

ORIENTAL UNION CHEMICAL CORPORATION

The 2017 Corporate Social Responsibility Report





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EDITING PRINCIPLE

Welcome to the Corporate Social Responsibility (CSR) Report of the Oriental Union Chemical Corporation (stock code: 1710, hereinafter referred to as the "OUCC") published for the fourth time in 2017. We would like all the stakeholders that care about us to better understand the challenges of sustainable development faced by the chemical industry, as well as our efforts and persistence in response to the development of green chemistry and the realization of sustainable action in the chemical industry (performance management, integrity governance, product research & develop, and sustainability risk) through the information disclosed in the CSR report..

This CSR Report is issued in both Chinese and English versions. You are welcome to download them from our **official website: <http://www.oucc.com.tw/>**

Reporting Period and Organizational Boundaries

The CSR Report discloses the CSR management policy, material topics, responses, and action performance of the OUCC in 2017 (Jan. 1 to Dec. 31). Some issues that go back to 2015 or 2016 have been included to ensure a comprehensive report of project performance and outcome.

To properly demonstrate the effort of OUCC in CSR, the content and data of this CSR report includes only the performance data of the OUCC Headquarters and the Linyuan Plant. The subsidiaries listed in the consolidated financial statement of 2017 included Tong Fu Investment Corp., Pacific Petrochemical (Holding) Ltd., OUCC (Bermuda) Holding Ltd., Oriental Petrochemical (Yangzhou) Corp., Far Eastern Union Petrochemical (Yangzhou) Ltd., Tong Da Gas Industries (Yangzhou) Limited.

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Writing Reference and Guarantee

This CSR Report is prepared in accordance with the "Global Reporting Initiative (GRI) Standards guidelines and AA1000 (2008) standards; also, verified by SGS-Taiwan in conformity with the GRI Standards (Core Option) and AA1000 AS Type I intermediate assurance level.

The CSR Report relevant information and data are composed and provided by the OUCC Taipei Headquarters and Linyuan Plant to ensure it meets the needs of the CSR report information. The relevant information, data, review, and data verification are documented, verified, and approved by each department head. The final issues and information are reviewed and authorized by the directors and top management.

Feedback

If you have any comments on the "Oriental Union Chemical Corporation 2017 Corporate Social Responsibility Report," you are invited to forward your valuable comments and advice.

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ABOUT US

OUCC was founded in 1975 and traded on the Taiwan Stock Exchange in 1987 with a capital stock of NT\$8.85 billion. The OUCC is engaged in professional petrochemical business within the Far Eastern Group. The OUCC has produced ethylene oxide (EO) and ethylene glycol (EG) related products for more than four decades and has plants in Kaohsiung Linyuan and China Yangzhou. The Linyuan Plant has an annual output of 360,000 tons of ethylene oxide (EO) and 300,000 tons of ethylene glycol (EG). The invested production plant in Yangzhou has an annual output of 400,000 tons of ethylene oxide (EO) and 500,000 tons of ethylene glycol (EG), 40,000 tons of ethanolamine (EA), and 60,000 tons of ethylene oxide derivative specialty chemicals (EOD).

Sustainable Development Philosophy of OUCC

In response to the changes in the global petrochemical market, with "sustainable management" as the goal, OUCC developed strategies for sustainability and set up milestones to implement short-, medium- and long-term activities to reduce the impact of sustainable business risks. Therefore, in respect of operations in the industry, OUCC not only established the expansion plan, but also never ceased its effort to ensure the stable supply sources of low-cost raw materials. Meanwhile, through the research and development of innovation core capabilities, it continuously developed a variety of high value-added specialty chemicals and materials while exploring new markets to mitigate the impacts of business fluctuations in bulk petrochemical raw materials on the company's operations, aiming to steady the growth of OUCC in a world of fierce competition coming forward.

In addition to pursuing economic stability, we value the importance of industrial safety, health, and environmental protection and substantiate management system compliance and efficient on-the-job training. In terms of industrial safety, the OUCC has continued implementation of the "OHSAS-18001 Occupational Safety Management System" and has completed the various safety requirements. The Kaohsiung Linyuan Plant was awarded the Certificate of "Three Million Accident-Free Working Hours Record" by the Occupational Safety & Health Administration, Ministry of Labor.

In terms of environmental sanitation, the OUCC has continued implementing the "ISO-14001 Environmental Management System", the company has established a pollution prevention system improvement plan to improve the effectiveness of pollution prevention and reduce the risk of emissions. We have also established a good and healthy working environment and were awarded "Health Promotion Label", the healthy workplace certification by the Health Promotion Administration of the Ministry of Health & Welfare.



Oriental Union Chemical Corporation

Tsai, Hsi-Chin

President

SUSTAINABLE COMMITMENT

Since its establishment in 1975, OUCC has always been committed to the industry and has long been committed to "Integrity governance, stability and reliability, and corporate responsibility" as core values of the OUCC towards sustainable development. In addition to pursuing excellent economic performance, the company strives to protect the environment and focus on corporate governance to fulfill its responsibility as a corporate citizen.

As for the industrial development, OUCC actively seeks industrial transformation in response to the fast-changing market, and continues to develop high-value, high-tech and green products to enhance the added value of products, expand the product line scale and profit growth. OUCC understands that "work safety, sanitation and environmental protection" is the perpetual foundation of the chemical industry. Therefore, we have set the goal of "zero accident, zero injury, zero pollution" and introduced the international ISO-14001 environmental management system as well as OHSAS-18001 occupational health and safety management certifications to continuously improve and strengthen our sustainable actions in a circular quality management manner.

OUCC completed the "Hazard and Operability Study" (HAZOP) at the time of construction of each plant, and the production process of the relevant process was reviewed by the "Management of Change" (MOC) to implement plant safety. In addition, proper staff training was established and safety awareness was deeply embedded in each plant. In 2017, Linyuan Plant was awarded the "2.95 million Disaster-free Working Hours Record" issued by the Ministry of Labor to demonstrate a concrete presentation of OUCC's safe and healthy workplace environment.

Meanwhile, we also actively support and respond to the United Nations Sustainable Development Goals (UN SDGs). With the goal of "Green OUCC", we will start with the equipment investment and production process improvement. In addition to improving energy efficiency and strengthening anti-pollution equipment, we also plan to build the discharge water recovery system, which is expected to recover 70% of the released water from the entire plant to properly reuse precious water resources and to put the green production into effect.

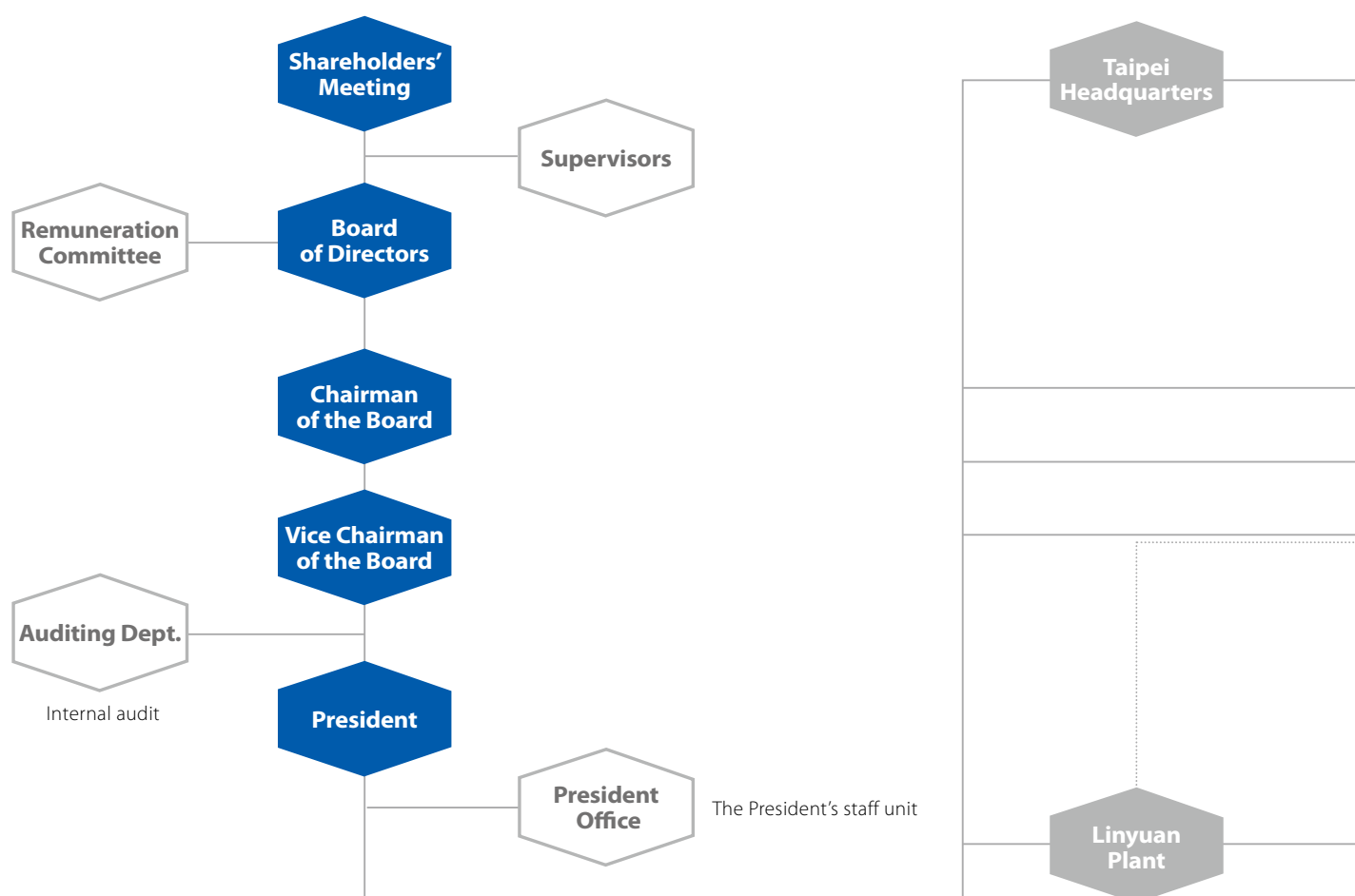
In terms of carbon reduction, exhaust gas recovery and reuse system (ERU) was set up to effectively recover ethylene and carbon dioxide from the exhaust gas. In 2018, we set a specific target of "reducing 120,000 metric tons of carbon dioxide" as a benchmark of carbon reduction actions. All the measures demonstrate the determination of OUCC on the issue of sustainable environment.

Despite the arduous challenges toward the path of sustainability, we still adhere to the core spirit of the corporate, listen to the voice of stakeholders, actively engage in corporate transformation with innovative thinking. Furthermore, we will integrate human and material resources, and invest in research and development to expand the core raw material from EO to PO, adding high value to the EO derivatives to be used in high-grade polyurethane (PU), optical coatings, electronic process additives and new surfactants, gradually aiming towards the provision of high-tech, high-value green materials multiple products for specialty chemicals. While continuing to expand our operation scale and growth steadily, OUCC will continue to uphold the core value of corporate responsibility, provide sustainable improvement solutions for the society, and create sustainable worth.

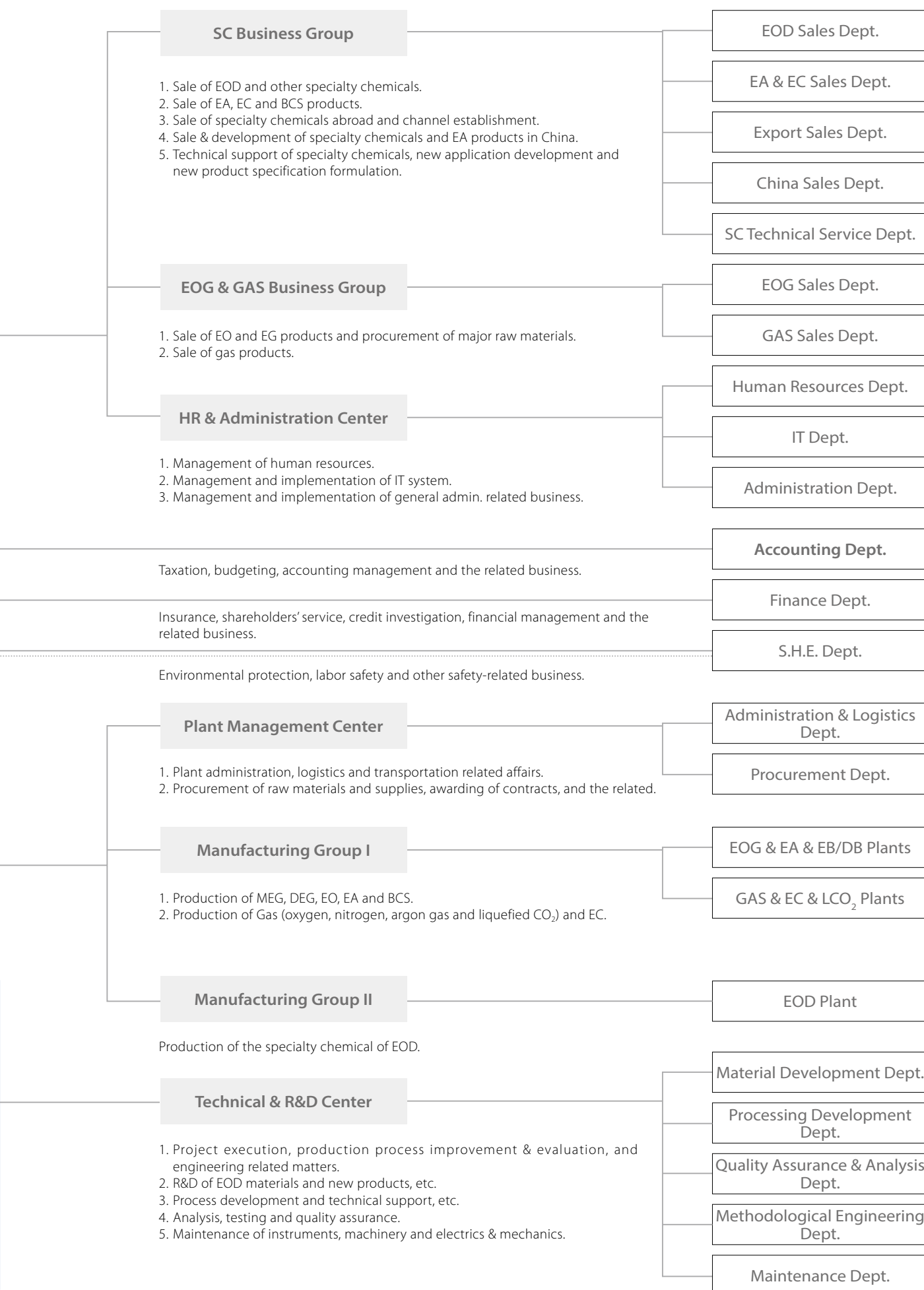




Sound Operational Structure



- **Head office:** 13F, No. 101, Fu-Hsing N Road, Taipei City
- **Telephone:** (02) 2719-3333
- **Factory:** No. 3-5, Industrial 3rd Road, Linyuan District, Kaohsiung City
- **Telephone:** (07) 641-3101
- **Number of employees:** 365
- **Manufacturing location:** Kaohsiung & Yangzhou



The Chronicles of The OUCC

1975

The company was authorized for incorporation with a share capital of NT\$569 million. The shareholders included the Central Investment Co Ltd, the National Development Fund of the Executive Yuan, the Far Eastern Textile Co Ltd, the Union Carbide Corporation, and the China Development Trust Incorporated.

1987

Stock approved for sale.

1978

Ethylene glycol plant construction completed.

1982

Union Carbide Corporation withdrew from the OUCC. The Yonglian Gas Company that had been invested in by the Union Carbide Corporation, Central Investment Co Ltd, and CPC Corporation, Taiwan were merged with the OUCC and the capital stock was increased to NT\$1,494 million.

1992

Completed the construction of the ethylene glycol wastewater treatment plant in compliance with national standards.

2008

1. Completed ethanolamine plant II with an annual production capacity of 40,000 tons. This increased the total annual ethanolamine production capacity to 80,000 tons.
2. Completed the ethylene carbonate plant de-bottleneck project to increase the annual production capacity to 60,000 tons.
3. The Investment Commission MOEA approved OUCC (Bermuda) Holding Ltd investment and establishment of the Oriental Petrochemical (Yangzhou) Corp. mainly engaged in the production and sales of ethanolamine, ethylene carbonate, fatty alcohol ethoxylates, polyethylene glycol, and polyethylene glycol monomethyl ether.

2009

Won the "National Industrial Zone Safety Partnership Excellence Award - Premium Business Unit" medal from the Council of Labor Affairs, Executive Yuan in December.

2012

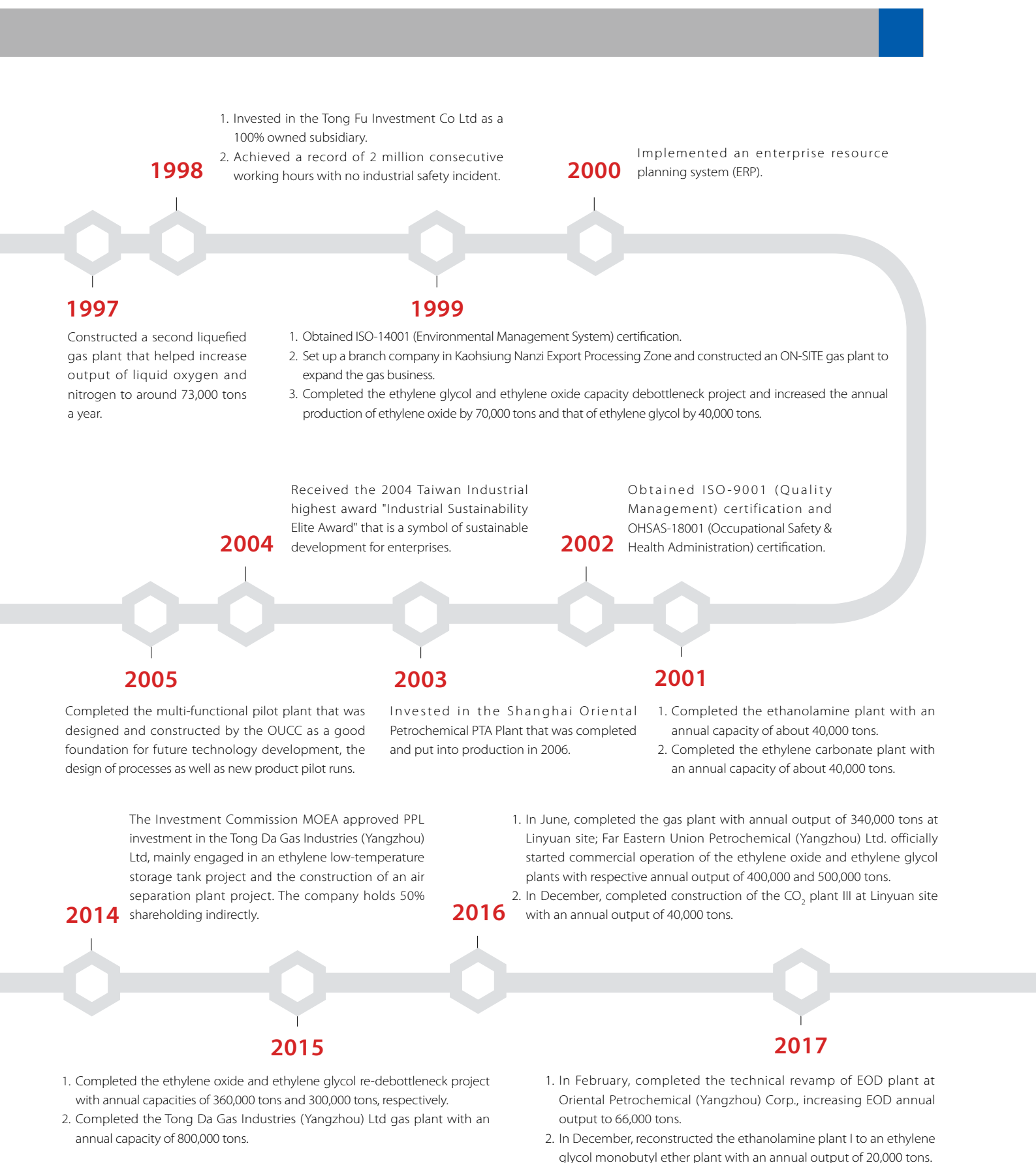
1. Completed the Oriental Petrochemical (Yangzhou) Corp. ethylene oxide derivatives plant with an annual capacity of 60,000 tons.
2. Investment Commission MOEA approved PPL investment in Far Eastern Union Petrochemical (Yangzhou) Ltd, which was mainly engaged in the production and sale of ethylene glycol and ethylene oxide. The OUCC acquired 50% of the stock.

2010

Purchased Pacific Petrochemical Holding Ltd. (PPL) stock shares from Yuan Ding Investment Corp and Core Pacific Capital Ltd. In addition, sold PETH shareholding to Far Eastern New Century Corp. The OUCC holds 100% of PPL shareholding after the transaction was completed and 39% indirect shareholding of Oriental Petrochemical (Shanghai).

2011

1. Oriental Petrochemical (Yangzhou) Corp. constructed and put the 40,000-ton ethanolamine plant into operation.
2. Completed the construction of the ethylene oxide derivatives plant in Linyuan with an annual capacity of 40,000 tons.



PRODUCTS and SERVICES



Ethylene glycol (EG) is the main product of the OUCC. The Ethylene Glycol Plant was built in 1978 using US Union Carbide process technology (Dow Chemical merged with Union Carbide in 2001). After the completion of the de-bottleneck project, EG annual production capacity expanded to 300,000 tons. The product is supplied mainly to domestic polyester industry manufacturers with some being exported to China, Southeast Asia, New Zealand, and Australia.

Due to the rapid expansion of polyester production capacity in China, local ethylene glycol production is insufficient to meet the needs of the downstream industry and millions of tons of ethylene glycol are imported annually. The OUCC invested in the Far Eastern Union Petrochemical (Yangzhou) Ltd. in 2012 and began the construction of an Ethylene Glycol Plant with production capacity of 500,000 tons and an Ethylene Oxide Plant with production capacity of 400,000 tons which have launched production in the second half of 2015. The Company owns 50% shareholding of that company. The ethylene oxide produced by the Far Eastern Union Petrochemical (Yangzhou) Ltd. can be used as the raw material for ethylene glycol or supplied to the Oriental Petrochemical (Yangzhou) Corp. as the raw material for specialty chemicals to achieve the synergy of lower raw material cost and vertical integration. In 2017, we completed the technical revamp of EOD plant at Oriental Petrochemical (Yangzhou) Corp., while reconstructing the ethanalamine plant at Linyuan into an ethylene glycol monobutyl ether plant with an annual output of 20,000 tons.

INDUSTRY SUPPLY CHAIN

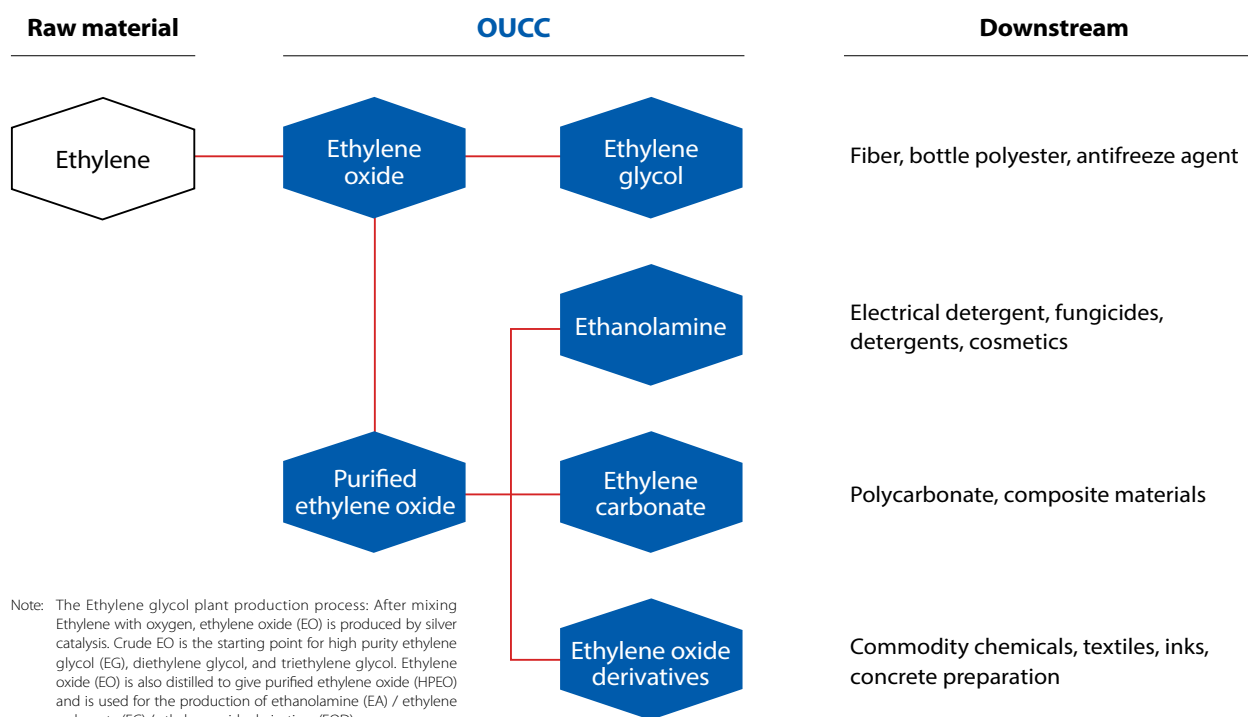
Ethylene Glycol (EG) is the main product of the OUCC. The intended use of EG is for polyester products, including polyester fiber and bottle polyester, film slitting, etc.

Ethanolamine (EA) is supplied to the downstream electrical detergent, resins, inks, textiles, and cement industry. It is also exported to Asia-Pacific, Europe, and America. The domestic EA plant is able to provide a flexible and rapid delivery service to the local electrical detergent manufacturers.

Ethylene Carbonate (EC) is mainly used to produce Polyethylene Carbonate (PC) for the production of optical discs and other composite plastic materials.

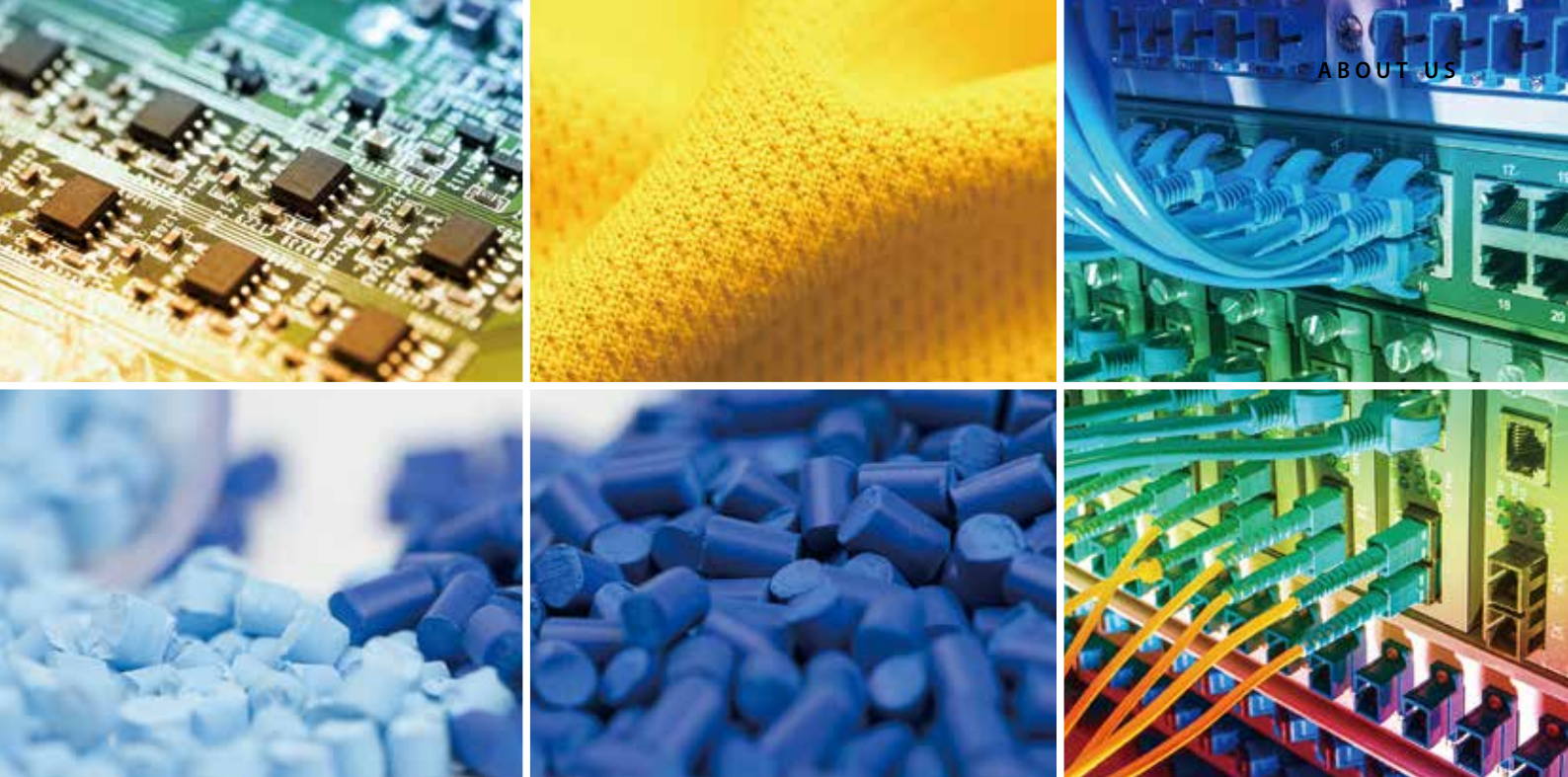
Ethylene Oxide Derivative (EOD) products are mainly supplied to downstream industries, for use in detergents, electronic chemicals, synthetic resins, textile auxiliaries, cement, and related domestic industries, which are closely related to economic growth. In recent years in Asia, particularly China and Southeast Asian emerging markets, the demand for EOD products continues to grow along with the increase of domestic consumption.

Most of the gas produced is used by the internal EG, EA, and EC plants. Oxygen and nitrogen are also supplied to customers in the Linyuan and Da Far industrial zones. The remaining liquid products are mainly supplied to the domestic electronics, petrochemicals, medical, food, steel, and metal processing markets.





Type	Item	Product application (end products)
Ethylene glycol (EG)	Monoethylene glycol (MEG)	Raw material for polyester fiber, antifreeze, desiccants, engineering plastics, PET bottles and brake fluid.
	Diethylene glycol (DEG)	Raw material for Dehumidifying agents, lubricants, leveling agents, solvents, grinding aid, and unsaturated polyols.
	Triethylene glycol (TEG)	Dehumidifying agents, solvents, and polyols.
	Ethylene oxide (EO)	Raw material for ethylene glycols, glycol ethers, ethyl ethers, nonionic surfactants, and as a disinfectant.
Ethanolamine (EA)	Monoethanolamine (MEA)	Household and industrial cleaning agents, textile auxiliaries, acid gas absorption, pharmaceutical intermediates, electrical detergents, water treatment, resin additives, metal surface treatment, and wood preservation treatment.
	Diethanolamine (DEA)	Shampoo and bathing products, cosmetics, household and industrial cleaners, textile auxiliaries, acid gas absorption, herbicides, PU bridging agent, lubricant or metal surface treatment, resin additives, and fluorescent whitening.
	Triethanolamine (TEA)	Shampoo and bathing products, cosmetics, household and industrial cleaners, textile auxiliaries, cement and ready-mixed concrete additives, lubricants and metal surface treatment, resin additives, PU foam catalyst, and fluorescent whitening.
EVOXs Ethylene oxide derivatives	Fatty alcohol ethoxylates (AEO)	Fatty alcohol ethoxylates (AEO) are non-ionic surfactants that can be used in: <ul style="list-style-type: none"> - Producing anionic surfactant AES as the raw material for shampoo - As a dispersing and leveling agent in the Textile and Dye industries - In metal surface cleaners - For detergent formulations - Wetting agents in the Leather industry - As an antistatic agent for synthetic fiber treatment
	Polyethylene glycol (PEG)	Polyethylene glycol (PEG) is an extremely versatile polyether polymer that can be used: <ul style="list-style-type: none"> - As a wetting, dispersing and leveling, and emulsifying agent in the Textile industry - As a softener in the Paper industry - In water-soluble ointments and suppository bases - In lubricants and antistatic agents for fiber processing - To increase solubility and lubrication in the resin and dye products



Type	Item	Product application (end products)
EVOXs Ethylene oxide derivatives	Polyethylene glycol monomethyl ether (MPEG)	Chemical structure of polyethylene glycol monomethyl ether: $\text{CH}_3\text{-(OCH}_2\text{CH}_2\text{)}_n\text{-OH}$ This product and acrylic acid are combined to produce MPEG acrylate that is the main raw material for the production of polycarboxylate, an efficient concrete water reducer.
	Polyethylene glycol tallow ether amine (TA)	Polyethylene glycol tallow amine ethers (TA) are non-ionic in alkaline and neutral medium and cationic in acidic media with excellent emulsifying and leveling properties widely used as: <ul style="list-style-type: none"> - Textile auxiliaries - Pesticide emulsifiers - Metal corrosion inhibitors - Lubricants
	Ethoxylated trimethylolpropane (TM)	Ethoxylated trimethylolpropane (TM) is a polyol alkoxy containing three primary alcohol functional groups that is a colorless and transparent liquid at room temperature and is often used in: <ul style="list-style-type: none"> - PU Crosslinking agents - UV Curable coatings reactive monomer precursors - Aqueous polymer compositions - Synthetic Lubricants - Polyester alkyd resin films - Chemical processes
Ethylene Carbonate (EC)	Ethylene carbonate (EC)	Ethylene carbonate (EC) is a widely used basic chemical that is mainly used: <ul style="list-style-type: none"> - In polymer synthesis: non-phosgene polycarbonate; polyurethanes; unsaturated polyester; and engineering plastics - In pharmaceutical intermediate synthesis - As a solvent: in acid gas absorption; as a lithium battery electrolyte; as an electrical detergent; in cosmetics; in cleaning agents; and as a degreaser
Gas Products	Oxygen	For use in the petrochemical industry, metal processing, industrial welding and cutting, wastewater treatment, incinerators, hospitals, and aquaculture.
	Nitrogen	For use in the refining industry, electronics and semiconductor industry, plastics, food refrigeration and packaging, the chemical industry, and metal heat treatment.
	Argon	For use in welding, the space industry, the electronics and semiconductor industry, metal and alloy manufacturing, etc.

FINANCIAL PERFORMANCE

In recent years, as the petrochemical industry is greatly affected by the dramatic changes in the global economic environment, OUCC not only continuously expands production and looks for low-cost energy and raw materials supply, but also actively develops product transformation in order to quickly response to changes through developing high-value, high-tech and green, environmental protection products.

With the relentless efforts of all our colleagues, in 2017, OUCC gained an operating income of NTD 12,755,671 thousand, increasing 16% compared to 2016. The net income was NTD 2,053,580 thousand before tax and NTD 1,749,409 thousand after tax. Earnings are distributed in cash dividend of NTD 1.75 per share following the resolution of the Board of Directors meeting.

2016-2017 Financial Performance

Unit: NT\$ Thousand

	2016	2017
Operating income	10,985,765	12,755,671
Operating cost	10,245,666	10,850,815
Staff salaries and benefits	482,274	504,154
Dividend paid to shareholders	177,141	1,549,981
Dividend paid to government	125,664	57,861
Community Investment	2,499	1,724
Economic value retained	176,063	1,280,192
Total debt	9,213,771	8,471,568
Total Assets	22,688,325	23,280,667

Note: The net balance of the dividend paid to the shareholders in the following year.



Open and Transparent Communication Channel

The OUCC complies with the information disclosure regulations by publishing the financial, business, and corporate governance-related information on the company website. We also post all the information and communications in connection with investment seminars, shareholders' meeting, and investor relations and other company matters on the website. The OUCC has diversified communication channels:

1. The suggestions or questions raised by the shareholders, in addition to being dealt with by the President Office, can also receive attention from the spokesman and deputy spokesman of the company, or from the "Oriental Securities Corporation" that provides stock services to the OUCC.
2. All the relevant information is on the MOPS and <http://www.oucc.com.tw> (the Company website) in accordance with government provisions and regulations.
3. In addition to the information available from the spokesman and deputy in accordance with the provisions, investors meetings are held from time to time and the results are disclosed in accordance with the provisions.

ASSOCIATION MEMBERSHIP LIST

OUCC keeps interacting with many external organizations across the industry. In addition to active participation in annual meetings, summits, and General Assemblies of international, national, and regional organizations. We promote mutual exchange among the same and different industries. Through instant communication, it is expected to understand the suggestions of relevant interested parties on the chemical industry and help OUCC march toward the sustainable development goals.

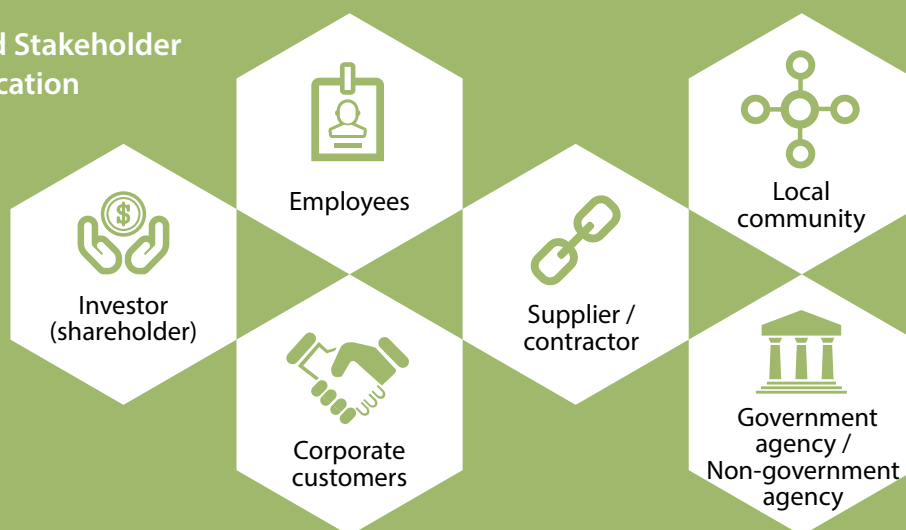
Association and Union Name	Admission status	Membership
	(Group, individual)	(General member / Director / Supervisor)
Petrochemical Industry Association of Taiwan (PIAT)	Group	Member
Taiwan Chemical Industry Association (TCIA)	Group	Member
Taiwan Responsible Care Association (TRCA)	Group	Supervisor, member
Taiwan Institute of Chemical Engineers	Group	Member
Taiwan Industry Gas Association (TIGA)	Group	Director, member
Industrial Gas Association of ROC	Group	Director, member
Specialty Chemical Development Association of ROC	Group	Director, member
The Institute of Internal Audit, ROC (Taiwan)	Group	Member
Industrial Safety and Health Association (ISHA) of the ROC (Taiwan)	Group	Member
Kaohsiung Commerce and Trade Development Association	Group	Member
Kaohsiung Personnel Representative Association	Group	Member
Kaohsiung County Industrial	Group	Member
Chinese Arbitration Association, Taipei	Group	Member
Chinese National Association of Industry and Commerce, Taiwan (CNAIC)	Group	Member

CSR ENGAGEMENT & SUSTAINABLE MANAGEMENT

"Sustainable Development" is the primary goal of OUCC. Therefore, we value the concerns of interested parties, including keeping a good economic performance for our shareholders to have confidence in the Company and reasonable returns, building a "healthy and safe working environment with self challenge" to protect employees' rights and interests relating to work, and making suppliers our partners in creating social values, all as the goals to be achieved with our efforts.

Therefore, since our first CSR report was issued in 2015, we have started with "Integrity governance, stability and reliability, and corporate responsibility" as three pillars of sustainable development to communicate with the interested parties in a real and transparent manner with immediate effect to resolve the sustainability issues in all aspects. Despite the fact that there are many challenges on the pass towards sustainability, we will continue to hold fast the Company's core values to create sustainability values for our relevant interested parties.

Diversified Stakeholder Communication



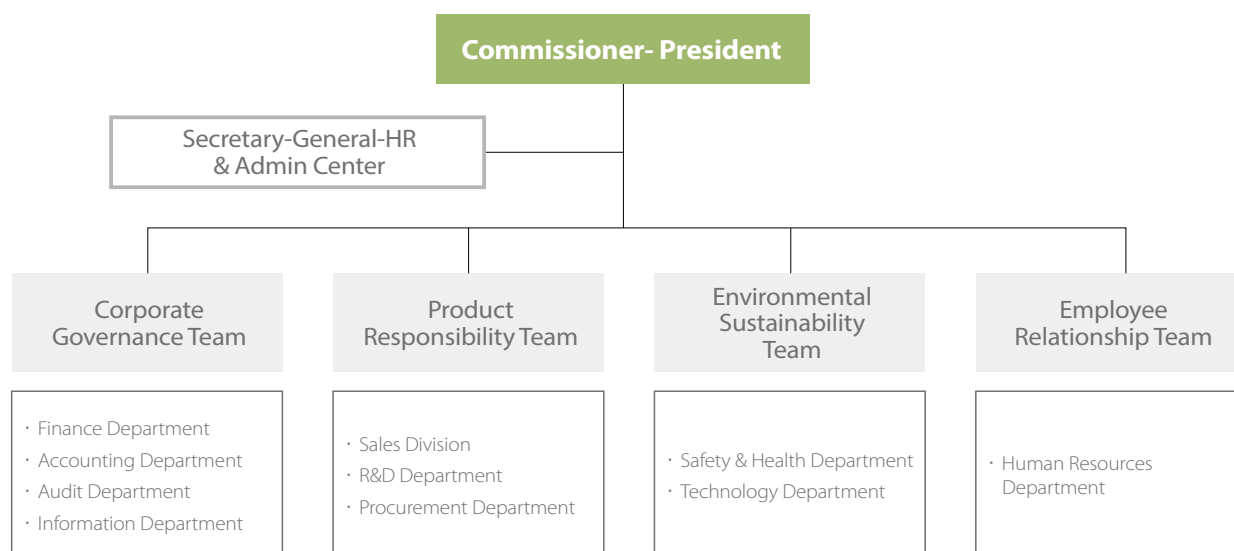


CSR Committee

CSR management was initiated in 2014 and at the same time a CSR Committee was established. The President was regularly appointed as the Commissioner responsible for final decision making, action plan review, and approval of the final reports. The HR & Administration Center is accountable for the organization and promotion of the task execution of each department, and report periodically to the Board of such progression status.

The head of each department, Assistant Vice-President or Senior Manager, is appointed to the CSR Committee. Top management is responsible for the operation of the committee and formulation of CSR relevant policies, action plans, and cross-departmental coordination. In principle, the CSR Committee holds regular meetings as well as extraordinary meetings for any specific CSR issue that might need an immediate response. All the management processes, results of assessments and general CSR information is communicated to stakeholders through the company CSR website.

CSR Committee Organizational Structure









Diversified Stakeholder Communication

We adopt the five major principles of AA1000 Stakeholder Engagement Standard (SES) (V.2015) to identify the interested parties of OUCC according to the dependence, responsibility, attentiveness, influence, and diversity perspectives of the interested parties including: Employees, suppliers, corporate customers, shareholders and investors, the government and the competent authorities, and so on. In response to the comments and suggestions made by the above interested parties, we highlighted key points and improved results in the Report after full discussion.

We value the suggestions of our stakeholders which provide strength for progress and help us meet the needs of our corporate customers for product safety and quality. We provide a number of communication channels for employees, investors, suppliers, and the community to easily voice their opinion and receive the response.

The OUCC believes that sustainable action can only be included in corporate business management through an understanding of the needs of stakeholders and by transparent disclosure of the issues of concern in a way that fulfills CSR commitments.

OUCC Stakeholder Communication Channels

Stakeholders	The main communication channel and frequency	Concerned issues
 Investor (shareholder)	1. One shareholder's meeting and one investor conference were convened in 2017 2. Spokesman hotline and mailbox 3. The company website discloses financial services and corporate governance information 4. The CSR website and report (annual) 5. MOPS 6. Participation in the corporation convened forum (occasional)	<ul style="list-style-type: none"> • Corporate Governance • Industry Trends • Economic Performance • Risk Management • Dividend Policy
 Employees	1. Employee Welfare Committee (occasional) 2. Labor-employer meetings (quarterly) 3. Occupational Health & Safety Committee (quarterly)	<ul style="list-style-type: none"> • Employment • Labor/Management Relations • Human Rights Assessment • Occupational Health and Safety • Forced and Coercive Labour
 Corporate customers	1. Customer satisfaction survey (annual) 2. E-mail and distribution meeting (occasional) 3. Customer visits (occasional) 4. The company website (occasional) 5. The CSR website and report (annual)	<ul style="list-style-type: none"> • Customer Health and Safety • Emissions • Customer Privacy • Occupational Health and Safety
 Supplier / contractor	1. Supplier periodical evaluation (annual) 2. The CSR website and report (annual)	<ul style="list-style-type: none"> • Energy Management • Water Resources Management • Effluents and Waste
 Local community	1. Charity donations (occasional) 2. Event sponsorship (occasional) 3. Telephone contact (occasional) 4. The CSR website and report (annual)	<ul style="list-style-type: none"> • Energy • Effluents and Waste • Environmental Compliance
 Government agency / Non-government agency	1. Periodic reports at the request of government agencies (occasional) 2. Periodic regulatory audit (occasional) 3. Academic research cooperation (occasional) 4. Social participation: related Union / Association (occasional) 5. The CSR website and report (annual)	<ul style="list-style-type: none"> • Environmental Compliance • Socioeconomic Compliance

Process & Boundaries of Material Topics

Material Topics Matrix



Note: Indicators of major consideration disclosed in the CSR Report.

Economy	Environment	Society
1 Economic Performance	2 Energy 3 Water 4 Emission 5 Effluents and Waste 6 Environmental Compliance	7 Employment 8 Labor/Management Relations 9 Occupational Health and Safety 10 Forced or Compulsory Labor 11 Human Rights Assessment 12 Customer Health and Safety 13 Customer Privacy 14 Socioeconomic Compliance

Process for Determining Material Topics



Step 1

Gather and complete the international guidelines, benchmarks and related industrial information, and OUCC's CSR related performance in 2017; call for the CSR sustainability meeting.



Step 2

Communicate through external related parties; evaluate major concerned issues of the external related parties.

Material Topics Boundaries

● Indicates importance or point of impact

Economy category		Boundary			
Scope	The OUCC	Local community	Supplier	Storage & transportation company	Corporate customer
Economic Performance	●		●	●	●
Environment category		Boundary			
Scope	The OUCC	Local community	Supplier	Storage & transportation company	Corporate customer
Energy	●		●	●	●
Water	●		●		
Emission	●	●	●	●	●
Effluents and Waste	●	●	●	●	●
Environmental Compliance	●	●	●	●	●
Society category		Boundary			
Scope	The OUCC	Local community	Supplier	Storage & transportation company	Corporate customer
Employment	●				
Labor/Management Relations	●				
Occupational Health and Safety	●		●	●	●
Forced or Compulsory Labor	●		●		●
Human Rights Assessment	●		●		
Customer Health and Safety	●		●	●	●
Customer Privacy	●				●
Socioeconomic Compliance	●			●	

Note: The OUCC is the main entity within the organization and those outside the organization include local communities, suppliers, storage and transportation companies, and corporate customers.



Step 3

Conduct CSR interview meetings and issue questionnaires to the interested parties to investigate potential impacts within and outside the organization.


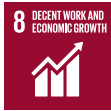








Step 4

With the above evaluations, we collaborate with the professional judgment of all units, and combine with industrial considerations and the importance of issues as well as GRI guidance recommendations to develop OUCC's CSR matrix for 2017, with 14 major issues.



The United Nations Sustainable Development Goals (SDGs)

Material topics	SDGs	OUCC contribution to SDGs
Occupational health and safety Customer Health and Safety	<p>Goal 3: Good health and well-being</p> <ul style="list-style-type: none"> By 2030, reduce by one-third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being. Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks. 	<p>Goal 3: Good health and well-being</p> <p>Introduce the international system to manage workplace health</p> <ol style="list-style-type: none"> We introduced OHSAS-18001, and under the strict management system, we were awarded at the same time the "Three Million Accident-Free Working Hours" certificate issued by Occupational Safety and Health Administration and the "Badge of Health Promotion issued by the Ministry of Health and Welfare". Set up the "Occupational Safety and Health Committee"; convene regular meetings to review and coordinate the internal occupational safety and health incidents. <p>Understand the state of the physical and mental health of staff</p> <ol style="list-style-type: none"> Conduct regular employee health checks. Develop the SOP for occupational disease prevention and women's health in the workplace. Hold seminars and activities related to health promotion. <p>OUCC's product liability</p> <p>The OUCC's quality management system is used to effectively control and reduce toxic substances in products, and also record the complete chemical characteristics and toxicity data for public inspection.</p>
Economic Performance Employment Labor/Management Relations Forced or Compulsory Labor Human Rights Assessment	<p>Goal 8: Decent work and economic growth</p> <ul style="list-style-type: none"> Achieve higher levels of economic productivity through diversification, technological upgrading and innovation. By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value. <p>Goal 16: Peace, justice and strong institutions</p> <ul style="list-style-type: none"> Promote the rule of law at the national and international levels and ensure equal access to justice for all. Develop effective, accountable and transparent institutions at all levels. Promote and enforce non-discriminatory laws and policies for sustainable development.  	<p>Goal 8: Decent work and economic growth</p> <p>Strengthen research & development capabilities</p> <p>In May 2016, we established the integrated "Technology & RD Center" and actively expand the application of new products and increase the added value of products.</p> <p>Emphasize the retention and cultivation of internal talents</p> <ol style="list-style-type: none"> Establish a perfect welfare system according to the labor law. Develop adaptive talent cultivation and training programs to put the right employees in the right places. Cultivate industrial talents through the "industry-academic internship collaboration and Talent Training" program. <p>Goal 16: Peace, justice and strong institutions</p> <ol style="list-style-type: none"> Transparent channels are provided for "employee complaints" to ensure the protection of labor rights and interests. Training courses on human rights training are conducted for 100% new employees. "The Act of Gender Equality" in Employment is stipulated to actively promote anti-discrimination policies and prevent the occurrence of sexual harassment incidents.

Material topics	SDGs	OUCC contribution to SDGs
Energy Water Effluents and Waste Emission Environmental Compliance	<p>Goal 6: Clean water and sanitation</p> <ul style="list-style-type: none"> By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing the release of hazardous chemicals and materials. By 2030, substantially increase water-use efficiency across all sectors. <p>Goal 7: Affordable and clean energy</p> <ul style="list-style-type: none"> By 2030, ensure universal access to affordable, reliable and modern energy services. <p>Goal 9: Industry, innovation and infrastructure</p> <ul style="list-style-type: none"> By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities. <p>Goal 12: Responsible consumption and production</p> <ul style="list-style-type: none"> By 2030, achieve the sustainable management and efficient use of natural resources. <p>Goal 13: Climate action</p> <ul style="list-style-type: none"> Integrate climate change measures into national policies, strategies and planning. 	<p>Goal 6 and 12</p> <ol style="list-style-type: none"> Set short-, medium- and long-term "water resources management" objectives and strategies. Stipulate the "Wastewater management procedure" to ensure the limit of wastewater discharge. Plan to complete the "Wastewater Recovery System" in 2018 and make proper use of water resources. <p>Goal 7, 9 and 13</p> <ol style="list-style-type: none"> Understand the energy consumption and greenhouse gas emissions of the plant through the ISO 14064-1 greenhouse gas inventory. Set short-, medium and long-term "greenhouse gas and energy saving management" objectives and strategies. Purchase green power to respond to government's renewable energy policy. Implement process equipment improvement to improve energy efficiency. In response to the increased natural disaster risk due to the global climate change, we have also set up the "Contingency Plan for the Prevention of Typhoons and Heavy Rains according to Grade Levels" to reduce its risk of damage.
	    	

INTEGRITY GOVERNANCE

The "Philosophy of Integrity" is the foundation for sustainable development of OUCC. We have a sound governance structure and a comprehensive risk control mechanism to enhance management efficiency and create an operating environment for sustainable development.

Solid
Organizational
Management



Remuneration
Committee



Board Diversity

Enterprise Risk
Management



Anti-corruption
Mechanism



Internal Audit



Internal Control
System

Integrity
Mechanism



Board Diversity

There are nine directors on the 14th Board, including two independent directors and all of them are male above age 51. The directors exercise their authority and duties in accordance with Company Law, the Articles of Incorporation, the Rules of Procedure for Directors Meetings, and the relevant laws and regulations.

The term of office of the Board of Directors shall be three years. The candidate's nomination system is adopted for the nomination and election of the members. Education and experience of the candidates are evaluated in accordance with the "Regulations governing the Election of Directors" and the "Code of Corporate Governance" while ensuring diversity, independence and taking opinions of the interested parties. Board of director's meetings are held four times during 2017.

Directors, Supervisors and Managerial Officers of OUCC shall participate in education and training on topics for corporate governance conducted on a regular basis. In 2017, we also invited external experts and conducted two courses of the "Operational Practices of the Board of Directors and Supervisors and Corporate Governance Seminar." (Please refer to Annual Report p.29-30)

Remuneration Committee

A Remuneration Committee has been established to determine and review the performance and remuneration of the directors, supervisors, and management on a regular basis. The remuneration of directors and supervisors as well as bonuses for employees are set in accordance with the annual operating performance of the Company and the percentage of distribution as set down in Article 33 of the Incorporation. Additional proceeds are distributed depending on overall operating performance, taking into account a market salary survey made by a professional management consulting firm, an investigation related to the industry salary levels and those of listed companies and the overall financial risk of the business environment.

The operations and financial arrangements of the OUCC are independent from those of affiliated companies. All interaction with them is handled in accordance with the "Regulations Governing the Transactions of Related Parties," "Procedures for the Acquisition and Disposition of Assets," "Procedures for the Capital Lending to Others," "Procedures for Endorsement and Guarantee," and other relevant provisions. A risk control mechanism and a computer firewall have been properly set up.

Anti-corruption Mechanism

The company is committed to the stipulation, supervision, and implementation of best practice in all management policies and precautionary programs. We carry out regular audits and report findings to the Board. We take advantage of the regular internal management meetings for all employees to advocate further education and training.

The directors, supervisors, managers, and all employees of OUCC are bound to comply with all the requirements of the "Codes of Conduct" and "Best Practice Principles" as published and posted on the company website. These codes of conduct serve to standardize ethical behavior throughout the company that all employees engaged in commercial acts shall not, directly or indirectly, offer, promise, request, or receive any improper benefit, or engage in acts of bad faith, breach of trust or fiduciary duty, or any other illegal conduct. Any violation of these codes will result in the offender being punishable under the Law and liable for compensation for damages incurred. In addition, it is clearly stated in the Rules of Procedure for Board of Directors Meetings that all directors are bound to circumvent the interest. The Board of Directors are also bound to fulfill their obligations in good faith and to ensure the implementation of the business best-practice principle. No corruption incident occurred in 2017.

OUCC has multiple communication channels for interested parties to report the relevant wrongful acts. Should any violation of the regulations for ethical corporate management, it may be reported to the Company's Supervisors, Managerial Officers, Chief Audit Officer, Human Resources Department and other suitable supervisors. In addition, the "Whistle-blowing system and Discipline Measures against Violation of the Codes of Ethics and Best Practice Principles" were stipulated to ensure the confidential report mechanism. (Please refer to the official website for more information about communication channels: <http://www.oucc.com.tw/tw/green.asp>)



A Sound Internal Control System

Approved by the Board of Directors, the internal control system of the OUCC is to be implemented by the Board, the management, and other employees and is designed to provide sound management and secure the three main objectives of the internal control system:






1. To ensure the effectiveness and efficiency of all operations.
2. That reports should be reliable, timely, transparent and in compliance with all the relevant specifications.
3. That all operations comply with the applicable laws and regulations.

The effectiveness of internal control, other than the achievement of three main objectives, depends also on its associated five elements, namely the control environment, risk assessment, control activities, information and communication, and monitoring.

In addition to the internal audits, all departments carry out regular as well as random self-audits of operations management from time to time. The internal auditor then reviews the results of the autonomous audits of the different departments to ensure the effectiveness of the internal control system.

Assessing the effectiveness of internal control

Financial Supervisory Commission has released the reference item, including five elements, 17 principles shown in the following table, for the effectiveness of the internal control system and the relevant subjects will be evaluated by the manager and the staff. In order to implement the project, reduce the paperwork and improve the efficiency of answering, the electronic system questionnaires are utilized by the employees and supervisors of all units and integrated into the company's electronic database to further complete the internal control self-assessment operations.

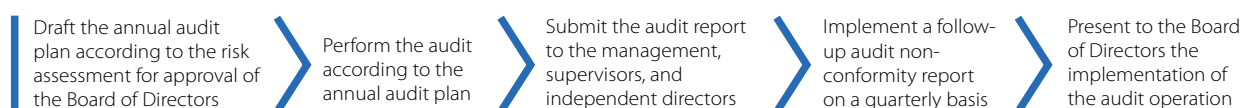
Five elements		17 principles
	Control Environment	<ol style="list-style-type: none"> 1. Committed to the value of integrity and morality 2. Implement the responsibility of supervision 3. Set up the organizational structure, authority and responsibility 4. Demonstrate the commitment to retain qualified talent 5. Performance evaluation and rewards & punishment system
	Risk Assessment	<ol style="list-style-type: none"> 6. Determine suitable and critical goals 7. Identify, analyze risk assessment and implement risk management 8. Assess risk of fraud 9. Identify and analyze major changes
	Control Operations	<ol style="list-style-type: none"> 10. Choose and establish control operations 11. Choose and develop general control of technology 12. Implement through policies and procedures
	Information & Communication	<ol style="list-style-type: none"> 13. Utilize information of great concern 14. Internal communication 15. External communication
	Supervisory Operations	<ol style="list-style-type: none"> 16. Conduct persistent or individual assessment 17. Assess and communicate defect

Internal Audit

The OUCC has an independent Audit Department that is directly responsible to the Board of Directors. The chief auditor, in addition to regular audit reports to the supervisors, attends Board meetings to present and discuss auditing matters.

Audits are carried out to assist the Board of Directors and management to check and review the internal control system, uncover any nonconformities, and also to measure the effectiveness and efficiency of operations. Regular reviews and recommendations for improvements are made in a timely manner to ensure the effective implementation of the internal control system.

The internal audit department of OUCC conducts mainly the inspection and review of the internal control system, performance of the annual audit plans according to risk assessment, the implementation of audits and preparation of audit reports and follow-up reports, audit reports to the Board of Directors, the review of the self-assessment reports from each business unit, as well as cooperation in occasional or special project audits.



OUCC places great value on corporate social responsibility, on internal control, and on internal audit related issues. To ensure that the business operation and information disclosure meets the expectation of the stakeholders, we included details of inspection of environmental safety, product safety, major financial operations, labor safety, and research and development operations in the 2017 audit plan.



In addition to scheduled auditing, the audit department submits the following internal audit reports to the competent authorities regularly every year as follows:

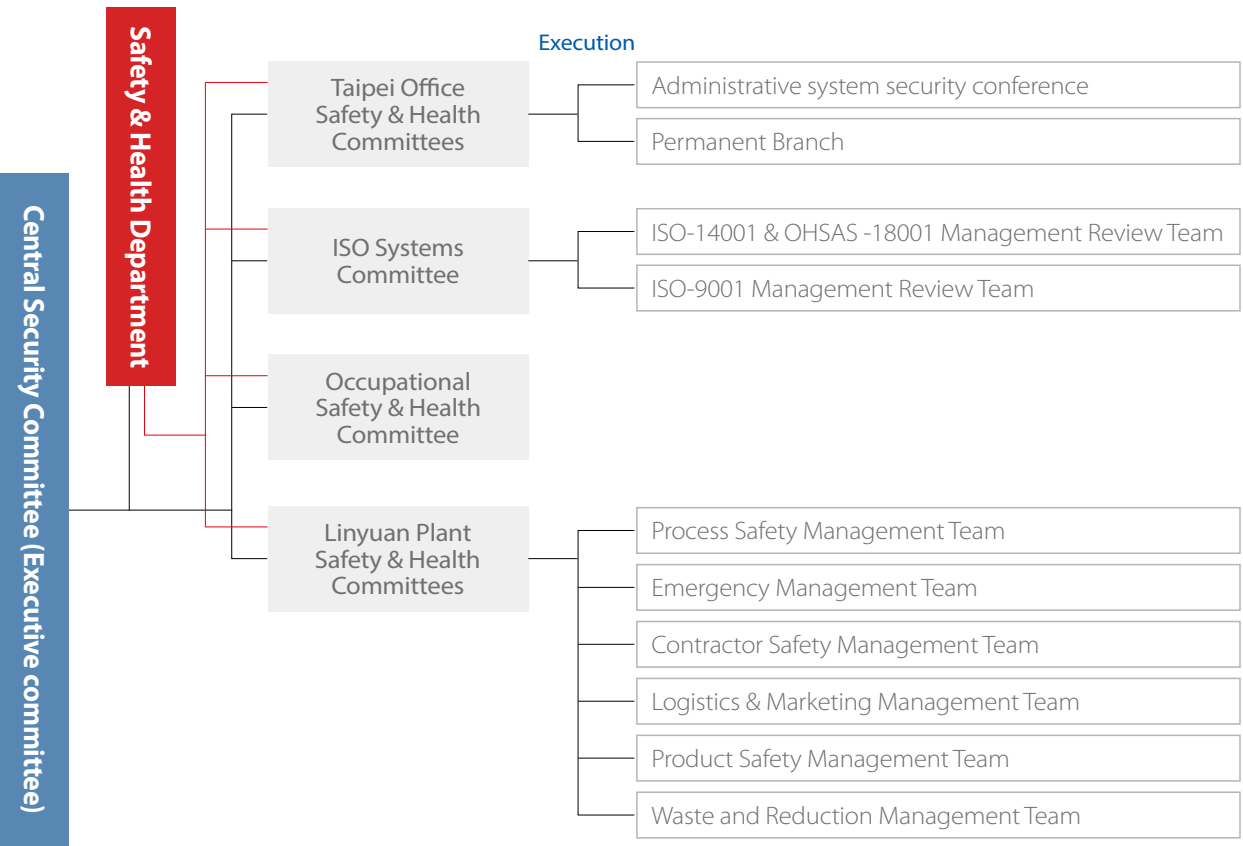
1. The next annual audit plan before the end of each fiscal year.
2. The internal audit staff list before the end of January every year.
3. The implementation of the last annual audit plan within two months after the end of the current fiscal year.
4. The internal control system statement within three months after the end of the current fiscal year.
5. Details of all nonconformity and corrective action taken for the last annual internal control system within five months after the end of the current fiscal year.

Enterprise Operational Risk

"Comprehensive risk strategies and steadfast operations" are important parts of thinking of OUCC's sustainable development. In addition to overall management planning for risk and setting up the general responsive strategies and procedures, individual units will also make their own appropriate plans for encounter of operation-related risk. Such precautionary planning will ensure the impact of an untoward event on company operation will be minimized through regular testing and drills.

Risk Management Organization

To ensure a balance between business operation and risk management, we have established a sound management and organizational system. Responsive measures can be taken for all business operation risks starting from the management level to ensure business stability and reliability.



Risk Management Mechanism

1. Asset Risk Response Measures: Asset risk can be shifted and reduced by the acquisition of insurance.

a. Property risk assessment :

External professional loss-prevention insurance company personnel are invited to make annual visits to the plant to work with the plant manufacturing and environmental safety personnel to jointly assess the categories of property risk and uncover potentially dangerous situations. Corrective action for any controllable risks can be adopted in advance while loss-prevention technology be introduced to prevent the occurrence of dangerous situations.

b. Insurance planning :

The transfer of unavoidable risk and force majeure by the acquisition of the necessary insurance in proportion to an assessment of the degree of risk. To formulate insurance strategy and insurance terms and conditions the company can buy a blanket insurance policy for all property at replacement cost. This includes business operation interruption insurance and comprehensive engineering insurance.

2. Accounts Receivable Risk Responsive Measures

In order to control an appropriate amount of working capital and minimize the occurrence of property damage, the OUCC has established a Credit Committee chaired by the President. Members are elected from Administration, Sales, Finance and the Auditing departments. The Committee Members regularly review and assess customer credit status and the credit lines granted. Customer's sales credit as well as accounts receivables are examined regularly. To reach the annual management objective of "Zero Bad Debt," the overdue receivables are reviewed monthly.

3. Interest Rate Risk Response

To reduce the risks arising from changes in interest rates, in addition to adjusting the interest rate structure for short-term operation, OUCC has tried to minimize the impact of future economic changes that might cause a rise in interest rate, and the consequent increase in cost, by having the mid-term and long-term interest rate locked by using fixed interest rate financing instruments. We will continue to observe the changes in interest rates and engage in short-term and long-term financial planning to reduce overall capital cost.

4. Exchange Rate Risk Response

We have initiated natural hedging in accordance with the assets and liabilities in foreign currency arising from our import and export business, and those of our merged companies, to control OUCC foreign exchange valuation profit and loss at a reasonable level.

Climate Change Risk Management

To ease the danger from natural disasters caused by the extreme weather resulting from climate change, or other causes (force majeure) in the plant area, the OUCC has planned various insurance programs to reduce loss to natural disasters. In addition to an alleviation of risk by the acquisition of insurance, OUCC also continuously invested in improving the process of energy consumption to reduce the impact of climate change on OUCC.

Earthquake risk:

We additionally apply for earthquake insurance in property insurance, with the claim limit of 20% of the total insured amount to reduce the loss to OUCC's plant in the event of an earthquake. According to the evaluation of Taiwan Risk Management Corp., the loss of a return period of 500 years is 6.37% of the total insured amount, while the maximum loss of the 7.0-scale Chaozhou Fault specific event with greater impact on the plant is 8.24% under the confidence level of 95%, and 19.17% under the confidence level of 99%. In addition, OUCC emphasizes and implements equipment management and maintenance system to ensure that the anti-seismic design can play the original planning functions.

Typhoon Flood Insurance :

The insurance coverage for typhoon floods is limited to 1/3~1/2 of earthquake coverage and an insurance claim is limited to 10% of the total insured amount. According to Fubon Property and Casualty Insurance evaluation based on Taiwan University model, the flood height reappeared of Linyuan Plant in 100 years would be less than 50 cm. Thus, based on our estimation, in the event of a typhoon flood there should generally be no significant loss if the machines are shut down normally. The important equipment inside the plant has been raised after the "August 8th flood incident" to ease loss and damage from flooding.





INNOVATION

In the face of global environmental issues and natural resources shortage, OUCC actively promotes "green chemistry." With strong internal product development capabilities, it draws the chemical business blueprint. In the new phase of the work development, OUCC is proactively engaged in high value-added product research and development, and also adopts the process-oriented approach in line with the "International Standards" to develop, implement and improve the effectiveness of quality management system so as to improve product quality. Not only must the requirements for raw materials and products always meet local and international standards as a prerequisite, but also exceeding the specification and criteria is pursued as the direction. We commit ourselves to the standards for stabilizing and regulating products in order to earn the trust of customers.

We have obtained ISO-9001 certification since 2002, and we provide our customers with the products in compliance with the regulatory quality requirements according to international standards. Meanwhile, we exclude the use of heavy metals such as lead and cadmium in accordance with "Restriction of Hazardous Substances Directive (RoHS)." Under a strict quality management, we win the trust of customers by the stable standards for products, and during 2017, no significant quality events occurred.

R&D
Direction

High-tech
Chemical Materials



Specialty
Chemicals

R&D amount
1.45 Million



Research and Innovation



In response to the dramatic changes in the global market environment, we have the ability to "research and development on innovation." First of all, we adjust the research and development technology team structure. The "R&D Center" was restructured into three units including Material Development, Process Development, Quality Control Analysis with six teams in January 2016, and combined the Technology and R&D teams to set up the "Technical and R&D Center" in May, 2016. In addition to the expansion of business applications, new products in several different areas have been developed in line with market changes and future chemical material demand. Current research and development areas include:

1. High quality, high value-added EOD / POD products: Low foaming surfactants with synthesizing many types of synthetic polyether, UV curing resin polyether, EO / PO copolymer.
2. EOPO polyether polyol specialty raw materials: Produce low unsaturation, high molecular weight, high activity polyether polyols with continuous processes to be used in specialty PU products.
3. Propylene oxide (PO) technology: Develop independent catalyst technology to produce PO, provide downward in EOPO polyether polyol reaction, integrate the product chain.
4. Polyether alcohol-based amination derivatization reaction: Synthesize various types of polyether amine compounds to be used in epoxy resin and PU industry.

R&D Direction

In recent years, OUCC EOD products have been actively developed into the customized products, new products include: UV curing monomer (PETEO, BPAEO, DMPEO, EO / PO block copolymer), customized OEM EO modified raw materials (A300, AR-58, GL7U), Isomers Alcohol + EO series products (TDE, TDK) and fatty alcohol ethers (S7, L7 series) with high-mole EO used for waterborne emulsifiers, etc., and the quality receives high praise from the downstream customers.

R&D Direction

Product Category	R&D Subject	Contents
EOD/POD	Surfactant	Downstream applications of EO derivatives for the development of fine chemicals, including nonionic surfactants, cement water-reducing agent, various intermediates for further dyeing, and consumable chemicals.
	Purified MPEG/PEG	Used in polyurethane PU processing. This polymer material is widely used in adhesives, coatings, low-speed tires, washers, and for car mats. Polyurethane is also used in the manufacture of a variety of foams and plastic sponges for domestic use.
EOD/POD Derivatives	Cement water reducing agent	Poly-carboxylic acid is a cement water-reducing agent and helps to improve the strength of the concrete. Also the admixture will reduce cement consumption while workability and strength maintained. Current research delves into the development of poly-carboxylic acid as a super water-reducing agent.
	Ultraviolet Curing resin	UV and aqueous paint and resin development is a response to the need for global environmental protection and carbon emission reduction.
	PEG-Fatty acid esters	Can be compounded with various types of wax emulsifier, lubricants and anti-corrosion additives, and dyeing dispersant to be used in water treatment, leather fatliquor.
PU Raw Materials	EOPO polyether polyol	Produce with continuous processes the low unsaturation, high molecular weight, high activity polyether polyols to be used in specialty PU products.

R&D Investment

To successfully become a diversified company that covers traditional chemicals, specialty chemicals and high-tech chemical materials, OUCC continues to build more customized EOD products on the basis of existing customers, to meet customer needs, and actively seek for opportunities in cooperation with internationally renowned companies. The amount of investment subsidy received in 2017 is NTD 5,201,954.

R&D Investment Form

	Unit	2015	2016	2017
R&D amount	Million (NT\$)	134	135	145
Total annual revenue	Million (NT\$)	13,924	19,531	28,920
Ratio	%	0.96	0.69	0.50

Production Process Development of cumyl-hydroperoxide propylene-oxide (CHPPO)

In order to proceed with the production of polypropylene glycol derivatives for OUCC, the development of self-owned technology for the production of propylene oxide has been underway, aiming to reduce the production cost of polypropylene glycol series and increase the categories of propylene oxide derivatives.

The nowadays pioneering processes of CHPPO and HPPO for the production of PO have been the exclusive ones and the mainstream of the field, which produce no co-products. Through all levels of comprehensive consideration, OUCC choose CHPPO process as the main technology for the production of propylene oxide. The most important key to this process technology lies in the technical limitation of the catalyst required for the conduction of epoxidized reaction, of which catalyst technology is still kept to the Sumitomo, with no sign of a releasing date so far, which also means the CHPPO process to produce propylene oxide will need to be licensed by Sumitomo.

OUCC has developed four independent catalyst-related technologies currently, and has applied for multi-national patents. The catalyst has excellent catalytic activity (CHP conversion > 99%, PO selectivity > 96%), and compared with the Sumitomo catalyst, its production and regeneration procedures are easier. This catalyst developed by OUCC has excellent catalytic stability. Under the continuous reaction test, the catalytic activity does not have any trend of decreasing after a long period of continuous on-and-off operation tests (>200hr, on-and-off every 6 hours). Based on the present achievement of the R&D, it is predictable this self-developed technology of OUCC will lead to the successful production of PO.

The OUCC is committed relentlessly to investment in R&D and innovation, and applications for investment tax credits with the approval of the government are filed annually, as an endeavor to the establishment of the new era of green chemistry. In addition, the OUCC also cooperates with other relevant R&D organizations and invests in R&D equipment.

R&D Collaborations

Type	Grant Plan	Description	Funded by the OUCC (NT\$)
R&D	Ministry of Economy Science and Technology Research and Development Project-A + Enterprise Innovation Research and Development Cultivation Plan: Oriental Union Chemistry Research and Development Center	1. Extend industrial applications from daily textile to aesthetic health care, electronic coating, and high-end polyurethane (PU). 2. Complement the gap of petrochemical raw material PO and core raw material used for high-end PU, strengthen the competitiveness of the downstream industry. 3. Company: 3 proprietary technologies, propose 10 domestic and foreign invention patents. 4. After technology commercialization, the Company is expected to increase NTD 6 billion in revenue and 150 employment opportunities.	40,500,000
Equipment	Oriental Union Chemistry Research and Development Center	1. Produce with continuous processes the low unsaturated, high molecular weight, highly active polyether polyol applied to the specialty PU products. 2. Establish PO proprietary technology. 3. Develop high-quality EOD/POD products.	13,813,000
	Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES)	Improving the sensitivity of electronic-grade metal ion content analysis.	2,000,000
Industry-academy cooperation	Develop CHPPPO catalyst proprietary technology	National Cheng Kung University (NCKU) provides us with the catalyst synthesis method for catalytic activity of CHPPPO so that we can own one more catalyst proprietary technology.	300,000
	Study on polyethylene glycol powder prepared by supercritical CO ₂	Build batch experimental data required for Particles from Gas-Saturated Solutions (PGSS) prepared by gas (supercritical CO ₂) saturated solution for subsequent continuous process design basis.	First period 350,000 Second period 300,000

Respect Intellectual Property Rights

We value the protection of technology and intellectual property rights (IPR). With regard to the research, development as well as purchase of the innovative technology, the "Procedure for Outsourcing Processing Technology" is formulated. Before it is kicked off, a new project will be initiated and a project leader assigned. A first edition of the formal technical data and relevant support will be provided to the project team by the outsourced supplier, then be allocated by the project leader to the production, technical, maintenance and other units, to complete the initial distribution signing process.

The project leader then convenes a project kickoff meeting, execute the project, and has the outsourced manufacturing process technical data distributed to production, technology (processing and engineering teams), maintenance (machinery, electrical engineering and instrument teams), and other relevant units. The contract will include protection clauses for IPR, patents, copyrights and confidentiality to ensure the integrity of technology rights.

Green Products

The OUCC understands our own corporate sustainability responsibility in the petrochemical industry persistent. For sustainable product development, the OUCC has adopted a stable, safe and environmentally friendly approach to product development. The effect of the product on health, safety and the environment has been taken into account from the very start of the life cycle, aiming to reduce all possible impact on the environment resulted from the product or production process. Our strategies include:

- **Process technology in compliance with regulations:**

The purchased technologies are those already developed in compliance with the relevant regulatory requirements.

- **Green and Innovative R&D:**

1. Innovative technology development not only must meet the requirements of environmental protection agency, but also encourages the research and development unit to make efforts to reduce resource consumption from an environment-friendly perspective.
2. Any release of toxic substances into the environment during production will be avoided as much as possible at the product development and design phase and there will be no residue on the product or contamination of the environment.
3. Upon customer's request, the newly developed and manufactured products will be tested and verified by a third party.

NMR Analysis Technology to Reduce the Generation of Waste Solvents

The OUCC has been using nuclear magnetic resonance (NMR) analysis since 2010 to determine EOD related product molecular structure, and in the analysis of impurities in AEO, MPEG, and PEG. This ensures rapid production and quality control as well as purity of the products. But the most important benefit is the reduction of the amount of waste solvent with enormous subsequent environmental benefit. Traditionally, qualitative analysis of organic compounds is carried out by titration or spectrophotometry of samples after chromatographic (LC/GC) separation. In addition to the sample which might be anything between 0.1g and 30g large volumes of solvent (MeOH, ACN, etc) 30 ~ 50ml at a time, are used throughout the analysis.

Although these conventional analytical methods can provide more sensitive detection and better accuracy, the large amount of waste solvents may affect the environment. NMR analysis requires very small samples (10~30mg) and very little solvent and has a minimal effect on the environment.

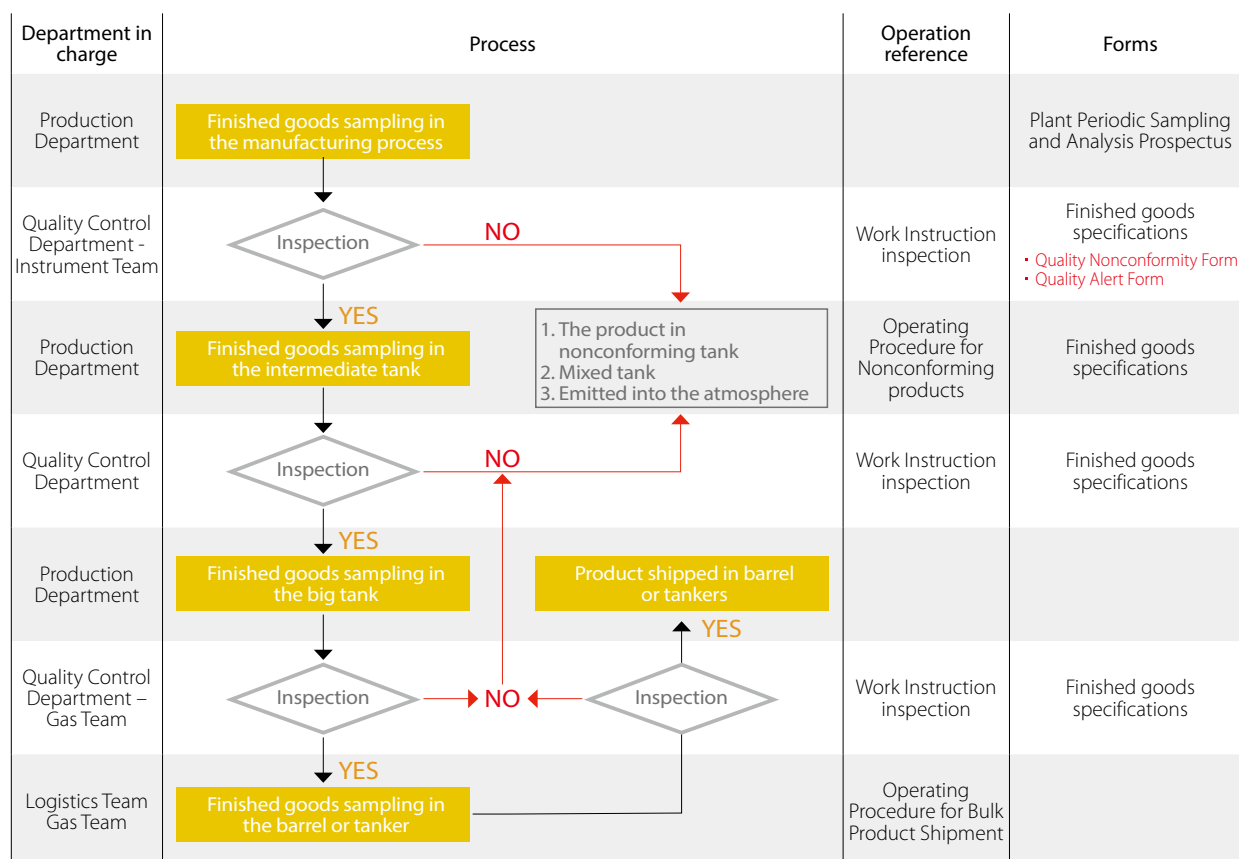
Environmental Characteristics Product (EC)

Ethylene carbonate is produced by a reaction between ethylene oxide (EO) and main feedstock carbon dioxide (CO₂), which reduces effectively the CO₂ emission and earns EC production a green process for the reduction of GHG emission.

Rigorous Quality Management

The OUCC implemented the "ISO-9001 quality management system" in 2002 and adheres strictly to all its requirements. We have deliberately set the product realization process, including raw materials management, incoming feedstock inspection, process and production control, product protection, process chain management, product identification and traceability, periodic sampling, field monitoring recording and storage, and statistical technique to ensure that product quality remains in line with customer demand and all the laws and regulations.

A customer satisfaction survey is carried out every year to validate product conformity, to ensure compliance of the quality management system, and to improve its effectiveness. All customer complaints, information or suggestions are taken into account when the performance of the quality management system is measured. An internal audit is carried out every six months and an annual external SGS audit is conducted to ensure effective implementation and maintenance of the quality management system. Corrective action is taken for any nonconformity found during an audit and the root cause is also corrected or eliminated.



Note: "Emissions into the atmosphere" refers to Company gas plant products - nitrogen, oxygen, and argon. These are non-toxic and are emitted directly into the atmosphere in the event of failure of the finished product inspection. Also, gas is not pumped into the storage tank until it passes analysis. Any gas in a storage tank that fails analysis will also be emitted into the atmosphere. However, the latter has never happened.

Low Residual Toxic Substances (Ethylene oxide & 1,4-Dioxane)

A critical quality control point has been set for each stage of the manufacturing process to reduce the presence of toxic substances in products, for example, the ethylene oxide residue in EOD product is controlled during manufacture and will be less than 1ppm in the final product and 1,4-Dioxane will be less than 5ppm.

As for product safety, lauryl alcohol polyvinyl ether for example is certified by SGS-Taiwan, and can be used safely by the consumer without causing skin sensitivity. The Safety Data Sheets (SDS) of every OUCC product is available to the public on the company website and this includes complete chemical property and toxicity data.

Reducing Harm of Product and Residual Materials

The OUCC fatty alcohol ethoxylates are primarily used as nonionic surfactants and main active ingredient of liquid hand soap, laundry detergents, shower gels, laundry powders, general detergents, and metal cleaning agents, all of which are necessities for people's daily life. The product specifications are strictly controlled and ethylene oxide residue (affecting human health) ≤ 1 ppm, and 1,4-dioxane (side effects) content ≤ 5 ppm.

The liquid CO₂ from OUCC only affects health due to impurities in the form of hydrocarbons. The CO₂ factory specification is Methane ≤ 20 ppm, total hydrocarbons ≤ 50 ppm, and purity $\geq 99.95\%$. Medical oxygen release criteria are based on the US Pharmacopeia (USP) specifications: Carbon monoxide ≤ 10 ppm, carbon dioxide ≤ 300 ppm, and purity $\geq 99.0\%$, odorless and tasteless.

Medical Oxygen GMP

The OUCC medical oxygen (as liquid) received the Executive Yuan Department of Health Pharmaceutical Good Manufacturing Certificate in February 2013. OUCC medical oxygen with the US Pharmacopeia (USP 35) manufacturing specifications is fully compliant with the pharmaceutical manufacturing plant standard Chapter 3 Good Manufacturing Practice and GMP standards of the Pharmaceutical Inspection Convention and Pharmaceutical Inspection Cooperation Scheme (PIC/S).



Satisfied Customer

The OUCC upholds the values of "sincerity, diligence, thrift, prudence, and innovation" to maintain a stable and good relationship with its customers. Customer opinion is highly valued and regular customer satisfaction surveys are carried out. For a contract review or change, the related product must be presented in advance to ensure that the company can actually meet the customer's requirements.

Customer Privacy Protection

The OUCC assumes responsibility for the protection of customer privacy. All the customers' intellectual property rights are held in the strictest confidence to ensure customer product competitiveness. With the strict protection management, there was no case of privacy violations in 2017.

Information Security Risk Management

The OUCC has built a remote backup service to control the information security risk. In the Linyuan Plant, the IT hub and backup system are located in different buildings and several safety measures have been adopted for control and security:

1. Built up the Cloud Data Center at the Kaohsiung Linyuan Plant

The data center contains ERP, applied system, and other important systems and databases and the following efficacy have been proved after some years of application and validation:

- I. Self-erected cloud database : The database has allowed safer internal data access and reduced the vulnerability of a leased cloud environment to a hacking attack.
- II. Cloud storage space : With high flexibility, cloud storage space can be divided and assigned to different types of applied servers by which means the problem of waste of storage space of the old-type has been solved.

2. Two 8MB MPLS VPN Data Lines Set up between Taipei Office and Linyuan Plant

Their main use is for video conference and data transmission. In addition to lower cost when compared to a point to point line, the use of ISP transmission encryption and decryption technology makes data transmission much safer. The two lines are incorporated using an ISP full backup facility to achieve an uninterrupted connection. In addition, the line has dynamic bandwidth control (QOS) that provides a bandwidth of 4M that guarantees the quality of video transmission. Data transmission can be up to 16M.

Customer Satisfaction Management

In order to ensure product quality relevance, sufficiency, and effectiveness, the OUCC convenes a quality management meeting every six months to review the quality of management, to consider customer feedback, the quality objective process performance, product compliance, the internal and external audits and nonconformity correction, resource status and demand, and the follow-up quality corrective and preventive actions for review and resolution by the Audit Committee.

In the event of a customer complaint, a reply must be made to the customer within three working days. The content of the complaint and any loss to the customer must be accurately documented, the root cause analyzed, and corrective or preventive action or continuous improvement must be implemented. The OUCC uses the following procedures to maintain a good customer relationship:

1. Occasional customer visits
2. An annual customer satisfaction survey
3. Occasional distributor meeting (sales)

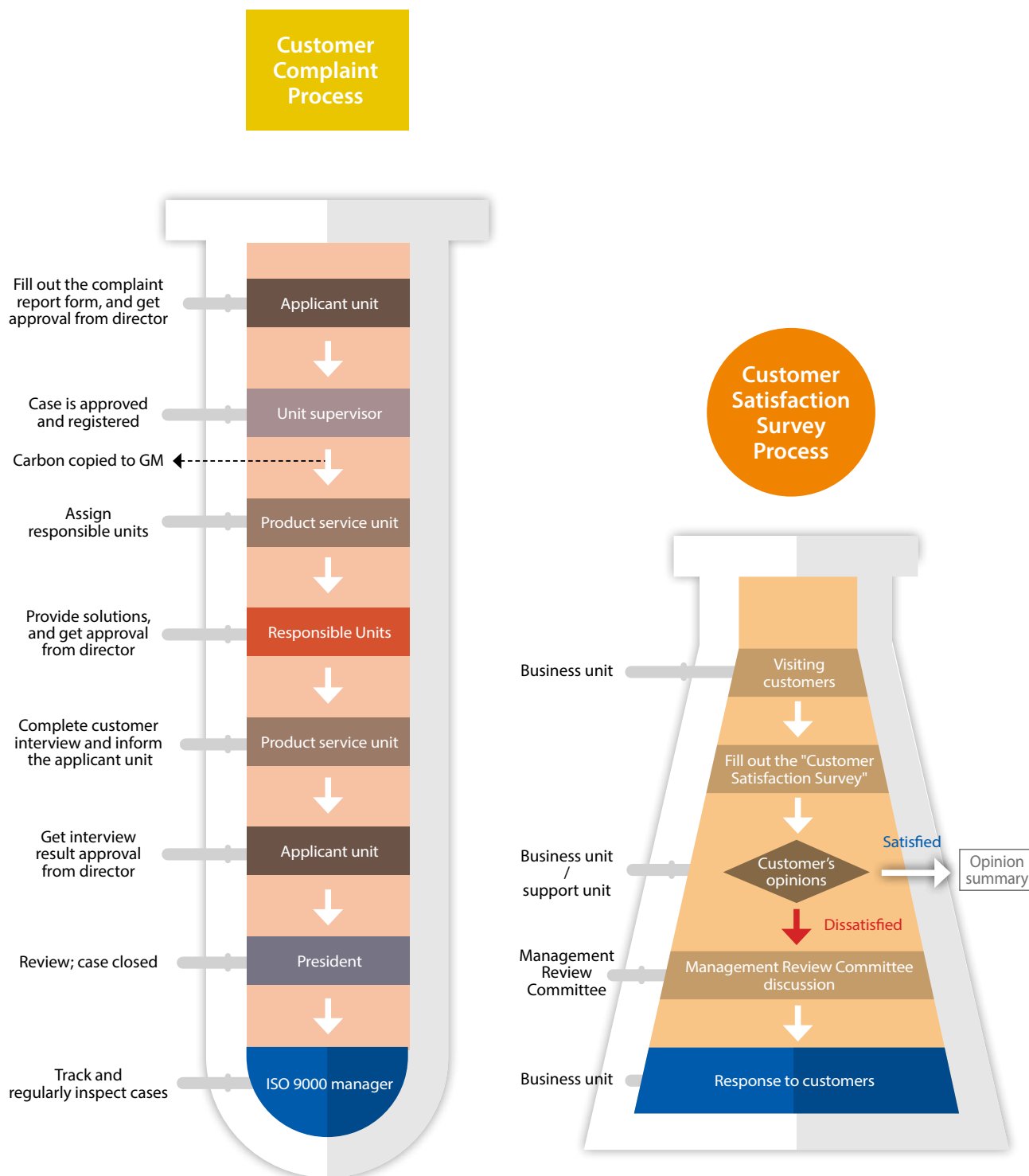
A business unit receiving a customer complaint should respond immediately and complete a "Customer Complaint Handling Form" with the complete details and date of occurrence, name, tanker number, and delivery number.

2015-2017 Customer Satisfaction Survey

	2015	2016	2017
Average score (out of 35 points)	32.4	33.5	32.8

The 2017 EG/EO Customer Satisfaction Survey attained a score of 32.8 points out of perfect score of 35 points, and the survey content including: Service, delivery, quantity accuracy, quality, packaging, transport and overall satisfaction.





Chemical Transportation and Process Safety

After the "Kaohsiung Gas Explosion" in 2014, safety management has become one of the most important issues in the chemical industry, as well as a major concern for the majority of stakeholders. Therefore, OUCC will make a long-term investment in the chemical safety management system inside the Company, and communicate with the public through the Report. Because we understand that the sustainability issue requires supporting ideas, policy planning and action implementation. In respect of safety management, we have a complete set of standard procedures for "chemical transportation", "process (plant) safety" and "emergency exercise", and continue to improve our safety management procedures with the concept of "only safer, not safest."

Freight Forwarders Control Target in 2018:

100% of forwarders
should implement the RSQAS

Management Result in 2017:

OHSAS-18001 Certification
is obtained at a pass rate of **100%**



Chemical Transportation Safety

Chemical transport can be divided into inland transport and marine transport. Inland transport can be further divided into pipeline transport, railroad transport, and road transport. As densely populated as Taiwan and with no roads especially designated for chemicals transport, most chemicals are transported on public roads resulting in close interaction with the public. Therefore, road accidents involving vehicles transporting chemicals may often present an immediate threat to the lives and property of people in proximity and also cause substantial loss to an enterprise and the society.

Transportation Risk Assessment

All OUCC products are transported by the tankers outsourced from external suppliers; therefore, the transport contractor management is of particular importance. The main risk of chemical transport is from traffic accident that caused the tanker to be overturned, resulting in the effusion of chemicals, and the chemical hazard categories, include: explosive, corrosive, flammable, oxidizing and toxic, not only endanger the life and property safety of transport personnel, road users, rescue workers and nearby residents, but also undermine the natural ecological environment, the social costs resulted in is huge. The direct cause triggering the hazardous substance leakage can be divided into four factors: man-made, vehicle, storage equipment, road and environment.

Risk factors	Possible incidents
Human error	<ol style="list-style-type: none"> 1. The inlet valve is not closed properly after a tank has been filled. 2. The tanker driver fails to fully comply with traffic rules, for example: speeding, drunk driving, running red lights, keeping no safe driving distance, etc. 3. Other road users fail to follow traffic rules and collide with the chemical tanker, or cause the tanker driver to veer and lose control.
Vehicle failure	<ol style="list-style-type: none"> 1. Vehicle mechanical failure: brakes, steering tire blowouts or punctures. 2. Transport tank not correctly coupled with the vehicle or the coupling device has been damaged.
Storage facilities	<ol style="list-style-type: none"> 1. The tank has been used for too long and may be corroded or be defective in other ways. 2. The chemical load is incompatible with the tank material. 3. The internal pressure is too high for tolerance of the tank. 4. Leaking valves or leaks from pipeline accessories or other parts.
Road and environment	<ol style="list-style-type: none"> 1. Poor geometric road design: too sharp curves, steep hills, obstructed view of the road, etc. 2. Unclear and insufficient traffic direction and warning signs. 3. Poor road conditions and obstructions.

Freight Forwarders Management System

We develop strict management standards to ensure that forwarders jointly fulfill their security commitments since all the tanker transportation in OUCC is contracted out. Apart from compliance with the minimum requirements of the laws and regulations in the country, we also ask our freight forwarders to include the "Risk Factors" in the emergency response mechanism, and continue to improve the safety management system based on the past disaster reviews or potential risk analysis.








Through the strengthening of the hardware inspection, the personnel operational proficiency, and the emergencies response capability, OUCC forms its main response mechanism on chemical transportation. Ensure the safety mechanism of outsourcing transportation companies through strict regulation and inspection, use of case-collected information, to improve the supplier's transportation personnel's depth of crisis response through promotion of regular education and training to the drivers and dispatchers.

Freight Forwarders Control Results in 2017

All the contracted tankers of OUCC have passed the inspection performed by the National Certification Body. Currently, there are 5 contracted tanker forwarders in total, with the introduction of the international system as follows:

- ISO-9001 certification is obtained at a pass rate of 80%, accounting for 94.2% of freight delivery.
- ISO-14001 Certification is obtained at a pass rate of 60%, accounting for 76.7% of freight delivery.
- OHSAS-18001 Certification is obtained at a pass rate of 100%, accounting for 95.2% of freight delivery.
- Road Safety & Quality Assessment System (RSQAS) for freight forwarders is obtained at a pass rate of 60%, and freight forwarders are requested to fully implement the RSQAS within 2018.

In addition, in order to strengthen the transport safety mechanism, OUCC regulates freight forwarders through contracts on operations for in and out of the plant, transport processes and audit system. Within the scope of labor inspection, we include road safety in the inspection scope, and ensure the quality and safety of product transportation through strengthening the advocacy and training of emergency response mechanisms.

Process	Control mechanism
 Specification	<ol style="list-style-type: none"> 1. Contract: Supplier conduct is regulated by elaborate clauses in the transport contracts. 2. The hazardous products road transport prospectus and material safety data sheets must be submitted to the local motor vehicle supervision office for the issue of a temporary permit that must be on board with the driver before loading and shipping. The driver must drive on the scheduled transportation routes at the stipulated times. 3. Vehicle hardware requirements: Use of retreaded tires is strictly prohibited for the entire tanker (including front, back or onboard trolley) ; Each tanker should have at least two functional (speed and image) event data recorders as well as GPS so the tanker can be located from any computer using a browser. 4. Driver requirements: OUCC requires that all tanker drivers must have dangerous goods transport license and driver's license, and the gas tanker driver is required to have two additional licenses for "high-pressure gas operating license" and "high-pressure container operating license". The driver must also have an annual physical checkup document and any driver with heart disease or hypertension is prohibited from driving chemical tankers.
 Plant access	<p>Each transport vehicle entering and leaving the factory will be required to have a visual checkup. Drivers are requested to do voluntary inspections and OUCC staff review accordingly. The loaded vehicles must be checked the same way.</p>
 In transit	<p>Each transport route must be confirmed by the motor vehicle supervision office. The driver must drive on the scheduled route set down in the temporary road permit and the journey will be confirmed by GPS recording.</p>
 Emergency response mechanism	<p>Each transport company is required to provide an emergency response prospectus. A transport company of each type of transport service is arranged for emergency drill, and invites the fire brigade or joint protection organization to participate, with more than two transportation companies involved.</p>
 Audit	<p>A transport contract is valid for one year. Drivers should receive refresher training once every six months. The transport company receives an onsite audit that is part of the vendor audit.</p>

Regular Transportation Meeting

To ensure the effective management of transportation safety and to discuss safety issues with transportation providers, OUCC held meetings with different transportation providers in 2017, including two meetings with tanker transportation companies, two meetings with gas tanker transportation companies and two with container and truck transportation companies. The subjects included: transportation distribution issues, follow-up on nonconformity reviews, transportation mode coordination, controversial issues, policies and safety information propagation and response to vendor issues.

Supplier Admission Control Mechanism

I. Forwarders are requested to comply with the signed admission management document that is included in the contract annexure:

- A. Contractors compliance commitments of Oriental Union Chemical Corporation Operation Safety Code
- B. Tanker driver compliance matters;
- C. Tanker operational safety management handbook;

II. Implement personnel, vehicles, cargos, and permit system, ID card control system and tanker weighing system to strictly control the admission of drivers, vehicles and their cargo.

Tanker transportation safety management mechanism

Nine freight forwarders were contracted by OUCC in 2017, of these, five were for tanker transportation which included three gas tankers, two EC tankers, and two EOD tankers.

I. Ensure that forwarders comply with and sign the safety management mechanism related document that is included as a contract annexure:

- A. Tanker driver compliance: The environmental health and operation safety matters to be complied with under the supervision of OUCC and the disciplinary action to be taken when necessary.
- B. Tanker operation safety management handbook: The tanks and trucks of the forwarders (including the autonomous shipment and shipment dispatched outside the plant) are all obliged to be in compliance with the requirements of management.
- C. Tanker emergency evacuation plan: To avoid the transportation operation being interrupted by a typhoon. If the Linyuan area should be flooded and roads become impassable, this will ensure the safety of gas tankers and the normal dispatch operation of gas delivery.
- D. Tank (truck) autonomous vehicle checklist: Prepare the safety checklist for the truck driver to check and confirm safety in advance before a double check is carried out by the OUCC loading personnel.
- E. Trailer truck connection and disconnection point checklist: Tank driver shall check and confirm the trailer truck connection and disconnection operation before a double check is carried out by OUCC personnel.

II. Any transportation emergency or nonconformity must be reported and handled in accordance with the "Transportation Incident Emergency Response Operation" and an incident report must be issued within three days after the incident. The Transportation Accident Emergency Response Operation Mechanism was revised in 2016 to include 24-hour emergency notification hotline, emergency notification and contact method for each unit. Strengthen the education for colleagues on emergency notification inquiry and illustrative focus, and establish an investigation SOP.

The Management Mechanism for The Production and Delivery Process of Raw Materials, Substances, and Finished goods

The delivery route taken by tankers transporting hazardous materials is regulated in accordance with Article 84 of the Rules on Road Traffic Safety. All forwarders were officially informed by the factory that the "Rules Governing Safety and Health for Hazardous Goods Delivery" and "Transportation Violation Penalty Standards" are included in the contract and strict compliance is required.

Road audits include occasional inspection and GPS satellite positioning. These audits include occasional random inspections and vehicles can be followed to record the driver's behavior on the road, the driving speed, and unloading operations. GPS satellite positioning audits can be used to determine the vehicles position and to check if the driving speed and the idle time on the road have been reasonable, and the choice of route or zone been normal.

Field Pipeline Maintenance Operation and Management

OUCC formed the "Pipeline Maintenance Operation Team" in May, 2016, to actively manage the pipeline-related business, including the control of the patrol inspection, testing and maintenance status of the field underground pipelines, expecting to reduce the risk of field pipelines operation.

Underground Pipeline Maintenance Operation:

1. Pipeline diagram information system maintenance: pipeline piping diagram, basic data collection and maintenance, the establishment of coordinate data and system applications.
2. Pipeline patrol inspection management and pipeline management audit:
 - A. Pipeline patrol inspection management: patrol inspection, verification of patrol inspection, pipeline cover testing and verification reports, etc.
 - B. Pipeline surrounding inspection & environment organization, construction survey, overlay mapping, station and maintenance of construction applications and supervision, etc.
 - C. Joining the Pipeline Bundle Area Joint Protection organization to participate in the training, contingency training, and pipeline maintenance meetings for the relevant management and improvement.
3. Pipeline and facility maintenance: Underground pipe thickness measurement, abnormal nodes maintenance, supervising and planning for the cathode anti-corrosion measurement, pipe positioning detection, close electricity potential detection and GPS positioning measurement, etc.
4. Pipeline maintenance and risk assessment: Pipeline condition detection and risk assessment, Intelligent Passers (IP) inspection planning, pipeline leak detection and replacement planning, etc.
5. Pipeline system operation and monitor: Pipeline inflow & outflow metering, pressure checking system planning and operation supervision.
6. Pipeline contingency plan and the drill: Implement pipeline contingency management and the drill according to the "Contingency Countermeasure Guidelines" and "Contingency Drill Plan" formulated by Chang Chun Group of the Pipeline Bundle 5 Area Joint Protection Organization.

Our field pipeline maintenance task is to reduce the risk of field pipeline hazard through pipeline diagram information establishment and management, pipeline operation status control, pipeline survey, contingency drill, and maintenance & operation of the joint protection organization.



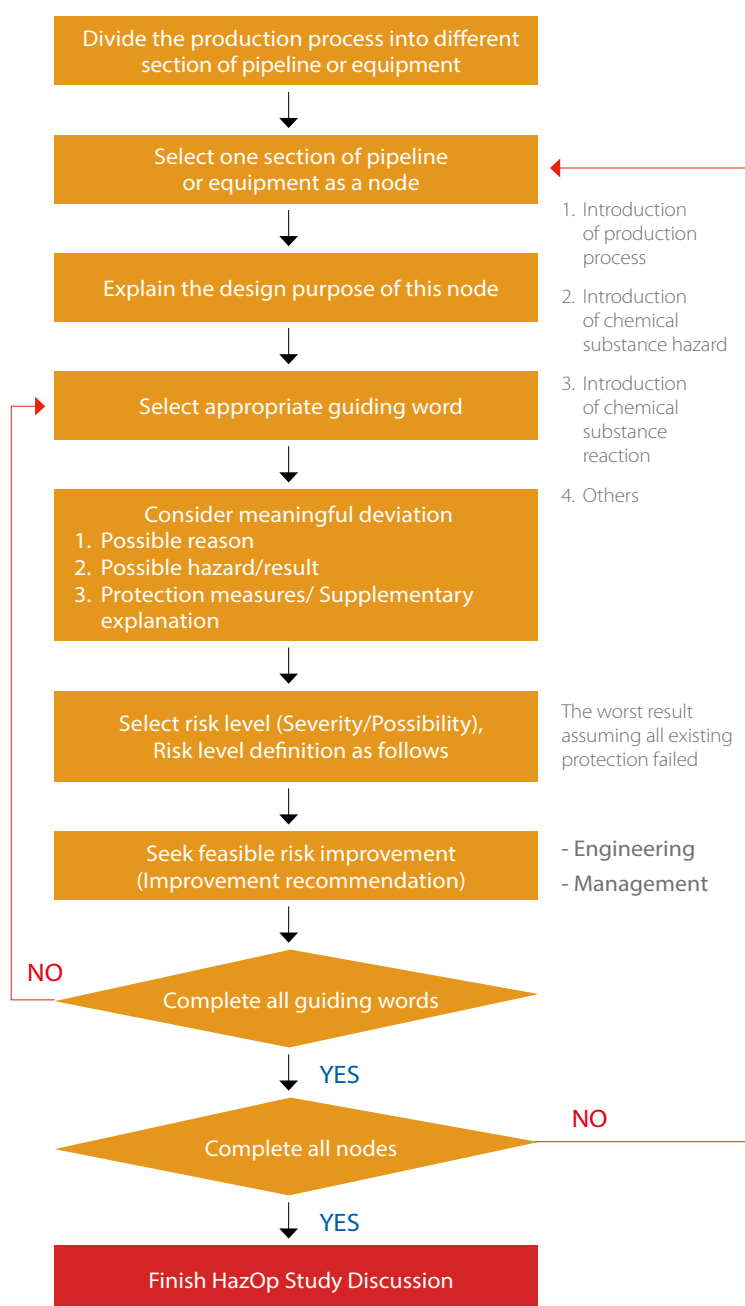
Manufacturing Process Safety

Manufacturing Process Hazard Risk Assessment

The OUCC regards "hazard control" as the most critical of all safety management measures. We believe that only the most stringent hazard control can actually reduce the risk of workplace accidents, possible personnel casualties, occupational injury and significant property loss. The OUCC has carried out manufacturing process hazard and operability (HazOp) analysis on the more hazardous processes associated with higher risk. A hazard prevention model and the risk management process have been constructed to reduce the probability of industrial accidents.

HazOp is a well-known analytical technique frequently used by labor inspection units. The OUCC has executed HazOp analysis for all new installations as well as for the existing ones and an assessment is carried out at least once every five years. The personnel with manufacturing process safety assessment certificates or licenses complete a further training course every three years. Moreover, The OUCC has also introduced Layers of Protection Analysis (LOPA) technique in the newly established EOD plant in 2010. High-impact events from the HazOp analysis of the EOD plant were selected for LOPA analysis. The security protection layer was strengthened to achieve the expected degree of risk management. A LOPA analysis of the existing processes (EG/EA/EC) was also completed.

Flowchart of HazOp



Propylene Oxide Storage Tank Risk Hazard Analysis

The process risk is a key issue to the safe environment. Thus, we conduct preliminary hazard analysis on the new propylene oxide storage to identify the safety risks of the work field, and for high-risk equipment, provide process safety assessment, and request for improvement within a specific period of time on missing items for safety.

The Factory's Preliminary Hazard Analysis Uses The Following Three Analyses

- One is to conduct essential hazards analysis on the manufacturing, disposal, use of dangerous products, flammability, stability, toxicity of hazardous substances.
- The other is to inspect the substances, processes, production process units, etc. to understand its harmfulness and measures.
- The last one is to conduct system function hazards identification and analysis on the operating conditions of the production process system such as temperature, pressure, flow and external environment.

Emergency response of propylene oxide unloading truck leaking



Isolation valve



Combustible gas detectors



Fire Alarm



Emergency foam and sprinkler system



Sprinkler system at unloading stations



Foam tank

Production Process Disaster Prevention Measures

1. Propylene oxide tank system abnormalities and operational procedures

Production Process Isolation

- Emergent activation of the ESD system.
- Shut off isolation valve.

Safety Configuration

- Combustible gas detectors are installed on site.
- Personnel are distributed with canister gas mask and goggles.
- Equipment and pipeline are equipped with emergency sprinkler system (with fire hydrant and water cannon for firefighting).
- Equipped with DCS production process with chain logic system.
- Emergency stop press button is equipped both on-site and in the control room.
- Personnel are equipped with class-A protective outfit when implementing the relevant isolation operations upon a leak.

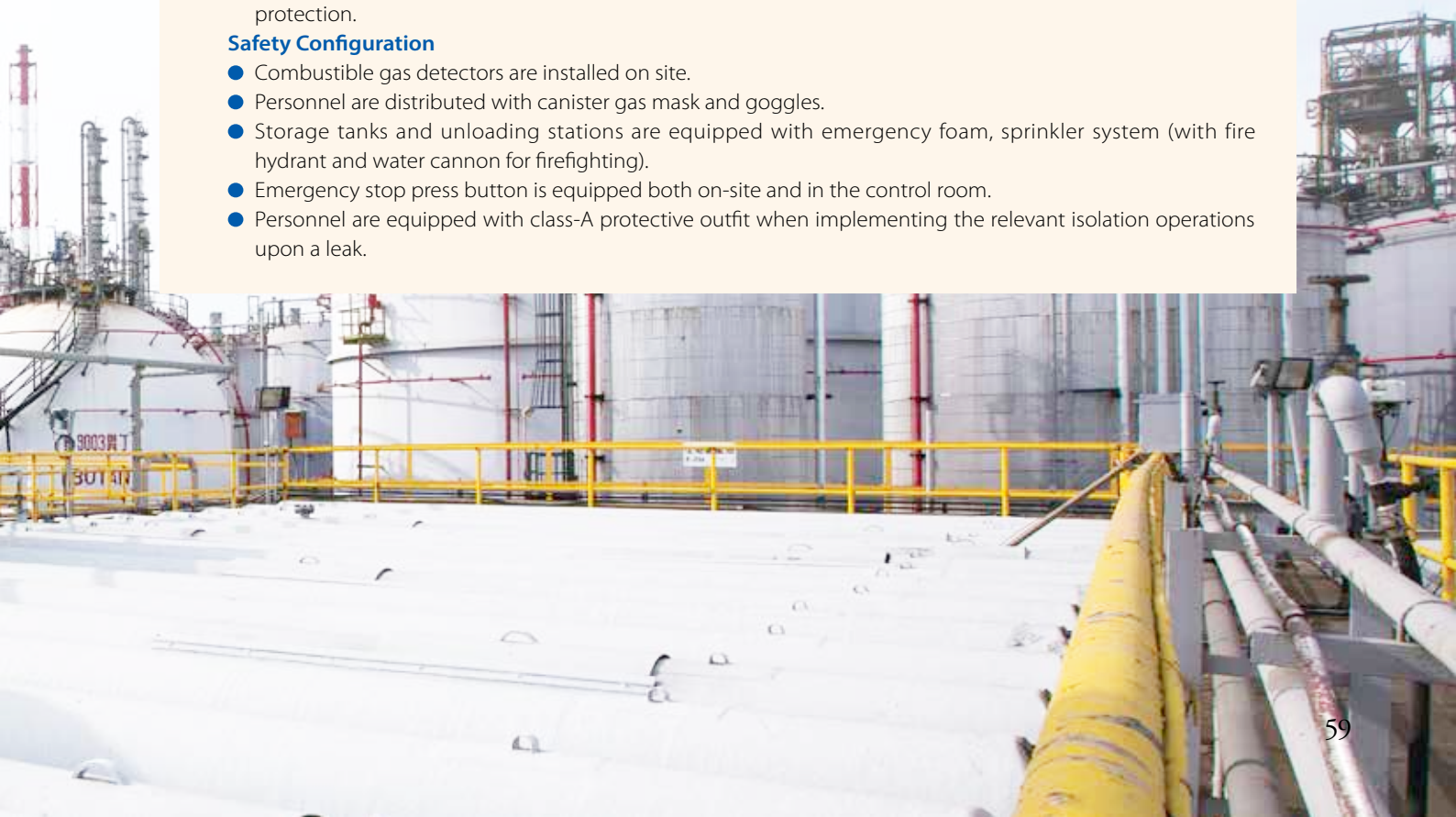
2. Emergency response of propylene oxide unloading truck leaking

Production Process Isolation

- Propylene oxide tank outlet pipeline is equipped with flow control valve, to have the shut-off activated when overflowed. To prevent large amount of leakage caused by a broken pipeline, a remote control switch is also equipped to activate an emergent shut-off.
- Propylene oxide storage tanks and unloading stations are equipped with sprinkler system as a fire protection.

Safety Configuration

- Combustible gas detectors are installed on site.
- Personnel are distributed with canister gas mask and goggles.
- Storage tanks and unloading stations are equipped with emergency foam, sprinkler system (with fire hydrant and water cannon for firefighting).
- Emergency stop press button is equipped both on-site and in the control room.
- Personnel are equipped with class-A protective outfit when implementing the relevant isolation operations upon a leak.



Emergency Response Mechanism

For risks associated with processing, operations and transportation, which might occur at any time, the company regards product type and departmental accountability to proceed with comprehensive simulation and preparation for the probable accidents. A contingency plan is formulated and practical exercises, education and training are arranged to help on-site staff quickly appreciate the situation at an accident site and react effectively, so to minimize the damage of the accident and its effect on people and the environment.

Emergency Response Plan

The OUCC has prepared an "Emergency Response Plan" for the prevention of occupational accidents and the protection of employees against fire, leaks, typhoons, floods, earthquakes, war, transportation accidents, and to deal with notifications, evacuations, rehabilitation, and so on. Regular drills and contingency measures are organized to cope with disasters that might occur, and to take immediate action in the event of an accident, in an organized and systematic way to minimize damage and loss.

We use the "prevention is better than cure" strategy, and apply the concept of risk assessment to any potential risk in the production and manufacturing process. We apply simulation to predict the occurrence of possible disaster situations and use the results to formulate an emergency response plan.

Education of the response teams is done and drills are held so that any inadequacy or insufficiency can be corrected in advance.

In the event of a disaster or an emergency, the internal and external reporting procedure is immediately activated in accordance with the "OUCC Emergency Response Reporting Process." In addition, the following comprehensive emergency response protocols are used to ensure that all employees will respond in the same coordinated way in the event of an accident:

1. The OUCC field pipeline leak emergency response principles.
2. The EG Plant raw materials field pipeline transportation procedures and nonconformity process.
3. The OUCC Linyuan Plant "Rules Governing Oxygen and Nitrogen Gas Transmission Pipeline Nonconformity."
4. Nitrogen gas pipeline leak emergency response plan.



Results

Potential manufacturing process and transportation accidents at OUCC are likely to involve chemical spills, fire, tanker accidents, and explosion.

An emergency response team was established in 2015 to reduce the incidence and consequences of accidental chemical leaks. The task force arranged the groups according to the nature of the emergency response needed. We are confident that the members selected have sufficient knowledge and experience to effectively reduce the impact of an emergency and to control the escalation of any such incident.

We engaged external experts who gave our personnel 70 hours of training sessions. These included general emergency response exercises, fire-fighting equipment operation, and mobilization of the emergency response teams. Staff from the Linyuan fire brigade are invited to instruct our personnel in the operation of the plant fire-fighting equipment. A total of 307 people/times took part in training sessions in 2017.

The 2017 Emergency Response Team Training List

Item	Training Programs	Number of Participants
1	Firefighting facilities operations review	289
2	A-class protective outfit review	66
3	EA plant n-butanol discharging station emergency response exercise	18
4	Evacuation exercise (including contractors)	261
5	Emergency response integrated exercise: Butanol discharging truck leakage response exercise	74
6	Emergency response integrated exercise: EO filling station leakage response exercise	120

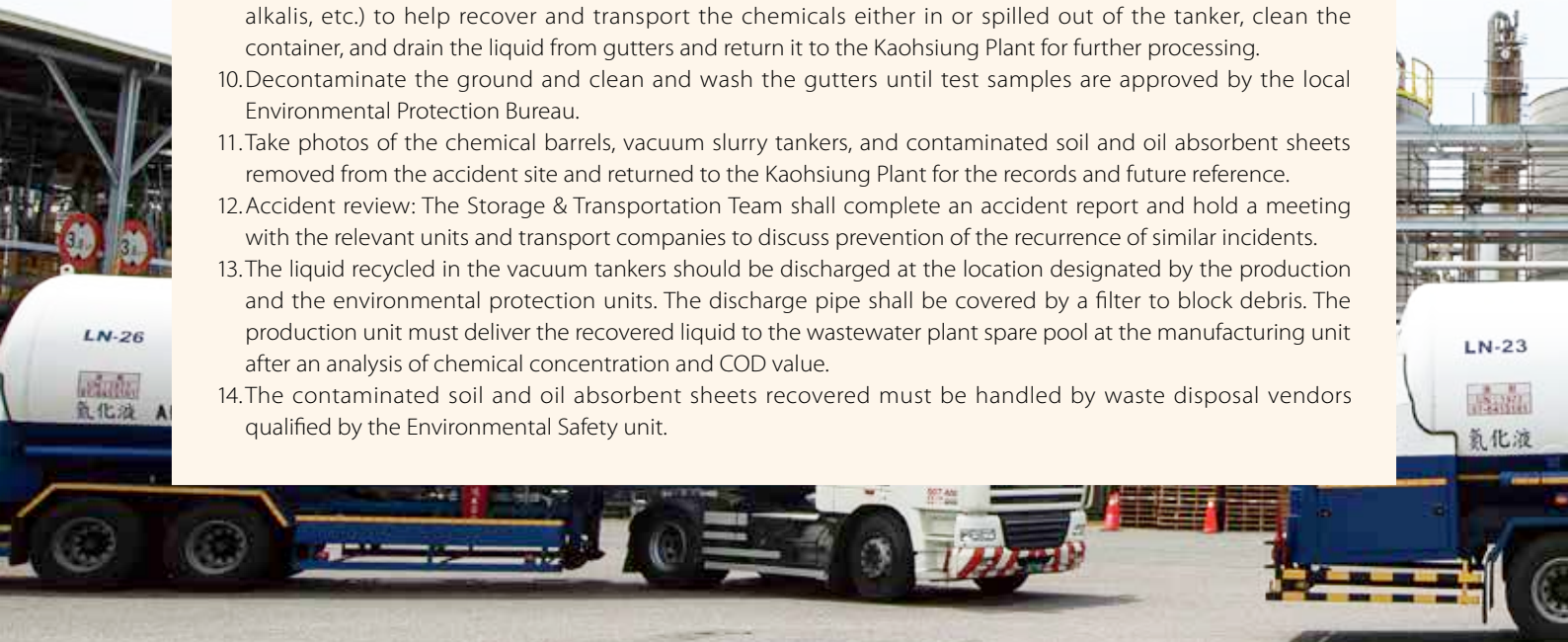
To ensure a convergent result for each emergency response, all emergency response plans were consolidated into one in the event of fire or leakage, and standardized with operation procedures (SOP). We have also introduced simple and effective guidelines to ensure emergency response team members are fully aware of their particular role so they can make a correct and prompt response based on the nature of any incident in accordance with such SOP.

The 2017 List of Emergency Response Plans

No.	Potential disaster	Emergency Response Plan
1	Leak, fire	Emergency response team members and missions
2	Transportation incident	Transportation incident emergency response operation
3	Typhoon and storm	Typhoon and storm graded emergency response plan
4	Earthquake	Earthquake emergency response procedure

Emergency Response Mechanism for Liquid Leaks

1. A transportation accident shall be reported immediately, depending on the situation and severity, in accordance with the "OUCC Emergency Response Report Flowchart."
2. The Plant Manager or Director will use the reporting system to dispatch personnel to the site. The Environmental Safety (environmental protection related follow-up), Production (chemical-related followup), and Storage and Transportation (transport company vehicle scheduling and replacement related follow-up), shall all be informed and assistance may also be requested from the Maintenance staff if necessary.
3. The SHE Department shall contact the local fire brigade (119), environmental agencies, transportation agencies, the Executive Yuan EPD Southern Taiwan environmental toxic disaster response team, ERIC national toxic disaster counseling center, or other toxic chemical disaster prevention center, and chemical disaster relief organization support units to request support and assistance.
4. The Storage & Transportation Team shall dispatch one emergency vehicle equipped with emergency response equipment with all the necessary personnel to the accident scene.
5. Site commander: Local relief personnel assigned to the accident scene shall act as the site commander and coordinate operations with the environmental safety personnel to manage disaster relief. To secure the safety of personnel, unauthorized persons should be removed from the accident scene.
6. Warning signs should be set up around the scene of the accident to prevent secondary damage, the area should be cordoned off and access should be denied to unauthorized persons.
7. An announcement should be made by the spokesperson of the Linyuan Plant.
8. Request the transport company to arrange trucks and cranes for backup and to recover the damaged or undamaged goods or shift the tank and return it to Kaohsiung Plant for further processing.
9. Contact a waste disposal company that is equipped with vacuum slurry tankers as needed (such as, acids, alkalis, etc.) to help recover and transport the chemicals either in or spilled out of the tanker, clean the container, and drain the liquid from gutters and return it to the Kaohsiung Plant for further processing.
10. Decontaminate the ground and clean and wash the gutters until test samples are approved by the local Environmental Protection Bureau.
11. Take photos of the chemical barrels, vacuum slurry tankers, and contaminated soil and oil absorbent sheets removed from the accident site and returned to the Kaohsiung Plant for the records and future reference.
12. Accident review: The Storage & Transportation Team shall complete an accident report and hold a meeting with the relevant units and transport companies to discuss prevention of the recurrence of similar incidents.
13. The liquid recycled in the vacuum tankers should be discharged at the location designated by the production and the environmental protection units. The discharge pipe shall be covered by a filter to block debris. The production unit must deliver the recovered liquid to the wastewater plant spare pool at the manufacturing unit after an analysis of chemical concentration and COD value.
14. The contaminated soil and oil absorbent sheets recovered must be handled by waste disposal vendors qualified by the Environmental Safety unit.



Tanker Leak Emergency Response Exercise

Simulation scenarios

CHI-HSEN staff drove and carried liquid nitrogen tanker to unload materials at Eternal Materials in Luzhu. When the unloading was completed and the tractor turned right into the Luzhu Science Park, the rear axis on the passenger side of the tractor wiped the roadside protection stone as a result of improper control on turning, causing the flat outer tire and damaged rims in the rear axis on the passenger side of the tractor, and the anti-embroided device being dented and damaged. There was no damage to persons and tanker body.

Exercises

- The response to an incident in transport delivery;
- The driver's report of the incident and the precautionary measures taken at the site of the incident;
- How well the company personnel handled the situation after receiving notice of the emergency;
- Post-processing capability and aftermath: Vehicle damage handling, review of the cause of the incident and the inclusion of other drivers in the review as a learning experience.



GREEN OUCC

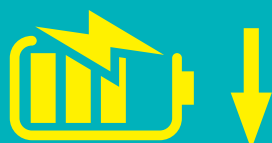
The OUCC is committed to the provision of a safe and healthy working environment and have made "zero accident, zero injury, and zero pollution" our goal. We have also complied with and introduced the relevant international SHE standards and regularly review the implementation of environmental health and safety to achieve protection of the global environment and the safety and health of our employees.

The OUCC supports "responsible" industrial development and improvement in collaboration with the Taiwan Responsible Care Association (TRCA). We are committed to the pursuit of balanced industrial safety, health, and environmental protection in accordance with the purpose of the TRCA.

2017 Environmental Performance



Total accumulated reduction of
1,935t-CO₂e



Power-saving of

3,658,000 kWh



Occupational Safety and Health Management

The environmental safety and health policies are carried out in every part of the plant to make sure production runs smoothly. Well-developed industrial safety and environmental protection measures are implemented and there are personnel responsible for air, water and toxic pollution, and waste, etc., who engage themselves in formulating, planning, supervising and promoting of the environmental health and safety management and equipment inspection, providing implementation guidance and equipment inspection related proceeding to relevant departments.

Dedicated Environmental Protection Personnel

1. Air pollution dedicated staff: Three Class A dedicated personnel.
2. Water pollution dedicated staff: Two Class A and two Class B dedicated personnel.
3. Toxic chemicals dedicated staff: Four Class A trained and qualified personnel.
4. Waste goods dedicated staff: One Class A trained and qualified personnel in waste management.



Occupational Health & Safety Committee

The OUCC has an Occupational Health & Safety Committee where the labor representatives account for 46% of the members. We regularly hold a meeting once every three months to review the occupational safety and health cases and coordinate with colleagues, and keep the full record for announcement.

Labor Safety & Health Committee	Unit	2017
The management level of Occupational Safety & Health Committee	Remark	Plant manager
Total number of members of Occupational Safety & Health Committee	Person	13
Number of labor representative	Person	6
Percentage of labor representatives	%	46

The OUCC has received ISO-14001 environmental management as well as OHSAS-18001 occupational health and safety management system certifications which ensure standard control and compliance. HAZOP study was carried out for each plant before construction began and the procedure for the management of change (MOC) is mandatory and must be carried out in advance to ensure safety remains intact after any changes related to process equipment, chemicals, technology, security and operation have been made.

The environmental health and safety risks assessment for employees is carried out in accordance with "ISO-14001:2004 4.3.1 environmental considerations" and "OHSAS-18001:2007 4.3.1 hazard identification, risk assessment and determine control method."



OUCC Safety, Health, and Environmental Principles

1. It is the responsibility of the staff as a whole to ensure a safe, healthy, and environmentally friendly workplace.
2. All injuries and occupational diseases can be avoided.
3. It is the responsibility of supervisors at all levels to train staff to work safely.
4. Employees are the most important company asset, and safety in work is also one of the conditions of employment.
5. Any nonconformity must be corrected as soon as possible.
6. Avoiding injury is a major employee contribution to the company.
7. Audits are necessary.
8. Contractor safety and management is as important as that of the employee.
9. Safety off the premises of the office and plant is also important to the employee.
10. Continue to improve clean production and be a good neighbor in the community.



Practices and Results

The OUCC upholds the spirit of self-discipline, has joined the Taiwan Responsible Care Association (TRCA) to promote responsible care and has taken up six standard management guidelines (CODE): process safety, emergency response and safety, distribution safety, contractor safety, waste and reduction management, and product safety management.

OUCC has cooperated closely in the environmental monitoring and sampling analysis carried out by the Kaohsiung City Environmental Protection Bureau and the Environmental Protection Administration of the Executive Yuan, ROC (Taiwan), since 2015. In 2017, OUCC also conducted the sampling for inspection for the established Eighteen groundwater monitoring wells, and the sampling results are also consistent with the monitoring standards for groundwater pollution. In addition, we cooperated with the Environmental Protection Administration of the Executive Yuan, for the promotion of the petrochemical process hazardous air pollutants reduction action and conducted an RTO-2 exhaust survey and analysis at the Linyuan plant with satisfactory results.

In addition to continued implementation of "ISO-14001 environmental management" we are actively promoting improvement in the effectiveness of the pollution prevention system and control. The installed underground monitoring wells and flammable gas monitoring stations are to ensure environmental pollution prevention. The recycling of carbon dioxide is being done, waste gas incinerators and wastewater plants are being constructed and other environmental engineering projects are underway.

Occupational Safety and Health Management Mechanism Standard Operating Procedures (SOP)

1. The "Hazardous Duty Consent Form," was formulated to designate authority and responsibility of the personnel at all levels clearly, according to the danger or hazard of the task.
2. The "Typhoon and Storm Prevention Graded Contingency Plan" clearly defines the activating timing for senior supervisors' stationing and discharge to be free from the weather impact.
3. The "Emergency Response Team Members and Mandate" was enacted and a regular emergency response organization was set up in the plant to strengthen incident response capability.
4. A "Pre-Startup Safety Review (PSSR) Procedure" was introduced to prevent operation, maintenance, or the related engineering safety problems when new or amended processes and equipment are just activated or started up.

Zero Disaster Workplace Environment

We believe that "no matter how big the plant, there can be no gray safety area, because a chemical plant without safe production is ineligible for an industry leader." To prevent failure and detection of abnormal conditions in a timely way, hence, the 5S safety team is formed by senior managers in charge of the plant, perform weekly regular inspection according to designated area, record any defects on the equipment or environment, and submit comments to the inspected unit for improvement.

Record of Awards 2014~2017

Date	Awards
2014.01.01	The smoke-free and health promotion measures are implemented in the workplace of OUCC to establish a quality healthy work environment. We were rewarded with the Badge of Accredited Healthy Workplace issued by the Health Promotion Administration, Ministry of Health and Welfare.
2014.04.30	Passed ISO-14001 and OHSAS-18001 certification again.
2014.08.19	Received the SGS "Environmental Sustainability Award".
2014.11.21	A commendation was received from the Fengshan District Office of Kaohsiung City for a donation of 500kgs of EG to facilitate spraying operations to help contain a dengue epidemic in the community.
2014.12.24	The Kaohsiung Linyuan Plant received a "One Million Accident-Free Working Hours Record" certificate from the Occupational Safety & Health Administration, Ministry of Labor.
2015.11.06	Actively participated in activities of the toxic chemicals union defense operation organization, and received the toxic chemicals union defense operation outstanding management – Excellence Award from the Environmental Protection Administration of the Executive Yuan, ROC (Taiwan) in 2015.
2016.03.23	Kaohsiung City Fengshan District Office Certificate of Appreciation, a gesture of appreciation for OUCC's enthusiasm in public service by providing 500 kg of smoke agent ethylene glycol to help dengue epidemic prevention and control.
2016.07.14	Certificate of "Two Million Accident-Free Working Hours Record" issued to Linyuan Plant by the Industrial Safety & Health Association commissioned by the Occupational Safety & Health Administration, Ministry of Labor.
2017.01.01	The smoke-free and health promotion measures are implemented in the workplace of OUCC to establish a quality healthy work environment. We were rewarded with the Badge of Accredited Healthy Workplace issued by the Health Promotion Administration, Ministry of Health and Welfare.
2017.12.01	The Plant participated in the "2017 Kaohsiung City Promotion of the Workplace 4-Cancer Screening Incentive Plan" of the Department of Health, Kaohsiung City Government and won the award.
2017.12.04	Occupational Safety and Health Administration, Ministry of Labor authorized the Industrial Safety and Health Association (ISHA) of the R.O.C. (Taiwan) to issue the "Two Point Nine Five Million Accident-Free Working Hours" certificate for encouragement.

Safety Prevention Mechanism

Safety and Health Training

Education and Training Project	Frequency	Hours	The number of participants	Investing amount
Fire safety	Twice a year	6	307 persons each time	Estimated NT\$ 40,000 each time
Environmental Protection				
Safety and Health				

Response to the Safety Demands of Employees

Propose the improvement mechanism and implementation to effectively reduce the work safety risk through the regular "Occupational Safety & Health Committee, Contractor Agreement Organization Meeting". In 2017, we reviewed, improved and ensured the safety of employees in the plant on the safety and health items submitted by the employees through the in-plant safety meeting, the improvements are as follows:

- The original noise problem in the dispatch room, which is to the south of the control room of the gas plant may affect hearing.
- Make hardware improvement: Set the two-entry doors to effectively reduce the noise value from 76 dB to 58 dB below.
- Regularly hold meetings with the focal point at each unit, and each unit takes turn to serve as the chairman. In the meeting, there will be experience sharing, use of safety protective tools, near miss and advocacy of occupational safety to be put forward, establishing a good interactive platform for all units and the occupational safety and health exchanges.

Noise pollutant before improvement



Noise pollutant after improvement





Noise Prevention Measure

1. Notices of wearing ear protection are displayed at all the entrances to the plant with noise pollutant.
2. Personal hearing tests are carried out every six months.
3. Plant personnel must wear earplugs or earmuffs before entering noise polluted spaces.
4. Every employee is arranged for an annual precision hearing test.

TAKE 5 Safety Training

Purpose: TAKE 5 is a safety check and audit reinforcement tool, take the initiative to effectively eliminate the accident factors through the five actions, and conduct two-way safety communications in all levels.

T Communication: (Stop, Step Back, Observe)

- Do I understand my task?
- The role between myself and my colleagues?
- Have I communicated with all those who will be affected by my task?
- Will my task affect other people?
- Have I communicated with anyone else through any method that makes the task safer?

A Action: (Think through the Task)

- What is the effect of my action on my safety?
- What is the effect of my action on the safety of others?
- Do I know the steps / procedures?
- Have I applied for the permit?
- Did I read the contents of the permit?

K Knowledge: (Identify any Hazards)

- Do I know if there are any hazardous items surrounding the working environment?
- Possible slip, trip or fall? Will it be in contact with dangerous substances?
- Is there any possible dropping or protruding objects?
- Is there pressure in the equipment / pipe?
Does the equipment need to be isolated and disconnected from power?
- Is the surface hot? Will I be burned?
- Will my task affect other operations around me?

E Equipment: (Control, Safety Protection)

- Has the danger been eliminated or controlled?
- Do I have the proper protective equipment to do this task?
- Do I have the right tools to do this task?
- Are the tools and equipment in good condition?

Complete the Task Safely

Health Promotion Project

We have set "Rules Governing Workplace Health" for the safety and health of employees, visitors, and contractors, to avoid occupational risk and protect all the people in the plant. We also take steps to ensure that all personnel are qualified and competent for their assigned missions both physically and mentally. The OUCC Safety & Health Department has defined and implemented an operational environment test routine for the review, confirmation and control of occupational hazards.

We comply with the "Labor Health Protection Rules" in the implementation of general physical examination and health checkup for all plant employees. The Chunggho Memorial Hospital of the Kaohsiung Medical University has been appointed by the Ministry of Labor and Department of Health as the medical institution responsible for the care of OUCC plant staff. A "Labor Health Checkup Handbook" is issued to all employees and their Safety & Health Department physical checkup records are kept for 10 years.

The hospital will inform the OUCC organizer and the employee of any abnormal findings before a written report is issued. They will assist the employee with further medical review, advice and treatment until recovery. In case the health condition is not suitable for the original work, after the evaluation by a doctor, it is recommended the person in charge of the unit to change the place or type of work for the employee. If the employee is a labor union member, the labor union will be notified to understand the employee's actual health condition and the handling status. Other relevant health and safety prevention measures include:

Health care measures

1. All our plants have first-aid kits in place, we keep them clean and replenish complimentary item
2. Set up the "automated external defibrillator (AED)", and conduct the first aid training. 100% of our employees have completed the training
3. There is a full-time physician and a nurse stationed in the plant to provide employees with healthcare and counseling.

Health checkup

1. One annual checkup and a re-check are arranged for every employee.
2. One annual checkup and one senior management health checkup every two years are arranged for managers and above.
3. A counseling follow-up service is provided.
4. Health checkup report is provided with the checkup items described and health education is also provided.
5. A 4-cancer screening (National Health Bureau) is included in the health checkup.

Health counseling & assistance

1. Assist employees and their families to get treatment and registration service.
2. Provide individual counseling service and suggest the employees the work to avoid.
3. Conduct risk assesment on occupational diseases at Linyun plant.
4. Quarterly urine drug testing.

Health education advocacy

1. Arrange health education advocacy at any time depending on the epidemic situation (please refer to the CDC & government health units).
2. Invite external lecturers to speak about safety and health education at the plant.
3. Work with local health units to arrange health courses and advocate and support the policies of the government.
4. Advocate safety on a daily basis.
5. An alert announcement would be made when the air quality measured by the Environmental Protection Agency displays dangers to health to remind employees to wear mask outdoors and reduce strenuous outdoor activities.
6. Invite health units to the plant to give a vaccination against influenza.

Health promotion activities

1. The "Health begins from eating and drinking: Dietary guidance for the three highs" activity is conducted by two sessions to effectively help employees to establish diet management principles.
2. The "Physical and mental health chapter: defend the right to dispose of the lives of individuals" activity is conducted by two sessions in response to the increasing elderly population, and make the physical and mental health reconstruction of the aged.
3. Conduct statistics and classification on the annual health exam results, track and understand the colleagues with abnormality and high-risk. The plant doctor will determine whether it is caused by the type of work or the environment, to conduct individual counseling health education and to assist medical treatment, and organize Health seminar in the factory. 100% of our employees except for those going on business travel participated in the seminars held in 2017.

Preventing exceptional work-related illness and occupational diseases

1. Establish the procedures for prevention and management of exceptional work-related illness and occupational diseases
2. Among all staff in the plant, according to the physical checkup report/overload scale/6-month overtime hours, four in total need the physician consultation. All the interviews have been completed according to the procedures, and the statuses of the persons interviewed have been improved.

Women's health at the workplace

1. Establish procedures for women's health management at the workplace
2. Set up a nursery room
3. In 2017, a total of two female employees completed care and counseling in accordance with the procedures; one has been back to work in 2017.10.02, and there is still one on parental leave.

Note: 1. According to information from the Ministry of Health about the top ten causes of death in recent years, heart disease is amongst the top three. Deaths caused by heart disease are mostly in the form of sudden cardiac arrest, and defibrillation is one way to help restore normal cardiac function.

2. Automated External Defibrillator (AED) is an equipment that can automatically detect heart rhythm in a patient and administer electric shocks to help restore normal function. It is easy to use with voice instructions and the graphics provided. It is a foolproof device and it is thus called a "fool-proof" AED. Data Source: Ministry of Health & Welfare – AED First Aid Information Network (<http://tw-aed.mohw.gov.tw/>).

Occupational Accident Statistics

Occupational Accident Statistics

	LDR	Unit	2016	2017		AR	Unit	2016	2017
Female	Work days missed	Day	0	0	Female	Total working days	Day	5,208	5,208
	Total working hours	Hour	41,664	41,664		Days absent	Day	62.5	109.2
	LDR	%	0	0		AR	%	1.2	2.1
Male	Work days missed	Day	0	0	Male	Total working days	Day	77,128	76,136
	Total working hours	Hour	617,024	609,088		Days absent	Day	395.4	487.8
	LDR	%	0	0		AR	%	0.51	0.64

Prevention of Occupational Disease

OUCC has been concerned about the issue of employee overwork, OUCC Linyuan plant has established, implemented and promoted "Prevention of Disease Caused by Abnormal Workload Procedures", and taken safety and health preventive measures related to overwork prevention to ensure the physical and mental health of employees in the plant, further to reduce the employee's long-term work pressure and job fatigue accumulation due to shift rotation, night shift work and long work hours, that affected the physical capability and caused the risk of cardiovascular disease.

The Linyuan Plant "Occupational Safety & Health Committee" holds meetings every three months. The plant nurse reports health service related matters concerned with the prevention of bad health conditions triggered by abnormal workload and all the health management, occupational disease prevention, health promotion, and other health protection matters are reviewed at the meeting. In addition, we have arranged for plant nurse to assess personal fatigue risk factors, working patterns and environmental risk factors, as well as the monthly overtime hours of employees with abnormal workloads. Health management measures are taken according to different levels of workload to safeguard employee health.

Environmental Management & Sustainable Energy

The issue of global warming and climate change has become a serious concern to industry. The energy supply in Taiwan relies mainly on foreign imports and is derived mostly from fossil-fuel that is more likely to produce excessive greenhouse gas emissions. The occurrence of extreme weather in recent years and an awareness of the need to save energy and reduce carbon emission has become a matter of urgency to both industry and the public.

The company understands that the energy and climate change issues will be even more closely linked to the future business environment and costs. We are therefore paying close attention to it, and, taking the existing and potential impact on our operations into consideration, are formulating appropriate energy saving, carbon reduction and greenhouse gas emission reduction strategy.



Greenhouse Gas & Energy Management

The GHG reduction target and short-, mid- and long-term strategies



Schedule	Management Objectives	Implementation Measures
Annual Plan (2018)	<ol style="list-style-type: none"> As a result of an actual reduction of 1,935 tons of CO₂e in 2017, with a target rate of about 60%, some of the energy-saving and carbon reduction measures are deferred to 2018 to accomplish the goal. Annual purchase of green electricity 100,000 kWh. 	<ol style="list-style-type: none"> Launch the ethylene recovery system. Implementation of energy efficiency and carbon reduction measures: <ol style="list-style-type: none"> Stop using part of the pumps for the optimization operation of process. <ul style="list-style-type: none"> The EA plant ammonia pumping pipelines are modified and process adjusted, and the feeding pumps are stopped running. One cooling pump and water tower fans have been stopped using in the EOD plant. Improvement of compressors or fan motor air conditioning efficiency - The improvement of gas and exhaust system for the R&D building. Introduction of energy-saving electrical equipment – Install additional frequency converters on motors: The construction of the first and second set of water tower fan installed with frequency converters at the EOG plant has been completed in January 2018, with estimated electricity saving of 560,000 kWh and reduced 296 tons of CO₂e per year. The LiBr multi-effect refrigeration system will be installed at the EOG Plant. Currently, it is under construction, expected to be completed in September 2018, saving electricity consumption of 3.7 GWh and 17,600 tons of steam per year, and reducing 5,600 tons of CO₂e per year. The Linyuan Plant Steam and Electricity Cogeneration Project has been launched in the middle of May 2018, and is expected to have mechanical completion by the end of October 2020 and begin commercial operations in mid January 2021. It is designed to generate 60 MW of electric power, achieving 80% of electricity self-sufficiency, and with an increase in the steam energy self-sufficiency, more than 60,000 tons of CO₂e will be reduced per year. The energy management system (ISO-50001) is introduced, and expected to pass verification for obtaining certificate by the end of December.
Mid-Term (Till 2020)	<ol style="list-style-type: none"> Set 2015 as the reduction benchmark year, commit to average annual reduction of 1%, and estimate a total accumulated reduction of 16,000 tons of CO₂e (5%) by 2020. According to the Government's five-year greenhouse gas phase control target, the "Sector Greenhouse Gas Emission Control Action Program" approved for first phase 2016 - 2020 will be referenced to adjust the mid-term target of greenhouse gas reduction. 	<ol style="list-style-type: none"> Choose high selectivity catalyst to reduce greenhouse gas emissions during production process. Evaluate/plan the introduction of low-carbon fuels, replace existing low-efficiency fuel oil boilers with natural gas steam electrical cogeneration system, and reduce the amount of purchased steam. It has also initialized the planning for a natural gas cogeneration system, which is expected to have mechanical completion by the end of October 2020 and begin commercial operations in the middle of January 2021. It is designed to generate 60 MW of electric power, achieving 80% of electricity self-sufficiency, and with an increase in the steam energy self-sufficiency, more than 60,000 tons of CO₂e will be reduced per year. Implementation of energy efficiency and carbon reduction measures : <ul style="list-style-type: none"> Add inverter to the motor : The construction of the first and second set of water tower fan installed with frequency converters at the EOG plant has been completed in January 2018, with estimated electricity savings of 560,000 kWh and CO₂e of 296 tons reduced per year. Add circulate cooling water optimization management, save electricity used by water pump : The water of cooling tower at the EOG plant re-planning for optimization and adjustment has been completed in January 2018 and confirmed by June 2018, with estimated electricity saving of 5 GWh and CO₂e of 2,660 tons reduced per year. Introduce Energy Management System (ISO-50001) The LiBr multi-effect refrigeration system will be newly installed at the EOG Plant. It is expected to be completed in September 2018, saving electricity consumption of 3.7 GWh and 17,600 tons of steam per year, and reducing 5,600 tons of CO₂e per year. All employees participate in energy conservation and carbon reduction management activities, to reduce greenhouse gas emissions.

Schedule	Management Objectives	Implementation Measures
Long-Term (2030 and Beyond)	<ol style="list-style-type: none"> 1. According to the long-term goal of the Government's GHG emission reduction strategies, the emission reduction target for 2030 is set at 20% of the "Sector GHG Emission Control Action Program" approved for 2005. 2. Commencing 2021, the power consumption ratio will take up a minimum of 1% of green electricity. 	Continue to plan the promotion of energy-saving and carbon reduction program, and focus on the study of low-carbon or carbon-free heat application technology, and greenhouse gas storage technology.






Note: Greenhouse gas emission 320,995 tCO₂e/year in 2015 is the reduction benchmark.

The energy management target and short-, mid- and long-term strategies

Schedule	Management Objectives	Implementation Measures
Annual Plan (2018)	<p>Annual electricity saving rate of 1%, i.e. 3,400,000 kWh, as objective.</p> <p>2017 Achievements:</p> <ul style="list-style-type: none"> ● Annual power-saving of 3,658,000 kWh. The achievement rate was 100%. 	<ol style="list-style-type: none"> 1. Stop using part of the pumps, compressors or fan motors for the optimization operation of process: The EA plant ammonia pumping pipelines are modified and process are adjusted, and the feeding pumps are stopped running, saving electricity consumption of 63,000 kWh per year. One cooling pump and water tower fans have been stopped using at the EOD plant (implemented from August, 2017), saving electricity consumption of 3,432,000 kWh per year. 2. Improvement of compressors or fan motor air conditioning efficiency: The EA plant cooling tower fan is additionally installed with the anti-reversing device, saving electricity consumption of 163,000 kWh per year.
Mid-Term (Till 2020)	<ol style="list-style-type: none"> 1. Annual electricity saving rate of 1%, 5 years accumulation of 5% as the management objectives. 2. Production used electricity accounted for 70% energy proportion, therefore, other fuel and steam saving program are also planned to save energy by 1% annually, 5 years accumulation of 5% as the management objectives. 	<ol style="list-style-type: none"> 1. Introduction of energy-saving electrical equipment (such as frequency converter). 2. Circulating cooling water optimization management to save electricity used by water pump. 3. The Linyuan Plant Steam and Electricity Cogeneration Project has been launched in the middle of May 2018, and is expected to have mechanical completion by the end of October 2020 and begin commercial operations in mid January 2021. It is designed to generate 60 MW of electric power, achieving 80% of electricity self-sufficiency, and with an increase in the steam energy self-sufficiency, more than 60,000 tons of CO₂e will be reduced per year. 4. The energy management system ISO-50001 is introduced at the end of May 2018 for all staff to participate in energy saving and carbon reduction management activity.
Long-Term (2030 and Beyond)	Set 2016 as the energy consumption base period, to achieve energy saving of 10% beyond 2030 as the management objectives.	<ol style="list-style-type: none"> 1. Continue to improve energy efficiency and carbon reduction management. 2. Evaluate the installation of waste heat recovery or steam electrical cogeneration equipment. 3. Evaluate the use of low-carbon fuels to improve combustion efficiency.

The OUCC Energy Consumption & Greenhouse Gas Emission

Energy Consumption

GRI indicator	Unit	2015	2016	2017
Gasoline 	Kilo-Liter	15.313	15.314	15.314
	Gallon	4,029.74	4,030.00	4,030.00
	GJ	503.72	503.75	503.75
Fuel 	Kilo-Liter	1,496	848,078	632.627
	Gallon	393,684.21	223,170.53	166,480.79
	GJ	56,690.53	32,136.56	23,973.23
Diesel fuel 	Kilo-Liter	777.1	548.84	580.844
	Gallon	204,500.00	144,431.58	152,853.68
	GJ	28,221.00	19,931.56	21,093.81
Power 	kWh	354,742,076	423,035,185	440,630,400
	GJ	1,277,071.47	1,522,926.67	1,586,269.44
Steam 	ton	893,977	335,135	221,174
	GJ	2,335,067.92	875,372.62	577,706.49
Total energy consumption	GJ	3,697,554.64	2,453,194.83	1,631,840.23
Energy intensity (Energy consumption/ Number of Employees)	GJ / person	9,481	6,648	4,471
Number of Employees	Person	390	369	365

Note: GJ data of 2015-2017 has been converted as a comparable contrast ratio.

Greenhouse Gas Emission (Summary)

	Unit	2017		
		Linyuan Plant	Taipei Head Office	Subtotal
Scope 1	t-CO ₂ e	52,759	3.07	52,762.07
Scope 2	t-CO ₂ e	290,180	45.22	290,225
Total emission	t-CO ₂ e			342,624
Number of employees	Person			365
Emission intensity	t-CO ₂ e/ Person			938.7
Emission collection method	Remark	Operational control		

Note: The 2017 Linyuan Plant data is certified by SGS-Taiwan

Greenhouse Gas Emission (Linyuan Plant)

Unit: t-CO₂e

	2017
CO ₂	50,014.1632
CH ₄	28.4125
N ₂ O	10.1022
HFCs	2,706.7098
The direct greenhouse gas emissions (Scope 1) expressed as metric tons of carbon dioxide equivalents	48,011.8467

Greenhouse Gas Emission (Taipei Head Office)

	Unit	2016	2017
Scope 1	Official car fuel consumption	L	1,497
	Official car CO ₂ emissions	t-CO ₂ e	3.39
Scope 2	Power consumption	kWh	87,985
	CO ₂ emission (t-CO ₂ e) from electricity consumption	t-CO ₂ e	46.46
Total (t-CO ₂ e)		t-CO ₂ e	49.84

Note: 1. Data obtained from self-reported GHG emissions inventory

2. Oil consumption is converted in accordance with the annual average unit price of the "Oil price data management and analysis system" of the Department of Energy MOEA Office. "https://www2.moeaboe.gov.tw/oil102/"

The Savings Actions and Results of 2017

Energy Efficiency Improvement Project

In order to implement energy efficiency and carbon reduction, we carried out the following energy conservation measures in 2017:

1. The EA plant ammonia pumping pipelines are modified and process adjusted, and the feeding pumps are stopped running, saving electricity consumption of 63,000 kWh per year.
2. The EA plant cooling tower fan is additionally installed with the anti-reversing device, saving electricity consumption of 163,000 kWh per year with an investment amount of NTD 48,000.
3. One cooling pump and water tower fans have been stopped using at the EOD plant (implemented from August, 2017), saving electricity consumption of 3,432,000 kWh per year.

All the above projects have been completed and saved electricity consumption of 3,658,000 kWh, reducing carbon dioxide equivalent (CO₂e) of 1,935 tons per year.

The following energy-saving measures are expected to be carried out in 2018:

1. The construction of the first and second set of water tower fan installed with frequency converters at the EOG plant has been completed in January 2018, with an estimated electricity saving of 560,000 kWh and carbon dioxide equivalent (CO₂e) reduction of 296 tons per year.
2. The water of #1/#2 cooling tower at the EOG plant re-planning for optimization and adjustment has been completed in January 2018 and confirmed by June 2018, with estimated electricity saving of 5 GWh and carbon dioxide equivalent (CO₂e) reduction of 2,660 tons per year.
3. The LiBr multi-effect refrigeration system will be newly installed at the EOG Plant. It is expected to be completed in September 2018, saving electricity consumption of 3.7 GWh and 17,600 tons of steam per year, and reducing carbon dioxide equivalent (CO₂e) of 5,600 tons per year.

Energy Savings Result

	Unit	2017
Energy consumption reduced by process improvement	GJ	12,576
Amount invested for equipment improvement or renewal	NT\$	48,000
Energy consumption reduced through equipment improvement or renewal	GJ	587
Total investment amount for energy saving	NT\$	48,000
Total energy-saving (Compared with the previous year)	GJ	13,163

Note: 1. Estimation of energy saving capacity is based on the assumption that the energy-saving measure lasts 12 months.

2. Energy saving improvement projects are as follows:

- Process improvement project in 2017 including "EA plant ammonia pumping pipeline modification and process adjustment" and "Stop the use of one cooling pump and the water tower fans at the EOD plant"
- In 2017 equipment improvement and update project including "EA plant cooling tower fan additionally installed with the anti-reversing device".

The Mitigation of Transportation Emission

In response to the need to save energy and reduce carbon emission, we require employees at the Linyuan Plant, the main manufacturing base of the OUCC, to take use of the company shuttle bus, or to join the carpool system for commuting, to cut down on the use of vehicles and indirectly reduce the emission of greenhouse gases.

In addition, we are reducing carbon emission by cutting down on travel between Taipei and Kaohsiung and increasing the use of video conference instead. The monthly management meeting is a good example: Twelve meetings were held in 2017 and ten people would travel on Taiwan High Speed Rail "Taipei – Zuoying" generating 11.65 kg of CO₂ emission per person (based on the carbon footprint announced by HSR). The CO₂ reduction reached was 11.65×2 times (north and south) $\times 10$ persons $\times 12$ times = 2,796kg, as a contribution to the effort of easing global warming.

Action I: To reduce the greenhouse gas emission from employee commuting

The utilization of carpools after a quantization under Scope 3 will also be applied as a reference for a more efficient transportation plan for the future reduction of employee travel emissions.

Employee Commuting carbon emission calculation

Linyuan plant employees carbon emission calculation:

1. Linyuan plant employees: 365 people (commuters by cars: 80 people); the number of shuttle bus: 5 bus-trip per regular working day, 3 bus- trip for rotating shift per day.
2. According to the ITRI research published by Environmental Protection Administration of the Executive Yuan, the traditional engine cars and buses mileage carbon emission coefficient and its associated calculation is as follows:
 - (1) Ordinary engine car: the average carbon emission = 0.214 kg/km
 - (2) City bus: the average carbon emission = 1.01 kg/km
3. The average commuting distance = 50km
4. Regular working days = 248 days, working days of rotating shift = 365 days
5. Employee commuting carbon emission = $0.214 \text{ Kg/km} \times 50 \text{ km/day} \times 80 \text{ people} \times 248 \text{ day} + 1.01 \text{ kg/km} \times 50 \text{ km/day} \times 5 \text{ bus-trip/day} \times 248 \text{ day} + 1.01 \text{ kg/km} \times 50 \text{ km/day} \times 3 \text{ bus-trip/day} \times 365 \text{ day} = 330.21 \text{ tonnes per year}$
6. Re-signed the contract in 2016, requiring the usage length of shuttle bus to be down from 6 years to 5 years, and to prompt the shuttle bus transportation contractors to replace vehicles with the new energy-saving model, to facilitate the reduction of carbon emissions.



Action II: Enhancing the fuel efficiency of outsourced tankers

We started from supplier management and introduced strict procurement specifications for outsourced tankers. A condition of the 2017 tanker outsourcing contract stipulates that no truck head may be over 15 years in use. This encouraged the use of new energy-saving truck heads. The CO₂ emission and energy generated in the transportation process was reduced effectively through this supplier CSR management mechanism.

Tanker transport emissions calculation (Scope 3)

Tankers traveling distance and diesel consumption calculation: The total transportation mileage in 2017 was 24,267,887 km and the annual transportation diesel consumption was estimated to be 8,089,296 liters and the CO₂ emission was 21,437 tons, about 293,769 GJ.

Note: According to the standard industry data, large vehicle fuel consumption is 3 km/liter (diesel). CO₂ emissions from diesel are 2.65 KgCO₂/L referring to the data provided by the Environmental Protection Administration, Executive Yuan.

Water Resource Management

The protection of water resources and the development of water-saving technology have become issues of great importance due to the gravity of global climate change. Although with abundant rainfall, Taiwan suffers from water supply instability and is often faced with water shortage due to its terrain formation.

The water for the OUCC Linyuan Plant comes from the Fengshan industrial water Reservoir. To fully utilize water resources, an investment was made in a water demineralization system years ago, and recycled process wastewater for the cooling tower. Currently, further investment is planned for the recovery of cooling tower wastewater. Moreover, the electrochemical and Electrodialysis Reversal measures for reducing the hardness of the water and for the wastewater recycling and reuse for cooling tower are under consideration.

The OUCC will continue to face the challenges involved in the protection of the environment and water resources and promote improvements in our processes and technologies and actively seek for the best water management solution to fulfill our corporate social responsibility.

It has also been planned to set up a wastewater recovery system in Linyuan plant, which is expected to be completed by December 2018 and will produce renewable water of about 1,400 tons per day, with a wastewater recovery rate of more than 70%, used for water supply in cooling towers.



The water resource management target and short-, mid- and long-term strategies

Schedule	Management Objectives	Implementation Measures
Annual Plan (2018)	Set the 2016 daily water consumption as benchmark, commit to reduce 2%, saving about 100 metric tons of water.	<ol style="list-style-type: none"> 1. Cooling water system optimization or system thermal integration to reduce evaporation losses. 2. Actual improvement of the cooling tower concentration multiple to higher than 7. 3. Post water-saving slogans and posters, and strengthen the promotion of water conservation concept. 4. Replace with automatic sensor faucet in the restroom.
Mid-Term (Till 2020)	Set the 2016 daily water consumption as benchmark, commit to reduce 20%, saving about 1,000 metric tons of water per day.	<ol style="list-style-type: none"> 1. Continue the planning of implementing water conservation plan and water conservation management program. 2. Construct the discharged wastewater recovery facilities in 2018.
Long-Term (2030 and Beyond)	Set the 2016 daily water consumption as benchmark, commit to reduce 50%, saving about 2,500 metric tons of water per day.	<ol style="list-style-type: none"> 1. Evaluate the use of recycled water to replenish the cooling tower water. 2. Evaluate/plan for cooling water tower exhaust condensate recycling.

Note: 2016 daily water consumption is 5,000 metric tons.

Wastewater Treatment & Discharge

The chemical plant wastewater contains incompletely reacted raw material, and/or in low medium of solvent used in production. Any wastewater or liquid waste produced in the manufacturing process that has not been properly treated would be a serious hazard should it be discharged into the environment.

In this regard, the OUCC abides by the "Procedure for OUCC production process wastewater discharge" stipulating emission limits of COD<100ppm and SS<30ppm. The total treated wastewater is piped into the Industrial Park Joint Wastewater Treatment Plant. The initial rainfall (about 30 minutes) is collected in a storage tank and then passed into the wastewater treatment plant for further processing.

Tap Water Usage Statistics

Unit: m³

	2016	2017
Linyuan Plant	1,905,697	2,179,929
Taipei Head Office	767	981
Subtotal	1,906,464	2,180,910

Note: The 2016~2017 figure is based on the water bill data.

Wastewater Discharge

Classified by water quality and discharge destination	2016	2017
The total amount of wastewater discharged m ³ /year	594,408	609,908
Discharge destination	Piped into the joint wastewater treatment plant.	
Water quality and discharge	In line with the Effluents Standard / activated sludge treatment method.	
Standards, methods, and assumptions	Joint wastewater treatment plant limit.	

Note: In 2017, the total amount of wastewater was 609,908 tons, slightly increased by 0.8% compared to 2016, of which EOD phase II construction test run wastewater increased by 4,000 tons, EB/DB renovation engineering washing tank/test run wastewater increased by 20,000 tons, and wastewater during shut down of the annual maintenance decreased by 9,000 tons.

Effluent Quality Test

Item	H1/2017	H2/2017
	Detected value	
pH	7.9/35.5°C	8.4/35.5°C
CHCl ₃	0.002	0.00365
COD	40.7	47
NH ₃	2.92	0.14
ArOH	<0.02	<0.02
NO ₃ -N	7.34	16.7
Suspended solids	7.7	12.3



Environmental Prevention Mechanism

Air Pollution Control and Prevention

The Linyuan Plant has acquired eight Fixed Pollutant Operator Permits from the Environmental Protection Bureau of Kaohsiung City Government in accordance with Article 24 of the Air Pollution Prevention Act. The main air pollutant emissions are: Volatile Organic Compounds (VOCs), Ethylene Oxide (EO), and ammonia.

The pollution prevention equipment in the Linyuan Plant includes: Two Regenerative Thermal Oxidizers (RTO), one Direct Fired Thermal Oxidizer (DFTO), one Catalytic oxidizer, and seven Scrubbers with 99% pollutant removal efficiency.

Type of pollution prevention equipment	QTY (unit)	Pollutants
Regenerative Thermal Oxidizer (RTO)	2	VOCs
Direct Fired Thermal Oxidizer (DFTO)	1	VOCs
Catalytic oxidizer	1	VOCs
Scrubber	7	VOCs

Air Pollution Control and Prevention

Pollutant emission	2016	2017
No _x	9,510	7,907.49
SO _x	10,180	8,445.96
POP	0	0
VOC	45,860	43,388
HAP	0	0
PM	0	1,266.35



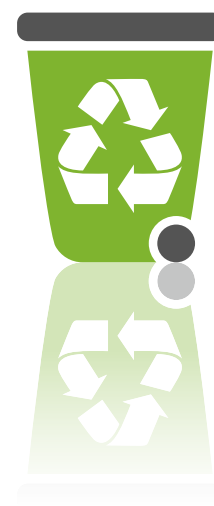
Waste Disposal

The OUCC has outsourced chemical waste removal to a qualified waste treatment company. Recycled materials, after preliminary classification in the plant, are donated to the community charitable organization for further processing and recycling.

Waste Disposal

		Unit: T
Type	2017	
Total weight of hazardous waste	0.051	
Total weight of non-hazardous waste	Reuse	67.05
	Recycling	0
	Composting	378.92
	Recovery, including energy recovery	234.10
	Incineration (mass burn)	158.08
	Landfill	85.96
	On-site storage	766.03
	Other	924.11

Note: 1. Recycling waste includes: Paper, fluorescent tubes, plastics, glass, household appliances, etc.
 2. Incineration waste includes: Mixed plastics, wood mixtures, lubricants, oil mixtures, household garbage, etc.
 3. Other waste includes: Liquid with pH value ≤ 2 , ion exchange resins, insulation materials, fire-resistant waste, organic sludge, other single non-hazardous metal or mixed metal, non-hazardous organic waste or solvents, wires and cables, sandblasting waste, etc.



Recycling Statistics

							Unit: Kg
	Paper	Fluorescent tubes	Plastics	Glass	Household appliances	Total	
2016	12,080	110	4,690	3,410	0	20,290	
2017	1,490	110	5,550	1,460	750	9,360	

Environmental Issues Appeal Mechanism

The OUCC has stipulated operating procedures for "Environmental, labor safety and health, internal quality control, and external communication". All advice, complaints or grievances made by the public are dealt with by the Environmental Safety Team or the shift supervisor and are all recorded in the "External Communications Log." The Central Security Committee depends on the Log content to ensure adequately trained security personnel respond in the shortest time. Minutes of any meetings held about the issue or investigation are kept and investigation or review of the issue must be carried out as soon as possible, depending on the severity of the matter.

We have "Liaison for Stakeholders" and "Liaison for Environmental Protection Business" setup with several smooth communications channels (07-6413101#2303). Contact information is also provided on the company website to ensure any environmental issues are dealt with immediately. There have been no complaints filed with the company over the last five years after effective management was implemented.



Environmental Expenses and Fines

The OUCC values the importance of environmental protection and makes every effort to reduce environmental impact through the promotion of investment in environmental resources. We are convinced that only the effective management of environmental impact and minimization of the impact of company operation on the environment can allow a harmonious and prosperous relationship to be built between industry and the community, so will the sustainable development of the company be possible.

The 2017 Environmental Protection Expenditures

Unit: NT\$

Item	2016	2017
Environmental protection expenditure	8,703,622	12,779,660
Soil pollution / sewage treatment costs	8,665,630	6,557,631
Total	17,369,252	19,337,291

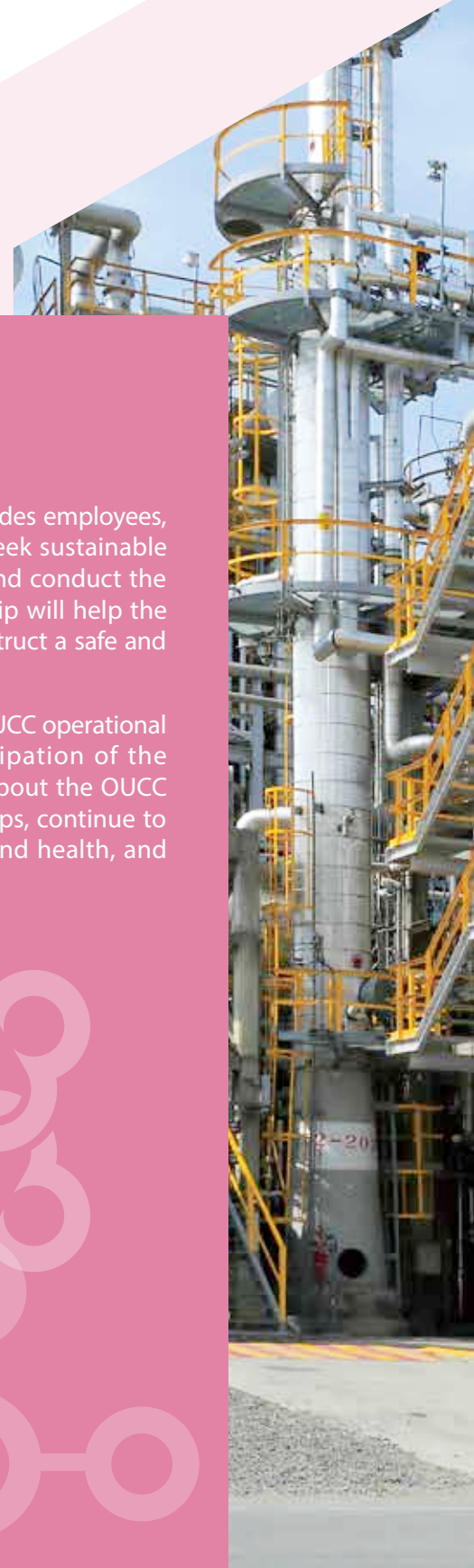
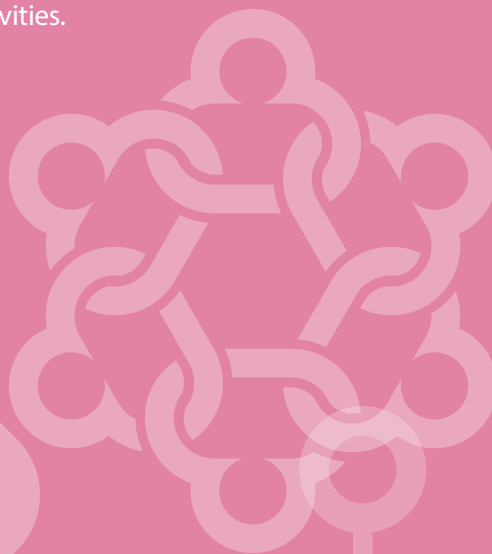
The 2017 Environmental Protection Related Fines

Item	Amount (NT\$)	Corrective Action
DEG overproduction in EG plant	100,000	The application for the process change has been submitted and permitted to be done by June 18th, 2022.
The Environmental Protection Bureau, Kaohsiung City Government conducted the examination on the equipment component VOC and found that poor sealing of the component resulted in VOC leakage exceeded the standard	200,000	<ol style="list-style-type: none"> 1. For the hot box examination, a total of 13 sets improved sealing of the instrument FIT component, with records created for the test. 2. Ensure that the autonomous detection for monitoring leaks from the PV flange leakage point of the ethylene pipeline is conducted at all times after each change in feeding operating mode. 3. EG plant wastewater pot/instrument/pit component records created for test and tracking. 4. A sample test on the on-site VOC found that the leaking component with the leakage lucked/resolved (a total of 7873 units of VOC components were contracted out for detection, among which leaks were found on 45 units, with a leakage rate reduced to 0.57% improvement completed for all). 5. VOC regular checks and requests are continuously conducted; for defects, MOC design improvement is performed, process equipment is updated, detection frequency is increased, staff rotation and retest is enhanced by zone according to the key area. 6. Set up a test team for the plant divided into eight zones; for the process VOC component within a single area, the infrared FLIR instrument leak detection and inhaling VOC leak detection tests are conducted every week. Should any leakage be found on the component exceed 1000ppm, the Maintenance Department will be requested for leakage solving and repair. It takes about two months to go round all plants and begin again. Currently, the actions according to such management procedure work well.

SUSTAINABLE PARTNERSHIPS

A good partnership plays a vital role in the OUCC operation that includes employees, suppliers, and the residents of the community. Enterprises that seek sustainable development must listen to the voice of partners, substantiate care, and conduct the appropriate communications. We believe that a sustainable partnership will help the OUCC move towards a better future, develop better products, and construct a safe and stable work environment.

A focus on compliance and response to customer requests is the main OUCC operational objective and the company works incessantly to enhance participation of the stakeholders, provide the correct information to the ones who care about the OUCC and those we care about. We maintain excellent interactive relationships, continue to optimize manufacturing processes and plant environmental safety and health, and strengthen participation in all social activities.





Employees



The OUCC is committed to the creation of a healthy and safe workplace, the development of an appropriate and adaptable staff training program and the construction of a positive work environment with sound welfare, work environment, organization and culture cultivation. We make sure there is a balance between work and non-working time for our employees.

Our staff management system is based firmly on the labor laws. We have established an appropriate management system. Employees are assigned to the most suitable job positions depending on their technical and functional competence. There is no discrimination based on gender, religion, nationality, or ethnicity with respect to employment, salary, performance evaluation, promotion, education and training, or personal benefits. And we set up an employee complaint management practice, to maintain a smooth channel of appeal and ensure labor rights.

In order to build the trust between employers and employees, we inform the employees of company operating results and conditions using internally published documents or regular formal or informal departmental meetings.

Hiring of Employees

The OUCC arranges recruitment in accordance with application made by the individual department. Upon approval of the President, an external or internal recruiting will be proceeded and screened prior to the delivering candidates for the HR and requesting department's interview. Child labor is strictly prohibited and we comply strictly with the relevant labor laws and regulations and protect the rights of all employees.

OUCC is a major petrochemical manufacturer, hence the employees are mostly expertise in the science field. This means that the percentage of male employees (including direct and indirect employees) is higher than that of female employees. However, the OUCC values and cares about the development of female employees and those with excellent performance are promoted in accordance with the same principles applicable to male employees.

OUCG Employment

The total number of OUCG employees is 365. Due to the industrial character, the number of male employees is 330 (90.41%) and female employees is 35 (9.59%). To fully care for all our employees, employees are all full-time and permanent contract employees.

		2017		
			Number of persons	%
General Staff	Aged under 30	Female	4	1.10
		Male	6	1.64
	Aged 30-50	Female	18	4.93
		Male	215	58.90
	Aged above 50	Female	6	1.64
		Male	46	12.60
	Total		295	80.82
Middle Management	Aged under 30	Female	0	0.00
		Male	0	0.00
	Aged 30-50	Female	2	0.55
		Male	31	8.49
	Aged above 50	Female	2	0.55
		Male	21	5.75
Senior Management	Aged under 30	Female	0	0.00
		Male	0	0.00
	Aged 30-50	Female	0	0.00
		Male	1	0.27
	Aged above 50	Female	3	0.82
		Male	10	2.74

		2017		
			Number of persons	%
General Staff – Direct Labor	Aged under 30	Female	0	0.00
		Male	4	1.10
	Aged 30-50	Female	0	0.00
		Male	76	20.82
	Aged above 50	Female	0	0.00
		Male	5	1.37
General Staff – Indirect Labor	Aged under 30	Female	4	1.10
		Male	2	0.55
	Aged 30-50	Female	20	5.48
		Male	171	46.85
	Aged above 50	Female	11	3.01
		Male	72	19.73

Note: 1. "Direct personnel" refers to plant shift employees.
 2. "Indirect personnel" refers to plant non-shift employees.
 3. "Permanent contract" refers to non-contractual employees who are hired officially.
 4. A "Contract employee" is an employee contracted for a certain period, for example, consultants or commissioned managers.



The OUCC headquarters is in Taipei City and the factory is in the Linyuan Industrial Zone of Kaohsiung County. To promote and increase employment opportunities for the region, close to 30% of the employees at the Linyuan Plant are local residents. We take direct action to support and encourage local employment.

Percentage of Kaohsiung Plant Employees from Linyuan Area

Job Title	Employees from Linyuan Area	
	Number of persons	%
Engineer / Administrator and above	13	4.01
Operation-Foreman	15	4.63
Operation-Operator	78	24.07
Total	106	32.72

Note: In terms of international scale, OUCC hires 100% of domestic employees. Therefore, the ratio of local employees at Linyuan is used as the basis for calculation.

Employee Turnover and Turnover Rate

		2016		2017	
		Number of persons	%	Number of persons	%
Aged under 30		0	0.00	0	0.00
Aged 30-50	Female	1	0.27	2	0.55
Aged above 50		1	0.27	0	0.00
Aged under 30		1	0.27	4	1.10
Aged 30-50	Male	11	2.98	11	3.01
Aged above 50		13	3.52	11	3.01

Note: 1. Employee resignation and retirement by gender calculation formula: Number of employees resigning (includes retirement but does not include involuntary leave)/ Total number of employees of the year.

2. The age distribution of employees is based on the ratio of annual turnover to the total number of employees on the payroll.

New Recruitment

		2016		2017	
		Number of persons	%	Number of persons	%
Aged under 30		0	0.00	2	0.55
Aged 30-50	Female	0	0.00	2	0.55
Aged above 50		0	0.00	0	0.00
Aged under 30		2	0.54	2	0.55
Aged 30-50	Male	3	0.81	15	4.11
Aged above 50		0	0.00	0	0.00

Note: 1. The new recruit ratio by gender calculation formula: Number of new recruit/ Total number of employees of the year.

2. The age distribution of employees is based on the ratio of annual new recruitment to the total number of employees on the payroll.

Number of Employees from Minority Groups

Year	2016	2017
Aboriginal employees	1	1
Disabled employees	3	3

Employee Ethical Behavior

We value the ethics and integrity of our employees who are requested to sign a "Letter of Consent" when joining the company. This document becomes part of their personnel record and is a declaration by the employee to abide by the company rules and regulations and also those of personnel management, as well as a commitment for non-disclosure of the company business confidentiality. The document content is published within the company and is available for examination and reference by all employees.

a. Code of Conduct and Code of Ethics:

Work rules include: (1) General rules (2) Employment (3) Service, holidays, days off, special leave (4) Request for leave (5) Salary (6) Year-end bonus (7) Safety, health, welfare, pension, and occupational accident compensation (8) Discipline (9) Performance evaluation and reward & penalty (10) Resignation, termination, and severance (11) Retirement (12) Annex.

b. Confidentiality commitments:

(1) The definition of confidential information (2) Confidentiality obligations (3) The legal effect of breach of contract and breach of contract liability (4) Effect after the termination of employment (5) The transfer of rights (6) The applicable law and jurisdiction.



Comprehensive Staff Training

Talent is the most important asset of the OUCC and is also the basis of sustainable development. The key to nurturing human resources is to help employees strengthen their technical capacity through practice and work training while encouraging the enthusiastic acceptance of challenges at work to aggregate and inspire new work value.

To achieve these objectives, the OUCC has implemented a range of appropriate training programs for employees from the beginning. There is an extensive education and training program available that allows employees to build up mid- and long-term technological capabilities together with those accumulated continuously from on-the-job training and sharing. Both help them find the stage to demonstrate their expertise.



In terms of nurturing talent, the OUCC provides professional training related to business management and plant management, and actively cultivates participation in the relevant professional and technical courses. This stimulates managers and potential managers and helps them improve the quality of manpower, to create a win-win situation for employees and the company by fulfilling all the operational needs.

New recruits at the OUCC will receive general training from the HR Department and will then be trained by personnel in the department in which they will be positioned. Professionals with all the necessary qualifications will help to train the new recruits and assist them in obtaining the relevant licenses and certificates.

Type	Training Content
New recruits	<ul style="list-style-type: none"> ● Introduces the history of the company and work rules ● Departmental introduction ● Internal training of the specific department
General staff	<ul style="list-style-type: none"> ● Organizational internal training ● Mandatory training ● Professional training (first pressure container, high-pressure gas specific equipment, person in charge of anoxic operation, forklift truck, fixed crane, specific chemical substances, boiler, etc.)
Management staff	<ul style="list-style-type: none"> ● Leader selection and nurturing programs ● basic finance and accounting ● talent management for furthering performance ● The Strategic Vision and Target Management Consensus Camp

Note: General staff (team leaders and subordinates) and management staff (team leaders and superiors)

Employee Training Hours and Input

Type of Employee	Gender	Unit	2016		2017	
			Total training hours	Average training hours	Total training hours	Average training hours
General Staff – Direct Labor	Male	Hour	519	6.41	1,423	16.74
	Female	Hour	0	0	0	0.00
General Staff – Indirect Labor	Male	Hour	5,257	15.6	6,786	37.29
	Female	Hour	143	4.47	493	17.61
Total training hours	Male	Hour	7,100	21.07	12,426	37.65
	Female	Hour	170.5	5.33	691	19.74
Middle Management	Male	Hour	179	9.42	4,066	12.32
	Female	Hour	4	2	169	42.25
Senior Management	Male	Hour	55	6.88	151	13.73
	Female	Hour	12	6	29	9.67

Note: 1. Definition of employee: General employee-grade 8 and up, mid-level management-grade 7,6,5, senior management-grade 4 and down.

2. How to calculate the average hours in training: "Total hours of training for the employee category / Total number of employees in the category."

The OUCC Training Investment Statement

	Unit	2016	2017
Total employee training amount	NT\$ million	0.67	1.06
Total employee training hours	Hour	6,428	12,802
Total number of employees	Person	369	365
Total Revenue	NT\$ thousands	10,985,765	12,775,671
Total employee training amount / Total Revenue	%	0.0061%	0.0083%
Total employee training amount / Total number of employees	NT\$	1,821	2,904
Total employee training hours / Total number of employees	Hour	17.42	35.07

Potential Personnel Training

A potential talent and leader nurturing mechanism has been implemented to search for competent successors for existing supervisory and management posts. Promising personnel are selected to take part in short-term management seminars and encouraged to participate in management master programs in domestic universities to enhance their management capacity.

The nurturing record of job rotation, training which aim to equip the personnel with comprehensive operation familiarity is filed with HR. Job rotation and promotion programs to enhance education and training has facilitated the cultivation of competent successors for managerial and supervisory posts.

Far Eastern Group affiliates started cooperating with the Yuan Ze University and the Oriental Institute of Technology in 2012 in the "Industry-Academy Internship and Talents Training Program" to help talented students with practice and training and to cultivate talent needed by the Far Eastern Group in the future. OUCC has participated in the plan and has accepted internship applications from Yuan Ze University students and is looking for those with the kind of skill that will be needed by the Company in the future.

Reward Mechanism

The OUCC has formulated the "Rules Governing the Payroll" as a reference for determining personnel remuneration and salary increases. To keep the salary competitive to attract and retain the talented candidate or personnel, the Company studies proactively the industry pay levels and review regularly of its remuneration policy. According to the "Rules Governing the Payroll:"

A. Annual salary adjustments are approved in accordance with operating results and industry salary adjustment.

B. Staff performance evaluation is as follows:

1. **Excellence A** - 90~100 points - Outstanding performance with special tangible or intangible contribution to the company (evidence enclosed)
2. **Excellence AB** - 85~89 points - Outstanding performance
3. **Above average B** - 80~84 points - Performance in line with operational need (above average)
4. **Average BC** - 70~79 points - Performance in line with operational need
5. **Below average C** - 69 points or less - Poor performance, not in line with operational need, no pay raise, job transfer, demotion, or dismissal. (evidence enclosed).

C. Principles for annual staff performance evaluation are separately prescribed and depend on market conditions. The performance evaluation criteria include:

1. Employee job performance.
2. Employee job responsibility.
3. The competitiveness of the current employee salary in the salary market.
4. Job performance and salary relationship of employee and subordinates, supervisors, and colleagues.
5. Budget.

Performance Evaluation

The OUCC has clear specifications for employee performance evaluation and employee incentive which are defined to substantiate the development of talent and decide pay differentiation. To maintain both equity and employee development, managers at all levels will discuss daily performance with the staff during the evaluation period.

The OUCC employee performance evaluation system includes: probation evaluation, routine evaluation, project evaluation, and annual evaluation. New recruits are evaluated for qualification after a 6-month probation period to confirm their competence.

All employees (including the President) are evaluated annually after a one year term of employment. Performance is evaluated every year and includes attendance, leadership skills, workability, work performance, and so on. In addition, any particular merits or demerits, should be reported to the Personnel Review Committee and to the President for approval before commendation is given, or disciplinary action is taken.

Pension Mechanism

We have implemented an employee retirement plan in full compliance with the "Labor Standards Law" and "Labor Pension Act." The sound financial system of the OUCC ensures that retired employees will have a guaranteed pension and will be able to work for the company and develop a career without worrying over their future financial security.

The rules for employment, service, performance evaluation, incentive and disciplinary act, promotion, and retirement pension are all set out in detail in the "Work Rules" of the OUCC. The Labor Pension Committee is set up according to the Law and a pension reserve is appropriated in an amount equivalent to 10% of the total monthly salary in accordance with the employee retirement plan and deposited in a trust fund account at the Bank of Taiwan as per government regulations. Pension reserve committee meetings are held periodically to review pension appropriation, investment and implementation to protect the interests of the employees. In addition, for those employees who have chosen the Labor Pension Act, an amount equivalent to 6% of the monthly salary respectively for each employee is deposited in a personal account with the Bureau of Labor Insurance to safeguard the interests of the employees.

When the Oriental Petrochemical (Yangzhou) plant was being constructed in Yangzhou China in 2008, we took advantage of some of our mentally and physically fit professional retirees whose experience and knowledge made their contributions as consultants invaluable to the project.

Employee Benefits

The OUCC has Employee Welfare Committee, which in addition to the lawful benefits, arranges welfare activities for the employees that include an annual dinner, scholarship grants, subsidies for activity, birthday, wedding, funeral, childbirth, and monetary gifts for three public festivals, and the year-end, as well as group insurance. The welfare committee also organizes employee annual tours and other activities, in addition to the health checkups, to keep balance of the physical and mental health of employees. The meal allowance offered to our employees was increased from NT\$1,800 to NT\$2,400 per month from July 2015.

The employee benefits expenses totaled NT\$67,139,481 in 2017 with welfare subsidy of NT\$5,195,543.

According to the Article 33 of the OUCC Incorporation, OUCC shall appropriate 1%~2% of any earnings as remuneration for employees. If the Company accumulates a loss, an equivalent amount should be reserved as compensation.

The OUCC Employee Benefits Expenses

Unit: NT\$

Type	2016	2017
Pensions	23,386,747	23,690,728
Insurance expenses	29,773,900	29,259,270
Employee (profit) recompense	0	31,958,257
Special bonuses	9,744,498	3,672,763
Shuttle bus	9,089,456	9,158,650
Employee health checkup	1,173,666	1,358,070
Total	73,168,267	67,139,481

Note: Employee benefits include regular appropriation (for example: pensions, insurance, business transportation, and private healthcare), as well as other employee subsidies, such as: housing subsidies, interest-free loans, public transport subsidies, educational grants, and dismissal subsidies, but does not include education and training, protective equipment, and staff costs or expenses directly related to the job.

The 2017 Welfare Measures List

Welfare measures	Description	Subsidy amount (NT\$)	Number of beneficiaries (person)
Marriage subsidy	Staff marriage subsidy, NT\$2,000/person	14,000	7
Childbirth subsidy	Employees childbirth subsidy, NT\$1,000/per birth	7,000	7
Hospitalization subsidy	Staff hospitalization subsidy, NT\$1,000/time	11,000	11
Staff travel subsidy	Full subsidy for each employee, partial subsidy for maximum three lineal family members	1,099,624	Employee:111 Family member:134
Self-reliant tourism	Self-reliant tourism, NT\$2,000/season	2,864,000	358
Social group activity	Encouraging employees to organize social group activities, each social group NT\$10,000/year, Taipei Office social group NT\$13,000/year	173,000	280
Birthday celebration subsidy	Staff birthday celebration, NT\$2,000/person	732,000	366
Year-end dinner	Employee year-end dinner	178,759	250
Retirement Benefits Application	Employee retirement gifts	116,160	8
Total		5,195,543	1,202

For the employees from Linyuan area and those who reside beyond reach of the shuttle bus, the Company provides each with transportation subsidy, which totaled NT\$1,683,000 in 2017.

Sum of Transportation Subsidy

Year	Subsidy amount (NT\$)
2016	1,753,400
2017	1,683,000

Club Activity

The OUCC does not have a large number of employee but they are as close as family. Our employees develop all kinds of associations for exercise and stress relief. There are currently 17 clubs that receive annual grants from the company and a total of NT\$173,000 was provided in grants (to 17 clubs) in 2017.

When a club is formed, the Director of the club files an application and a prospectus for annual club activity and a budget, a club members list, the purpose of the new club, and an introduction of the club to the Employee Welfare Committee for a resolution. Grants are provided to the officially established clubs.



Women's Health in the Workplace

To protect the health of our female employees at the Kaohsiung Linyuan plant we have had the "Maternal Employee Health Plan" available for female employees who are pregnant, will be pregnant, likely pregnant, and within a period of one year after birth. This provides physical and mental health care during pregnancy, childbirth, or nursing period. In addition, we have set up a "nursing room" for breastfeeding.

Maternal health protection measures, including the assessment of hazard & health risk and control, the interviews with physicians, risks classification management, adaptive work allocation and so forth, are chiefly for those female employees who might be exposed to hazardous working conditions. A "Healthy Mothers Protection Committee" has been established by Human Resources Department, the Department of Safety and Health, plant nurse, and director of the workplace maternity unit to study maternal health hazard control and work adaptability adjustment practices. Risk levels are classified and adjusted in accordance with health risk assessment to ensure the nature of the work is in line with a proper level of care for the health of female employees.


Transparent and Smooth Communication

The OUCC has comprehensive management rules and regulations designed to ensure fair and reasonable treatment of all personnel. Employees can express their opinions, discuss and solve differences at labor-management meetings which are held from time to time. Employees and employer are able to present views in the spirit of coexistence and by friendly interaction to maintain harmonious labor relations for the common good.

The OUCC pays careful attention to the voices of the employees and cares for them. The Company promotes healthy communication with their employees using a range of different means. In addition to regular labor-management meetings, the Company communicates and discusses the operating conditions and objectives by means of special internal meetings.

OUCC has a Labor Union formed to protect the employees, rights to the freedom of association and collective bargaining power. We believe that the union represents the viewpoint of the majority of employees on all labor-management issues and harmonious labor relationships can be effectively established through proper communication with the union, so can a good working environment be created.

All decisions which result in significant operational changes, are discussed at regular Board and other related meetings, after which they are presented to the employees and union representatives through the staff meetings, plant operation meetings, or through other suitable channels. Before the implementation of any major change in business operation that might affect employee rights, an appropriate notification will be made in accordance with all the relevant laws and regulations. There has been no major change in business operation that might have affected employee rights during this report period.



The OUCC Union

The OUCC Union was established in 1988 to protect the interests of members, to increase their knowledge and skills, and promote the manufacturing business for the purpose of improving members working conditions and lives. Union members constitute 66.85% of the employees. The current group agreement covers employees who participate in unions. To defend the interest of occupational safety and health, 46% of the membership of the health & safety committee are labor representatives. Besides, all health and safety issues are regulated by the "Occupational Safety & Health Committee."

Human Rights Protection and Appeal Mechanism

The OUCC abides strictly by the rules for gender equality as set out in the "Act of Gender Equality in Employment," and the "Prevention of Sexual Harassment," and has established a "Sexual Harassment Complaint Handling Mechanism" to prevent workplace violation and sexual harassment. OUCC is vigorous in its advocacy and promotion of the anti-gender discrimination policies and acts.

The risk of the OUCC operation violating human rights is not high. Although there is no minimum period of time defined for reporting any major changes in business operation, there are many effective channels by which employees may be informed about such changes. Employees are encouraged to question any changes made to their job responsibilities.

In order to assist employee to have better understanding about human right, the document system is explained and made available to employees in new employee education and training course. The relevant human rights trainings include "Work Rules," "Rules Governing Personal Information," "Rules Governing Employee Grievances," and "Act of Gender Equality in Employment and Sexual Harassment Prevention, Grievance, and Discipline." 100% of the employees have received new employee education and training course in 2017.

The OUCC treats all their employees fairly and complies strictly with all the relevant labor laws and human rights regulations. The OUCC applies the "Rules Governing Employee Grievance" in response to any human rights issues. A contractor grievance window is anticipated to be established to provide a smooth channel for employee grievances to be dealt with by the relevant facilities. There were no complaints about human rights in 2017. Related measures are implemented including:

1. Stipulate labor conditions and relevant regulations in accordance with government labor-related laws and regulations.
2. Provide open, fair, and impartial job opportunities to all applicants in accordance with the "Employment Service Act."
3. Abide strictly by the "Rules Governing Employee Grievance" and establish a smooth grievance channel.
4. The "Human Resource Evaluation Committee" has been established to administer the "Rules Governing Human Resource Evaluation" and matters that involve commendation or disciplinary action will be discussed and decided by the department heads with a final decision approved by the President in accordance with the "Work Rules."
5. The "Act of Gender Equality in Employment and Sexual Harassment Prevention, Grievance, and Discipline" is stipulated to protect employee rights to work and maintain gender equality in employment. The real promotion of the spirit of gender equality must abide and a sexual harassment-free working environment must prevail. All the appropriate preventive, corrective, and disciplinary action against sexual harassment must be present and all employees must have unimpeded access to a clear grievance channel to ensure their best interests.
6. The "Rules Governing Personal Information" have been clearly set down for the preservation of confidentiality and the management of personal information, and also to ensure the safety and legality of the OUCC collection, processing, usage, and international transmission of personal information.
7. The company will establish a Contractors grievance window on the website to provide a smooth channel for their complaints.

Suppliers

The success of the OUCC business operations relies on a considerable extent on the support of the suppliers, with whose involvement the Company is able to maintain sustainable development as well as the continuous trust of the community and our stakeholders.

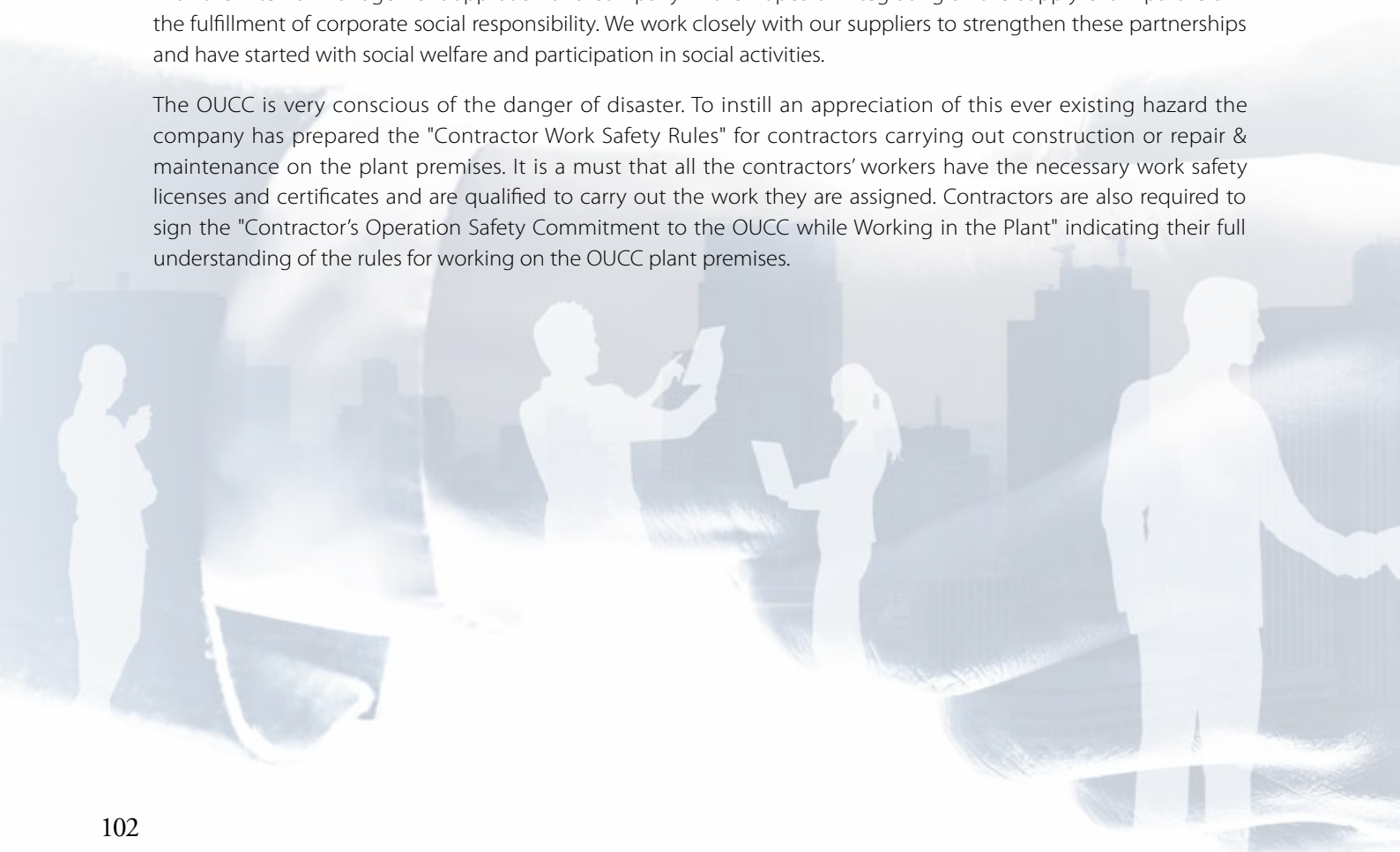
As highly pervasive as the CSR awareness of today, our challenges, in addition to continuing to optimize supplier management processes, are to meet the demands of our customers and supply them with quality products. We also have to ensure that our suppliers treatment to their labor, behavior towards the environment, and business integrity meets the expectations of society through our supplier screening mechanism.

Contractor Management

The OUCC has internal "Rules Governing Suppliers". The OUCC believes that the company should provide a safe working environment for employees, work together with the suppliers to fulfill corporate social responsibility, and establish a higher environmental protection, safety, and health standard for the industry taken as a whole.

We take the initiative with our suppliers with respect to environmental matters, as well as safety and health issues. We also encourage them to enhance their management in breadth and depth. We have provided grants in accordance with the internal management approach of a company in the hopes of integrating all the supply chain partners in the fulfillment of corporate social responsibility. We work closely with our suppliers to strengthen these partnerships and have started with social welfare and participation in social activities.

The OUCC is very conscious of the danger of disaster. To instill an appreciation of this ever existing hazard the company has prepared the "Contractor Work Safety Rules" for contractors carrying out construction or repair & maintenance on the plant premises. It is a must that all the contractors' workers have the necessary work safety licenses and certificates and are qualified to carry out the work they are assigned. Contractors are also required to sign the "Contractor's Operation Safety Commitment to the OUCC while Working in the Plant" indicating their full understanding of the rules for working on the OUCC plant premises.



Screening and Evaluation

To strengthen the awareness and execution of corporate social responsibility in the suppliers, we have worked closely with them, and with our contractors, on five matters: labor, health & safety, environment, management, and business ethics.

Suppliers must comply with the petrochemical industry code of conduct and the OUCC "Environmental Safety and Health Policy." The OUCC uses a supplier self-evaluation process with a questionnaire to help them understand the meaning and requirements of the policy. Suppliers and contractors sign a Letter of Commitment to guarantee compliance with environmental safety and health. The OUCC supplier screening and evaluation mechanism and result include:

1. New suppliers must pass a "Supplier Evaluation" and plan to add human rights issues to "Suppliers' Corporate Social Responsibility Commitments" in 2018.
2. Existing suppliers must receive and complete an annual evaluation (on-site or written evaluation). In 2017, there was a total of 661 trading suppliers undertaken written evaluations; 5 suppliers disqualified.
3. The evaluation process includes record evaluation and field evaluation. The items include company management, quality, delivery, price, service, and environmental safety. Only when the suppliers' rating score reaches standard requirement could the suppliers be listed as qualified. Should any disqualified evaluation or material incident incurred result in the damage of the company's reputation, labor safety, product quality, or manufacturing operation, the supplier will be listed as disqualified and suspended.
4. Forwarders evaluation system: Nine forwarders who had agreed to the terms of the "Environmental Safety and Health Policy Handbook" also agreed to be audited on their commitment to environmental safety and health in 2017. Currently, there are five outsourced tanker forwarders, four of these have ISO-9001 certification (80% pass rate, accounting for 94.2% of freight delivery); three of these have ISO-14001 certification, (60% pass rate, accounting for 76.7% of freight delivery); and five have OHSAS-18001 certification (100% pass rate, accounting for 95.2% of freight delivery).
5. Environmental policy: Require all contractors to comply with OUCC's goals of zero accident, zero damage and zero pollution, and review safety, health and environmental protection actions to the highest level to protect the Earth's ecological environment and ensure the safety and health of employees, and to create the best interests for employees, suppliers, contractors, customers, shareholders and the public while achieving the vision of sustainable development.

Note: The OUCC has 3-in-1 ISO certifications, which means a declaration of compliance with environmental policies and an environmental impact assessment must be sealed, signed and returned to the Company by the suppliers.

Transportation Supplier's Safety and Health Quality Audit

As an enterprise committed to substantiating responsibility, the OUCC is doing everything possible to realize the goal of transport safety. Contracted transport service providers must participate in the Kaohsiung City – Kaohsiung County - Pingtung County diesel self-management program and receive their qualification mark, and comply with the environmental and safety standards requirements. A regular "Outsourcing Transportation Safety and Health Quality Audit and Survey" is performed in the fourth quarter for all the main transport service providers. Annual accident statistics accounted for 50% of the score, while transportation safety and hygiene quality audit accounted for another 50%. The transport service provider will not be renewed if the evaluation score is below the standard score.

The total number of evaluation audit on transport is seven in 2017 with the passing rate of 100%. The items audited include:

- | | |
|--|--|
| 1. Transport Company Profile and transport policy. | 2. Security System and policy. |
| 3. Work procedures and emergency response. | 4. Driver qualification (employment / training). |
| 5. Driver qualification review (evaluation). | 6. Equipment safety. |

In response to CSR management trend, contracted tanker or transport companies will be requested to follow environmental safety and other health-related matters mentioned in their contracts. They must pass environmental management system certification, or must be free of any industrial safety accident within the previous five years. All suppliers are invited to participate in CSR management and development.

Contractor Safety Conference

Organize the Contractor Safety Conference every week to conduct two-way communication on safety matters through the meeting. Firstly, the OUCC internal units will conduct announcement such as: factory regulations, environmental safety operations focus, etc., then conduct co-experience sharing of the OUCC supervision and contractor management, and finally provide temporary motions to submit the discovered problems and review followed by improvements to ensure the safety of the workplace. In the 2017 Safety Conference, the matters promoted and announced by the Environmental Safety unit were:

1. Make sure to conduct safety check in hot work operation.
2. Make sure to conduct safety check by the work safety personnel.
3. Promote the legal license and management matters required for each type of work.
4. Monthly Contractor Safety Meeting, Supervision and Contractor Safety Reporting Schedule.
5. Introduce chemical product characteristics and notification of the hazards.

Community

The OUCC applies their corporate spirit of "taking from society, giving back to society" to sponsor charity groups or to engage in activities of the affiliated charitable foundation of the company, of which sponsorship is subject to the Company's yearly operating performance. We also engage in feedback to the community and collaborate with suppliers to maintain our partnerships. Suppliers and employees are also invited to participate in social welfare activities with the support of enterprises.

The OUCC has occasionally arranged blood donation drives, held along with FE Group other donation activities such as the Taipei Expo, August 8th hurricane donations, 921 earthquake donations; and spontaneous employee donations to disadvantaged groups and volunteer work. The amount donated to disadvantaged minority and charity groups in 2017 totaled NTD 1.72 million, including over NTD 146.8 thousand for community sponsorship. Relevant details may be referred as below.

Donation

Unit: NT\$ thousands

	2016	2017
Cash donation amount	2,499	1,724
In-kind donation amount	0	0
Total	2,499	1,724

Cash Donation Activity

Recipient	Activities	Invested amount (NT\$ Thousand)
Longji Temple, Donglong Temple, Chinsui Temple, etc.	Temple festival	2.9
Sijhou Village, Wufu Village, Jhongyun Village, etc.	Heads of boroughs & neighborhoods gathering activities, festivals, etc.	26.6
Linyuan Village Promotion Association, Sijhou Community Development Association, Linyuan Environmental Protection Association, etc.	Clubs and association activities	26.6
Linyuan Petrochemical Industrial Park Manufacturers Meeting, Kaohsiung Petrochemical Industry Trade Union, Linyuan District Office, Linyuan Volunteer Firemen, etc.	Work with the industry in Linyuan to sponsor the Linyuan District Office for community activities, such as community fund, emergency assistance, slowball game, and scholarships etc.	90.7
Linyuan Precinct	Friends of the Police Association	1.9
Linyuan Police Station		1.9
Taiwan Chemical Industry Association	2017 Summit Forum	3.0
The National Cheng Kung University Chemical Engineering Education Foundation	Member of the club	3.0
UDNFUNLIFE CO., LTD.	Cirque du Soleil performance	15.8
Total		172.4

ASSURANCE STATEMENT



ASSURANCE STATEMENT

SGS TAIWAN LTD.'S REPORT ON SUSTAINABILITY ACTIVITIES IN THE ORIENTAL UNION CHEMICAL CORPORATION'S CORPORATE SOCIAL RESPONSIBILITY REPORT FOR 2017

NATURE AND SCOPE OF THE ASSURANCE/VERIFICATION

SGS Taiwan Ltd. (hereinafter referred to as SGS) was commissioned by ORIENTAL UNION CHEMICAL CORPORATION (hereinafter referred to as OUCC) to conduct an independent assurance of the Corporate Social Responsibility Report for 2017 (hereinafter referred to as CSR Report). The scope of the assurance, based on the SGS Sustainability Report Assurance methodology, included the sampled text, and data in accompanying tables, contained in this report.

The information in the OUCC's CSR Report of 2017 and its presentation are the responsibility of the management of OUCC. SGS has not been involved in the preparation of any of the material included in OUCC's CSR Report of 2017.

Our responsibility is to express an opinion on the report content within the scope of verification with the intention to inform all OUCC's stakeholders.

The SGS protocols are based upon internationally recognized guidance, including the Principles contained within the Global Reporting Initiative Sustainability Reporting Standards (GRI Standards) 101: Foundation 2016 for accuracy and reliability and the guidance on levels of assurance contained within the AA1000 series of standards and guidance for Assurance Providers.

This report has been assured using our protocols for:

- AA1000 Assurance Standard (2008) Type 1 evaluation of the report content and supporting management systems against the AA1000 Accountability Principles (2008) at a moderate level of scrutiny; and
- evaluation of the report against the Global Reporting Initiative Sustainability Reporting Standards (2016)

The assurance comprised a combination of pre-assurance research, interviews with relevant employees, superintendents, and the senior management in Taiwan; documentation and record review and validation with external bodies and/or stakeholders where relevant. Financial data drawn directly from independently audited financial accounts has not been checked back to source as part of this assurance process.

STATEMENT OF INDEPENDENCE AND COMPETENCE

The SGS Group of companies is the world leader in inspection, testing and verification, operating in more than 140 countries and providing services including management systems and service certification; quality, environmental, social and ethical auditing and training; environmental, social and sustainability report assurance. SGS affirm our independence from OUCC, being free from bias and conflicts of interest with the organisation, its subsidiaries and stakeholders.

The assurance team was assembled based on their knowledge, experience and qualifications for this assignment, and comprised auditors registered with ISO 26000, ISO 20121, ISO 50001, SA8000, EICC, QMS,

EMS, SMS, GPMS, CFP, WFP, GHG Verification and GHG Validation Lead Auditors and experience on the SRA Assurance service provisions.

VERIFICATION/ ASSURANCE OPINION

On the basis of the methodology described and the verification work performed, we are satisfied that the information and data contained within OUCC's CSR Report of 2017 verified is accurate, reliable and provides a fair and balanced representation of OUCC sustainability activities in 01/01/2017 to 12/31/2017.

The assurance team is of the opinion that the Report can be used by the Reporting Organisation's Stakeholders. We believe that the organisation has chosen an appropriate level of assurance for this stage in their reporting. In our opinion, the contents of the report meet the requirements of GRI Standards in accordance with Core Option and AA1000 Assurance Standard (2008) Type 1, Moderate level assurance.

AA1000 ACCOUNTABILITY PRINCIPLES (2008) CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

Inclusivity

OUCC has demonstrated a good commitment to stakeholder inclusivity and stakeholder engagement. A variety of engagement efforts such as survey and communication to employees, customers, investors, suppliers, communities, NGOs and other stakeholders are implemented to underpin the organization's understanding of stakeholder concerns. For future reporting, OUCC may proactively consider having more direct two-ways involvement of stakeholders during future engagement.

Materiality

OUCC has established processes for determining issues that are material to the business. Formal review has identified stakeholders and those issues that are material to each group and the report addresses these at an appropriate level to reflect their importance and priority to these stakeholders.

Responsiveness

The report includes coverage given to stakeholder engagement and channels for stakeholder feedback.

GLOBAL REPORTING INITIATIVE REPORTING STANDARDS (2016) CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

The report, OUCC's CSR Report of 2017, is adequately in line with the GRI Standards in accordance with Core Option. The material topics and their boundaries within and outside of the organization are properly defined in accordance with GRI's Reporting Principles for Defining Report Content. Disclosures of identified material topics and boundaries, and stakeholder engagement, GRI 102-40 to GRI 102-47, are correctly located in content index and report. For future reporting, it is recommended to have more descriptions of OUCC's involvement with the impacts for each material topic (103-1), and how efforts were given to mitigate the impacts. Goals, targets and the expected results for each material topic are suggested to be set, if applicable, with quantitative objectives.

Signed:

For and on behalf of SGS Taiwan Ltd.



David Huang, Director
Taipei, Taiwan
13 June, 2018
WWW.SGS.COM



AA1000
Licensed Assurance Provider
000-8

Management Approach of Material Topics

Material topics	The purpose of the management approach	Policies	Goals	Grievance mechanisms
Economic Performance	Establish a sound corporate governance structure and transparent communication channels, strive to improve business performance and protect investor-related rights and interests.	"Business Integrity Principles" "Codes of Conduct" "Responsible Care Chapter"	<ul style="list-style-type: none"> Transparent governance Stable and continuous income 	Stakeholder contact line (shareholder): 02-2719-3333#201
Energy	Keep close track of its own energy consumption, and formulate the short-, medium- and long-term goals of energy and resources management in OUCC according to domestic laws and regulations and international environmental energy management trends.	"Business Integrity Principles" "Responsible Care Chapter"	<ul style="list-style-type: none"> Green power purchase of 100,000 kWh/year Use carbon emissions in 2015 as the benchmark and reduce by 1% every year 	
Water	OUCC faces up to the water resources issue and makes efforts to improve the utilization of water resources through process improvement.	"Safety, Health and Environmental Protection Policy" "Responsible Care Chapter"	Use daily water consumption in 2016 as the benchmark and commit ourselves to achieve 50% reduction in water consumption by 2030	
Emission	Carry out the Directions for Implementation of Safety, Health and Environmental Protection Policy, and appoint a dedicated personnel responsible for supervision and promotion.	"Code of Control Procedures for Wastewater Discharged into the Wastewater Treatment Plant"		Business contact: 07-6413101#2303
Effluents and Waste				
Environmental Compliance	With an environment-friendly perspective, environmental management is rigorously implemented in the process of industrial development; we not only comply with the requirements of the regulations and related standards, but also make efforts to reduce the production of harmful substances produced in the production process.	"Safety, Health and Environmental Protection Policy" "Domestic and foreign environmental regulations" "Responsible Care Chapter"	Meet regulatory requirements, zero environmental incidents	
Employment	OUCC believes that employees are important assets to us, so we are committed to providing comprehensive training, good welfare and working environment. Meanwhile, we emphasize labor interests and rights and have trade union and a complaint handling mechanism.	"Business Integrity Principles" "Code of Conduct and Ethics for Employees" "Responsible Care Chapter"	<ul style="list-style-type: none"> Complete and excellent employee care Employee-friendly workplace Zero labor rights and interests damage incident 	
Labor/ Management Relations				
Occupational Health and Safety	Take an initiative to join the "Taiwan Responsible Care Association (TRCA)" to continuously improve and increase the health and safety performance in the plant.	"Labor Health Protection Rules" "Responsible Care Chapter" "Various Disaster Emergency Response Plan"	<ul style="list-style-type: none"> Zero workplace disaster 	
Human Rights Assessment	OUCC strictly abides by the labor and human rights-related laws and regulations of the government, and treat all people fairly. Reduce the harm of products to the environment, and assess the health, safety and environmental impact of products in the perspective of life cycle.	"Code of Conduct and Ethics"	<ul style="list-style-type: none"> 100% human rights training 	Stakeholder contact line (employee): 02-2719-3333#281
Forced or Compulsory Labor				
Customer Health Safety	<ul style="list-style-type: none"> To protect the customers' intellectual property rights and ensure that the customers' products maintain market competitiveness, OUCC strictly takes the responsibility to protect the privacy of customers. Build private cloud space to reduce the worries of information leakage. 	"Relevant Domestic and Foreign Laws and Regulations"	<ul style="list-style-type: none"> 100% safe transportation Fully introduce RSQAS to freight forwarders 	

Material topics	The purpose of the management approach	Policies	Goals	Grievance mechanisms
Customer Privacy	OUCC complies with local regulations.	"Regulations for Information Security Management"	<ul style="list-style-type: none"> Zero customer privacy damage incident 	Stakeholder contact line (customer): 02-2719-3333#331
Socioeconomic Compliance	OUCC strictly abides by the labor and human rights-related laws and regulations of the government, and treat all people fairly.	"Business Integrity Principles" "Responsible Care Chapter"	<ul style="list-style-type: none"> 100% compliance with local regulations 	

Material topics	The evaluation of the management approach	Results (page)
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Energy		
Water	ISO-14001 Environmental Management System	
Emission	ISO-14064-1 GHG emission inventories	77-79, 82-87
Effluents and Waste	Environmental regulations	
Environmental Compliance		
Employment	OHSAS-18001 Occupational Safety Management System	
Labor/Management Relations	Labor union, Collective bargaining agreements	90, 100-101
Occupational Health and Safety	Domestic employment law	
Forced or Compulsory Labor	Labor union, Collective bargaining agreements	100-101
Human Rights Assessment	Domestic human rights law	
Customer Health Safety	Quality management system, Customer regulation	
Customer Privacy	Customer satisfaction survey	47-49
Socioeconomic Compliance	Domestic socioeconomic law	

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GENERAL DISCLOSURES

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	102-10	Significant changes to the organization and its supply chain	None
	102-11	Precautionary Principle or approach	57
	102-12	External initiatives	19, 26, 64
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	103-02 The management approach and its components	108-109
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GRI 302: ENERGY 2016		
302-01	Energy consumption within the organization	78
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302-03	Energy intensity	78
302-04	Reduction of energy consumption	79
GRI 303: WATER 2016		
303-01	Interactions with water as a shared resource	82-83
303-02	Management of water discharge related impacts	Water Usage is all from tap water None
GRI 305: EMISSIONS 2016		
305-01	Direct (Scope 1) GHG emissions	79
305-02	Energy indirect (Scope 2) GHG emissions	79
305-03	Other indirect (Scope 3) GHG emissions	80
305-04	GHG emissions intensity	78

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306-01	Water discharge by quality and destination	83
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306-05	Water bodies affected by water discharges and/or runoff	None
GRI 307: ENVIRONMENTAL COMPLIANCE 2016		
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GRI 409: FORCED OR COMPULSORY LABOR 2016		
409-01	Operations and suppliers at significant risk for incidents of forced or compulsory labor	None
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GRI 416: CUSTOMER HEALTH AND SAFETY 2016		
416-01	Assessment of the health and safety impacts of product and service categories	None
416-02	Incidents of non-compliance concerning the health and safety impacts of products and services	None
GRI 418: CUSTOMER PRIVACY 2016		
418-01	Substantiated complaints regarding concerning breaches of customer privacy and losses of customer data	None
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419-01	Non-compliance with laws and regulations in the social and economic area	None



東聯化學股份有限公司
Oriental Union Chemical Corp.