



世鎧精密股份有限公司
SHEH KAI PRECISION CO.,LTD.

2023

溫室氣體盤查報告書

GHG Inventory Report



Version: 2.0
Issued on July 18, 2024

SHEH KAI PRECISION CO., LTD.



- ✧ Plant: Gangshan Plant
- ✧ Address: No. 1, 3, 5, Bengong 1st Rd., Benzhou Vil., Gangshan Dist., Kaohsiung City
- ✧ Main Production Items:
 - ◎ Bi-metal Screws
 - ◎ Concrete Screw Anchors
 - ◎ Stainless Steel Screws
 - ◎ Stainless Steel Point Tail/Flat Tail Screws
 - ◎ Stainless Steel Threat Cutting Screws Type17
 - ◎ Stainless Steel Self-drilling Screws
 - ◎ High Strength Stainless Screws
 - ◎ Special Fasteners
 - ◎ Double Bolts/Screws
 - ◎ Automotive Fasteners
 - ◎ Carriage Bolt
 - ◎ Hex Lag Screws

Plant	Main Business	Address
Luzhu Plant	Stainless Steel Wire	No. 161, Minyou Rd., Beilin Vil., Luzhu Dist., Kaohsiung City
Packaging Plant	Products Packaging and Shipping	No. 1, Bengong W. 1st Rd., Benzhou Vil., Gangshan Dist., Kaohsiung City
Bi-Metal	Drill Bit	No. 70-29, Shishan, Neigh. 23, Dacuo Vil.,

Material Plant	Manufacturing Equipment Development	Zhunan Township, Miaoli County
Zhunan Plant	Screw Automatic Joining	No. 58, Neigh. 9, Dacuo Vil., Zhunan Township, Miaoli County



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Chapter 1 2023 GHG Carbon Inventory Report Preparation Instructions and Introduction

Company Name	SHEH KAI PRECISION CO., LTD.
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Basis

Informed by the Letter of Taipei Exchange dated March 9, 2022: Jin-Guan-Zheng-Fa-Zi No. 1110381030 Letter of Financial Supervisory Commission, “Sustainable Development Roadmap for TWSE/TPEX Listed Companies” plan content

(I) Information disclosure on greenhouse gas (GHG) inventory and verification completed according to the schedule:

Disclosure content: GHG direct emissions (Scope 1) and energy indirect emissions (Scope 2).

Applicable schedule: TPEX listed companies in steel industry: Complete inventory inspection in 2023, and complete verification in 2024.

(II) Complete GHG inventory and verification schedule plans for the parent company and group (including subsidiaries) before the end of Q2 of 2022 and before the end of Q1 of 2023. After reporting to the Board of Directors for approval, the implementation progress shall be subsequently reported to the Board of Directors on a quarterly basis, in order to continuously control the GHG inventory and verification disclosure schedule completion status. The aforementioned implementation plan items shall include but not limited to the following focuses:

- Specify the establishment of full-time (adjunct) unit, evaluate the number of full-time (adjunct) personnel and the scope of their job duties, and establish an internal audit unit.
- Specify the plan item detailed implementation schedule.
- Establish talent training, strategic goal, control mechanism, internal audit and external verification plans, GHG inventory and report plan content, etc. The inventory inspection procedure shall include the following key focuses:
 1. Set up inventory boundary, identify emission source and disclosure scope.
 2. Complete emissions inventory inspection.
 3. Prepare, distribute the first edition of inventory report and execute document preservation management.
 4. Perform verification procedure (including internal and external verification).

5. Internal auditors shall track and audit whether relevant operations are completed according to the plan.
6. Complete the establishment of relevant information systems.

Sheh Kai Precision Co., Ltd. (hereinafter referred to as “Sheh Kai Precision” or “the Company”) is committed to the sustainable development and has actively completed the 2022 GHG inventory report and information disclosure. To cope with the energy-saving and carbon reduction net zero trend in response to the global climate change, this report is prepared in accordance with ISO 14064-1:2018 standards and the project requirements of the Ministry of Environment. The purpose of this report is to provide GHG inventory management related information of the Company. Through the inventory inspection process and result, the GHG emissions of the Company can be properly understood. In addition, the Company further plans to exert greater effort in the reduction of GHG emissions in the future.

Responsibility of Report:

The preparation of this report is to comply with the requirements of the Greenhouse Gas Reduction and Management Act.

Purpose of Report:

- (1) To identify the GHG emission source and to investigate the emissions of the Company in order to use it as the basis for internal management to cope with the national and international GHG trend.
- (2) To clearly explain the GHG information of the Company in order to properly understand the GHG emission status, to use it as the basis for the study and discussion of Category 1 and Category 2 GHG reduction, and to use as the inventory basis for the disclosure of the Sustainable Development Roadmap for TPEX Listed Companies announced by the Financial Supervisory Commission (FSC).

Expected Purpose and Subject of Report:

According to Category 1 and Category 2 of the Sustainable Development Roadmap for TPEX Listed Companies announced by FSC, the GHG report of the current year is an internal document of the Company and is mainly provided for the internal GHG management and communication.

I. Introduction

The impact of global climate change and greenhouse effect becomes more severe year after year, and disaster also occurs more frequently. In view of the threat of climate change on the environment, human survival and national security becomes greater and more urgent, more than 130 countries

worldwide have declared and responded to the “2050 Net Zero Emissions”. How to respond to the impact of the climate change in order to achieve stability and balance of natural system is a major challenge that needs to be faced and actively resolved by all of us.

While facing the treat of climate change, countries around the world have stated their commitments in the net zero emissions by 2050. Nevertheless, the international net zero trade and domestic net zero regulations implemented are expected to cause harsh potential impact on export-oriented industries. With regard to the “European Union Carbon Border Adjustment Mechanism (CBAM)”, the “European Commission's Implementing Regulation” has been officially implemented in October 2023. Accordingly, for products exported to European Union (EU) during Q4 of this year, the first 2023_Q4 carbon content report must be completed by the end of January of next year, 2024. For the “European Union Carbon Border Adjustment Mechanism (CBAM)” recently implemented, the draft of “U.S. Clean Competition Act (CCA)” currently under stipulation and even the supply chain requirements specified by the international giant manufacturers and business operators, all of these regulations and standards will cause material impact on the competitiveness of products exporting to European and American regions and other countries in the future. The government of our nation announced the “Taiwan 2025 Net Zero Emissions Roadmap” in March 2022, and the “Greenhouse Gas Reduction and Management Act” Amendment Draft also passed the third-reading of the Legislative Yuan on January 10, 2023 and promulgated for implementation on February 15 of the same year with the title of the Act amended to “Climate Change Response Act”, which also included the goal of 2050 net zero emissions, improvement of climate governance level, collection of carbon fee for specific purpose of use, additional stipulation of climate change adaption section, inclusion of carbon footprint and product label management mechanism. Accordingly, the Taiwanese government not only demonstrates the determination of our nation heading toward goal of net zero emissions to the external but also establishes a resilient climate legal basis for the internal.

The “Climate Change Response Act” specifies the basic carbon inventory requirements and also emphasizes the carbon pricing mechanism of carbon fee, voluntary reduction and cap control. The carbon fee collection in stages for different period is planned, and the subjects for carbon fee collection can be divided into direct emissions sources and indirect emission sources. The Ministry of Environment plans to collect carbon fees for direct emissions

sources of petrochemical and steel industries, etc. with the carbon emissions exceeding 25 thousand metric tons in 2024. The power generation industry operators are not included in the direct emissions category, and instead, the electricity users' indirect emissions are calculated. For example, although semiconductor industry is not listed under the category of direct production of carbon emissions, it is still classified as the subject for carbon fee collection due to its large amount of electricity consumption. It clearly shows that the era of carbon emissions with a cost has arrived. Sustainability low-carbon transition has become the global trend, and improvement of manufacturing process, improvement of performance, energy saving, carbon reduction and enhancement of international competitiveness are key subjects to enterprises. Accordingly, enterprises must deploy plan and establish solutions early.

Company Profile:

Sheh Kai Precision Co., Ltd., established in 1992 and approved by the Financial Supervisory Commission for public listing at Taipei Stock Exchange (TPEX) in 2008, equipped with the European ETA Certification and U.S. ICC Certification for products of screw anchors, is the largest manufacturer for the export of products of stainless steel bi-metal drilling screws and bi-metal screw anchors in Taiwan. The “dissimilar metal joining and partial high-frequency heat treatment” of bi-metal screws, apart from conventional screws, is of relatively higher technical barrier, and its manufacturing process is extremely complicated. All of the key automated machineries necessary for the manufacturing process are self-designed and fabricated by the Company. The Company aims to research and develop manufacturing process technologies and to reduce cost for a long period of time. After extensive years of effectors, the Company has achieved competitive advantages in its stable and exclusive mass production technologies, self-development and manufacturing of machine equipment, product reputation and framework in the specific high-end markets requiring certification. For products demanded by customers, the Company is able to respond promptly and properly, in order to increase the profit margin and to achieve the most optimal profitability for the Company.

Policy Statement:

This report is prepared in accordance with the requirements specified in the “Sustainable Development Roadmap for TWSE/TPEX Listed. Companies” announced by Financial Supervisory Commission - GHG inventory and

verification information disclosure schedule: For steel and iron industry TPEx listed company first stage of GHG direct emissions (Scope 1) inventory and energy indirect emissions (Scope 2) inventory, the inventory inspection is to be completed in 2023 and the verification thereof is to be completed in 2024.

Based on proper use of resources and fulfillment of corporate social responsibility, and in accordance with the requirements on the GHG control development trend and response to the requirements for future GHG emission reduction specified by ISO 14064-1:2018, Sheh Kai Precision has implemented the plans of systematic GHG emission inventory and list establishment as well as the verification procedure, etc. In addition, the 2022 carbon inventory has also been performed early along with the report of 2023 total carbon emissions of the monthly inventory result during the quarterly meeting, in order to provide a reference for future implementation of effective emission reduction improvement plans. In addition, the Company aims to achieve sustainable energy development along with the consideration of resource efficiency, energy saving and environmental protection at the same time, in order to exert effort in the achievement of low-carbon economic society for the industry jointly.

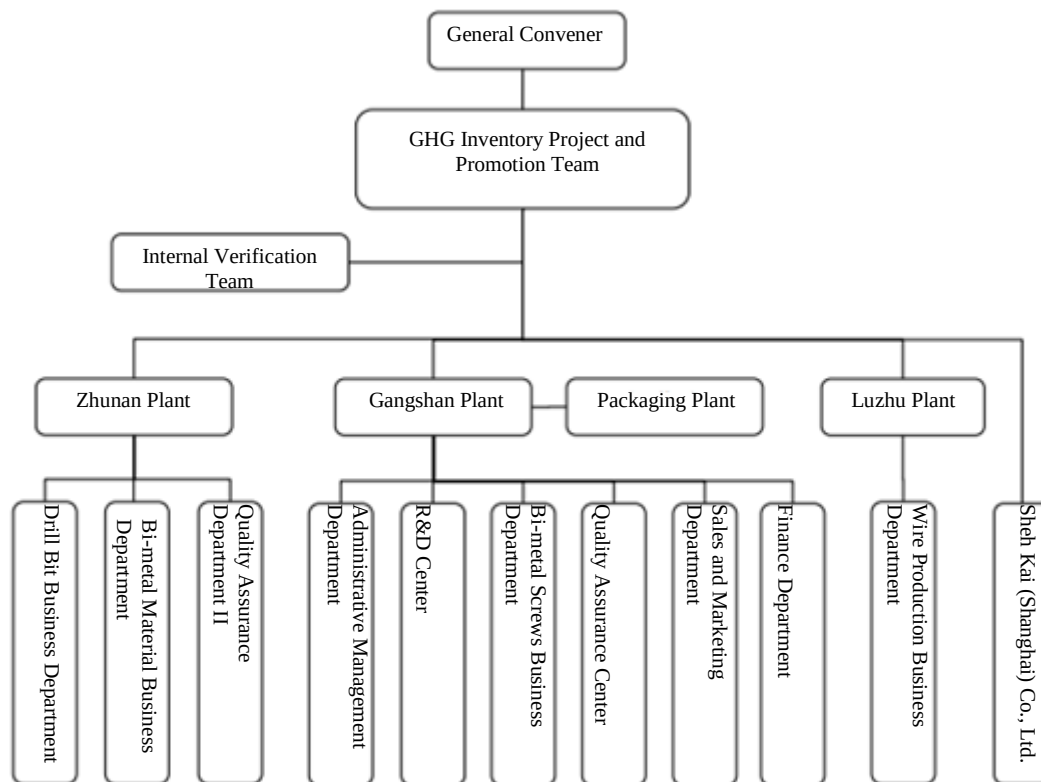
Policy Implementation Goal:

- Carbon Inventory Base year: The present GHG inventory is performed in accordance with the latest version of (14064-1: 2018), and verification is completed in 2024 in accordance with the requirements of the FSC; therefore, the year of 2023 is set as the GHG inventory base year.
- Commitment in GHG inventory of the factory in order to properly understand the GHG emission status.
- Propose emission reduction feasible plan according to the GHG inventory data and execute the plan properly in order to implement energy saving and carbon reduction measures properly.
- Enhance the Company's currently existing green power generation scale (solar power generation).
- Encourage all employees to comply with environmental protection laws and to participate in carbon reduction activities.
- Set up energy saving and carbon reduction goals, and actively reduce emissions through process optimization and environmental management.
- Assist and request suppliers/contractors to perform GHG inventory, and to provide data and cooperate with other relevant requirements.

GHG Inventory Handling Unit [R&D Center]

Reviewed by

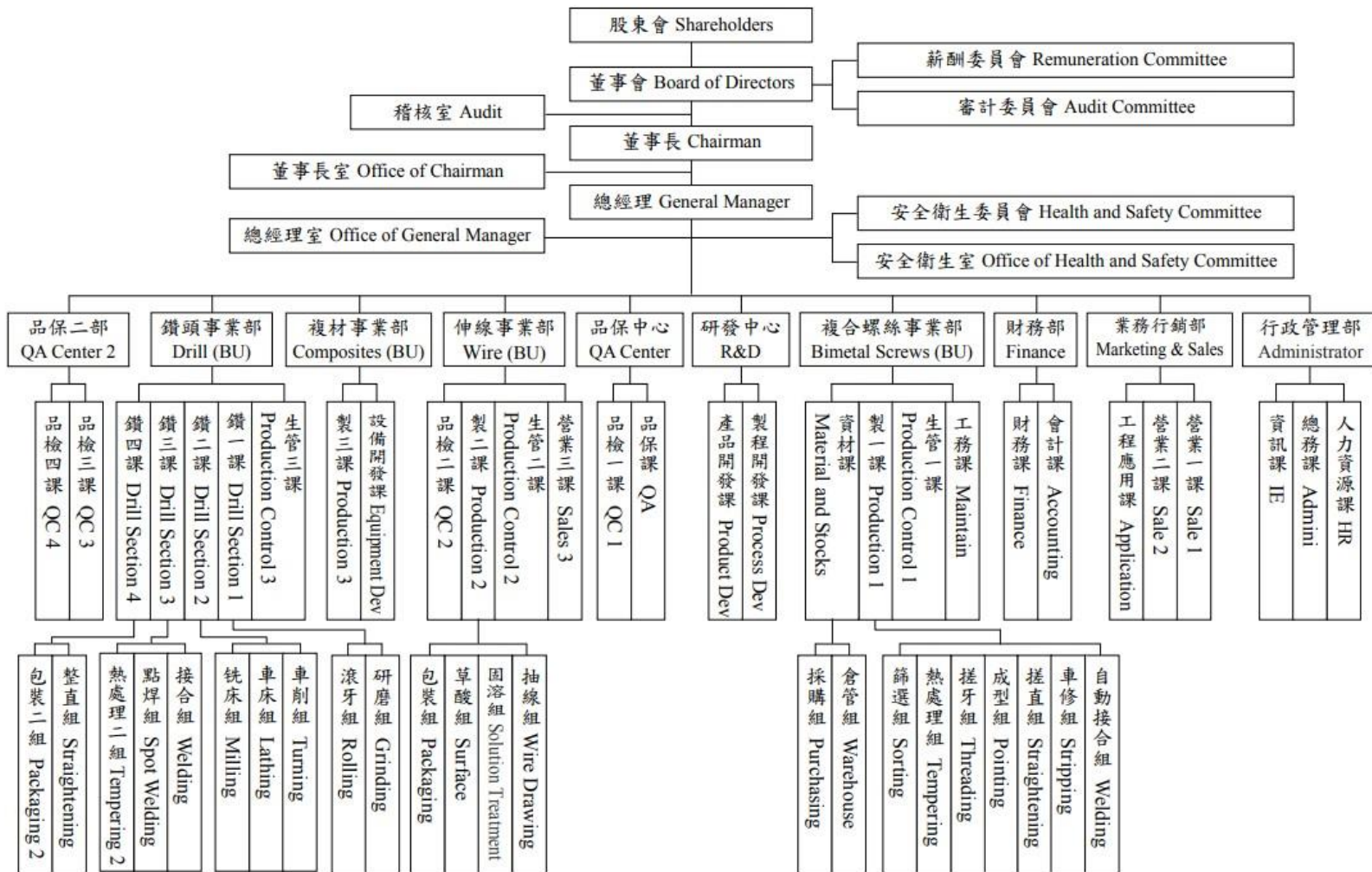
Manager:
Senior Vice President:



GHG Inventory Promotion Organizational Structure

“R&D Center” is the handling unit for the GHG inventory. The report boundary setting is defined in accordance with the organization, geographic, emission and operating boundaries of the organizational structure of the Company in order to establish various relevant reports and forms, following which each department head then designates the executing personnel to collect and sort the information (filling out forms), and the R&D Center then performs the summarization of the information for subsequent years according to the GHG inventory and verification schedule to plan the continuous improvement operation annually.

- Summarize GHG total monthly emissions
- Quantify data
- Calculate GHG emission equivalent
- Report to the Board of Directors quarterly
- Establish annual inventory emission inventory list
- Prepare inventory report
- Distribute report and document preservation management
- Verification procedure (internal verification), (external verification)



Sheh Kai Precision Company Organizational Chart

2023 GHG Inventory Product Manufacturing Operation Flow Chart

Operation Process	Process Description
Wire rod ↓ Wire drawing ↓ Heading ↓ Trimming ↓ Straightening ↓ Forming ↓ Threading ↓ Heat treatment ↓ Surface treatment ↓ Packaging ↓ Shipping	Manufacture metal materials of the carbon steel and stainless steel of fasteners Perform acid pickling, wire drawing and heat treatment (spheroidization) on the wire rod for skinpass to obtain desired wire diameter. Perform pre-pressing on the wire to form desired head shape. Trim and flatten the joint parts of composite fasteners. Straighten deformation and bending of long fasteners due to manufacturing process. Stamping on screw tails. Thread formation of fasteners. Heating and cooling treatments on the fasteners according to the needs, in order to obtain the desired mechanical property. Electroplating and galvanization on exterior of screws to improve anti-rust capability and appearance. Perform packaging and label attachment according to the quantity instructed by client. Shipping of products to client end.

Chapter 2 Organization and Report Boundary Description

2.1 Organization Boundary Description

Inventory Year	Basic Information
	Company Plant Name
2023	Sheh Kai Precision Co., Ltd.

Plant	Address
Sheh Kai Precision Co., Ltd. Gangshan Plant	No. 1, 3, 5, Bengong 1st Rd., Gangshan Dist., Kaohsiung City
Sheh Kai Precision Co., Ltd. Luzhu Plant	No. 161, Minyou Rd., Luzhu Dist., Kaohsiung City
Sheh Kai Precision Co., Ltd. Packaging Plant	No. 1, Bengong W. 1st Rd., Gangshan Dist., Kaohsiung City
Sheh Kai Precision Co., Ltd. Bi-Metal Material Plant	No. 70-29, Shishan, Neigh. 23, Dacuo Vil., Zhunan Township, Miaoli County
Sheh Kai Precision Co., Ltd. Zhunan Plant	No. 58, Neigh. 9, Dacuo Vil., Zhunan Township, Miaoli County

Setting Method	Operational control approach
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2.2 Report Boundary Description

For the present inventory, the GHG category can be classified into the following GHG groups of carbon dioxide (CO₂), methane (CH₄), nitrous oxide(N₂O), nitrogen trifluoride(NF₃), sulfur Hexafluoride(SF₆)and other appropriate GHG groups, hydrofluorocarbons (HFCs), perfluorinated chemicals (PFCs), etc.

This report is prepared in accordance with the requirements specified in the “Sustainable Development Roadmap for TWSE/TPEX Listed. Companies” announced by the FSC. The report boundary includes the direct GHG emissions (Category 1) and indirect GHG emissions from imported energy (Category 2). The GHG emission source type and item are as shown in Table 1, and the emission source identification chart is as shown in Table 2.

Table 1 Sheh Kai Precision’s 2023 GHG Emission Source Type and Item

Category	Item	Activity/Equipment Type	Emission Source	GHG	Emission Source Location
Category 1: Direct GHG emissions	Direct emissions from stationary combustion source	Heating furnace	Natural gas	CO ₂ , CH ₄ , N ₂ O	Gangshan Plant, Luzhu Plant
		Emergency power generator	Diesel	CO ₂ , CH ₄ , N ₂ O	Gangshan Plant, Luzhu Plant, Bi-Metal Material Plant
	Direct emissions from mobile combustion source	Company vehicles	Gasoline	CO ₂ , CH ₄ , N ₂ O	Gangshan Plant, Bi-Metal Material Plant
		Company vehicles	Diesel	CO ₂ , CH ₄ , N ₂ O	Gangshan Plant
		Fork lift trucks	Diesel	CO ₂ , CH ₄ , N ₂ O	Gangshan Plant, Luzhu Plant, Packaging Plant, Zhunan Plant
	Direct emissions from manufacturing processes or facilities	Wires for electric welding operation	Welding materials	CO ₂	Bi-Metal Material Plant
		Acetylene	CO ₂	CO ₂	Gangshan Plant, Luzhu Plant
		WD40 anti-rust oil	CO ₂	CO ₂	Gangshan Plant, Luzhu Plant
		Ammonia cracker	Note 2	Note 2	Luzhu Plant
	Direct fugitive emissions of GHG from anthropogenic systems	Septic tanks	CH ₄	CH ₄	Gangshan Plant, Luzhu Plant, Packaging Plant, Bi-Metal Material Plant, Zhunan Plant
		Air conditioners/refrigerators/chiller units/vehicle coolant	HFCs	HFCs	Gangshan Plant, Luzhu Plant, Packaging Plant, Bi-Metal Material Plant, Zhunan Plant
		Gas circuit breakers (GCB)	SF ₆	SF ₆	Gangshan Plant, Luzhu Plant

Category 2: Indirect GHG emissions from imported energy	Indirect emissions from imported electricity	Electricity supplied by Taipower	Electricity	CO ₂	Gangshan Plant, Luzhu Plant, Packaging Plant, Bi-Metal Material Plant, Zhunan Plant
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2.2.1 Exclusions for GHG Emissions Inventory

1. For Category 2, except for the externally purchased Taipower's electricity, the externally purchased energies of thermal energies and steam are excluded. In addition, since the Company does not use biomass energy, it is also excluded.
2. The process of ammonia cracker refers to the reaction of ammonia and nitrogen, and there is no reaction with the oxygen during the process; therefore, the GHG of N₂O is not generated.
3. Since R-22 and R-12 coolants are controlled substances specified in the Montreal Protocol, rather than GHG controlled substances, they are excluded.
4. Since R-600a coolant has no GWP value, it is excluded.
5. Since activity data collection of the tail gas combustion of Gangshan Plant is difficult, it is excluded.
6. The fire extinguishers have been verified to be ABC type of fire extinguishers such that they do not generate GHG directly; therefore, they are excluded.

Table 2 Sheh Kai Precision's 2023 GHG Emission Source Identification Chart

No.	Location Name	Raw Fuel/Material or Product	Emission Source Data		Type of GHG Possibly Generated						
		Name	Category	Emission Type	CO ₂	CH ₄	N ₂ O	HFCS	PFCS	SF ₆	NF ₃
1	Gangshan Plant	Company vehicles (gasoline)	Category 1	Mobile (T)	v	v	v				
2	Gangshan Plant	Company vehicles (diesel)	Category 1	Mobile (T)	v	v	v				
3	Gangshan Plant	Fork lift truck (super diesel)	Category 1	Mobile (T)	v	v	v				
4	Gangshan Plant	Employees (septic tank escape)	Category 1	Fugitive (F)		v					
5	Gangshan Plant	Non-employees (septic tank escape)	Category 1	Fugitive (F)		v					
6	Gangshan Plant	Coolant (R-134a)	Category 1	Fugitive (F)				v			
7	Gangshan Plant	Coolant (R-407C)	Category 1	Fugitive (F)				v			
8	Gangshan Plant	Coolant (R-410A)	Category 1	Fugitive (F)				v			
9	Gangshan Plant	Natural Gas	Category 1	Stationary (E)	v	v	v				
10	Gangshan Plant	Emergency power generator (diesel)	Category 1	Stationary (E)	v	v	v				
11	Gangshan Plant	Gas circuit breakers/GCB	Category 1	Fugitive (F)						v	
12	Gangshan Plant	Acetylene	Category 1	Process (P)	v						
13	Gangshan Plant	WD-40 anti-rust oil	Category 1	Process (P)	v						
14	Gangshan Plant	Externally purchased electricity	Category 2	Externally purchased electricity	v						
15	Luzhu Plant	Fork lift truck (super diesel)	Category 1	Mobile (T)	v	v	v				
16	Luzhu Plant	Employees (septic tank escape)	Category 1	Fugitive (F)		v					
17	Luzhu Plant	Non-employees (septic tank escape)	Category 1	Fugitive (F)		v					
18	Luzhu Plant	Coolant (R-134a)	Category 1	Fugitive (F)				v			
19	Luzhu Plant	Coolant (R-410A)	Category 1	Fugitive (F)				v			
20	Luzhu Plant	Natural Gas	Category 1	Stationary (E)	v	v	v				
21	Luzhu Plant	Emergency power generator (diesel)	Category 1	Stationary (E)	v	v	v				
22	Luzhu Plant	Gas circuit breakers/GCB	Category 1	Fugitive (F)						v	
23	Luzhu Plant	Acetylene	Category 1	Process (P)	v						
24	Luzhu Plant	WD-40 anti-rust oil	Category 1	Process (P)	v	v	v				
25	Luzhu Plant	Externally purchased electricity	Category 2	Externally purchased electricity	v						
26	Packaging Plant	Fork lift truck (super diesel)	Category 1	Mobile (T)	v	v	v				
27	Packaging Plant	Employees (septic tank escape)	Category 1	Fugitive (F)		v					
28	Packaging Plant	Non-employees (septic tank escape)	Category 1	Fugitive (F)		v					
29	Packaging Plant	Coolant (R-134a)	Category 1	Fugitive (F)				v			
30	Packaging Plant	Coolant (R-410A)	Category 1	Fugitive (F)				v			
31	Packaging Plant	Externally purchased electricity	Category 2	Externally purchased electricity	v						
32	Bi-Metal Material Plant	Company vehicles (gasoline)	Category 1	Mobile (T)	v	v	v				
33	Bi-Metal Material Plant	Employees (septic tank escape)	Category 1	Fugitive (F)		v					
34	Bi-Metal Material Plant	Non-employees (septic tank escape)	Category 1	Fugitive (F)		v					
35	Bi-Metal	Coolant (R-134a)	Category 1	Fugitive (F)				v			

	Material Plant											
36	Bi-Metal Material Plant	Coolant (R-410A)	Category 1	Fugitive (F)				v				
37	Bi-Metal Material Plant	Emergency power generator (diesel)	Category 1	Stationary (E)	v	v	v					
38	Bi-Metal Material Plant	Wires for electric welding operation	Category 1	Process (P)	v							
39	Bi-Metal Material Plant	Externally purchased electricity	Category 2	Externally purchased electricity	v							
40	Zhunan Plant	Fork lift truck (super diesel)	Category 1	Mobile (T)	v	v	v					
41	Zhunan Plant	Employees (septic tank escape)	Category 1	Fugitive (F)		v						
42	Zhunan Plant	Coolant (R-134a)	Category 1	Fugitive (F)				v				
43	Zhunan Plant	Coolant (R-410A)	Category 1	Fugitive (F)				v				
44	Zhunan Plant	Externally purchased electricity	Category 2	Externally purchased electricity	v							

Chapter 3 Base Year Setting and Inventory List Change

3.1 Base Year

Base Year Setting	2023
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The Company sets the year of 2023 as the base year for the GHG inventory, and the reason is explained in the following:

Since the Company officially performed the GHG inventory for the first time in 2023 and also established a systematic system with quantified data to ensure the credibility of the inventory data, the year of 2023 was set as the inventory base year.

In the future, the base year setting and revision will be made according to the Company's needs and relevant national policies

3.2 Change of Base Year

In case of the following situations, the base year set by the Company may be updated and re-calculated according to the new situation, and documentation is to be implemented:

1. Structural change (merger, acquisition, investment and disinvestment) in the organization boundary or report boundary.
2. GHG emission source or relevant ownership and control right moving in or out of the organization boundary.
3. Change in the quantification method, resulting in significant change of the GHG emissions or removals amount; discovery of major error, or accumulated error exceeding the significance threshold by 3% (significance threshold of GHG inventory operation is set to be 3.0%).
4. Change in the facility production level, including facility shutdown or activation, and the organization shall not consider the re-calculation of its base year and GHG inventory list.

Chapter 4 GHG Inventory and CO₂_e Emissions of Each Category

Category 1 Direct emissions from stationary combustion (natural gas)

(1) 2023 Monthly natural gas consumption (*cross-month consumption)		
Month	Consumption amount (m ³)	
	Gangshan Plant	Luzhu Plant
1	580.6452*	3320.9678*
2	826.0000	7877.0000
3	939.0000	15402.0000
4	791.0000	8569.0000
5	753.0000	9921.0000
6	885.0000	7705.0000
7	935.0000	5450.0000
8	940.0000	5058.0000
9	808.0000	5067.0000
10	627.0000	4200.0000
11	828.0000	6451.0000
12	924.0000*	7651.6429*
Subtotal (m ³)	9836.6452	86672.6107

(2) GHG emissions factor and GWP value			
GHG	CO ₂	CH ₄	N ₂ O
Emission factor (kg/m ³)	1.8790358400	0.0000334944	0.0000033494
GWP value	1	27.9	273

(3) Emissions equivalent = Annual consumption amount x [CO ₂ emission factor + CH ₄ emission factor x CH ₄ GWP + N ₂ O emission factor x N ₂ O GWP]		
Plant site emission source_emissions amount	Gangshan Plant (natural gas)	Luzhu Plant (natural gas)
Emissions equivalent (ton_CO ₂ -e)	18.5016	163.0212
Total (ton_CO₂-e)	181.5228	

Note: Packaging Plant, Zhunan Plant and Bi-Metal Material Plant do not use natural gas. Gangshan Plant uses natural gas for the drawing furnace waste gas burning, and after the burning of the waste gas, the additional small amount of carbon emissions cannot be detected easily for calculation; therefore, it is excluded from the calculation.

2023 Direct emissions from stationary combustion (natural gas)

Total emissions equivalent 181.5228

ton_CO₂-e

Category 1 Direct emissions from stationary combustion of power generators (diesel)

**2023 Diesel consumption of emergency power generators of each plant site
(Unit: L)**

Plant site	KW	Test run oil consumption per minute (L)	Total annual test run time (minutes)	Total oil consumption (L)
Gangshan Plant (1)	60	0.2500	30	7.5000
Gangshan Plant (2)	114	0.4167	30	12.5010
Luzhu Plant	30	0.1250	30	3.7500
Packaging Plant	0	0	0	0.0000
Bi-Metal Material Plant	50	0.2083	30	6.2500
Zhunan Plant	0	0.0000	0	0.0000

Note 1: The diesel consumption of the fork lift trucks of Gangshan Plant and Luzhu Plant refers to the total diesel consumption minus the diesel consumption of power generators.

Note 2: Bi-Metal Material Plant has no fork lift truck, and the emergency power generator diesel is supplied by the fire inspection company.

Note 3: For each trial run, the power generator is turned on for five minutes, and numerous startups are performed according to the inspection items. The average annual trial run time is half an hour.

GHG emissions factor and GWP value			
GHG	CO ₂	CH ₄	N ₂ O
Emergency power generator diesel	2.6060317920	0.0001055074	0.0000211015
GWP value	1	27.9	273

Emissions equivalent = Annual consumption amount x [CO₂ emission factor + CH₄ emission factor x CH₄ GWP + N₂O emission factor x N₂O GWP] (Unit: ton_CO₂-e)

Plant site emission source (L)	Gangshan Plant		Packaging Plant
	Emergency power generator diesel (20.0010L)		Emergency power generator diesel (0L)
Emissions equivalent ton_CO ₂ -e	0.0523		0
Plant site emission	Luzhu Plant	Bi-Metal Material	Zhunan Plant

source (L)	(3.7500L)	Plant (6.2500L)	(0L)
	Emergency power generator diesel	Emergency power generator diesel	Emergency power generator diesel
Emissions equivalent ton_CO ₂ -e	0.0098	0.0163	0
Total	0.0784 (ton_CO₂-e)		

**2023 Direct emissions from stationary combustion
of diesel of emergency power generators**
Total emissions equivalent 0.0784 ton_CO₂-e

Category 1 Direct emissions from mobile combustion (gasoline, diesel)

2023 Consumption amount of each plant site (Unit: L)			
Gangshan Plant			Packaging Plant
Vehicle gasoline	Vehicle diesel	Fork lift truck diesel	Fork lift truck diesel
11572.4320	4594.3300	3179.9990	3200.0000
Luzhu Plant	Bi-Metal Material Plant	Zhunan Plant	-
Fork lift truck diesel	Vehicle gasoline	Fork lift truck diesel	-
5921.2500	4338.1120	49.8900	-
Note 1: Since the vehicle gasoline and diesel of Luzhu Plant are paid and supplied by Gangshan Plant, the vehicle gasoline and diesel consumption of Luzhu Plant is calculated towards the consumption of Gangshan Plant. Note 2: The diesel consumption of the fork lift trucks of Gangshan Plant and Luzhu Plant refers to the total diesel consumption minus the diesel consumption of power generators.			

GHG emissions factor and GWP value				
GHG		CO ₂	CH ₄	N ₂ O
Emission factor (kg/L)	Vehicle gasoline	2.2631328720	0.0008164260	0.0002612563
	Vehicle/fork lift truck diesel	2.6060317920	0.0001371596	0.0001371596
GWP value		1	27.9	273

Emissions equivalent = Annual consumption amount x [CO ₂ emission factor + CH ₄ emission factor x CH ₄ GWP + N ₂ O emission factor x N ₂ O GWP] (Unit: ton_CO ₂ -e)				
Plant site emission source	Gangshan Plant			Packaging Plant
	Vehicle gasoline	Vehicle diesel	Fork lift truck diesel	Fork lift truck diesel
Emissions equivalent	27.2790	12.1626	8.4184	8.4714
Subtotal	47.8600			8.4714
Plant site emission source	Luzhu Plant	Bi-Metal Material Plant	Zhunan Plant	-
	Fork lift truck diesel	Vehicle gasoline	Fork lift truck diesel	-
Emissions equivalent	15.6754	10.2260	0.1321	-
Subtotal	15.6754	10.2260	0.1321	-

Total	82.3648(ton_CO₂-e)
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**2023 Direct emissions from mobile combustion,
Including gasoline and diesel consumed by vehicles and
fork lift truck diesel**

Total emissions equivalent 82.3648 ton_CO₂-e

Category 1 Direct emissions from industrial processes (acetylene, WD40 anti-rust oil)

(1) 2023 Annual consumption amount				
Plant site emission source	Gangshan Plant		Luzhu Plant	
	Acetylene	WD40 anti-rust oil	Acetylene	WD40 anti-rust oil
Consumption amount (kg)	27.5	1.3416	10.0	0.2303
Acetylene cylinder specification (35L), acetylene filling of 2.5kg, Gangshan Plant consumption of 11 cylinders, and Luzhu Plant consumption of 4 cylinders. WD40 anti-rust oil is calculated based on the mass balance approach, and the equation is: WD40 consumption amount $\times$ 0.81 (WD40 specific weight) $\times$ 3% (carbon content) = ??(kg). Gangshan Plant's WD40 consumption amount 55.208L: $55.208 \times 0.81 \times 3\% = 1.3416\text{kg}$ Luzhu Plant's WD40 consumption amount 9.476L: $9.476 \times 0.81 \times 3\% = 0.2303\text{kg}$				

(2) Emission factor		
Emission Source	Acetylene	WD40 anti-rust oil
Emission factor (kg/kg)	3.3846153846	1.0000000000

(3) Emissions equivalent = Annual consumption amount x Emission factor				
Plant site emission source	Gangshan Plant		Luzhu Plant	
Emission Source	Acetylene	WD40 anti-rust oil	Acetylene	WD40 anti-rust oil
Emissions equivalent (ton_CO ₂ -e)	0.0931	0.0013	0.0338	0.0002
Subtotal (ton_CO ₂ -e)	0.0944		0.0340	
Total (ton_CO ₂ -e)	0.1284			

Note: Packaging Plant, Zhunan Plant and Bi-Metal Material Plant do not use acetylene and WD40 anti-rust oil.

2023 Direct emissions from industrial processes, including acetylene, WD40 anti-rust oil

**Total emissions equivalent 0.1284
ton_CO₂-e**

GHG emissions carbon equivalent inventory Category 1 - Coolants (2023)

Plant site	Gangshan Plant				
Equipment	Refrigerators, water dispensers	Company vehicles	Air conditioners	Chiller units	Dryers
Coolant type	R-134a/HFC-134a	R-134a	R-410a	R-410a	R-407C
Equipment quantity (units)	29(# 1)	10+2(# 1)	3+4(# 2)	2	3
Total filling amount (g)	2212.0000	8090.1644	5515.0137	36000.0000	12500.0000
Fugitive emissions rate (%)	0.3	20	3	8.5	16
GWP	1530	1530	2256	2256	1908
Carbon emissions equivalent (kg_CO2-e)	10.1531	2475.5903	373.2561	6903.3600	3816.0000
Subtotal (kg_CO2-e)	13578.3595				

Plant site	Luzhu Plant		Packaging Plant	
Equipment	Refrigerators, water dispensers	Air conditioners	Refrigerators, water dispensers	Air conditioners
Coolant type	R-134a	R-410a	R-134a	R-410a
Equipment quantity (units)	5	13	3	6
Total filling amount (g)	512	28920	235	7490
Fugitive emissions rate (%)	0.3	3	0.3	3
GWP	1530	2256	1530	2256
Carbon emissions equivalent (kg_CO2-e)	2.3501	1957.3056	1.0787	506.9232
Subtotal (kg_CO2-e)	1959.6557		508.0019	

Plant site	Bi-Metal Material Plant				Zhunan Plant	
Equipment	Refrigerators, water dispensers	Company vehicles	Air conditioners	Chiller units	Refrigerators, water dispensers	Air conditioners
Coolant type	R-134aHFC-134a	R-134a	R-410a	R-410a	R-134aHFC-134a	R-410a
Total quantity (units)	5	3(# 3)	6	4+1(# 4)	2	2

Total filling amount (g)	260.0000	1289.8356	20450.0000	36108.6301	330.0000	4200.0000
Fugitive emissions rate (%)	0.3	20	3	8.5	0.3	3
GWP	1530	1530	2256	2256	1530	2256
Carbon emissions equivalent (kg_CO ₂ -e)	1.1934	394.6897	1384.0560	6924.1909	1.5147	284.2560
Subtotal (kg_CO ₂ -e)	8704.1300				285.7707	

Remarks:

1: Gangshan Plant changed vehicles in October 2023, and RCR-7916 was changed to RDV-0565. The fugitive emissions is calculated according to the corresponding vehicle model and time. For the two company vehicles of Luzhu Plant, since the vehicle gasoline is paid by Gangshan Plant, relevant coolant fugitive emissions is calculated towards the emissions of Gangshan Plant.

2: Gangshan Plant newly installed four split-type air conditioners in November 2023. The fugitive emissions is calculated according to the plant entrance time of the air conditioners.

3: Bi-Metal Material Plant changed vehicles in October 2023, and RAS-9239 was changed to RDP-5697. The fugitive emissions is calculated according to the corresponding vehicle model and time.

4: Bi-Metal Material Plant newly installed a laser welder cooling-water machine in November 2023. The fugitive emissions is calculated according to the plant entrance time of the machine.

Plant site	Gangshan Plant		Bi-Metal Material Plant		Zhunan Plant		
Equipment	Air conditioners	Chiller units	Dryers	Chiller units	Air conditioners	Dryers	Water dispensers
Coolant type	R-22						R-12
Total quantity (units)	8	5	2	1	4	2	1
Total filling amount (kg)	59.9500	36.0000	6.2000	4.2000	20.0500	4.9000	0.3000
Fugitive emissions rate (%)	5.5	8.5	5.5	8.5	5.5	5.5	0.3
GWP	1960						11200
Carbon emissions equivalent (kg_CO ₂ -e)	6462.61	5997.60	668.36	699.72	2161.39	528.22	10.08
Carbon emissions equivalent (ton_CO ₂ -e)	6.4626	5.9976	0.6684	0.6997	2.1614	0.5282	0.0101
Note: Air conditioners and equipment use R22 and R12 coolants. Since such types of coolants refer to substances under the control of the Montreal Protocol rather than substances for GHG emissions control, they are listed in the inventory inspection but are excluded from the scope of carbon emissions equivalent statistics.							

GHG emissions carbon equivalent inventory Category 1 - Coolant (2023)						
Plant site	Gangshan Plant	Luzhu Plant	Packaging Plant	Bi-Metal Material Plant	Zhunan Plant	-
Carbon emissions equivalent (ton_CO ₂ -e)	13.5784	1.9597	0.5080	8.7041	0.2858	-
Total	25.0359					

2023 Direct fugitive emissions (coolants) of

GHG from anthropogenic systems
Total emissions equivalent 25.0359
ton_CO₂-e

Category 1 Direct fugitive emissions (septic tanks) of GHG from anthropogenic systems

Employee monthly working hours					
Month \ Working hours (hr)	Gangshan Plant	Luzhu Plant	Packaging Plant	Bi-Metal Material Plant	Zhunan Plant
1	22937.5000	6099.0000	3143.0000	4557.0000	3628.0000
2	27588.5000	7652.0000	3580.0000	5296.5000	4252.0000
3	33605.0000	8651.0000	4417.0000	6696.0000	5329.0000
4	26226.0000	6455.0000	3712.0000	4800.0000	3851.0000
5	30869.5000	8133.0000	3706.0000	5852.5000	5036.0000
6	29872.5000	7399.0000	4085.0000	5620.5000	4830.5000
7	30841.0000	7803.0000	4247.0000	5546.5000	4504.0000
8	31129.0000	7978.0000	4558.0000	6228.5000	4920.5000
9	27285.0000	7362.5000	4017.5000	5792.0000	3998.5000
10	25713.0000	7105.0000	3966.5000	5533.0000	3718.0000
11	27764.5000	7830.5000	4139.0000	6123.0000	4168.5000
12	26055.0000	7594.0000	3989.0000	5650.0000	3759.0000
Subtotal (hr)	339886.5000	90062.0000	47560.0000	67695.5000	51995.0000

Non-employee monthly working hours					
Month \ Working hours (hr)	Gangshan Plant	Luzhu Plant	Packaging Plant	Bi-Metal Material Plant	Zhunan Plant
1	872.0000	744.0000	312.0000	128.0000	-
2	832.0000	672.0000	288.0000	160.0000	-
3	936.0000	744.0000	324.0000	192.0000	-
4	856.0000	720.0000	300.0000	136.0000	-
5	920.0000	744.0000	324.0000	176.0000	-
6	888.0000	720.0000	312.0000	168.0000	-
7	912.0000	744.0000	312.0000	168.0000	-
8	928.0000	744.0000	324.0000	184.0000	-
9	888.0000	720.0000	312.0000	168.0000	-
10	904.0000	744.0000	312.0000	160.0000	-
11	896.0000	720.0000	312.0000	176.0000	-
12	912.0000	744.0000	312.0000	168.0000	-
Subtotal (hr)	10744.0000	8760.0000	3744.0000	1984.0000	-

2023 total working hours of employees and non-employees					
Plant site	Gangshan Plant	Luzhu Plant	Packaging Plant	Bi-Metal Material Plant	Zhunan Plant
Employees	339886.5000	90062.0000	47560.0000	67695.5000	51995.0000
Non-employees	10744.0000	8760.0000	3744.0000	1984.0000	0.0000
Total Working Hours	350630.5000	98822.0000	51304.0000	69679.5000	51995.0000

GHG emissions factor and GWP value	
GHG	CH ₄
Emission factor (ton/hr)	0.0000015938
GWP value	27.9

(1) Emissions equivalent = Working hours (subtotal) x CH ₄ emission factor x CH ₄ GWP					
Plant site	Gangshan Plant	Luzhu Plant	Packaging Plant	Bi-Metal Material Plant	Zhunan Plant
Total Working Hours	350630.5000	98822.0000	51304.0000	69679.5000	51995.0000
Emissions equivalent (ton_CO ₂ -e)	15.5905	4.3943	2.2822	3.0997	2.3129
Total (ton_CO₂-e)	27.6796				

Note: Non-employees include cleaning personnel and security guards.

2023 Direct fugitive emissions (septic tanks) of GHG from anthropogenic systems

Total emissions equivalent 27.6796 ton_CO₂-e

Laser welding of dissimilar metals

Laser welding of dissimilar metals					
Plant site	Gangshan Plant	Luzhu Plant	Packaging Plant	Bi-Metal Material Plant	Zhunan Plant
ttw-M2 quantity (g) Dimension: 1.0mm, 0.6mm	0	0	0	600	0
Emissions equivalent (kg_CO ₂ -e)	0.0000	0.0000	0.0000	0.0191	0.0000

ttw-M2 metal welding rod metal material carbon content ratio and GHG emissions factor	
Greenhouse Gas Emissions	CO ₂
Emission factor	3.6666666667
Carbon content ratio (%)	0.87
Carbon emissions = Metal material weight x Carbon content ratio (%) x Emission factor	

For the project, R&D welding prototyping was performed during Q3 of 2023, and the R&D prototyping consumption amount in 2023 was 600g. Based on the carbon content ratio of 0.87% (material certificate provided by the supplier), the carbon emissions is calculated to be 0.0191kg_CO₂-e, and for the expression in ton_CO₂-e, the carbon emissions is calculated to be 0.0000ton_CO₂-e.

2023 Direct emissions from metal laser welding of R&D processes

Total emissions equivalent 0.0000 ton_CO₂-e

High pressure gas circuit breakers

High pressure gas circuit breakers (GCB) protection gas SF ₆ (Unit: g)					
Plant site	Gangshan Plant	Luzhu Plant	Packaging Plant	Bi-Metal Material Plant	Zhunan Plant
Gas circuit breakers (GCB) quantity (units)	2	0	0	0	0
Filling amount of current year (g)	0.0000	0.0000	0.0000	0.0000	0.0000
Emissions equivalent (ton_CO ₂ -e)	0.0000	0.0000	0.0000	0.0000	0.0000

Gas circuit breaker (GCB) protection gas SF ₆ GHG emissions factor and GWP value	
GHG	SF ₆ sulfur hexafluoride
Emission factor	1.0000000000
GWP value	25200
SF ₆ emissions = Filling amount of current year x Emission factor x GWP value	



溫室氣體化學式	AR2 (1995)	AR3 (2001)	AR4 (2007)	AR5 (2014)	AR6 (2021)
HFC-245ca, 1,1,2,2,3-五氟丙烷, CH ₃ CF ₂ CHF ₂	560	640	693	716	787
HFC-245fb, 1,1,1,3,3-五氟丙烷, CHF ₂ CH ₂ CF ₃	—	950	1,030	858	962
HFC-365mfc, 1,1,1,3,3-五氟丁烷, CF ₃ CH ₂ CF ₂ CF ₃	—	890	794	804	914
HFC-43-10mee, 1,1,1,2,2,3,4,5,5,5-十氟戊烷, CF ₃ CHFCF ₂ CF ₂ CF ₃	1,300	1,500	1,640	1,650	1,600
Chlorocarbons and Hydrochlorocarbons					
Methylchloride, CH ₃ Cl	100	140	146	160	161
Methylenechloride, CH ₂ Cl ₂	4	16	13	12	6
Chloroform, CHCl ₃	9	10	8.7	9	11
Fully Fluorinated Species	—	10,800	17,200	16,100	17,400
NF ₃ , 三氟化氮	23,900	22,200	22,800	23,500	25,200
SF ₆ , 六氟化硫	6,500	5,700	7,390	6,630	7,380
PFC-14, 四氟化碳, CF ₄	9,200	11,900	12,200	11,100	12,400
PFC-116, 六氟乙烷, C ₂ F ₆	7,000	8,600	8,830	8,900	9,290
PFC-218, 全氟丙烷, C ₃ F ₈	8,700	10,000	10,300	9,540	—
PFC-318, 全氟丁烷, C ₄ F ₁₀	7,000	8,600	8,860	9,200	10,000
Perfluorocyclopentane, C ₅ F ₁₂	—	—	—	2	—
PFC-4-1-12, C ₄ F ₉ (n-C ₄ F ₉), 全氟戊烷	7,500	8,900	9,160	8,550	9,220
PFC-5-1-14, C ₅ F ₁₂ (n-C ₅ F ₁₂), 全氟己烷	7,400	9,000	9,300	7,910	8,620
混合冷媒					
R-401A, HCFC-22/HFC-152a/HCFC-124(53.0/13.0/34.0)	1,126	1,127	1,182	1,130	1,263

$$\text{SF}_6 \text{ emissions} = \text{Filling amount of current year} \times \text{Emission factor} \times \text{GWP value} \\ 0 \times 1.0000000000 \times 25200 = 0 \text{ (ton_CO}_2\text{-e)}$$

GHG chemical	Emission factor	GWP
SF ₆ , sulfur	1.0000000000	25200

Information source: Calculation according to mass balance approach

High pressure gas circuit breakers (GCB)
protection gas SF₆

Total emissions equivalent 0 ton_CO₂-e

GHG emissions carbon equivalent inventory Category 1 - Fire extinguishers (2023)

Plant site	Dry powder fire extinguisher type	Quantity (units)	Remarks
Gangshan Plant	ABC type (general, oil, electrical fire)	79	Without carbon content; therefore, no calculation is necessary
Luzhu Plant	ABC type (general, oil, electrical fire)	19	Without carbon content; therefore, no calculation is necessary
Packaging Plant	ABC type (general, oil, electrical fire)	11	Without carbon content; therefore, no calculation is necessary
Bi-Metal Material Plant	ABC type (general, oil, electrical fire)	14	Without carbon content, and no calculation is necessary
Zhunan Plant	ABC type (general, oil, electrical fire)	7	Without carbon content; therefore, no calculation is necessary

Note: Fire extinguisher type ●ABC dry powder: Without carbon content, and no calculation is necessary; ●BC type dry powder: Depending on its content, if the content refers to sodium bicarbonate (NaHCO_3), then calculation is necessary; ●Carbon dioxide: Its content refers to CO_2 , and calculation is necessary; ●KBC type: Its content refers to potassium bicarbonate (KHCO_3), and calculation is necessary; ●HFC: For HFC-227ea, HFC-23 and HFC-236fa, the calculation is necessary.



All plant sites use ABC type dry powder fire extinguishers, and such fire extinguishers contain no carbon content.

Total emissions equivalent 0 ton_CO₂-e

Category 2 Indirect emissions from imported energy (2023)

2023 Monthly electricity consumption of each plant site (unit: kWh) (*cross-month calculation)					
Month \ Plant site	Gangshan Plant	Luzhu Plant	Packaging Plant	Bi-Metal Material Plant	Zhunan Plant
1	439400	175840	5174.5832*	17360	32343.3335*
2	552800	292240	3528	20000	26760
3	701000	269920	4234	27720	24360
4	573000	253200	4939	21840	25920
5	658600	269680	5645	27280	31320
6	674400	241040	5645	31120	32280
7	668000	233840	5645	34880	35880
8	726000	225600	7056	37440	37680
9	581600	212960	5645	32840	24960
10	510400	217040	6350	29360	18120
11	493200	240800	4939	28320	16560
12	428800	242160	4797.8857*	24400	23677.4515*
Subtotal (kWh)	7007200	2874320	63598.4689	332560	329860.7850

Electricity emission factor	The 2023 electricity emission factor announced by the Bureau of Energy is 0.4940 kgCO ₂ e/kWh.
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Emissions equivalent = Electricity consumption (subtotal) x Electricity emission factor / 1000(ton_CO ₂ -e)					
Emissions equivalent (ton_CO ₂ -e)	Gangshan Plant	Luzhu Plant	Packaging Plant	Bi-Metal Material Plant	Zhunan Plant
	3461.5568	1419.9141	31.4176	164.2846	162.9512
Total (ton_CO₂-e)	5240.1243				

2023 Imported energy (electricity)

Total emissions equivalent 5240.1243 ton_CO₂-e

Summarization of GHG CO₂_e Emissions of Each Plant Regional Boundary

4.1 2023 GHG total emissions according to category, type of GHG and emission source are described in the following table

Table 4.1.1 Gangshan Plant GHG Emissions Summary Table

Category 1: Direct GHG emissions and removals (tonCO ₂ -e)						95.6772				
Item	Subtotal	Percentage (%)	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	NF ₃	
Direct emissions from stationary combustion	18.5539	0.522	18.5355	0.0093	0.0091	-	-	-	-	
Direct emissions from mobile combustion	47.8600	1.345	46.4501	0.2934	1.1165	-	-	-	-	
Direct emissions from industrial processes and removals	0.0944	0.003	0.0944		-	-	-	-	-	
Direct fugitive emissions of GHG from anthropogenic systems	29.1689	0.820	-	15.5905	-	13.5784	-	-	-	
Total	95.6772	2.690	65.0800	15.8932	1.1256	13.5784	-	-	-	
Category 2: Indirect GHG emissions from imported energy (tonCO ₂ -e)						3461.5568				
Item	Total	Percent age (%)	Significance identification							
Imported electricity/energy	3461.5568	97.310	GHG emissions from imported electricity or imported energy (steam, thermal energy, cold energy, high pressure air)							
[Category 1 + Category 2] Gangshan Plant GHG emissions (ton CO ₂ - e)				3557.2340						

**Table 4.1.2 Luzhu Plant GHG Emissions Summary
Table**

Category 1: Direct GHG emissions and removals (tonCO2-e)						185.0944			
Item	Subtotal	Percentage (%)	CO2	CH4	N2O	HFCs	PFCs	SF6	NF3
Direct emissions from stationary combustion	163.0310	10.157	162.8707	0.0810	0.0793	-	-	-	-
Direct emissions from mobile combustion	15.6754	0.977	15.4310	0.0227	0.2217	-	-	-	-
Direct emissions from industrial processes and removals	0.0340	0.002	0.0340	-	-	-	-	-	-
Direct fugitive emissions of GHG from anthropogenic systems	6.3540	0.396	-	4.3943	-	1.9597	-	-	-
Total	185.0944	11.532	178.3357	4.4980	0.3010	1.9597	-	-	-
Category 2: Indirect GHG emissions from imported energy (tonCO2-e)						1419.9141			
Item	Subtotal	Percentage (%)	Significance identification						
Imported electricity/energy	1419.9141	88.468	GHG emissions from imported electricity or imported energy (steam, thermal energy, cold energy, high pressure air)						
[Category 1 + Category 2] Luzhu Plant GHG emissions (tonCO2-e)				1605.0085					

**Table 4.1.3 Packaging Plant GHG Emissions Summary
Table**

Category 1: Direct GHG emissions and removals (tonCO ₂ -e)						11.2615			
Item	Subtotal	Percentage (%)	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	NF ₃
Direct emissions from stationary combustion	-	-	-	-	-	-	-	-	-
Direct emissions from mobile combustion	8.4713	19.849	8.3393	0.0122	0.1198	-	-	-	-
Direct emissions from industrial processes and removals	-	-	-	-	-	-	-	-	
Direct fugitive emissions of GHG from anthropogenic systems	2.7902	6.537	-	2.2822	-	0.5080	-	-	-
Total	11.2615	26.386	8.3393	2.2944	0.1198	0.5080	-	-	-
Category 2: Indirect GHG emissions from imported energy (tonCO ₂ -e)						31.4176			
Item	Subtotal	Percentage (%)	Significance identification						
Imported electricity/energy	31.4176	73.614	GHG emissions from imported electricity or imported energy (steam, thermal energy, cold energy, high pressure air)						
[Category 1 + Category 2] Packaging Plant GHG emissions (tonCO ₂ -e)				42.6791					

**Table 4.1.4 Bi-Metal Material Plant GHG Emissions
Summary Table**

Category 1: Direct GHG emissions and removals (tonCO ₂ -e)						22.0460				
Item	Subtotal	Percentage (%)	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	NF ₃	
Direct emissions from stationary combustion	0.0163	0.009	0.0163	0.0000	0.0000	-	-	-	-	
Direct emissions from mobile combustion	10.2259	5.488	9.8177	0.0988	0.3094	-	-	-	-	
Direct emissions from industrial processes and removals	-	-	-	-	-	-	-	-	-	
Direct fugitive emissions of GHG from anthropogenic systems	11.8038	6.335	-	3.0997	-	8.7041	-	-	-	
Total	22.0460	11.832	9.8340	3.1985	0.3094	8.7041	-	-	-	
Category 2: Indirect GHG emissions from imported energy (tonCO ₂ -e)						164.2846				
Item	Subtotal	Percentage (%)	Significance identification							
Imported electricity/energy	164.2846	88.168	GHG emissions from imported electricity or imported energy (steam, thermal energy, cold energy, high pressure air)							
[Category 1 + Category 2] Bi-Metal Material Plant GHG emissions (tonCO ₂ -e)				186.3306						

Table 4.1.5 Zhunan Plant GHG Emissions Summary Table

Category 1: Direct GHG emissions and removals (tonCO ₂ -e)						2.7308			
Item	Subtotal	Percentage (%)	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	NF ₃
Direct emissions from stationary combustion	-	-	-	-	-	-	-	-	-
Direct emissions from mobile combustion	0.1321	0.080	0.1300	0.0002	0.0019	-	-	-	-
Direct emissions from industrial processes and removals	-	-	-	-	-	-	-	-	-
Direct fugitive emissions of GHG from anthropogenic systems	2.5987	1.568	-	2.3129	-	0.2858	-	-	-
Total	2.7308	1.648	0.1300	2.3131	0.0019	0.2858	-	-	-
Category 2: Indirect GHG emissions from imported energy (tonCO ₂ -e)						162.9512			
Item	Subtotal	Percentage (%)	Significance identification						
Imported electricity/energy	162.9512	98.352	GHG emissions from imported electricity or imported energy (steam, thermal energy, cold energy, high pressure air)						
[Category 1 + Category 2] Zhunan Plant GHG emissions (tonCO ₂ -e)				165.6820					

2023 Sheh Kai Precision GHG Emissions Statistics

Category 1~2

Plant site Category		Gangshan Plant	Luzhu Plant	Packaging Plant	Bi-Metal Material Plant	Zhunan Plant	Inventory Category Subtotal
1	Direct emissions from stationary combustion (natural gas, power generator diesel)	18.5539	163.0310	0.0000	0.0163	0.0000	181.6012
1	Direct emissions from mobile combustion (vehicle gasoline, diesel)	47.8600	15.6754	8.4714	10.2259	0.1321	82.3648
1	Direct emissions from industrial processes (acetylene, anti-rust oil)	0.0944	0.0340	0.0000	0.0000	0.0000	0.1284
1	Direct fugitive emissions (coolant) of GHG from anthropogenic systems	13.5784	1.9597	0.5080	8.7041	0.2858	25.0360
1	Direct fugitive emissions (septic tank) of GHG from anthropogenic systems	15.5905	4.3943	2.2822	3.0997	2.3129	27.6796
	Laser welding of metal materials	0.0000	0.0000	0.0000	0.0000	0.0000	0
1	High pressure gas circuit breakers (SF ₆ gas)	0.0000	0.0000	0.0000	0.0000	0.0000	0
1	Fire extinguishers (ABC type)	0.0000	0.0000	0.0000	0.0000	0.0000	0
Total		95.6772	185.0944	11.2616	22.0460	2.7308	316.8100
2	Imported energy (electricity)	3461.5568	1419.9141	31.4176	164.2846	162.9512	5240.1243

Plant site Category		Gangshan Plant	Luzhu Plant	Packaging Plant	Bi-Metal Material Plant	Zhunan Plant	Category Total
1		95.6772	185.0944	11.2616	22.0460	2.7308	316.8100
2		3461.5568	1419.9141	31.4176	164.2846	162.9512	5240.1243
Total		3557.234	1605.009	42.679	186.331	165.682	5556.934

Category 1+2

Total emissions equivalent 5556.934

ton_CO₂-e

Chapter 5 GHG Quantification

5.1 Qualification Method

5.1.1 Quantitative Principle

The calculation of GHG emissions of each emission source of the Company mainly adopts the “Emission Factor Approach” and the “Mass Balance Approach”.

- **Emission Factor Approach:** It refers to multiplying the consumption amount of raw (fuel) materials by the corresponding emission factor, and further multiplying the result obtained by the global warming potential (GWP) coefficient according to the each type of GHG emissions generated, in order to calculate the GHG emissions. The calculation equation is as follows:

GHG emissions equivalent

$$\text{GHG emissions equivalent} = \text{Activity data} \times \text{Emission factor} \times \text{Global warming potential (GWP) coefficient}$$

- **Mass Balance Approach:** It refers to the method of using in/out, generation, consumption and conversion balance of the substance mass and energy in a process or chemical equation, in order to calculate the emission.
 - (1) For the emission of each GHG, the data unit is converted into kilogram, gram (weight unit) or liter (volume unit) for recording according to different sources.
 - (2) For different emissions sources, the emission factor and calculation method provided in the “GHG Emission Factor Management Table Version 6.0.4 (2019.06)” of the Ministry of Environment are used for calculation.
 - (3) The “GHG Inventory Table” used by the Company is adjusted and summarized according to the “GHG Inventory Table Version 3.0.0 (Revised)” announced on the GHG Emissions Information Platform of the Ministry of Environment.
 - (4) After the emission factor is selected, for the value calculated, the global warming potential (GWP) for different types of GHG announced in the IPCC2021 Sixth Assessment Report is further used in order to convert all calculation results into CO₂e (carbon dioxide equivalent), and the unit is metric ton CO₂e/year. The GWP values used by the Company are summarized in the following Table 5.1.

Table 5.1 GWP Values of IPCC Announced Substances

Substance Name	GWP Values of IPCC Sixth Assessment Report (2021) AR6
CO ₂	1
CH ₄	27.9
N ₂ O	273
HFC-134a/R-134a	1530
R-410A	2256
R-407C	1908
R-600a	GWP value not yet announced
SF ₆	25200

5.1.2 Calculation Method

5.1.2.1 Category 1 Stationary Combustion Sources

- (1) Natural gas CO₂e emissions
 = (Natural gas consumption x CO₂ emission factor x CO₂ GWP) +
 (Natural gas consumption x CH₄ emission factor x CH₄ GWP) +
 (Natural gas consumption x N₂O emission factor x N₂O GWP)
- (2) Emergency power generator (diesel) CO₂e emissions
 = (Diesel consumption x CO₂ emission factor x CO₂ GWP) +
 (Diesel consumption x CH₄ emission factor x CH₄ GWP) +
 (Diesel consumption x N₂O emission factor x N₂O GWP)

5.1.2.2 Category 1 Mobile Combustion Sources

- (1) Vehicle gasoline CO₂e emissions
 = (Vehicle gasoline consumption x CO₂ emission factor x CO₂ GWP)
 +
 (Vehicle gasoline consumption x CH₄ emission factor x CH₄ GWP)
 +
 (Vehicle gasoline consumption x N₂O emission factor x N₂O GWP)
- (2) Diesel CO₂e emissions
 = (Diesel consumption x CO₂ emission factor x CO₂ GWP) +
 (Diesel consumption x CH₄ emission factor x CH₄ GWP) +
 (Diesel consumption x N₂O emission factor x N₂O GWP)

5.1.2.3 Category 1 Process Emission Sources

- (1) Acetylene CO₂e emissions = Acetylene consumption amount x CO₂ emission factor x CO₂ GWP
 - CO₂ emission factor is calculated based on the mass balance approach, $C_2H_2 + 2.5O_2 \rightarrow 2CO_2 + H_2O$, and for the burning of 1 mole C₂H₂ (molecular weight of 26), 2 mole CO₂ (molecular weight of 88) is generated; therefore, the CO₂ emission factor=88/26=3.3846153846(kg/kg acetylene)
- (2) WD40 anti-rust oil CO₂e emissions
 - = WD40 anti-rust oil consumption amount x Specific weight x Carbon content ratio x CO₂ emission factor x CO₂ GWP
 - WD40 anti-rust oil specific weight=0.81 (reference to SDS safety data sheet)
 - Carbon content ratio is 3% (reference to SDS safety data sheet)
- (3) Wires for electric welding operation CO₂e emissions
 - = Wire usage weight x Wire carbon content x Emission factor x CO₂ GWP
 - Wire carbon content is 0.87% indicated in the material certificate (material certificate provided by the supplier)
 - CO₂ emission factor is calculated based on the mass balance approach, $C + O_2 \rightarrow CO_2$, and for the burning of 1 mole C (molecular weight of 12), 1 mole CO₂ (molecular weight of 44) is generated; therefore, the CO₂ emission factor=44/12=3.6666666667(kg/kg carbon)

5.1.2.4 Category 1 Anthropogenic Fugitive Emission Sources

- (1) Coolant CO₂e missions = Equipment specification filling amount x Coolant fugitive emissions rate x Coolant GWP
 - Coolant fugitive emissions rate and emission factor refer to the GHG Emission Factor Management Table Version 6.0.4 of the Ministry of Environment, and the selection is as shown in the following Table 5.2:

Table 5.2 Equipment Coolant Fugitive Emissions Rate

Equipment name	Fugitive emissions rate (%)	Fugitive emissions rate selected for use (%)
Household freezer and refrigerator	0.1-0.5	0.3%
Independent commercial freezer and refrigerator	1-15	8.0%
Medium and large freezer and refrigerator	10-35	22.5%
Freezer and refrigerator for transportation purpose	15-50	20.0%
Industrial freezer and refrigerator, including food processing and refrigeration	7-25	16.0%
Chiller units	2-15	8.5%
Residential and commercial	1-10	3.0%

building air conditioner		
Mobile air purifier	10-20	15.0%

(2) Septic tank CO₂e emissions = Total number of working hours x CH₄ emission factor x CH₄ GWP

➤ CH₄ Emission factor

= BOD emission factor x Average pollution concentration (mg/L) x 10⁻⁹ x Wastewater amount per person per hour (L/hour) x Septic tank treatment efficiency

= 0.6 (tonCH₄/ton-BOD)x200(mg/L)x10⁻⁹x15.625(L/hour)x85%

= 0.0000015938 (tonCH₄/person-hour)

(3) Gas circuit breaker(GCB) CO₂e emissions = Filling amount x Emission factor x SF₆GWP

5.1.2.5 Category 2 Indirect GHG emissions

(1) Externally purchased electricity CO₂e emissions = Electricity consumption in kWh x Electricity emission factor

➤ The 2023 electricity emission factor announced by the Bureau of Energy = 0.494 (kgCO₂e/kWh)

5.2 Emission Factor Selection and Use

The emission factor selection principle of the Company is to use the factor obtained from measurement or calculated via the mass balance approach in priority, and the national emission factor is used as the secondary option. If no emission factor is available for use, the applicable factor announced internationally is then used. Emission factors are as shown in Table 5.3:

Table 5.3 Table of Emission Factors for Different Emission Sources

Emission Source Category	Emission Source	GHG	Emission factor	Unit	Information Source	Emission Source Location
Category 1 Stationary (E)	Natural Gas	CO ₂	1.8790358400	Kg/m ³	GHG Emission Factor Management Table Version 6.0.4	Gangshan Plant, Luzhu Plant
		CH ₄	0.0000334944	Kg/m ³		
		N ₂ O	0.0000033494	Kg/m ³		
	(Emergency power generator) Diesel	CO ₂	2.6060317920	Kg/L	GHG Emission Factor M Management Table Version 6.0.4	Gangshan Plant, Luzhu Plant, Bi-Metal Material Plant
		CH ₄	0.0001055074	Kg/L		
		N ₂ O	0.0000211015	Kg/L		
Category 1 Mobile (T)	(Company vehicles) Vehicle gasoline	CO ₂	2.2631328720	Kg/L	GHG Emission Factor M Management Table Version 6.0.4	Gangshan Plant, Bi-Metal Material Plant
		CH ₄	0.0008164260	Kg/L		
		N ₂ O	0.0002612563	Kg/L		

Emission Source Category	Emission Source	GHG	Emission factor	Unit	Information Source	Emission Source Location
	(Company vehicles) Diesel	CO ₂	2.6060317920	Kg/L	GHG Emission Factor Management Table Version 6.0.4	Gangshan Plant
		CH ₄	0.0001371596	Kg/L		
		N ₂ O	0.0001371596	Kg/L		
	(Fork lift trucks) Super diesel	CO ₂	2.6060317920	Kg/L	GHG Emission Factor Management Table Version 6.0.4	Gangshan Plant, Luzhu Plant, Packaging Plant, Zhunan Plant
		CH ₄	0.0001371596	Kg/L		
		N ₂ O	0.0001371596	Kg/L		
Category 1 Process (P)	Acetylene	CO ₂	3.3846153846	Kg/Kg	Mass balance approach	Gangshan Plant, Luzhu Plant
	Anti-rust oil (WD40)	CO ₂	1.0000000000	Kg/Kg	Mass balance approach	Gangshan Plant, Luzhu Plant
	Wires for electric welding operation	CO ₂	3.6666666667	Kg/Kg	Mass balance approach	Bi-Metal Material Plant
Category 1 Fugitive (F)	Septic tanks	CH ₄	0.0000015938	ton/person-hour	GHG Emission Factor M Management Table Version 6.0.4	Gangshan Plant, Luzhu Plant, Packaging Plant, Bi-Metal Material Plant, Zhunan Plant
	HFC-134a/R-134a	HFCs	1.0000000000	g/g	GHG Emission Factor Management Table Version 6.0.4	Gangshan Plant, Luzhu Plant, Packaging Plant, Bi-Metal Material Plant, Zhunan Plant
	R-407c	HFCs	1.0000000000	g/g	GHG Emission Factor Management Table Version 6.0.4	Gangshan Plant
	R410a	HFCs	1.0000000000	g/g	GHG Emission Factor Management Table Version 6.0.4	Gangshan Plant, Luzhu Plant, Packaging Plant, Bi-Metal Material Plant, Zhunan Plant
	R-600A	HFCs	1.0000000000	g/g	GHG Emission Factor Management Table Version 6.0.4	Gangshan Plant, Luzhu Plant, Packaging Plant, Bi-Metal Material Plant
	Gas circuit breakers	SF ₆	1.0000000000	g/g	Mass balance approach	Gangshan Plant, Luzhu Plant

	(GCB)					
Category 2	Externally purchased electricity	CO ₂ e	0.4940000000	Kg/kWh	2023 Electricity emission factor announced by Bureau of Energy	Gangshan Plant, Luzhu Plant, Packaging Plant, Bi-Metal Material Plant, Zhunan Plant

5.3 Quantitative Calculation Method Change Explanation

When there is any change in the quantitative calculation method, the new quantitative calculation method is used for calculation, and it is also necessary to perform comparison with the original calculation method, and the difference between the two and the reason for the use of the new method shall be explained. The current quantitative calculation method is performed in accordance with the requirements specified by the Ministry of Environment, and there is no change in the quantitative method.

5.4 Emission Factor Selection and Use Explanation

For the emission calculation factor, if there is any change of the factor indicated in the data source, file must be re-created and calculated, and the difference between the data after change and the original data shall also be explained. The current selection and use of the emission factors are performed in accordance with the requirements specified in the GHG Emission Factor Management Table Version 6.0.4 (2019.06) of the Ministry of Environment, and there is no change in the factors.

5.5 Data Quality Management

5.5.1 Direct and indirect GHG emission source data quality

- (1) To achieve data quality accuracy, all responsible units are required to explain the data source, such as the purchase basis, flow meter record, quantifier record, pickup record and computer database record or computer documents, etc., and all records and documents capable of proving and supporting the credibility of the data must be investigated. In addition, the data shall be preserved in the responsible units in order to facilitate subsequent inspection and to be used as the tracking basis.
- (2) The purpose of the Company's quality control operation on the 2023 inventory data is to comply with the principles of relevance, completeness, consistency, transparency and accuracy specified in ISO14064-1:2018/CNS 14064-1:2021. The operation content is explained in the following:
 - A. Quality audit is handled by internal auditors.
 - B. Implementing general quality audit: For general mistakes likely to occur due to negligence and errors during the processes of data collection/input/processing, data file creation and emissions calculation, appropriate quality inspection is performed rigorously.
 - C. Performing specific quality audit: For the specific scope of the appropriateness of inventory boundary, re-calculation operation, quality of specific emission source input data, and qualitative explanation for main causes of data uncertainty, rigorous inspection performed.

The contents of the general and specific quality inspection operations are as shown in Table 5.4 and Table 5.5.

Table 5.4 General Quality Audit Operation Content

Inventory stage	Inspection	Work content
Data collection, input and processing operation		• Inspect whether the records of input data contain any error. • Inspect whether there is any omission in the data filling and recording (completeness). • Ensure that the electronic file of appropriate version is executed.
Data file creation		• Determine the data source of all primary data (including reference data) in the forms and tables. • Inspect that files have been created for all documentations referenced. • Inspect that files have been created for the assumptions and rules selected for application to the following items: boundary, base year, quantitative method, activity data, emission factor and other parameters.
Calculate emissions and inspect calculations		• Inspect whether the emissions unit, parameters and conversion coefficients have been properly indicated. • Inspect whether the units are appropriately indicated and used properly during the calculation process. • Inspect the conversion coefficient. • Inspect the data processing steps in the inventory forms and tables. Inspect that the input data and arithmetic data in the forms and tables shall be clearly distinguished. • Inspect the representative samples of the calculation. • Use simple algorithm to check the calculation. • Inspect the total of different emission source types and data. • Inspect the consistency between the input and calculation values for different periods and years.

Table 5.5 Specific Quality Audit Operation Content

Inventory type	Inspection	Work focus
Emission factors and other parameters		• Determine whether the use of emission factors and other parameters is appropriate. • Determine whether the units of the factors or parameters are consistent with the units of the activity data. • Determine whether the unit conversion coefficient is accurate.
Activity data		• Determine whether the data collection operation is continuous (without interruption). • Determine whether relevant historical data has a consistent variation. • Perform cross-comparison on the activity data of the same types of facilities/departments.

Inventory Inspection type	Work focus
	• Determine whether there is correlation between the activity data and product production capacity. • Determine whether the activity data changes due to re-calculation of the base year.
Emission calculation	• Determine whether the computer built-in equations for emissions calculation are correct. • Determine whether historical emissions estimation is consistent. • Perform cross-comparison on the emissions of the same types of facilities/departments. • Determine the difference between the actual measurement value and the emissions estimation value. • Determine whether there is correlation between the emissions and product production capacity.

5.5.2 Inventory Inspection Data Uncertainty Management

(1) Emission source uncertainty quantitative analysis

Since the Company's 2023 GHG emissions are centralized at the emission sources of natural gas, vehicle gasoline, diesel and externally purchased electricity, and since the instrument accuracy and supporting documents for the activity data of other emission sources cannot be obtained easily, uncertainty quantitative assessment is performed mainly on the aforementioned four emission sources, as shown in Table 5.6.

A. Uncertainty analysis sources for activity data

- (A) For externally purchased electricity, it refers to the requirements specified in Section 8.1.4 of the Technical Specification of Verification and Inspection for Electricity Meters (CNMV 46, Edition 6) announced by the Bureau of Standards, Metrology and Inspection. When the mechanical and electronic electricity meter (watt-hour meter) exterior indicates "0.5), the verification tolerance is $\pm 0.5\%$ of the verification value. In addition, according to the statistics principle of two standard deviations, the verification tolerance of 1% is used as the uncertainty of this data.
- (B) For natural gas, it refers to the requirements specified in Section 4.7 of the Technical Specification of Verification and Inspection for Diaphragm Gas Meters (CNMV 31, Edition 5) announced by the Bureau of Standards, Metrology and Inspection. For gas meters, the verification tolerance is $\pm 1.5\%$ of the verification value. In addition, according to the statistics principle of two standard deviations, the verification tolerance of 3% is used as the uncertainty of this data.
- (C) For the oil of vehicle gasoline and diesel, it refers to the requirements specified in Section 3.12 of the Technical Specification of Verification and Inspection for Oil Gauges (CNMV 117, Edition 3) announced by the Bureau of Standards, Metrology and Inspection. For oil gauges, the verification tolerance is $\pm 0.5\%$ of the verification value. In addition, according to the statistics principle of two standard deviations, the verification tolerance of 1% is used as the uncertainty

of this data.

B. Uncertainty analysis sources for emission factors

- (A) For the externally purchased electricity, since the Bureau of Energy has not yet announced the scope of uncertainty for its electricity emission factor, the incomplete data statistical system for the energy category announced in the IPC 1996 Edition of the GHG Emission Factor Management Table Version 6.0.4 is used to calculate the uncertainty, and the uncertainty of the emission factor is $\pm 7\%$.
- (B) For natural gas, according to the recommended value of the Ministry of Environment in the GHG Emission Factor Management Table Version 6.0.4, the uncertainty of the emission factor is $-3.2\%/+3.9\%$.
- (C) For the uncertainty of the emission factor of vehicle gasoline, according to the GHG Emission Factor Management Table Version 6.0.4 of the Ministry of Environment, the CO₂ upper limit of gasoline is $+5.3\%$, and the lower limit is -2.6% . Such limits are used as the uncertainty of the emission factor of the gasoline.
- (D) For the uncertainty of the emission factor of diesel of company vehicles and fork lift trucks, according to the GHG Emission Factor Management Table Version 6.0.4 of the Ministry of Environment, the CO₂ upper limit of diesel is $+0.9\%$, and the lower limit is -0.2% . Such limits are used as the uncertainty of the emission factor of the diesel.

Table 5.6 Uncertainty Quantitative Assessment Table

Emission source	Uncertainty of activity data		CO ₂ Emission factor uncertainty		Single emission source uncertainty
	Upper/lower limits of 95% confidence interval	Source	Upper/lower limits of 95% confidence interval	Source	Upper/lower limits of 95% confidence interval
Company vehicles (Vehicle gasoline)	+1.00% to -1.00%	Technical Specification of Verification and Inspection for Oil Gauges (CNMV 117, Edition 3) of the Bureau of Standards, Metrology and Inspection	+5.30% ~ -2.60%	GHG Emission Factor Management Table Version 6.0.4	+5.394% ~ -2.786%
Company vehicles, fork lift trucks (diesel)	+1.00% to -1.00%	Technical Specification of Verification and Inspection for Oil Gauges (CNMV 117, Edition 3) of the Bureau of Standards, Metrology and Inspection	+0.90% ~ -0.20%	GHG Emission Factor Management Table Version 6.0.4	+1.345% ~ -2.236%

Natural Gas	+3.00% to -3.00%	Technical Specification of Verification and Inspection for Diaphragm Gas Meters (CNMV 31, Edition 5)	+3.90% ~ -3.20%	GHG Emission Factor Management Table Version 6.0.4	+4.920% ~ -4.386%
Externally purchased electricity	+1.00% to -1.00%	Technical Specification of Verification and Inspection for Electricity Meters (CNMV 46, Edition 6)	+7.00% ~ -7.00%	GHG Emission Factor Management Table Version 6.0.4	+7.071% ~ -7.071%

Table 5.7 Uncertainty Summary Classification Table

Precision level	Uncertainty of sample average value (confidence interval expressed in %)
High	±5%
Good	±15%
Normal	±30%
Poor	Exceeding 30%

The Company's 2022 emissions data uncertainty analysis result is -4.82%/+4.82% (as shown in Table 5.8), and the data quality precision level is rated as "High".

Table 5.8 The Company's 2023 GHG Emissions Data Uncertainty Quantitative Assessment Result

Sum of emissions absolute values of uncertainty assessment (metric tons)	Sum of total emissions absolute values (metric tons)	Ratio of uncertainty quantitative value over emissions of entire plant (%)	Uncertainty 95% confidence interval	
			Lower limit	Upper limit
5501.637	5556.934	99.00%	-4.82	+4.82

(2) Emission source uncertainty qualitative analysis

The Company performs uncertainty quantitative analysis on the emission sources of natural gas, vehicle gasoline, diesel and externally purchased electricity only. However, for all of the emission sources, their uncertainties are assessed according to the qualitative level score evaluation principle of uncertainty analysis, and the score evaluation principle is as shown in Table 5.9. For the uncertainty analysis of 44 types of emission sources of the Company in 2023, the qualitative level score evaluation table is as shown in Table 5.10.

The Company's 2023 emissions data uncertainty qualitative analysis result is as shown in Table 5.8, and the data quality qualitative level is rated as "Level 1".

For the uncertainty analysis of 44 types of emission sources of the Company in 2022, the qualitative level score evaluation table is as shown in Table 5.10

Level Score Evaluation	1	2	3
Activity data category level	Continuous measurement	Periodic (intermittent) measurement	Financial and accounting estimation
Activity data trust level	External calibration is performed or multiple sets of data are available as supporting documents	Internal calibration is performed or certified via accounting audit	No instrument calibration or no record summarization is performed
Emission factor category level	Own factory development factor/factor obtained from mass balance approach, same process/equipment experience factor	Factor provided by manufacturing plant, regional emission factor	National emission factor, international emission factor
Final evaluation level	Single emission source data error level (after multiplication of the aforementioned three levels) $X < 10$ points	Single emission source data error level (after multiplication of the aforementioned three levels) $10 \text{ points} \leq X < 19$ points	Single emission source data error level (after multiplication of the aforementioned three levels) points $19 \text{ points} \leq X \leq 27$ points

Table 5.10 The Company's Uncertainty Analysis Qualitative Level Score Evaluation Table

No.	Field	Category	Name	Activity data category level	Activity data credibility level	Emission factor category level	Single emission source data error level	Evaluation level
1	Gangshan Plant	1	Company vehicles (gasoline)	2	2	3	12	2
2	Gangshan Plant	1	Company vehicles (diesel)	2	2	3	12	2
3	Gangshan Plant	1	Fork lift truck (super diesel)	2	2	3	12	2
4	Gangshan Plant	1	Employees (septic tank escape)	3	2	3	18	2
5	Gangshan Plant	1	Non-employees (septic tank escape)	3	2	3	18	2
6	Gangshan Plant	1	Coolant (R-134a)	3	2	3	18	2
7	Gangshan Plant	1	Coolant (R-407C)	3	2	3	18	2
8	Gangshan Plant	1	Coolant (R-410A)	3	2	3	18	2
9	Gangshan Plant	1	Natural Gas	1	2	3	6	1
10	Gangshan Plant	1	Emergency power generator (diesel)	3	2	3	18	2
11	Gangshan Plant	1	Gas circuit breakers/GCB	3	2	1	6	1
12	Gangshan Plant	1	Acetylene	2	2	1	4	1
13	Gangshan Plant	1	WD-40 anti-rust oil	3	2	1	6	1
14	Gangshan Plant	2	Externally purchased electricity	1	2	3	6	1
15	Luzhu Plant	1	Fork lift truck (super diesel)	2	2	3	12	2
16	Luzhu Plant	1	Employees (septic tank escape)	3	2	3	18	2
17	Luzhu Plant	1	Non-employees (septic tank escape)	3	2	3	18	2
18	Luzhu Plant	1	Coolant (R-134a)	3	2	3	18	2
19	Luzhu Plant	1	Coolant (R-410A)	3	2	3	18	2
20	Luzhu Plant	1	Natural Gas	1	2	3	6	1
21	Luzhu Plant	1	Emergency power generator (diesel)	3	2	3	18	2
22	Luzhu Plant	1	Gas circuit breakers/GCB	3	2	1	6	1
23	Luzhu Plant	1	Acetylene	2	2	1	4	1
24	Luzhu Plant	1	WD-40 anti-rust oil	3	2	1	6	1
25	Luzhu	2	Externally purchased	1	2	3	6	1

	Plant		electricity					
26	Packaging Plant	1	Fork lift truck (super diesel)	2	2	3	12	2
27	Packaging Plant	1	Employees (septic tank escape)	3	2	3	18	2
28	Packaging Plant	1	Non-employees (septic tank escape)	3	2	3	18	2
29	Packaging Plant	1	Coolant (R-134a)	3	2	3	18	2
30	Packaging Plant	1	Coolant (R-410A)	3	2	3	18	2
31	Packaging Plant	2	Externally purchased electricity	1	2	3	6	1
32	Bi-Metal Material Plant	1	Company vehicles (gasoline)	2	2	3	12	2
33	Bi-Metal Material Plant	1	Employees (septic tank escape)	3	2	3	18	2
34	Bi-Metal Material Plant	1	Non-employees (septic tank escape)	3	2	3	18	2
35	Bi-Metal Material Plant	1	Coolant (R-134a)	3	2	3	18	2
36	Bi-Metal Material Plant	1	Coolant (R-410A)	3	2	3	18	2
37	Bi-Metal Material Plant	1	Emergency power generator (diesel)	3	2	3	18	2
38	Bi-Metal Material Plant	1	Wires for electric welding operation	3	2	1	6	1
39	Bi-Metal Material Plant	2	Externally purchased electricity	1	2	3	6	1
40	Zhunan Plant	1	Fork lift truck (super diesel)	2	2	3	12	2
41	Zhunan Plant	1	Employees (septic tank escape)	3	2	3	18	2
42	Zhunan Plant	1	Coolant (R-134a)	3	2	3	18	2
43	Zhunan Plant	1	Coolant (R-410A)	3	2	3	18	2
44	Zhunan Plant	2	Externally purchased electricity	1	2	3	6	1

Table 5.11 The Company's 2023 Uncertainty Qualitative Assessment Result

The Company's 2023 GHG Data Level Score Evaluation Result			
Level	Level 1	Level 2	Level 3
Score Range	X<10 points	10 points $\leq$ X<19 points	19 points $\leq$ X$\leq$27 points
Quantity	14	30	0
Inventory List Level Total Average Score	6.21	Inventory List Level	Level 1

Remarks: For average score of X<10, it is classified as Level 1; for average score of 10 points $\leq$ X<19 points, it is classified as Level 2; for average score of 19 points $\leq$ X $\leq$ 27 points, it is classified as Level 3.

5.6 Inventory Data Preservation

The accuracy of the 2023 emissions data has been improved significantly. The Company implements operations according to the inventory improvement plan established. With regard to the enhancement of the activity data accuracy, such as the filing and preservation of relevant records of purchase invoices, etc., and the externally purchased electricity statistical data, such data is used as supporting documents, in order to reduce the risk of inventory inspection and verification.

- For this Report, inventory list, data list and relevant supporting documents and forms, the preservation period is at least six years.
- For the public release of this Report, the valid period is up to any further revision or abolishment of this Report.

Chapter 6 Report Verification

Internal verification:

The internal audit on the 2023 Sheh Kai Precision Co., Ltd. Carbon Inventory Report for Five Plant Sites was conducted at Gangshan Plant during 20240325~29. According to the report, for the carbon emissions data, documents and supporting information or data were verified one by one or randomly according to the report, and the internal audit was completed on 20240329.

External verification:

A third party BellCERT International Inspection and Certification Group - BellCERT Group Taiwan was entrusted to perform: external verification on the 2023 Sheh Kai Precision Co., Ltd. Carbon Inventory Report for Five Plant Sites.

External Verification Unit Name	BellCERT International Inspection and Certification Group BellCERT Group Taiwan
Field Verification Date	First stage: 20240701, 20240705 Second stage: 20240717

After the GHG external verification performed by BellCERT Group Taiwan, relevant GHG inventory data has been verified to comply with the ISO 14064-1:2018 standard, and the assurance level after verification as well as the Category 1 and Category 2 verification assurance level have been determined to be at the Reasonable Level of Assurance.

Chapter 7 Report Management

1. This Report covers the period of January 1, 2023~December 31, 2023. The preparation frequency of this Report is once annually, and this Report is prepared mainly in accordance with ISO 14064-1:2018.
2. Limitation on issuance subject and publication: This Report refers to the Company's GHG Inventory Report, and it is publicly released after internal verification and after being verified and assured by a third party qualified external verification institution.
3. For the public release of this Report, the valid period is up to any further revision or abolishment of this Report.
4. For this Report, inventory list, data list and relevant supporting documents and forms, the preservation period is at least six years.
5. Report Preparation Unit Information

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