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

ORIENTAL UNION CHEMICAL CORPORATION

The 2018 Corporate Social Responsibility Report

OUCC

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2018

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About this Report

Welcome to the Corporate Social Responsibility (CSR) Report of the Oriental Union Chemical Corporation (stock code:1710, hereinafter referred to as the "OUCC") published in 2019. We would like all the stakeholders that care for us to better understand the challenges of sustainable development faced by the chemical industry, as well as our efforts and persistence in response to integrity governance, product research & development, green chemistry action and sustainable performance 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.
- 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 2018 (Jan. 1 to Dec. 31). Some issues tracing back to 2016 or 2017 have been included to ensure a comprehensive report of project performance and outcome. The financial performance described in this report is from the data of the OUCC's individual financial statement and the currency presented in this report is NTD. The environmental and social performance covers OUCC Headquarters and the Linyuan Plant and will be indicated in the paragraph if the scope of disclosure differs from the aforementioned.

This year's new structure describes our efforts on different aspects of corporate social responsibility, to demonstrate the OUCC entrepreneurial spirit of "integrity, diligence, thrift, prudence, and innovation" and the achievements in corporate social responsibility, and for stakeholders to agree with our intentions.

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References and Assurance

The CSR Report relevant information and data are composed and provided by the OUCC Taipei Headquarters and Linyuan Plant to ensure it meets the requirements of the CSR report. 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.

The relevant data in this report are verified by third-party unit and are presented in conformity with international indicators.

Sustainability Report

- GRI Standards: Core Option
- AA1000 (2008) Accountability: Type I intermediate assurance level

Economy

- Regulations Governing the Preparation of Financial Reports by Securities Issuers
- ISO 9001 Quality Management System

Environment

- ISO 14001 Environmental Management System
- ISO 14064-1 Greenhouse Gas Inventory
- ISO 50001 Energy Management System

Society

- OHSAS 18001 Occupational Health and Safety Management

Feedback

If you have any comments on the "Oriental Union Chemical Corporation 2018 Corporate Social Responsibility Report", you are invited to forward your valuable comments and advice to keep us advancing towards the concept of sustainable governance.

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CHAIRMAN'S MESSAGE

Welcome to the 2018 Corporate Social Responsibility (CSR) Report of the Oriental Union Chemical Corporation. Despite a rapidly changing market environment, OUCC has upheld the spirit of "integrity, diligence, thrift, prudence, and innovation" and will steadily build up a stable basis and core competence for sustainable development of the company.

To maintain sustainability in our changing world, OUCC supports and responds to the United Nations Sustainable Development Goals (UN SDGs) and refers to the "Chemical Sector SDGs Roadmap" to communicate with stakeholders in different countries, industries and communities in a real and transparent manner with immediate effect. OUCC considers different opinions, identifies key sustainability issues, and focuses on its core business with a forward-looking strategy which includes employee care, the protection of human rights, energy & resource management, innovative R&D, process environment and supply chain management, to accumulate energy for sustainable development.

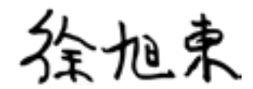
As a corporate citizen, OUCC is innovative with respect to product development economics. The company actively engages in corporate transformation, the development of green chemistry, and the establishment of diversified technological high-value products to seize market opportunities. The aim being to become more specialized in terminal and customer-oriented products. As for the process environment, OUCC has improved its process design, carries forward green production, improves energy efficiency and waste recycling equipment, to reduce the impact of its operations and production on the environment, and to maintain a balance between the development of industrial production and environmental protection.

To achieve equality and create a friendly working environment, OUCC not only adheres to the principles of "The United Nations Global Compact" and the "Universal Declaration of Human Rights", but has also set the goal of "zero accident, zero injury, zero pollution", completed the "Hazard and Operability Study" (HazOp) before the construction of each plant, established the "Management of Change" (MOC), and acquired the international "ISO 14001 Environmental Management System" as well as "OHSAS 18001 Occupational Health and Safety Management System" through efficient staff training. In 2018, the Linyuan Plant achieved a "3.96 million Disaster-free Working Man hour record" with the support of all the company employees.

In addition, 2018 is an important year for OUCC to achieve the Circular concept. The company has analyzed the entire process, including front-end processing, manufacturing design, and waste reduction based on the established development foundation and R&D core competence. A more active new circular economy business model, which reduces the dependence on resources and creates a new layout for sustainability has been adopted. However, the Circular concept also refers to continuous improvement, as a tribute of the Company's reciprocation to the society, to ensure a path towards sustainability!

Going forward, OUCC upholds the concept of "unlimited" for future sustainability and continues to develop a Circular Economy in 2018. Even in the face of severe challenges, the company has dedicated all possible effort to corporate responsibility and is committed to the promotion of company spirit and the concept of sustainability to the industrial supply chain and the community. OUCC promotes the value of joint consensus with collective resources to jointly achieve sustainable development, and commits to the improvement of the environment, social integration, and a sustainable future.

Chairman
Oriental Union Chemical Corporation



The OUCC Sustainable Development Strategies

The Sustainable Development Goals(SDGs) are the global principles for guiding sustainable development. As a corporate citizen, OUCC is one of the key drivers for the 2030 global blueprint on sustainability. The company has identified the sub-goals of the SDGs as the first direction for improvement by understanding the idea of the SDGs with reference to the "Chemical Sector SDGs Roadmap". This includes stakeholder's expectations and comprehensive risk analysis to discover all the relations between the 169 targets. OUCC is committed to ongoing development of innovative strategies, the adoption of internal goals on sustainable development, and plans for a sustainable future.

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Innovative OUCC

Keep up with the developing world, gain insight on trends with value, circular, R&D and process innovations as a foundation for sustainable development.

Short-term Goal (2019)

- Continue to invest in R&D and actively develop high-quality and high value-added new EOD/POD product lines

Mid-/Long-term Goal (2025-2030)

- Improve the advantages of existing products and enhance the sustainable competitiveness of the company

Ethical Governance

With integrity and trust as vital parts of corporate culture, the company fully upholds the spirit of self-discipline in corporate governance by complying with all the relative laws and regulations as well as the application of robust internal control.

Short-term Goal (2019)

- Establish an information management backup mechanism
- Continue to propose solutions on key CSR issues

Mid-/Long-term Goal (2025-2030)

- Continue to improve internal risk management system
- Continue to enhance the CSR negotiation mechanism

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Diligent Partners

OUCC upholds the motto of "Diligence excels all work, become diligent-oriented", work together with suppliers to provide high-quality and reliable services, and to become a turstworthy company for both customers and partners.

Short-term Goal (2019)

- Conduct a survey for employees
- Conduct human rights training courses on seven major labor issues of the Responsible Business Alliance (RBA)
- Implement a new performance appraisal system
- Obtain AEO certification
- Continue to perform internal audits and third-party external audits to effectively implement the ISO 9001 Quality Management System
- 100% of new suppliers have signed the "Suppliers' Corporate Social Responsibility Commitments"
- Existing suppliers have completed on-site or written evaluation.

Mid-/Long-term Goal (2025-2030)

- Introduce a Talent Quality-Management System (TTQS)
- Conduct training courses in cooperation with the vocational training center
- Continue to optimize control measures and improve customer satisfaction
- 100% of freight forwarders have acquired RSQAS certification

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Solid Contributions

Committing to efforts to improve the environment, social integration, and sustainable future as the Company's reciprocation on what's bestowed from the society, as well as with a "down to earth" attitude and "Truthful" action.

Short-term Goal (2019)

- Accumulated carbon reduction of 29,000 t-CO_2e
- Five years of accumulated electricity saving totaling 5%
- Daily water saving of 2%
- Wastewater recycling system set up with a recycling rate targeted at 70%

Mid-/Long-term Goal (2025-2030)

- Accumulated electricity saving of 10%
- Daily water saving of 20%
- Continue the promotion of energy-saving and a carbon reduction program, and focus on the technologies of low carbon or carbon-free heat application, as well as greenhouse gas storage
- Dedicate efforts to the achievement of targets to become a green enterprise

Short-term Goal (2019)

- Participate in blood donation activities
- Make donations to disadvantaged groups
- Volunteer services to social care

Mid-/Long-term Goal (2025-2030)

- We contribute to the society by using core competence

Prudent Thinking

Risk management is integrated with sustainable operations in various businesses with a concept of caution and safety. We are committed to a working environment of zero pollution, zero injury and zero accident.

Short-term Goal (2019)

- Continue to conduct emergency response training for all plants and suppliers
- Results of on-site inspections of the freight forwarder are listed in the allocation standard

Mid-/Long-term Goal (2025-2030)

- Construct a chemical plant that adheres to the concept of "zero pollution, zero injury, and zero accident"

INNOVATIVE OUCC

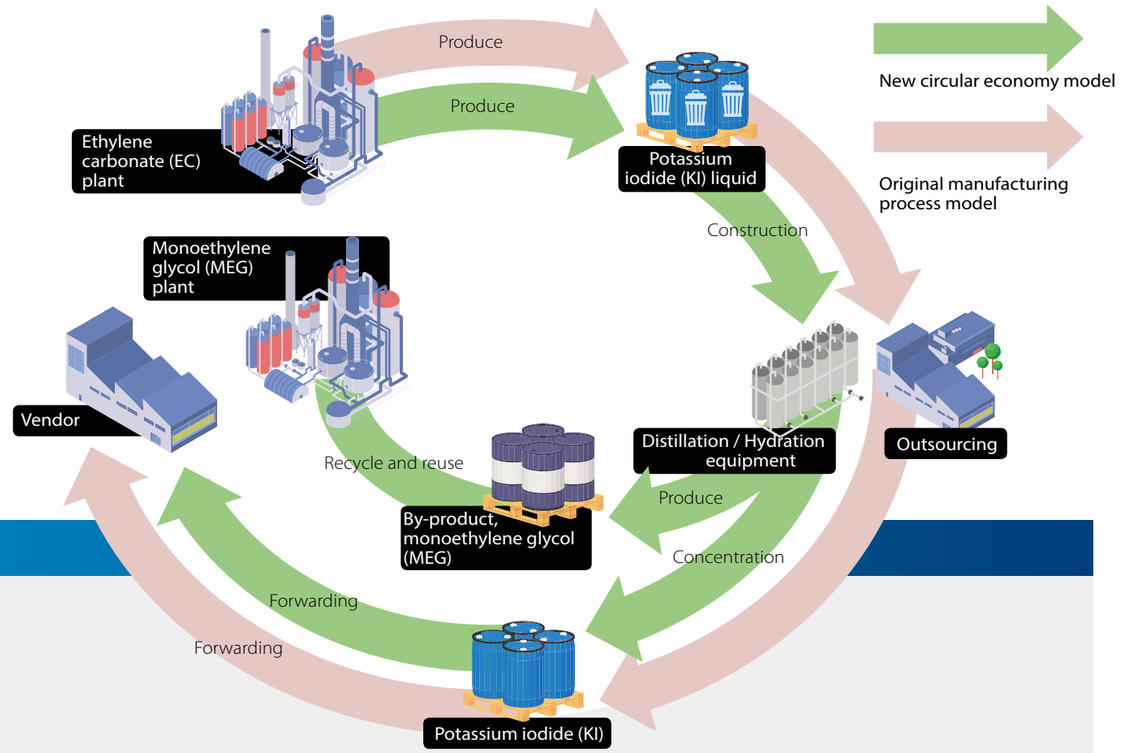
In the face of global environmental issues and natural resources shortage, OUCC actively promotes "green chemistry" combining strong internal product development capabilities to draw its green chemical business blueprint. In the new phase of the work development, OUCC is proactively engaged in high value-added 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 enhance product quality. Not only must the requirements for raw materials and products always meet local and international standards as a prerequisite, but also the specification and criteria pursued is aimed at excellence. We commit ourselves to the stabilization and regulation of product standards as the foundation to sustainable and innovative growth.

2018 Sustainable Performance

- Promote circular economy to generate profit of NT$**14.51** million per year
- R&D investment totaled NT$**160** million
- **Various innovative technologies** developed and applications made for international patents

The Circular Economy Implementation

It is a fundamental goal of OUCC, as a corporate citizen, to reduce both economic and environmental impact. OUCC has been creating opportunities for corporate sustainability in the face of global environmental issue, and has established a "circular economy" model, aiming at "zero waste, zero pollution and zero emission", to reduce dependence on resources and create a new layout for sustainability.



New Business Model: The Circular Economy

OUCC has developed new technologies and changed traditional linear economy strategy into a circular economy model, to establish an economic development model for resource recycling with the innovative R&D concept, so as to develop a sustainable cycle of "resources-products-renewable resources" within the industry. The cost of future waste treatment will be reduced and result in additional economic value. The company will be able to achieve the aim of sustainable resources more effectively while also implementing a circular economy within the industry.

The OUCC circular economy model initiating from the R&D professional core projects has reconstructed the industry chain. Since 2017, the company has invested NT$19.2 million in the development of innovative "potassium iodide (KI) recovery technology" after comprehensive planning and evaluation. The investment plan includes basic design, equipment procurement and production, civil construction, equipment installation and testing, with the aim of creating sustainable business value. The project has been officially in operation since November 2018 after mechanical completion in September 2018 and test run finished in October 2018.

Vision

- Green business opportunities are developed to enhance industry sustainability through higher levels of mutually beneficial cooperation.

Goal

- Environmental issues solved including the environmental impact of past "linear" developments.
- Strict review of core technology processes to develop competitiveness within the industry

Key Issue

Potassium iodide (KI) is a reaction catalyst for the production of ethylene carbonate (EC), and the waste liquid from reaction contains 5% potassium iodide (KI). This disposition of waste liquid was originally outsourced for concentration to 15% potassium iodide (KI), prior to forwarding to Japanese manufacturer for further refinement into high value iodine (I2). Based on an estimated ethylene carbonate (EC) capacity of 60,000 tons/year, 400 tons of potassium iodide (KI) waste liquid will be produced per year, with an outsourcing cost of approximately NT$8 million per year.

Cycle Innovation

The development and design of the "distillation/hydration equipment" allows potassium iodide (KI) waste liquid produced by the ethylene carbonate (EC) plant to be concentrated and upgraded the originally paid "outsourced waste" into reusable resource products, which can then be utilized in new production processes.

- At the beginning of 2018, OUCC started to recruit manpower from departments of R&D, engineering design and production, to be engaged in the R&D of the resource-based process for concentrating potassium iodide (KI).
- After the completion of test run in October 2018, the potassium iodide (KI) waste liquid was successfully concentrated to 15% potassium iodide (KI) for recycling, along with the simultaneous production of a by-product, monoethylene glycol (MEG).

Process Improvement

Input	Tons	Output	Performance
Potassium Iodide (KI) Waste Liquid	365 tons	Concentrated potassium iodide (KI) of 94 tons	Achieved (Note 1)
	122 tons	Recycled monoethylene glycol (MEG) 159 tons	Estimated production (Note 2)

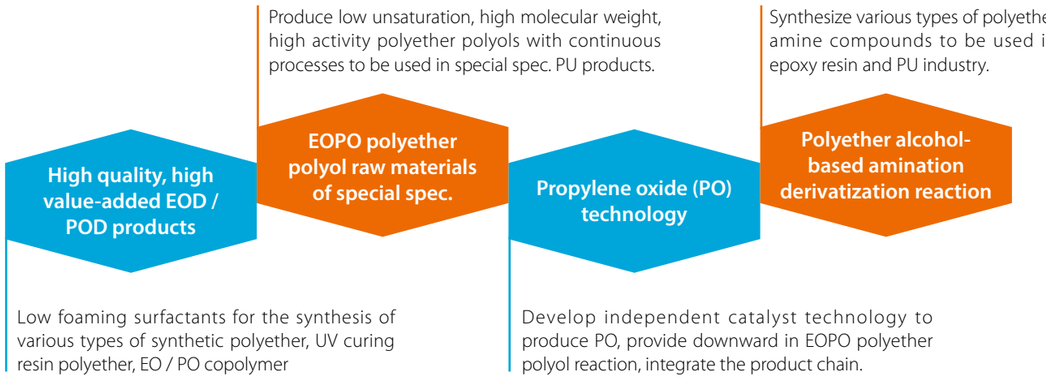
Note: 1. Processing and production from November 2018 to January 2019.
2. Estimate for February to June 2019.

Expected Benefits

Reduction in outsourcing processing costs and KI procurement costs, as well as recycling by-products, contribute to a total benefit of NT$ 14.51 million/ year, with an investment payback period of 1.3 years.

Innovation and R&D

"Innovative R&D" is an OUCC fundamental capability and this has allowed us to establish a strong R&D technical team. Departments including Material Development, Process Development, Quality Control Analysis and Engineering Design are established under the Technical and R&D Center. In November 2018, the Product Development Department was added. 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:



Short-term Plan

OUCC has been collaborating with Ya Tung Ready Mixed Concrete Co., Ltd since 2018 to improve the synergy of the Group. It has committed to the development of concrete admixtures (water-reducing/ collapse/ coagulation-retarded), and anticipates a launch of related products in 2019 to improve concrete quality.

The booming development of the polyurethane (PU) industry in Taiwan, has resulted in the soft segments in the PU structure being mostly composed of polyether polyols. OUCC has developed its own proprietary technology for the production of high-grade fine chemicals. These special spec. polyether polyols include the PPG, GL and EO-PO copolymer series. The molecular weight range of each series of polyether polyols ranges from 230 to 20000. The physical properties of each series can be adjusted to suit specific needs. Each series of polyether polyols can be applied to various PU applications, including adhesives, sealants, and elastomers, as well as rigid and soft foams. Production is expected to begin in 2019.

R&D Direction

In recent years, OUCC EOD/POD products have been actively developed into the customized products. New products include: UV curing monomer (PETEO, BPAEO, DMPEO, EO / PO block copolymer), long-chain alcohol ethoxylated propoxylated (SL, SX series), styryl phenol ethoxylated (DSP, TSP series), Guerbet C10 alcohol ethoxylated/ propoxylated (DP, DPY series), non-regulated polyether (BT50H, DG75H, L775H, MT75H series), terephthalic acid & polyethoxylated (CMB, CHB, PHB series) and other non-ionic surfactants. These products have excellent functions for moisturization, infiltration, emulsification, dispersion and cleansing. The company has also developed products with low foam, low flow, low odor and biodegradability based on customer requirements and the quality receives high praise from the downstream customers.

Innovative Product

Category	Subject	Contents
EOD/POD	Surfactant	● Downstream applications of EO/PO derivatives include nonionic surfactants, cement water-reducing agent, oil agent, detergent, and various intermediates ● Development and application of fine chemicals, mainly covering plastic rubber, textile dyeing, coatings, pesticides, electronic semiconductors, metal processing, construction and commodity chemicals
EOD/POD	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 Downstream Derivatives	Concrete admixture	● The concrete admixture refers to a substance which when added to a concrete mix improves the properties of the concrete. Its functions mainly include: water reducer, collapse, coagulation-retarded accelerator, and an air-entraining 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 and collapse agent
	PEG-Fatty acid esters	● Can be compounded with various types of wax emulsifier, lubricants and anticorrosion additives, and dyeing dispersant to be used in water treatment, leather fat liquor
Polyetheramine	Monoamines, diamines, polyamine and polyetheramine derivatives	● Polyetheramine is an amine-terminated molecule with a polyether skeleton as its main chain. It has features including low viscosity, high permeability, and excellent resistance to heat and yellowing ● It is mainly used in high performance composite materials, polyurea, cement additives, epoxy flooring, coatings and accessories
PU Raw Materials	EOPO polyether polyol of special spec.	● With a wider range of adjustable molecular weight than the traditional polyether polyols. Polyetheramine features low unsaturation, low VOC, as well as uniform molecular weight distribution ● Used in polyurethane (PU) polymer materials to increase the top limit of molecular weight, improve foam stability, withstand mechanical stress and increase material stiffness

R&D Investment

To maintain a position as a successful diversified company that supplies traditional chemicals, specialty chemicals and high-tech chemical materials, OUCC continues to build more customized EOD products on the basis of existing customers. We actively seek opportunities for cooperation with internationally renowned companies, and have increased R&D investments to meet customer needs under the innovative R&D of products and processes.

The establishment of a high-value R&D center for the petrochemical industry by OUCC has been approved by the Ministry of Economics. The amount of investment subsidy received in 2018 is NT$ 6.28 million.

R&D Investment Form

	Unit	2016	2017	2018
R&D Amount	Million (NT$)	135	145	160
Total Annual Revenue	Million (NT$)	10,986	12,756	14,620
Ratio	%	1.23	1.14	1.09

Note: Individual operating income.

Product Development: Special Spec. Polyether Polyol

We have invested in the development and production of special spec. polyether polyol series (including ethylene oxide / propylene oxide) to strengthen establishment of the propylene product tree. The newly developed special spec. polyether polyol has several advantages over traditional polyether polyol. It has features such as a wide range of adjustable molecular weight, low VOC and unsaturation, as well as uniform molecular weight distribution. The special polyether polyol is mainly used in PU polymer materials. It has the advantage of an increase of the top limit of the polymer molecular weight and foaming stability, it withstands mechanical stress well, and can increase material stiffness. This special polyether polyol is often used in high spec., high-priced, products.

Key Innovations and Patented Technology

Catalysts are a key technology in the production of special spec. polyether polyol products, and most international companies are authorized suppliers of these catalyst technologies. Production and application by OUCC is mainly focused on Europe and America, China and Thailand, due to the high unit price of special spec. of polyether polyol products. Major key catalyst technologies have been successfully developed and the company has applied for multinational patents to allow them to gain more future opportunities.

In addition, to increase product diversification, OUCC has developed a number of technologies to synthesize special spec. polyether polyol products. The technologies have been tested by downstream customers with positive feedback that acknowledge the company efforts towards sustainable development.

Production Process Development of Cumyl-Hydroperoxide Propylene-Oxide (CHPPO)

To improve production planning of the product tree related to all propylenes, the development of our self-owned technology for the production of propylene oxide has been underway. The aim is to reduce production cost of the polypropylene glycol series and increase the diversity of the oxide derivatives.

Innovative Technology and Exclusive Domestic Supplier

The existing pioneering CHPPO and HPPO processes for the production of PO (exclusive) which produce no co-products, have been the mainstream in the field. Amongst these, the CHPPO process best fits the concept of a circular economy and the percentage of atom utilization is close to 100%. After all levels of comprehensive consideration, OUCC has chosen the CHPPO process as its main technology for the production of propylene oxide.

Until now, there have been no domestic manufacturers or technologies for propylene oxide production, and it has been fully relied on import. Hence, the OUCC self-developed propylene oxide can become the main supply for the domestic market.

Product Development and Global Patent

The propylene oxide production process is comprised of three main stages. The most important key to this process technology lies in the technical limitation of the catalyst required for the epoxidizing reaction, for which the catalyst technology is still provided by a Japanese supplier, with no sign of a release date so far. This means the CHPPO process for the production of propylene oxide will need to be licensed by the Japanese supplier.

OUCC has developed four independent catalyst-related technologies and has applied for multi-national patents. The catalyst has excellent catalytic activity (CHP conversion > 99%, PO selectivity > 97%), and its production and regeneration procedures are easier than those of the Japanese catalyst provider.

The catalyst developed by OUCC has excellent stability. Under a continuous reaction test, the catalytic activity does not tend to decrease over long periods of continuous on-and-off operation tests (>200 hours). Present R&D shows this self-developed technology of OUCC will lead to the successful production of PO.

Furthermore, OUCC has also established related process technology in response to CHPPO dehydration and hydrogenation. The current conversion and selectivity of dehydration-hydrogenation are more than 99% in compliance with the threshold for commercialization.

R&D Cooperation

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, OUCC also cooperates with other relevant R&D organizations and invests in R&D equipment.

2018 R&D Collaborations

Type	Research plan/Unit	Description	Investment Amount (NT$)
Equipment	OUCC Research and Development Center	1. Produce with continuous processes the low unsaturated, high molecular weight, highly active polyether polyol applied to the special spec. PU products 2. Establish PO proprietary technology 3. Develop high-quality EOD/POD products	19,863,209
	Gas Chromatography (GC)	For purity analysis of raw materials or finished products, or to act as a mixture in the reaction to determine the conversion rate of the reactant	5,327,567
	KF Karl Fischer Moisture Analyzer	For the rapid analysis of product moisture	138,000
Industry Academy Cooperation	Develop CHPPO catalyst proprietary technology	National Cheng Kung University (NCKU) provides us with the catalyst synthesis method for catalytic activity of CHPPO so that we can own one more catalyst proprietary technology	300,000
	Research 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	650,000

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, maintenance, and other relevant units. The contract will include protection clauses for IPR, patents, copyrights and confidentiality to ensure the integrity of technology rights, as well as the strength of core products ventage and corporate sustainability.

Green Products

Product and Service

Ethylene glycol (EG) is the main product of 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. 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, of which the company owns 50% shareholding. 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 reconstructed the ethanolamine plant at Linyuan into an ethylene glycol monobutyl ether plant with an annual output of 20,000 tons. Completed the technical revamp of EOD plant at the Oriental Petrochemical (Yangzhou) Corp. in 2018, increasing EOD annual output to 66,000 tons.

Environmental Products

OUCC fully acknowledges our own corporate sustainability responsibility in the petrochemical industry persistence. For sustainable product development, 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 in the following and it would Promote sustainable development of the industry and respond concerns to the public:

- **Process Technology in Compliance with Regulations:** purchased technologies are those already developed in compliance with the relevant regulatory requirements.
- **Green and Innovative R&D:**
  1. Innovative technology development must not only 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.

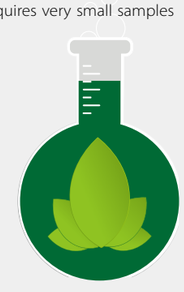
NMR Analysis Technology to Reduce the Generation of Waste Solvents

Nuclear magnetic resonance (NMR) analysis since 2010 has been used to determine EOD related product molecular structure, and analyse 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.

Ethylene Carbonate The Product of Environmental Properties

Ethylene Carbonate (EC) is produced by a reaction between Ethylene Oxide (EO) and main feedstock carbon dioxide (CO_2), which reduces effectively the CO_2 emission and earns EC production a green process for the reduction of GHG emission.



ETHICAL 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 create an operating environment for sustainable development through the gradual implementation of sustainable management.

2018 Sustainable Performance

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

- The result of the board of directors’ performance appraisal is **“Above standard”**
- Annual operating income of NT$ **14.6** billion
- Enhance information security, establish a remote backup facility, and remote login to the terminal that requires a two-factor authentication according to **Business Continuity Planning (BCP)**

About OUCC

OUCC was founded in 1975 and traded on the Taiwan Stock Exchange in 1987 with a capital stock of NT$8.85 billion. OUCC is engaged in professional petrochemical business within the Far Eastern Group.

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).

OUCC has actively implemented innovative R&D, cooperative development and the introduction of high value-added technology, growth-oriented fine chemicals and special chemicals. The company also develops some diversified products, transforming gradually its focus from ethylene glycol production to speciality chemicals, and moving towards the development of multiple fields including speciality chemicals, biodegradable polymer materials and medical biotechnology, to create new sustainable value in the industry.

Note: The OUCC production base for invested production will be in Yangzhou, China.

The Sustainable Development Philosophy of OUCC

OUCC has developed strategies with "sustainable management" as the goal. Milestones are to be set for the implementation of short-, medium- and long-term activities that will reduce the impact of sustainable business risks. OUCC has not only established expansion plans in respect to operations in the industry, but has never ceased in its efforts to ensure a stable supply of low-cost raw materials. The R&D of innovative core capabilities has resulted in the continuous development of a wide range of high value-added specialty chemicals and materials. New markets have been explored to mitigate the impact of business fluctuations in bulk petrochemical raw materials on company operations, with the aim of steadying the growth of OUCC in a world of fierce competition.

In addition to pursuing economic stability, we value the importance of industrial safety, health, environmental protection and human rights. In terms of industrial safety, OUCC has implemented the "OHSAS 18001 Occupational Health and Safety Management System" and continues to complete all the various safety requirements. Under OUCC's strict work safety management, the Kaohsiung Linyuan Plant was awarded a "Three Million Accident-Free Working Man-hour Record" certificate from the Occupational Safety & Health Administration, Ministry of Labor in 2017, and continues to progress towards acquiring a "Four Million Accident-Free Working Man-hour Record" award. We have also established a good and healthy working environment and were awarded a "Health Promotion Label" and healthy workplace certification from the Health Promotion Administration of the Ministry of Health & Welfare, affirming OUCC's efforts to shape a healthy workplace.

In terms of environmental sanitation, OUCC has implemented the "ISO 14001 Environmental Management System" in 1998, completed the transfer work in 2018, and obtained the ISO 14001:2015 Environmental Management System certificate. A pollution prevention system has been established to improve the effectiveness of pollution prevention and reduce the risk of emissions. To ensure a sustainable production model and reduce energy use, OUCC has also introduced the ISO 50001 Energy Management System, and switched its business model from a linear economy to a circular one. We continue to accelerate our momentum into a green industry to ensure a sustainable production model to save energy.

With regard to human rights protection, OUCC proactively adheres to the core spirit of the "Universal Declaration of Human Rights", the "ILO Declaration", and "The United Nations Global Compact" and "Responsible Business Alliance Code of Conduct". We abide strictly by all labor-related laws and regulations. The company has also formulated internal labor-related rules and management mechanisms to ensure that employees are treated with dignity and respect, and has provided diversified and equal employment opportunities to achieve equality and create a friendly working environment.

Going forward, we will continue to integrate and develop core competencies, actively seek potential cooperation with global companies, and introduce the most advanced chemical and biochemical technologies with the aim of creating new profit potential, and adherence to the OUCC spirit of entrepreneurship – "integrity, diligence, thrift, prudence, and innovation" to steadfastly face future challenges and achieve sustainability.

The Chronicles of 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.

1978 Ethylene glycol plant construction completed.

1982 Union Carbide Corporation withdrew from 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 OUCC and the capital stock was increased to NT$1,494 million.

1987 Stock approved for sale.

1992 Completed the construction of the ethylene glycol wastewater treatment plant in compliance with national standards.

1997 Constructed a second liquefied gas plant that helped increase output of liquid oxygen and nitrogen to around 73,000 tons a year.

1998
1. Invested in the Tong Fu Investment Co.,Ltd as a 100% owned subsidiary.
2. Obtained ISO 14001 Environmental Management System, and achieve a record of 2 million consecutive working hours with no industrial safety incident.

1999
1. Set up a branch company in Kaohsiung Nanzi Export Processing Zone and constructed an ON-SITE gas plant to expand the gas business.
2. Completed the ethylene glycol and ethylene oxide capacity debottleneck project and increased the annual production of ethylene oxide by 70,000 tons and that of ethylene glycol by 40,000 tons.

2000 Implemented an enterprise resource planning system (ERP).

2002
1. Completed the ethanolamine plant with an annual capacity of about 40,000 tons.
2. Completed the ethylene carbonate plant with an annual capacity of about 40,000 tons.
3. Obtained ISO 9001 Quality Management System certification and OHSAS 18001 Occupational Safety & Health Administration certification.

2003 Invested in the Shanghai Oriental Petrochemical PTA Plant that was completed and put into production in 2006.

2004 Received the 2004 Taiwan Industrial highest award "Industrial Sustainability Elite Award", which is a symbol of sustainable development for enterprises.

2005 Completed the multi-functional pilot plant that was designed and constructed by OUCC as a good foundation for future technology development, the design of processes as well as new product pilot runs.

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.

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. 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 tons ethanolamine plant into operation.
2. Completed the construction of the ethylene oxide derivatives (EOD)plant in Linyuan with an annual capacity of 40,000 tons.

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. OUCC acquired 50% of the stock.

2014 The Investment Commission MOEA approved PPL investment in the Tong Da Gas Industries (Yangzhou) Ltd, mainly engaged in an ethylene low-temperature storage tank project and the construction of an air separation plant project. The company holds 50% shareholding indirectly.

2015
1. Completed the ethylene oxide and ethylene glycol debottleneck project with annual capacities of 360,000 tons and 300,000 tons, respectively.
2. Completed the Tong Da Gas Industries (Yangzhou) Ltd gas plant with an annual capacity of 800,000 tons.

2016
1. Completed the gas plant with annual output of 340,000 tons at Linyuan site
2. Far Eastern Union Petrochemical (Yangzhou) Ltd. officially started commercial operation of the ethylene oxide and ethylene glycol plants with respective annual output of 400,000 and 500,000 tons.
3. Completed construction of the CO_2 plant III at Linyuan site with an annual output of 40,000 tons.

2017 Reconstructed the ethanolamine plant I to an ethylene glycol monobutyl ether plant with an annual output of 20,000 tons.

2018
1. Obtained ISO 14001:2015 Environmental Management System certification.
2. Completed the technical revamp of EOD plant at Oriental Petrochemical (Yangzhou) Corp, increasing EOD annual output to 66,000 tons.
3. Awarded the "Outstanding Imported Manufacturer Certificate" by the Bureau of International Trade, Ministry of Economic Affairs.
4. Obtained ISO 50001:2011 Energy Management System certification.
5. Obtained ISO 9001:2015 Quality Management System certification.

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 respond to changes through developing high-value, high-tech and green, environmental protection products.

With the relentless efforts of all our colleagues, in 2018, OUCC gained an operating income of NT$ 14,619,729 thousand, increasing 15% compared to 2017. The net income was NT$ 2,083,589 thousand before tax and NT$ 1,750,724 thousand after tax. Earnings are distributed in cash dividend of NT$ 1.75 per share following the resolution of the Board of Directors meeting.

2016-2018 Financial Performance

Unit: NT$ thousand

	2016	2017	2018
Operating Income	10,985,765	12,755,671	14,619,729
Operating Cost	10,245,666	10,850,815	12,567,843
Staff Salaries and Benefits	482,246	504,154	542,770
Dividend Paid to Shareholders	177,141	1,549,980	1,549,980
Expenditure Paid to Government	125,664	57,861	366,197
Community Investment	2,499	1,724	5,859
Economic Value Retained	176,063	1,280,192	1,330,899
Total Liability	**9,213,771**	**8,471,568**	**9,050,534**
Total Asset	**22,688,325**	**23,280,667**	**24,017,716**

Note: 1. The information from the above form is obtained from unconsolidated financial reports.
2. Please refer to Annual Report p.63 for annual net sales revenue and sales volume.
3. Please refer to Annual Report p.48 for shareholder structure.

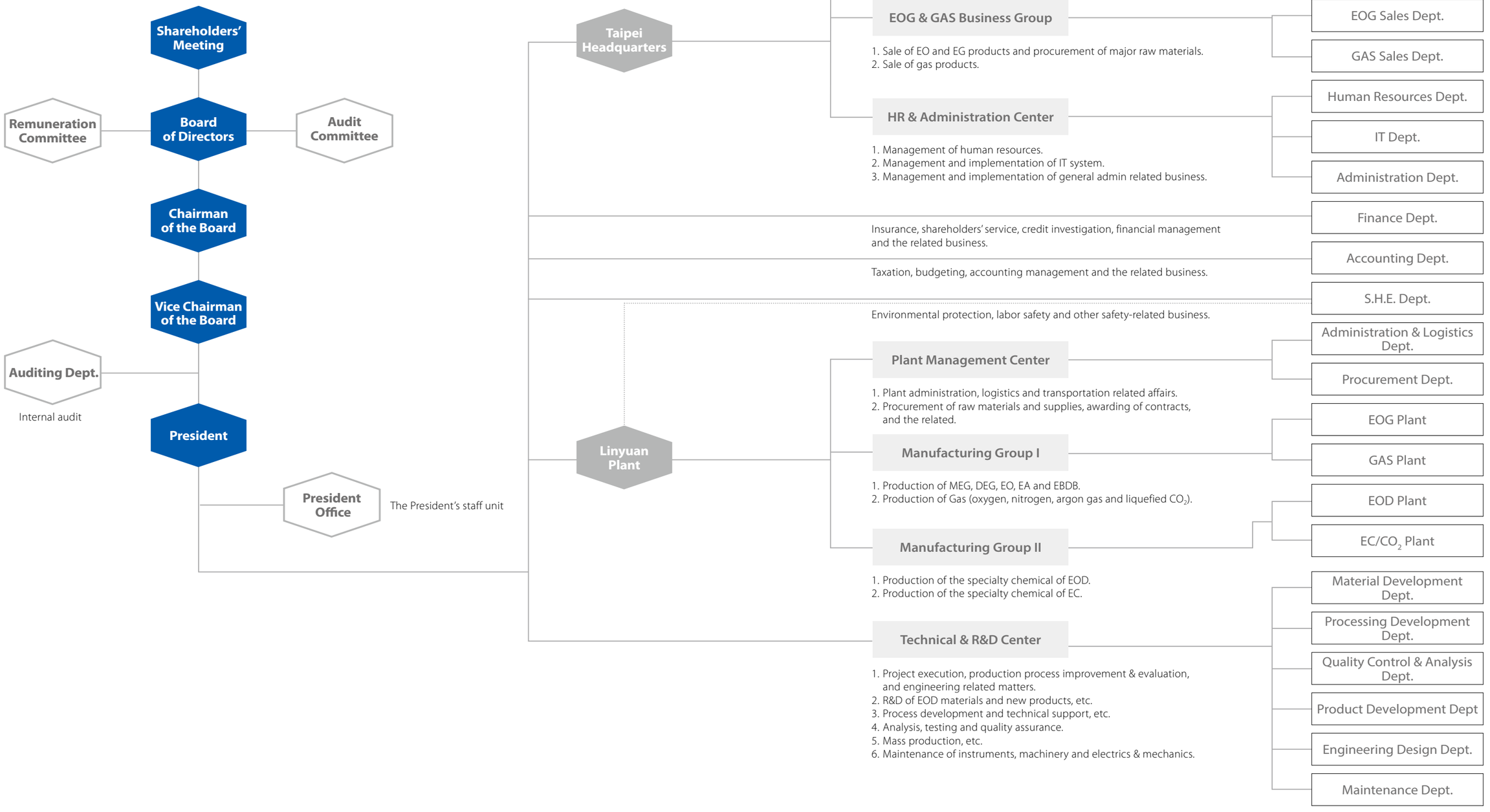
Open and Transparent Communication Channel

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. 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 be attended by the spokesman and deputy spokesman of the company, or by the "Oriental Securities Corporation" that provides stock services to OUCC. Investors meetings are held from time to time and the results are disclosed in accordance with the provisions.
2. All the relevant information is on the MOPS and the Company website in accordance with government provisions and regulations.
   - Company website: http://www.oucc.com.tw
   - MOPS: http://mops.twse.com.tw/mops/web/index

Type	Contact	Communication Channels
Shareholders and Investors	Spokesman and Investor Relations: Vice President of OUCC Sales Division	(02)2719-3333
	Deputy Spokesman: Assistant VP of OUCC Finance Department	(02)2719-3333
	Stock Services: "Oriental Securities Corporation"	(02)2361-8600
Employees	Ms. Chen	(02)2719-3333#281
Suppliers/ Contractors	Mr. Hsu	(02)2719-3333#282
Business Clients	Mr. Hsieh	(02)2719-3333#331

Operational Structure



Board Diversity

There are 11 directors on the 15th Board, including 3 independent directors, and one of which is female, and all aged above 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.

For the sound establishment of the corporate management system, the "Corporate Governance Principles" have been formulated and approved by the Board. And the corporate governance of all aspects and the mechanism thereof are reinforced continuously, to secure the Company's niche for sustainability.

Board Members Skills and Diversification	● The term of office of the Board of Directors shall be three years. The candidate nomination system has been adopted for the nomination and election of members. Education and experience of the candidates are evaluated in accordance with the "Regulations governing the Election of Directors" and the "Corporate Governance Principles" while ensuring diversity, independence and the opinions of the stakeholders. ● The directors (including 1 female) on the 15th Board all have sufficient skills in management, leadership in decision-making and related industry knowledge, with education and experience in legal, financial, economics, sales, etc.
Performance Appraisal	The result of the board of directors' performance appraisal is "Above standard".
Board of Directors' Meetings	The Board of Directors' meeting was held 5 times during 2018 to set up the sustainable management objectives of OUCC and relative decision making.
Professional Training Seminars	Directors, Independent Directors and Managerial Officers of OUCC shall participate in external education and training courses on topics for corporate governance on a regular basis. In 2018, the courses included the "Operational Practices of the Board of Directors and Corporate Governance Seminar" and "Operational Practices of the Audit Committee". Please refer to page 35 of the Annual Report
Major Proposals	● Approved the re-election of directors of the 15th board. ● Established the 1st term of Audit Committee. ● Appointed the 4th term of Remuneration Committee. Please refer to page 40-41 of the Annual Report

Remuneration Committee

A Remuneration Committee has been established to determine and review the performance and remuneration of the directors, and management on a regular basis. Two meetings were held during 2018, with an attendance rate of 100%. The Remuneration Committee is mainly responsible for assisting the board of directors in setting up compensation policies and systems, and to review the performance appraisals of directors and managers.

The OUCC procedures for setting the remuneration of directors are based on the Procedure for the "Board of Directors' Performance Appraisal", which evaluates the operating performance, potential operating risks in the industry, corporate social responsibility and development trends. The company will decide reasonable compensation with reference to individual performance, achievement rate, and contributions to the company. The Remuneration Committee and the Board of Directors review relevant performance appraisal and the reasonableness of the compensation, and the remuneration system is reviewed when necessary according to the actual operating conditions and relevant laws and regulations, to reach a balance between corporate sustainability and risk control.

The remuneration of directors and 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.

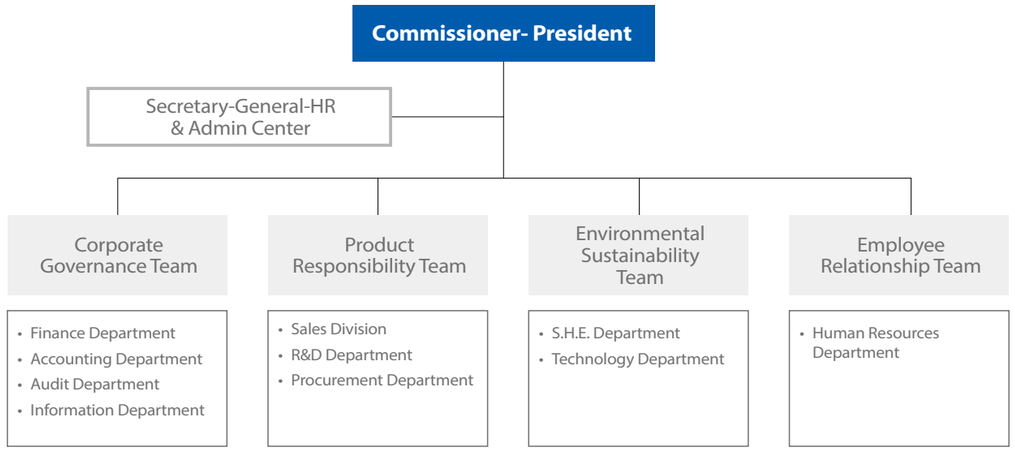
The operations and financial arrangements of OUCC are independent of those of affiliated companies. All interaction with them is handled in accordance with the "Regulations Governing the Transactions of Related Parties," "Procedures for the Acquisition and Disposal of Assets," "Procedures for the Capital 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.

Corporate Social Responsibility Committee

Since 2014, OUCC has established CSR Committee. 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 are communicated to stakeholders through the company CSR website.

CSR Committee Organizational Structure



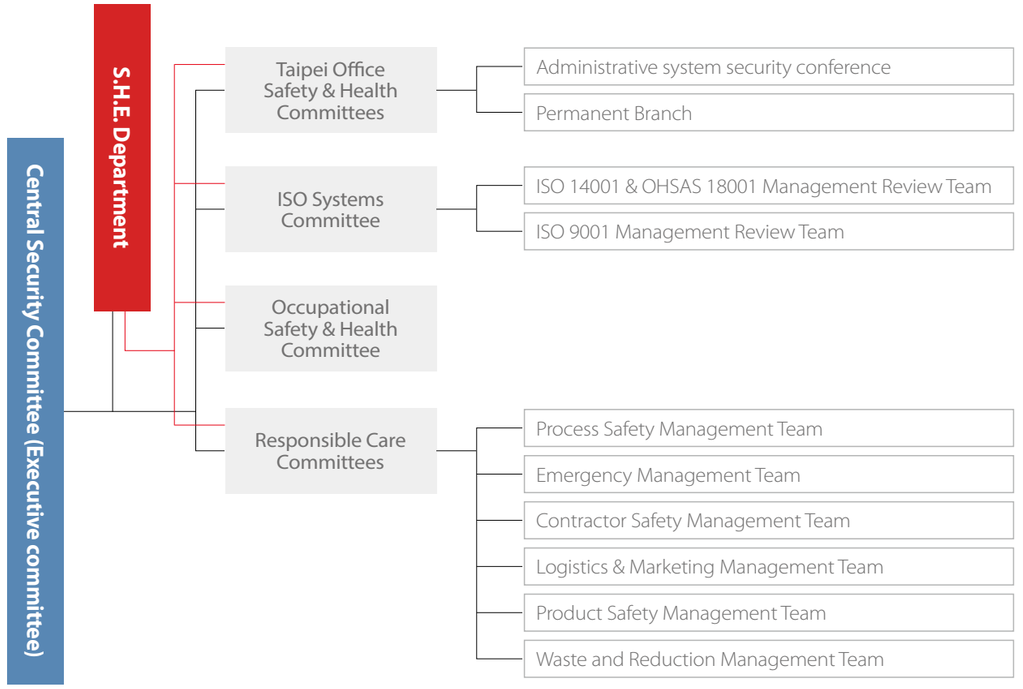
Risk Management

"Comprehensive risk strategies and steadfast operations" are important parts 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.



Asset Risk Response Measures

- 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.
- 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.

Accounts Receivable Risk Responsive Measures

In order to control an appropriate amount of working capital and minimize the occurrence of property damage, 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.

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.

Anti-corruption Mechanism

To improve the stipulation, supervision, and implementation of best practice in all management policies and precautionary programs, the directors, supervisors, managers, and all employees of OUCC are bound to comply with relevant codes of conduct as published and posted on the company website for communication and advocacy on related stakeholders. The 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. 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, so that the Board of Directors may fulfill their obligations in good faith and ensure the implementation of a best-practice business principle.

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 Managerial Officers, Department Heads, and the relevant departments under protection of the confidential mechanism for the "Whistle-blowing".

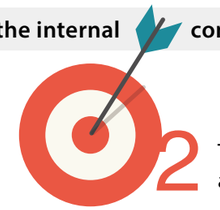
Management Policies	"Codes of Conduct" "Best Practice Principles" "Regulations Governing the Election of Directors" "Procedures for Handling Material Inside Information" "Whistle-blowing System and Discipline Measures against Violation of the Codes of Ethics and Best Practice Principles"
Communication and Advocacy	Relevant management policies are published on the company website to communicate information and to all relevant stakeholders. Official website: http://www.oucc.com.tw/tw/investor_m06.asp
Education and Training	Internal management meetings are held regularly for the education and training of all employees.
Supervision Mechanism	The company has assigned a dedicated department responsible for reporting the implementation of best practice policies to the board of directors on a regular basis.
Report Channel	In person, by telephone, or in written form.
Result	No corruption incident occurred in 2018.

Sound Internal Control System

Approved by the Board of Directors, the internal control system of OUCC is to be implemented by the Board, the management, and other employees and is designed to provide sound management and to achieve objectives of the internal control system.

3 main objectives of the internal control system

To ensure the effectiveness and efficiency of all operations.



That reports should be reliable, timely, transparent and in compliance with all the relevant specifications.

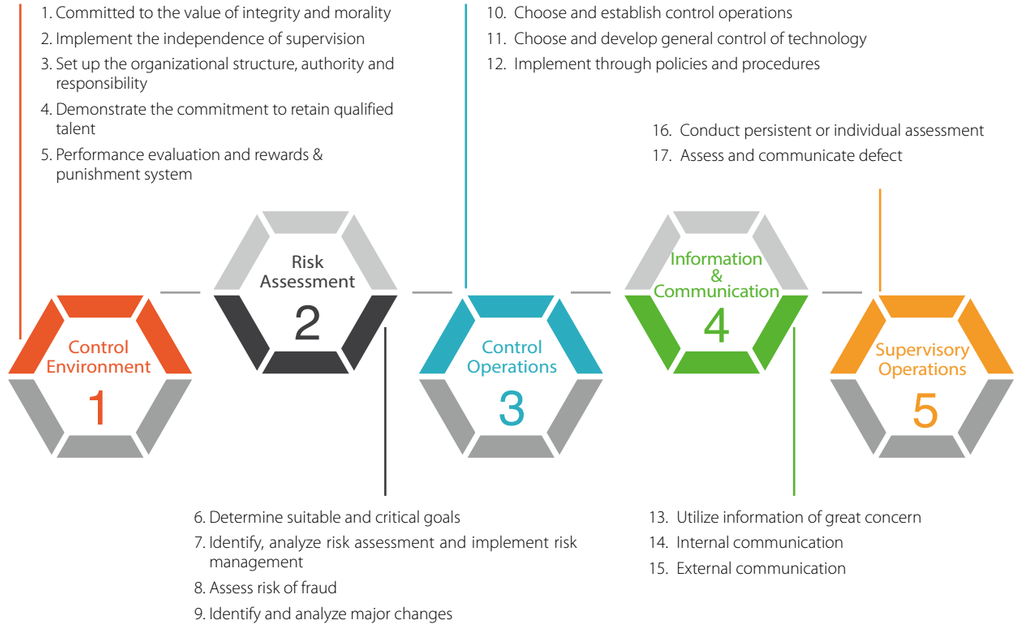
That all operations comply with the applicable laws and regulations.

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.

1. Assessing the effectiveness of internal control

Financial Supervisory Commission has released the reference item, including 5 elements, 17 principles shown in the following table, for the effectiveness of the internal control system and the relevant subjects will be evaluated by each unit.

5 elements / 17 principles



2. Internal Audit

OUCC has an independent Audit Department that is directly responsible for the Board of Directors. The chief auditor, in addition to regular audit reports to the Audit Committee, 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. Internal Audits include:

- The inspection and review of the internal control system
- Performance of the annual audit plans according to risk assessment, for the approval of Audit Committee and the Board
- The implementation of audits and preparation of audit reports and follow up reports
- Audit reports to the Audit Committee and the Board
- The review of the self-assessment reports from each business unit
- 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 product safety, environment safety, labor safety, investors, and research and development operations in the 2018 audit plan.

Environment and Product Safety	• Environmental law compliance • Suppliers management • Product quality management
Labor Safety	• Industrial safety compliance • Manufacturing process safety management • Shift scheduling, attendance and overtime
Major Financial Operations	• Acquire or dispose of assets • Loan and guarantee • Derivative commodity trading
Information and R&D	• Information security and internal material information management • R&D and intellectual property management

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.

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, 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 (please refer to Chapter 4 for more programs).

Information Security Risk Management

To secure the IT assets against the unaffordable risks impact, the Company has established the specific IT management mechanism, according to the Business Continuity Planning (BCP) concept, for systematical analysis and IT security management policy, which includes the organization, implementation, operation, supervision,inspection, maintenance and improvement guidelines for all the information, to consolidate the customers and stakeholders trust and partnerships with OUCC.

1. Management Approach

To ensure better information security management, OUCC has adopted risk transfer and emergency response strategies that include management mechanisms such as risk assessment, risk transfer, emergency response and audit maintenance for proper operation of the information system.

Risk Assessment	● OUCC adheres to "confidentiality, integrity, and availability" for identification of asset value at each stage of information management, such as legal regulations, operational processes, information needs and organizational reputation, to determine the scope of information security risk management.
Risk Transfer	● Multiple security defenses: these include firewalls, an enterprise VPN and remote access, encryption, intrusion detection and prevention, and anti-spyware software. ● Application of an authorization mechanism: a user must fill in the online application form and is authorized for an application only after the electronic signature sign-off. ● Management of hardware devices: OUCC equipment has uninterruptible power supplies and inspections of safety control facilities are carried out regularly. ● Data Lines are set up between Taipei Office and Linyuan Plant: two 8MB MPLS VPN Data Lines run between the Taipei Office and the Linyuan Plant. Their main use is for data transmission and video conferencing. 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 uninterruptible 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 16Mb/s.
Emergency Response	● Backup and restore mechanism: this consists of a self-developed cloud database and four backup mechanisms for more secure internal data access, better security, and protection from the outflow of customer information.
Audit Maintenance	● Electronic Administration Operations: OUCC has established a comprehensive electronic document management system, and has set up an administrative process control and electronic mechanism that effectively manages all the signature sign-off operations. This enhances business and administrative efficiency, and reduces unnecessary resource consumption by administration and business. ● File security control and maintenance: maintenance of fire and moisture protection for hardware and media devices. ● Systems security audit management: an initial audit startup procedure has been built into the information system, and user account permissions are reviewed on an annual basis.

2. New Program

To more effectively maintain information security applications and continuously improve operational energy, OUCC proposed three major action plans in 2018 to comprehensively strengthen information security mechanisms, ensure information confidentiality, integrity and reliability, and avoid damage or improper use of resources. All backup mechanisms are expected to be established in 2019.

Item	Strategy	Goal	Program	Description
1	Risk Transfer	Enhance system defense mechanisms	Upgrade computer firewall and antivirus software	● The new sandbox technology is used to ensure a safe application environment and isolate computer virus attacks, to avoid advanced cybersecurity attacks and information leakage. ● OUCC upgrades anti-virus software, which includes the filtering of remote command execution attacks, the prevention of malicious email attachment attacks, the modification and auditing of system configuration, and a cloud-based analysis of unknown programs.
2		Enhance login security	Remote login terminal two-factor authentication mechanism	● Before importing: The remote user can directly use the account and password to log into the company system. However, a stolen account and password can give an intruder direct access to the server for the theft of data. ● After introduction: In addition to the account and password, the remote user also needs to enter a verification code from a mobile phone to access the terminal server and access data thereof.
3	Emergency Response	Enhance resilience	Establishment of a remote backup mechanism	● The establishment of a comprehensive remote backup mechanism which consists of a total of four backup processes to enable information from OUCC head office and Kaohsiung Linyuan Factory to be simultaneously backed up into two alternative storage locations, to strengthen the continuous operations management.

Stakeholder Engagement & Material Topics

Sustainable Development is the primary goal of OUCC and we value the concerns of the stakeholders, including the maintenance of good economic performance to give shareholders confidence in our company and to provide reasonable returns. A "healthy and safe working environment with self-challenge" is maintained to protect the rights and interests of our employees relating to work, and treating our suppliers as partners in the creation of social value, are all important goals to be achieved.

Since our first CSR report was issued in 2015, we have adhered to "integrity governance, stability and reliability, and corporate responsibility" as three pillars of sustainable development. OUCC communicates with stakeholders in a real and transparent manner without delay to resolve any sustainability issues in all aspects. Despite the many challenges on the path towards sustainability, we will continue to hold fast to the core values of Company to create sustainability values for all our stakeholders.

Diversified Stakeholder Communication

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.

We adopt the five major principles of AA1000 Stakeholder Engagement Standard (SES) to identify the interested parties of OUCC according to the responsibility, influence, attentiveness, dependence, representative and policy implication of the stakeholders 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 disclosed major points and improved results in the Report after conducting materiality analysis.

We value the suggestions of our stakeholders which provide strength for progress and the core element to sustainable development. We have provided a number of communication channels for employees, investors, suppliers, and the community to easily voice their opinion and receive a response to suggestions for improvement and innovation. We believe that sustainable development can be achieved through diversified stakeholder communication, policy planning and implementation. In 2018, we have identified several major topics and developed corresponding strategies and actions in response to the concerns of stakeholders, with details described in each chapter and please refer to page 132 for management approach of material topics.

Stakeholder Communication Channels

Stakeholder	The Main Communication Channel and Frequency	Concerned Issues	GRI Material Topic
Shareholders and Investor	1. One shareholder's meeting (annual) 2. One investor conference convened (annual) 3. The CSR website and report (annual) 4. Participation in the corporation convened forum (occasional) 5. Spokesman hotline and mailbox (occasional) 6. The company website (permanent) 7. MOPS (permanent)	• Corporate Governance • Industry Trends • Economic Performance • Risk Management • Dividend Policy	• Economic Performance • Socioeconomic Compliance
Employee	1. Employee welfare committee (occasional) 2. Labor-employer meetings (quarterly) 3. Occupational health & safety committee (quarterly) 4. Performance appraisal (annual) 5. Group activity (occasional) 6. Education training (occasional) 7. Complaint e-mail (permanent)	• Employee Welfare • Work Environment • Labor Right	• Employment • Labor/Management Relations • Human Rights Assessment • Occupational Health and Safety
Corporate Customer	1. Customer satisfaction survey (annual) 2. E-mail (occasional) 3. Distribution meeting (occasional) 4. Customer visits (occasional) 5. The company website (permanent) 6. The CSR website and report (annual)	• Industry Trend • Emission • Customer Privacy • Law and Regulation Compliance • Occupational Health and Safety	• Emission • Customer Privacy • Occupational Health and Safety
Supplier/ Contractor	1. Supplier periodical evaluation (annual) 2. The CSR website and report (annual) 3. Transportation meeting (occasional) 4. Supplier/Contractor safety meeting (monthly)	• Supply Chain Sustainability Development • Water Management • Waste Management • Occupational Health and Safety Management	• Economic Performance • Supplier Environment Assessment • Occupational Health and Safety
Local Community	1. Public Welfare donations (occasional) 2. Event sponsorship (occasional) 3. Telephone contact (occasional) 4. The CSR website and report (annual)	• Environmental Pollution Management • Toxic Material Management • Environmental Compliance	• Effluents and Waste • Environmental Compliance
Government/ 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 via related Union / Association (occasional) 5. The CSR website and report (annual)	• Compliance • Energy • Award Engagement	• Emission • Energy • Water • Socioeconomic Compliance

Process & Boundaries of Material Topics

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 2018 and call for the CSR sustainability meeting.	Sustainability, Completeness
Step 2	Communicate through external related parties; evaluate major concerned issues of the external related parties.	Stakeholder Inclusiveness
Step 3	Conduct CSR interview meetings and issue questionnaires to the interested parties to investigate potential impacts within and outside the organization.	Stakeholder Inclusiveness
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 2018, with 13 major issues.	Materiality, Sustainability

Material Topics Matrix

Economy ● Environment ● Society ●

Concern \ Impact	Low	Moderate	High
High	● Non-discrimination ● Training and Education ● Forced or Compulsory Labor	● Economic Performance ● Employment ● Labor/Management Relations ● Socioeconomic Compliance	● Occupational Health and Safety ● Environmental Compliance ● Emission ● Effluents and Waste ● Energy
Moderate	● Freedom of Association and Collective Bargaining	● Customer Privacy ● Supplier Environmental Assessment	● Water ● Human Rights Assessment
Low			● Supplier Social Assessment

Material Topics Boundaries

Indicates importance or point of impact ●, ●, ●

Material Topics	Meaning and Importance to OUCC	Boundary: OUCC – Taipei	Boundary: OUCC – Linyuan	Boundary: Local community	Boundary: Supplier	Boundary: Forwarders	Boundary: Corporate customer	SDGs	Strategy Management (Page Number)
Economy									
Economic Performance	Economic stability is the foundation of sustainable development of enterprises, and it is also the basic commitment to shareholders	●	●		●	●	●	16	32
Environment									
Energy	Through the development of a comprehensive climate change strategy and the promotion of energy management, operational risks can be reduced, and green and sustainable business opportunities can be grasped	●	●		●	●	●	6, 7	86
Emission			●	●	●	●	●	7	89
Water	Water resources are a key of the mitigation of natural disasters in enterprises. Through water recycling, water consumption is reduced, and resources in the plant are used in a sustainable way	●	●		●			8, 9	96
Effluents and Waste	Strengthen the control and production of waste, and seek opportunities for the development of the circular economy to reduce the impact on the environment		●	●	●	●	●	11	98
Environmental Compliance	Strict compliance with environmental protection regulations is the promise the chemical industry makes for the environment	●	●	●	●	●	●	12, 13, 14	102
Supplier Environmental Assessment*	The supplier/contractor is an important partner of OUCC with sound supplier management, sustainable development of the chemical industry can be created		●		●	●		14	80
Society									
Employment	Employees are the most important assets of OUCC. To actively value employees' rights, listen to employees' voices, strengthen professional skill, and construct a sustainable and safe workplace is OUCC's policy of building a friendly workplace for employees	●	●					3	56
Labor/Management Relations		●	●					5	59
Occupational Health and Safety			●		●	●	●	8	110
Human Rights Assessment		●	●		●			9	60
Customer Privacy	Value customer rights and interests, and improve operation to protect customer privacy	●	●				●	16	72
Socioeconomic Compliance	Adhere to various regulations to improve the trust and recognition of stakeholders	●	●			●			103

Note: 1. The OUCC is the main entity within the organization and those outside the organization include local communities, suppliers, storage and forwarders, and corporate customers.
2. * indicates the material topic added this year because the chemical industry is more strictly controlled by government and the cooperative suppliers and storage and transportation companies need to be more professional.
3. In recent years, there has been no violation of the health and safety of products and services, indicating successful management. Therefore, customer health and safety is not considered in the major topic this year.

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
Petrochemical Industry Association of Taiwan (PIAT)	Group	Director, Member
Taiwan Chemical Industry Association (TCIA)	Group	Director, Member
Taiwan Responsible Care Association (TRCA)	Group	Director, Member
Taiwan Institute of Chemical Engineers	Group	Member
Taiwan High Pressure Gas Industrial Association	Group	Director, Member
Taiwan Industry Gas Association (TIGA)	Group	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

DILIGENT PARTNERS

In order to forge ahead towards a brighter future, develop better quality products, and construct a safe and stable work environment, it is a must to listen to the voice of partners, substantiate care, and conduct appropriate communications, as a foundation to the rapport partnerships OUCC established with its employees, suppliers, and residents in proximity in respect to sustainable development.

To enhance and focus on communications with our stakeholders, and to maintain good interactive relationships, OUCC uses a diversified and transparent communication channel to accommodate their needs and opinions. The company uses professional innovative strategies to actively optimize manufacturing processes as well as plant environmental safety and health to meet expectations of customers, while strengthening participation in all social activities for the nurture and development of sustainable partnerships. OUCC is committed to listen to the voice of partners and dedicates much effort to respond to the expectations of all parties to fulfill corporate social responsibility.

2018 Sustainable Performance

- Employee benefits expenses totaled NT$**138** million
- Employee average compensation was NT$**1.09** million
- OUCC has formulated a new performance appraisal system with a **33**% increase in the overall performance bonus
- A customer satisfaction survey scored **33.1** points out of perfect score of 35 points
- Awarded the **"Certification Mark for Excellent Exporters/Importers"** by the Bureau of Foreign Trade, Ministry of Economic Affairs in 2018
- **100**% of suppliers followed the OUCC environmental policy
- The total number of evaluation audits on suppliers was **662**
- **100**% of freight forwarders passed the evaluation audit

Satisfied Employee

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. We inform the employees of company operating results and conditions using internally published documents or regular formal or informal departmental meetings.

Hiring of Employees

We value labor rights and 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. Besides, Child labor is strictly prohibited and we comply strictly with the relevant labor laws and regulations and protect the rights of all employees.

OUCC recruits employees according to its recruitment principles with equity and justice, without unreasonable restrictions (such as withholding IDs, passports, and accepting unjustified benefits), and sets up employment contracts in the appropriate language and uses words that the employees are able to understand. Our recruitment needs are mainly based on the application form filled out by each unit. The human resource department is responsible for conducting external or internal recruitments after its approval, obtaining qualified candidates through recruitment and interviews, and cooperating with the vocational training center to recruit qualified employees for on-site labor.

OUCC is a major petrochemical manufacturer and the employee need to have basic physical strength to handle on-site works. 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.

The number of OUCC employees in 2018 totaled 373, including males up to 332 (89%) on account of the categorized industry property, and females 41 (11%). All were full-time, non-contractual employees and responsibly well taken care of.

The OUCC Employee

		2017				2018			
		Person		%		Person		%	
		♂	♀	♂	♀	♂	♀	♂	♀
General Staff	Aged under 29	6	4	1.64%	1.10%	11	6	2.95%	1.61%
	Aged 30-50	215	18	58.90%	4.93%	233	23	62.47%	6.17%
	Aged Above 51	46	6	12.60%	1.64%	53	7	14.21%	1.88%
Middle Management	Aged 30-50	31	2	8.49%	0.55%	18	1	4.83%	0.27%
	Aged Above 51	21	2	5.75%	0.55%	8	1	2.14%	0.27%
Senior Management	Aged 30-50	1	0	0.27%	0%	1	0	0.27%	0%
	Aged Above 51	10	3	2.74%	0.82%	8	3	2.14%	0.80%
Direct Labor (DL)	Aged under 29	4	0	1.10%	0%	4	0	1.07%	0%
	Aged 30-50	76	0	20.82%	0%	74	0	19.84%	0%
	Aged Above 51	5	0	1.37%	0%	5	0	1.34%	0%
Indirect Labor (IDL)	Aged under 29	2	4	0.55%	1.10%	7	6	2.14%	1.61%
	Aged 30-50	171	20	46.85%	5.48%	178	24	47.45%	6.43%
	Aged Above 51	72	11	19.73%	3.01%	64	11	17.16%	2.95%

Note: 1. "Direct personnel" refers to plant shift employees "Indirect personnel" refers to plant non-shift employees. Both are included in the "Permanent contract" employees.
2. "Permanent contract" refers to non-contractual employees who are hired officially.
3. A "Contract employee" is an employee contracted for a certain period, for example, consultants or commissioned managers. No contract employee has been hired in 2018.
4. Definition of employee: General employee-grade 8 and down, mid-level management-grade 7,6,5, senior-level management-grade 4 and up. There is no employee under the age of 29 for mid- and senior-level management in 2018.

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, a number of 111 out of the total 334 employees at the Linyuan Plant are local residents. We take direct action to support and encourage local employment.

Percentage of Local Residents at Linyuan Plant

Job title	Local Residents	
	Linyuan District	%
Engineer / Administrator and above	15	4.49%
Operation-Foreman	14	4.19%
Operation-Operator	82	24.55%
Total	**111**	**33.23%**

Note: 1. In terms of international scale, OUCC hires 99.5% of domestic employees. Therefore, the ratio of local employees at Linyuan is used as the basis for calculation.
2. Ration = Number of employee located in Linyuan area/ Total of employee at Linyuan plant.

Employee Turnover and Turnover Rate

	2016				2017				2018			
	Person		%		Person		%		Person		%	
Aged Under 29	1	0	0.27%	0.00%	4	0	1.10%	0.00%	1	3	0.27%	0.80%
Aged 30~50	11	1	2.98%	0.27%	11	2	3.01%	0.55%	6	0	1.61%	0.00%
Aged Above 51	13	1	3.52%	0.27%	11	0	3.01%	0.00%	9	0	2.41%	0.00%

Note: Number of employees resigning (includes retirement but does not include involuntary leave)/ Total number of employees of the year.

New Recruitment

	2016				2017				2018			
	Person		%		Person		%		Person		%	
Aged Under 29	2	0	0.54%	0.00%	2	2	0.55%	0.55%	6	3	1.61%	0.80%
Aged 30~50	3	0	0.81%	0.00%	15	2	4.11%	0.55%	9	4	2.41%	1.07%
Aged Above 51	0	0	0.00%	0.00%	0	0	0.00%	0.00%	1	0	0.27%	0.00%

Note: Number of new recruit/ Total number of employees of the year.

Smooth Labor/Management Communication

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 regularly. 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.

OUCC pays great 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 labor/management coordination by means of internal meetings, labor/management meetings, employee seminar and real-time manner. Harmonious labor relationships can be effectively established, so can a good working environment be created.

Labor 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. Group agreement has been approved in 1995.
- Protect the employees 'rights to the freedom of association and collective negotiation power without any interference in the establishment, operation or management of an organization or collective negotiation.
- Union members constitute 65.42 % of the employees in 2018.
- 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.

Labor/ Management Meeting

- The regular labor-management meeting appropriately reflects the employees' opinions on the operation and financial status of OUCC, or the important decisions concerning the interests of employees, so as to effectively solve the problem.

Internal Meeting

- 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, business review meetings, or through other suitable channels.
- There has been no major change in business operation that might have affected employee rights in 2018.

Employee Seminar

- We advocate internal rules and regulations, collect and reorganize employee opinions, which are sent to each responsible unit for improvement. The company also has a follow-up mechanism to enhance communications and cooperation with employees.

Occupational Safety & Health Committee

- To defend the interest of occupational safety and health, 50% 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."

Timely Manner

Human Resources Dept.

- Taipei Office: (02)2719-3333
- Linyuan Plant: (07)641-3101

Human Rights Protection

Employees are an indispensable OUCC asset. To protect the rights and interests of employees, OUCC actively adheres to the core spirit of the "Universal Declaration of Human Rights", the "ILO Declaration", the "The United Nations Global Compact" and "Responsible Business Alliance Code of Conduct". We abide strictly by all labor-related laws and regulations. The company ensures that employees are treated equally, and has provided diversified and equal employment opportunities and working environment.

There is little risk from human rights in the operation environment of the Company, as the internal labor conditions and relevant rules formulated are all compliant to government regulations, so are the communications with employees on account of major operational changes delivered through various effective channels. All the voiced opinions of employees are encouraged, and well respected.

To reduce human rights risks and support the employees' understanding of human rights, OUCC has set up a 0.5-hour human rights training course for all new employees, every employee receives human rights education and training course after they have been recruited. In 2018, 23 new employees completed the training (accounting for 6% of the total number employees). Relevant regulations in the document system are explained and made available to employees, these 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". In addition, we plan to start conducting annual human rights training and advocacy in 2019, to enhance the concept of diversity, equality, and tolerance for all employees, and to create a friendly working environment.

Employee Ethical Behavior

We value the ethics and integrity of our employees, and all 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 reference by all employees.

1. 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.

2. 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.

Number of Employees from Minority Groups

Unit: person

	2016	2017	2018
Aboriginal Employee	1	1	1
Disabled Employee	3	3	3

Protection Mechanism of Human Rights

Fair Hiring	● Provide open, fair, and impartial job opportunities to all applicants in accordance with the "Employment Service Act." ● 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."
Labor Freedom and Labor Rights	● Domestic and foreign employees are respected for their freedom of choice and occupational rights, and are not forced or pressured to conduct labor activities, nor will their freedom of movement be unreasonably limited in the working environment. ● Employment contracts signed by foreign employees are written in their own mother tongues, the terms and conditions are compliant with local laws or even superiorly provided, and no arbitrary changes are made to the content of an employment contract. ● All employees are treated with equal care and protection irrespective of their nationality.
Gender-Friendliness	● The "Act of Gender Equality in Employment and Sexual Harassment Prevention, Grievance, and Discipline" and "Sexual Harassment Grievance Handling Mechanism" are 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. ● Education and Training on Gender Equality in Employment and Sexual Harassment Prevention. ● All the appropriate preventive, corrective, and disciplinary measures against sexual harassment are firmly applied and all employees have unimpeded access to a clear grievance channel to ensure their best interests. ● OUCC is vigorous in its advocacy and promotion of the anti-gender discrimination policies and acts to prevent workplace violation and sexual harassment.
Personal Information Security	● 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.
Multiple Grievance Channel	● Abide strictly by the "Rules Governing Employee Grievance" and establish a smooth grievance channel. ● Establish a contractor grievance window on the website to provide a smooth channel for their complaints, hotline: (02)2719-3333 ● There were no complaints about human rights in 2018.

Talent Training

Talent is the most important asset of 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, to further develop their short-, mid-, long-term career talent planning while developing short, medium, and long-term program for professional career knowledge, encouraging the enthusiastic acceptance of challenges at work to aggregate and inspire new work value.

2016-2018 Employee Training Hours and Input

Unit: hour

Type of Employee	Gender	2016		2017		2018	
		Hour	Average	Hour	Average	Hour	Average
General Staff – Direct Labor	Male	519	6.41	1,423	16.74	1,978	23.83
	Female	0	0	0	0	0	0
General Staff – Indirect Labor	Male	5,257	15.6	6,786	37.29	4,397.5	21.66
	Female	143	4.47	493	17.61	705	20.14
Middle Management	Male	179	9.42	4,066	12.32	552.5	14.93
	Female	4	2	169	42.25	4	1.33
Senior Management	Male	55	6.88	151	13.73	170	18.89
	Female	12	6	29	9.67	28	9.33
All Employee	Male	7,100	21.07	12,426	37.65	7,098	21.38
	Female	170.5	5.33	691	19.74	737	17.98

Note: 1. Definition of employee: General employee-grade 8 and up, mid-level management-grade 7,6,5, senior-level management-grade 4 and down.
2. Average hours in training: Total hours of training for the employee category / Total number of employees in the category.

2016-2018 Training Investment Statement

Type	Item	Unit	2016	2017	2018
Total Employee Training Hours	Total	hr	6,428	12,802	7,835
	Average	hr	17.42	35.07	21.01
Total Employee Training Amount	Total	million	0.67	1.06	0.98
	Average	NT$	1,821	2,904	2,630
	The proportion in the current year's total revenue	%	0.0061%	0.0083%	0.0067%

OUCC Education and Training System

1 Basic training for new employees

Consolidation of employee knowledge of company business operations

- One-week training with courses covering business functions, regulations and procedures, products and processes.
- Managers of each unit are appointed as training instructors.
- Examinations after the training courses.
- Follow-up seminars for new employees.

2 General training

To improve the professionalism and work function talent

- Organize annual environmental safety training, training in ethical corporate management best practice principles and the ethical codes of conduct. At least four sessions of courses are conducted which provide supplementary training in cooperation with work shifts, to ensure that all employees complete the general training courses.
- Courses are planned for all employees that include briefing techniques and SAP operations based on common training requirements.

3 Job requirements training

- Each job position has a corresponding job description, which clearly defines the accountabilities and knowledge required for the job, and to expand On Job Training (OJT) for each position.
- Employees can accumulate and develop the ability to perform their job duties through practice, task assignments, experience sharing by senior colleagues, and guidance given by managers.

4 Functional training

- This matches job requirements with employee ability by regular performance review to uncover any functional gaps and add remedies by functional training.
- Internal and external training is organized according to different requirements to solve individual performance problems and set up a corporate goal for continuous improvement.

5 Statutory training

- Conduct strict review of the operation and management qualifications required for each position in accordance with the regulations related to environmental safety and health.
- Before taking up certain dedicated positions an individual must complete statutory training and obtain such operating certificates as might be necessary for the job: such as for work with first class pressure vessels, specific high-pressure gas equipment, hypoxic operation and supervision, stackers, fixed crane operation, work with specific chemical substances, and boilers.
- Further training courses are conducted on a regular basis to ensure the continuity and effectiveness of qualifications.

6 Professional training

- In addition to job duties set out in the job description, we also pay attention to employee development in relevant fields, we conduct professional training, and prepare and retain talented manpower in line with company strategic direction.

7 Management training

- We develop team leader training that focuses on management cases that may be encountered by newly promoted managers, and assist them to enhance their managerial competence through relevant case discussions, exercises of a series of courses.
- Cooperate with external training institutions and recommend appropriate management courses to meet the development requirements of mid- and high-level managers.

Talent Nurturing

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.

Job rotation and promotion programs have been established to enhance education and training, as well as a filing procedure for recording job rotation and training aimed to provide comprehensive operation familiarity to personnel. This 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.

In 2018, the company recruited one young student for an internship program to enhance their career development. In addition, the company has also set up an intern performance evaluation mechanism to evaluate their interpersonal relationships, qualifications, workability, work performance and attendance. This provides feedback for the young interns, raises their level of enthusiasm for independent learning, and improves competence in the work environment.

Performance Evaluation

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 equality and employee development, managers at all levels will discuss daily performance with the staff during the evaluation period.

All employees are evaluated annually after a one-year term of employment. In addition, any particular merits or demerits, should be reported to the Personnel Review Committee and to the President for approval and give commendation.

Performance Evaluation Management Mechanism

Personnel	Item	Type
All Employee	Performance is evaluated annually, including attendance, leadership skills, capability, work performance, and so on.	• routine evaluation • project evaluation • annual evaluation
New Recruites	New recruits are evaluated for qualification after a 6-month probation period to confirm their competence.	probation evaluation

In 2018, OUCC started to plan a new performance evaluation system for all employees, and included individual work performance in the monthly evaluation. The management indicators are set up by top managers in each unit. Evaluation in the production unit is divided into five key performance indicators, including: equipment maintenance and inspection, process improvement/energy saving improvement/near miss proposal, on-site inspection/meter reading, 5S self-assessment of each work environment, and work execution. These indicators are used as a reference for annual performance evaluation and promotion.

	The Number of Employees (excluding directors and managers) (Person)	Average Monthly Salary of the Number of Employees (excluding directors and managers) (NT$ thousand)
2018	351	1,095

Reward Mechanism

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. The performance appraisal and evaluation mechanism is carried out in two stages. Direct supervisors account for 70% of variance in employee performance evaluation, and then higher-leveled managers account for 30% of variance. After that, the divisional management will make final adjustments, and share interest with employees when the company is profitable in the current fiscal year. According to "Rules Governing the Payroll":

A. Annual salary adjustments are approved in accordance with operating results and industry salary adjustment. In 2018, OUCC plans to add individual performance items, and aims to implement the plan in 2019

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. **Extraordinary** AB - 85~89 points - Outstanding performance
3. **Good** B - 80~84 points - Performance in line with operational need (above average)
4. **Fair** BC -70~79 points - Performance in line with operational need
5. **Poor** C - 69 points or less - No good 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

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 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 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.

Employee Benefit

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. 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, as well as group insurance applicable to both employees and families. The employee benefits expenses totaled NT$138,187,880 in 2018 with welfare subsidy of NT$19,956,500.

According to 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	2018
Pensions	23,386,747	23,690,728	24,994,677
Insurance Expenses	29,773,900	29,259,270	32,713,618
Employee (profit) Recompense	0	31,958,357	31,973,230
Special Bonuses	9,744,498	3,672,763	37,705,780
Shuttle Bus	9,089,456	9,158,650	9,681,549
Employee Health Checkup	1,173,666	1,358,070	1,134,899
Total	**73,168,267**	**67,139,481**	**138,203,753**

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 2018 Welfare Measures List

Unit: NT$

Welfare Measure	Description	Subsidy Amount	Number of Beneficiaries (person)
Marriage Subsidy	Staff marriage subsidy, NT$2,000/person	18,000	9
Childbirth Subsidy	Employees childbirth subsidy, NT$1,000/per birth	7,000	7
Hospitalization subsidy	Staff hospitalization subsidy, NT$1,000/time	16,000	16
Staff Group Tour Subsidy	Full subsidy for each employee, partial subsidy for each lineal family member for NT$1,600/person, maximum 3 persons.	1,490,000	333
Staff Travel Subsidy	Individual travel, a total of NT$6,000 for 3 seasons	2,224,000	372
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	183,000	200
Birthday Celebration Subsidy	Staff birthday celebration subsidy, NT$2,000/person	744,000	372
Year-end Dinner	Employee year-end dinner	285,000	260
Retirement Benefits Application	Employee retirement gifts	120,000	8
Funeral Subsidy	Funeral subsidy for employee for NT$50,000, for spouse and relatives within the first degree of kinship for NT$5,700 per person	84,900	7
Moon Festival Gift	Moon cake gifts	223,200	372
Group Insurance	Life insurance, personal accident insurance, medical insurance, hospitalization insurance	611,400	372
Festival Bonus	A festival bonus of NT$5,000 for each of four holidays (the Spring, Dragon Boat, and Moon Festivals, as well as 5/1 Labor Day)	13,950,000	372
Total		**19,956,500**	**2,700**

Note: New Employees' welfares are provided on proportion.

Club Activity

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 total 20 clubs, currently 17 clubs that receive annual grants from the company and a total of NT$183,000 was provided in grants in 2018.

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.

Comprehensive Health Management 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 and has been awarded the Health Promotion Workplace Certification of the National Health Service of the Ministry of Health and Welfare several times, affirming the efforts of OUCC to protect the work and physical and mental health of employees.

OUCC promotes a healthy employee workplace and provides comprehensive healthcare resources that focus on the health of employees. In terms of corporate social involvement, OUCC has set up complete evaluation mechanisms and health management programs for the families of employees and for nearby communities. These include health checkups, health consultations, health education, diversified health seminars, employee assistance programs, as well as programs for the prevention of human-induced hazards. This service helps employees to manage their own health, and creates a friendly and healthy work environment.

Health Promotion Program	Content
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 Linyuan plant to provide employees with healthcare and counseling.
Better Health Checkup Benefits Compared to Relevant Laws and Regulations	1. We comply with "Labor Health Protection Rules" by the implementation of annual health checkups annually and further medical review for employees. We provide better health checkup benefits than are required by the relevant laws and regulations. 2. One annual checkup and one health checkup for senior management every two years have been arranged for managers and above. 3. A health report is provided with the checkup items, and descriptions and health education are also provided. 4. A health check follow-up procedure has been established that assists an employee with any abnormal findings to get further medical review and treatment. 5. If a health condition arise that makes an employee unsuitable for their original work and is evaluated by a doctor, a recommendation is made to the person in charge of the unit that the place or type of work should be changed.
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 assessment on occupational diseases at Linyuan plant. 4. Statistical study and classification of the annual health exam results is regularly carried out to track employees with an abnormality, or who are at high risk. The full-time plant physician will determine the risk factor and conduct individual counseling, or health education, and provide necessary medical treatment.
Health Education	1. In support of government policy, health units regularly visit the plant to give vaccination against influenza. 2. Health education can be arranged at any time if required. For example, in the event of an epidemic situation. 3. Invite external lecturers to speak about safety and health education at the plant. 4. Cooperate with local health units, hold health courses and promotion in line with government policies. 5. Safety is advocated on a daily basis by E-mail to all employees and suppliers. 6. 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.

Health Promotion Program	Content
Health Promotion Activities	Diversified health seminars were organized in 2018, and 100% of our employees participated, except for a few away on official business travel. ● "Introduction to six major food groups – Making healthy food choices": Encourage employees to establish healthy diet management. ● "Healthy and Dynamic Physical Fitness": This activity is conducted as two sessions to advocate the importance of physical exercise. This helps employees develop the right concept and creates an interest in physical activity. ● "Introduction to common hearing disorders": The Linyuan plant health checkup report has been analyzed and employees are now being educated about ways to protect their hearing.
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, three in total need the physician consultation. After assessment, no employee needs to consult doctors.
EAP	1. Advocate safety on a daily basis and relevant information is sent to all employees for reference. 2. The plant nurse in the medical office is available for telephone consultation and provides diversified assistance to employees. 3. After consultation, an employee may be referred to the full-time physician in the plant for counseling, assistance or medical treatment. The family of the employee might also be contacted if necessary. 4. Annual recreational activities are organized for employees to encourage outdoor activity and help keep the physical and mental health of employees in balance.
Dietary and Food Safety	1. Inspections of the hygiene at food suppliers are carried out from time to time. Checks are made on such matters as the ingredients used, food hygiene, food quality and workplace hygiene. 2. The food companies chosen comply with all legal requirements and have product liability insurance.
Program for the Prevention of Human-induced Hazards	1. The "Program for the prevention of Human-Induced Hazards" has been developed to prevent work-related illness associated with the performance of long-term repetitive work. 2. Risk assessment and investigations are carried out on musculoskeletal hazards. 3. Administrative changes, health promotion, general and advanced improvements are suggested according to the hazard level, and review and tracking of the effectiveness of improvements are done at each quarterly occupational safety meeting.

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. In 2018, there is no occurrence of employee overwork.

Mechanism:

1. Employee attendance is managed by an electronic system.
2. 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.
3. Employees are required to complete a health checkup form. After a health check, and the health checkup form has been submitted, as well as an occupational health promotion questionnaire, the 6-month overtime hours are calculated. This is done to identify any high-risk employees and is based on the Industrial Safety and Health Association format.
4. Personal fatigue risk factors are assessed as well as working patterns and environmental risk factors. The monthly overtime hours of employees with abnormal workloads is taken into account and health management measures are taken according to the level of workload to safeguard employee health.

Woman Health at the Workplace

A "Healthy Mothers Protection Committee" has been established in Linyuan Plant 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.

Most of the OUCC employees are male adults, and their children are not within the age group that require parental leave. However, one female employee applied for parental leave in 2018. We continue to dedicate efforts to improve maternal health protection measures, and this includes the assessment of hazard, health risk and control, interviews with a physician, risk classification management, adaptive work allocation and so on. This is done primarily for those female employees who might be exposed to hazardous working conditions. Two female employees benefitted from this provision in 2018.

Establishment	"Healthy Mothers Protection Committee"
Goal	This provides physical and mental health care during pregnancy, childbirth, or nursing period.
Plan	"Maternal Employee Health Plan"
Measure	● Risk assessment, management and classification of the health of maternal employees is done regularly. ● Assessment of the health and the adaptability of an employee to their work is done less than one year after pregnancy and childbirth. ● A nursing room has been set up. ● Control strategies and plans have been prepared. • A full-time physician and nurse are stationed on the premises to provide employees with interviews, health counseling and health assessment. • Adaptive work allocation has been established. • Emergency response measures have been implemented. • Improvements have been made to the working environment. • Tracking and management is done regularly.

Pleased Customers

OUCC upholds the values of "integrity, 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.

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 2018.

Customer Satisfaction Management

In order to ensure product quality relevance, sufficiency, and effectiveness, 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. OUCC uses the following procedures to maintain a good customer relationship:

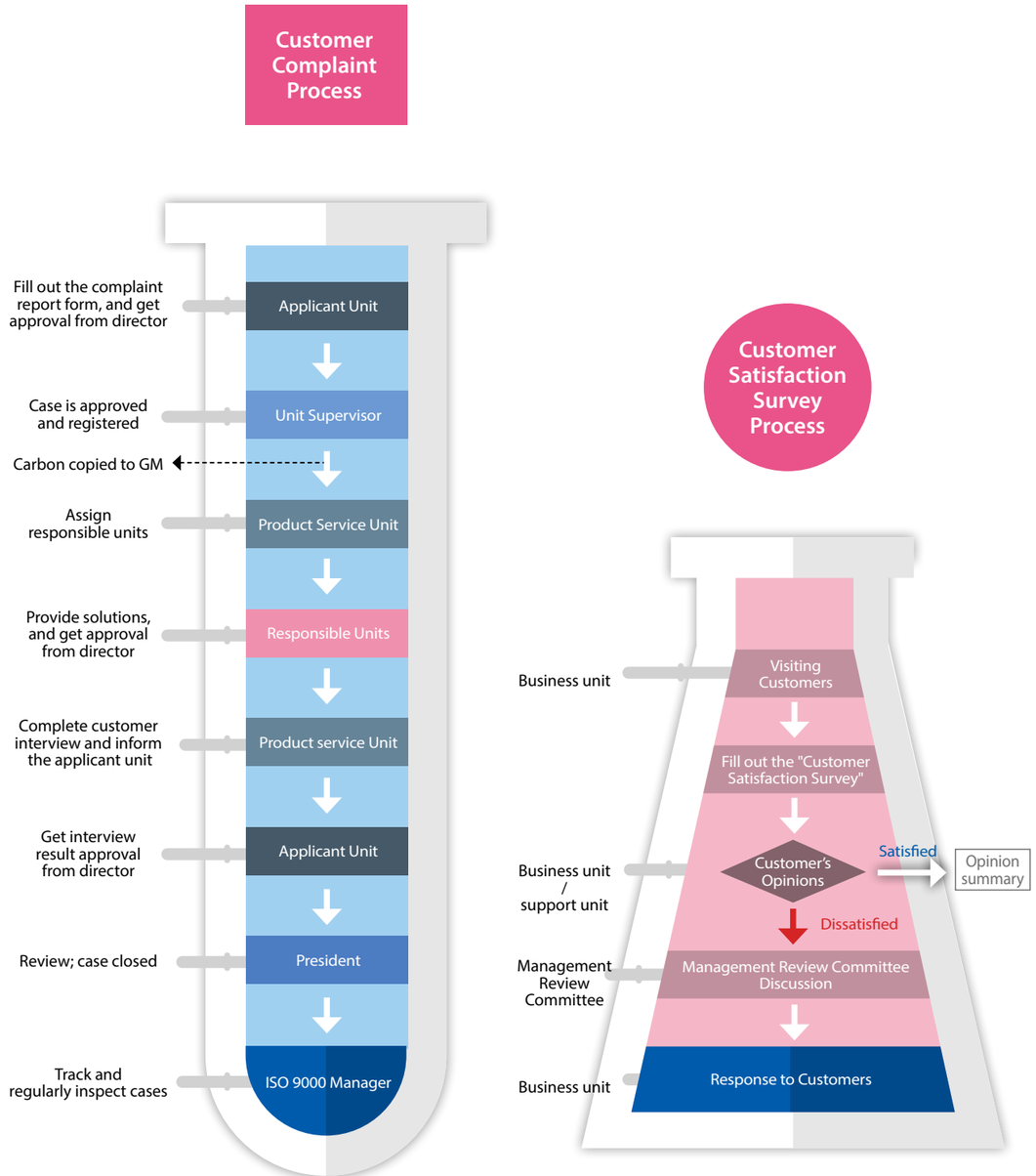
1. Occasional customer visits
2. An annual customer satisfaction survey
3. Occasional distributor meeting (sales)

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.

The 2018 EG/EO Customer Satisfaction Survey attained a score of 33.1 points out of perfect score of 35 points, and the survey content including: service, delivery, quantity accuracy, quality, packaging, transport and overall satisfaction.

2016-2018 Customer Satisfaction Survey

	2016	2017	2018
Average Score	33.5	32.8	33.1



Rigorous Quality Management

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 strict quality management, we win the trust of customers by the stable standards for products, and during 2018 no significant quality events occurred.

According to "ISO 9001 Quality Management System", OUCC has 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 annual 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 audit is conducted to ensure effective implementation and maintenance of ISO 9001 Quality Management System. Corrective action is taken for any nonconformity found during an audit and the root cause is also corrected or eliminated. With the strict quality management, no major product quality abnormalities occurred in 2018. OUCC won the customer's trust with stable quality.

Department in Charge	Process	Operation Reference	Forms
Production Department	Finished goods sampling in the manufacturing process		Plant Periodic Sampling and Analysis Prospectus
Quality Control Department - Instrument Team	Inspection → NO / YES	Work Instruction inspection	Finished goods specifications • Quality Nonconformity Form • Quality Alert Form
Production Department	Finished goods sampling in the intermediate tank 1. The product in nonconforming tank 2. Mixed tank 3. Emitted into the atmosphere	Operating Procedure for Nonconforming products	Finished goods specifications
Quality Control Department	Inspection → NO / YES	Work Instruction inspection	Finished goods specifications
Production Department	Finished goods sampling in the big tank Finished goods sampling in the barrel or tanker		
Quality Control Department – Gas Team	Inspection → NO ← Inspection; YES / YES	Work Instruction inspection	Finished goods specifications
Logistics Team Gas Team	Finished goods sampling in the barrel or tanker	Operating Procedure for Bulk Product Shipment	

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 essential as commodities. The product specifications are strictly controlled and ethylene oxide residue (affecting human health) ≤ 1ppm, and 1,4-dioxane (side effects) content ≤ 5ppm.

The liquid CO_2 from OUCC only affects health due to impurities in the form of hydrocarbons. The CO_2 factory specification is Methane ≤ 20ppm, total hydrocarbons ≤ 50ppm, and purity ≥ 99.95%.

Medical oxygen release criteria are based on the US Pharmacopeia (USP) specifications: Carbon monoxide ≤ 10ppm, carbon dioxide ≤ 300ppm, and purity ≥ 99.0%, odorless and tasteless, which 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), which has also been awarded Excellent Medical Products Manufacture by Dept. of Health, Executive Yuan.

The Chemical Supply Chain

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 CSR awareness is today, our challenges still include continued optimization of supplier management to meet customer demands for quality products, as well as supply. We also use a comprehensive supplier screening mechanism to ensure that their treatment of workers and behavior towards the environment, as well as business integrity in order to fulfill sustainable management.

2018 Management Results	2019-2020 Short-term Targets
● 100% of suppliers followed the OUCC environmental policy. ● Conducted 9 supplier security training conferences. ● The total number of evaluation audits on suppliers was 662. ● 100% of freight forwarders passed the evaluation audit.	● 100% of freight forwarders must acquire RSQAS certification. ● 100% of new suppliers must sign the "Suppliers' Corporate Social Responsibility Commitments". ● Existing suppliers must complete an on-site or written evaluation.

Industry Supply Chain

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

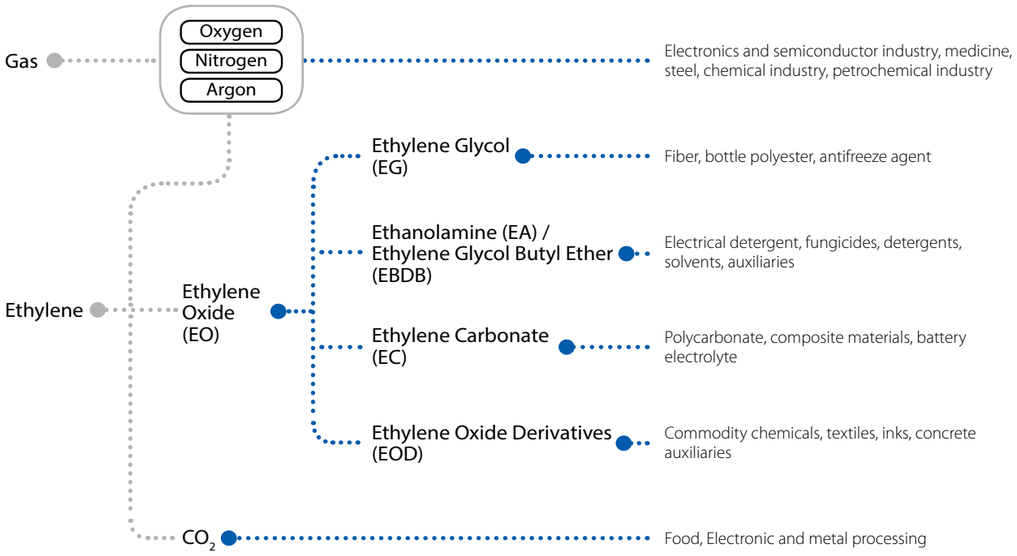
Ethanolamine (EA) is supplied to the downstream electrical detergent, resins, inks, textiles, and cement industry. It is also exported to Asia-Pacific, Europe, and America. The domestic EA plant is able to provide a flexible and rapid delivery service to the local electrical detergent manufacturers.

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.

OUCC Industry Supply Chain



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.
Ethylene Oxide Derivatives (EVOXs)	Fatty Alcohol Ethoxylates (AEO)	Fatty alcohol ethoxylates (AEO) are non-ionic surfactants that can be: • Producing anionic surfactant (AES) • 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: • 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
	Methoxy Polyethylene Glycol (MPEG)	Chemical structure of polyethylene glycol monomethyl ether: CH_3-(OCH_2CH_2)n-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.
	Methallyl Alcohol Ethoxylate (HPEG)	The main raw material for the production of polycarboxylate, an efficient concrete water reducer.
	Tallow Amine Ethoxylates (TA)	Tallow Amine Ethoxylates (TA) are non-ionic in alkaline and neutral medium and cationic in acidic media with excellent emulsifying and leveling properties widely used as: • Textile auxiliaries • Pesticide emulsifiers • Metal corrosion inhibitors • Lubricants
	Trimethylolpropane Ethoxylate (TM)	Trimethylolpropane Ethoxylate (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: • PU crosslinking agents • UV curing 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: • In polymer synthesis: non-phosgene polycarbonate; polyurethanes; unsaturated polyester; and engineering plastics • In pharmaceutical intermediate synthesis • As a solvent: in acid gas scrubbing; 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.

Management Principles

OUCC has set up management policies such as "Rules Governing Suppliers" and "Environmental Safety and Health Policy" for supplier management. Suppliers must comply with the "Petrochemical Industry Code of Conduct" and the OUCC "Environmental Safety and Health Policy". The declaration of compliance with environmental policies and an environmental impact assessment must be signed, sealed, and returned to the Company by all suppliers. The company believes that there should be a safe working environment for employees. We should work with the suppliers to fulfill corporate social responsibility, and establish a higher environmental protection, safety and health standard for the industry as a whole.

In addition, OUCC is very conscious of the protection of equipment and the safety of workers, and has prepared the "Contractor Work Safety Rules" for contractors assigned to carry out any work on the plant premises. It is absolutely essential that all the contractor workers have the necessary work safety licenses and certificates, to ensure a safe working environment.

Environmental Safety and Health Policy

All contractors must comply with the OUCC goal of zero accident, zero damage and zero pollution. Safety, health and environmental protection actions must be of the highest level to protect the Earth's ecological environment and ensure the safety and health of employees. This not only achieves the vision of sustainable development, but is in the best interests of the employees, suppliers, customers, contractors, shareholders and the public as well.

Note: OUCC has 3-in-1 ISO certifications from SGS, 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.

Strategy Plans

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 aspects: labor, health and safety, the environment, management, and business ethics, to establish a comprehensive supply chain mechanism, as well as to lead supplier partners to the commitment of sustainability, participate in evaluation audits and improve health and safety management. OUCC also has a supplier appeal mechanism and channel, and enhanced communication with suppliers through security meetings regularly. The company also handles appeals made by telephone.

In addition, 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 to integrate all the supply chain partners in the fulfillment of corporate social responsibility. We will continue to work closely with our suppliers to strengthen these partnerships and have started with social welfare and participation in social activities.

1. Commitment to Sustainability

OUCC has made a dedicated effort towards the positive development of the supply chain, as well as promoting environmental safety, ethical compliance, employee rights and environmental protection. The company has required suppliers to fill out a self-assessment questionnaire and sign a Letter of Commitment to help clarify the relevance and intention as well as the requirements of the policy. We are committed to adherence to the concept of corporate social responsibility.

- Contractors are required to sign the "Contractor's Operation Safety Commitment to OUCC while Working in the Plant" indicating their full understanding of the rules for working on OUCC plant premises.
- Since 2018, new suppliers have been required to pass a Supplier Evaluation test, and must sign the "Suppliers' Corporate Social Responsibility Commitments". This has three main aspects including employee and human rights, environmental protection, and ethical management.

2. Evaluation Management Audit

This OUCC audit process, includes records as well as field evaluation, to ensure that suppliers are in compliance with all the relevant laws and regulations. Existing suppliers must receive and complete an annual evaluation which may be on-site or written. In 2018, 662 trading suppliers underwent written evaluations and 3 were disqualified. The items evaluated included company management, quality, lead time, price, service, and environmental safety. Suppliers were listed as qualified only if their rating score reached a specific standard. Should an evaluation or material incident occur that rated disqualification and also resulted in damage to the company's reputation, labor safety, product quality, or manufacturing operation, the supplier would be listed as disqualified and suspended.

Transportation Supplier's Safety and Health Quality Audit

As an enterprise committed to substantiating responsibility, OUCC is doing everything possible to realize the goal of transport safety.

- **Contract Specification**
  1. Contracted transport service providers must participate in the Kaohsiung City – Kaohsiung County - Pingtung County diesel self-management program and receive their qualification mark.
  2. Establish environmental and safety standards.
  3. 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 health quality audit accounted for another 50%.
  4. The transport service provider will not be renewed if the evaluation score is below the standard score.
- **Items Audited**
  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
- **Result**
  1. 6 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 2018. Current total of contracted tanker forwarders is 5.
  2. The passing rate of evaluation audit in 2018 is 100%.
- **Future Goal**

  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.

Enhance Safety Promotion

OUCC organizes 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 key points, 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 2018 Safety Conference, the matters promoted and announced by the Environmental Safety unit were:

- Make sure to conduct safety check in hot work operation.
- Make sure to conduct safety check by the work safety personnel.
- Promote the legal license and management matters required for each type of work.
- Monthly Contractor Safety Meeting, Supervision and Contractor Safety Report Rotating Sheet.
- Introduce chemical product properties and notification of the hazards.

Freight Forwarders Control Results in 2018

All the contracted tankers of OUCC have passed the inspection performed by the National Certification Institution. To enhance comprehensive safety management, we continue to communicate with contracted tanker forwards targeting 100% of forwarders implementing Road Safety & Quality Assessment System (RSQAS) by 2020. Currently, there are 5 contracted tanker forwarders in total, with the introduction of the international system as follows:

Statistics of contracted tanker forwarders with the introduction of the international management system

International Management System	Number of Contracted Tanker Forwarders	Rate (%)	Ratio of Freight Delivery (%)
ISO 9001	5	100%	97.43%
ISO 14001	3	60%	77.24%
OHSAS 18001	5	100%	97.43%
RSQAS	4	80%	95.95%

Note: ration of freight delivery= transaction amount of contracted tanker with introduction of international management system in 2018 / total transaction amount of all contracted tankers in 2018.

SOLID CONTRIBUTIONS

OUCC attaches great importance to the faith of "taking from society, giving back to society", and also places great value on stakeholders' opinions. The company regards issues related to climate change, water, energy resources and social care as challenges and opportunities, and closely integrates these matters with the development of its business operations. Relative strategies have been proposed as follows:

- Enhancement of operational management of pollution prevention equipment, and the discharge of pollutants in accordance with environmental protection regulations.
- An increase in the capacity of pollution prevention equipment to avoid accidents by controlling the management of operations and maintenance.
- The promotion of industrial waste reduction, research to improve process technology, and a reduction in the generation of wastewater, exhaust gas and other waste products.
- The review and the promotion of various water, energy and carbon reduction programs.
- The enhancement of participation in social care and charitable donations, and the fulfillment of corporate social responsibility.

We aim to commit efforts on environmental symbiosis, social integration, and a sustainable future with a "truthful" attitude and actions.

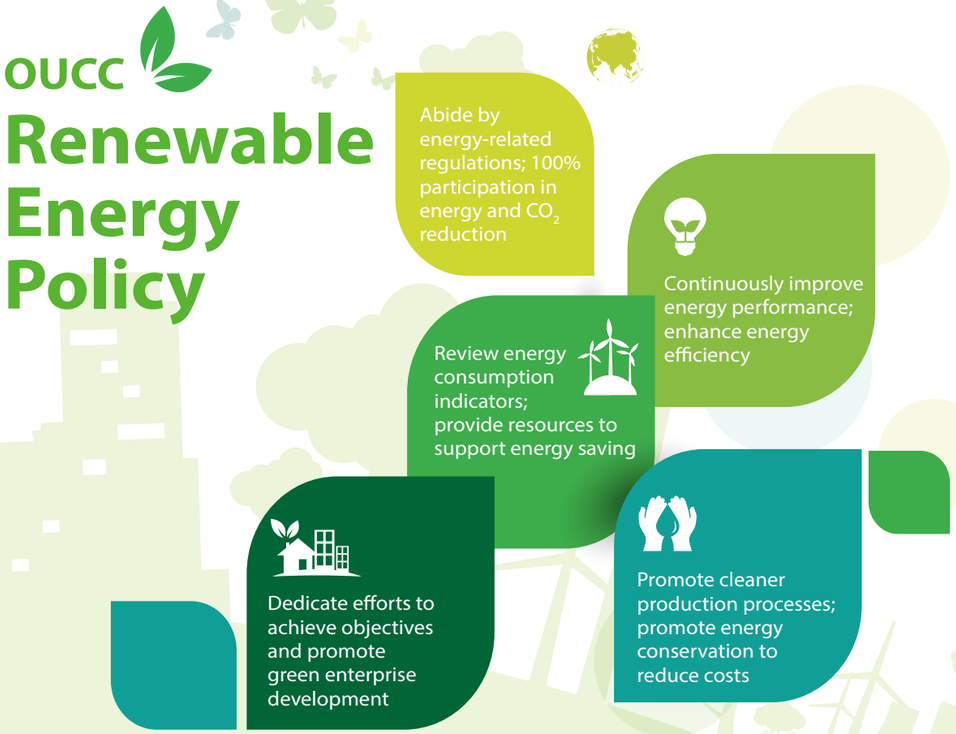
2018 Sustainable Performance

- Reduced carbon dioxide by about **15,682** t-CO_2e per year
- Introduced the **ISO 50001 Energy Management System**
- Completed **GHG Scope 3** inventories
- **The first** company in Taiwan to introduce **ABR technology**
- Invested NT$**68** million to set up a wastewater recycling system
- Improved waste management and control by **increasing the reuse rate of metal barrels**
- Donations to local charities and disadvantaged minority groups amounted to a total of NT$**5.88** million

Sustainable Energy Management

The issue of global warming and climate change has become a serious concern all around the world after the Paris Agreement had come into force. The energy supply in Taiwan relies mainly on 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 general public and clients have begun to urge the industry to implement changes in behavior.

As a corporate citizen, OUCC actively responded to the United Nations Sustainable Development Goals (SDGs), as well as Group policies on energy saving and carbon reduction by integrating green management and sustainable development strategies into all the daily company operations. The company also invested in the establishment of sustainable recycling from an environmental-friendly perspective, and introduced the ISO 50001 Energy Management System to improve the plant energy efficiency. They also dedicated much effort to the reduction of greenhouse gas emissions, air pollution, waste and wastewater. This enhanced sustainability and the move towards an ultimate goal of transformation into a green enterprise.



The Energy Saving and Carbon Reduction Committee

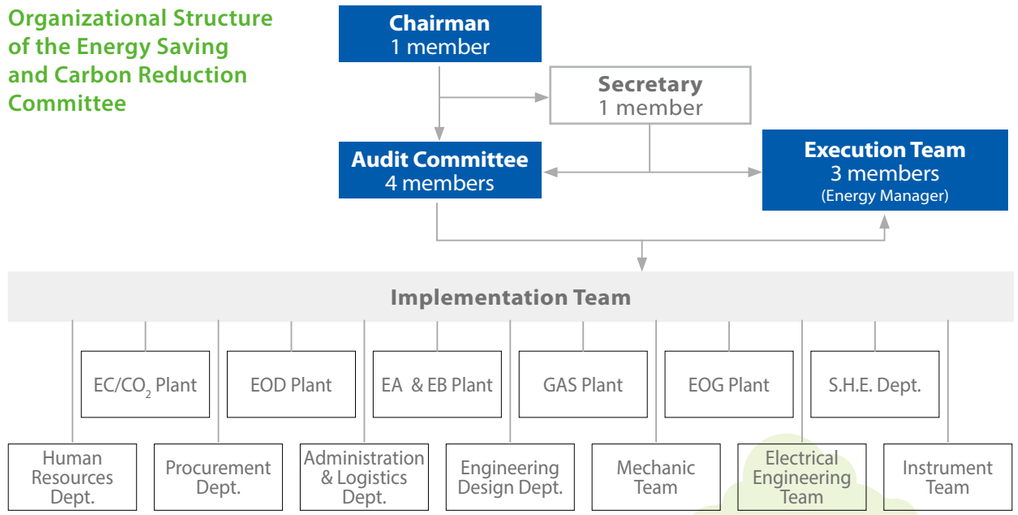
Period	Goal of Meeting
March	To review and verify project results and revised objectives for 2017
June	Reviewing deviations from the objectives
September	A review of the improvement plan for 2019
December	Confirmation of the executive plan for 2019

OUCC established an inter-departmental "Energy Saving and Carbon Reduction Committee" and set up "Procedures for the Organization of Energy Saving and Carbon Reduction Committee" in 2008. The company also set up an operation mechanism for the committee, procedures for target setting and the planning of carbon reduction, energy audit procedures, and procedures for verification and certification of the effectiveness of carbon reduction. At the same time, various energy-saving measures were implemented through a Plan-Do-Check-Act (PDCA) mechanism where on-site inspections were conducted in cooperation with the competent authorities.

The Energy Saving and Carbon Reduction Committee not only holds regular quarterly meetings, but also reviews energy saving and carbon reduction plans, sets up annual objectives for energy saving, formulates policies related to energy saving and carbon reduction, keeps track and evaluates the effectiveness of policy implementation and execution, and reports progress in energy conservation to the Chairman's office.

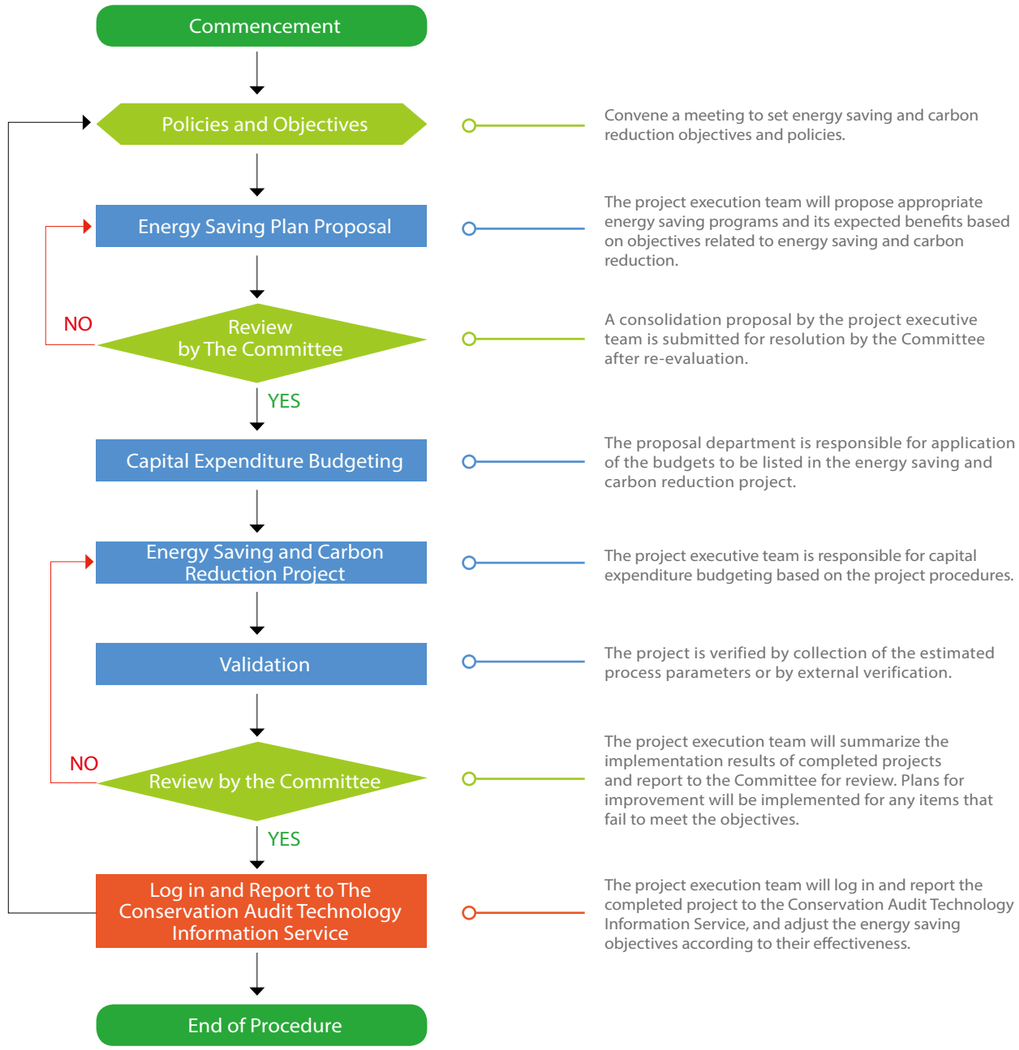
Through the intensive network of the Energy Conservation and Carbon Reduction Committee, it can effectively collect energy-saving information and innovative technologies, and solidly implement various energy-saving programs to achieve greenhouse gas reduction and mitigate climate change.

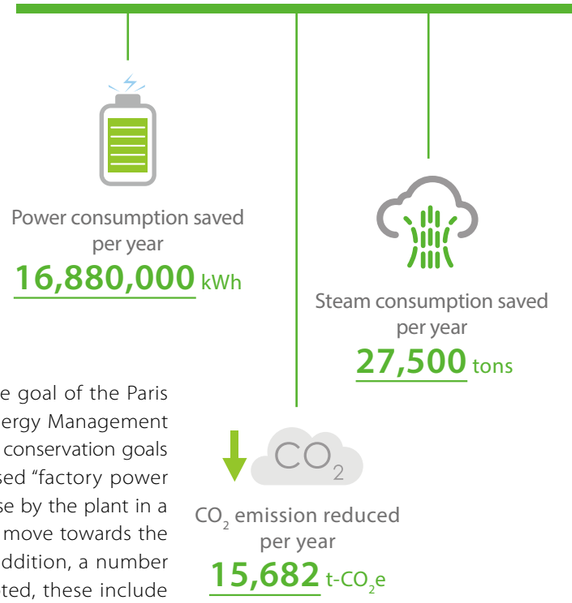
Organizational Structure of the Energy Saving and Carbon Reduction Committee



Note: 1. The Committee is chaired by the Chief Director of the Linyuan plant, or a divisional managing officer (or above) appointed by the General Manager.
2. 4 Audit Committee members are elected from amongst the company department managers (or above) and may also be appointed by the General Manager or Chairman of the Committee.

Procedures for the Energy-Saving Objectives and Project Plans





Greenhouse Gas and Energy Management

To strengthen greenhouse gas reduction and respond to the goal of the Paris Agreement, we use law-based compliance, the ISO 50001 Energy Management System implemented in 2018 to meet the international energy conservation goals and promote clean processes. For this purpose, a cloud based "factory power monitoring system platform" will be used to monitor energy use by the plant in a structured way and to find energy-saving opportunities for a move towards the ultimate goal of transformation into a green enterprise. In addition, a number of office area carbon reduction measures have been promoted, these include electronic administrative operations, control of photo-copying and monitoring over the entire factory, and the promotion of a paperless system for online management, a tribute to the mitigation of global climate warming.

2018 Energy Efficiency Improvement Results

	Energy Saving Project	Estimated Annual Energy Consumption Saved	Estimated Annual Carbon Dioxide Reduction (t-CO_2e)
EOG Plant	Install additional frequency converters on water tower fan	Saving power consumption of 444,000 kWh	246
	Energy-saving by the ceramic coating of cooling pump casings and rotors	Saving power consumption of 80,000 kWh	45
	Reduction of power consumption per product	Saving power consumption of 12,120,000 kWh	6,716
	Installation of a multi-effect chilling system	Saving stream consumption of 27,500 tons	6,330
EC Plant	A halt to the use of circulating compressors for the optimization of processes	Saving power consumption of 856,000 kWh	474
EOD Plant	Cooling water optimization to save electricity used by water pumps and water tower fans	Saving power consumption of 2,284,000 kWh	1,266
	A halt in the use of circulating pumps for the optimization of processes	Saving power consumption of 972,000 kWh	538
	Change the centrifugal pumps for quantitative pumps	Saving power consumption of 120,000 kWh	67

Energy Saving Improvement Results

Type	Item	Unit	2017	2018
Process Improvement	Total Investment	NT$	-	41,038,203
	Energy Consumption	GJ	12,576	58,855
Equipment Upgrade	Total Investment	NT$	48,000	32,883,708
	Energy Consumption	GJ	587	84,702
Total	**Total Investment**	**NT$**	**48,000**	**73,921,911**
	Energy Consumption	**GJ**	**13,163**	**143,557**

Note: Estimation of energy saving capacity compared with that of the previous year, based on an assumption that the energy-saving measure lasts 12 months.

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

Schedule	Target	Strategy
Short-term (2019)	● Accumulation of 5,100 t-CO_2e reduced ● Estimated achievement rate of 1.6%	1. Re-planning and optimization of the water-cooling tower at the EOG plant with estimated 6 GWh power saved and 3,300 t-CO_2e reduced per year. 2. The coal-fired furnace at the EOG plant will be converted to natural gas which will be also used for the Regenerative Thermal Oxidizers. With the diesel pump being deactivated, the estimated annual power saving will be 3,731 kWh, the annual consumption of diesel fuel reduced by 650 kL, and the CO_2 emission reduction 1,696 t-CO_2e per year. 3. Frequency conversion adjustment has been made to 300 EA plant. Estimated electricity saving will be 110,000 kWh and CO_2 emission will be reduced by 61 t-CO_2e per year.
Mid-term (until the end of 2020)	● Accumulation of 29,000 t-CO_2e reduced ● Estimated achievement rate of 9%	1. To use the highly selective catalysts to reduce greenhouse gas emissions during production processes. 2. To evaluate and plan for the introduction of low-carbon fuels, and for the replacement of existing low-efficiency fuel oil boilers with natural gas steam/electrical cogeneration systems, to reduce the steam volume purchased and to enhance energy efficiency. 3. With the combined energy management system and a cloud-based "Plant Energy Monitoring System Platform" to keep controlling energy usage and seeking opportunities for energy saving. 4. Smart monitoring will be used to improve production processes and for optimization, to reduce energy consumption. 5. All employees participate in energy conservation and carbon reduction management coupled with the continuous planning and implementation of energy-saving and carbon-reduction programs to reduce greenhouse gas emissions. 6. According to the Government five-year phase of greenhouse gas control target, the "Sector Greenhouse Gas Emission Control Action Program" approved for the first phase 2016 - 2020 will be referenced to adjust the mid-term target for greenhouse gas reduction.
Long-term (2030 and beyond)	According to the long-term Government goal for GHG emission reduction strategies, the emission reduction target for 2030 has been set at 20% of the "Sector GHG Emission Control Action Program" approved for 2005.	We continue to promote the energy-saving and carbon reduction programs, and focus on the study of low-carbon or carbon-free heat application technology, as well as greenhouse gas storage technology.

Note: 2015 greenhouse gas emission 320,000 t-CO_2e was used as a reduction benchmark.

Green Manufacturing Process

1. **Plant Establishment:** The ethylene carbonate (EC) plant was constructed in 2001 and started production in 2002. The annual capacity was 40,000 tons, with a total investment of NT$420 million. A debottlenecking project was completed in 2008 and the annual production capacity rose to 60,000 tons, with a total investment of NT$318 million.
2. **Production and Use:** EC is mainly used to produce Polyethylene Carbonate (PC) for the production of optical discs and other composite plastic materials.
3. **Manufacturing Process:** The major raw materials for processing EC are purified ethylene oxide (HPEO) and CO_2. The carbon dioxide produced from the EOG manufacturing process is recycled to high purity CO_2, which is reacted with HPEO to produce EC.
4. **Expected Benefits:** Use of the recycled exhaust emissions from the EOG manufacturing process, effectively reduced CO_2 emissions, and earned the EC production the status of a green process which reduces annual greenhouse gas emissions by about 50,000 tons per year.

New Green Sustainable Manufacturing Processes

Key Aspects

- These enhance the plant energy saving and carbon reduction benefits.
- Respond to the tightening emission standards set by the Kaohsiung City Government in July 2018.
- Current steam boilers, which use heavy fuel oil, will not be economical to revamp.
- OUCC mainly uses outsourced steam for manufacturing processes, which is equivalent to the cost of steam generated by natural gas boilers. The lack of independent energy supply capacity will result in higher risk with respect to the maintenance of stable production at low cost.
- Increase production stability.

Green Strategies

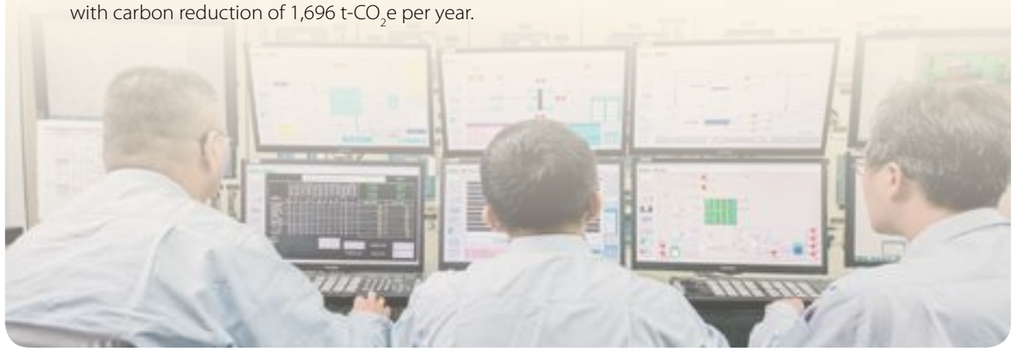
- The coal fired furnace and Regenerative Thermal Oxidizer (RTO) at the Linyuan plant will now use clean low-carbon natural gas as its fuel source and highly efficient waste heat recovery equipment is being installed. To ensure safety at the manufacturing and processing sites of the plant, high- and low-pressure natural gas is obtained from different sources to supply both the natural gas steam electrical cogeneration system as well as the furnace and Regenerative Thermal Oxidizer (RTO) systems, project is expected to complete by the end of 2019.
- OUCC has planned to establish a qualified natural gas combined-cycle steam electrical cogeneration system, and has signed an electricity backup and off-peak electricity contract. The new steam electrical cogeneration system is designed to mix the exhaust gas and residual liquid from manufacturing processes, which is in line with the concept of a circular economy. The backup plan for steam outsourcing will continue at the Linyuan Plant to ensure future safe and stable production, and the project is expected to begin commercial operations in 2022.

Transformation Plan

	Plan	Investment Amount
1	Establish a Combined Heat and Power System	NT$ 2,200 million
2	Fuel gas piping installation for the low-pressure natural gas metering station as well as the coal-fired furnace and Regenerative Thermal Oxidizer (RTO) system	NT$ 11 million

Expected Benefits

- The cogeneration system may generate 50 MW of electric power at peak time, achieving 80% of electricity self-sufficiency, which enhances the back-up capacity of the Taiwan power systemby 0.14%. This increase in steam energy self-sufficiency will reduce greenhouse gas emissions and also result in an outsourced electricity saving of 354 GWh and carbon reduction of 60,000 t-CO_2e per year.
- This conversion of use in natural gas and the disuse of diesel fuel pumps of coal-fired furnace and RTO I/II shall result in an estimated electricity saving of 3,731 kWh and diesel consumption reduction of 650 kL, with carbon reduction of 1,696 t-CO_2e per year.



The Energy Management Target and Short-, Mid- and Long-Term Strategies

To promote low-carbon manufacturing, we analyzed and identified through international framework analysis that electricity used in production was the main source and accounted for 70% of the energy used. We then set "Electricity Saving" as our key issue and promoted a series of electricity saving measures with the Energy Saving and Carbon Reduction Committee with the reference of current greenhouse gas regulations of the competent authority, and our participation in the government incentive project on energy saving and carbon reduction. After comprehensive evaluation of possible approaches in process improvement, equipment upgrade and energy management, the use of suitable fuel and a steam saving program were planned and implemented, resulting in actual annual power savings of 16,880,000 kWh in 2018, of an achieving rate 3.68%.

Schedule	Target	Strategy
Short-term (2019)	● The annual power saving rate is 1% ● Saving power consumption of 3.4 GWh per year	1. The water-cooling tower at the EOG plant was optimized and adjusted. This work was completed in January 2018, followed by a re-test in May 2019. The estimated electricity savings were 6 GWh. 2. The conversion of use in natural gas and disuse of diesel fuel pumps of the coal-fired furnace and RTO at the EOG plant shall result in estimated electricity saving of 3,731 kWh per year. 3. Frequency conversion adjustment of pumps at the section 300 of EA plant shall result in estimated electricity savings of 110,000 kWh per year. 4. A new natural gas cogeneration system shall generate 50 MW of electric power, achieving electricity self-sufficiency of 80%, and increase steam energy self-sufficiency, which shall result in a reduction of greenhouse gas emissions, with estimated annual electricity savings of 3.54 GWh and a reduction of 60,000 t-CO_2e per year.
Mid-term (until the end of 2020)	● The annual power saving rate is 1% ● Accumulation of 5% on power savings for 5 years	1. Introduction of electrical energy-saving equipment such as frequency converters. 2. Establishment of the Combined Heat and Power System. 3. Optimization of cooling water circulation to save electricity used by water pumps. 4. OUCC has combined the management structure of the energy management system with a cloud-based "Plant Energy Monitoring System Platform", to continuously monitor energy usage and explore energy saving opportunities. 5. Plans have been made to introduce a smart monitoring system to optimize and improve production processes and reduce energy consumption. 6. Plans have been made for the construction of a solar PV system to reduce the use of outsourced electricity. 7. Plans have been made to set up a LiBr double effect absorption chilling system to replace traditional air conditioners by using excess steam from the EOG plant to reduce the use of outsourced electricity. 8. All employees participate in energy conservation and carbon reduction management activities, coupled with the continuous planning and implementation of energy-saving and carbon-reduction programs.
Long-term (2030 and beyond)	● Accumulation of 10% on power savings	1. Improvement in energy efficiency and carbon reduction management is ongoing. 2. Evaluation of installations for waste heat recovery.

Note: The 2016 power savings were set as a benchmark.

Energy Consumption

Statistics of Energy Consumption

Type	Unit	2016	2017	2018
Gasoline	Kilo-Liter	15.314	15.314	1.775
	Gallon	4,030.00	4,030.00	467.05
	GJ	503.75	503.75	58.38
Fuel	Kilo-Liter	848.078	632.627	715.122
	Gallon	223,170.53	166,480.79	188,190
	GJ	32,136.56	23,973.23	270,993.6
Diesel Fuel	Kilo-Liter	548.84	580.844	647.350
	Gallon	144,431.58	152,853.68	170,355.26
	GJ	19,931.56	21,093.81	23,509
Electricity	kWh	423,035,185	440,630,400	447,722,345
	GJ	1,522,926.67	1,586,269.44	1,611,800
Steam	ton	335,135	221,174	223,588
	GJ	875,372.62	577,706.49	584,011.86
Total Energy Consumption	**GJ**	**2,453,194.83**	**1,631,840.23**	**2,490,372.838**
Energy Intensity	GJ/ person	6,648	4,471	6,677
	GJ/ NT$ thousand	0.22	0.13	0.17

Greenhouse Gas Emission (Summary)

	Unit	2018		
		Taipei Head Office	Linyuan Plant	Subtotal
Scope 1	t-CO_2e	2.58	57,109.1232	57,111.70
Scope 2	t-CO_2e	50.59	299,654.6168	299,705.21
Total Emission	t-CO_2e		356,816.91	
Emission Intensity	t-CO_2e/Person		956.6137	
	t-CO_2e/NT$ thousand		0.02	
Emission Collection Method			Operational Control	

Note: The 2018 Linyuan Plant data is certified by SGS-Taiwan and obtained ISO 14064-1 certification.

Greenhouse Gas Emission (Taipei Head Office)

Scope	Item	2016	2017	2018
Scope 1	Official Vehicles fuel consumption (L)	1,497	1,354	1,091
	Official Vehicles CO_2 emissions (t-CO_2e)	3.39	3.07	2.58
Scope 2	Power consumption (kWh)	87,985	85,643	91,324
	CO_2 emission (t-CO_2e) from power consumption	46.46	45.22	50.59
Total		**49.84**	**48.29**	**53.17**

Note: 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/

Greenhouse Gas Emission (Linyuan Plant)

Unit: t-CO_2e

Item	2017	2018
CO_2	50,014.1632	54,364.0685
CH_4	28.4125	29.0175
N_2O	10.1022	9.3274
HFCs	2,706.7098	2,706.7098
The Direct Greenhouse Gas Emissions (Scope 1) Expressed as Tons of Carbon Dioxide Equivalents	52,396.0551	57,109.1232

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 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 (Scope 3).

	Program	Description	2018 Result
Action 1	Promote Video Conferences	● Establish a remote video conference system. ● Increase the number of video conferences to reduce the frequency of business travel between Taipei and Kaohsiung. ● In 2019, the multipoint video conferencing equipment is expected to be updated to improve its efficiency. In addition to computer devices, mobile communication devices will be added to the cloud platform to maximize energy efficiency.	The monthly staff meeting as an example **3,355 kg-CO_2e reduced**
Action 2	Encourage Employee Commuting	● The utilization of carpools after quantization will also be applied as a reference for a more efficient transportation plan for the future reduction of emission from employee travel. ● In recent years, the following measures have been taken to reduce greenhouse gas emissions: 1. Re-signed the contract in 2016 to standardize the supplier's transportation vehicles, which have to be made within 5 years, prompting the suppliers to replace the old vehicles with new energy-saving ones. 2. Earlier departure for shuttle buses since 2018, to avoid traffic peaks, shorten travel time, and reduce greenhouse gas emissions.	Employee commuting carbon emissions of **356.74 t-CO_2**
Action 3	Enhancing the Fuel Efficiency of Outsourced Tankers	We have introduced stricter specifications for outsourced tankers, the outsourcing contract now stipulates that no tractor may remain in use for more than 15 years. This has encouraged the use of new energy-saving tractors. Through CSR management mechanism of the suppliers, the CO_2 emission and energy used in the transportation process have been effectively reduced by this measure.	Outsourced transport emissions of **24,320 t-CO_2**

Note: Energy Consumption of contracted transportation is 317,697GJ.

Resources Recycling

Water Resource

The conservation 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 source of OUCC Linyuan Plant comes from Fengshan Reservoir, which belongs to industrial water. In response to climate change, water shortage and flood risk, we have formulated water resources management plans and set water management objectives, and cooperate with local governments to prepare for the maintenance and water saving measures. To fully utilize water resources, apart from a water demineralization system installed, and the process wastewater recycled for the cooling tower, further investment is planned for the recovery of cooling tower wastewater, as well as for the reduction of wastewater discharge by adopting the electrochemical and Electrodialysis Reversal measures for reducing the hardness of the cooling tower wastewater for reuse.

To protect the environment and water resources, OUCC has continuously promoted improvement projects in our processes and technologies and actively seek for the best water management solution to fulfill our corporate social responsibility. In 2018, it has planned to build a wastewater recovery system with an investment of NT$68 million, which is expected to be completed by 2019 and will produce reclaimed water of about 1,000 tons per day, with a wastewater recovery rate of more than 70%, used as water supply for cooling towers.

Tap Water Usage Statistics

Unit: m^3

	2016	2017	2018
Linyuan Plant	1,905,697	2,179,929	2,181,603
Taipei Head Office	767	981	724
Total	**1,906,464**	**2,180,910**	**2,182,327**

Note: The 2016~2018 figure is based on the water bill data.

The Water Resource Management Target and Short-, Mid- and Long-Term Strategies

Schedule	Target	Measure
Short-term (2019)	● Daily water consumption reduced by 2% ● Daily water saving of 100 tons	1. Cooling water system optimization and system thermal integration to reduce evaporation loss. 2. Improvement of the cooling tower concentration was 7 times higher. 3. Water-saving slogans and posters are circulated to strengthen and raise the awareness of the concept of water conservation. 4. Automatic sensor faucets are installed in the restrooms. 5. A wastewater recovery system planned for the Linyuan plant, is expectedto be completed by the end of 2019 and will produce about 1,000 tons of recycled water per day, and the wastewater recovery rate is higher than 70%. 6. Install pure water treatment equipment and pure water storage tanks with ion exchange resins, saving about 175 tons of water per day, reducing recycled wastewater of 100 tons.
Mid-term (until the end of 2020)	● Daily water consumption reduced by 20% ● Daily water saving of 1,000 tons	Water conservation planning, implementation, and management program will be continued.
Long-term (2030 and beyond)	● Daily water consumption reduced by 50% ● Daily water saving of 2,500 tons	1. An evaluation of the use of recycled water to replenish cooling tower water will be conducted. 2. A plan for the evaluation of cooling water tower exhaust condensate recycling will be underway.

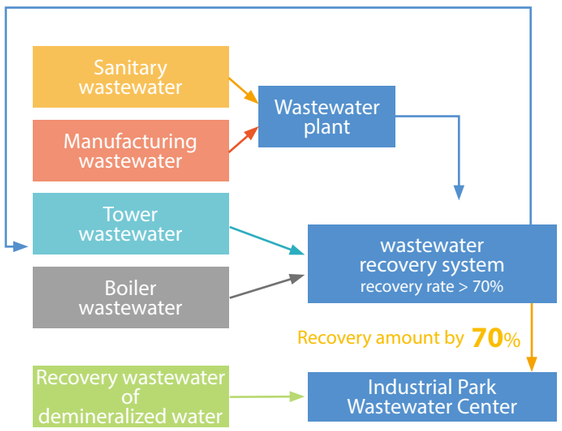
Note: 2016 daily water consumption is 5,000 tons.

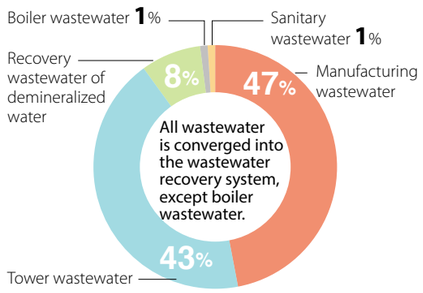
Water Recycling Measures

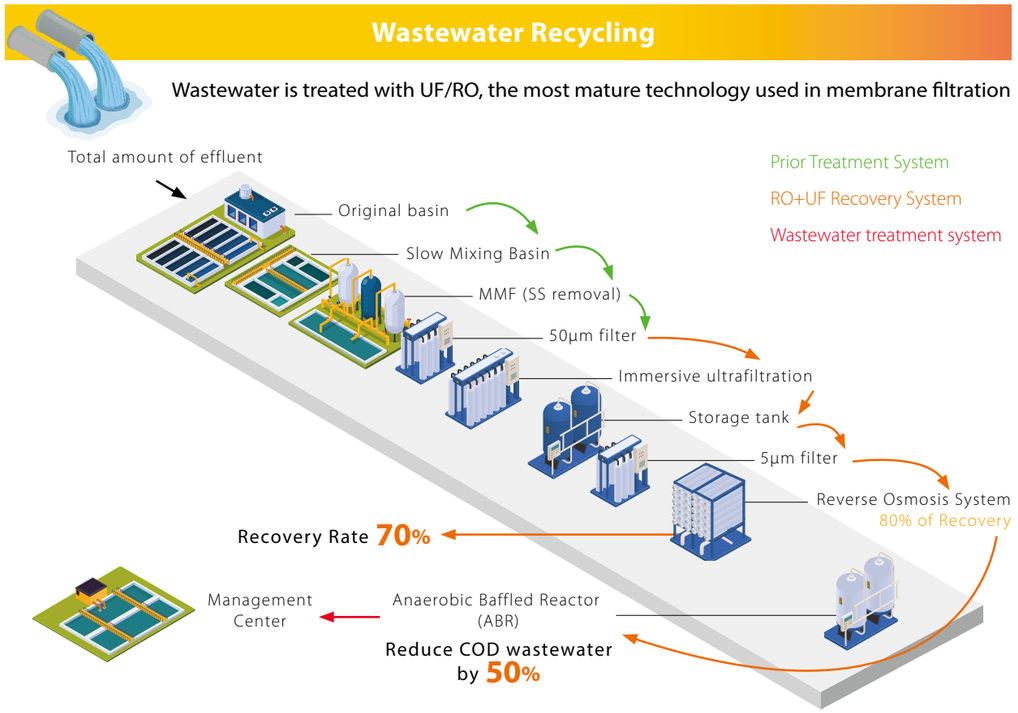
As such an essential natural resource of OUCC, the water resources with escalating risks under the impact of climate change has been an important aspect of daily operation in terms of sustainable management.

Wastewater Recovery Rate up to 70%	Different from those partial recoveries or single recovery used (such as recycling exclusively the cooling tower wastewater) by other traditional industries. OUCC expects to improve the wastewater recovery rate to more than 70%, which includes processing wastewater as well as cooling tower water.
New Technology	In the cooling tower wastewater recycling process, the water is treated with UF/RO, a mature membrane filtering technology, and then recycled to the production processes in response to government policy on water conservation.
Enhanced Recovery Efficiency	To effectively enhance the recovery rate, our plant uses a two-stage RO process which increases recovery efficiency from 50% to 70%, which is estimated to result in the recovery of 1,000 tons of cooling tower/water per day. In addition, since the quality of the recycled water is better than that of ordinary industrial water, such recovery for the cooling tower water by this process reduces the amount of acid and anti-scaling agents to be used.
The First Company in Taiwan to Introduce ABR Technology	Although the RO process produces very pure water with high economic value, the wastewater produced by the process has a high ionic concentration with high COD. RO concentrated water is mixed with other low concentration wastewater in the general water recycling systems, releasing the organic material which is hard to dissolve back into the water environment. Therefore, the Company becomes the first in the industry to introduce ABR technology for the treatment of concentrated wastewater from the RO process and to reduce COD and other environmentally harmful substances to fulfill our environmental responsibility. **Features of the Anaerobic Baffled Reactor (ABR)** ● No COD – reducing the potential chemical hazards to the environment and operating personnel ● Low electricity consumption ● Low sludge production

Note: The Anaerobic Baffled Reactor (ABR) employs a new technology mainly used to treat industrial wastewater with many solutes. The technology relies on specific bacteria which form an anaerobic biofilm that acts to reduce chemical oxygen demand (COD) in the wastewater and maintains activity of the bacterial flora under aerobic conditions. This acts to eliminate COD which is difficult to do by other means.







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, OUCC abides by the "Procedure for OUCC production process wastewater discharge" stipulating emission limits of COD<90ppm and SS<25ppm. 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.

Effluent Quality Test

Item	H1/2018	H2/2018
	Detected Value	
pH	8.3	8.1
$CHCl_3$	0.00325	0.00092
COD	40.1	35.5
NH_3	44.3	0.06
ArOH	ND	ND
NO_3-N	12.8	25.3
Suspended Solids	10.8	9.3

Wastewater Discharge

	2016	2017	2018
The Total Amount of Wastewater Discharged (m^3/year)	594,408	609,908	577,315
Discharge Destination	Piped into the joint wastewater treatment plant and sea area in Kaohsiung		
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 2018, the total amount of wastewater was 577,315 tons, slightly decreased by 5.3% compared to 2017.

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, and regularly report pollutants according to the permits. The main air pollutant emissions are: Volatile Organic Compounds (VOCs), Ethylene Oxide (EO), and ammonia.

Air Pollution Prevention Equipment

Type	Number	Pollutant	Pollutant Removal Efficiency
Regenerative Thermal Oxidizer, RTO	2	VOCs	99%
Direct Fired Thermal Oxidizer, DFTO	1		
Catalytic Oxidizer	1		
Scrubber	7		

Air Pollution Control and Prevention Results

Unit: Kg

Pollutant Emission	2016	2017	2018
NO_x	9,510	7,907.49	7,456.87
SO_x	10,180	8,445.96	8,221.11
POP	0	0	0
VOC	45,860	43,388	44,857
HAP	0	0	0
PM	0	1,266.35	2,242.06

Waste Disposal

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. In 2018, we strengthened our waste management to reduce environmental impact. The improvement measures include improving the recycling rate of iron drums and incinerating non-hazardous organic waste liquids.

Waste Disposal Prevention Equipment

Unit: T

Type	Item	2017	2018
Hazardous Waste	Waste acid	0.051	0.08
Non-hazardous Waste	Reuse	67.05	175.79
	Composting	378.92	361.98
	Recycling	234.1	0
	Incineration	158.08	213.98
	Landfill	85.96	163.98
	On-site storage (Note 4)	766.03	0
	Other	924.11	923.67

Note: 1. Reuse incudes energy reuse.
2. Incineration waste includes: Mixed plastics, wood mixtures, lubricants, oil mixtures, household garbage, etc.
3. Landfill includes the calculation of waste undelivered out of plant.
4. 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**
2018	5,730	40	5,200	30	0	**11,000**

Environmental Issues Grievance Mechanism

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 6 years as effective management has been implemented.

Environmental Expenses

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 through the effective management of environmental impact, and minimization of the impact of company operation on the environment, so can a harmonious and prosperous relationship be built between industry and the community, the sustainable development of the company be fulfilled.

The Environmental Protection Expenditures

Unit: NT$

Item	2016	2017	2018
Environmental Protection Expenditure	8,703,622	12,779,660	30,691,137
Soil Pollution / Sewage Treatment Costs	8,665,630	6,557,631	5,838,884
Total	**17,369,252**	**19,337,291**	**36,530,021**

Fines for Environmental Penalties in 2018

Description	Amount (NT$)	Corrective Action
VOC Leakage Exceeded the Standard 2018.05.30 2018.09.25	100,000 100,000	1. Leakage from equipment or pipeline components used for operation or maintenance must be avoided after repair or construction, and VOC leakage checks must be confirmed immediately. 2. VOC monthly checks are continuously conducted based on the SOP. 3. Enhance and correct the false concept that not all site areas need monitoring. 4. The VOC test team must conduct leak detection tests every week. 5. Quarterly infrared FLIR instrument leak detection to be tested for all VOC components.
The Odor Emanating from the Outlet Pipeline of the Regenerative Thermal Oxidizer RTO1 Exceeded the Standard 2018.09.25	100,000	1. Change the water in the scrubber and adjust the amount of water before the RTO1 process. 2. Regular sampling checks of the outlet pipeline must be carried out and an analysis for emanation must be carried out at biannually intervals.
Penalized by the EPA Due to a False Declaration of the Waste Products Amount 2018.12.14	60,000	1. Inspection and recording of waste storage at the plant by the Department of S.H.E. 2. The environmental safety personnel must confirm the waste quantity using a monthly waste declaration system, and can only file the declaration after approval by S.H.E. Department manager.

Social Inclusion

OUCC applies its 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.

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 such as donating goods to children's homes, supporting Shanwei primary school by providing new desks and chairs, providing emergency assistance for residents of Linyuan district and participating in beach cleaning activities. The amount donated to disadvantaged minority and charity groups in 2018 totaled NT$ 5.88 million.

2018 Social Contributions **Totaled NT$ 5.88 Million**	● Donated goods to children's homes ● Spontaneous donation and served as volunteers for disadvantaged groups ● Supported Shanwei primary school by providing new desks and chairs ● Provided emergency assistance for residents of Linyuan district ● Participated in beach cleaning activitie ● Sponsored community activities, such as scholarships, emergency assistance, the promotion of agricultural and fishery special products and beautification of the environmental	
2019 **Social Participation**	● Occasionally participated in blood donation ● Donated to disadvantaged groups ● Volunteered social work activities ● Sponsored Primary Schools in the Linyuan district by the provision of air purification equipment ● Sponsored the Taiwan Lantern Festival	

Donations Statistics

Unit: NT$ ten thousand

Type	2016	2017	2018
Charity	107	25	426
Local Participation	143	147	160
Goods Donation	0	0	2
Total	**250**	**172**	**588**

Cash Donation Activities

Recipient	Activities	Invested Amount (NT$ thousand)
Linyuan District Office	Worked with the industry in Linyuan to sponsor the Linyuan District Office for community activities, such as scholarships, emergency assistance, promotion of agricultural and fishery special products, environmental beautification, and reading material.	91.2
Sijhou Village, Wufu Village, Jhongyun Village, etc.	Boroughs & neighborhoods gathering activities, festivals, etc.	27
Linyuan Village Promotion Association, Sijhou Community Development Association, Linyuan Environmental Protection Association, etc.	Clubs and association activities	24.2
Wang-Gong Village	Beach cleaning, mountain cleaning, and disinfection activities.	6.8
Linyuan Village Promotion Association, Wufu Village, Association, etc.	Sponsored gatherings of neighborhoods, communities and associations.	3.2
District Office or Heads of Boroughs	Funeral subsidies and economic assistance for residents.	2.4
Linyuan Village Promotion Association, Temple, etc.	Caring for the disadvantaged	1.8
ROC Slow Pitch Softball Association, Linyuan Township Badminton Association, Petrochemical Industry Trade Union, etc.	Ball games	1.5
Longji Temple, Donglong Temple, Chinsui Temple, etc.	Temple festival	1.4
Linyuan Precinct and Linyuan Police Station	Friends of the Police Association	3.8
ROC Angel Heart Care Association	Charitable activities	100
Keelung E-Generation Youth Development Association	Charitable activities	100
Taiwan Tourism Promotion Association	Charitable activities	100
Donations to the Hualien Earthquake Disaster Fund	Donations	100

Community Environment Green Beautification

To make a contribution to air purification in the industrial zone by the development of a green roadside landscape, OUCC applied to the Ministry of Economic Affairs to sponsor environmental maintenance, adopting about 116 trees, 2,028m^2 of sidewalk and 4,020 m^2 of roads in 2018. The company will be responsible for cleaning, watering, sanitation maintenance, pest control, road repair and cleaning up after a natural disaster, as well as supplementary planting according to plant density.

PRUDENT THINKING

OUCC aims at “zero accident, zero injury, and zero pollution”, follow and introduce relevant international environmental safety standards, regularly check safety, environmental protection and related practices, implement environmental sustainability concepts and build a safe and healthy working environment.

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.

2018 Sustainable Performance

- Accumulated a record of **3.69** million Accident-Free Working Man-hour
- **100**% of freight forwarders have acquired the OHSAS 18001 Occupational Health and Safety Management certification
- **7** operational environment tests in compliance with the relevant standards
- Labor representatives accounted for **50**% of the Occupational Health and Safety Committee members

Safety management is one of the important topics in the chemical industry, and it is also the primary concern of the majority of stakeholders. OUCC applies the concept of potential risk assessment as "Only Safer, Not Safest" in production and manufacturing processes. This attitude contributes to the establishment of a comprehensive company approach to "Prevention Measures", "Chemical Transportation Safety", "Manufacturing Process (Plant) Safety" and the "Contingency Plan". We apply simulation to predict the occurrence of possible disaster situations and use the results to formulate emergency response plans, and continue to improve safety management at all our plants.

2018

An Accumulated Record of

3,690,000

Accident-Free Working Man-hour

Zero-Pollution Workplace

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.

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 2016~2018

Date	Awards
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 Man-hour 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 Man-hour" certificate for encouragement
2018.12.15	Invited to co-organize the "Linyuan Jhongyun Port Autumn Beach Cleaning Activity" organized by the Environmental Protection Bureau, and received a Certificate of Appreciation from the Environmental Protection Bureau

Comprehensive Environmental 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 accounted 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.

OUCC has received ISO 14001 Environmental Management System as well as OHSAS 18001 Occupational Health and Safety Management System certifications which ensure standard control and compliance. HazOp analysis 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 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.

Solid Environmental Protection Organization

OUCC has an Occupational Health & Safety Committee where the labor representatives account for 50% of the members. We 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. The plant manager is the appointed convener and there are 14 committee members. 7 of these are labor representatives and account for 50% of members. We review the occupational safety and health cases and coordinate with colleagues, and full records of all meetings and announcements are kept.

Dedicated Environmental Protection Personnel

Air pollution dedicated staff: 3 Class A dedicated members

Water pollution dedicated staff: 2 Class A and 2 Class B dedicated members

Toxic chemicals dedicated staff: 4 Class A trained and qualified members

Waste goods dedicated staff:
1 Class A trained and qualified member in waste management

Environmental Testing

Environmental safety is the key to sustainable development. To safeguard the effectiveness of environmental protection, as well as safety and health management, OUCC has established a special management unit responsible for inspection, review and verification of on-site business operations with respect to occupational hazards. The special management unit also coordinates between relevant units and proposes measures for effective management, control and improvement, as well as the creation of a friendly, safe and healthy working environment.

In addition to continued implementation of ISO 14001 Environmental Management System, we are actively promoting improvement in the effectiveness of the pollution prevention and control system, which covers underground monitoring wells, flammable gas monitoring stations, the recycling and reuse of carbon dioxide, waste gas incinerators, as well as the capping of wastewater plants to alleviate the impact of production on environment.

To improve occupational and plant safety, prevent accidents caused by night shift work by both employees and contractors, and solve problems that arose during machine operations caused by a lack of light, we recommended the use of a Light Lux meter to check areas where light seemed to be insufficient for night shift work. On-site inspections were conducted and new lighting plans set up for each area. After these inspections had been carried out the company invested NT$1 million in a green lighting solution related to environmental protection and energy saving in 2018. This involved 43 LED lighting installations to improve lighting at the factories. The LED lights are calibrated every six months in accordance with lighting standards and engineering specifications to strengthen the quality of factory lighting.

2018 Environmental Testing Results

Item	Content	Frequency	Inspection Results
Inspection of the Purity of the Water in Drinking Water Dispensers	Detection of drinking water quality	Quarterly	Achieved Standards
Personal Hearing Tests	Measurement of accumulated personal noise exposure	Semi-annually	
Reproductive Toxic Chemical Detection	Detection of the concentration of ethylene oxide and carbon disulfide	Semi-annually	
Chemical Detection	Detecting and measurement of the concentration of chemicals such as methanol, ethylene glycol butyl ether, n-butanol and sulfuric acid in the working environment	Semi-annually	
Central AC Indoor CO_2 Concentration Detection	Indoor CO_2 concentration detection	Semi-annually	
Underground Monitoring Wells	Soil samples were collected for inspection at 18 groundwater monitoring wells	Annually	
Factory Lighting Fixtures	Calibration of the Light Lux Meter	Semi-annually	

Operational Environment Carried out in Cooperation with The Competent Authority

- Actively cooperate with the Environmental Protection Administration of the Executive Yuan, and to promote the reduction of harmful air pollutants in the petrochemical process, and to investigate and analyze the physical properties of the exhaust gas in the regenerative incinerator (RTO-2) of the Linyuan Plant, and establish a database of the types of emissions.
- Cooperate with the Environmental Protection Administration, Executive Yuan and Environmental Protection Bureau Kaohsiung City Government to carry out environmental testing and analysis operations, and conduct soil and groundwater survey sampling operations in the plant area. The test results are in line with groundwater pollution monitoring standards.

Zero Damage in Manufacturing Process

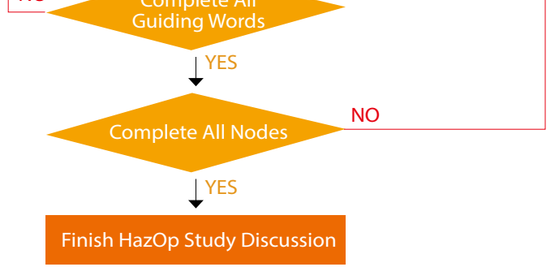
Manufacturing Process Hazard Risk Assessment

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. OUCC has carried out manufacturing process Hazard and Operability Study (HazOp) 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.

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, 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. LOPA analysis of the existing processes (EG/EA/EC) was also completed.

100%
of existing processes completed LOPA analysis

Flowchart of HazOp



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

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 following three analyses are used for the factory's preliminary hazard analysis:

- **Analyzing Item:** to conduct essential hazards analysis on the manufacturing, disposal, use of dangerous products, flammability, stability, toxicity of hazardous substances
- **Comprehensive Inspection:** to inspect the substances, processes, production process units, etc. to understand its harmfulness and measures
- **Process of Operation:** 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

Production Process Disaster Prevention Measures

	Production Process Isolation	Safety Configuration
Operational Procedures of Tank System Abnormalities	● Emergent activation of the ESD system ● Activate the isolation valve	● 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) ● 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 ● Emergency response of propylene oxide unloading truck leaking
Emergency Response of Unloading Truck Leaking	● 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 Prevention Mechanism

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

- 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.
- 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.
- 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.
- 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.

Routine Safety and Health Education Training

- **Course Theme:** Safety, Health and Environmental Protection.
- **Course Content:** This included the prevention of common disasters in petrochemical plants, the six major food groups, healthy dynamic living - aerobic exercise, introduction to common hearing disorders, control and management of hazardous air pollutants from petrochemical processes, PM2.5 air pollution and employee health.
- **Employee Feedback:** Employees may express opinions and ask questions during courses for effective interchange with their lecturers.

Annual Safety Training

Education and Training Project	Frequency	Hour	The Number of Participants	Investing Amount
Fire Safety				
Environmental Protection	4	7	325	12,000
Safety and Health				

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. No employees experienced hearing disorders in 2018.
5. A full-time physician and a nurse are stationed in the plant and provide employees with health checkups and healthcare.

The 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.

Steps:

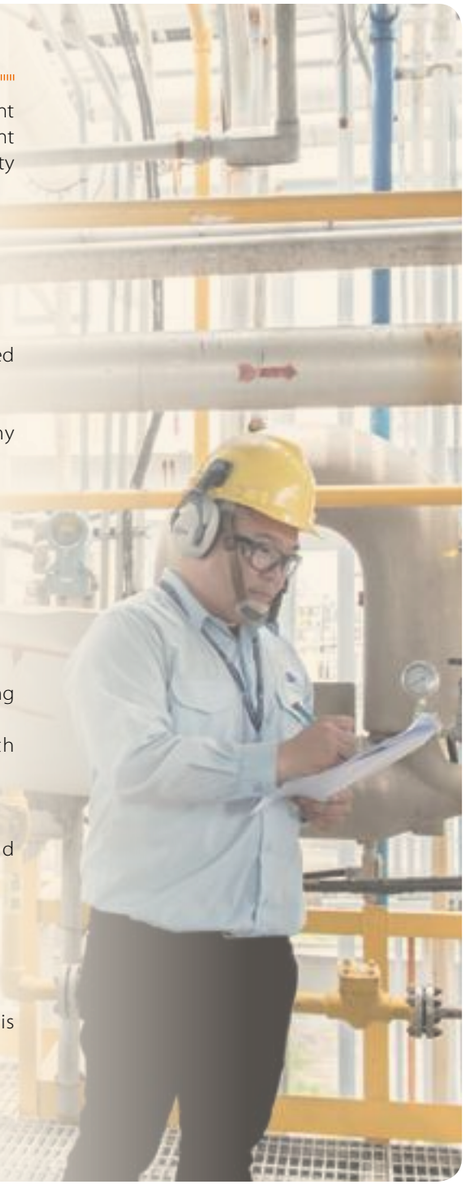
T Talk: (Stop, Step Back, Observe)
- Do I understand my task?
- The role between myself and my colleagues?
- Have I communicated with all those who will be affected by my task?
- Will my task affect other people?
- Have I communicated with anyone else through any method that makes the task safer?

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



Work Safety Risk Management

Discuss and formulate the safety improvement mechanism to effectively reduce work safety risk at regular meetings of Occupational Safety and Health Committee, and Contractor Agreement Organization Meetings. In 2018, we reviewed, improved and ensured the safety of employees in the plant in response to safety and health matters that employees have raised through the "In-plant safety meeting", the improvements made were as follows:

Purpose	Improvement Items and Procedure	Result
The Provision of Hygienic Safe Drinking Water	Five old water dispensers were replaced with new ones in the office.	Achieved
Reduction of the Risk to Health from Harmful Substances	Checks were carried out at the chemical laboratories and restrictions were made to the unnecessary storage of toxic chemicals.	
Establish a Good Interactive Platform for All Units and the Occupational Safety and Health Exchanges	Safety and environmental protection meetings are now held at Linyuan monthly. There is experience sharing, discussions about the use of safety protective gear and near misses, and the advocacy of occupational safety.	
To Create a Win-win Situation for the Contractors and the Company	Safety meetings are held every two weeks for contractors to encourage the awareness of safety and the implementation of management through various interactions, the advocacy of experience sharing, and the correction of nonconformities found.	

Linyuan Plant Occupational Accident Statistics

LDR	Gender	Unit	2016	2017	2018
Work Days Missed		Day	0	0	0
Total Working Hours		Hour	41,664	41,664	43,424
LDR		%	0	0	0
Work Days Missed		Day	0	0	0
Total Working Hours		Hour	617,024	609,088	610,088
LDR		%	0	0	0

AR	Gender	Unit	2016	2017	2018
Total Working Days		Day	5,208	5,208	5,428
Work Day Absent		Day	62.5	109.2	65.625
AR		%	1.2	2.1	1.2
Total Working Days		Day	77,128	76,136	76,261
Work Day Absent		Day	395.38	487.8	315.25
AR		%	0.5	0.6	0.4

Note: 1. In 2018, there were no work accidents related to buildings, equipment, raw materials, materials, chemicals, gas, vapors and dust in the workplace, or matters such as occupational diseases, injury, disability or death due to business operations, or any other occupational reason.
2. Lost Day Rate (LDR) = Total loss of work days/Total work hours) x 200,000.
3. Absentee Rate (AR) (Including personal and sick leave) = (Total number of absent days/Total number of man-days) x 100%.

2018 Environmental Safety and Health Risk Assessment and Improvement Results

The Evaluation Mechanism: the PDCA cycle has been adopted from the concept of corporate sustainable management, for the identification of risk types and management measures based on routine and non-routine activities, behavioral factors, equipment, materials and external hazards outside the workplace through hazard identification and assessment. The business operations in the management system are continuously optimized and implemented through performance and compliance assessments as well as internal audits, to enhance workplace safety and health performance.

The Management Mechanism: risks are verified before adding new equipment or new chemical substances, and control measures are based on priority: elimination, replacement, engineering controls, signs/warnings/management and control, and the use of personal protective equipment, are all considered for its reduction, should the risk score be higher than 45.

Improvement Case:

Preliminary Hazard	Score before Improvement	Safety Improvement Mechanism	Score after Improvement
Potassium Hydroxide (KOH) Spill is Harmful to Workers	54	• Increased the pressure of the exhaust valve gauge. • Set up a valve and CAP standard operating procedure. • Added KOH safety signs. • Safety glasses are required for operations or maintenance in the KOH PUMP area.	24
A Staff Member Slipped and Fell from a High Level Working Platform	48	• Ground positioning and leveling at the work area. • Add a cushion protector to the hand valve screw, add a level platform, and turn the cooling water control valve to 180 degrees to provide better maintenance. • Painted yellow warning lines on the sides of the platform. • Advocacy during the electrical engineering team hand-over meeting, or the monthly safety meeting, as a guide.	4

A staff member slipped and fell from a high level working platform

Painted yellow warning lines on the sides of the platform

Add a cushion protector to the hand valve screw and turn the cooling water control valve to 180 degrees

Zero Accidents in Transportation

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 society. There were no serious chemical leakages in 2018.

Transportation Risk Assessment

All OUCC products are transported by the tankers outsourced from external suppliers; therefore, the transport contractor management is of particular importance. Also, we conduct chemical transportation risk assessment, which results mainly from traffic accidents, especially the chemical spillover effects caused by tank overturn, which is the most concerned.

The chemical hazard categories, including: 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: human error, vehicle failure, storage equipment, road and environment.

Risk Factor	Possible Incidents
Human Error	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	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	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	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 request 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.

Among them, the main response mechanism of chemical transportation management includes strengthening hardware inspection, formulating verification mechanism, strengthening personnel operation proficiency and emergency response capability. The company also makes use of case-collected information to improve the depth and perception of crisis response in the supplier transportation personnel and to create a win-win situation for contractor and the company through the promotion of regular education and training for the drivers and dispatchers.

Process	Control Mechanism
Operational Regulations	1. **Contract specifications:** Supplier conduct is regulated by comprehensive clauses in the transport contracts. Forwarders are requested to comply with the signed admission management document that is included in the contract annexure: A. Contractor’s Operation Safety Commitment to OUCC while Working in the Plant B. Tanker Driver Compliance Matters C. Tanker Operational Safety Management Handbook 2. **Tanker loading:** 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 event data recorders (speed and image), and remote image storage for at least two weeks. GPS of 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.
Transportation Regulations	1. **Control mechanism:** implementation of personnel control, as well as vehicle and cargo permits, together with tanker weighing and driver ID, strictly controls the admission of drivers, vehicles and their cargo. 2. **Safety control and management:** the delivery route taken by tankers transporting hazardous materials is regulated in accordance with Article 84 of the Rules for Road Traffic Safety. All forwarders have been officially informed by OUCC that the "Rules Governing Safety and Health for Hazardous Goods Delivery" and "Transportation Violation Penalty Standards" are part of the contract and strict compliance is required. 3. **Safety checkup:** each transport vehicle entering or leaving the factory is required to have a visual check. All drivers are requested to make regular voluntary inspection and regular reviews are carried out by OUCC staff. The loaded vehicles are all checked the same way. 4. **Transport Monitor:** 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.

Process	Control Mechanism
Transportation Meeting	1. **Regular meetings**: to ensure the effective management of transportation safety and to discuss safety issues with transportation providers, OUCC held meetings with different transportation providers on a regular basis. 2. **Meeting results:** in 2018, OUCC convened two meetings with tanker transportation companies, two with gas transportation companies and two with general container and truck transportation companies. The matters discussed included: transportation distribution issues, follow-up and the review of nonconformity, transportation mode coordination, controversial issues, policies and safety information propagation and response to vendor issues. 3. **Goal:** to improve road safety management, OUCC convened regular transportation meetings in 2018. The company also advocated that all the transportation contractors should acquire RSQAS certification by 2020.
Emergency Response	1. **Emergency response mechanism:** each transport company is required to provide an "Emergency Response Prospectus". 2. **Emergency drill:** emergency drills are carried out by at least two transport companies of a certain type at the same time. This is done as a joint exercise with the fire brigade to ensure that the companies have adequate planning and proper joint protection for emergencies.
Education and Training	Drivers and dispatchers should receive refresher training every six months to improve their depth of crisis response.
Diversified Auditing	1. **Onsite audit:** the transport company is subject to an onsite audit every year that is part of the vendor audit. To ensure that the transport companies attach enough importance to the quality of transportation, OUCC formulated a new regulation in 2018: "The results of the onsite audit shall be the basis for the distribution of freight charges and volume ratio for the following year." 2. **Road audits:** GPS audits are classified as occasional inspections or as GPS satellite positioning. For occasional inspections, vehicles can be followed to record the driver's behavior on the road, driving speed, and unloading operations. GPS satellite positioning audits are used to determine the vehicles position and to check if the driving speed and the idle time on the road, as well as the choice of route or zone, has been normal.

Tanker Transportation Safety Management Mechanism

7 freight forwarders were contracted by OUCC in 2018, of these, 5 were for tanker transportation which included 3 tankers for gas, 2 for EC, and 2 for EOD.

1. 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 tankers 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. Tanker (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.
2. 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.

Field Pipeline Maintenance Operation and Management

OUCC formed the "Pipeline Maintenance Operation Team" 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:

- Pipeline patrol inspection management: patrol inspection, verification of patrol inspection, pipeline cover testing and verification reports, etc.
- Pipeline surrounding inspection & environment organization, construction survey, overlay mapping, station and maintenance of construction applications and supervision, etc.
- 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 Pipeline 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.

Emergency Response Mechanism

To strengthen emergency response 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

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. 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

Emergency Response Training

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 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.

OUCC carried out 112 hours of off-site "Emergency Response Team" training covering general emergency response exercises, fire-fighting equipment operation, and mobilization of the emergency response teams by external experts. Staff from the Linyuan fire brigade are invited to instruct our personnel in the operation of the plant fire-fighting equipment for a total number of 270 participants, in 2018. In addition, 4 emergency response training courses were held for all staff in the Linyuan Plant in the first and second half of 2018, for a total of 325 participants.

Training List of The Emergency Response Team in 2018

Item	Training Program		Number of Participants
1	Firefighting facilities operations review		68
2	A-class protective outfit review		68
3	EA plant Ethylene Oxide abnormal leakage response exercise		10
4	EA plant ammonia abnormal leakage response exercise		10
5	EOG plant boiler water level drop response table top exercise		7
6	Carbon dioxide abnormal leakage response exercise		25
7	EOD plant propylene oxide storage tank feeding pump flange abnormal leakage response exercise		6
8	Emergency response integrated exercise	D reactor lower end cover flange leakage and fire accident exercise	20
9		Tanker and mechanical flange liquid ammonia leakage exercise at EA plant ammonia unloading station	56

To ensure a convergent result for each emergency response, all emergency response plans including compound disaster 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.

Compound Disaster Prevention and Emergency Response Plan

No.	Potential Disaster	Emergency Response Plan
1	Leakage, 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 Leakage

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 Chief Plant Director will use the reporting system to dispatch personnel to the site. The Environmental Safety (environmental protection related follow-up), Production (chemical-related follow-up), 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 Leakage Emergency Response Exercise

Simulation Scenarios

The contractor driver (insert name here), drove the (insert plate no. here)vehicle, transporting the OUCC liquid oxygen tanker (insert plate no. here) after the tanker driver had unloaded liquid oxygen at a client's facility and had a meal at the Xinying Service Area of National Freeway No. 1, a small pipe leak was discovered at voluntary inspection by the driver when he was bound to return to the OUCC Linyuan Plant. This was immediately reported to the transportation company. The transport company responded at once and dispatched an emergency response team equipped with all the necessary emergency response equipment and devices to the scene of the accident.

Exercises

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


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

Assurance Statement

ASSURANCE STATEMENT

SGS TAIWAN LTD.'S REPORT ON SUSTAINABILITY ACTIVITIES IN THE ORIENTAL UNION CHEMICAL CORPORATION's CORPORATE SOCIAL RESPONSIBILITY REPORT FOR 2018

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 2018 (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 2018 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 2018.

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 requirements of Global Reporting Initiative Sustainability Reporting Standards (100, 200, 300 and 400 series) claimed in the GRI content index as material and in accordance with.

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, RBA, 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 2018 verified is accurate, reliable and provides a fair and balanced representation of OUCC sustainability activities in 01/01/2018 to 12/31/2018.

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, CSR experts, and other stakeholders are implemented to underpin the organization's understanding of stakeholder concerns. For future reporting, OUCC may consider having more direct two-ways stakeholder engagements.

Materiality

OUCC has established effective 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 CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

The report, OUCC's CSR Report of 2018, 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), as well as impacts that occur as a result of the organization's business relationships with other entities in its value chain. When reporting on goals and targets for each material topic, the expected results are suggested to be set, if applicable, with quantitative objectives.

Signed:
For and on behalf of SGS Taiwan Ltd.

AA1000 Licensed Assurance Provider 000-8

David Huang
Senior Director
Taipei, Taiwan
10 June, 2019
WWW.SGS.COM

2018 Management Approach of Material Topics

SDG	Material Topics	The Purpose of the Management Approach	Policies	Goals	Grievance Mechanisms	Assessment Mechanisms	Management Approach and Results (page)
16	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"	● Transparent governance ● Stable and continuous income	Stakeholder Contact line (shareholder/investor): 02-2719-3333#230	Independent directors, supervisor system, and evaluation by the relevant authority	32-38
6 7 8 9 11 12 13 14	Energy Emission	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.	"Responsible Care Chapter"	Use carbon emissions in 2015 as the benchmark and reduce by 1% every year. Accumulated carbon reduction of 29,000 t-CO_2e	Business contact: 07-6413101#2302	ISO 14001 Environmental Management System ISO 50001 Energy Management System ISO 14064-1 Greenhouse Gas Inventory Domestic environmental law	86-95
	Water	OUCC faces up to the water resources issue and makes efforts to improve the utilization of water resources through process improvement.	"Labor Health Protection Rules" "Responsible Care Chapter"	Use daily water consumption in 2016 as the benchmark and commit ourselves to achieve 1,000 tons of reduction in water consumption by 2020			96-99
	Effluents and Waste	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" "Safety, Health and Environmental Protection Policy"				98-99
	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.	"Domestic and foreign environmental regulations" "Responsible Care Chapter"	Meet regulatory requirements, zero environmental incidents			100-103
	Supplier Environmental Assessment*		"Rules Governing Suppliers" "Safety, Health and Environmental Protection Policy"			100% of forwarders should implement the RSQAS	77, 80-83 120-122
3 5 8 9 16	Employment Labor/Management Relations	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"	● Complete and excellent employee care ● Employee-friendly workplace ● Zero labor rights and interests damage incident	Stakeholder contact line (employee): 02-2719-3333#281	OHSAS 18001 Occupational Safety Management System Labor union, Collective bargaining agreements Domestic employment law	56-71
	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"	Zero workplace disaster			69-70 110-119
	Human Rights Assessment	OUCC strictly abides by the labor and human rights-related laws and regulations of the government, and treat all people fairly.	"Code of Conduct and Ethics"	100% human rights training			60
	Customer Privacy	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.	"Regulations for Information Security Management"	Zero customer privacy damage incident	Stakeholder contact line (customer): 02-2719-3333#331	Customer satisfaction survey	72-75
	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"	100% compliance with local regulations		Domestic socioeconomic law	103

Note: 1. * indicates the material topic added this year because the chemical industry is more strictly controlled by government and the cooperative suppliers and storage and transportation companies need to be more professional.
2. In recent years, there has been no violation of the health and safety of products and services, indicating successful management. Therefore, customer health and safety is not considered in the major topic this year.

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GRI 307: Environmental Compliance 2016	307-01	Non-compliance with environmental laws and regulations	103	No occurrence of major incident
GRI 308: Supplier Environmental Assessment 2016	308-01	New suppliers that were screened using environmental criteria	81	
		Standards GRI 400 Social		
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GRI 402: Labor/ Management Relations 2016	402-01	Minimum notice periods regarding operational changes	59	
GRI 403: Occupational Health and Safety 2016	403-01	Workers representation in formal joint management–worker health and safety committees	112	
	403-02	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	118	
GRI 412: Human Rights Assessment 2016	412-02	Employee training on human rights policies or procedures	60	
GRI 418: Customer Privacy 2016	418-01	Substantiated complaints regarding concerning breaches of customer privacy and losses of customer data	72	No occurrence of related incident
GRI 419: Socioeconomic Compliance 2016	419-01	Non-compliance with laws and regulations in the social and economic area	103	No occurrence of major incident