



Sharp Site Report 2023



Sharp Manufacturing (Thailand) Co.,Ltd.



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Period and Item Covered

Period covered : Fiscal 2022

(From April 1, 2022 to March 31, 2023)

Coverage

: Environmental aspects of SMTL

[Sharp Manufacturing (Thailand) Co.,Ltd.]

CEO's Statement



Mr. Ayumu Oda
Managing Director
Sharp Manufacturing (Thailand) Co., Ltd.

Sharp Manufacturing (Thailand) Co., Ltd. provides high quality products, We will fulfill our social responsibilities by committing to protect human health, natural resources and ecological environment.

Based on the philosophy of "Quality First", "Sincerity and Creativity", we will establish the following policies concerning quality, environment, occupational health and safety.

1. Establish a crystal clear and efficient management system for quality, environment, occupational health and safety, to meet the expectations of customers, governments, society and employees.

2. We will comply with all laws and regulations concerning quality, environment, occupational health and safety and other Requirements and contribute to improvement of the local environment through employee participation in local environmental conservation activities.

3. We will develop and produce highly safe and reliable products by accept the perspective from customers, which do not contain a toxic substance that was banned from both internal country regulation and also international regulation.

4. We will concern about Employee's safety as the first priority by eliminating all risks, creating a scientifically and reasonably safe and harmonious workplace environment and workplace style.

5. We will aggressive efforts to energy conservation and reduce CO₂ emissions, contribute to reduction of resource consumption, reduce environmental impact, reduction of global warming, aiming to be a company friendly to the earth as a Super Green Factory.

6. We will continue to improve Quality, environment, occupational health and safety, also improve the optimization the awareness of employees, and operational efficiency of the business.

Company's Business

Summary of the organization

Company name Sharp Manufacturing (Thailand) Co., Ltd.

Address 58 Moo 3, Tambol Sampatuan,
Amphur Nakornchaisri, Nakornpathom
73120. Thailand.

Managing Director Mr.Ayumu Oda

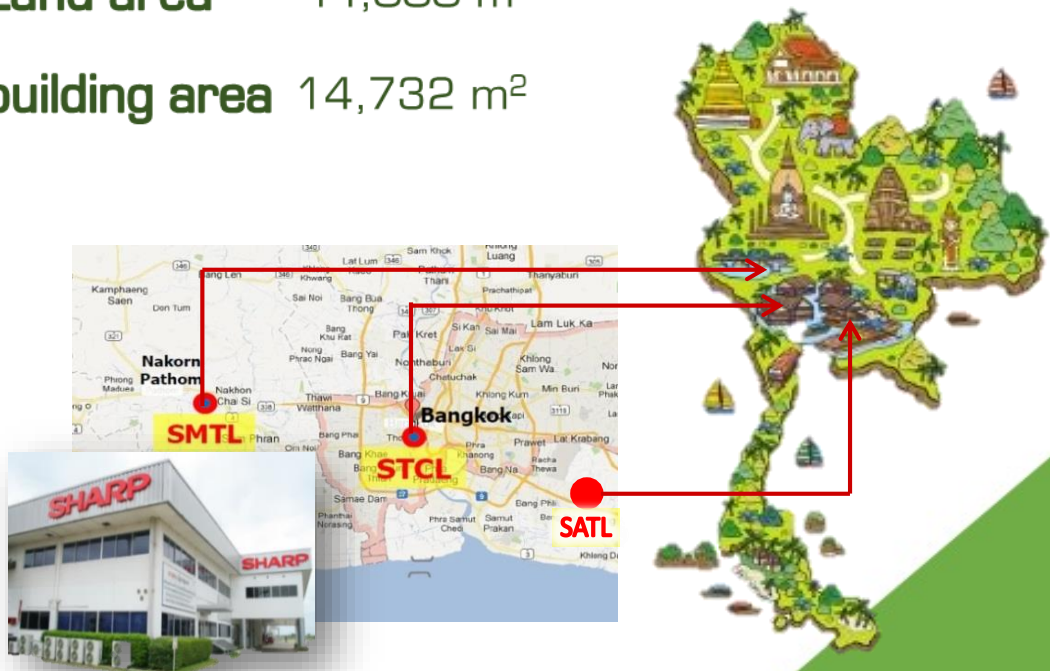
Established August 14, 1992

Production start November 1, 1992

Manpower 430 persons (On March 2023)

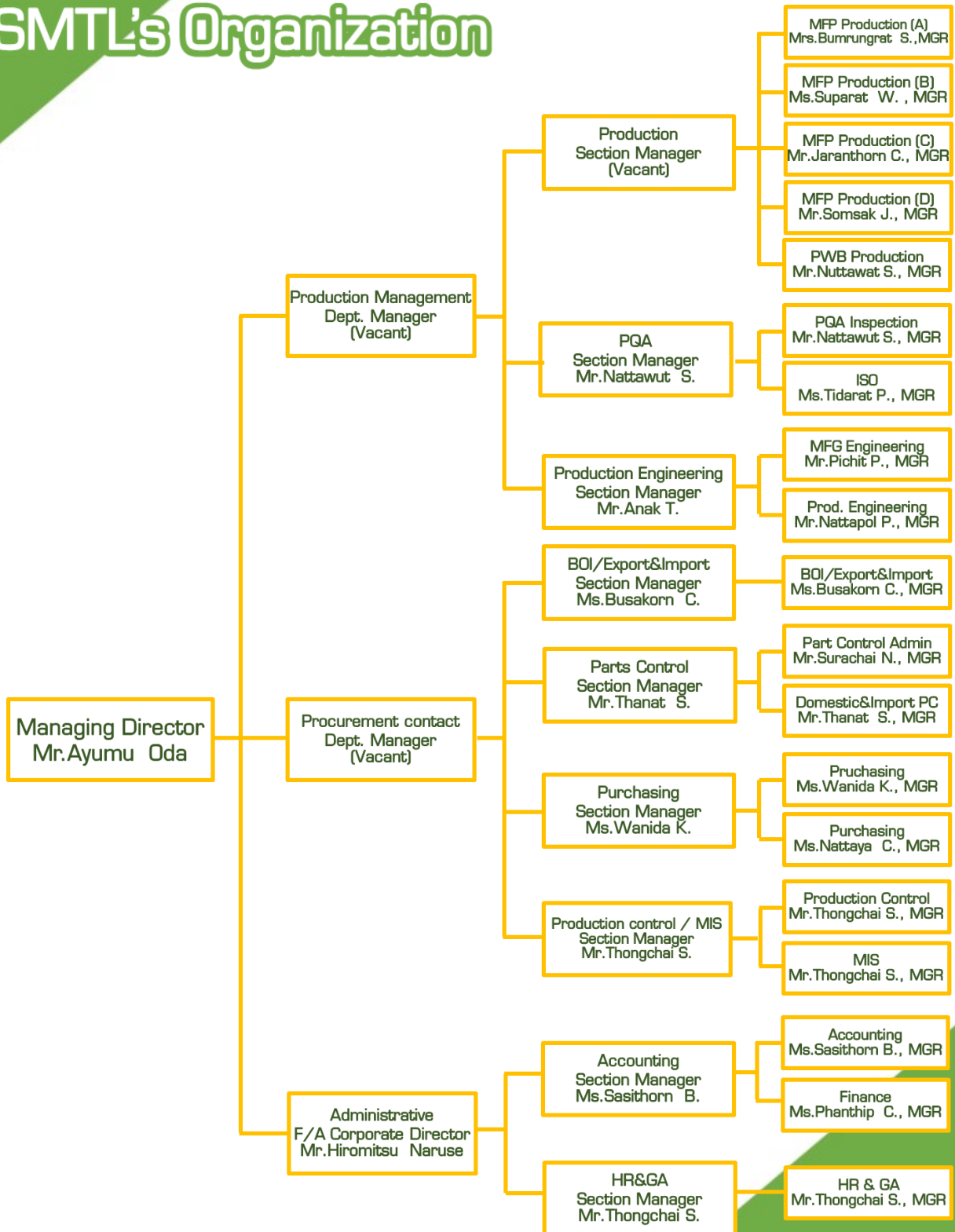
Total Land area 44,000 m²

Total building area 14,732 m²



Company's Business

SMTL's Organization



Company's Business

Our Products

➤ Multifunction printer



Nano



BCR 5



CR5



BCR 4

Company's Business

Our Products

➤ Multifunction printer



Neo-I



Neo-II



Taurus 2



Polaris-3

Environmental policy

... *Environmental Policy* ...

SHARP MANUFACTURING (THAILAND) CO., LTD. is determine to do business with strong sense of responsibility for environmental and natural resources conservation as following;

1. Activate and build awareness in all employee of environmental and natural resources conservation.
2. Observe law and regulation which related environmental aspect of SMTL including the requirements of interested party.
3. Reduce resource usage, and efficient use of energy.
- 4 . Protection of the environmental including prevention and control of pollution, chemical, waste so that is shall have the least impact on environment.
5. Review and determine the opportunities and risks in order to continuously improve and correct any problem which may have significant impact on environment through review of objectives and target in specified a intervals.

This policy will be recorded in Environmental management manual and implemented, communicated to all employee and interested party. It shall be open upon request.



Mr. Hiromitsu Naruse
(Managing Director)

Date 5 April 2022

SMTL

Environmental Management system

ISO 14001 Certification

We has certified ISO14001 by SOCOTEC EQS, History;

ISO 14001 Version 1996

- Jan 27th,2000 Certified ISO14001:1996
- Feb 18th,2005 Extension scope of ISO14001:1996 for Solar module
- Aug 2nd,2005 Extension scope ISO14001:1996 for Multifunction Printer

ISO 14001 Version 2004

- Jan 26th,2007 Upgrade ISO14001:1996 to ISO14001:2004
- Feb 26th,2009 : Renew the Certificate of ISO14001::2004
- Feb 26th,2012 : Renew the Certificate of ISO14001:2004
- Feb 21th,2014 : Extension scope of ISO 14001:2004 for LDC monitor (IDP/IWB)
- Feb 26th,2015 : Renew the Certificate and Extension scope of ISO 14001:2004

For ECR (Electronic Cash Register)

- Feb 26th,2016: Certificate of ISO14001:2004
- Feb 26th,2017 : Certificate of ISO14001:2004

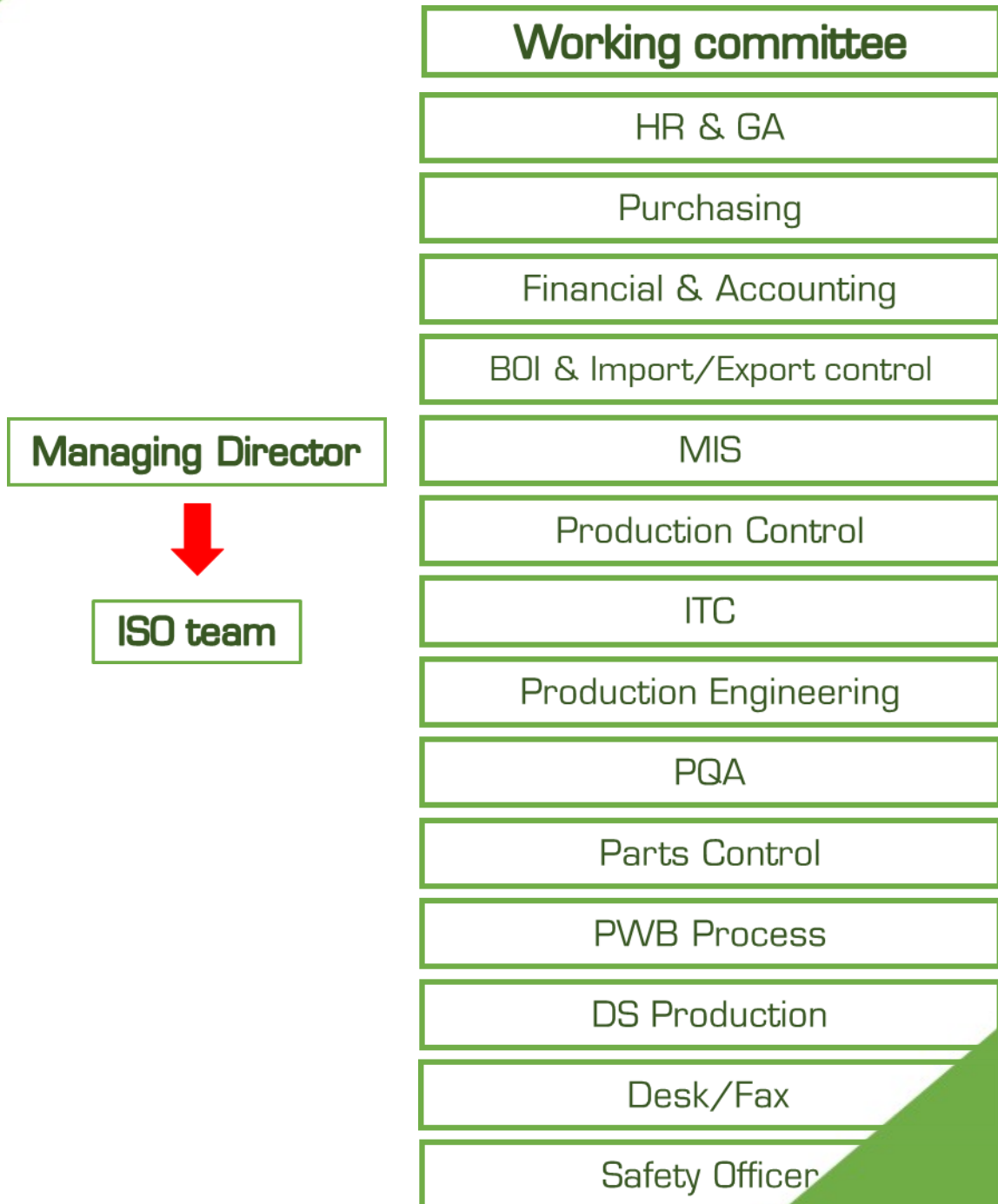
ISO 14001 Version 2015

- Feb 26th,2018: Upgrade ISO 14001:2004 to ISO14001:2015 and Extension scope for LCD TV
- Jul 1st,2019: Certificate of ISO14001:2015
- Feb 27th,2021: Certificate of ISO14001:2015



Environmental Management system

Structure of an organization's environmental management system



Environmental Management system

ISO Team

MD



Mr. Ayumu Oda

ISO Office
Group



Ms. Tidarat Prodpromjariya



Ms. Kitsana Samkasorn



Ms. Kamonchanok Painuchit

We are responsible to control document of Environmental management system, internal audit and support to all department and section in order to improve our Environmental Management System.

Moreover, we also conduct the social activities that affect society and the environment that are not directly related to the operation of the organization such as plantation and donation etc..

Environmental Management system

Structure of document for environmental management system

Environmental Manual

Procedure

PR-GA-001-E : Waste Water Treatment

PR-GA-002-E : Training, Awareness and
Competence

PR-MR-001-E : Management Review

PR-MR-002-E : Internal Audit

PR-MR-004-E : Identification and evaluation of
environmental aspects

PR-MR-005-E : Control of records

PR-MR-006-E : Waste Management

PR-MR-007-E : Management of Chemical and
Hazardous Material

PR-MR-008-E : Setting Objectives, Target and
Environmental Management
Program

PR-MR-009-E : Identification of compliance
obligation

PR-MR-010-E : Communication

PR-MR-011-E : Corrective and Preventive Action

PR-MR-012-E : Emergency Preparedness

PR-MR-013-E : Monitoring and Measurement

PR-MR-014-E : Maintenance

PR-MR-015-E : Control of Subcontractor and
Procurement

PR-MR-016-E : Evaluation of Compliance

PR-MR-017-E : Identification of Environmental
risk and opportunities

Support Document

- Registration of environmental aspects
- List of Compliance obligations Concerning Environmental
- The list of chemicals and hazardous materials
- Registration of environmental monitoring and measurement.
- The list of machinery or equipment which environmental impact
- The list of contractors
- The list of Internal Auditor Risk/Opportunity Registration
- The environmental Objective/Target and management program
- Responsible for self-defense fire service (Emergency plan)

Work Instruction

Format

Environmental Management system

Environmental Education

Education	Trainer	Training Date	Participants
Emergency plan practice case of chemical leakage.	Safety	Every month	5 persons
Waste management	ISO Office	Sep. 23, 2022	25 persons
Using and Storing hazardous substance training	ISO Office & Safety	Nov. 30, 2022	21 persons
First Aid Training	Nurse	Nov. 30, 2022	21 persons
Emergency plan practice case of radiation leakage.	The person responsible for the radiation technique	Dec. 13, 2022	6 persons
Firefighting and fire escape training.	Rai-Khing municipality office.	Mar. 31, 2023	Lecture : 51 persons Fieldwork : 100% of SMTL member



Environmental Management system

Education provided for employees

- Emergency plan practice case of chemical leakage.



Environmental Management system

Education provided for employees

➤ Waste management



Environmental Management system

Education provided for employees

➤ Using and Storing hazardous substance training



Environmental Management system

Education provided for employees

➤ First Aid Training



Environmental Management system

Education provided for employees

- Emergency plan practice case of radiation leakage.



Environmental Management system

Education provided for employees

➤ Firefighting and fire escape training



Environmental Objective and Achievements

Objective and Target in Fiscal 2022

Training

Objective : All employees will be trained The matter of Environmental 20 hours by average, within March 2023.

Target : 20 hours (by average)

Results : 21.33 hours (by average)



Activity

Objective : Perform the environmental activities, 3 activities within March 2023.

Target : 3 Activity

Results : 3 Activity



Energy saving

Objective : Reduce electricity using by 1%, within March 2023.

- Electricity using in FY2022 = 14,203.00 kWh

Target : 14,203.00 kWh (1%)

Results : 6,102.39 kWh (0.43%)



Waste

Objective : Reduce 20% amount of hazardous waste for disposal within Mar.'23 compare data total amount of hazardous waste

Target : 20%

Results : 4.22%



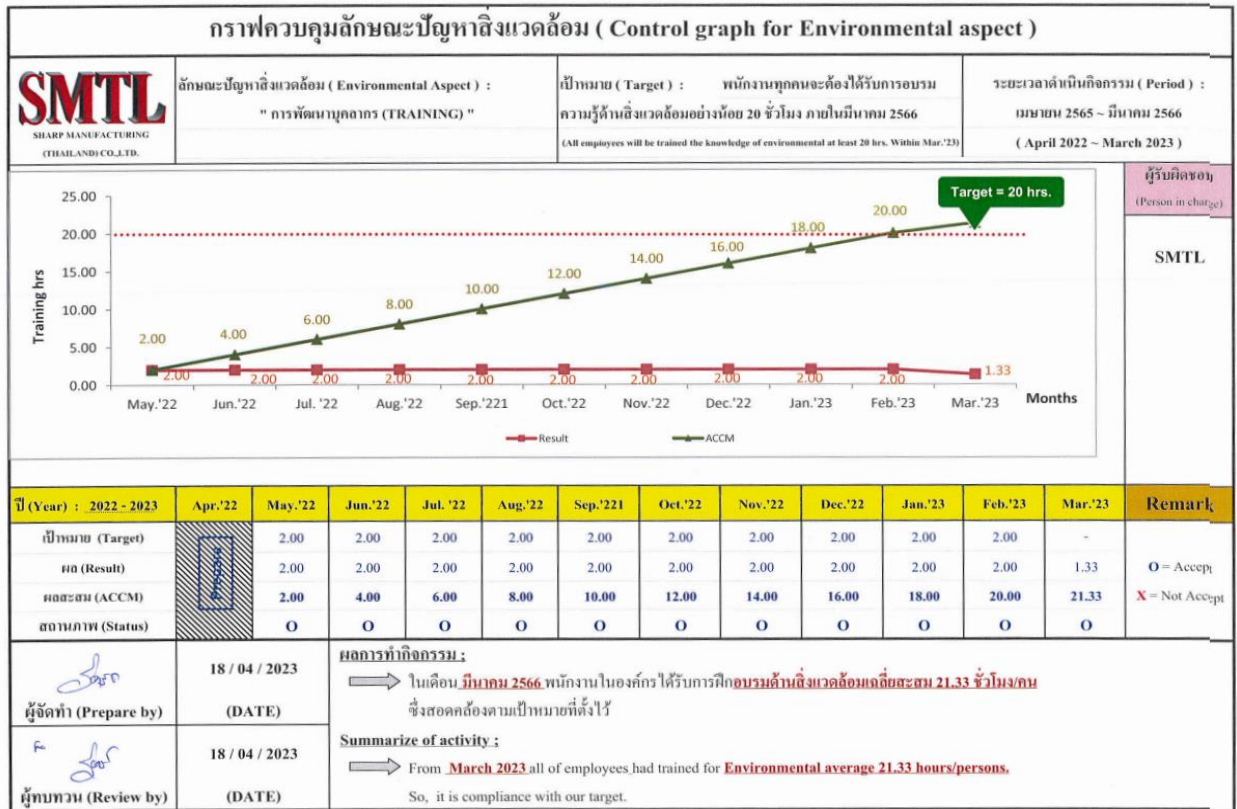
Environmental Objective and Achievements

Training

Objective : All employees will be trained The matter of Environmental 20 hours by average, within March 2023.

Target : 20 hours (by average)

Results : 21.33 hours (by average)



From FY2022, SMTL's employees had trained the matter of Environmental is 21.33 hours by average.

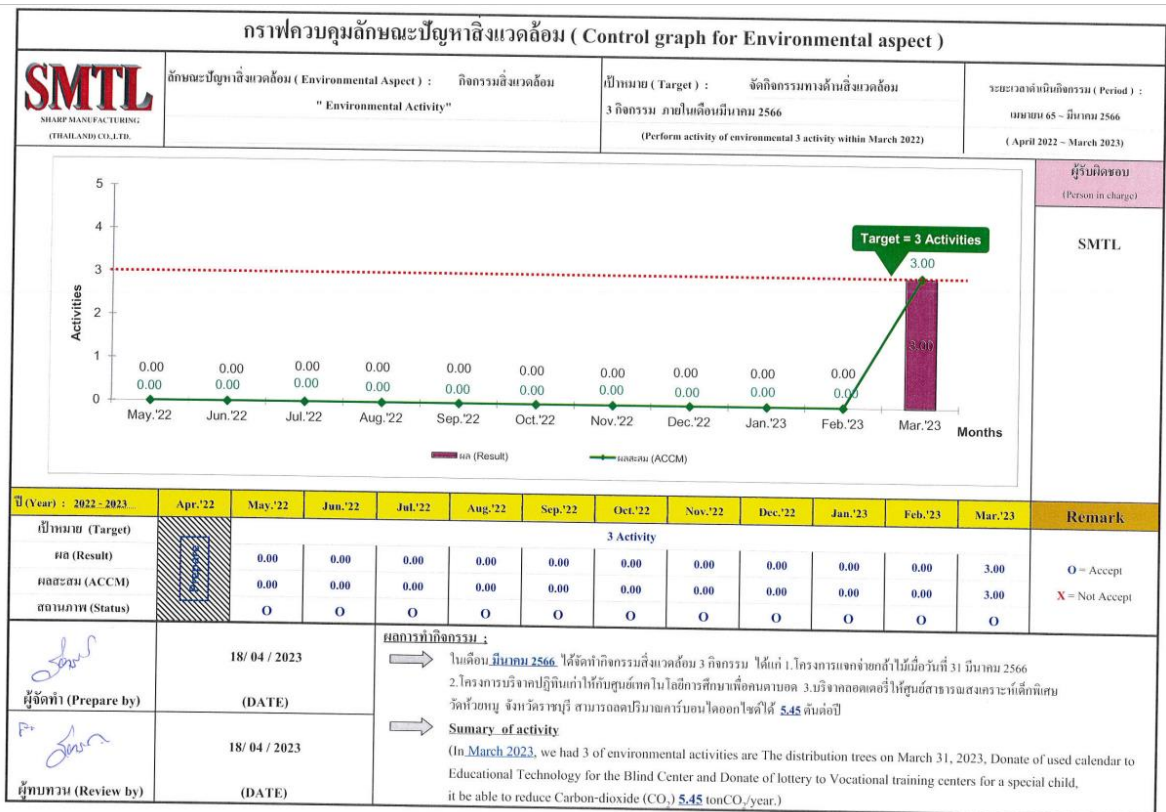
Environmental Objective and Achievements

Activity

Objective : Perform the environmental activities, 3 activities within March 2023.

Target : 3 Activity

Results : 3 Activity



In FY2022, we had conducted 3 activities of Environmental as following;

- The distribution trees,
- Donate of used calendar to Educational Technology for the Blind Center,
- Donate of lottery to Vocational training centers for a special child.

Environmental Objective and Achievements

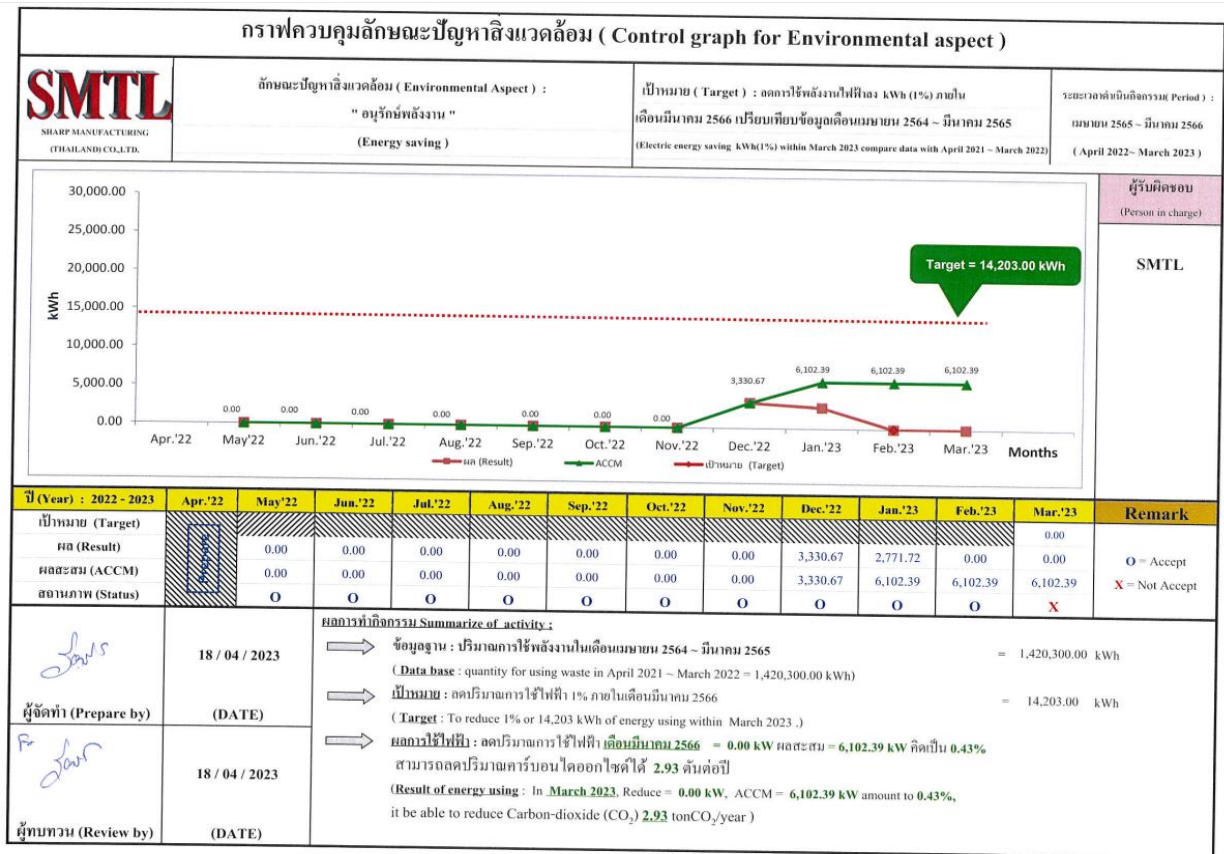
Energy saving

Objective : Reduce electricity using by 1%, within March 2023.

- Electricity using in FY2022 = 14,203.00 kWh

Target : 14,203.00 kWh (1%)

Results : 6,102.39 kWh (0.43%)



In FY2022, we had conducted 2 project of reduce electricity using as following;

1. Remove lamp in area not use light,
2. Change the air conditioner to replace the damaged air conditioner,

However, the result of energy saving is lower than the target due to out of that energy conservation plan.

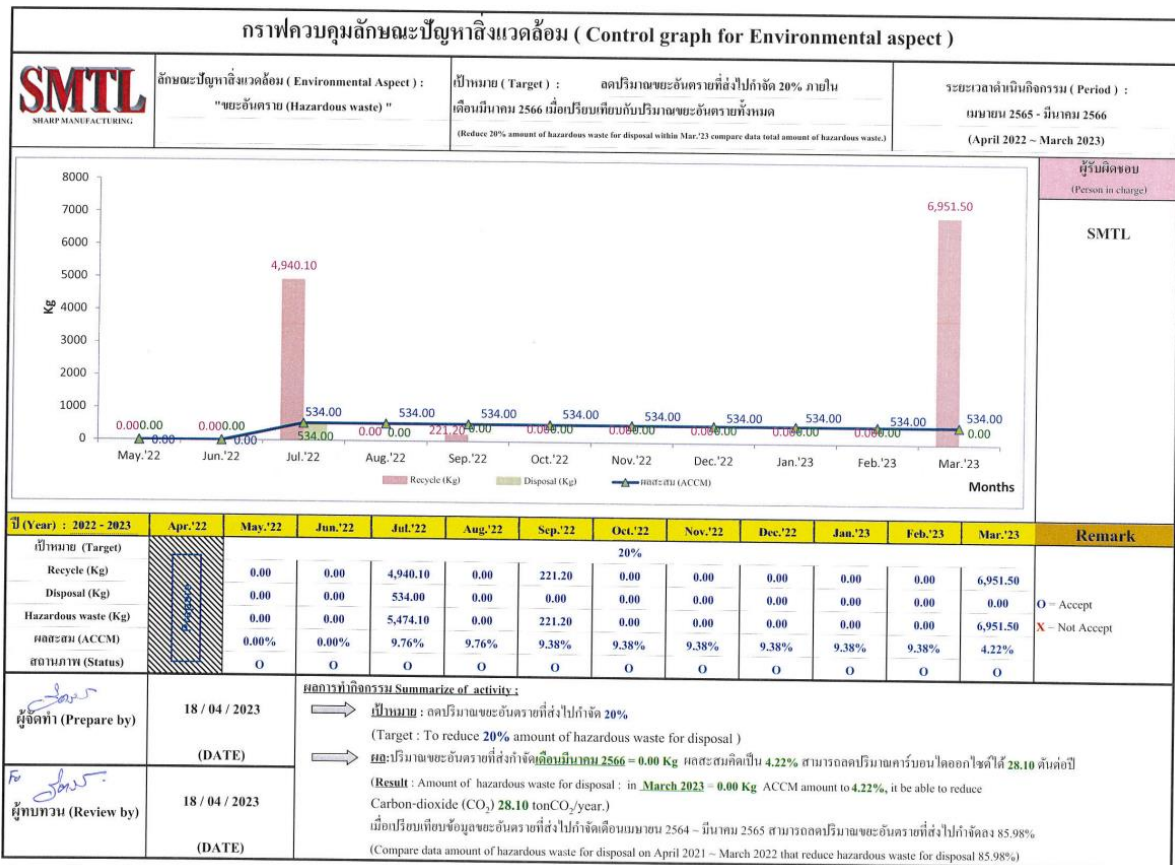
Environmental Objective and Achievements

Waste

Objective : Reduce 20% amount of hazardous waste for disposal within Mar.'23 compare data total amount of hazardous waste

Target : 20%

Results : 4.22%



In FY2022 we had amount of hazardous waste for dispose 4.22% or 534.00 Kg, compare data amount of hazardous waste for disposal on April 2021 ~ March 2022 that reduce hazardous waste for disposal 85.98%. It was successful in our target.

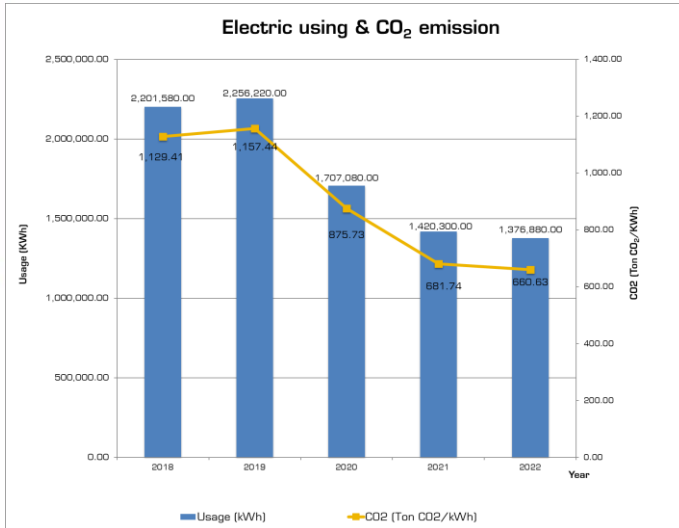
Environmental Impacts and Reduction Measures

Greenhouse Gas Emissions

Input	
Electricity	1,376,880.00 kWh



Output	
Electricity	660.63 (ton-CO ₂ /kWh)



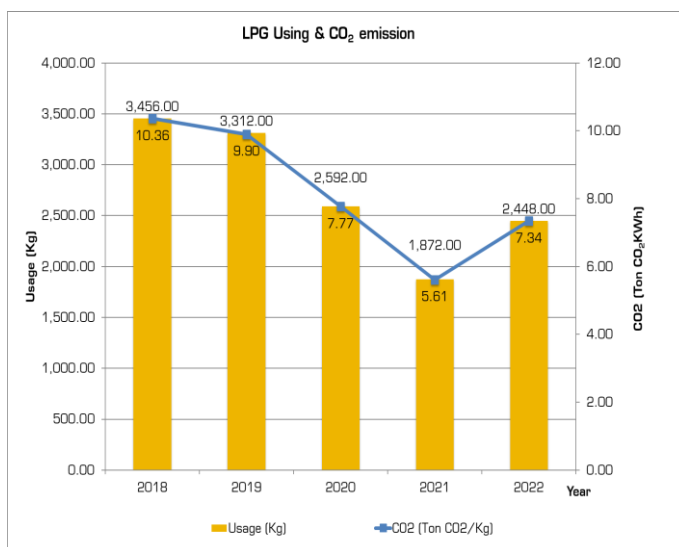
Year 2022, CO₂ emission of Electricity using 660.63Ton CO₂/kWh. It is lower FY2021 as 3.05%.

CO₂ emission :
Electric using (kWh) * 0.4798 kgCO₂/1000

Input	
LPG	2,448 Kg



Output	
LPG	7.34 (ton-CO ₂ /kg)



Year 2022, CO₂ emission of LPG using is Ton-CO₂/Kg. It is over than FY2021 as 30.77% because of we had new employees increased. Then the LPG using for canteen also increased.

CO₂ emission :
LPG using (kg) * 3.000 kg-CO₂/1000

Environmental Impacts and Reduction Measures

Reduction of CO₂ Emission

FY	Electricity usage		LPG usage		Total of CO ₂ emission (ton-CO ₂)
	Unit (kWh)	CO ₂ Emission (ton-CO ₂ /kWh)	Unit (Kg)	CO ₂ Emission (ton-CO ₂ /kg)	
2018	2,201,580.00	1,129.41	3,456.00	10.36	1,137.77
2019	2,256,220.00	1,157.44	3,312.00	9.90	1,167.34
2020	1,707,080.00	875.73	2,592.00	7.77	883.50
2021	1,420,300.00	681.74	1,872.00	5.61	687.35
2022	1,376,880.00	660.63	2,448.00	7.34	667.97

FY	Energy Saving			Total of CO ₂ emission (ton-CO ₂)	Ratio of CO ₂ reduction
	Energy saving (kWh)	Investment (Baht)	Cost saving by Energy saving (Baht/year)		
2018	34,416.89	140,677.01	141,453.44	17.65	1.55%
2019	28,969.87	56,496.00	119,066.15	14.86	1.28%
2020	10,717.48	52,002.00	47,907.12	5.50	0.63%
2021	6,547.05	98,654.00	29,265.31	3.14	0.46%
2022	6,102.39	52,323.00	31,671.36	2.93	0.43%

CO₂ emission :

- Electricity usage = 0.4798 kg-CO₂/kWh
- LPG usage = 3.000 kg-CO₂/kg

Environmental Impacts and Reduction Measures

Our activities for Energy saving in FY2022

Activities	Reduction		Investment (Baht)	Payback period (year)
	kWh/year	Saving (Baht)		
Change the air conditioner to replace the damaged air conditioner. 1) Accounting department	3,330.67	17,286.16	52,323.00	3.03
2) Remove lamp in area not use light.	2,771.72	14,385.20	0.00	0.00
Total	6,102.39	31,671.36	52,323.00	3.03



Environmental Impacts and Reduction Measures

Calculation for saving energy effect

Activity

- Change the air conditioner to replace the damaged air conditioner at Accounting department.

Description	kW	kWh/year	Baht/year
Energy using before reduction	3.48	5,681.73	29,488.16
Energy using after reduction	1.44	2,351.06	12,202.00
Energy saving	2.04	3,330.67	17,286.16
Investment	52,323.00		Baht
Pay back return	3.03		Years

Calculation of Cost Saving :

Cost saving/year = Energy saving (kW) x Working hours in FY2022
power factor x Electricity purchase (unit)

Before = 3.48 x 2,040.85 x 0.8 x 5.19
= 29,488.16 Baht/year

After = 1.44 x 2,040.85 x 0.8 x 5.19
= 12,202.00 Baht/year

Cost saving/year = Before – After
= 29,488.16 – 12,202.00
= 17,286.16 Baht/year

Remark :

- Working hours in FY2022 = 245 x 8.33 = 2,040.85 hours
- Working day in FY2022 = 245 days
- Working time (8:00am.-5:20pm) = 8 hours and 20 minute or 8.33 hours
- Electricity purchasing = 5.19 Baht/unit (by estimated)

Environmental Impacts and Reduction Measures

Calculation for saving energy effect

Activity

- Remove lamp in area not use light.

Description	kW	kWh/year	Baht/year
Energy using before reduction	1.509	2,771.72	14,385.20
Energy using after reduction	0.00	0.00	0.00
Energy saving	1.509	2,771.72	14,385.20
Investment		0.00	Baht
Pay back return		0.00	Years

Calculation of Cost Saving :

$$\begin{aligned}\text{Cost saving/year} &= \text{Energy saving (kW)} \times \text{Working hours in FY2022} \\ &\quad \text{power factor} \times \text{Electricity purchase (unit)} \\ &= 1.509 \times 2,040.85 \times 0.9 \times 5.19 \\ &= 14,385.20 \text{ Baht/year}\end{aligned}$$

Remark :

- Working hours in FY2022 = $245 \times 8.33 = 2,040.85$ hours
 - Working day in FY2022 = 245 days
 - Working time (8:00am.-5:20pm) = 8 hours and 20 minute or 8.33 hours
- Electricity purchasing = 5.19 Baht/unit (by estimated)

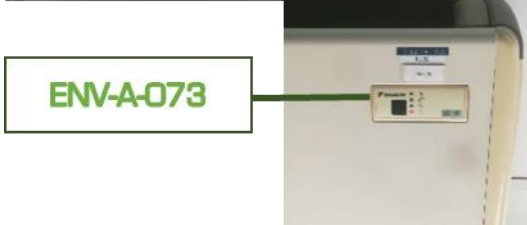
Environmental Impacts and Reduction Measures

- Change the air conditioner to replace the damaged air conditioner at Accounting department.

Before



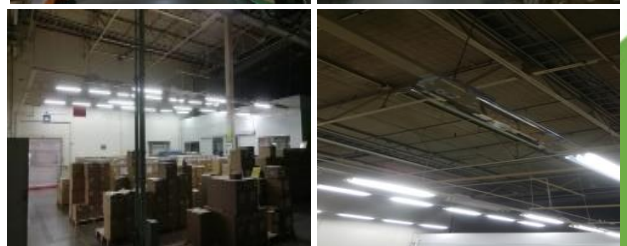
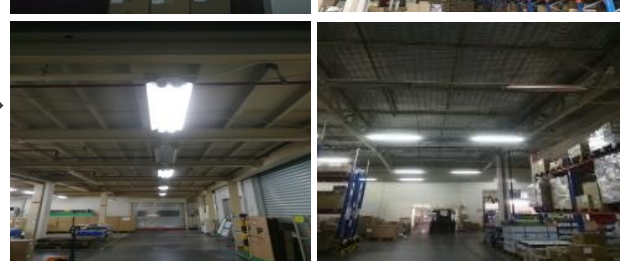
After



- Remove lamp in area not use light.

Before

After



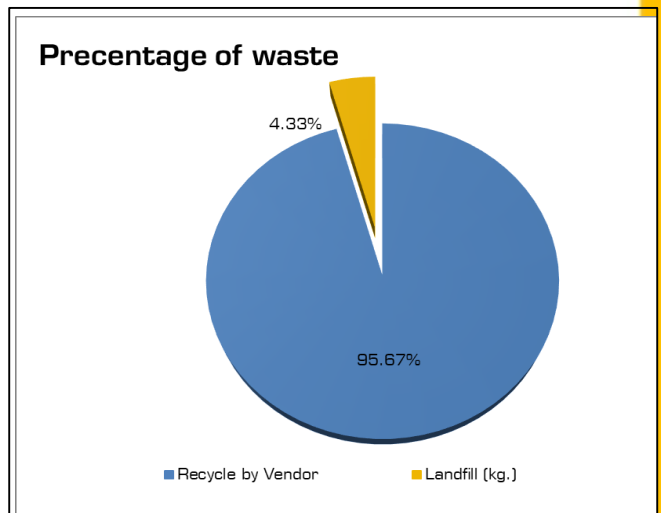
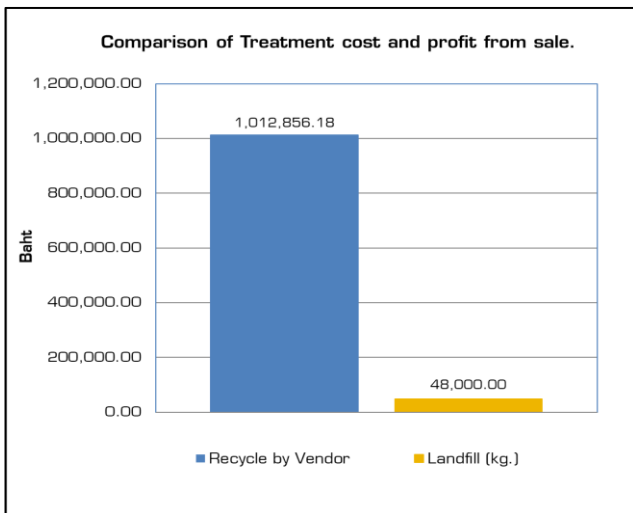
Environmental Impacts and Reduction Measures

Minimization and Recycle of Waste

➤ Trends of Recycle waste and Waste Landfill

Year	Total of Waste (kg)	Waste recycle (kg)	Valuable (Baht)	Waste Landfill (kg)	Cost (Baht)
FY2020	356,424.90	337,154.60	844,316.54	19,270.30	80,100.00
FY2021	209,290.40	195,585.40	652,872.25	13,705.00	76,515.00
FY2022	248,977.40	238,187.40	1,012,856.18	10,790.00	48,000.00

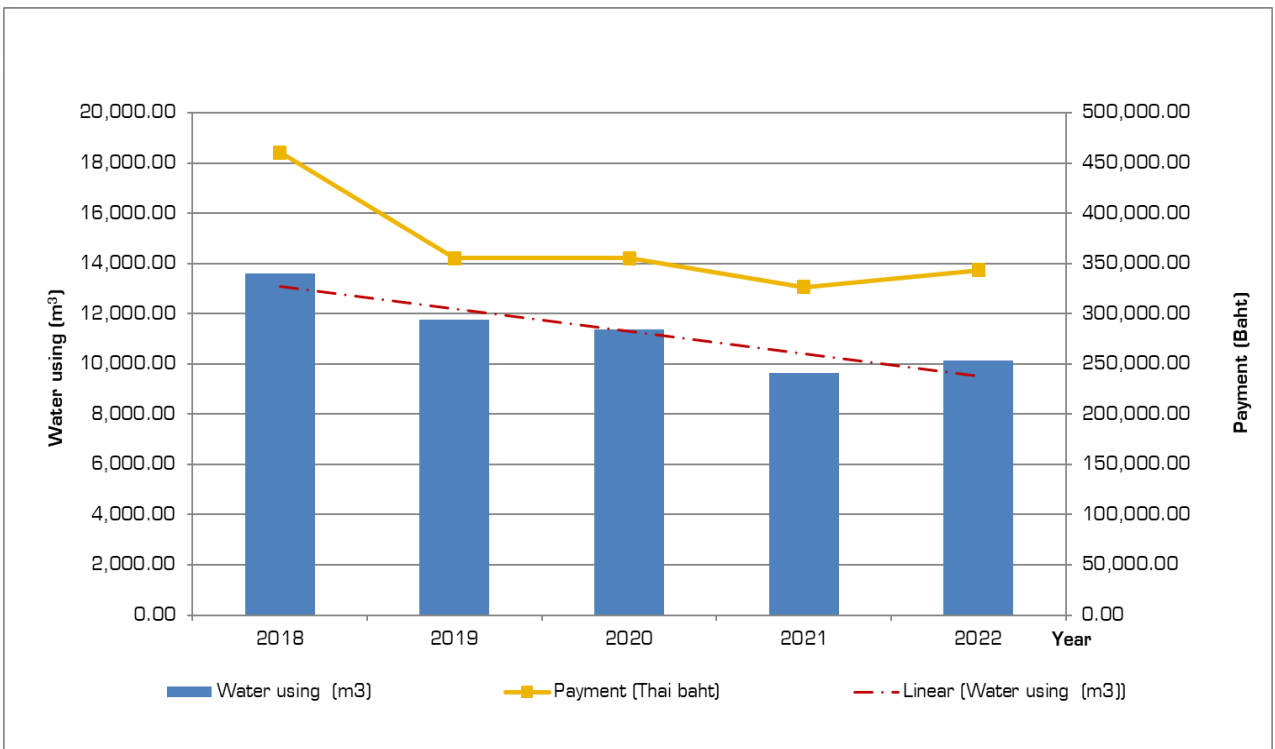
Waste data in Year 2022					
Investigation item	Total of waste (kg)	Recycling		Landfill	
		Total (kg)	Valuable (Baht)	Total (kg)	Cost (Baht)
Compound waste	3,215.65	3,215.65	146,790.86	0.00	0.00
Waste plastics	46,348.40	46,348.40	231,551.90	0.00	0.00
Scrap metal	3,447.85	3,447.85	26,136.15	0.00	0.00
Waste paper	181,319.00	181,319.00	543,373.00	0.00	0.00
Wood chips	0.00	0.00	0.00	0.00	0.00
Toxic waste	0.00	0.00	0.00	0.00	0.00
General waste	14,646.50	3,856.50	65,004.27	10,790.00	48,000.00
Amount	248,977.40	238,187.40	1,012,856.18	10,790.00	48,000.00
Ratio (%)	100%	95.67%		4.33%	



Environmental Impacts and Reduction Measures

Water Usage

Trend of Water using from FY2018- FY2022						
Item	Unit	2018	2019	2020	2021	2022
Water usage	Water using (m ³)	13,588.00	11,747.00	11,368.00	9,648.00	10,148.00
	Payment (Thai baht)	460,796.00	397,873.65	355,229.42	326,525.24	343,501.05

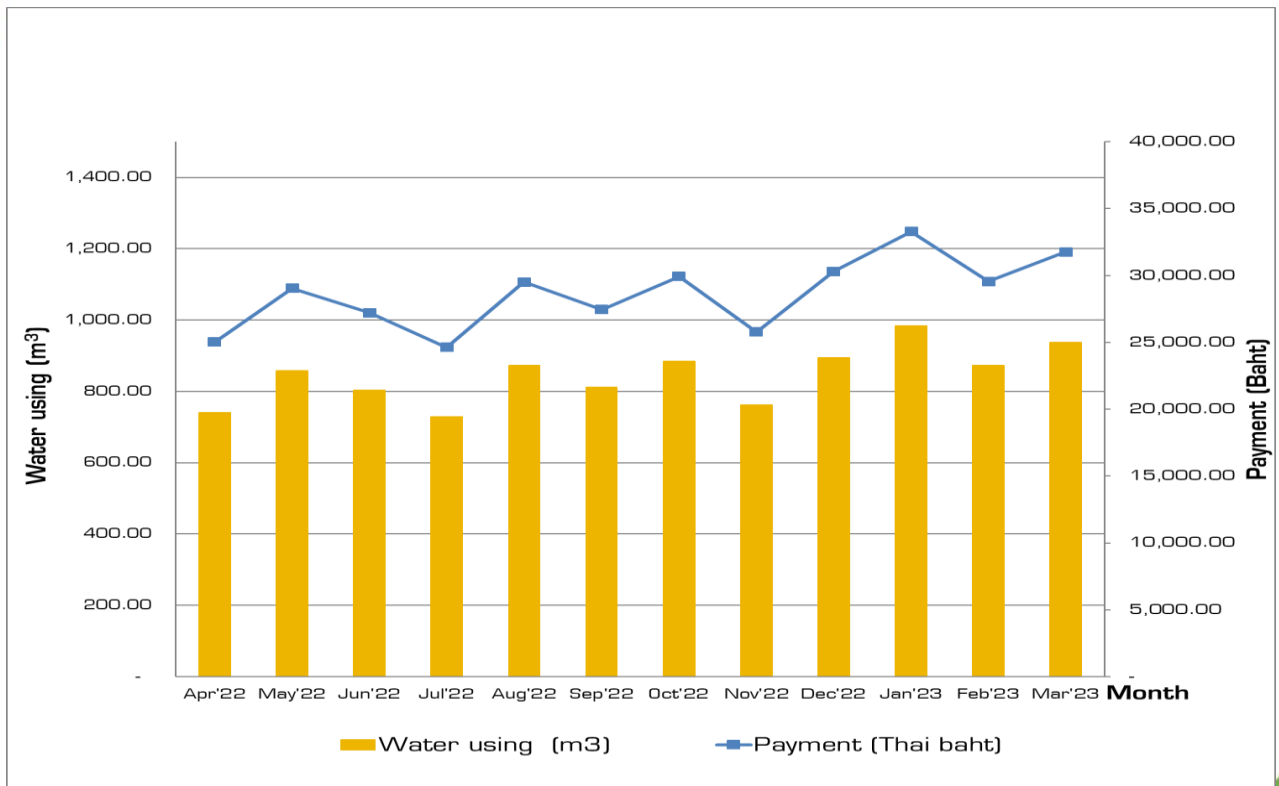


The trend of water using in FY2022 is higher than FY2021 is 4.93% by estimated. Because of we had new employees increased.

Environmental Impacts and Reduction Measures

Data of Water Using in FY2022

Month	Apr.'22	May.'22	Jun.'22	Jul.'22	Aug.'22	Sep.'22	Oct.'22	Nov.'22	Dec.'22	Jan.'23	Feb.'23	Mar.'23
Water using (m ³)	740.00	858.00	804.00	728.00	872.00	811.00	884.00	762.00	895.00	983.00	873.00	938.00
Valuable (Baht)	25,035.33	29,044.08	27,209.57	24,627.66	29,519.70	27,447.37	29,927.37	25,782.72	30,301.06	33,290.64	29,553.67	31,761.88



Environmental Impacts and Reduction Measures

Management of Chemical

We will keep chemical on the shelf with identified by condensation SDS



Usage chemical will be kept in the cabinet by protect leak with aluminum tray and identified by condensation SDS.



Environmental Impacts and Reduction Measures

Compliance with Environment Regulations

Atmosphere Emissions

Monitored by SMILE LABORATORY CO.,LTD., on Jan. 9 - 10, 2023

Item	Parameter	Sampling area	Standard Level			Results	Status
			Standard	Unit	Reference		
Workplace	Tin (Sn)	- Harness unit (DS Production)	2.0	mg/m ³	1	<0.001	Pass
		- LSU (DS production Line B)	2.0	mg/m ³	1	<0.001	Pass
		- Sub assembly (ECR Production)	2.0	mg/m ³	1	<0.001	Pass
	Styrene	- Office : Printer HR&GA	100	ppm	1	0.062	Pass
		- Adjustment (DS-B)	100	ppm	1	0.074	Pass
		- PGA outgoing room	100	ppm	1	0.058	Pass
	Ethanol	- Sub material room	1000	ppm	1	0.215	Pass
		- Main drive (DS Production Line A)	1000	ppm	1	0.359	Pass
	Zinc stearate as Zinc dust	- DS Production Line B (1 st transfer)	5	mg/m ³	1	<0.001	Pass
	Total Dust	- Toner cartridge	15	mg/m ³	1	0.625	Pass
		- DV	15	mg/m ³	1	0.667	Pass
		- Toner	15	mg/m ³	1	0.542	Pass
		- Adjustment (DS - B)	15	mg/m ³	1	0.583	Pass
		- PGA outgoing room	15	mg/m ³		0.500	Pass
	Respirable dust	- Toner cartridge (K.Pongsathorn)	5	mg/m ³	1	0.133	Pass
		- DV (K.Dumrung)	5	mg/m ³	1	0.100	Pass
		- DS Production line A : Process unit (K.Jiraprapha)	5	mg/m ³	1	0.167	Pass
- DS Production line B : 1 st transfer (K.Pimpom)		5	mg/m ³	1	0.200	Pass	

Reference :

¹ OSHA Standard/ Notification of Department of Labor Protection and Welfare 2560
Re.Limit the concentration of hazardous chemicals.

Environmental Impacts and Reduction Measures

Compliance with Environment Regulations

Atmosphere Emissions

Monitored by SMILE LABORATORY CO.,LTD., on Jan. 9 - 10, 2023

Item	Parameter	Sampling area	Standard Level			Results	Status
			Standard	Unit	Reference		
Workplace	Noise level (Leq 8 hours)	- DS Production Line C (DV waste toner)	85	dB(A)	⁴	66.3	Pass
		- DS Production Line C (Toner filling NEO)	85	dB(A)	⁴	72.0	Pass
		- DS Production Line B (LSU)	85	dB(A)	⁴	77.1	Pass
		- DS Production Line B (near LSU)	85	dB(A)	⁴	77.3	Pass
Ambient	TSP	- Toner (Out of toner room)	0.33	mg/m ³	³	0.185	Pass
		- DS Production Line B	0.33	mg/m ³	³	0.172	Pass
	CO	- Hydrant system	30	ppm		1.15	Pass
		- Sprinkel system	30	ppm		2.61	Pass
		- Generator room	30	ppm		2.65	Pass
	Noise level (Leq 24 hours)	- Compressor 1	70	dB(A)	⁵	64.8	Pass
		- Compressor 2	70	dB(A)	⁵	59.3	Pass
	Annoyance noise	- Compressor 1	10	-	⁵	18.2	Fail
- Compressor 2		10	-	⁵	19.0	Fail	
Stack	TSP	- Stack from toner	400	mg/m ³	²	2.9	Pass
		- Stack from DV	400	mg/m ³	²	2.5	Pass
		- Stack 2 nd auto room	400	mg/m ³	²	3.0	Pass
		- 1 st transfer DS Production Line B	400	mg/m ³	²	2.3	Pass

Reference :

² Notification of the ministry of industry, B.E.2549 (2006)

³ The Notification of National Environment Board No. 24, B.E.2547 on "The Ambient air quality standard"

⁴ Notification of the Department of Labor Protection and Welfare, Noise level standard allowing employees to Make average income working period.

⁵ Notification of the Ministry of Industry, B.E. 2548 (2005)

Environmental Impacts and Reduction Measures

Compliance with Environment Regulations

Pollutant Loads of Public Water Areas

Monitored by GOSHU TECHNOSERVICE CO.,LTD

Parameter	Unit	Standard level	Results					
			May	July	September	November	January	March
pH	-	5.5-9.0	6.9	6.4	7.1	6.9	6.9	7.1
T.D.S	mg/L	3000.00	366	351	418	533	370	407
SS	mg/L	50.00	<10	<10	<10	<10	<10	14
COD	mg/L	120.00	38	<30	<30	<30	36	35
BOD	mg/L	20.00	7	<2	4	4	4	9
Oil & Grease	mg/L	5.00	<1	2	<1	<1	1.4	<1
Pb	mg/L	0.20	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TNK	mg/L	100.00	6.9	4.7	6.0	<2	9.4	12.5

Reference :

Notification of the Ministry of Natural Resources and Environment Re : Industrial effluent standard, Industrial Estate and Industrial zones And Notification of ministry of Industry Re: Industrial effluent standard B.E.2560 (2017).

Environmental Social Contribution Activities

➤ The distribution trees



Environmental Social Contribution Activities

➤ Donate of used calendar to Education Technology for the Blind Center



Environmental Social Contribution Activities

- Donate of lottery to Vocational training centers for a special child.





SHARP

Be Original.

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