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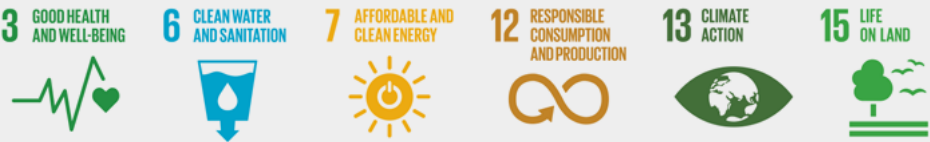
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Material Topics

- Response to climate change
- Energy and resources management
- Environmental pollution management
- Manufacturing process and product innovation
- International standards certification
- Crisis management and disaster prevention

Purpose of Management

To slow down and mitigate climate change risks, reduce production cost and enhance competitiveness through energy and resources management and green manufacturing process, avoid environmental pollutions and reduce impacts on neighboring communities of operational activities, achieve environmental and corporate sustainability

Management Approaches and Effectiveness
Evaluating Mechanisms

- Establish task forces for energy management and environment management, and hold meetings regularly for follow-up and review
- Formulate related systems and objectives, continue to monitor outcomes
- Launch environment and energy management related certifications
- Learn latest technical trends through exchanges between production sites
- Investigate environmental data, which are regularly reviewed and analyzed to timely discover problems and make improvements
- Launch various projects for energy-saving, water-saving, emissions-reduction, and wastes-reduction, and follow up on progress and effects
- Have emergency response procedures in place, and hold drills regularly to minimize impacts of accidents on neighboring communities
- Report to the highest governance body through regular meetings
- Ensure all production activities comply with laws and regulations



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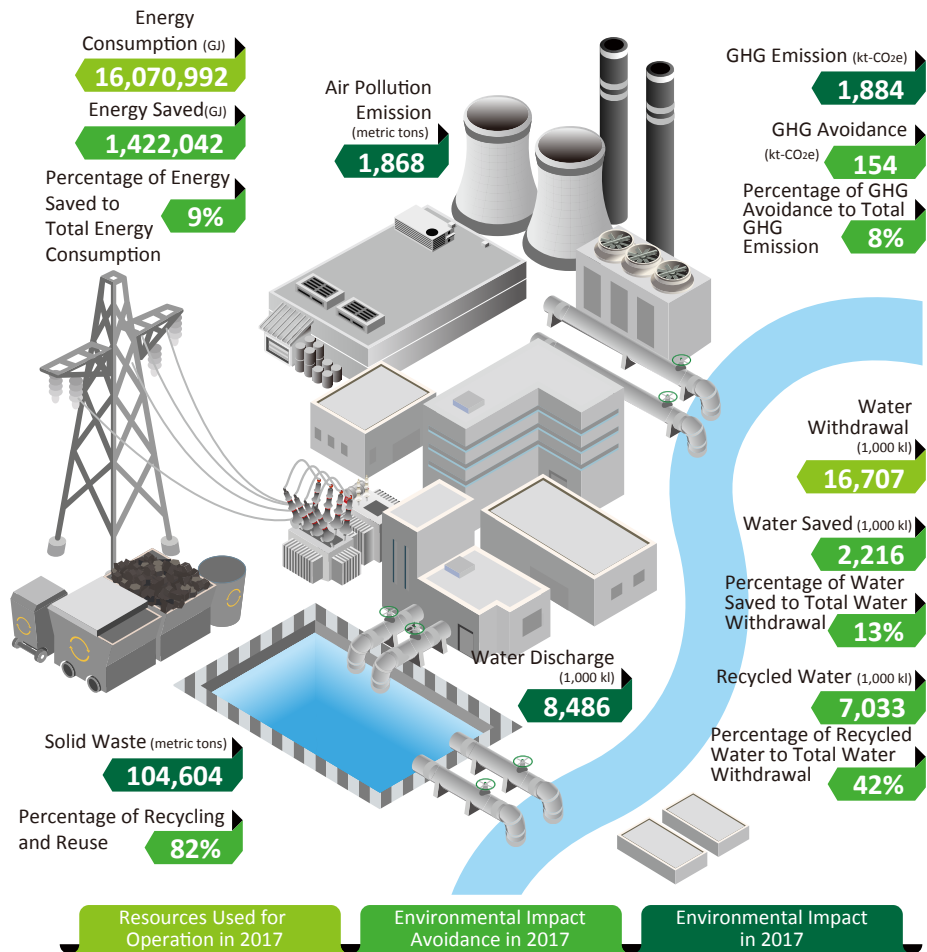
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3.1 Overview of Environmental Data



Note: For detailed data, please refer to description of this chapter

3.2 Energy and Resources Management

3.2.1 Energy Management

Among the 17 SDGs outlined by UN, the SDG13-Climate Action specifies that related measures should be taken to cope with global and entrepreneurial sustainability risk due to climate change. FENC therefore takes energy issues within corporate seriously. It not only proactively responds to government's energy policies, but also continues to promote measures for energy conservation and carbon reduction to improve efficiency of energy consumption. By lowering energy consumption step by step, it aims to mitigate global climate change.

Energy management methods

- Designate a unit responsible for energy management and hold meetings regularly for follow up and review.
- Establish energy management related systems and set energy conservation goals.
- Establish plan and procedure for energy conservation and carbon reduction
- Enhance promotion of energy conservation awareness through means such as circulation of energy conservation publications and sharing of case studies.
- Follow up on energy conservation project results and include performance as criteria for reward and compensation.
- Promote energy management related certification.

The power consumption was reduced by 1.9% in 2015, 2.3% in 2016, and 2.0% in 2017 at Taiwan production sites. This progress is ahead of the government's power conservation goal of 5% in five years. The Polyester Business reorganized its structure to accommodate Taiwan's energy policy, establishing four task forces (production procedure, water resources management, power management, and resource and reuse). Each task force will recruit members according to its duties and report the project status to the project's main point of contact with the aim to comprehensively enhance management capacity. Hsinpu Chemical Fiber Plant monitors power consumptions of each production unit through smart electricity management system, and introduces the three-stage pricing through setting contract capacity with power consuming units to reduce electricity cost and respond to the government's objective of energy conservation and carbon reduction, achieving significant results. Kuanyin Chemical Fiber Plant also plans to introduce the program in 2018. In the future, Hsinpu Chemical Fiber Plant will aim to consolidate power consumption information and integrate the public system into the smart electricity management system.

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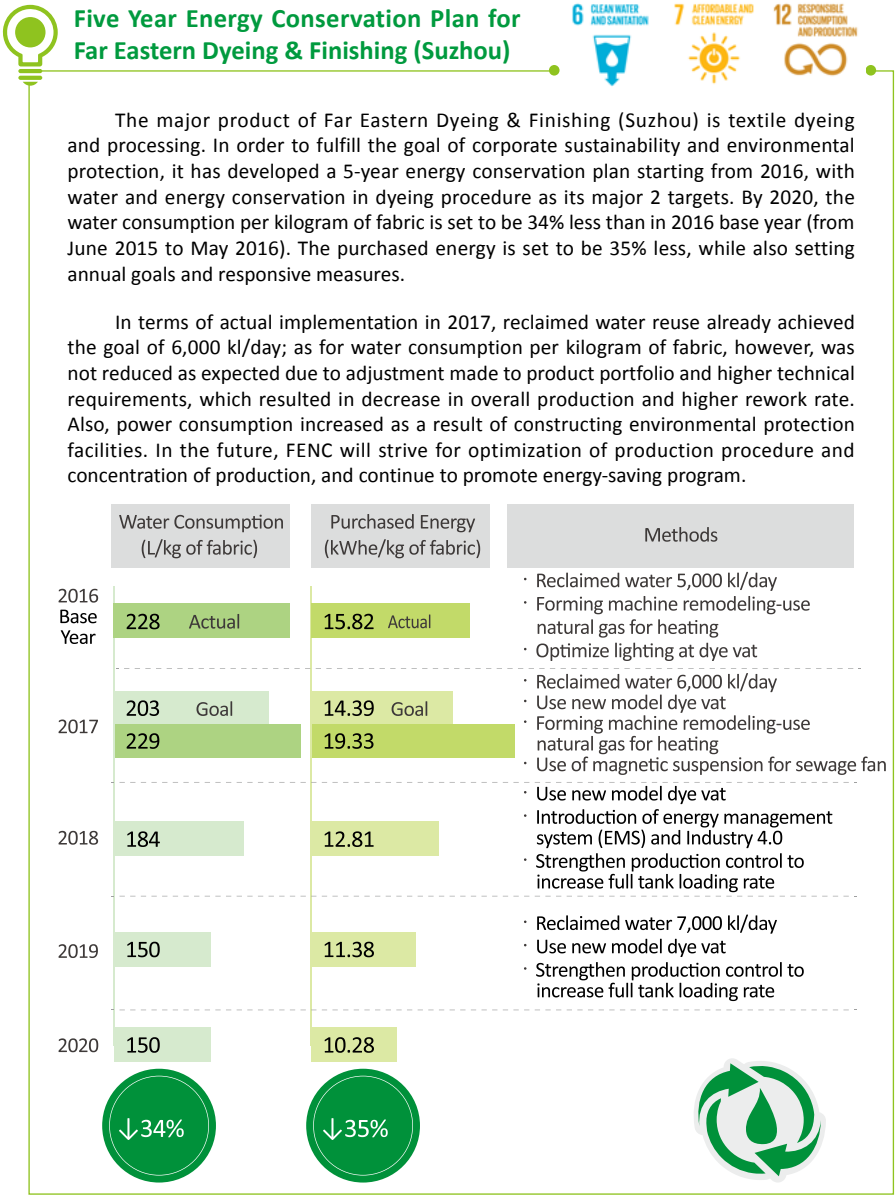
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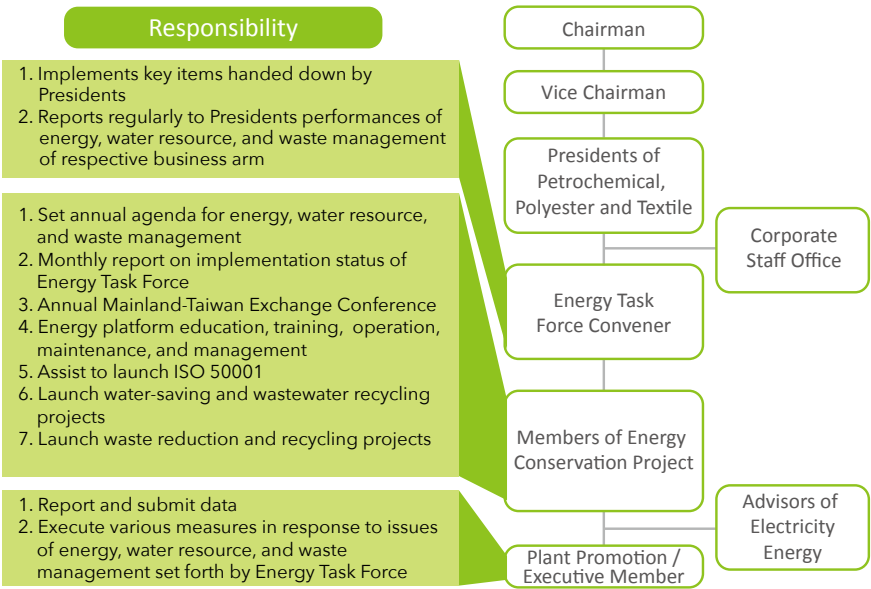
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Energy Task Force

FENC established the intercompany and interdepartmental “Energy Task Force” in 2010. The energy Task Force sets energy-saving goals, holds meetings regularly to review energy consumption and direction for energy saving, follows up on results and energy-saving projects and regularly reports to the governing body. The task force also organizes energy-saving technical exchange conferences and explores opportunities for energy-saving improvements to enhance the efficiency of energy consumption. All production sites have formulated related guidelines and regulations in accordance to the policies set by the Energy Task Force, and implemented the measures; professional personnel also review energy consumption status and propose improvement measures at monthly meetings, conduct energy-saving performance audit, cooperate with authority or clients for energy inspection, and provide the Energy Task Force information needed for the assessment of related projects.

Organization Structure of Energy Task Force



It has been years since FENC first launched energy-saving program, and most of the more effective projects with shorter payoff period have been executed; to further break new grounds and enhance energy-saving benefits, FENC once again allocated a special energy-saving budget of NT\$2 billion in 2017, after previously allocating a special budget of the same amount in 2010. The budget is provided to all arms of FENC, including petrochemical, polyester and textile, to propose and execute projects of energy conservation and carbon reduction. In 2018, 134 projects are planned, with a total budget of NT\$1.02 billion; 22 of the projects are major projects with over NT\$10 million of investment. Together, all the projects will bring a total of NT\$360 million annually in terms of energy-saving benefit.

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Statistics of Special Budget for Energy Conservation Allocated in 2018

Unit: Number of Projects, NT\$ million, NT\$ million/Year

Business	Petrochemical			Polyester			Textile			Total		
	Number of Projects	Budget	Expected Benefit	Number of Projects	Budget	Expected Benefit	Number of Projects	Budget	Expected Benefit	Number of Projects	Budget	Expected Benefit
Power	8	60	17	30	133	40	60	153	44	98	346	101
Water	1	14	3	6	22	12	3	181	94	10	217	109
Fuels	5	126	38	9	56	21	1	7	14	15	189	73
Wastes	1	21	5	3	233	72	0	0	0	4	254	77
Others	2	2	0	2	8	3	3	1	0	7	11	3
Total	17	223	63	50	452	148	67	342	152	134	1,017	363

Note: Fuels include natural gas, steam, and heavy fuel

The Energy Task Force actively promoted the introduction of ISO 50001 Energy Management System to production sites in 2017. In addition to the three sites that have already passed the certification, the task force plans to introduce the ISO 50001 Energy Management System to Oriental Petrochemical (Taiwan), Oriental Petrochemical (Shanghai), Far Eastern Apparel (Suzhou), and Far Eastern Apparel (Vietnam) in 2018.

Environmental and Energy Management Certification Passed at Production Sites

Certification Standards	Sites with Certifications
ISO 14001 Environmental Management Systems	Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, Kuanyin Dyeing and Finishing Plant, Oriental Petrochemical (Shanghai) Corp., Far Eastern Industries (Shanghai) Ltd., Wuhan Far Eastern New Material Ltd., Oriental Industries (Suzhou) Ltd., Far Eastern Dyeing & Finishing (Suzhou) Ltd., Far Eastern Apparel (Vietnam) Co., Ltd., Headquarters
ISO 50001 Energy Management Systems	Hukou Mil, Far Eastern Industries (Wuxi) Ltd. ,Headquarters

At the end of 2017, the scope of duties of the task force expanded to include water resource and solid waste management, setting consistent objectives and regulations at the corporate level to enhance water resource recycle rate, ensure water supply, and reduce waste production, fully committing to recycling and reusing waste materials.

Water Resource and Solid Waste Management Approaches

Water Resource Management

- Evaluate the installation of reclaimed water recycling system
- Evaluate the installation of rainwater recycling system
- Recycle and reuse of wastewater or effluent
- Evaluate the introduction of reclaimed water

Solid Waste Management

- Evaluate the installation of anaerobic processing system/sludge drier
- Evaluate the installation of ultrasound technology for waste sludge treatment
- Install rotary kiln incineration facility
- Implement waste sorting, and recycle and reuse

The Energy Task Force organized Cross-Strait Energy Conservation Technical Conference which invited experts in the industry to share on related experiences and the latest trend in the field. Besides, the task force has promoted the online smart data analysis system project to precisely control energy data and to be able to penetrate into the core of energy management. To further encourage operation of data analysis system, the members of the task force served as lecturers in 2017 to hold system education and training classes for high-level executives at Oriental Petrochemical (Taiwan), Hukou Mill, and Hsinpu Chemical Fiber Plant.

In 2017, the Energy Task Force organized a group of power conservation experts, which visited Hsinpu Chemical Fiber Plant and Hukou Mill to evaluate power consumption and offer advice on analysis results of transformer usage and electric load, and provide information on power conservation and enhance production units' power usage and energy-saving awareness.

Cross-Strait Energy Conservation Technical Conference

The energy task force holds the Cross-strait Energy Conservation Technical Conference every year to exchange ideas on energy conservation, introduce new concepts and discuss the bottleneck in developing technology for energy conservation and application. "2017 Far Eastern Cross-strait Energy Conservation Technical Conference" was held from March 13 to 17, and May 15 to 19, 2017.

The highlights of this year's conference were the outstanding energy conservation projects over the past five years by all five major businesses, exploring how to introduce existing outstanding projects to other production sites, while following up on the progress of each unit's energy conservation project implementation in 2017, as well as actual modes of operation in the four energy conservation directions: power management, water resource management, recycle and reuse of waste, and energy-saving production procedure. The members of the task force visited 15 production sites to conduct research and onsite exchange.

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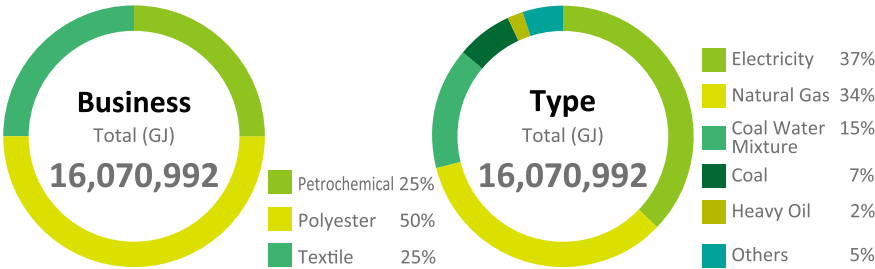
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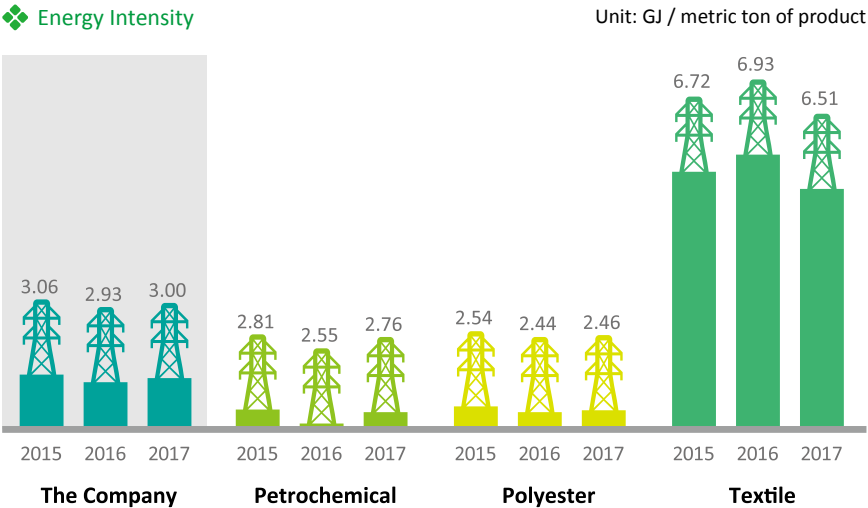


Energy Consumption in 2017



The total energy consumption increased by 1.5% in 2017, which was mainly the result of increased production at Oriental Petrochemical (Taiwan) and Oriental Industries (Suzhou). FENC's energy intensity increased by 2.4%, due to factors such as slight decrease in overall production and adjustment and launch of new production lines.

Energy Intensity



Note: The Textile Business does not include Far Eastern Apparel (Suzhou) Co., Ltd. and Far Eastern Apparel (Vietnam) Ltd.

Energy Consumption

Energy Type	Petrochemical			Polyester			Textile			Total		
	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017
Purchased Power	885,017	1,005,486	1,045,816	2,754,247	2,839,321	2,840,856	1,957,374	2,033,461	2,081,316	5,596,638	5,878,268	5,967,988
Purchased Green Power	0	360	360	540	540	540	180	180	180	720	1,080	1,080
Self-generated Green Power	0	0	0	0	1,005	5,171	0	6,013	18,747	0	7,018	23,918
Electricity	885,017	1,005,846	1,046,176	2,754,787	2,840,866	2,846,567	1,957,554	2,039,654	2,100,243	5,597,358	5,886,366	5,992,986
Natural Gas	876,487	2,769,800	2,912,774	31,286	1,255,296	1,396,161	1,045,616	1,157,987	1,145,928	1,953,389	5,183,083	5,454,863
Heavy Oil	0	0	0	309,019	249,954	292,503	58,737	44,308	56,803	367,756	294,262	349,306
Fuel Oil	0	0	0	0	0	0	0	0	6,265	0	0	6,265
Coal	0	0	0	1,009,054	1,048,185	989,739	49,237	91,435	80,851	1,058,291	1,139,620	1,070,590
Coal Water Mixture	1,458,945	62,876	27,880	3,746,151	2,388,625	2,212,238	157,521	104,052	139,962	5,362,617	2,555,553	2,380,080
Ethylene tar	631,420	437	0	0	0	0	0	0	0	631,420	437	0
Purchased Steam	0	0	0	240,244	330,852	393,441	401,792	443,173	423,461	642,036	774,025	816,902
Total	3,851,869	3,838,959	3,986,830	8,090,541	8,113,778	8,130,649	3,670,457	3,880,609	3,953,513	15,612,867	15,833,346	16,070,992

Note:

- Above figures are energy consumption for production procedure.
- Heating value is based on heating value coefficient at each production site.
- Energy consumption outside of the organization is not included.

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Far Eastern Industries (Wuxi) Innovative and Smart Spinning Plant's Energy Conservation Technology

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Far Eastern Industries (Wuxi) launched the energy improvement project for spinning facilities and auxiliary production system, carrying out own research and conducting improvement of production, dust removal, and A/C systems. Each year, it is projected that the project will save 23.1 thousand kWh electricity, a rate of 28%, and save NT\$12.17 million in electricity bill. The main projects included modification of cotton suction fan on spinning machine, development of automatic block valve and pressure adjustment system, and remodeling A/C room's centrifugal nozzle to target spray nozzle.

System	Measures	Saved Power (kWh/Year)	Energy Saving Rate
Production	Modification of cotton suction fan on spinning machine	602,643	37.7%
Dust Removal	Development of automatic block valve and pressure adjustment system	1,382,901	23.3%
A/C	Remodeling A/C room's centrifugal nozzle to target spray nozzle	328,386	46.2%
Total		2,313,930	28.1%

Measures and Performances of Energy Conservation and Carbon Reduction


FENC continues to implement measures to conserve energy and reduce carbon emission. There were 101 related projects in 2017, mostly were about improvement of production procedures in aim to reduce consumption of natural gas.

Performance of Energy Conservation and Carbon Reduction Projects in 2017




Manufacturing Process Improvement

61 Change of production parameters, such as temperature, pressure, and operation time



Facility Improvement

17 Optimization, upgrade and replacement of air conditioning (A/C), air compressor, boiler, power generator, electric motor, lighting equipment and production procedure equipment, for example, frequency conversion, use of temperature-control devices and light-weighted equipment



Energy Management

23 Retrofitting frequency converters for air compressor, improving refrigeration system and adjusting the operating hours or ending the use of equipment

Performance of Energy Conservation and Carbon Reduction Projects in 2017

Type of Measures	Energy Saved (GJ)	GHG avoidance (t-CO ₂ e)	
		Scope 1	Scope 2
Manufacturing Process Improvement	932,876	38,228	59,855
Facility Improvement	137,298	6,985	9,346
Energy Management	351,868	22,828	16,509
Total	1,422,042	153,751	

Measures by Business	Energy Saved (GJ)	GHG avoidance (t-CO ₂ e)	
		Scope 1	Scope 2
Petrochemical	968,585	47,915	68,303
Polyester	102,855	4,458	3,294
Textile	350,602	15,667	14,114
Total	1,422,042	153,751	

- Note:
- The energy saved is calculated by comparing to energy consumptions of original facilities and production process prior to the execution of the projects.
 - Heating value is based on heating value coefficient of each production site.
 - GHG Emission Coefficient: for Taiwan, is based on "GHG Emission Coefficient Management Chart" version 6.0.3 published by Bureau of Energy, MOEA, and EPA. Electricity GHG Emission Coefficient is 0.529 t-CO₂e/1000 kWh, and steam emission coefficient is 0.1518t-CO₂e/t; Electricity GHG Emission Coefficient for Mainland China is based on local electricity network, other emission coefficients are calculated based on "General Principles for Calculation and Report (trial) of GHG Emission by China Chemical Production." Electricity GHG Emission Coefficient for Vietnam is calculated based on 0.57t-CO₂e/1000kWh.
 - Scope 1 Emissions include heavy oil, natural gas and CWM. Scope 2 emissions include purchased electricity.
 - GHG includes CO₂, CH₄, N₂O, PFCs, HFCs and SF₆.

Performance of Energy Conservation and Carbon Reduction Projects

Item	2015	2016	2017
Investments Amount (NT\$ 1,000)	311,165	384,486	239,134
Energy Conservation (NT\$ 1,000)	189,258	156,618	106,466
Energy Savings (GJ)	608,400	1,192,761	1,422,042
GHG avoidance(t-CO ₂ e)	74,022	166,252	153,751

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Energy Conservation Optimization of Compressed Air System at Polyester Plants in Taiwan

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Hsinpu Chemical Fiber Plant and Kuanyin Chemical Fiber Plant had old and inefficient air compressors, and changes were made to the plants' manufacturing structures. Therefore, an optimization project was launched for the air compressors in 2017. Each year, the optimization project is estimated to save electricity 4.2 million kWh, and NT\$9 million in electricity cost, and reduce GHG emissions by 2,222t-CO₂e. Items of optimization included:

Replacement	Replacing old centrifugal air compressors and water slurry air compressors with high-efficiency air compressors
Addition of variable frequency regulation	Added variable frequency regulation to oil-injected compressors
Manufacturing procedure adjustment	Rotary variable frequency compressor transfer system and reduced pressure operation
Divergence of high and low pressures	Added low-pressure centrifugal compressors

Note: Electricity GHG Emission Coefficient is 0.529 t-CO₂e/1,000 kWh.

Oriental Petrochemical (Taiwan) Energy Conservation Project through Lowering RPM of Centrifugal Air Compressor via Variable Frequency System

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Oriental Petrochemical (Taiwan) had long been limiting the opening of the inlet air flap to keep its high-speed (10,000 RPM) centrifugal air compressor at low load operation, resulting in low energy efficiency. Thus, assessment was made to widen the opening of the inlet air flap and add a variable frequency drive to lower the speed. After on-line testing, the current significantly lowered during operation, and each year, an estimated 2.5 million kWh are saved.

Oriental Petrochemical (Taiwan) Cooling Water Diverge

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After reviewing cooling water pipes, Oriental Petrochemical (Taiwan) found that there was room for cooling water pressure adjustment and also for the distance of pipe transportation and for production procedure. It has started to use both high and low pressure for water pressure to replace the previous 3 high power (1,090kW) water pumps in parallel operation and transport cooling water via single discharge pressure. Upon completion of the project, annual power consumption is projected to be reduced by 8 million kWh, saving NT\$17 million in electricity cost and reducing GHG emissions by 4,232t-CO₂e. Since the outcome of the project is outstanding, Oriental Petrochemical (Shanghai), Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, and Far Eastern Industries (Shanghai) all plan to introduce the project.

Note: Electricity GHG Emission Coefficient is 0.529 t-CO₂/1,000 kWh.

Far Eastern Industries (Shanghai) Extraction Tank Water-Cooled Heat Exchanger Replacement by Air-Cooled Heat Exchanger

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During the process of esterification that separates MEG and water mixtures, extraction tank is needed to condensate water vapor into liquid form for ensuing processing. This process requires pumping cooling water to the elevated extraction tank to cool down the water vapor, consuming large amount of power and water resource. Now the process has been changed to air-cooled technology in place of the water-cooled heat exchanger to reduce consumption of water and electricity. The new system was launched in July 2017, and by the end of December, 500,000 kl of cooling water and 240,000 kWh of power were saved.

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FAR EASTERN NEW CENTURY CORPORATION

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3.2.2 Material Management

FENC’s each production site carries out regular reviews to monitor the utilization of raw materials, introduce new technology and systems and enhance efficiency of raw material utilization. Also, through executing facility maintenance and evaluation of suppliers, the Company ensures the quality of materials and thus is able to improve yield rate to achieve the goal of reducing material usage.


FENC has also formulated related safety management regulations regarding hazardous materials, including safety guidelines, storage method, and emergency response measures for leaking and provide trainings for related personnel. In 2017, there was no incidence of leaking of oil, fuel or waste chemicals.

Raw Materials Management

Raw materials account for the largest share of production cost, and quality of raw materials is the key factors that affect the yield rate. Therefore, stable raw material supply and outstanding quality are our top priorities for raw material procurement.

In 2017, Oriental Petrochemical (Shanghai) implemented purification system improvement project to enhance recycling rate of PX; each year, recycled PX reduces the cost of procuring PX by NT\$4.53 million.

With highest standards in the industry, we strictly follow internal procurement management procedures and procurement regulations to select raw material suppliers that abide by laws and CSR regulations and high independent expert to carry out material examination. For supply stability, raw materials are provided by a number of suppliers, which ensures flexibility that helps us to react quickly to rapidly changing market of raw materials. At the same time, we study the operational situation of suppliers through interviews and market research, so we can make corresponding adjustments when a supplier cannot provide stable supply, ensuring production security and achieving the goal of sustainable management.

 Procurement of Major Raw Materials

Unit: 1,000 metric tons

Raw Materials	Sources	2015	2016	2017
PX	Japan, Korea, China, Singapore	905	990	1,035
PTA	Taiwan, China, Korea, Thailand, Japan	1,260	1,311	1,313
MEG and Bio-MEG	Saudi Arabia, Taiwan, Canada, India, China, Japan	506	520	521
Cotton (Including Organic Cotton and Recycled Cotton)	China, USA, Australia, Brazil, India	73	78	70

Notes: Some PTA are self-produced by Oriental Petrochemical (Taiwan) and Oriental Petrochemical (Shanghai) after procuring raw material PX. The remaining PTA is purchased externally.

We care about impact of raw material to the environment and support use of recycled material. We engage in development and use of biomass material and environmentally friendly plastics such as Bio-MEG, Bio-PTA, 100% Bio-PET, PLA. Besides, we also adopt environmentally friendly material such as organic cotton, BCI cotton, etc. to lower the negative impact to the environment and minimize influence of chemicals to human health. (Please refer to 2.2.3 Sustainable.)

Packaging Material Recycling and Management

FENC cares about packaging materials, using environmentally-friendly materials is our top priority. The Company also recycles and reuses packaging materials and avoid excessive packaging. In addition to doing our own recycling and reutilization, we also collaborate with recycling companies. Qualified contractors help to recycle packaging materials from domestic clients, sort the recycled materials, and sell back to us the packaging materials that are still in good conditions. Every month, we calculate the amount of packaging materials recycled, recycle rate, and achievement rate, and review items we fail to achieve. Through packaging materials recycling management mechanism, the Company has lowered amount of materials used and its cost, and at the same time, reduces waste materials.

FENC achieved 70% packaging materials recycling rate in 2017. We also recycle packaging materials of other companies in the industry to boost recycling rate to exceed 100%, such cases include plastic bases and plates, recycling rates of which are 200% and 103% respectively.

Furthermore, Far Eastern Dyeing and Finishing (Suzhou) replaced packaging paper boxes with recycled paper boxes, saving approximately NT\$3.42 million in cost annually; Hsinpu Chemical Fiber Plant switched the wooden pads provided to Japanese clients to recyclable plastic pads, reducing the consumption of wooden material.

3.2.3 Water Resources Management

FENC is deeply concerned with water resources management and continues to review efficiency of water withdrawal in its daily operation and activities. In addition to recording meter readings every day, the Company also assesses and reviews water withdrawal status and water conservation results in monthly meetings, and devises solutions and improvement plans, such as regular maintenance of facilities, adopting new manufacturing technology, recycling and reusing of wastewater, in order to establish comprehensive monitoring and control of water resources.

In addition to the development of the company and changes of the industry, FENC also takes into consideration land utilization needs of residents living in the surrounding areas for water resources planning to effectively manage supply and distribution of water resources. Our water usage and the ways we withdraw water did not bring negative impact to environment and local residents.

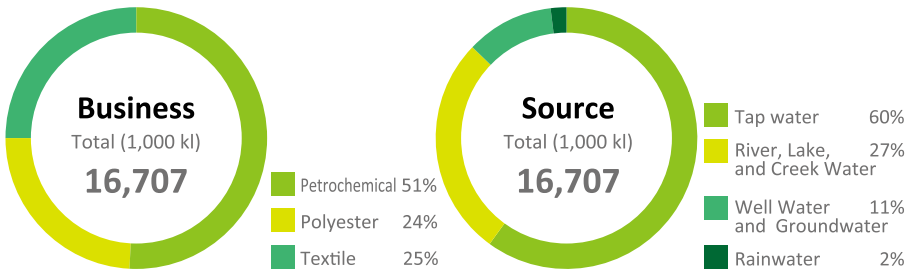
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FENC carries out manufacturing procedure water consumption planning and implements reclaimed water recycling to reduce water consumption and boost water usage efficiency. Far Eastern Industries (Shanghai) has conservation plans for short, mid and long terms. For short term, it's 80% reclaimed water; for mid and long terms, 100%. Far Eastern Dyeing & Finishing (Suzhou) plans to recycle 7,000 kiloliter/day of reclaimed water by 2019. In 2017, Oriental Petrochemical (Shanghai) began to reclaim the water discharged by the cooling tower, saving 182,000 kl of water annually. Far Eastern Industries (Shanghai) recycled staple fiber oily wastewater and saved 39,000 kl of water annually. Hsinpu Chemical Fiber Plant constructed cooling water and wastewater recycling facilities to recycle approximately 54,000 kl of water annually.

Water Withdrawal in 2017



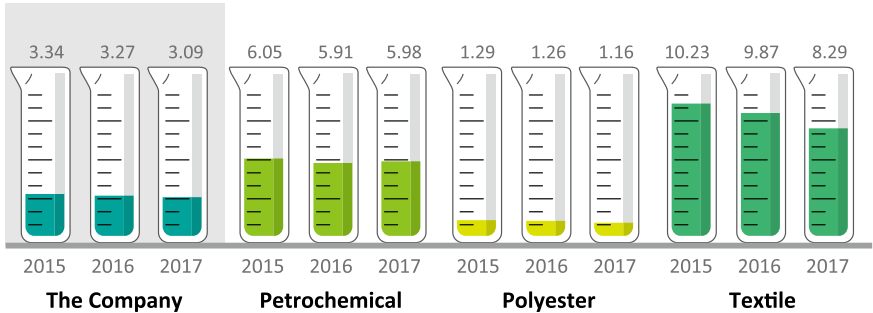
Water Withdrawal

Unit: 1,000 kl

Type	Petrochemical			Polyester			Textile			Total		
	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017
Tap Water	7,325	7,483	7,099	1,673	1,689	1,586	1,463	1,462	1,407	10,461	10,634	10,092
River, Lake, and Creek Water	898	1,406	1,316	955	840	880	2,844	2,792	2,388	4,697	5,038	4,584
Well Water and Groundwater	73	0	0	1,607	1,814	1,517	325	309	257	2,005	2,123	1,774
Rainwater	0	0	209	0	0	0	64	64	48	64	64	257
Total	8,296	8,889	8,624	4,235	4,343	3,983	4,696	4,627	4,100	17,227	17,859	16,707

Water Intensity

Unit: kl / metric ton of product



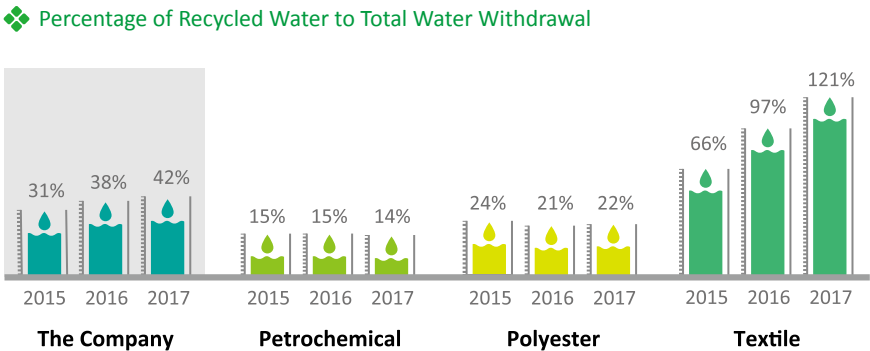
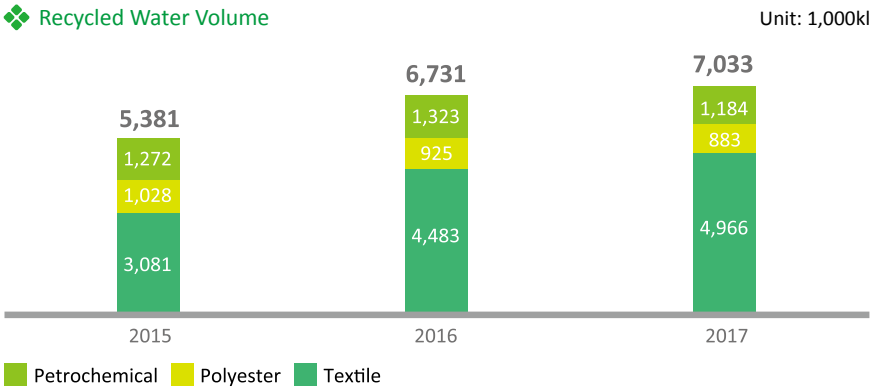
Note: Textile business does not include Far Eastern Apparel (Suzhou) Co. Ltd. and Far Eastern Apparel (Vietnam) Ltd.

Outcome of Water Saving Projects in 2017

Business	Investment (NT 1,000)	Water Saved (kl/year)	Percentage to Water Withdrawal
Petrochemical	9,576	230,515	3%
Polyester	12,165	130,064	3%
Textile	46,135	1,855,641	45%
The Company	67,876	2,216,220	13%

Note: Water saved is calculated by before the project with the same facility and same production procedure

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Water intensity has been decreasing over the years because FENC continues to improve manufacturing procedure, promote water recycling projects, and enhance management, reducing water withdrawal annually. The percentage of recycled water to total water withdrawal continues to grow each year, because Far Eastern Dyeing and Finishing (Suzhou) that has the largest water intensity continues to promote reclaimed water recycling project. Currently, the Company plans to promote related water recycling projects at other production sites.

Replacing Traditional Dyeing Machine with Low Liquor Ratio Dyeing Machine

6 CLEAN WATER AND SANITATION 7 AFFORDABLE AND CLEAN ENERGY 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Tradition fabric dyeing process consumes a large amount of water and discharges a large amount of wastewater that leads to environmental pollutions. FENC introduced water-free dyeing technology; however, the new dyes for this technology are only applicable to polyesters, rather than to all fabrics. Therefore, it is necessary for dye suppliers and brands to engage in long-term research and development together. FENC will continue to replace traditional liquor ratio dyeing machine with low liquor ratio dyeing machine as short- and mid-term solution, which is estimated to save 63% of water, 50% of electricity, 50% of steam, and 35% of dyeing agent, mitigating the environmental impact of the dyeing process. After replacing traditional liquor ratio dyeing machine with low liquor ratio dyeing machine in 2018, Far Eastern Dyeing and Finishing (Suzhou) and Kuan Yin Dyeing and Finishing Plant will both have low liquor ratio dyeing machines over 20% of all dyeing machines.

3.2.4 Outstanding Achievements





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Recognized as Water-Saving Enterprises and Awarded for Water-Saving Technological Improvement Projects

In 2017, Oriental Petrochemical (Shanghai) and Far Eastern Dyeing and Finishing (Suzhou) won the Water-Saving Enterprise honors from Shanghai City and Jiangsu Province respectively for outstanding water resource management performances. Furthermore, Far Eastern Dyeing and Finishing (Suzhou) was recognized for its water-saving technological improvement project by Suzhou City Water Resources Bureau.

Shanghai City launched the water resource management system of Water-saving Enterprise to promote the “prioritizing water-saving” principle. Through quantitative and qualitative assessments and promotion of wastewater utilization, the city government reviews all enterprises and encourages water saving efforts. Oriental Petrochemical (Shanghai) achieved water-saving goals through effective utilization of water resources, reaching 98% water reusing rate; the steam boiler can be 100% reused by the boiler after condensation through production system, and the reclaimed water facility can reduce the amount of discharge water. Also, rainwater recycling and reutilization reduces fresh water consumption. Jiangsu Province Water-Saving Enterprise review is an important foundation for the building of water-saving city. Far Eastern Dyeing and Finishing (Suzhou) was recognized as Water-Saving Enterprise, and won the Water-Saving Technological Improvement Project Award with its reclaimed water reuse project. Currently, the plant uses reclaimed water up to 6,000 kl/day.



Hukou Mill Won the MOEA's Excellent Corporation on GHG Voluntary Reduction Award

Hukou Mill won the MOEA's Excellent Corporation on GHG Voluntary Reduction Award in 2017 with 15 GHG reduction projects, investing approximately NT\$11 million and reducing 1,741 tons CO₂e/year; the benefit reached NT\$7.4 million as Hukou won the recognition of all sectors with such outstanding performance.

The key of Hukou Mill's GHG reduction is to enhance the efficiency of electricity consumption, including renewal of production and public facilities, introduction of most optimal feasible technology and establishment of management system. The automatic voltage regulation variable frequency energy-saving project achieved the best result. Negative voltage detectors detect the actual negative voltage at the end of pipeline, and transmits signal to digital controller that controls power output of facilities through variable frequency device, resolving the issue of energy waste due to actual negative voltage greater than minimum demand. The criteria of this award are actual performance of annual GHG reduction, total annual reduction and percentage to total plant emissions, innovativeness of reduction measure, return period of reduction measure, and GHG management system, where the first two criteria have the highest weight. This is a recognition of Hukou Mill's long-term commitment to GHG reduction.



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3.3 GHG Management

In response to the trend of global warming caused by GHGs that result from human activities, FENC has established GHG management mechanism, and all production sites will regularly discuss and implement related management measures. Furthermore, FENC has been a step ahead of the government and launched a GHG emission inventory and audit at all production sites, establishing a sound foundation for further reduction of GHG emission.

After the “Trial Procedures of Shanghai Municipality on Carbon Emission Administration” launched in 2013, carbon emissions quota has been imposed. Oriental Petrochemical (Shanghai) and Far Eastern Industries (Shanghai) formulated carbon emission reduction and monitoring measures to ensure compliance with government regulations; both subsidiaries also formulate annual energy-saving goals and amount of carbon emission reduction at the end of each year, follow up on monthly energy consumption and carbon emissions in monthly meetings, and propose suggestions for improvement, while also ensuring responsible divisions to monitor carbon price daily and report at monthly energy-saving meeting. At the end of 2017, Mainland China launched the national carbon trading market and included the power generation industry in the first phase; in addition to compiling reports in accordance to existing regulations in Shanghai, the aforementioned two subsidiaries are also required to compile annual carbon emissions report and emissions monitoring plan for 2016 and 2017 in accordance to the system of national carbon trading market.

Carbon Quotas and Emissions of Oriental Petrochemical (Shanghai) and Far Eastern Industries (Shanghai)

Unit: kt-CO₂e

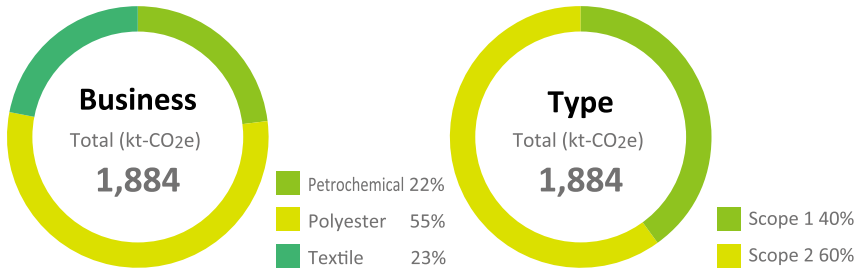
		2013	2014	2015	2016	2017
Oriental Petrochemical (Shanghai)	Quota	299	299	299	265	166
	Actual Emissions	298	291	261	167	161
Far Eastern Industries (Shanghai)	Quota	349	349	349	375	366
	Actual Emissions	368	399	393	319	328

Both Hsinpu Chemical Fiber Plant and Kuanyin Chemical Fiber Plant set the emission reduction goal at 2% per year. Kuanyin Dyeing and Finishing Plant’s goal is at 2.5% per year. Far Eastern Industries (Shanghai)’s goal is at 3% per year. Meanwhile, the plants have actively participated in local government’s regulation amendment to demonstrate how much we cared about the issue.

3.3.1 GHG Inventory

In order to be in full control on the status of GHG emission for the formulation of GHG reduction plan, FENC conducted an inventory on GHG emissions at all production sites. All production sites must conform to ISO 14064-1 or local official standards and conduct an inventory and calculation of GHG emissions, and must complete third party auditing every 3 years. Currently, all production sites have completed GHG emission audit by the third party. Through establishing inventory data, FENC can set reduction goals and execution priorities, so as to ultimately reduce GHG emissions for mitigation of climate change.

GHG Emission in 2017



GHG Emission

Unit: kt-CO₂e

Type	Petrochemical			Polyester			Textile			Total		
	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017
Scope 1	326	242	246	530	442	435	68	69	70	924	753	751
Scope 2	158	176	175	558	579	588	377	390	370	1,093	1,145	1,133
Biofuel CO ₂ emission	20	20	18	0	0	0	0	0	0	20	20	18
Total Emission	484	418	421	1,088	1,021	1,023	445	459	440	2,017	1,898	1,884

Note:

1. Scope 1: direct emission includes CO₂, CH₄, N₂O, PFCs, HFCs and SF₆; scope 2 indirect emission includes CO₂, CH₄, and N₂O. Total emission does not include CO₂ emission from biofuel.

2. Oriental Petrochemical (Shanghai) and Far Eastern Industries (Shanghai) conform to SH/MRV-004-2012, which only CO₂ emission is calculated.

3. Production sites which have completed standards (e.g. ISO 14064-1) for GHG inventories in 2015 included: Oriental Petrochemical (Taiwan), Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, Far Eastern Fibertech, Neili Texturizing Plant, Hukou Mill, Oriental Petrochemical (Shanghai), Far Eastern Industries (Shanghai), and Wuhan Far Eastern New Material.

4. Production sites which have completed standards (e.g. ISO 14064-1) for GHG inventories in 2016 included: Oriental Petrochemical (Taiwan), Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, Oriental Petrochemical (Shanghai) and Far Eastern Industries (Shanghai).

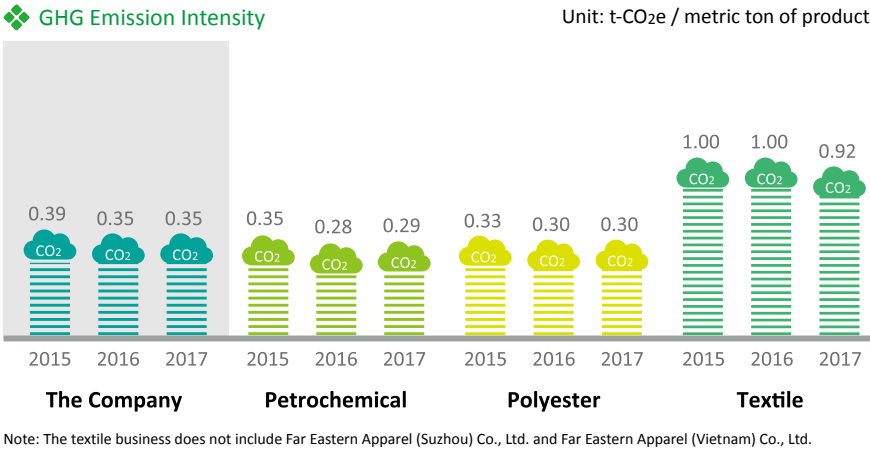
5. Production sites which have completed or were in progress of standards (e.g. ISO 14064-1) for GHG inventories in 2017 included: Oriental Petrochemical (Taiwan), Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, Kuanyin Dyeing and Finishing Plant, Oriental Petrochemical (Shanghai), Far Eastern Industries (Shanghai), Far Eastern Industries (Wuxi), Oriental Industries (Suzhou), Far Eastern Dyeing & Finishing (Suzhou), Far Eastern Apparel (Suzhou) and Far Eastern Apparel (Vietnam).

6. The total emission for FENC’s 5 production sites in Taiwan is 743 kt-CO₂e.

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Implementation of GHG Inventory Scope 3: Employee Business Trip by Air Travel and Waste Processing

To implement GHG management, FENC has launched employee business trip by air travel and waste processing inventories. For employee business trip inventory, all employees of production sites in Taiwan and Mainland China are included. The calculation of GHG emission is using the air travel carbon calculator implemented by International Civil Aviation Organization, ICAO, adding up all the mileage of employees' business travels. The employee business trip by air travel carbon emissions of 2017 was 838 tons CO₂e. Waste processing inventory includes all waste removed from all production sites in Taiwan, calculating ton-kilometer of waste removal based on carbon footprint emissions coefficient announced by EPA. The carbon emissions of waste processing in 2017 was 2,770 tons CO₂e.

The total GHG emissions and intensity in 2017 remained the same as 2016. The textile business GHG emissions and intensity decreased by 4% and 8% respectively compared to 2016, because Far Eastern Industries (Wuxi) and Far Eastern Dyeing and Finishing (Suzhou) have implemented energy-saving technological improvement and manufacturing procedure optimization, reducing GHG emissions and intensity.

3.3.2 Use of Renewable Energy

Solar power is an environmental-friendly and sustainable renewable energy in that it never runs out. To increase the use of green energy and reduce GHG emissions and environmental impact, solar power stations at Oriental Industries (Suzhou), Far Eastern Dyeing and Finishing (Suzhou), and Far Eastern Industries (Shanghai) were launched in August 2016 in order to further monitor the power generation efficiency of solar stations. In 2017, AISolar management platform was established, and FENC is currently planning the second phase of solar power construction at the aforementioned three sites and first phase solar power station construction at Far Eastern Industries (Wuxi).

To mitigate the risk of climate change resulted from GHG emissions, Taoyuan City Government launched the "Autonomous Regulations on Developing Taoyuan City as a Low-Carbon-Emission and Green City," which requires those with a certain level of power consumption to establish renewable energy facilities. The Energy Task Force investigated the green energy insufficiency at production sites in Kuanyin District, and proposed coping measures, planning to launch solar power project at Oriental Petrochemical (Taiwan) in 2018.

Establishment of AISolar Management Platform for Solar Power Stations

To maintain normal efficiency of solar power station requires manual maintenance and inspection. However, inspection points are often on rooftop, making inspections more dangerous. Usually, solar power station information provided by general suppliers only present an overview on the operation, and the operator cannot gain access to the information of a single panel.

Far Eastern Industries (Shanghai), Oriental Industries (Suzhou), and FENC Information and Technology Division established the digitalized management platform AISolar, to collect and organize big data of solar power stations, and establish various models through statistics and deep learning, to produce statistical analysis results for onsite personnel to use for management, reducing the need for onsite inspections and workplace safety risks. The results of data analysis can also be used to timely detect malfunctions and enhance efficiency of facilities. AISolar management platform is also in construction for Far Eastern Dyeing and Finishing (Suzhou), and is projected to go online in 2018.

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Advocating Renewable Energy



To support the development of renewable energy in Taiwan, FENC voluntarily purchased green power in 2015, purchasing a total of 800,000 kWh of power from 2015 to 2017, showing our support for local renewable energy, such as wind power, solar power, and geothermal power and contributing to environmental protection. Since the opening of Taiwan Renewable Energy Certificate (T-REC) trading in 2017, FENC has planned to purchase T-RECs in 2018, and have signed contract with ITRI Southern Branch's Liujia Office for 2018 T-RECs supply. FENC also continues to negotiate with qualified vendors. Oriental Petrochemical (Taiwan) will also apply for T-RECs after completion of its solar power station.



3.4 Pollution Prevention and Waste Management

FENC complies with regulations of “CSR Policy” and adopts preventive measures for pollution, focusing on handling of waste materials and avoiding air, water, soil pollutions. We prioritize the consideration of environmental risks in all production processes and strive to minimize pollution. We also faithfully report amounts of wastewater, emissions and waste materials as well as abide by all related laws and regulations.

Awareness for environmental protection is on the rise in recent years, and related laws have been rapidly promulgated. In 2018, Mainland China changes from “charges for disposing pollutants” to “Environmental Protection Tax,” imposing tax on pollutants including air pollutants, water pollutants, solid wastes and noises. Therefore, environmental protection expenses of production sites in Mainland China are expected to increase in 2018. To enhance environmental protection outcome and comply with laws and regulations, FENC has established environmental protection task force and allocated environmental protection project budget NT\$1 billion, reviewing policies and performances of water resources management, air pollution prevention, and waste management of all production sites, and carrying out necessary addition of replacement of related facilities based on the review results.


3.4.1 Air Pollutant Discharge Management

Through pollution prevention facilities, FENC processes pollutants produced through manufacturing processes and continues to review existing facilities and production processes to find areas for improvement. We also conduct periodical examination on boilers and pollutant emitting channels to make sure that all emissions are within the limits of related regulations.



Winter is especially vulnerable to smog, and Oriental Petrochemical (Shanghai) and Far Eastern Industries (Shanghai) have been scheduling annual maintenance in November as requested by Shanghai City environmental protection agency; on days of severe pollution, the plants will halt operations that will generate aeolian dust and reduce transportation vehicles at the plants by half, in order to reduce pollutants.

In response to Mainland China’s environmental protection tax beginning in 2018, all production sites have implemented related measures, including establishment of environmental protection task force to study influences of laws and coping measures; Oriental Industries (Suzhou) has installed regenerative thermal oxidizer, which can convert VOC in tail gas into water and CO₂, achieving a removal rate of approximately 95%. One such facility has been installed in 2017, and 4 more will be installed in 2018; Oriental Petrochemical (Shanghai) has installed monitoring devices on exhaust pipes and boiler pipes to ensure stable emissions that meet the terms of tax reduction and exemption.

In 2017, Far Eastern Fibertech changed two oil-burning boilers to gas-fired boilers; in 2018, Kuanyin Chemical Fiber Plant plans to improve NO_x prevention facilities, and it is estimated to reduce NO_x emissions by 60%. Hsinpu Chemical Fiber Plant will also introduce the facility. Hukou Mill plans to replace oil-burning boiler with electric yarn humidification machine to provide steam, achieving 0 emissions of NO_x and SO_x.



Regenerative Thermal Oxidizer



Mainland China’s environmental laws and regulations are becoming increasingly strict, setting higher standards for tail gas emissions. Oriental Industries (Suzhou) originally adopted the washing method for processing tail gas of dipping machine, reducing approximately 60% of VOC; after switching to regenerative thermal oxidizer, VOC can be reduced by over 95%, while also recollecting tail gas heat by over 50% and decreasing the temperature of tail gas emissions to less than 80°C.

It is an innovation in the industry to combine dipping machine with regenerative thermal oxidizer, and the process must overcome the problems of controlling powder particles, avoiding condensation of tail gas materials, and balancing the use of recycled heat; the system also needed to be installed in existing facility piping and space, while maintaining the operation of original washing facility during the construction. After the installation, the quality of tail gas emissions has been enhanced, while odor in air improved, eliminating the problems of water consumption, wastewater discharge, and sludge processing of the original washing method. Recycled heat also reduced natural gas consumption by 20%. Furthermore, the facility is highly automated, requiring minimal manpower for maintenance.

Total air pollutant emission in 2017 decreased significantly by 31% compared to five years ago; however, it slightly increased by 2.9% compared to 2016. It was mainly because that although chemical fiber plants greatly reduced pollutants by half, it could not make up for the increase in NO_x emissions. FENC will continue to improve manufacturing procedures and install discharging and processing facilities to reduce air pollutant emission.

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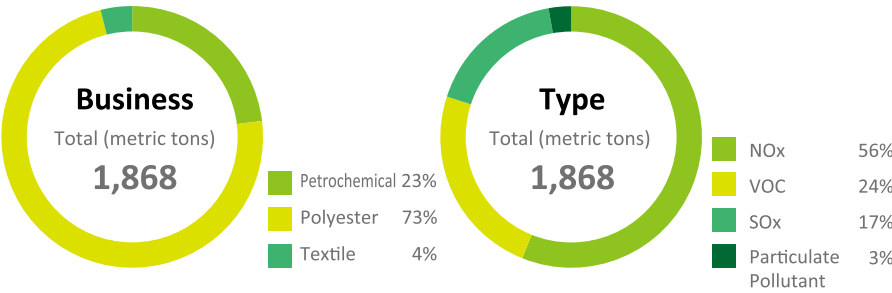
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Air Pollution Emission in 2017



Air Pollution Emission

Unit: metric tons

Category	Petrochemical			Polyester			Textile			Total		
	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017
NOx	493	167	170	811	750	854	32	34	26	1,336	951	1,050
SOx	187	123	152	191	154	153	8	7	6	386	284	311
VOC	198	88	101	177	339	324	15	16	20	390	443	445
Particulate Pollutant	3	2	3	60	113	38	23	23	21	86	138	62
Total	881	380	426	1,240	1,356	1,369	77	80	73	2,198	1,816	1,868

Note:

1. Only gases emitted are listed.

2. Particulate matter pollutants include PM, dust and smog.

3. The data includes four types: actual measured values, annualized sample values, calculate values, and permitted amounts of emissions. Actual measured values come from Hsinpu Chemical Fiber Plant (NOx, SOx, particulate pollutant), Kuanyin Chemical Fiber Plant (NOx, SOx, particulate pollutant), Far Eastern Fibertech, Oriental Petrochemical (Shanghai), Wuhan Far Eastern New Material Ltd., Far Eastern Industries (Wuxi), Far Eastern Dyeing & Finishing (Suzhou), Far Eastern Apparel (Suzhou); annualized sample values are from Kuanyin Dyeing and Finishing Plant, Far Eastern Industries (Shanghai), Far Eastern Apparel (Vietnam) Ltd.; calculated values are from Oriental Petrochemical (Taiwan), Hsinpu Chemical Fiber Plant (VOC), Kuanyin Chemical Fiber Plant (VOC), Hukou Mill, Neili Texturizing Plant, Far Eastern Industries (Suzhou); permitted amounts of emissions are from Oriental Industries (Suzhou).

3.4.2 Wastewater Discharge Management

FENC has formulated comprehensive regulations and procedures for wastewater treatment. Sewage is treated prior to discharge and quality of wastewater is regularly checked to ensure compliance with government regulations. The Company has also obtained enterprise sewage discharge permit in accordance with related regulations, and discharges sewage into the permitted water bodies. Furthermore, we have enhanced wastewater recycling and increased volume of wastewater recycled to reduce volume of sewage discharged to realize our goal of recycle and reuse. FENC's discharged wastewater is not reused by any other organizations. There is no leakage reported in 2017.

Volume of Sewage Discharged and Location

Unit: 1,000kl

Location	Production Site	Volume of Sewage			Sewage Treatment Method and Discharge Location
		2015	2016	2017	
Taiwan	Hsinpu Chemical Fiber Plant	1,046	1,062	907	Wastewater is bioprocessed to meet local effluent standards before being discharged into the Fengshan River.
	Kuanyin Chemical Fiber Plant	382	434	394	Wastewater is bioprocessed to meet local effluent standards before being discharged into the Shulin River.
	Kuanyin Dyeing and Finishing Plant	524	558	502	Wastewater is processed at onsite wastewater treatment plant before being discharged to the sewage treatment plant of the industrial park.
	Neili Texturizing Plant	103	110	63	Discharge directly into sewage system upon permission
	Hukou Mill	98	74	72	Wastewater is Bioprocessed onsite (oxidation and aeration) before being discharged into the Desheng River.
	Oriental Petrochemical (Taiwan)	2,358	2,579	2,185	Wastewater is Bioprocessed (deep-well aeration and anaerobic treatment) to meet local effluent standards before being discharged into the Shulin River.
	Far Eastern Fibertech	97	99	98	Wastewater from manufacturing process and domestic wastewater are bioprocessed (contact oxidation) and undergoes the precipitation process to meet local effluent standards before being discharged into the Shulin River.
China	Oriental Petrochemical (Shanghai)	1,348	1,347	1,423	Wastewater from manufacturing process, domestic sewage, and lab wastewater are all discharged to sewage treatment plant. Treated wastewater is recycled at reclaimed water recycling unit; final wastewater is discharged through underground sewage system to sewage treatment plant in eastern Fengxian District before being discharged into sea.
	Far Eastern Industries (Shanghai)	483	425	437	Wastewater is treated at the plant's wastewater treatment station before being discharged to city wastewater treatment plant.
	Wuhan Far Eastern New Material	12	12	13	Directly discharged into Wuhan City's sewage system
	Oriental Industries (Suzhou)	140	138	239	Domestic wastewater is permitted to be directly discharged into the city's sewage network for centralized management upon meeting local effluent standards.
	Far Eastern Industries (Suzhou)	9	11	25	Wastewater is discharged into sewage treatment plant; wastewater is treated to meet local effluent standards before being discharged into the Grand Canal.
	Far Eastern Industries (Wuxi)	4	4	4	Wastewater is directly discharged into Wuxi's sewage system.
	Far Eastern Dyeing & Finishing (Suzhou)	2,663	2,474	1,965	Wastewater treatment is commissioned to national sewage treatment plant.
Vietnam	Far Eastern Apparel (Suzhou)	129	93	88	Wastewater is treated at the plant to meet effluent standards before being discharged into city sewage network. The wastewater is ultimately discharged to sewage treatment plant in the south of the city.
	Far Eastern Apparel (Vietnam)	69	76	71	Wastewater is discharged to the sewage process center of the industrial area
	Total	9,465	9,496	8,486	

Note:

1. The differences between sewage discharge and water withdrawal come from evaporation at cooling tower. Small volume of water is lost through related manufacturing processes.

2. The discharged wastewater poses no obvious impact to waterbodies and related habitats.

3. Wastewater at Oriental Petrochemical (Taiwan), Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, Far Eastern Fibertech, Oriental Petrochemical (Shanghai), Far Eastern Industries (Shanghai), and Oriental Industries (Suzhou) include wastewater from manufacturing process, domestic wastewater, and lab wastewater; wastewater at Kuanyin Dyeing and Finishing, Far Eastern Industries (Suzhou), and Far Eastern Dyeing and Finishing (Suzhou) include wastewater from manufacturing process and domestic wastewater; wastewater at Neili Texturizing Plant, Hukou Mill, Wuhan Far Eastern New Material, Far Eastern Industries (Wuxi), Far Eastern Apparel (Suzhou) and Far Eastern Apparel (Vietnam) include only domestic wastewater.

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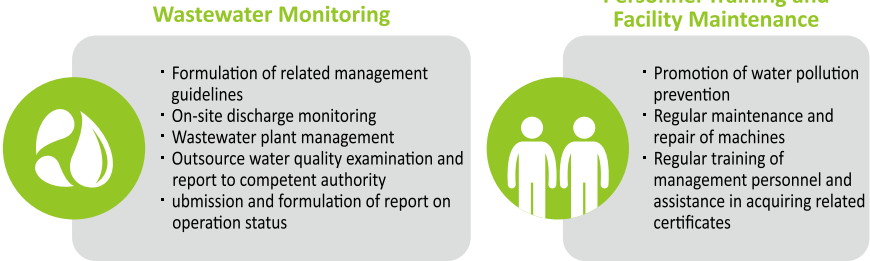
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Sewage Management Measures



Staple Fiber Waste Water Reduction Project

Far Eastern Industries (Shanghai) staple fiber business launched oil-water separation system and bio-processible project in 2017. The oil-water separation system separates oily water into pure water and concentrated oily water, and the pure water can be recycled together with cooling water, reducing amount of discharged wastewater. Wastewater processing method changed from air floatation to anaerobic treatment, which can effectively reduce sludge. The system has been modified and tested, beginning to show significant effect in September 2017. Each year, the system reduces 29,700 kl of discharged wastewater, reduces 61,380 kl of water consumption, and reduces 100 tons of sludge.

3.4.3 Waste Management

The objective of FENC's waste management is to increase the rates of reusing and recycling waste materials produced through the production process, reducing the amount of waste from the source. All handling and removal of waste materials are in compliance with related laws and regulations, permits have been applied and obtained, and all amounts are reported. Qualified contractors are employed to remove the waste materials. The governance principle of waste management is "categorization to reduces garbage; turn waste into valuables, turn valuables into something precious." All production units follow categorization of wastes strictly, and valuable wastes are sold through procurement department for external organizations to recycle and reuse. Qualified contractors are commissioned for the removal of invaluable wastes. We strictly review qualification of contractors. In addition to GPS tracking, FENC also conducts inspections on removal and transportation of waste materials from time to time.

Hazardous business wastes produced through the manufacturing process are collected and stored at designated sites before qualified contractors are commissioned for removal and transportation. Ad hoc inspections are conducted by having personnel follow the contractors for the removal and transportation of waste materials to ensure contractors comply with all regulations.

Taiwan's Waste Disposal Act was amended in 2017, which stipulates that when an enterprise commissions clearance and disposal of its waste, it shall take up joint liability with the commissioned agency for the clearance of the waste. Due to this amendment, all production sites in Taiwan amended internal waste management procedures, adding clauses on commissioned enterprises' responsibilities in waste removal contracts, while also increasing internal patrol and inspection and external audit, including requirement for commissioned enterprises to provide documentations, interview with commissioned enterprise at least once a year to examine management, irregular check at processing facilities, and random access to transportation record of waste materials upon leaving the plant, to ensure compliance with laws and regulations.

With rising cost of waste processing and low recycling price, companies are less willing to recycle materials. Through introduction of new manufacturing procedures and facilities, FENC strives to reduce waste at the source and implement waste sorting and categorization, to limit generation of waste. FENC also joins forces with research institutes to develop other usage for wastes that cannot be remanufactured.

Sludge Drying System

Sludge drying system dries sludge with steam, decreasing the water content in sludge to reduce carbon emissions from transporting sludge and processing cost. Hsinpu Chemical Fiber Plant first installed sludge-drying system in 2015. As the outcome is outstanding, Oriental Industries (Suzhou) and Kuanyin Chemical Fiber Plant also adopted sludge-drying system in 2016 and 2017. Hsinpu Chemical Fiber Plant and Kuanyin Chemical Fiber Plant plan to install upflow anaerobic sludge bed (UASB) in 2018 to treat high-concentration wastewater, further reducing amount of sludge generated.

Category	Oriental Industries (Suzhou)	Hsinpu Chemical Fiber Plant	Kuanyin Chemical Fiber Plant
Water Content of Sludge (Before Installation)	80%	85%	85%
Water Content of Sludge (After Installation)	40%	25-30%	35%
Cost Saved Annually	NT\$ 5.4million	NT\$ 5.0million	NT\$ 1.8million
Future Plan	Water Content of Sludge reduced to 15%	Installation of UASB	Installation of UASB

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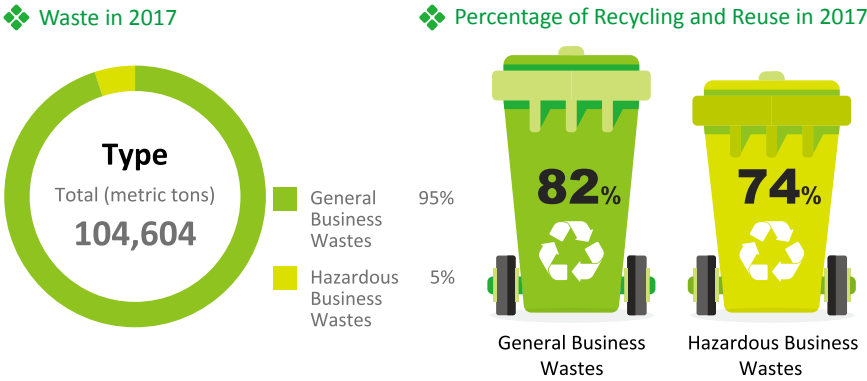


Hukou Mill Recycles LED Light to Love the Earth through Environmental Protection




Hukou Mill emphasizes energy saving and environmental protection, and continues to replace energy-saving lights. However, currently there are not recycling companies that can recycle used LED light, and LED light tubes cannot be processed as wastes. Therefore, Hukou Mill conducts manual recycling procedure, including disassembling, separating, and sorting LED lights, to disassemble light tubes into aluminum strip, plastic, circuit board, and screw, for recycling. Approximately 4,000 LED light tubes were disassembled in 2017.





In 2017, total waste volume increased by 12% compared to 2016. This was due to bad sales of wastes at Hsinpu Chemical Fiber Plant in 2016, leaving behind some wastes in storage to be sold in 2017; also, Far Eastern Dyeing and Finishing (Suzhou) was required to construct wastewater treatment facility by environmental protection regulations, resulting in increase of sludge. Furthermore, amount of sludge that was incinerated increased, resulting in share of recycled wastes to total volume of wastes dropping 4 points from the year before.



Data of Waste

Unit: metric tons

			2015	2016	2017
General Business Wastes	Manufacturing Process Wastes	Recycling and Reuse	84,934	75,263	79,140
		Energy Uses	214	207	345
		Incineration	4,649	8,854	13,689
		Landfilling	3,328	339	475
		Other Treatment Methods	1,003	871	1,151
		Subtotal	94,128	85,534	94,800
	Domestic Wastes	Recycling and Reuse	2,601	2,417	2,397
		Energy Uses	340	340	340
		Incineration	1,088	1,102	1,369
		Landfilling	341	365	352
		Other Treatment Methods	110	110	110
		Subtotal	4,480	4,334	4,568
	Total General Business Wastes		98,608	89,868	99,368
Hazardous Business Wastes	Recycling and Reuse		3,957	2,538	3,860
	Energy Uses		0	0	0
	Incineration		1,390	872	1,267
	Landfilling		0	0	0
	Other Treatment Methods		62	66	109
	Total Hazardous Business Wastes		5,409	3,476	5,236
Total			104,017	93,344	104,604

Note: Recycling and reuse includes recycling and reuse by the plants, selling of waste materials, and recycling by commissioned contractors.

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3.5 Green Production Process

FENC strives to do its part for environmental sustainability, actively reducing amount of energy consumed in production processes. The Company has also set the long-term goal of zero waste production and responds to UN's SDG12, responsible consumption and production, to ensure a sustainable production model and steadily proceeding into green industry.

Oriental Petrochemical (Taiwan) New Energy-Saving and Carbon-Reducing Manufacturing Procedure

Oriental Petrochemical (Taiwan) adopts the latest PTA manufacturing procedure, and sets up a third production line. Related manufacturing procedures adopt BAT and BACT to meet the comprehensive execution objectives of energy and water conservation and minimization of pollutant emissions. Trial production was officially launched on November 23, 2017.



Item	Benefit
Energy-Saving and Carbon-Reducing Manufacturing Procedure	• GHG emissions of unit of capacity reduced to 0.25 t-CO ₂ e/ton PTA, a 48% decrease.
Air Pollution Prevention	• Unit SO _x emissions reduced to 0.001kg/ton PTA, a 99% reduction. • Unit NO _x emissions reduced to 0.124kg/ton PTA, a 69% decrease.
Recycle and Reuse of Water Resources	• Recycle rate of wastewater from manufacturing process estimated to exceed 60%.

3.6 Neighboring Community Communication and Response

Most of FENC's production sites are located in industrial parks. Only a handful of production sites are located in residential areas, such as Hsinpu Chemical Fiber Plant and Hukou Mill and Far Eastern Industries (Suzhou). We proactively communicate with neighboring residents and listen to their opinions about how to improve the environment. In our opinion, the neighborhood around the plant is in close relationship with local residents' living. We would like to upgrade the environment to maintain amiable relationship and increase work efficiency so that our production activity can proceed with ease.

In 2017, to reduce the impact of noises on neighboring residents, Far Eastern Industries (Suzhou) carried out improvement measures for noise sources along the streets, such as addition of soundproof room, vehicles transporting goods only during the day to go along with residents' routine, pipeline transportation switching to manual packaging during night time. No further complaints were received after the implementation of the improvement measures. To ensure noise level in compliance with laws and regulations, and eliminate residents' speculations, Oriental Petrochemical (Shanghai) stopped self-monitoring, and commissioned a professional third party for noise level monitoring.

Furthermore, each production site has its own emergency response procedure and carries out regular drills to minimize the impact on surrounding communities in the event of emergency. Communities around production sites can submit appeals or complaints through official channels. Regarding the channels and ways of communication between production sites and residents in nearby communities, please refer to 1.4.4 Grievance Procedures.



A muffler installed for the exhaust port



Noise monitoring