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Sharp Site Report 2018

SHARP MANUFACTURING (THAILAND) CO.,LTD

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Period and Items Covered

Period covered : Fiscal 2017 (From April 1, 2017 to March 31, 2018)

Coverage : Environmental aspects of SMTL

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

CEO's Statement

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English version

MR.KOICHI KAWAMURA
Managing Director
Sharp Manufacturing (Thailand) Co., Ltd.
August 16, 2018

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 CO_2 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

CEO's Statement

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Japanese version

Sharp Manufacturing (Thailand) Co.,Ltd.は、高品質な製品の提供、人類の健康、自然資源と生態環境の保護をコミットメントし社会的責任を果たします。

「品質第一」「誠意と創意」の理念のもとに品質・環境・労働衛生安全に関する以下の方針を打ち出します。

1. 品質、環境、労働衛生安全においてクリスタルクリアで効率的な管理システムを確立し、顧客、政府、社会および従業員の期待に応えます。
2. 品質、環境、労働衛生安全に関する法令およびその他の要求事項をすべて遵守し、従業員の地元環境保全活動への参加を通して、地域環境の改善に貢献します。
3. 国際的、または国内において禁止されている有害物質を含まない、安全性と信頼性の高い製品を顧客の目線で開発し生産します。
4. 従業員の安全を第一とし、あらゆるリスクを排除し、科学的・合理的な安全で調和のとれた職場環境と職場スタイルを創出します。
5. 省エネルギーとCO2排出削減を積極的に取り組み、資源消費の削減、環境負荷の低減、地球温暖化の抑制に貢献し、スーパーグリーンファクトリーとして地球にやさしい企業を目指します。
6. 品質、環境、労働衛生安全に関する従業員の意識を継続的に向上させ、事業の最適化と業務効率の向上を図ります。

Company's Business

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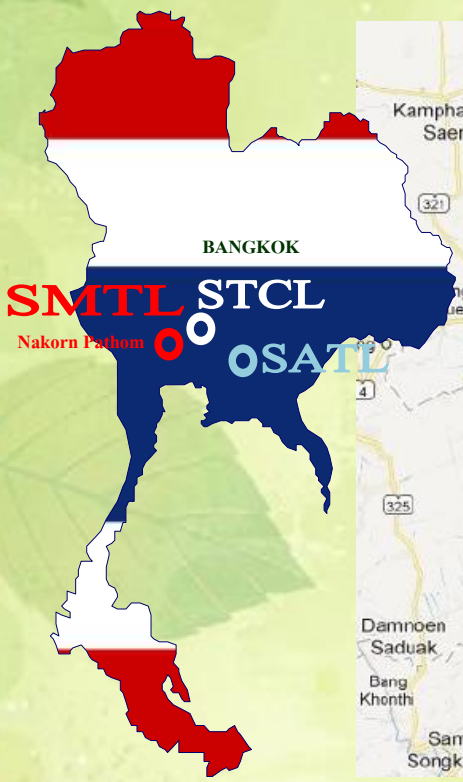
Summary of the organization

Company name	**Sharp Manufacturing (Thailand) Co., Ltd.**
Address	**58 Moo 3, Tambol Sampatuan, Amphur Nakornchaisri, Nakornpathom 73120. Thailand.**
Managing Director	**Mr. Koichi Kawamura**
Established	**August 14, 1992**
Production start	**November 1, 1992**
Manpower	**456 persons (on July 2018)**
Total Land area	**44,000 m²**
Total building area	**14,732 m²**



Company's Business

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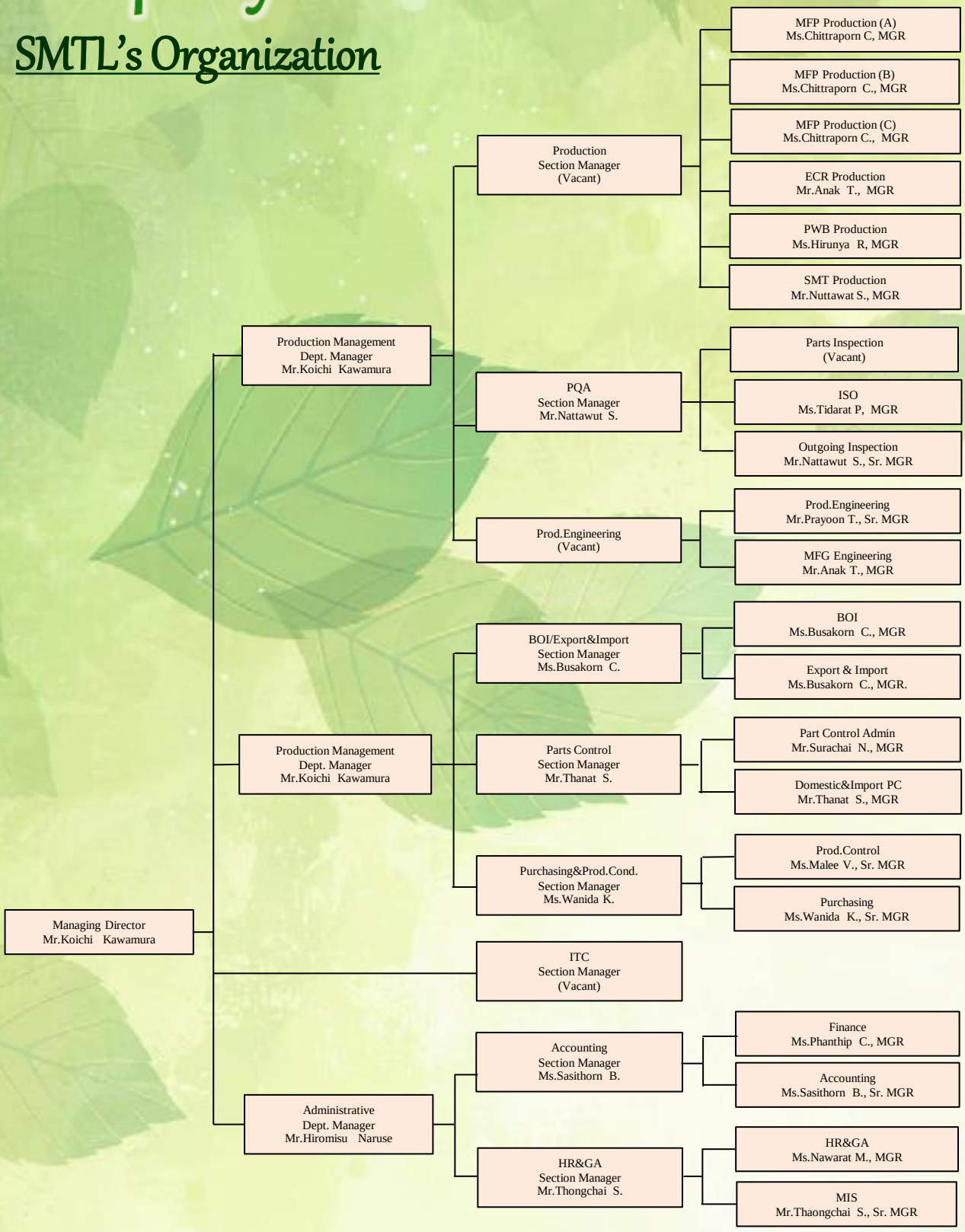
SMTL's Organization



Company's Business

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Our Products

- Multifunction Printer

- Electronic Cash Register

- LCD TV

Environmental Policy

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… *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.

Koichi

Mr. Koichi Kawamura

(Managing Director)

Date 1 December 2017

SMTL

Environmental Management System

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ISO 14001 Certification

Registration Certificate

This is to certify that the Management Systems of

SHARP MANUFACTURING (THAILAND) CO., LTD.

have been assessed by AJA Registrars and registered against the requirements of

ISO 14001:2015

Certificate No:	AJA00/2115	Date of Original Registration:	27th January 2000
Expiry Date:	26th February 2021	Date of Re-Registration:	07th March 2018
Previous Expiry Date:	26th February 2018		

Chief Executive - AJA Registrars Ltd

UKAS MANAGEMENT SYSTEMS 0039

IAF

AJA REGISTRARS

This certificate is issued in respect of the locations & scope of registration detailed in the Associated Registration Schedule.
This certificate is the property of AJA Registrars Ltd Unit 6 Gordano Court Gordano Gate Business Park Serbert Close Portishead Bristol UK BS20 7FS and must be returned on request. A member of the AJA Group of Companies

Registration Schedule

SCOPE OF REGISTRATION

' Manufacturing of Digital Multifunctional System (Machine) and Sheet Paper Feed Unit, Electric Cash Register, LCD/LED TV '

Company Name:	**SHARP MANUFACTURING (THAILAND) CO., LTD.**
Site Registered:	58 Moo 3 Tambol Sampatuan, Amphur Nakornchaisri, Nakornpathom 73120 Thailand
Standard:	**ISO 14001:2015**
EAC:	19
Certificate Number:	AJA00/2115
Date of Re-Registration:	07th March 2018
Expiry Date:	26th February 2021
Next Re-Audit Due Date:	26th December 2020

Chief Executive - AJA Registrars Ltd

UKAS MANAGEMENT SYSTEMS 0039

IAF

AJA REGISTRARS

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This certificate has been issued by AJA Registrars Ltd Unit 6 Gordano Court Gordano Gate Business Park Serbert Close Portishead Bristol UK BS20 7FS

We has certified ISO14001 by AJA EQS,

History;

- Jan 27th,2000 : Certified ISO14001:1996
- Feb 18th,2005 : Extension scope of ISO14001:1996 for Solar module
- Aug 2nd,2005 : Extension scope of ISO14001:1996 for Multi Function Printer
- 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
- Feb 26th,2018: Upgrade ISO 14001 :2004 to ISO 14001 :2015 and Extension scope for LCD TV

Environmental Management System

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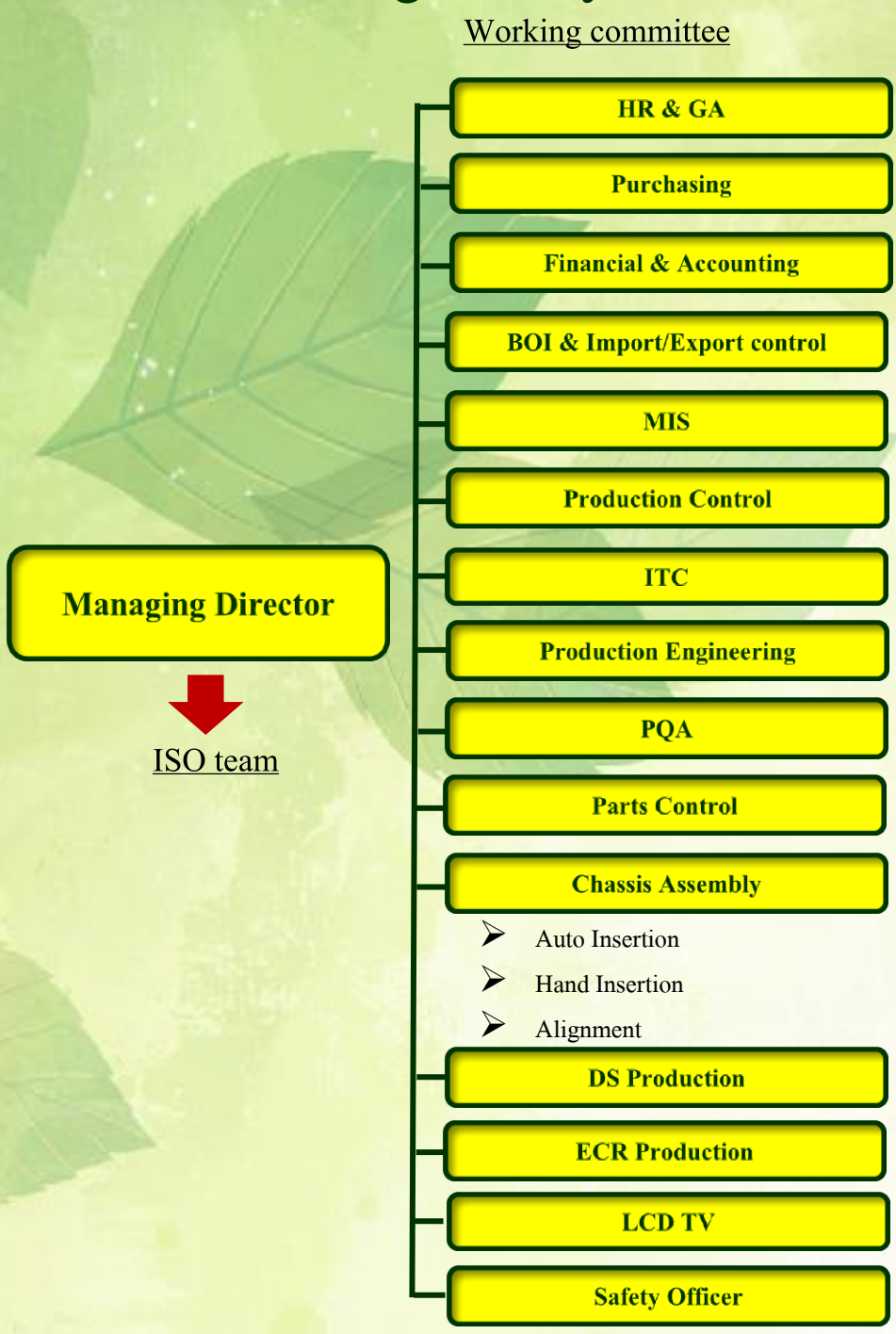
Structure of an organization's environmental management system



Environmental Management System

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ISO team

MD

Mr.Koichi Kawamura

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

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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: Document and data control
  - PR-MR-003-E: EMS 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
  - 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)

- **Format**

- **Work Instruction**

Environmental Management System

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Environmental Education

Training Course	Trainer	Training date	Participants
Energy of Awareness Training	Asia Training Center Co.,Ltd.	Sep. 25, 2017	47 persons
Requirement of ISO 14001:2015	Asia Training Center Co.,Ltd.	Nov. 24, 2017	39 persons
Environment risk assessment	Asia Training Center Co.,Ltd.	Dec. 8, 2017	41 persons
Internal Auditor ISO14001:2015	Asia Training Center Co.,Ltd	Dec. 18, 2017	30 persons
Safety on using of chemical substance.	Safety officer	Mar. 29, 2018	33 persons
Responsible for self-defense fire service	Wat-Plang, Local Government	Mar. 30, 2018	Lecture : 60 persons Fieldwork :100% of SMTL member

Environmental Management System

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Education provided for employees

- Energy of Awareness Training, on Sep. 25, 2017

Environmental Management System

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Education provided for employees

- Requirement of ISO 14001:2015, on Nov. 24, 2017
- Environment risk assessment, on Dec. 8, 2017
- Internal Auditor ISO14001:2015, on Dec. 18, 2017

Environmental Management System

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Education provided for employees

- Safety on using of chemical substance, on Mar. 29, 2018

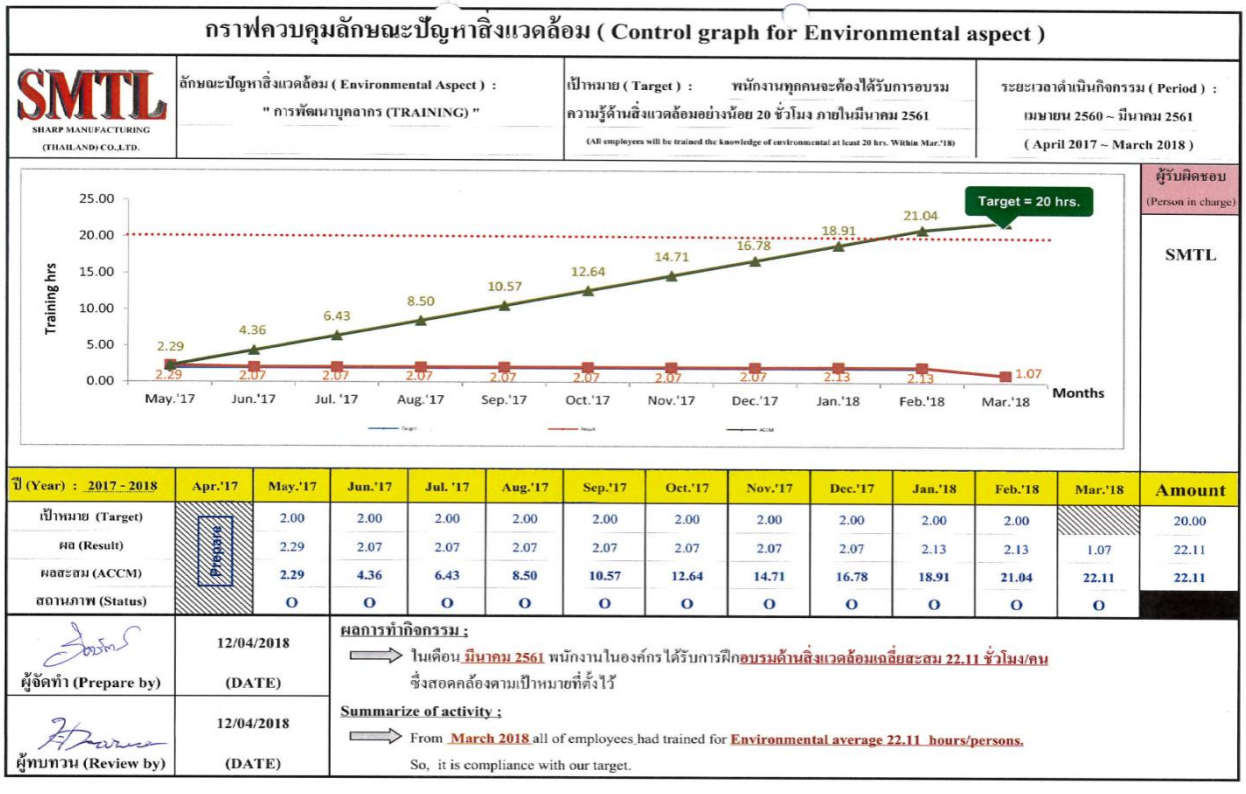
- Responsible for self-defense fire service, on Mar. 30, 2018

Environmental Objective and Achievements

Objective in Fiscal 2017	Target	Results	Self Evaluation
All employees will be trained The matter of Environmental 20 hours by average, within March 2018.	20 hours (by average)	22.11 hours (by average)	
Perform the environmental activities, 3 activities within March 2018.	3 activities	3 activities	
Reduce electricity using by 1%, within March 2018. Remark : - Electricity using in FY2016 = 2,311,660 kWh - Target to reduce 1% = 23,116 kW	23,116 kWh (1%)	39,098.12 kWh (1.69 %)	
Reduce water using 2%, within March 2018. Remark : - Water using in FY2016 = 16,103 m^3 - Target to reduce 2% = 322 m^3	322 m^3 (2%)	0 m^3 (0%)	
Reduce garbage dispose 5%, within March 2018. Remark : - Amount of garbage dispose in FY2016 = 20,949 Kg - Target to reduce 5% = 1,047 Kg	1,047 kg (5%)	10,911.80 kg (52.09%)	

Environmental Objective and Achievements

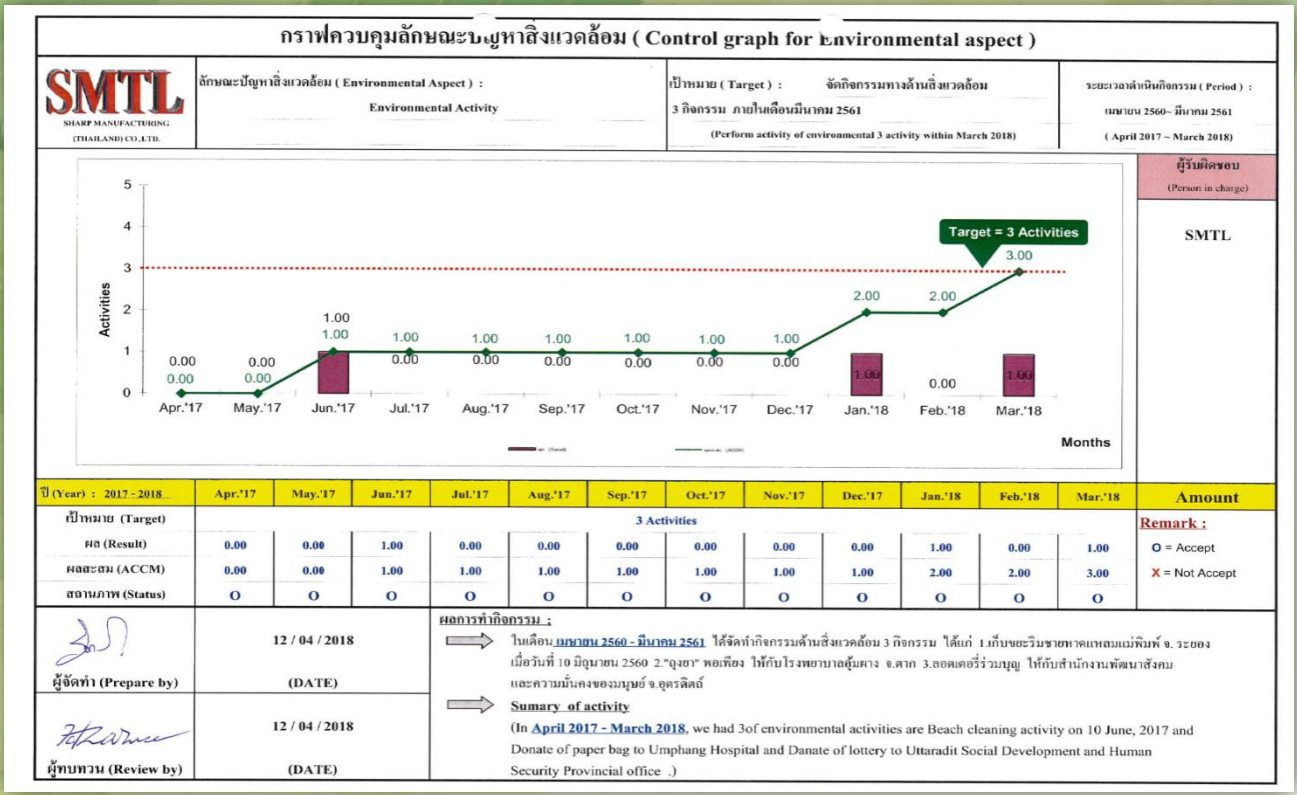
Objective in Fiscal 2017	Results	Self Evaluation
All employees will be trained The matter of Environmental, 20 hours by average within March 2018.	22.11 hours (by average)	PASS



From FY2017, SMTL's employees had trained the matter of Environmental is 22.11 hours by average.

Environmental Objective and Achievements

Objective in Fiscal 2017	Results	Self Evaluation
Perform environmental activities, 3 activities within March 2018.	3 activities	PASS

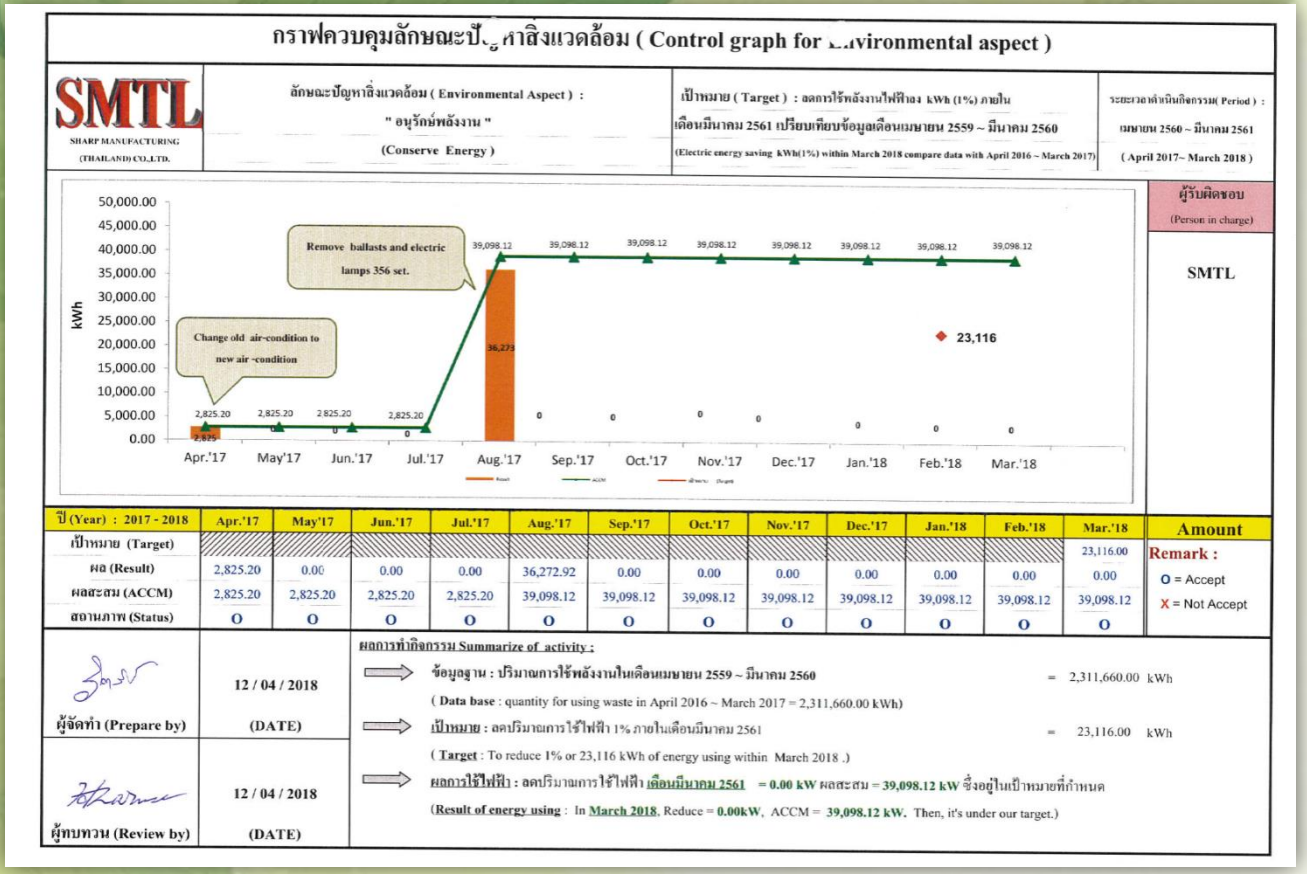


In FY2017, we had conducted 3 activities of Environmental as following;

- Beach cleaning activity on 10 June, 2017.
- Donate of paper bag to Umphang Hospital .
- Donate of lottery to uttaradit Social Development and Human Security Provincial office.

Environmental Objective and Achievements

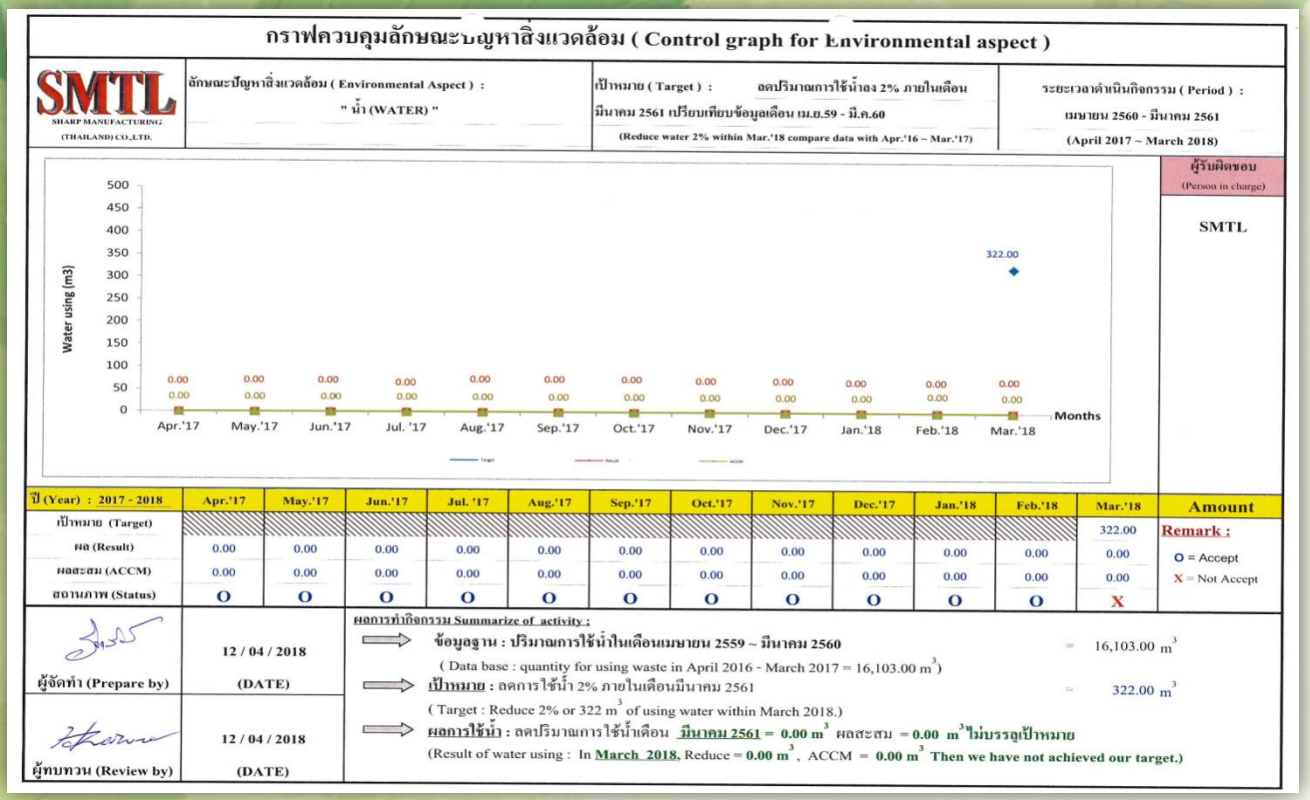
Objective in Fiscal 2017	Results	Self Evaluation
Reduce electricity using by 1% (23,116 kWh) within March 2018. Remark : - Electricity using in FY2016 = 2,311,660 kWh - Target to reduce 1% = 23,116 kW	39,098.12 kWh (1.69 %)	PASS



Form FY2017, SMTL's had reduce electricity using 39,098.12 kWh. It is under our target.

Environmental Objective and Achievements

Objective in Fiscal 2017	Results	Self Evaluation
Reduce water using 2% within March 2018. Remark : - Water using in FY2016 = 16,103 m³ - Target to reduce 2% = 322 m³	0 m³	FAIL

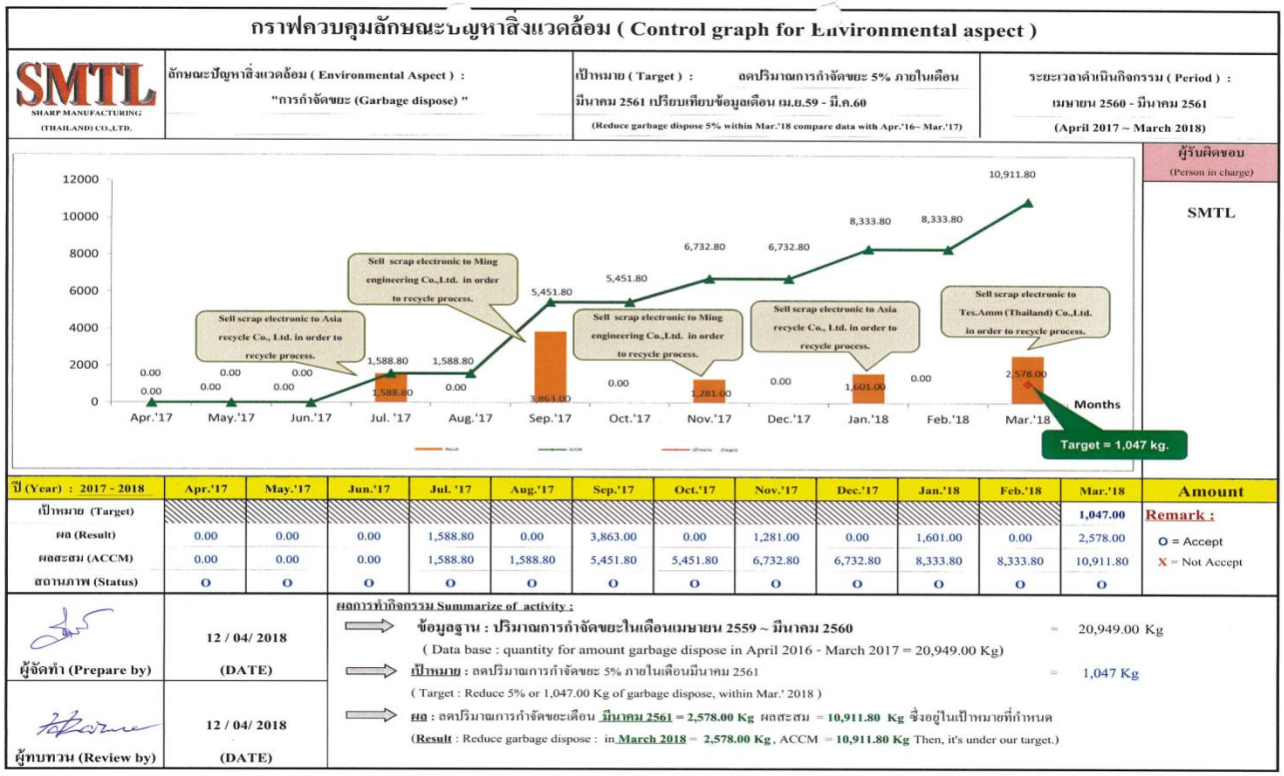


In FY2017 we have had not achieved our target. Because of we did not clearly identified the action plan.

However, in FY2018 we continue to set the target for reduce 2% of water using one more time.

Environmental Objective and Achievements

Objective in Fiscal 2017	Results	Self Evaluation
Reduce garbage dispose 5% within March 2018. Remark : - Amount of garbage dispose in FY2016 = 20,949 Kg - Target to reduce 5% = 1,047 Kg	10,911.80 Kg (52.09%)	PASS



In FY2017 we had reduced 10,911.80 kg. of Landfill the electronics waste by change to recycling instead.

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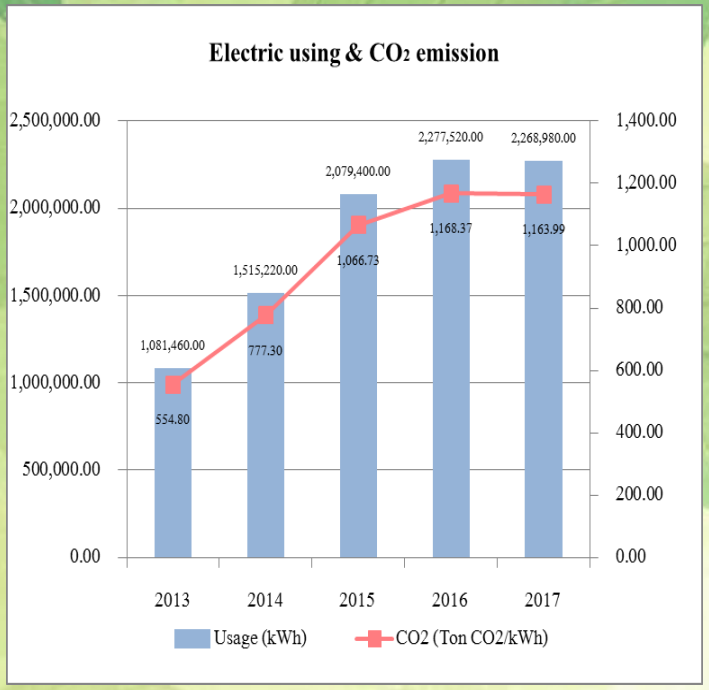
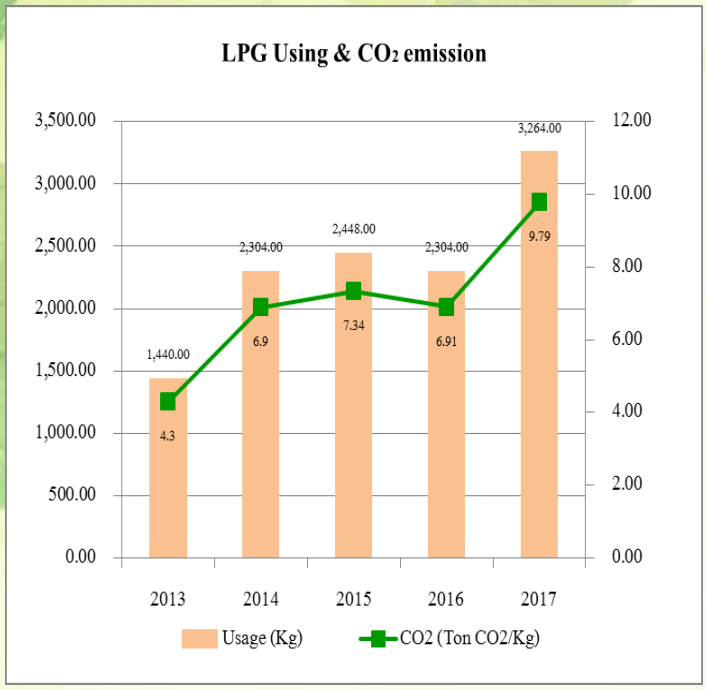
Environmental Impacts and Reduction Measures

Greenhouse Gas Emissions

Input	
Electricity	2,268,980.00
LPG	3,264.0

Output (CO2)
1,163.99 (ton-CO_2/kWh)
9.79 (ton-CO_2/kg)





Year 2017, CO_2 emission of Electricity using is 1,163.99 Ton-CO_2/kWh. It is lower than FY2016 as 0.375%.

CO_2 emission :
Electric using (kWh) * 0.513 kgCO_2/1000

Year 2017, CO_2 emission of LPG using is 9.79 Ton-CO_2/kg. It is over than FY 2016 as 41.68%, because of we had new employees increased. Then the LPG using for canteen also increased.

CO_2 emission :
LPG using (kg) * 2.999 kg-CO_2/1000

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Environmental Impacts and Reduction Measures

Reduction of CO_2 Emission

FY	CO2 emission by Electricity and LPG usage					Reduction of CO2 emission				Ratio of CO2 reduction
	Electricity usage		LPG usage		Total of CO2 emission (ton-CO2)	Energy Saving			Total of CO2 emission (ton-CO2)	
	Unit (kWh)	CO2 Emission (ton-CO2/kWh)	Unit (m2)	CO2 Emission (ton-CO2/kg)		Energy saving (kWh)	Investment (Baht)	Cost saving by Energy saving (Baht/year)		
2013	1,081,460	554.80	1,440	4.30	559.10	17,301.60	51,827.00	80,971.39	8.88	1.59%
2014	1,515,220	777.30	2,304	6.90	784.20	18,977.50	195,564.00	18,977.46	9.74	1.24%
2015	2,079,400	1,066.73	2,448	7.34	1,074.07	7,315.58	195,564.00	32,261.65	3.75	0.35%
2016	2,277,520	1,168.37	2,304	6.91	1,175.28	25,726.27	4,440,393.00	105,281.59	13.20	1.12%
2017	2,268,980	1,163.99	3,264	9.79	1,173.79	39,098.12	65,919.00	160,693.27	20.06	1.71%

CO2 emission :
- Electricity usage = 0.513 kg-CO2/kWh
- LPG usage = 2.999 kg-CO2/kg

Our activities for Energy saving in FY2017

Activities	Reduction			Investment (Baht)	Payback period (year)
	kW	kWh/year	Saving (Baht)		
Change Air condition of HR&GA dept., because it is low efficiency and out of order	1.39	2,825.20	11,611.57	37,919.00	3.26
Remove the ballasts and electric lamps 356 set.	0.05013	36,272.92	149,081.70	28,000.00	0.19
Total	1.44013	39,098.12	160,693.27	65,919.00	-

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Environmental Impacts and Reduction Measures

Calculation for saving energy effect

➢ Activity : Change Air condition of HR&GA dept.

Description	kW	kWh/year	Baht/year
Energy using before reduction	3.00	6,097.56	25,060.97
Energy using after reduction	1.61	3,272.36	13,449.40
Energy saving	1.39	2,825.20	11,611.57
Investment	37,919.00	Bath	
Pay back return	3.26	Years	

Calculation of Cost Saving :

Formular :

Cost saving/year = Energy saving(kW) x working hours in FY2017(hours) x Electricity purchase (unit)

= 1.39 x 2,032.52 x 4.11

= 11,611.57 Baht/year

Remark :

- Working hours in FY2017 = 244 x 8.33 = 2,032.52 hours
  - Working day in FY2017 = 244 days
  - Working time (8:00am.–5:20pm) = 8 hours and 20 minute or 8.33 hours
- Electricity purchasing = 4.11 Baht/unit (by estimated)

Before

After

Environmental Impacts and Reduction Measures

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Calculation for saving energy effect

➢ Activity : Remove ballasts and electric lamps 356 sets.

Description	kW	kWh/year	Baht/year
Energy using before reduction	0.10026	72,545.84	298,163.40
Energy using after reduction	0.05013	36,272.92	149,081.70
Energy saving	0.05013	36,272.92	149,081.70
Investment money	28,000.00	Bath	
Pay back return	0.19	Bath	

Calculation of Cost Saving :

Formular :

Cost saving/year = Energy saving(kW) x Q'ty of removed lamps x working hours in FY2017(hours) x Electricity Purchase (unit)

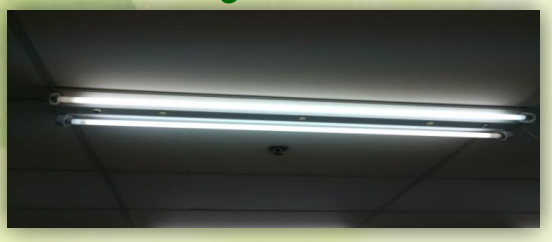
= 0.05013 x 356 x 2,032.52 x 4.11

= 149,081.70 Baht/year

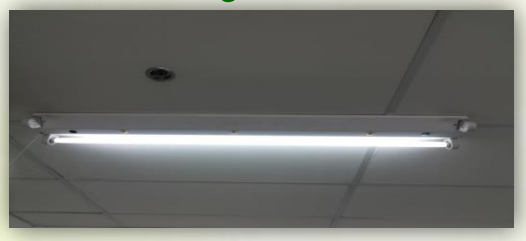
Remark :

- Working hours in FY2017 = 244 x 8.33 = 2,032.52 hours
  - Working day in FY2017 = 244days
  - Working time (8:00am.–5:20pm) = 8 hours and 20 minute or 8.33 hours
- Electricity purchasing = 4.11 Baht/unit (by estimated)

Before



After



Environmental Impacts and Reduction Measures

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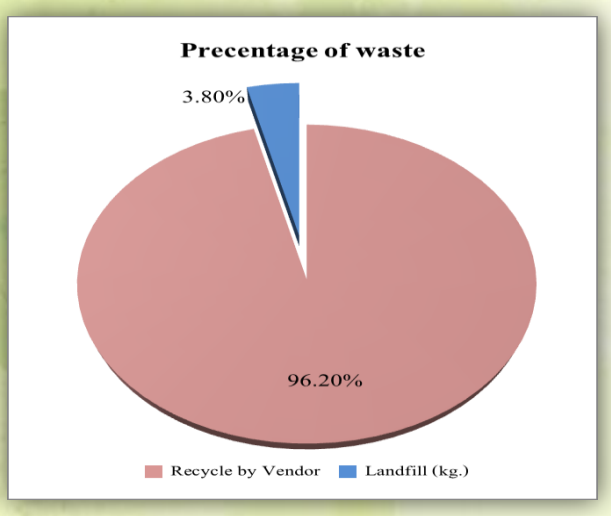
Minimization and Recycle of Waste

➢ Trends of Recycle waste and Waste Landfill

Year	Total of Waste (kg)	Waste recycle (kg.)	Valuable (Baht)	Waste Landfill (kg.)	Cost (Baht)
FY2016	304,098.7	294,029.2	3,388,530.1	10,069.5	78,000.0
FY2017	327,292.3	314,877.3	3,372,103.7	12,415.0	98,520.0

Waste data in Year 2017

Investigation item	Total of waste (kg.)	Recycling		Landfill	
		Total (kg.)	Valuable (Baht)	Total (kg.)	Cost (Baht)
Compound waste	9,459.5	8,397.8	27,498.4	1,061.7	9,335.4
Waste plastics	60,582.0	60,582.0	288,482.5	0	0
Scrap metal	5,875.9	5,875.9	2,276,990	0	0
Waste paper	238,013.0	238,013.0	776,515.9	0	0
Wood chips	2,008.6	2,008.6	2,616.9	0	0
Toxic waste	5,038.3	0	0	5,038.3	47,184.6
General waste	6,315.0	0	0	6,315.0	42,000.0
Solar waste	0.0	0	0	0	0
Amount (kg)	327,292.3	314,877.3	3,372,103.7	12,415.0	98,520.0
Ratio (%)	100%	96.20%	-	3.80%	-



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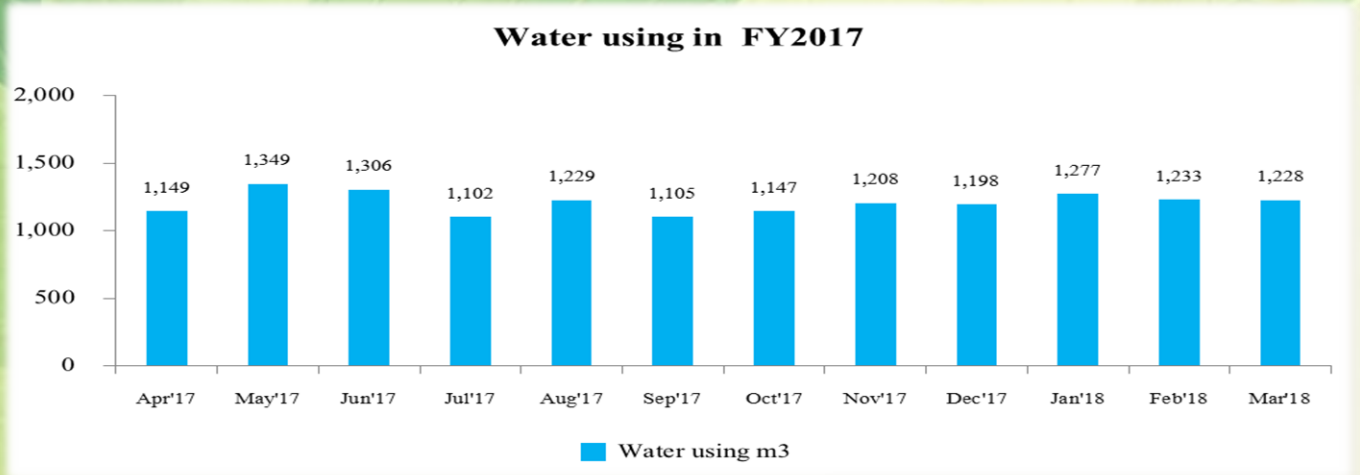
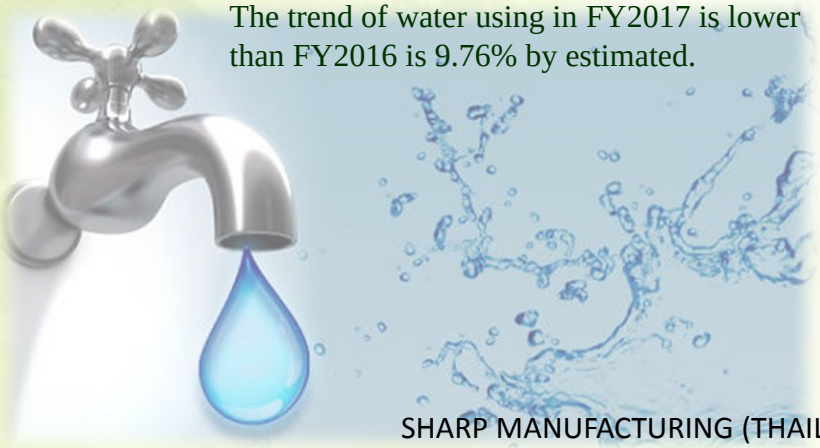
Environmental Impacts and Reduction Measures

Water Usage

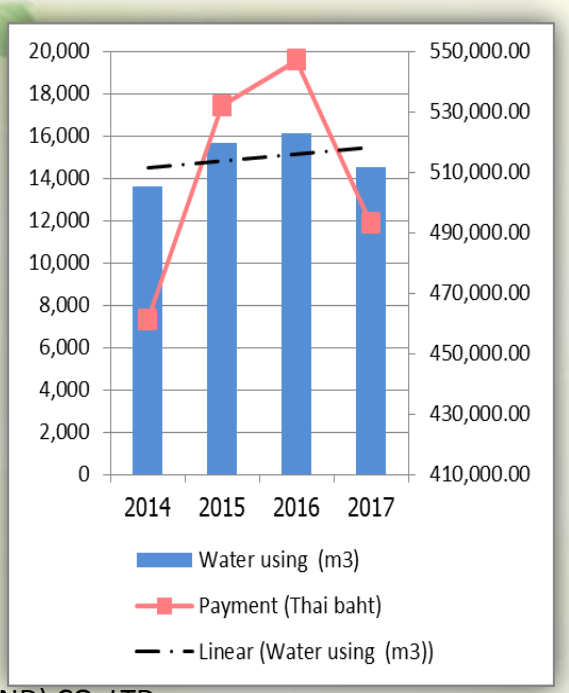
Data of Water using in FY2017														
Item	**Unit**	Apr'17	May'17	Jun'17	Jul'17	Aug'17	Sep'17	Oct'17	Nov'17	Dec'17	Jan'18	Feb'18	Mar'18	Cumulative
Water using	**m3**	1,149	1,349	1,306	1,102	1,229	1,105	1,147	1,208	1,198	1,277	1,233	1,228	14,531
Valuable	**Baht**	38,969.94	45,817.94	44,345.62	37,360.66	41,709.14	37,463.38	38,901.46	40,990.00	40,647.70	43,352.66	41,846.10	41,674.90	493,079.50



Trend of Water using from FY2014 - FY2017					
Item	**Unit**	**2014**	**2015**	**2016**	**2017**
Water usage	Water using (m3)	13,600	15,665.00	16,103.00	14,531.00
	Payment (Thai baht)	461,076.64	531,907.76	546,904.18	493,079.50



The trend of water using in FY2017 is lower than FY2016 is 9.76% by estimated.



Environmental Impacts and Reduction Measures

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Management of Chemical

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

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

Environmental Impacts and Reduction Measures

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Compliance with Environmental Regulations

➢ Atmosphere Emissions

Monitored by Accufas Lab Center Co., Ltd., on Dec. 12-13, 2017

Item	Parameter	Sampling area	Standard Level			Results	Status
			Standard	Unit	Reference		
Workplace	Tin (Sn)	- Soldering machine A	-	mg/m³	*	0.008	Pass
		- Soldering machine B	-	mg/m³	*	0.011	Pass
		- Alignment/Harness unit	-	mg/m³	*	0.016	Pass
		- Sub Assembly (ECR)	-	mg/m³	*	0.013	Pass
		-SMT room	-	mg/m³	*	0.019	Pass
	Styrene	- Adjustment (DS-A)	100	ppm	**	<0.050	Pass
		- Adjustment (DS-B)	100	ppm	**	<0.050	Pass
		- Adjustment (DS-CTO)	100	ppm	**	<0.050	Pass
		- PQA Outgoing room	100	ppm	**	<0.050	Pass
	Thinner as Xylene	- Auto insert (SMT machine)	100	ppm	**	<0.050	Pass
		- SMT room	100	ppm	**	0.181	Pass
	Total Dust	- PQA Outgoing room	-	mg/m³	*	0.46	Pass
		- Toner 1	-	mg/m³	*	0.58	Pass
		- Toner 2	-	mg/m³	*	0.54	Pass
		- DV	-	mg/m³	*	0.62	Pass
		- Adjustment (DS-A)	-	mg/m³	*	0.42	Pass
		- Adjustment (DS-B)	-	mg/m³	*	0.54	Pass
		- Adjustment (DS-CTO)	-	mg/m³	*	0.50	Pass

Reference :

*Parameter No Standard prescribed by the Ministry of Industry.

**Notification of Department of Labor Protection and Welfare 2560 Re.Limit the concentration of hazardous chemicals.

***The Notification of National Environment Board No. 24, B.E.2547 on “The Ambient air quality standard”

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Environmental Impacts and Reduction Measures

Compliance with Environmental Regulations

➢ Atmosphere Emissions

Monitored by Accufas Lab Center Co., Ltd., on Dec. 12-13, 2017

Item	Parameter	Sampling area	Standard Level			Results	Status
			Standard	Unit	Reference		
Workplace	Respirable dust	- Toner 1	-	mg/m³	*	0.39	Pass
		- Toner 2	-	mg/m³	*	0.29	Pass
		- DV	-	mg/m³	*	0.20	Pass
		- DS Production Line A	-	mg/m³	*	0.25	Pass
		- DS Production Line B	-	mg/m³	*	0.20	Pass
	Nickel	- Soldering Machine A	1.0	mg/m³	**	<0.001	Pass
	Toluene	- LSU Unit (DS-A)	200	mg/m³	**	0.053	Pass
	Ethanol	- DS Production Line A	1,000	ppm	**	0.625	Pass
	Silica	- LSU Unit (DS-B)	0.025	mg/m³	**	<0.01	Pass
Stack	Tin (Sn)	- Stack No.1	-	mg/m³	*	<0.001	Pass
		- Stack No.2	-	mg/m³	*	<0.001	Pass
		- Stack No.3	-	mg/m³	*	<0.001	Pass
		- Stack No.4	-	mg/m³	*	<0.001	Pass
		- Stack No.5	-	mg/m³	*	<0.001	Pass
	TSP	- Stack from Toner 1	400	mg/m³	**	7.83	Pass
		- Stack from Toner 2	400	mg/m³	**	3.44	Pass
		- Stack from DV	400	mg/m³	**	3.78	Pass
Ambient	Tin (Sn)	- In front of High-Voltage power	-	mg/m³	*	0.001	Pass
	TSP	- Out of toner room	0.33	mg/m³	***	0.106	Pass

Reference :
*Parameter No Standard prescribed by the Ministry of Industry.
**Notification of Department of Labor Protection and Welfare 2560 Re.Limit the concentration of hazardous chemicals.
***The Notification of National Environment Board No. 24, B.E.2547 on "The Ambient air quality standard"

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Environmental Impacts and Reduction Measures

Compliance with Environmental Regulations

Noise

Monitored by Accufas Lab Center Co., Ltd., on Dec. 12-13, 2017

Item	Parameter	Sampling area	Standard Level			Results	Status
			Standard	Unit	Reference		
Workplace	Noise level (Leq 8 hours)	SMT Machine (Auto Insertion room)	90	dB(A)		74.2	Pass
		Axial Machine (Auto Insertion room)	90	dB(A)	*	79.3	Pass
		Radial Machine (Auto Insertion room)	90	dB(A)	*	74.3	Pass
		SMT Machine (SMT room front room)	90	dB(A)	*	78.0	Pass
		SMT Machine (SMT room back room)	90	dB(A)		76.5	Pass
		LCD TV	90	dB(A)	*	71.61	Pass
		LCD TV (PQA)	90	dB(A)	*	71.4	Pass
Ambient	Noise level (Leq 24 hours)	Front room Compressor	70	dB(A)	**	60.0	Pass
		Compressor DS	70	dB(A)	**	59.3	Pass
	Annoyance Noise	Front room Compressor	10	dB(A)	**	3.9	Pass
		Compressor DS	10	dB(A)	**	9.5	Pass

Reference :

* Ministerial regulation on the prescribing of standard for administration and management of occupational safety, health and environment in relation to heat, light and noise B.E.2559, Section 3: Sound (Reference Table 6 annex Ministerial regulation B.E.2549)

** Ministry of Industry B.E.2548 under the section of "The noise level and noise level resulting from the operation of the plant."

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Environmental Impacts and Reduction Measures

Compliance with Environmental Regulations

➢ Pollutant Loads of Public Water Areas

Monitored by GOSHU TECHNOSERVICE CO.,LTD.

Parameter	Unit	Standard level	Results					
			19/05/2017	15/07/2017	20/09/2017	10/11/2017	16/01/2018	06/03/2018
pH		5.5-9.0	6.28	5.70	6.60	6.8	6.30	6.60
T.D.S	mg/L	3000	592.00	504.00	338.00	444.00	618.00	440.00
SS	mg/L	50	16.00	33.00	<10.0	<10.0	20.00	14.00
COD	mg/L	120	44.00	50.00	38.00	<30	66.00	49.00
BOD	mg/L	20	<2	6.00	7.00	4.0	9.00	4.00
Oil & Grease	mg/L	5	2.50	<1.0	<1.0	<1.0	<1.0	<1.0
Pb	mg/L	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TNK	mg/L	100	3.40	5.60	5.10	5.80	5.00	3.80

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

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Environmental Social Contribution Activities

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Beach cleaning activity

On June 10, 2017, Sharp manufacturing (Thailand) Co.,Ltd. by Mr.Masaki Katsuyama, Corporate Director together with the staff 250 persons had beach cleanup activity at the Laem Maepim Beach, Rayong province. This event to build awareness of employees in the conservation of environment and keep good natural of the beach.

Environmental Social Contribution Activities

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Donate of paper bag to Umphang Hospital

Sharp Manufacturing (Thailand) Co., Ltd. arrange a donated of paper bag (from used paper) and medicine in January 2018 in order to donate to Umphang Hospital use of dispense to the patient. In this activity we had collected 20.43 kg of the used paper and 20.28 kg of the medicine from SMTL, it able to reduce carbondioxide 59.86 kgCO2/year.

[Reference from: IPCC Guidelines for National Greenhouse Gas Inventories – Volume 5: Waste; Emission factor of paper is 2.93 kg-CO2

Environmental Social Contribution Activities

SHARP
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Donate of lottery to Uttaradit Social Development and Human Security Provincial office.

In order to build awareness of employees in the importance of recycling. Sharp Manufacturing (Thailand) Co., Ltd. arrange a donated of used lottery in March 2018 in order to donate to volunteer (Uttaradit Social Development and Human Security Provincial office) use for Sandalwood Flowers (artificial flower used for cremation). In this activity we had collected 2 kg of the used lottery from SMTL member, it be able to reduce Carbondioxide (CO2) 5.86 kgCO2/year.

[Reference from: IPCC Guidelines for National Greenhouse Gas Inventories – Volume 5: Waste; Emission factor of paper is 2.93 kgCO2

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