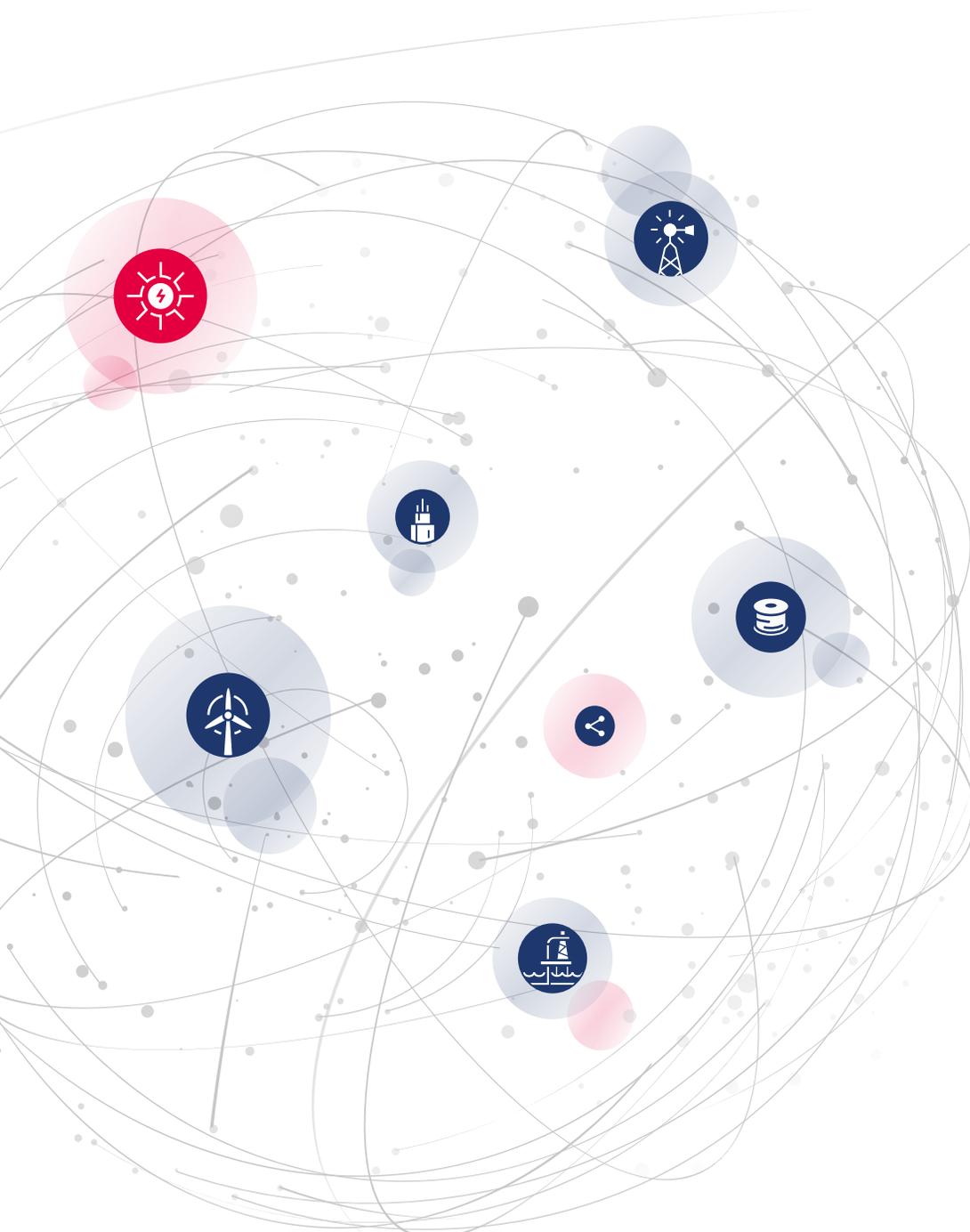


2018-2019

Sustainability Report + Annual Report

Enable the Cabled World



About This Report

The 2018-2019 LS C&S Sustainability Report is our ninth sustainability report prepared to share with our stakeholders the last year's performance in economy, environment and society. To increase the credibility of the report, internal policies for sustainable management were analyzed and the result of an employee survey was reflected through a material assessment. In addition, reports from other domestic and overseas companies within the industry were applied as references. We will continue our efforts to communicate and listen to our stakeholders to provide information that meet their needs.

Reporting guidelines

- GRI (Global Reporting Initiative) Standards
- UN Sustainable Development Goals
- ISO 26000

Reporting period

- From January 1 to December 31, 2018 (published annually)
- Three-year data from 2016 to 2018 is provided to keep track of performance trends.
- Performances and issues in 2019 that are considered meaningful and in need of reference are included and the point of time is specified.

Reporting scope

Domestic worksites (the head office, Gunpo R&D center and plants in Gumi, Indong, and Donghae) and domestic and overseas subsidiaries

Assurance

For the credibility of this report, internal review by the management and third-party verification were conducted.

Publication date of the latest report

May 2018

Currency

All financial figures are presented in KRW in the report in Korean and in USD in the English version. All won amounts are expressed in U.S. dollars at US\$1:KRW1,180.1 the exchange rate in effect on December 31, 2018.

Data collection

- We processed and used the data collected from seven working committees through the information management system.
- If there are any changes in a data collection method, adjustment is made using the 2018 method and details are specified in the report.

Key changes in terms of the size, structure, and ownership of the organization

None

Website: http://www.lscns.co.kr/kr/intro/sustainability_system.asp
 Address: LS Cable & System Sustainability Coordination Group, LS Tower, 127 LS-ro, Dongan-gu, Anyang-si, Gyeonggi-do, Korea
 E-mail : csr@lscns.com
 Tel : +82-2-2189-9104

Enable the Cabled World

Overview

Chairman's Message	02
President's Message	04
About LS C&S and its Businesses	06
Our Products	08
Company Vision and Philosophy	10
Global Business	12
Key Achievements	14
Achievements in the LS C&S Way	16
Corporate Governance	18
Risk Management	19
Opportunities in the Cable Industry	22
Sustainable Management System	24
Materiality Assessment	28

10 Key Topics (Special Themes)

1. Customer First	
New Technology and Products	34
Quality and Product Responsibility	44
2. One LS C&S	
Social Contribution	52
Shared Growth	56
Respect for Human Rights and Diversity	62
3. Rule&Responsibility	
Compliance Management	66
Ethical Management	69
Workplace Safety	72
4. Expertise	
Talent Management	76
Advanced Green Management	84

Appendix

Consolidated Statements of Financial Position	95
Consolidated Statements of Comprehensive Income	96
Consolidated Cash Flow Statements	97
Separate Statements of Financial Position	98
Separate Statements of Comprehensive Income	99
Separate Cash Flow Statements	100
Independent Assurance Statement	101
GRI Standards	103
Additional Information	105

LS (Leading Solution)

For LS Cable & System, sustainable management means our belief in the value of going forward together. It is not simply a resolution, but something that must be put into action on a daily basis. We resolutely believe in and act upon our vision 'Enable the Cabled World' to enhance the quality of life of our stakeholders, including suppliers, customers, investors, and local communities. Our goal for sustainable management is to create a society defined by coexistence and a prosperous future.

Chairman's Message

LS C&S has been striving to achieve sustainable growth through proactive communication with our shareholders, customers, employees, suppliers, and local communities and through the promotion of an organizational culture with work-life balance.

Distinguished stakeholders,

On the occasion of the publication of our ninth sustainability report, I would like to take this opportunity to express my gratitude to all the stakeholders in our enterprise for your continued interest and support.

Over the last half-century, LS C&S has contributed to a solid foundation for the development of the international cable industry and fueled the global economy through the construction of telecommunications and power-distribution networks. Utilizing our hard-earned experience and expertise, we are aiming for a world where everyone has access to energy and information without any constraints of time and space.

Rapidly changing market environments at home and abroad have increased uncertainty. In response, we have been proactively addressing challenges through refinements and innovations targeting sustainable and high-quality growth since 2016.

We have devised and implemented strategies tailored to the needs of respective markets, which has allowed us to identify new business opportunities around the world. Our efforts at developing an innovative business model will keep us prepared for shifting business environments and future uncertainty.

Meanwhile, in order to ensure our sustainable growth, we have focused on proactively communicating with our shareholders, customers, employees, suppliers, and local communities while promoting an

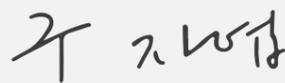
organizational culture of work-life balance.

In 2018, numerous strategies, including our 'leaving the office on time' campaign and 'PC-Off' (automatic shutting off of office computers) system, were pursued in an effort to enhance productivity and performance by concentrating work and ensuring work-life balance.

Success in our endeavors is the key to preserving our company's growth. To keep our business sustainable, it is essential to maintain a positive corporate culture. We will do our utmost to uphold a culture that encourages employees to be proactive at work, heighten their competitiveness while supporting a healthy work-life balance that allows them a greater sense of control and ownership over their lives.

Moving forward, we will continue our efforts at promoting the growth of both the company and our employees and lock in future competitiveness. By thoroughly communicating with our stakeholders and fulfilling our corporate social responsibility, we will offer the best possible service to customers and become a trustworthy partner creating ever-greater value.

Thank you.



Chairman **Koo Cha-Yub**



President's Message

LS C&S will continue its efforts to promote communication and cooperation with its stakeholders and fulfill its social responsibility, contributing to improving quality of life and building a brighter future.

Distinguished stakeholders,

The 2018-2019 LS C&S Sustainability Report is published to transparently share with our stakeholders the achievements and future directions of our economic, social, and environmental activities in support of sustainable management.

Over the last year, the global economy experienced turbulence stemming from the trade war between the US and China and sluggish economic growth in the EU. Despite unfavorable global market conditions, we dedicated ourselves to expanding sales and winning additional contracts by identifying emerging markets and securing new customers. As a result, total order volume for 2018 reached a record high for the second consecutive year and sales broke the USD 3,577 million level for the first time in five years.

Meanwhile, in order to support a corporate culture that promotes work-life balance, a wide range of programs have been operated to help our employees gain both enhanced productivity at work and improved quality of life.

Over the course of this coming year, we will continue our efforts to meet the expectations of our customers, employees, and local communities by achieving robust business performance while promoting sustainability through activities for ethical and quality management and shared growth.

In particular, we will focus on quality management to

attract additional customers since product quality is the key in the manufacturing industry to win the trust of customers. To ensure quality, we will do our utmost to heighten our technological capacity and reach our goal of 'zero failures' for product quality and customer requirements.

Our focus will also be on nurturing talent. Long-term company policies will be formulated to strengthen employee competitiveness and solidify the fundamentals that determine the survival of a company.

In order to fulfill our corporate social responsibility, we are conducting a wide range of local social contribution activities in the areas around our subsidiaries. To achieve shared growth, we are also providing financial and training support to our suppliers.

LS C&S will sustain its efforts to promote communication and cooperation with its stakeholders and fulfill its social responsibility, contributing to improving quality of life and building a brighter future.

We look forward to your support and appreciate your interest in our efforts.

Thank you.

President **Myung Roe-Hyun**



About LS C&S and its Business

Company profile

LS C&S, a global leader in industrial electricity, electronics and materials is providing state-of-the-art products, including HV/EHV, superconducting, submarine and telecommunication cables to energy agencies and telecommunication companies. In addition, our focus is also on identifying new growth engines such as HVDC cables and components of electric vehicles to become a leading company in the global energy and IT industries.

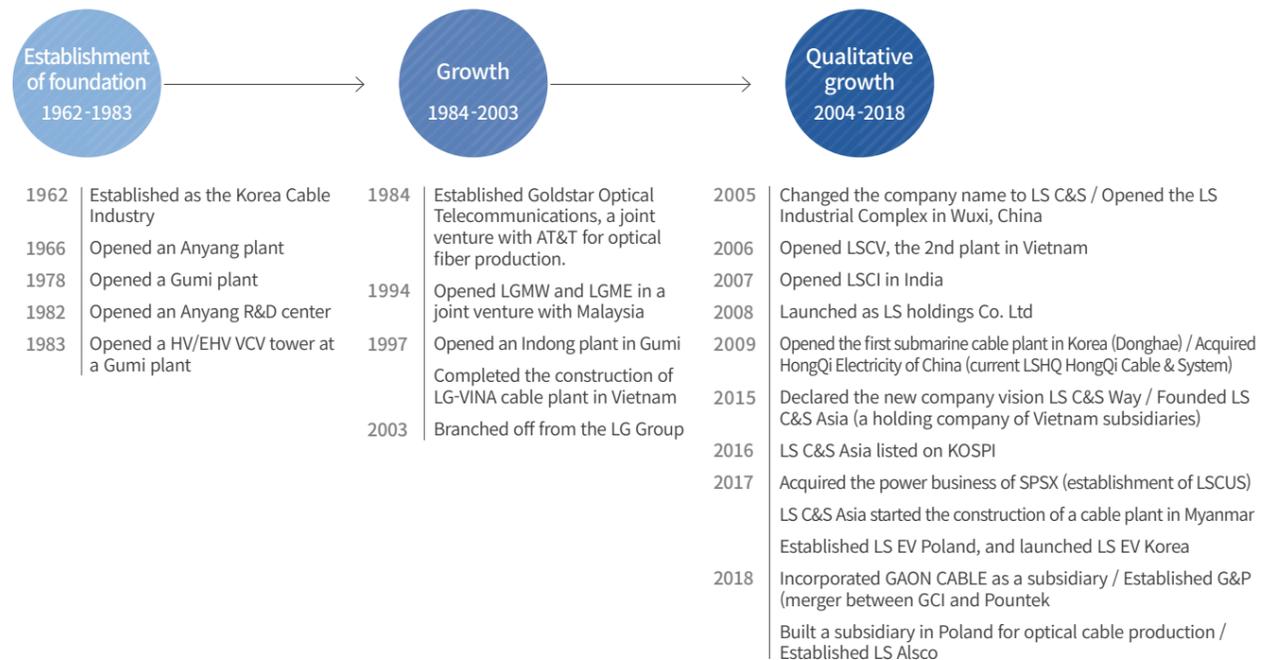
Company name	LS Cable & System
Head office	12th-16th Fl. LS Tower, 127 LS-ro, Dongan-gu, Anyang-si, Gyeonggi-do, Korea (zip code: 14119)
Domestic worksites	Plants in Gumi, Indong and Donghae
President	Myung Roe-Hyun
Date of establishment	May 1962
Primary products	Power/telecommunication/industrial cables and materials
Subsidiaries	5 domestic subsidiaries and 14 overseas subsidiaries

*as of Dec. 31, 2018

Company information * as of the end of December 2018; consolidated

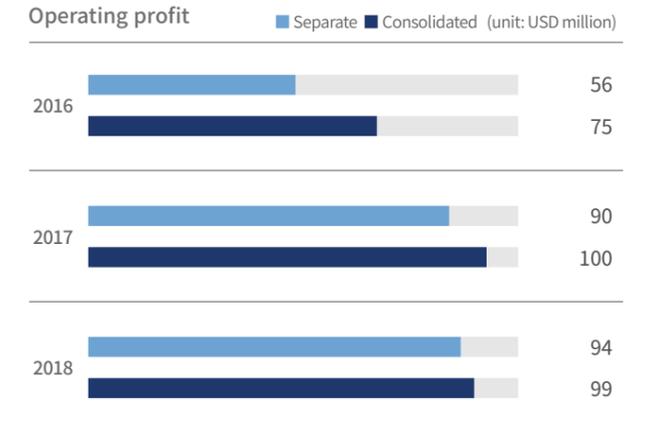
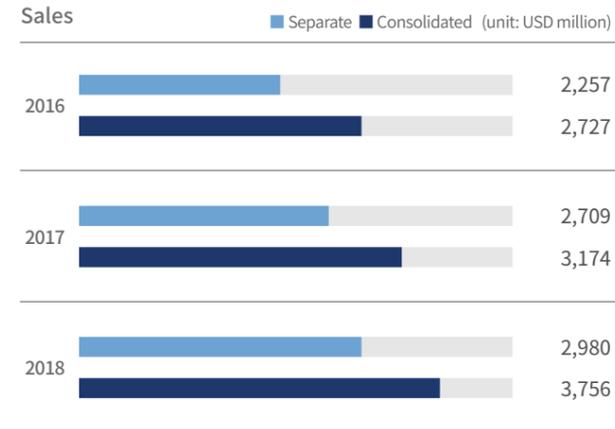


History

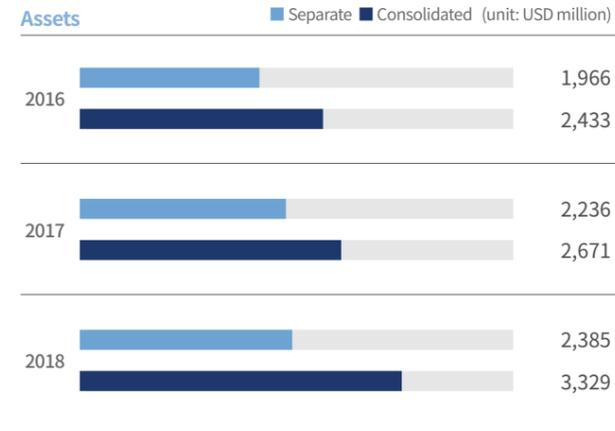


Financial results

Consolidated sales for 2018 was recorded at USD 3,756 million, a year-on-year increase of USD 582 million, surpassing the USD 3,577 million mark for the first time in five years. Operating profit rose to USD 99 million similar to that of the previous year and earnings before tax increased by USD 26 million to USD 108 million since total order volume for 2018 reached a record high through proactive investment and strategies tailored to customer needs. As of the end of 2018, the total amount of assets stood at USD 3,329 million, a rise of USD 703 million year on year mainly due to increased tangible assets and trade receivable from expanded sales. Our financial structure has improved from the previous year with USD 2,337 million for debt, USD 992 million for equity, and 235% for debt-equity ratio.



Financial structure



Membership

- Korea Personnel Improvement Association
- SERI CEO
- Korea HRD association
- Anyang Reserve Commander Association
- Korea Emergency Planning Council
- Korea Employer's Federation (KEF)
- Anyang Chamber of Commerce
- Korea International Trade Association (KITA)
- Fair Competition Federation
- Korea Listed Companies Association
- Korea Electric Wire Industry Cooperative (KEWIC)
- Korea Engineering & Consulting Association (KENCA)
- Korean Institute of Electrical Engineers (KIEE)
- Korea Electric Association
- Korea Electrical Manufacturers Association
- Korea Electrical Contractors Association
- Korea Information and Communications Contractors Association (KICA)
- CIRED KOREA
- ICF
- Korea Wind Energy Association
- FTTH Council Asian Pacific
- Korea Rolling Stock Industries Association
- Korea Railway Association
- Korea Defense Industry association
- Foundation Fieldbus Association (FieldComm membership)
- Korea Profibus Association
- CLPA (CC-Link Association)
- ODVA
- CIGRE Korea

Our Products

Energy

Overhead transmission line



This is mainly installed in steel towers for long-distance power transmission. OPGW (optical ground wire) is overhead ground wire to which telecommunication features have been added.

HV/EHV cable



This efficiently transmits large-capacity power with a voltage of 154kV or higher.

Busduct system



This has the advantage of distributing power efficiently in confined spaces with a high demand for electricity, such as factories or apartment buildings.

Power distribution cable



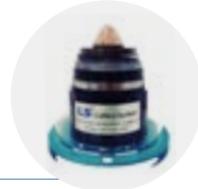
This supplies power at 0.6/1kV to 22.9kV to residential and commercial buildings and industrial distribution circuits.

Superconducting cable system



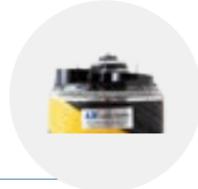
This transmits and distributes large quantities of energy with little loss since there is minimal electrical resistance.

HVDC cable



This supports long-distance transmission with reduced power loss by converting AC to DC.

Submarine cable system



This can be installed along the ocean floor to allow electric power transmission and communications between islands or between the mainland and an island.

Industries

Industrial cable



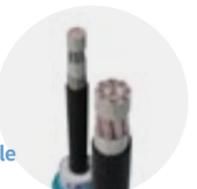
These are used to supply signals and power to electric and electronic devices and industrial robots.

Automotive cables and harnesses and modules for electric vehicles



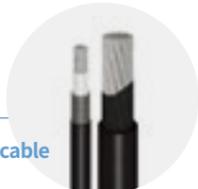
These are used to provide power to all devices required in a vehicle.
* Products of LS EV Korea (LSEVK)

Military cable



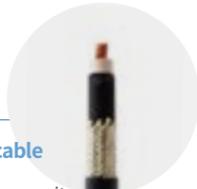
This is used to for signaling and powering military vehicles, including tanks, aircraft, and naval vessels.

Rolling stock cable



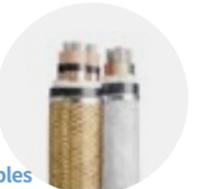
This is used to power and control various rail vehicles, such as subway cars and high-speed electric trains (KTX).

Wind power cable



This is used to transmit to transformers the electricity generated from onshore and offshore wind power generators.

Marine and offshore cables



These are used to power and control ships (such as an oil tanker or container ship) and oil-drilling facilities, and also for telecommunications on such ships and facilities.

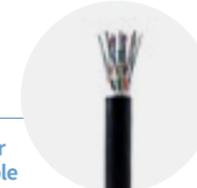
Telecommunications

FTTA (Fiber to the Antenna)



This is installed in wireless base stations to efficiently send electric power and optical signals to an antenna.

Optical fiber /Optical cable



This delivers large-capacity data rapidly and accurately by sending communication signals using light.

FTTH (Fiber to the Home)



This provides high-speed internet service to homes using optical fiber cables.

LAN (Local Area Network)



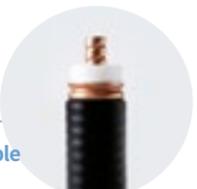
This allows high-speed telecommunications networking within limited geographic areas.

Structured cabling system



This supports the planned installation and operation of cables used for communications equipment and personal computers within buildings.

Coaxial cable



This stably transmits a high frequency signal from base stations to antennas using broadband

Materials

Copper wire



This is high-purity copper wire made exclusively with electrolytic copper to minimize the loss of electricity.

Aluminum



This is made of lightweight, high-strength aluminum with elevated conductivity.

Magnet wire



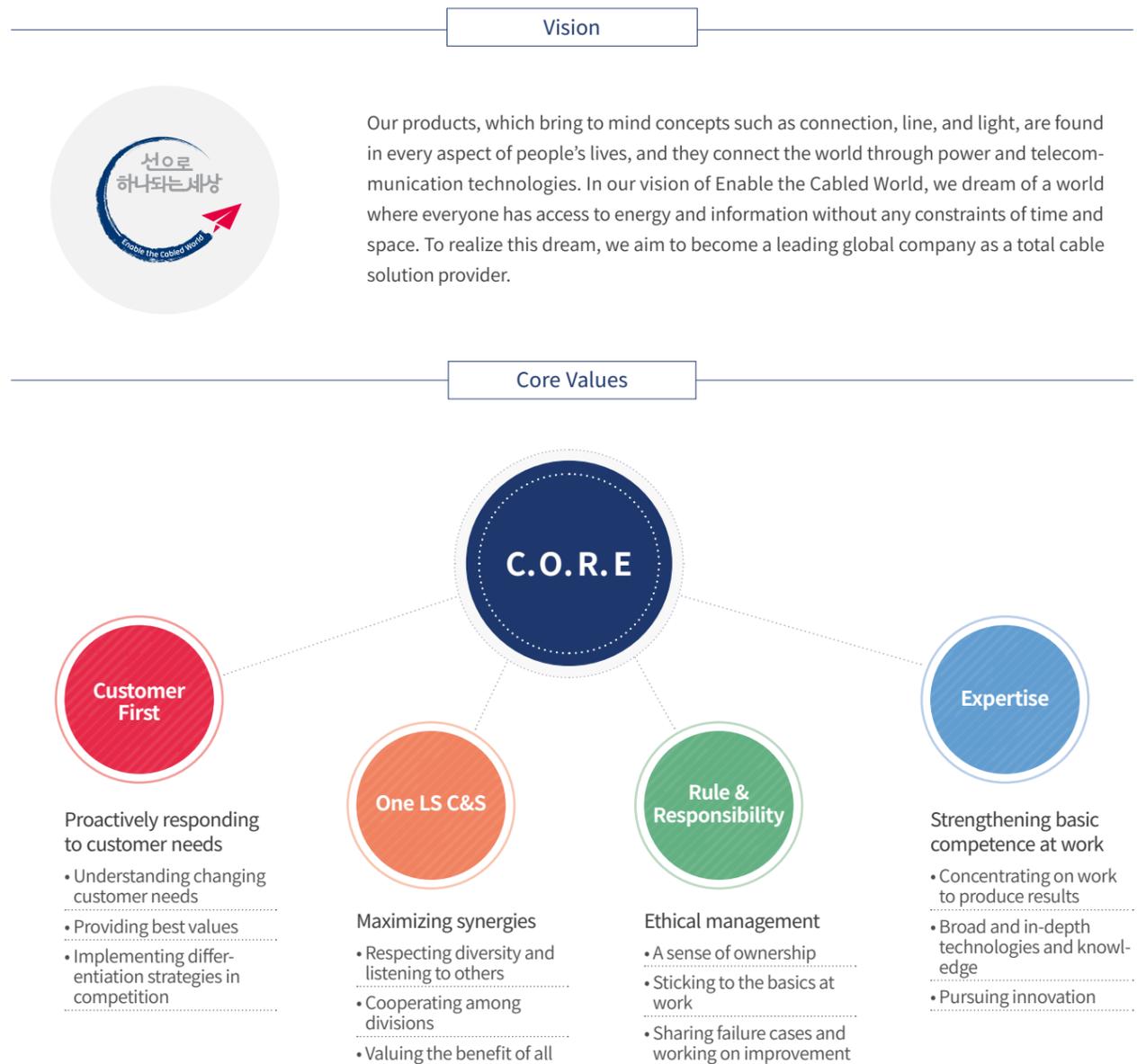
This is used to convert back and forth between electric and mechanical energy in electrical or electronic devices.

Company Vision and Philosophy

LS C&S is striving to fulfill its responsibility to meet the unique needs of its customers as a cable system manufacturer and provider while offering the best possible value to stakeholders as a trusted partner making life more convenient and prosperous. To this end, we will continue our efforts to devise innovative business models and implement management strategies based on willing winning the respect of our stakeholders.

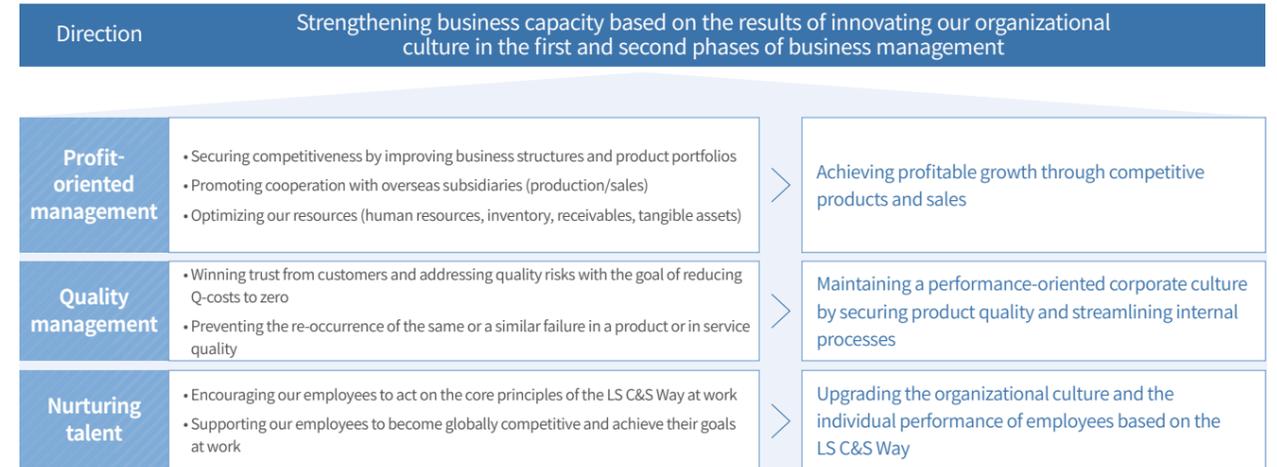
LS C&S Way

Our LS C&S Way ideal provides a future direction and value system for LS C&S. It consists of the company's vision and core values that inspire the principles on which employees act.



Management policy in 2019

Top priorities for 2019 will include operating businesses for profitable growth, promoting quality, and strengthening the capacities of our employees as our efforts at encouraging all employees to contribute to increasing sales and operating profits, strengthening our business portfolio, and promoting an organizational culture of work-life balance produce results in the second phase of our business management.



Corporate philosophy - LSpartnership

LS Group affiliates are joining forces to become globally competitive by sharing and practicing the corporate philosophy of Greater Value Together. Despite increasing uncertainties and sluggish growth in the global economy, we will continue our efforts to become a global leader in the industry based on Lpartnership.

Lpartnership means employees armed with a sense of ownership achieve superior performance through mutual respect, care, and trust. They cooperate based on open-mindedness and grow together with our stakeholders. Lpartnership was created with the participation of all members of LS Group and provides the philosophy upon which employees should act. It serves as a driving force that will bring about a new future. By practicing Lpartnership, we will create greater value with our stakeholders at home and abroad.

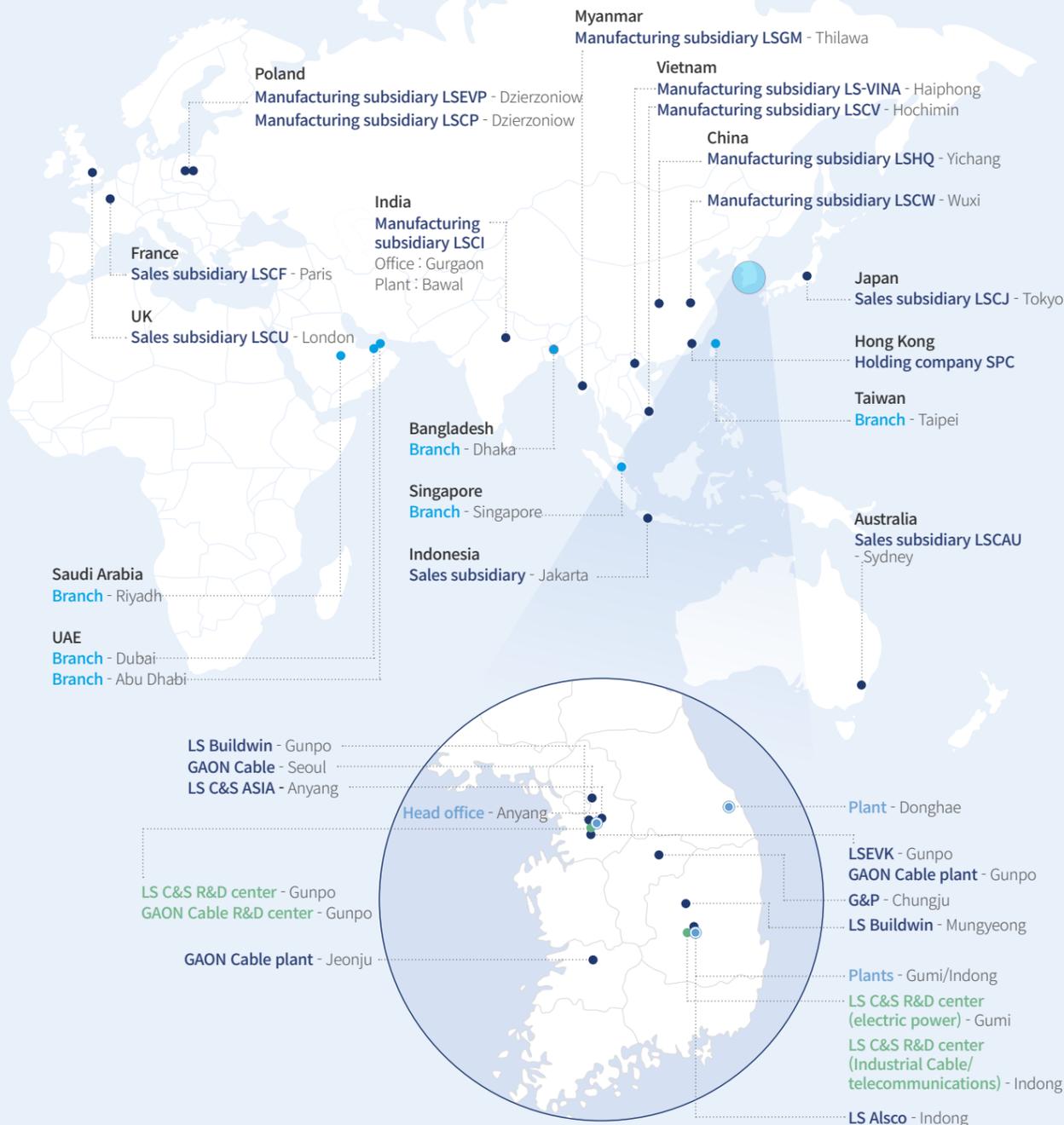


Global Business

18 countries — 18 plants — 4 R&D centers

● LS C&S ● Subsidiary ● Branch ● R&D center

* as of the end of March 2019



LSCW



Location	Wuxi, China
Date of establishment	2003
Building area	34,415m ²
Employees	349
Primary products	Automotive cables; industrial cables tubes, H&M, AL PFC
Annual capacity	1,680 million meters of industrial cables; 557,000 units of H&M; 2,400 tons of AL PFC; 54,000 sets of BD

LSHQ



Location	Yichang, China
Date of establishment	2009
Building area	141,587m ²
Employees	438
Primary products	Primary products HV/EHV cables; power distribution cables; overhead transmission lines; industrial/specialty cables; submarine cables
Annual capacity	558km of HV/EHV cables; 3,276km of power distribution cables

LS-VINA



Location	Haiphong, Vietnam
Date of establishment	1996
Building area	29,337m ²
Employees	480
Primary products	HV/EHV cables; power distribution cables; copper rod
Annual capacity	63,000km of power cables, and 100,000 tons of copper rod

LSEVP



Location	Dzierzoniow, Poland
Date of establishment	2017
Building area	6,000m ²
Employees	25
Primary products	Inter-connection board for EV batteries
Annual capacity	200,000 sets

LSCUS



Location	Tarboro, US (plant)
Date of establishment	2017
Building area	54,000m ²
Employees	151
Primary products	MV(Cu, Al), LV, C&I
Annual capacity	4,044 tons of MV; 7,800 tons of MV; 1,356 tons of C&I

LSCP



Location	Dzierzoniow, Poland
Date of establishment	2018
Building area	6,000m ²
Employees	97
Primary products	Optical cables
Annual capacity	124 million fiber kilometers

LSCI



Location	Gurgaon/Bawal
Date of establishment	2007
Building area	29,000m ²
Employees	190
Primary products	Primary products Tele-communication cables (RF/FTTA); HV/EHV cables; and OPGW
Annual capacity	10,200km (RF cables); 720km (HV); 600km (MV); 360km (LV); 3,000km (OPGW)

Key Achievements

We would like to share our achievements in 2018 in product development, new contracts, and investment with LS C&S stakeholders. Based on the results, we will continue our efforts to become a top-tier player in the industry as a total cable solution provider.

01 Facility investment in Europe

We invested USD 12,521 thousand to build an optical cable manufacturing facility at our subsidiary in Poland in order to compress the delivery process and prepare for economic regionalization in Europe. Through this new facility, we aim to increase our European market share that has hovered in the 1-2% range to 10%.

— April 2018



We signed a 67 million-dollar (72 billion won) two-year exclusive contract with Singapore's EMA to supply 22kV cables. This achievement was possible due to our price competitiveness and the good reputation we have built through previous contracts. This contract is meaningful since it indicates that our technology is recognized in the Singapore market for its high quality standards.

— April 2018



02 Winning an MV cable supply contract from Singapore's Energy Market Authority (EMA)

03 Achieving the world's first HVDC cable certification

We recently became the first producer in the world to acquire HVDC cable certification. A pre-qualification (PQ) test for 500kV DC cables was conducted at the Donghae plant over six months with observers from the Korea Electro-technology Research Institute (KERI) in attendance. The technology applied to the product was awarded official certification. This technology is held by only five companies worldwide.

— May 2018



04 Signing a preferred supplier contract with Western Power

We recently concluded a five-year contract with Western Power. As a preferred supplier, we will provide 60% of Western Power's low- and medium-voltage cable orders for five years. This is the largest achievement in the two years since the establishment of our sales subsidiary in 2016. Seizing this opportunity, we will step up our efforts to increase our market share in Australia.

— June 2018



05 HV/EHV cable supply for Hornsea Project Two

We signed a USD 35,775 thousand contract with Ørsted, a Denmark-based power company. We will be supplying HV/EHV cables for Hornsea Project Two, helping build the world's largest offshore wind farms in the seas off of the UK.

— September 2018

Our tube products were placed on the Quality Products List of the US Defense Logistics Agency. Prior to registration on the QPL, the tubes underwent rigorous testing in thirty categories over the course of two years, including for tensile strength and thermal shock. Leading global chemical companies such as 3M are also on the list in the same product category. As only products on the QPL can be used for tanks, armored vehicles, and fighters starting from the second half of 2019, the sales of our tube product are expected to rise.

— September 2018



06 LS C&S tube products listed on the QPL by the US Defense Logistics Agency

07 Winning a bid to supply HV/EHV cables to the EWA of Bahrain

We signed a 125.55 million dollar (142.4 billion won) turnkey contract with the Electricity & Water Authority of Bahrain. LS C&S will be responsible for the supply of 400kV HV/EHV cables as well as electric and engineering work on a project to construct new electrical grids across the nation.

— September 2018

Achievements in the LS C&S Way

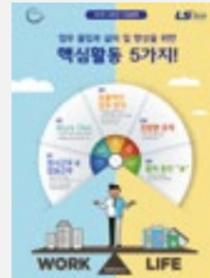
Since the declaration of LS C&S Way in 2015, a wide range of activities have been conducted to encourage employees to understand the meaning and importance of its core values and act on them. We will concentrate our efforts to reduce the inefficiency at work so that employees can take the initiative and concentrate on their works to produce results.



Concentrating on working during office hours and leaving the office on time

To establish a work environment in which employees can concentrate on their work during office hours and leave the office on time, announcements with background music have been made on an in-house broadcasting station at the start and end of office hours since March 2018.

This has helped minimize confusion from the PC-Off (automatic powering down of office computers) system implemented in July, and employees have begun feeling comfortable with leaving work on time. Meanwhile, a weekly in-house broadcasting program called Happy Wednesday Evening is being operated to deliver thank-you and encouragement messages from employees and their family members.



Work Diet workshop for teams

To reflect the resolute commitment of management to a corporate culture promoting work-life balance and to respond to changes stemming from a transition in generations within the organization, it is essential to eliminate inefficiencies at work. As a response, Work Diet workshops were held for diverse work teams. From May to July, a total of 82 teams individually conducted a two-day workshop at the LS Group training institute or at their worksites.

At these workshops, a total of 240 inefficiencies were identified at the head-office level and 640 at the enterprise level. In addition, 1,000 requests or expectations for cooperation among teams were raised. We have categorized these into eight areas and have begun work with the pertinent teams on improvement measures.



Healthy and vital organization

To help employees concentrate on their work by relieving stress at work and at home, we have instituted counseling offices across all of our domestic worksites. Employees can receive support for job stress, interpersonal relationships, marital concerns, and childcare issues.

To help employees better understand their state of mind and promote mutual understanding, we are operating programs including blood pressure tests, stress diagnosis, psychological examination using drawings, dreamcatcher making, 'chemistry between you and me' couples counseling, diffuser making using natural aroma oils, and yoga lessons. For employees with examination or test results that require attention,

the offices help them learn to deal with stress. In addition, smoking cessation programs are being run at worksites to raise awareness of employee health.

Starting from 2018, sandwich days falling between holidays are designated as company holidays. We are also encouraging people to use all of their assigned annual vacation days so that they can fully refresh themselves and restore their energy. Meanwhile, a system that powers down workplace computers outside of office hours was implemented to encourage employees to concentrate on their work during business hours and leave the office on time.



Efficiency at work

We have conducted improvement activities for work efficiency. Rather than simply reducing working hours, these activities are designed to help employees concentrate on their work and maximize their performance by eliminating inefficiencies at work.

For the success of these activities, the role of team leaders is critical. In response, each team made a list of consensus under the title of "Leaders, Promise Us the Following" and put it on the wall of the offices to encourage team leaders keep their promise. In addition, activities to adjust the frequency and duration of meetings were conducted at the business Group level.



Corporate culture promotion activities and organizational diagnosis for subsidiaries

As the role of our subsidiaries has become increasingly important in our business, activities are conducted to help them understand and promote the vision and core values of LS C&S. Core Communicators representing each domestic subsidiary are selected and they participate in our C.C meeting to share our corporate culture while making and implementing their own annual plan.

Meanwhile, a survey aimed for diagnosing their organizational competence and vitality was conducted for three domestic (G&P, LS Buildwin and LS EV-Korea) and five overseas (LS-VINA, LSCV, LSHQ, LSCW and LSCI) subsidiaries. Based on the result, improvement activities will be implemented at the subsidiary level.

Other programs for organizational vitality

Following the previous year's activities, "Core-up" activities were conducted and led by the Core Communicators of each Business Group according to its particular needs. At the team level, a variety of activities, including birthday parties, 'lunch together', 'let's compliment each other', and team-based learning were conducted. LS Homepany programs were also provided at the company level with the aim of strengthening employee loyalty, such as Family Happiness Camp, Dream Camp (for children), Go Camp (for adolescents), and Camp with Daddies. At these activities, LS C&S employees and their families joined in and gained a chance to come to further understand each other and strengthen their family bonds.

In addition, overseas training for organizational vitality has provided for model employees since 2014. In 2018, a total of 81 employees participated in international exhibitions and conferences held in 16 countries in Europe, North and South America, and Asia. Participants reported that the training program gave them an opportunity to observe global trends and refresh themselves through new cultural experiences and hoped this program will be extended to benefit more employees.



Corporate Governance

Promoting management efficiency and transparency

Auditor

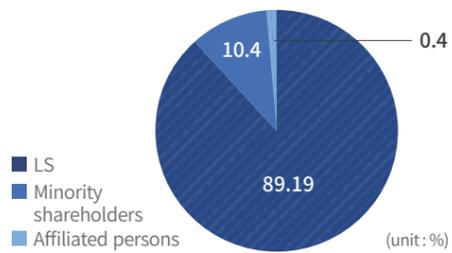
We have one auditor in compliance with the related laws and articles of association in order to secure management transparency and legality. To inspect and verify internal accounting and affairs, the auditor investigates overall financial status or requests accounting managers or subsidiaries to immediately submit their sales reports as needed. In the general meeting of shareholders, auditor is selected and appointed among those who have no reason for disqualification under the commercial law.

Auditor profile : the profile details and background information of the auditor are specified in the published sales and business reports.

Enhancing shareholder value

Shareholder composition (As of the end of Dec. 31, 2018)

I Shareholder composition I



Dividends

Dividends are determined from within available profit by considering the management environment, investment needs for the sustained growth of the company, and shareholder interests. They are paid by the resolution of the board of directors and the general meeting of shareholders. In 2018, USD 8,407 thousand worth of cash dividends were paid, and the company's cash payout ratio based on consolidated financial statements stood at 11%.

	2016	2017	2018
Cash dividends total (USD thousand)	84	84	84
(Consolidated) cash payout ratio (%)	133.4	19.0	10.9

BOD composition

Directors are appointed at the general meeting of stakeholders. Candidates are selected by the board based on their experience and expertise in industrial environments, finance, and law. As of the end of 2018, the BOD features four internal directors. Chairman Koo Cha-Yub was appointed chair considering his crisis responsiveness skills, expertise, and responsibility. President Myung Roe-Hyun is serving as a director.

Board of directors (BOD)

BOD status (As of the end of Dec. 31, 2018)

Name	Appointed as	Recommended by	Responsibility	Transaction with the company	Relations with the largest and major shareholders
Koo Cha-Yub			Chairman	-	
Myung Roe-Hyun	Internal director (full-time)	BOD	President	-	Executive of the affiliate of LS Group
Ju Wan-Seob			CSO	-	
Lee Sang-Ho			CFO	-	

Board Meetings

The Board Meetings are held on a regular basis according to the pre-established annual plan. Special meetings are convened for prompt decision-making on major agenda items. In 2018, 18 board meetings were held in which a total of 37 items were resolved, including the establishment of a joint-venture sales subsidiary in Indonesia.

Evaluation and compensation

Executives are evaluated in accordance with performance indicators linked to the company's business goals and evaluation criteria for financial and non-financial performance. Remuneration is determined based on quarterly and annual evaluation results to increase accuracy and objectivity. In regard to remuneration of the directors and auditor, incentives are provided according to the evaluation results within the amount approved by the general shareholders' meeting. In 2018, the remuneration limit at USD 6,350 thousand was approved in the meeting.

	Person	Total remuneration	Average per person	Note
Registered director	4	4,105	1,029	-
Audit Committee member or auditor	2	36	18	-
Total	6	4,141	689	-

*The above is the remuneration for the year 2018. The average remuneration per capita is based on the calculation of the total amount of remuneration divided by the number of people.
*In the calculation, the remuneration for Director Lee Hak-Young, who retired during the period from the start of the business year to working on the documents for disclosure, was included.

Director profile

The profile details and background information are specified in the published sales and business reports.

Integrated Risk Management

As an ever-wider variety of business is being conducted to provide products and services that meet different customer needs and the global market rapidly evolves, unpredictable risks impacting business performance are on the rise. In response, we define key risks and pertinent management procedures. By preemptively managing risks, we aim to maintain management stability and soundness, promote corporate value, and create a friendly relationship with stakeholders, ensuring our foundation for sustainable growth.

Risk management system

Risk Management Committee

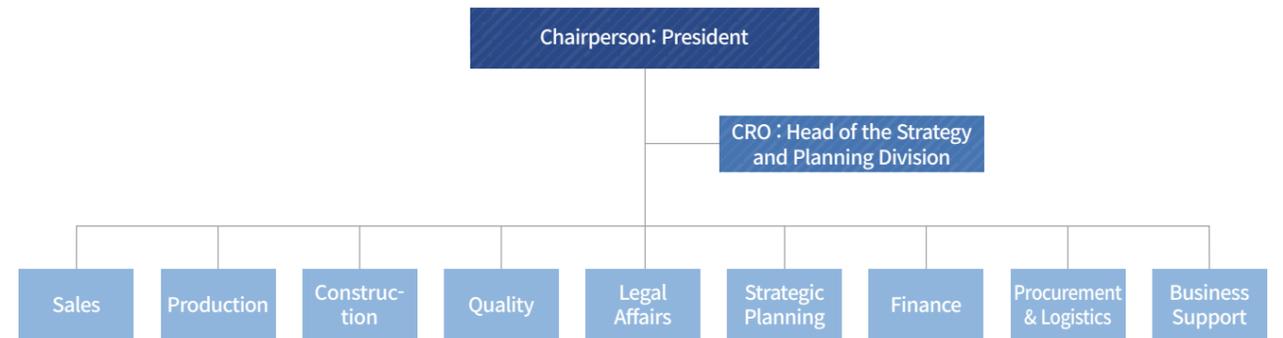
The company-wide Risk Management Committee is the highest decision-making body that reviews the risk status and makes a decision on response measures. The committee is led by the President as the chairperson and the head of the Strategy and Planning Division as the Chief Risk Officer (CRO). Meanwhile, project bidding cases are deliberated on in the Bidding Review Committee; the Copper Futures Committee for copper management; and the Working-level Investment Review Meeting and Investment Risk Review Committee for major investments.

Risk Management Committee meetings

Meetings are held to review the risk status in detail, evaluate potential losses and establish response measures on a quarterly basis (January, April, July, November). If necessary, special committee meetings are convened for which the monitoring team is required to immediately provide the general management team with the report on the risk and its impact on the business.

Risk management organizations

Our risk management activities are conducted by three groups: an execution team, monitoring team, and general management team. The execution team implements action plans and takes response measures when risks occur. The monitoring team makes a risk prevention plan at the Division or Group level and examines risks for prevention. When abnormal signals are detected, the team reports them to the general management team. The general management team establishes a risk management plan at the enterprise level, oversees its status, and operates the company-wide risk management committee.



Integrated Risk Management

Risk management activities by type

Definition

For LS C&S, risk refers to events that could degrade corporate value and uncertainties that will or could impact our achievement of business targets.

Disaster risk

To prevent disasters and occupational accidents and minimize the damage when they do occur, we are conducting management activities including response policy formulation, inspection and diagnosis, and implementation of improvement measures. For accident prevention at plants and construction sites, safety inspections are carried out on a regular basis. At the same time, we have established a management system and are maintaining a dedicated organization to prevent and respond to emergency situations to prevent unexpected accidents such as earthquakes from negatively impacting our efforts to provide value to employees and customers. Even when production is disrupted by a disaster, we are still able to supply products from our overseas subsidiaries through cross-selling. In order to ensure that our subsidiaries provide comparable products, we operate an integrated Control Tower to support and manage the R&D, quality, and production technologies at our subsidiaries in a comprehensive manner.

Risk	Category	Item	Impact	Affected
Disaster risk	Natural disaster	Natural disasters such as typhoons, floods, earthquakes, production and sales snowstorms, thunderstorms	Suspension of production and sales	All
	Accidents	Fires and explosions	Loss due to fires, and casualties, the suspension of production and disruption of process operations	Production
Disaster risk	Disaster risk	Leakage of chemical substances (toxic materials)	Casualties and tarnished corporate images	Production
		Serious accidents (including inhouse suppliers)	Causing victims and disruption of process operations	All
Others	Wars and coups	Disruption of process operations	All	

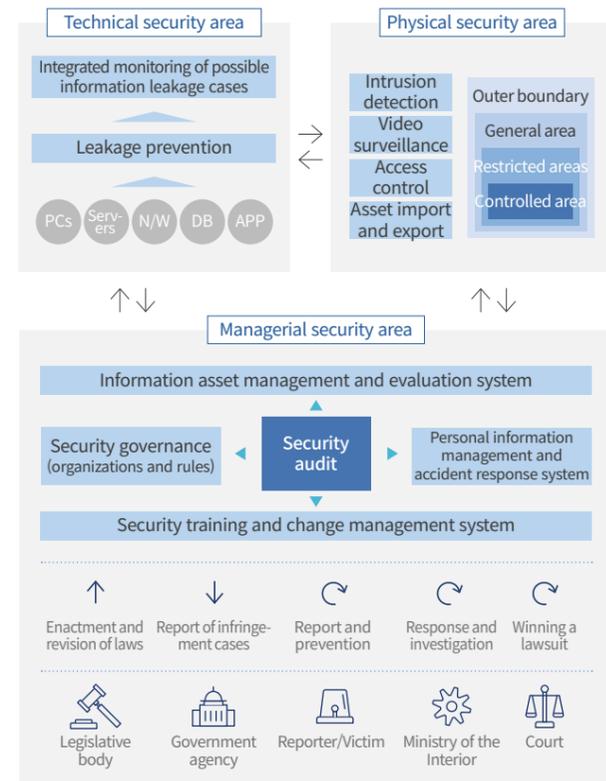
Financial risk

We strictly prohibit currency and derivatives trading for speculative purposes beyond essential risk management. Since price fluctuations in raw materials heavily affect our profit structure, such risks are mitigated through futures trading. In particular, the Copper Futures Committee regularly reviews related risks by sharing information, including copper commodity and futures related issues, operational performance, and market conditions by period. In addition, to minimize risks stemming from fluctuations in foreign exchange rates, we implement a 100-percent foreign currency hedge policy when bidding on international projects. Our debt-to-capital ratio is reviewed on a monthly basis and improvement measures are taken as necessary to maintain capital-structure soundness.

Operational risk

In order to maintain the stability of the IT system, daily data backup for the entire system is conducted and the backup systems and data are stored in a vault to prepare for disasters or accidents. Measures in place to prevent the leakage of corporate and personal information include document encryption, authentication of external storage media, an approval process for exporting PCs, encryption systems, and firewalls. In regards to production, regular equipment inspections are being conducted and a response manual has been established for any case of the disruption of equipment operation.

I System for personal information and corporate security I



Other risks

Strategy risks are the chances that a company's strategy will result in losses due to changes in competitive environment or strategic partners or to a damaged reputation. Regulation risks could occur by violating laws and regulations related to sales, environment, safety and health. We are proactively managing such risks through legal compliance activities since non-compliance could have a serious impact on our business, such as business suspension and closing orders.

Refining risk management criteria

In March 2018, under a policy to refine risk management measures, specific guidelines and examples were provided to help identify risks. Classifications such as disaster, operational, and financial risks can feature room for subjective interpretation. To minimize subjectivity, we devised six new categories: collusion/litigation, debt, quality, withdrawal of business, subsidiaries, and miscellaneous. In addition, examples of cases identified as risks were provided to improve the efficiency of risk management and increase accuracy in profit and loss estimations.

	Examples used as criteria	Risk (Y/N)
Collusion/litigation	Penalties and fines handed down as administrative measures	Y
	Legal claims for payment or damage	Y
	Incidental expenses for court decomposition or litigation (legal fees)	N
Debt	Bad debts	Y
	Overdue debts	N
	Overdue debts related to other issues, such as quality	Y
Quality	Construction loss due to disputes with customers or contractors	Y
	Construction loss due to cost overruns (including costs not reflected in the quotation price)	N
	Losses from inventory disposal due to a large volume of (unusual) defects in process (writing-down the value of inventory included)	Y
	Inventory or loss from development and production activities (such as remaining PP, execution loss, development samples)	N
	Quality claims raised by customers	Y
Withdrawal of business	Asset impairment due to withdrawal of business	Y
Subsidiaries	Impairment of securities, liquidation loss, fund raising	Y
Others	Delivery delay, exceeding planned construction duration, and unpredictable changes on the part of customers (such as contract termination, bankruptcy, unreasonable requests)	Y
	Expenses or losses from ordinary business activities (test/certification fees, taxes, and additional cable length required at the start and end of the manufacturing process)	N

Risk management process

Risk Identification

At this phase, potential cases that may affect the company are identified and then defined as opportunities or risks. Responsible teams host meetings to identify risks of each business process from quotation to contract, production and delivery.

Risk Assessment

This is a phase of determining how much impact identified potential risks will have on our efforts to achieve goals. Qualitative or quantitative methods are used in assessing risks. In the qualitative evaluation method, the likelihood of risk occurrence is indicated as high, moderate, and low while the results using a quantitative method is indicated in the form of frequency, percentage, and numerical value (amount).

Risk Response

Risk response is a phase of establishing and implementing appropriate responses to eliminate or reduce identified risks. Risk responses are largely classified into three steps: setting a goal and strategy; devising measures and management index; and implementing them.

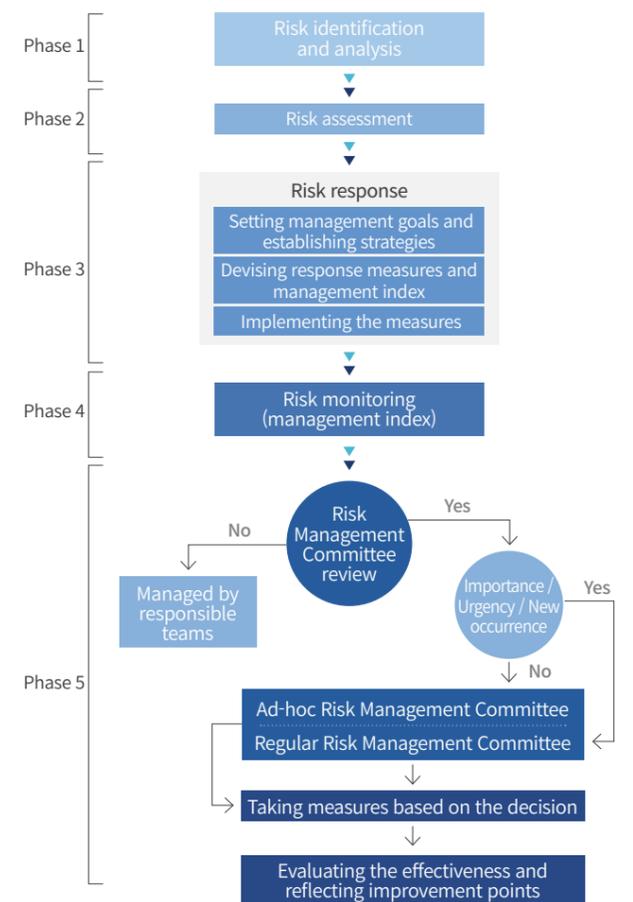
Risk monitoring

Risk monitoring is a phase of conducting a series of activities from review to supervision, observation, and management in order to identify abnormal signs for the defined risks. Monitoring and general management teams check the status of risk cases and response plans and share the results.

Risk report and closing

Risks are reported to management through the Risk Management Committee for their closing. Based on the three criteria, importance, urgency, new occurrence, decisions are made on whether pertinent risks are reported to the committee. Once the risk case is closed, results and completion date are documented.

I Process Map I



Opportunities in the Cable Industry

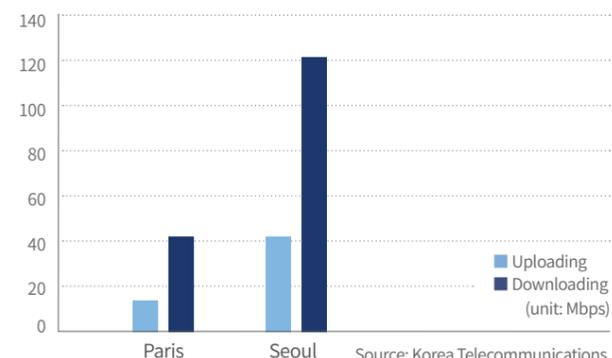
Cable business environment

Increasing European investment in telecommunications infrastructure

Led by France and Italy, investment in 5G network infrastructure in Europe has recently been growing. Telecommunications facilities in many European countries are outdated, and the speed of wireless internet is slower than in other regions. High-speed telecommunications networks with 5G wireless are essential to prepare for the Fourth Industrial Revolution. In response, the French government has announced a plan to invest in high-speed networks prior to the 2024 Olympics in Paris. Investment is actively proceeding under this plan, with a goal of securing 8.5 million subscribers nationwide by 2022. The Italian government has also disclosed a plan to expand telecommunications infrastructure nationwide, which should boost the European optical cable market.

LS C&S established a sales subsidiary in France in April 2017. A manufacturing subsidiary for optical cables was added to our Polish EV part plant with an annual capacity of 3 million fiber kilometers, equivalent to 7% of the European market. In 2018, we won 53 million euros worth of contracts in France and Italy. Moving forward, we will continue our efforts to utilize our subsidiaries in France and Poland to expand our presence and market share.

I Wireless internet speed (Paris vs. Seoul) I



Growing global demand for electricity

Growth in the global cable market is expected to be driven by the power cables needed to meet the forecast rising demand for new and renewable energy and related equipment in the Middle East and Asia. Despite sluggish economic growth in China and anxieties over financial markets in emerging nations, demand for power cables is expected to steadily increase with the upgrade of power transmission facilities in the ASEAN countries and the construction of offshore wind farms in the US, UK, and Northern European countries. According to research by our global support team, global power cable demand is projected to reach an annual growth rate of 3%, with ASEAN countries expected to record the highest rate.

In 2018, LS C&S achieved a record volume of orders received based on businesses restructuring focusing on key products, including HV/EHV and submarine cables and global market strategies tailored to customer needs. In June 2018, we established a joint-venture subsidiary with the Artha Graha Group in Indonesia, allowing us to expand our presence in the largest ASEAN cable market. Meanwhile, in November 2018, our power cable plant in Myanmar started operations manufacturing overhead transmission lines and cables for buildings. With our technological prowess, on-hand facilities, and production capacity, we intend to become a leading company in the ASEAN market.

I Cable demand forecast I

(unit: 1,000 tons of conductors)

Country	2018	2019	2020	2021	2022
US	391	403	412	419	428
Europe	1,166	1,208	1,245	1,277	1,305
GCC ¹⁾	696	710	727	755	783
China	2,338	2,420	2,497	2,571	2,643
ASEAN	303	319	336	353	371
Global demand	6,811	7,042	7,265	7,498	7,735

1) GCC : Gulf Cooperation Council (Saudi Arabia, Qatar, Kuwait, Bahrain, Oman, UAE)
*Source: LS C&S global support team research

Mega trends

Increasing demand for new and renewable energy

With global environmental issues such as greenhouse gas emissions and pollution becoming increasingly pressing, a variety of eco-friendly energy policies are being formulated by the governments of many countries. Germany has accelerated its nuclear phase-out efforts since the Fukushima Daiichi nuclear disaster in 2011. In France, former president Hollande made a commitment to cutting the share of nuclear power by 50% and increasing the share of new and renewable energy. In addition as countries such as the UK, China, and Japan leading the trend toward green energy by implementing energy transition policies, the supply volume of new and renewable energy, in particular solar and wind power, is growing significantly.

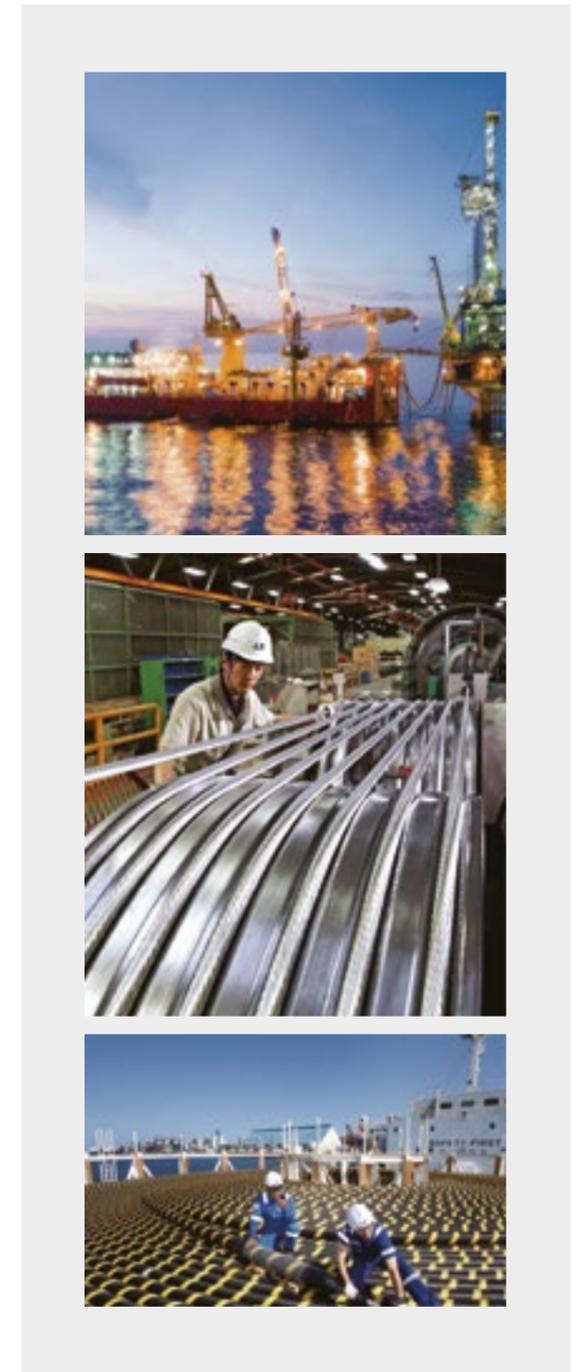
We feel a great responsibility to address environmental issues and participate in a wide range of related activities, including GHG emissions reduction and eco-friendly cable development, as part of the response to climate change. In particular, offshore wind power generation has caught our eye due to the relative ease of securing power generation sites and their capacity for scale. LS C&S will supply 66kV submarine cables for installation at offshore wind farms in Yunlin County on the west coast of Taiwan by 2020. Careful attention is being paid to growing business opportunities as Japan, China, and the US work on the revision of legal structures and improvement of related systems along with increasing investment in offshore power generation.

I Forecast of wind and solar power generation I

(unit: GW)

Country	2016		2025		2030		2035	
	Wind	Solar	Wind	Solar	Wind	Solar	Wind	Solar
US	233	47	418	205	464	255	524	311
EU	320	107	562	157	693	178	835	200
China	242	66	685	436	907	615	1,129	806
Japan	6	46	14	72	20	75	26	81
India	49	7	154	182	240	342	346	530
Others	131	30	359	212	513	362	687	543
Total(TWh)	981	303	2,192	1,264	2,837	1,827	3,547	2,471

*Source : IEA (International Energy Agency)



Sustainable Management System

Sustainable management

Strategy

In 2010, we established a mid-to-long term strategy and roadmap for sustainable management, focusing on 7 key topics, including customer satisfaction, green management, social contribution, employee wellbeing, shared growth, compliance and fair competition, and ethical management. Next, a system to respond to ISO 26000 was implemented and roles and responsibilities were defined for seven working committees. In addition, the 2018 sustainable management activities of subsidiaries are included in this report. Starting from 2019, localized strategies to promote sustainability at the global level will be formulated for activities tailored to the needs of respective regions.

Roadmap for system implementation



Organization

The Sustainable Management Secretariat is in overall charge of this effort, and its seven working committees are carrying out tasks aimed at increasing stakeholder value, such as discussion of CSR activities by working committees and response to CSR issues at home and abroad. In addition, one-to-one meetings between the Secretariat and the working committees are being held to discuss the challenges they are facing in conducting pertinent activities. Key issues and achievements are reported to the executive meeting, where decisions are made on implementation measures to effectively respond to stakeholder needs.



Direction



Sharing value with stakeholders (consolidated)



Sustainable Management System

Activities and responsibilities to promote stakeholder value

Throughout the production value chain, we closely communicate with stakeholders and reflect their requirements in our business management activities. By considering raw material procurement from suppliers, pollutants generated during production, and the range of value that our products bring to customers, we are striving to lay a foundation for sustainable management for both our stakeholders and our businesses.



Raw material procurement

Responsibility – Promoting shared growth through transparent and fair trade with 331 suppliers

Suppliers: domestic and international companies supplying materials, electricity and water used for production, and services



Suppliers
331

Production

Responsibility – Providing a safe work environment, fair evaluation and rewards to 4,497 employees and complying with environmental regulations

Employees: employees from LS C&S and its domestic and overseas subsidiaries



Employees
4,497

Use

Responsibility – Contributing to energy conservation and the development of local communities by providing products and information for customer convenience

Customers: users of LS C&S products and service, including electricity agencies, telecommunications service providers, construction companies, shipbuilders, and device manufacturers.

Reinvestment

Responsibility – Contributing to the development of local communities through increased employment, and creating profits and enhancing shareholder value through R&D investment of USD 129 million

Shareholders and investors: those who make an investment in capital investment, R&D, and business operations.

R&D cost in 2018
USD **129** million

*R&D and capital investment for LS C&S and its subsidiaries

Corporate social activities

Responsibility – Contributing to the development of local communities and promoting the public good while reducing social costs through legal compliance

Local communities: areas surrounding our Korean worksites in Anyang, Gumi, Indong, and Donghae; the locations of our nine overseas manufacturing subsidiaries; and wherever our large-scale projects are being operated.

Social contribution cost in 2018
USD **447** thousand

Materiality Assessment

2018-2019 Key topics

We conduct a materiality assessment on an annual basis to identify topics of greatest importance impacting our businesses and stakeholders at home and abroad. In 2018, a pool of topics was created utilizing our internal process, GRI Standards Index, ISO 26000, and Sustainable Development Goals. Assessment results are reflected in the next year's sustainability plan and report. Our 2018-2019 activities related to ten topics identified as highest priority are included in this report.

Topic selection process



STEP 1 Identifying

Selecting 30 topics by analyzing the company's policies and strategies, benchmarking other companies, and checking press reports

STEP 2 Prioritizing

Considering employee survey results, interviews of nine working committees, and press reports

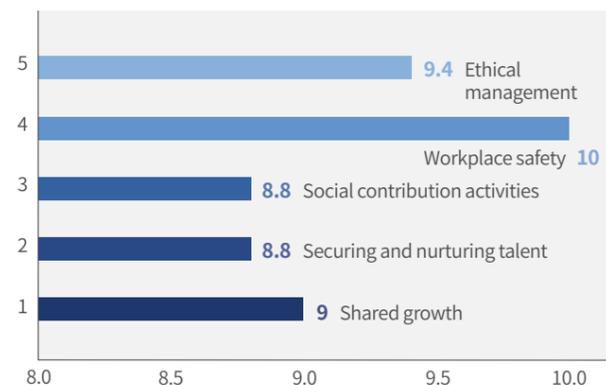
Shareholder interest

The topics have been identified based on company policy items considering the agendas discussed at the company-wide meetings, pending issues, and the 2018 management policy and management opinions regarding the policy, as well as on interviews with nine working committees and sales and support teams. For company policy items, new technology and products, ethical management, and securing and nurturing talent were considered most important, while higher priority was given to topics including workplace safety, and respect for human rights and diversity in the interviews.



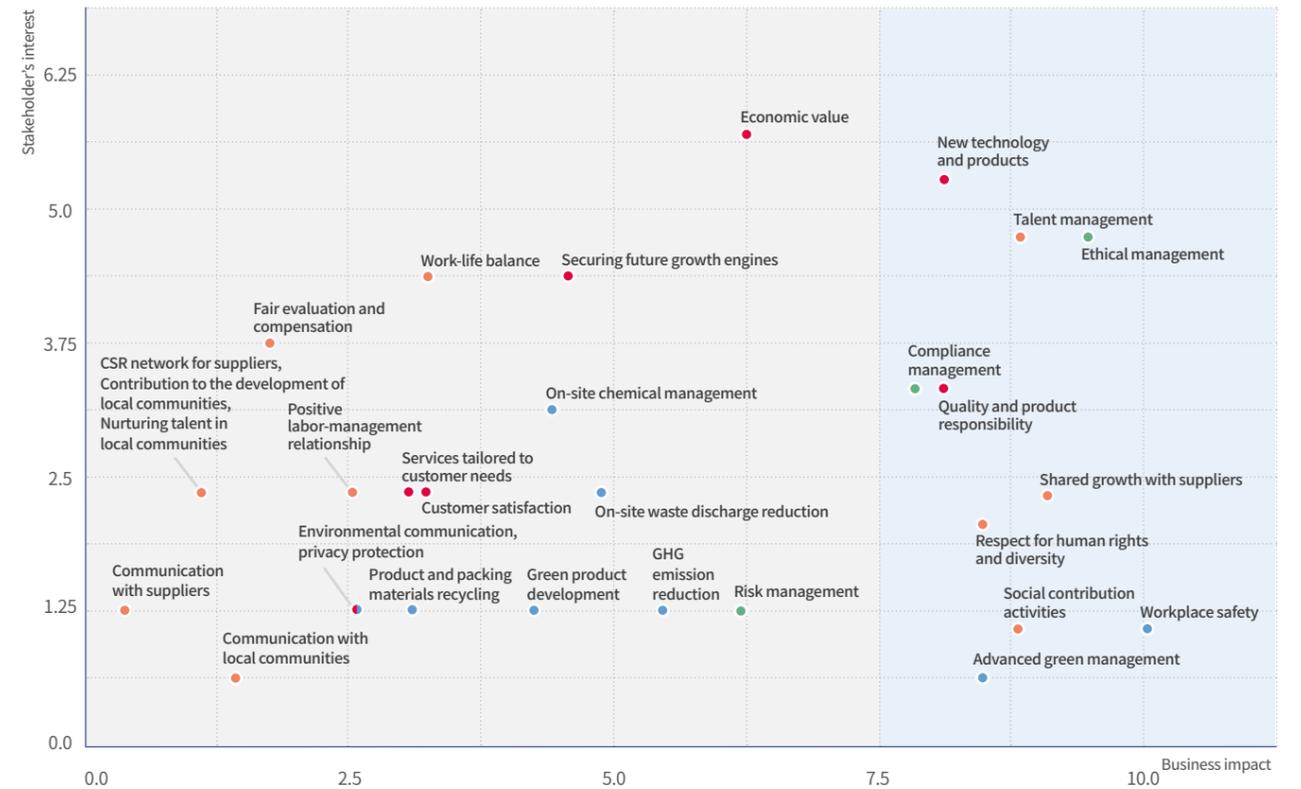
Business impact

We analyzed and benchmarked the material assessment results of domestic and international companies in the areas of cables and energy. In addition, press report items were scored based on their frequency of being reported in Korea in major newspapers, broadcast news, and business magazines. The analysis indicates that other companies paid close attention to topics such as shared growth with suppliers and ethical management. Meanwhile the domestic press placed greater importance on achieving financial performance and developing new products.



STEP 3 Finalizing

A total of 10 out of the 30 topics identified through the material assessment have been selected as key issues. As we pursue our target of enhancing shareholder value as a top priority, topics related to business management, such as strengthening quality competitiveness and developing new technology and products were selected as key topics. In addition, ethical management and shared growth with suppliers were also selected as they are key to our business activities in order to achieve the goal of becoming a global leader in the cable industry.



Key topics	Reporting scope							Page
	Customer	Shareholder	Government	Supplier	Local community	Employee	Future generation	
Customer First								
New Technology and Products	●	●	●		●		●	34
Quality and Product Responsibility	●	●		●		●		44
Social Contribution Activities			●		●		●	52
One LS C&S								
Shared Growth		●	●	●				56
Respect for Human Rights and Diversity			●			●	●	62
Rule & Responsibility								
Compliance Management	●	●	●	●		●	●	66
Ethical Management	●	●	●	●		●	●	69
Workplace Safety	●	●	●	●	●	●		72
Expertise								
Talent Management		●				●	●	76
Advanced Green Management		●	●		●		●	84

Materiality Assessment

LS C&S and SDGs

The Sustainable Development Goals (SDGs) were set by the United Nations General Assembly in September 2015 as an effort to promote sustainability in the areas of economy, society, and the environment. SDGs consist of 17 goals and 169 targets. We have set targets for achieving SDGs considering our business environment and strategic goals and have conducted a wide range of related activities. We will actively join efforts to address global challenges and do our utmost to identify efforts that can contribute to meeting SDGs.



<p>1</p> <p>End poverty in all its forms everywhere</p>	<p>7</p> <p>Ensure access to affordable and clean energy</p>	<p>13</p> <p>Combat climate change</p>
<p>2</p> <p>End hunger</p>	<p>8</p> <p>Promote sustainable economic growth, full employment and decent work</p>	<p>14</p> <p>Conserve the oceans, seas and marine resources</p>
<p>3</p> <p>Ensure healthy lives and promote well-being</p>	<p>9</p> <p>Build infrastructure</p>	<p>15</p> <p>Protect terrestrial ecosystems</p>
<p>4</p> <p>Ensure quality education</p>	<p>10</p> <p>Reduce inequality</p>	<p>16</p> <p>Provide access to justice for all</p>
<p>5</p> <p>Achieve gender equality</p>	<p>11</p> <p>Make cities and human settlements sustainable</p>	<p>17</p> <p>Strengthen the means of implementation and revitalize the global partnership</p>
<p>6</p> <p>Ensure sustainable management of clean water and sanitation</p>	<p>12</p> <p>Ensure sustainable consumption and production patterns</p>	

Area	SDG targets	2018 activities and performance	Page
Customer First	Ensure access to affordable, reliable, sustainable and modern energy for all.	* Promoting customer value with customized and differentiated products * Satisfying the needs of global customers (quality)	33, 44
	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.	* Enhancing technological competitiveness	34
	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.	* Strengthening businesses through R&D digital transformation	34
	Make cities and human settlements inclusive, safe, resilient and sustainable.	* Enhancing competitiveness in HV/EHV and submarine cable products	34
One LS C&S	Ensure healthy lives and promote well-being for all at all ages.	* Support for female employees * Employment of the disabled	62
	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.	* LS Dream Science Class (science class for children) * Job Schooling program	52
	Achieve gender equality and empower all women and girls.	* Space for female employees / * Parental leave systems / * LS daycare center	62
	Ensure access to affordable, reliable, sustainable and modern energy for all.	* Electrical safety checks in traditional markets	52
	Reduce inequality within and among countries.	* LS Code of Ethics and Practical Guidelines (chapter 5. Corporate Responsibilities for Employees) * Respect for employee rights (including no discrimination)	62
	Ensure sustainable consumption and production patterns.	* Training on procurement and subcontracting * Subcontracting Review Committee	56
Rule & Responsibility	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.	* No child/forced labor * No discrimination	62
	Ensure healthy lives and promote well-being for all at all ages.	* Activities for a healthy workplace * Workplace safety / * OHSAS 18001	72
	Ensure sustainable consumption and production patterns.	* Activities for promoting safety at work * Activities for a healthy workplace * Safety and health management activities * Official documents for cooperation to suppliers	69, 72
	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.	* Ethical and compliance management training * Upgrade of the standard form of contract and legal support / * Counseling center * Cyber Reporting Channel / * Evaluation of ethics	66, 69
Expertise	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.	* Nurturing talent (leadership and job competence programs, and training support for overseas subsidiaries)	76
	Ensure access to affordable, reliable, sustainable and modern energy for all.	* Efficient use of resources	84
	Reduce inequality within and among countries.	* Securing talent and promoting fair HR management (employment and evaluation)	76
	Make cities and human settlements inclusive, safe, resilient and sustainable.	* Operation of an environment management system * Efficient use of resources * Use of green materials	84
	Ensure sustainable consumption and production patterns.	* Efficient use of resources * Use of green materials	84
	Take urgent action to combat climate change and its impacts.	* Response to climate change (reduction of GHG emissions) * Emissions and waste discharge management * Use of green materials	84

Ten Key Topics on C.O.R.E

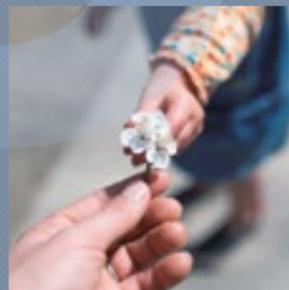


One LS C&S

- Promoting social contribution to achieve shared and sustainable growth
- Establishing a system to achieve shared growth in a sustainable manner
- Respecting the human rights and diversity of our employees and pursuing global standards

Customer First

- Strengthening competitiveness and securing future growth engines by developing new products and technologies
- Providing products and services that meet customer expectations and needs anytime, anywhere and under any circumstances



Rule & Responsibility

- Setting a vision for the compliance working committee: spearheading the efforts for promoting compliance management and reducing risks to zero
- Strengthening the foundation for ethical management and raising employee awareness
- Ensuring a healthy workplace and achieving the goal of zero-accidents by strengthening safety activities

Expertise

- Supporting employees with a sense of ownership in their jobs to make a great achievement together
- Strengthening environmental management for zero accidents and pleasant work environment and contributing to a green society by reducing greenhouse gas emissions



CUSTOMER FIRST

New Technology and Products



We focus on the research and development of: power transmission and distribution cable systems, construction technologies and submarine fields; network solutions for the wire and wireless fields; industrial, automotive, and special cables and cable materials. In addition, we develop power IT solutions to diagnose and operate transmission and distribution power and establish power networks for offshore wind farms thereby enhancing customer value.

Strategic direction

Strengthening competitiveness and securing future growth engines by developing new products and technologies

Key tasks

Enhancing technological competitiveness

Enhancing technologies in HV/EHV systems
Strengthening the portfolio of submarine cable products

Promoting customer value with customized and differentiated products

Developing high value-added cable systems for telecommunication
Securing product groups to respond to new and renewable energy

Performance in 2018

Strengthened competitiveness in HV/EHV and submarine cable products

- Passed long-term reliability tests for DC 500kV (MI¹⁾)
- Developed inter-array cables for offshore wind power

Enhanced customer value by expanding the product portfolio

- Developed multiple-conductor cables and connection materials for 5G networks
- Expanded the scope of FA (Factory Automation), railway and military-related products
- Secured onshore and offshore cables

Strengthened the business through R&D digital transformation

- Established a R&D project management system
- Built a platform to formulate and develop cable compounds
- Developed a cable information monitoring system utilizing IoT

1) MI : mass impregnated

Targets in 2019

- Develop new products and technologies to enhance global competitiveness
- Implement strategic tasks for digital transformation at the enterprise level
- Secure future growth engines by developing new products and expanding businesses

VSC-type DC 320kV XLPE submarine cables

Product overview

With green technologies gaining ground as new growth engines, photovoltaic and wind power generation is on the rise. However, these types of electrical generation require long-distance transmission due to their geographical limitations. AC (alternating current) transmission presents advantages such as simpler power conversion and lower initial investment. Unfortunately, it results in ever-greater power losses with transmission distance. On the other hand, higher initial investment is required for DC (direct current) transmission due to the need for inverters and converters, but less power loss is incurred. As a result, more people are turning to DC over AC, and DC cable systems are being actively developed worldwide.

In line with this trend, LS C&S initiated its VSC DC 320kV XLPE cable systems project in 2015. In February 2017, we became the first company in Korea to acquire a KEMA Type Test certificate in accordance with CIRGE (International Council on Large Electric System) recommendations. In addition, a PQ test was conducted at the KEMA Laboratories facility in the Netherlands from August 2017 to November 2018. This product is expected to be applied to the building of cross-border power grids and super grids.

Product concept

What is a VSC-type DC XLPE cable?

VSC and LCC types are used for DC transmission, depending on the power conversion method and XLPE materials. Polarity reversal is required for LCC DC transmission, but not for VSC. Depending on the polarity reversal, different electrical properties are required for VSC and LCC DC XLPE and different approaches must be taken in material development. If AC XLPE insulating materials are used as-is in DC cables, by-products from cross-linking agent decomposition can serve as carriers, causing space charge accumulation in an insulator. This leads to a higher electric field, reducing insulative properties.

In this regard, our VSC-type DC 320kV XLPE cables are formulated with a base resin, agents and antioxidants are cross-linked by cross-linking PE molecules in long chains in order to withstand high temperatures. Moreover, existing AC XLPE additives and organic additives are optimized to minimize space charge, providing XLPE with enhanced electrical properties and excellent dielectric characteristics.

VSC-TYPE DC 320KV XLPE SUBMARINE CABLES



Product advantages

As the size of this product 70% of that of AC, less insulating materials are required. Its power transmission efficiency is also higher than with AC due to reduced power loss. In AC transmission, a minimum of three lines of cables are needed. Just a single line of cable can be used for DC transmission, meaning fewer cables and less space for transmission lines are required. As DC cables are unlimited in terms of transmission distance, hundreds of kilometers of land or dozens of kilometers of submarine power transmission line can be installed, and construction costs are less compared to when using AC products. Furthermore, no electromagnetic waves are generated, reducing the potential for interference with telecommunications lines and devices.



DC 500kV MI underground cable systems

Product overview

DC transmission has become an important topic with the recent trend toward large-capacity and HV/EHV cables. It results in less power loss and shows advantages over AC for long-distance transmission in cross-border grids and new and renewable energy. In particular, as HVDC (High Voltage Direct Current) allows the transmission of a large volume of electricity over great distances, it is considered a core technology for a planned Asian Super Grid potentially connecting power networks in the two Koreas, Mongolia, China, Japan, and Russia.

LS C&S became the first company in Korea to develop a DC 500kV MI underground cable system insulated with polypropylene laminated paper. In the first domestic HVDC project, this product has been implemented along the 35-km span between the North Dangjin Converter and the Goduk Converter to facilitate the supply of three GW of power. The reliability of the product has been assured through certification (Type Test) by the Korea Electrotechnology Research Institute. In addition, a PQ test over six months was completed in March 2018 to guarantee a 40-year product life.

Product concept

Depending on the insulating materials, HVDC cables are classified as MI cables (mass impregnated paper cables) or XLPE cables (cross-linked polyethylene). MI cables have traditionally been used for DC transmission since long drum-length cables can be manufactured and they show stable insulating performance. Manufacturing MI cables requires a high level of process technology, including in winding and impregnation. In particular, the winding process must be conducted manually and is heavily dependent on the proficiency of the workers involved.

The kraft paper previously used in our polypropylene-laminated-paper MI cables has been replaced with polypropylene-laminated paper with a triple structure of kraft paper-polypropylene film-kraft paper in order to increase transmission capacity and better withstand voltage.

DC 500KV MI UNDERGROUND CABLES



Product advantages

This product can be used at a higher maximum temperature (80°C) than Kraft cables (55°C) and possesses a higher power transmission capacity. To minimize the environmental impact, the size of the electric power conduit pipes has been minimized.



66kV inter-array cables

Product overview

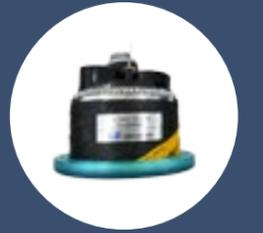
Recently, new and renewable energy has been increasingly emphasized as global attention has turned to environmental policy. In this regard, offshore wind power has been taking center stage due to the relative ease of securing such power generation sites and their capacity for scale. As part of its phase-out of nuclear technologies, the government of Taiwan has been investing heavily in new and renewable energy, including plans to build 5,480MW of offshore wind farms by 2025.

For this project, LS C&S will supply 170 kilometers of 66kV submarine cables for installation at offshore wind farms in Yunlin County on the west coast of Taiwan. In the past, 33kV cables have commonly been used for wind power, but the application of 66kV cables is on the rise with the growth of large-capacity power generation. As LS C&S becomes the first in Asia to provide 66kV inter-array cables, it is expected to gain an advantage in the next-generation wind power market.

Product concept

Offshore wind power cables are used with fixed platforms in water of less than 50 meters and with floating platforms in depths exceeding 50 meters. Since fixed-type wind farms are generally 600MW or higher, 66kV cables are an appropriate response to this increased capacity. Floating-type wind farms are expected to be validated by 2021 through a pilot project being conducted. In addition, dynamic properties are required of cables for connecting floating bodies and they must be carefully designed and tested. Our products supplied to the offshore wind farm project in Taiwan are intended for fixed-type platforms and have increased voltage.

66KV INTER-ARRAY CABLES



Product advantages

As the scale of wind farms has grown, the capacity of inter-array cables has increased from 33kV to 66kV. The efforts at developing 66kV cables have been mainly undertaken by European companies. Our product allows the stable operation of cables: compounds that inhibit water treeing are used so that the insulative properties remain robust even when seawater penetrates the surface of an insulated cable core.



High-performance HV/EHV cables

Product overview

As transmission capacity grows in an environment of demand for cable systems with a compact, cost-saving structure, we must actively respond with differentiated strategies. Improved electrical properties in materials and advanced process technology are allowing us to devise HV/EHV underground cables able to withstand a high level of electrical stress.

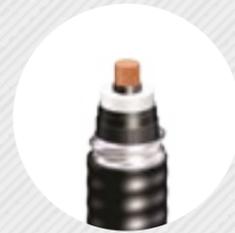
Our high-performance cables are designed to maintain optimal insulation properties at line voltage. Any void or foreign substances that could cause serious defects in insulators are minimized. These cables have been proven to function stably at operating temperatures. State-of-the-art cross-linking technology and materials that do not cause protrusions in the semiconductor layers are used to keep residual insulator stress to a minimum level. In particular, insulators have become thinner and now allow our product to withstand a high level of electrical stress. At the same time, fewer materials can be used in cable manufacturing to improve environmental friendliness.

Product concept

In our product, insulators have become thinner compared to previous HV/EHV cables through the application of specially-prepared materials and advanced manufacturing technology. For example, our 220kV HV/EHV underground cables have insulators 25% thinner than others of the same degree of insulation. This was mainly made possible through established statistical analysis theory and validation methods that allow us to predict and confirm the reliability and service life of the product.

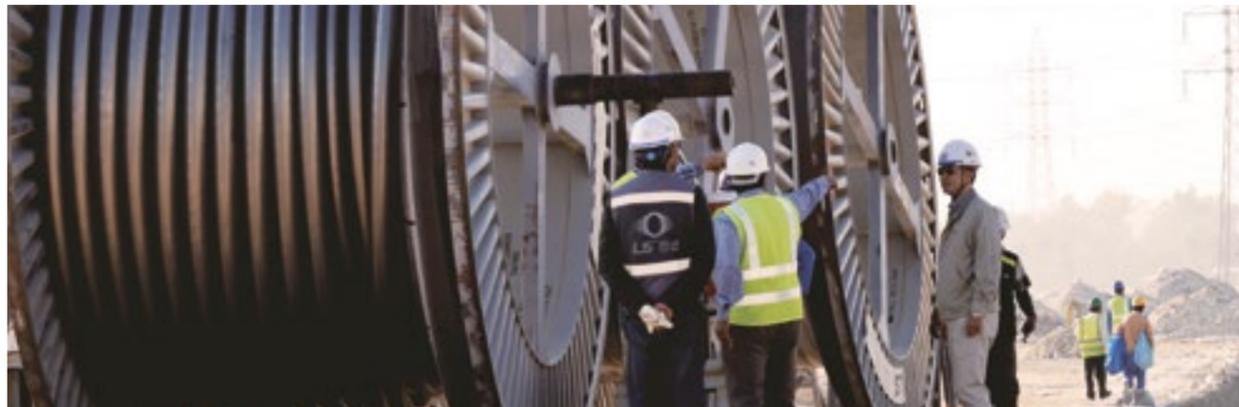
Above all, this product is the outcome of our efforts to meet market demands for reducing the volume required for insulation.

HIGH-PERFORMANCE HV/EHV CABLES



Product advantages

Thinner insulators create a more compact cable structure that allows an increase in power transmission due to reduced transmission loss. In addition, the smaller external diameter reduces product weight, allows long drum-lengths cables, and ultimately leads to drastic cuts in construction costs and durations.



Wireless and remote PD monitoring systems

Product overview

There has been growing demand for systems to monitor power transmission lines and ensure stable operation. In this regard, efforts are being made to apply PD (partial discharge) monitoring systems on-site so that operators can plan cable replacement by observing PD signals before failures occur. However, in order to implement such systems, additional optical communications cables need to be installed along the power transmission lines and operators must independently conduct detailed analyses on the signals. Moreover, they cannot currently obtain and store the signal data.

To resolve these difficulties, LS C&S has developed wireless and remote PD monitoring

systems and provides services ranging from installation to monitoring. Our experts remotely analyze and report any abnormal signals, and the data can be accumulated to produce more accurate analyses for the next diagnosis.

Product concept

Its signal detection device is powered by photovoltaic or energy harvesting modules and the data is transmitted to a cloud server using 4G networks. Our PD experts analyze the data stored in the cloud server and provide customers with analysis result and device operation status.

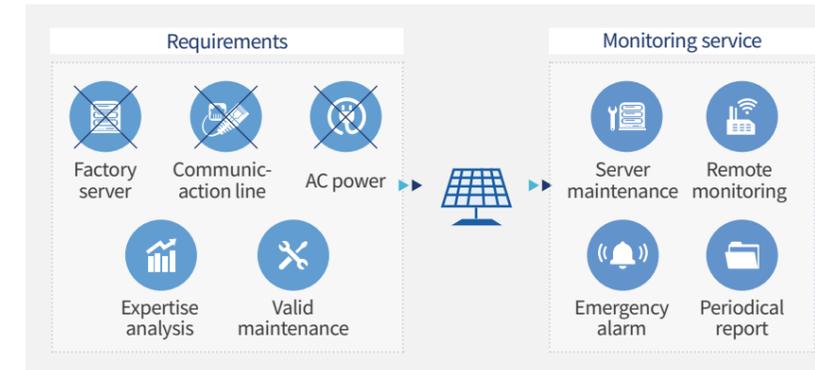
WIRELESS AND REMOTE CONTROL PD MONITORING SYSTEMS



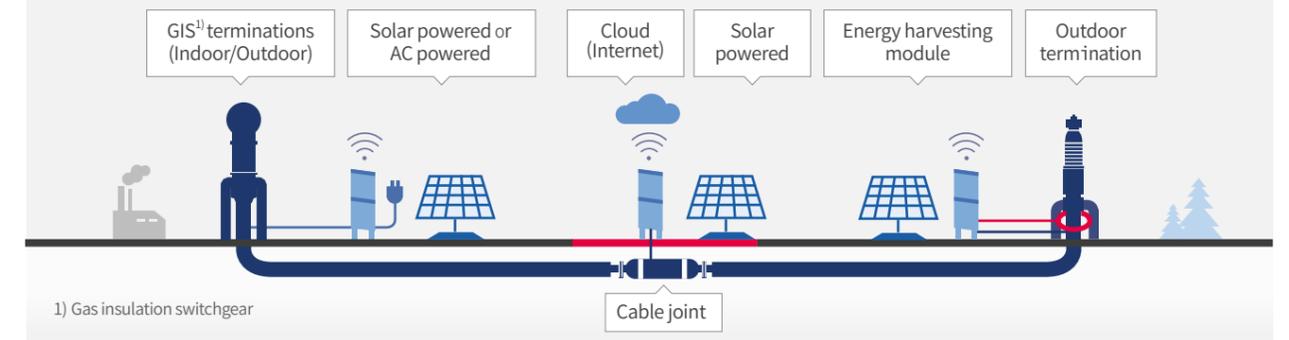
Product advantages

Since this product is wireless, there is no need to install telecommunications and power cables. High-maintenance servers do not need to be installed on-site and can be carefully managed by LS C&S. As our experts with pertinent skills and experience conduct data analyses, customers can be provided detailed and accurate monitoring results.

I Product advantages I



I Conceptual diagram of the system I



Multiple Fiber Cables

Product overview

5G networks, the telecommunications infrastructure to support the Fourth Industrial Revolution through ultra-high-speed connections and minimal latency, demand multiple high-density conductor cables.

5G networks provide up to 20-times faster speeds, 10-times higher connectivity, and 10-times lower latency compared to 4G. The sophistication of the networks is the key to 5G technologies. As societies around the world experience a digital transformation, the demand for high-density multiple fiber cables is on the rise to meet the storage, processing, and operation needs of big data.

In response to this trend, LS C&S has devised advanced optical cables, including Max 864F(Fiber) with a micro-unit structure and Micro ABC, ADSS, and 396F with a loose-tube cable structure. Furthermore, connective materials have been developed to offer comprehensive solutions.

Product concept

What is a micro air-blown cable?

Micro air-blown cables are laid inside micro ducts using air-blowing installation equipment. The cable laying cost is significantly lower than with hand installation. In addition, enhanced utilization of existing ducts makes it easier to expand access networks.

What is an ADSS cable?

ADSS stands for all-dielectric self-support, which is used for overhead cable laying. It is nonmetallic and requires no sheathing wire, so it costs less when laying cables and earthing is not required. No additional tension materials are needed, which makes it lightweight and compact. As a result, we were able to develop cables that are easy to lay and cost-competitive.

What is a micro unit cable?

Low-smoke zero-halogen or PVC is applied to a micro unit tube protecting optical fibers. The resulting cable is easy to handle since no additional tools are required for cutting the tube.

MULTIPLE FIBER CABLES



Product advantages

Our multiple conductor cables with enhanced fiber integration precisely meet customer needs. These lightweight and easy-to-lay cables with a reduced external diameter ensure ease of handling. All-dry micro unit technology allows us to significantly reduce cable laying time compared to using existing jelly-filling micro unit products. As for connection materials, rental costs are set according to the volume of connecting materials. To help our customers reduce operation costs, we have developed materials with a smaller volume utilizing gel-block technology for waterproofing.



EV products

HV/EHV cables

HV/EHV cables

Due to the rapid expansion of environmentally-friendly vehicles, the automotive market is expected to grow steadily. As some European car makers have shifted focus from cars with internal combustion engines to eco-friendly or hybrid electric vehicles, the demand for related products is rising apace. In this regard, LS C&S has developed and launched an HV/EHV product line-up and cables with enhanced oil resistance that meet the requirements of automakers and automotive electrical parts manufacturers.

Product concept

With the spread of hybrid electric vehicles, the market for HV/EHV cables for such vehicles is also expanding. This product designed to ensure the safe transmission of high-capacity voltage can be used in hybrid electric, plug-in hybrid electric, and electric-only vehicles.



Charging cables

Product overview

With the increasing number of electric vehicles on the market, it is expected that the scope of charging-related business will continue to expand. Conventionally, people must go to charging stations for rapid charging. In response, LS C&S has launched standardized charging cable products that can connect to general electrical outlets and allow users to conveniently charge their cars without a dedicated charging station.

Product concept

This allows going from a discharged to a fully charged state in 4 to 5 hours. The 6 or 7kW cable can connect to any 220V outlet, allowing users to conveniently charge their EVs.



EV PRODUCTS

HV/EHV cables

Product advantages

This product was developed in accordance with ISO specifications and has long-term heat resistance properties. Its double-shielded design blocks noise, and its flexible and oil-resistant PO materials are highly applicable to electric vehicles.

Charging cables

Product advantages

TPE insulating sheath materials are used to enhance heat- and wear-resistance. The elevated durability of this product makes it suitable for use in a high-mobility environment. In addition, meeting the UL, EN, and IEC standards provides us with an advantage for entering US and European markets.



Ring wire for solar modules

Product overview

Eco-friendly and renewable energy is quickly replacing coal and oil as one element of the response to greenhouse gas emissions and the climate change they could cause. Great attention has been focused on developing technologies and manufacturing products that minimize carbon dioxide. In this regard, we have been focused on new and renewable energy as a growth engine, and eventually devised solar ring wire. In 2015, we brought this product to market for the first time in the world when it was applied to solar photovoltaic modules by LG Electronics. As a primary supplier, we have been providing this product to Hanwha Q CELLS, the world's largest manufacturer of solar cells, since 2017. Starting in 2018, we have been supplying it to AU Optronics in Taiwan through the production part approval process.

The trend in the solar module market is rap-

idly shifting from ribbon-type to round-type wire. Round wire is expected to be applied to 50% of newly installed modules by 2020, and the sales of this product should only continue to grow.

Product concept

Usage

This product sends the electricity generated by connecting solar cells to a junction box, the power collector for solar modules.

Composition

Solar wire comes in two types: ribbon and round. Its conductor is made from copper plated with SnPb solder.

Main characteristics

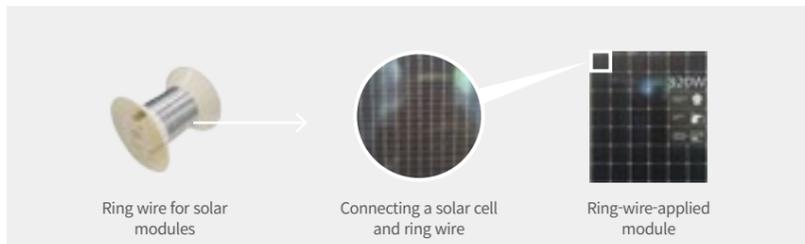
As solar cells grow increasingly thinner, it is necessary to use solar wire with low-yield strength and uniform plating thickness to prevent cracking and ensure a stable connection between the cells and wire.

RING WIRE FOR SOLAR MODULES



Product advantages

The product's excellent straightness has reduced the rate of defects due to misalignment. Since this product has improved low-yield strength and uniform plating thickness, it has greatly contributed to improving workability and product reliability for customers. In addition, technological cooperation with tabbing machine manufacturers has allowed us to develop customized products and offer optimal specifications tailored to the needs of the production system of each customer.



Underwater cables for floating solar modules

Product overview

Electricity demand has been increasing worldwide due to economic development and rising standards of living. As a result, environmental concerns are growing and the importance of new and renewable energy has become greater than ever. Since this product is installed underwater, there is no need for trenching or for damaging wilderness or farmlands. Power generation efficiency using floating solar modules is 1.4 times greater than on land due to the cooling effect of the water. Idle reservoirs can be utilized to create power generation facilities.

As electricity generated from floating solar modules needs to be sent to electrical rooms, underwater cables are run from below the modules to the shore. These cables are exposed to water for long periods and they shift along with the movement of solar modules. Therefore, it is essential that this product possesses the durability demanded by the dynamic underwater environment. Our product has passed durability tests that apply reliability evaluation technology designed for mobile and undersea cables, and its use is expected to grow both at home and abroad.

Product concept

What is an underwater cable for floating solar modules?

F-CV cables are commonly used in solar modules installed on land. However, issues such as water treeing can occur if they are applied to floating solar modules. Considering that water treeing hampers the long-term performance of cable products, our underwater cables make use of rubber insulators. To minimize water infiltration, water-resisting sheath materials commonly used in submarine cables are applied. Eco-friendly materials are used in accordance with related laws and regulations for resource protection, which has allowed us to have this product certified.

UNDERWATER CABLES FOR FLOATING SOLAR MODULES



Product advantages

We offer structural designs according to the intended environment for floating solar modules (such as in reservoirs or the sea). The durability of our products has been tested to ensure long-term reliability. In addition, this product can be supplied in the form of optical-metal composite cables containing optical or signal cables, which facilitates their installation. We provide customers with tailored products for their specific environmental conditions, including with customized flexibility and armoring materials.



CUSTOMER FIRST

Quality and Product Responsibility



As our cable products are used for power and telecommunication transmission for industrial infrastructure and people's lives and applied to a variety of power devices, we are proactively conducting quality management activities to increase reliability and meet the need for eco-friendly products. In addition, considering the impact of our products has on local communities and the country, we establish a risk management system across the entire processes and strive to secure the best possible product quality to meet the needs of our customers and stakeholders.

Strategic direction

Providing products and services that meet customer expectations and needs anytime, anywhere and under any circumstances

Key tasks

Focusing on computerizing our quality management system to meet the requirements of global customers.

Satisfying the needs of global customers

Acquiring certification of a quality system by area; establishing an enterprise-wide QMS¹⁾; conducting real-time quality risk management

Strengthening efforts for quality management

Conducting innovation activities (Speed up! 2018); securing product quality evaluation technology; providing quality training

Operating the quality control tower

Setting the criteria for overseas subsidiaries
Conducting 'level-up' activities for suppliers

Performance in 2018

Satisfying the needs of global customers	<ul style="list-style-type: none"> Obtained additional quality system certification (two cases) Established a QMS IT system Managed quality risks and VoCs in real-time
Strengthening efforts for quality management	<ul style="list-style-type: none"> 176 cases for quality circles 33 cases for evaluation technology Quality School
Conducting quality monitoring activities for overseas subsidiaries	<ul style="list-style-type: none"> Compared quality by product group among the head office and subsidiaries Established standards for quality index management

Targets in 2019

- Satisfying the needs of global customers: review the feasibility of upgrading the QMS IT system and implementing the system in overseas subsidiaries
- Promoting proactive quality management: manage production lot; meet CTQ²⁾; strengthen 4M control; implement a QC Patrol function by product; secure core evaluation technology
- Operating a quality control tower: establish a quality risk report process for overseas subsidiaries; prepare a company-level business management index (Q-Cost) and monitoring process; secure outsourcing quality

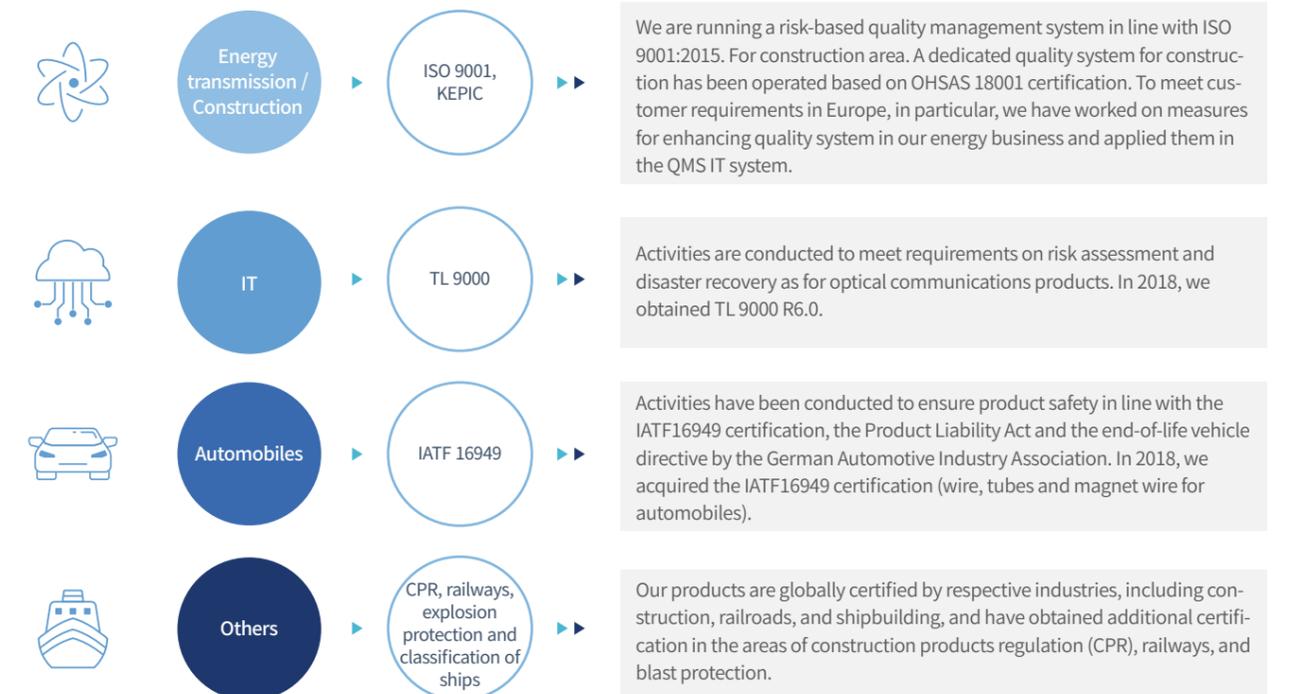
1) Quality management system
2) Critical to quality

Satisfying the needs of global customers

Activity 1

Certification by area

To operate a quality management system tailored to customer needs worldwide and each product group, VoCs, pertinent laws and regulations, and global standards are identified and reflected within the system



Activity 2

Establishing an enterprise-wide QMS IT system

A QMS IT system is designed to organically connect and manage data quality at the enterprise level with the goal of utilizing information as an asset and minimizing quality costs. Starting from January 2018, as-is analysis, to-be process design, and program development were conducted for system implementation. The system was officially launched in August 2018, laying the foundation for our establishment of a global quality management system.

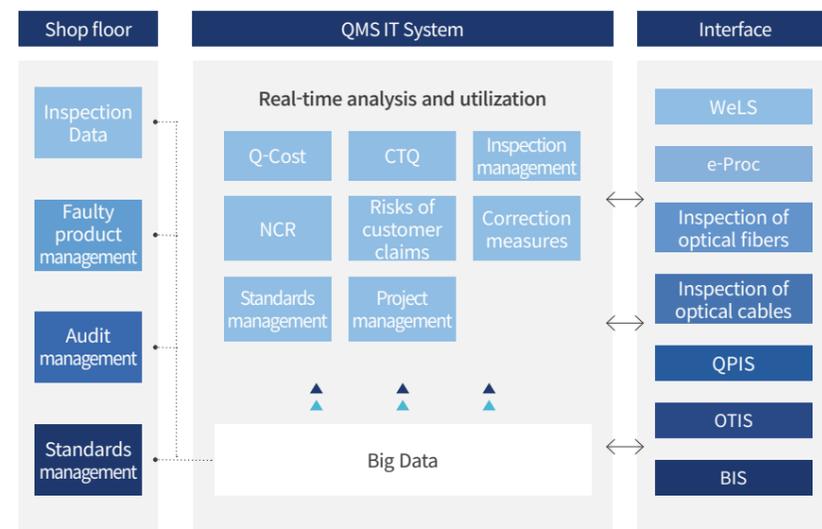


I QMS IT system I

Key improvements made through the system

QMS IT System

1. Monitoring Q-Cost performance and key issues
2. Analyzing in real-time CTQ and control charts utilizing data
3. Monitoring and tracking the state of progress in addressing NCR and customer claims
4. Reflecting changes and improvement measures through the comprehensive operation of up-to-date management and technology standards
5. Monitoring the progress at the construction sites at home and abroad and storing key information in the database.



The scope of the QMS IT system is: 1) development/before-production quality; 2) material quality; 3) production quality; 4) test and management; and 5) customer quality management. Data is being accumulated for enterprise-wide quality data management.

Key improvements have been made during the implementation of the system. Data monitoring and statistical analyses allow us to track and quickly respond to any quality issues. Root-cause analysis and follow-up processes have been strengthened. In addition, up-to-date company standards, enhanced search features, and an audit pool are significantly helping our employees to better respond to our customers.

Activity 3

Real-time quality risk and VoC management

Since our products serve as a basis for industrial infrastructure and people's lives, addressing any product quality risks is critical, as is ensuring that there is a response system to swiftly deal with any possible issues. In this regard, we implement preventive risk management processes through which potential issues can be identified in the design review phase to minimize risks throughout the entire process. In addition, a risk tracking management system has been implemented to mitigate losses if pertinent risks pass through into quality issues.



	Customer	Product	Issue	Cause	Action	Risk			Closed/Open
						Worst	Normal	Best	
Customer claims	Company A	220kV	Damaged exterior	Stabbed	Replacement	100	10	0	Closing
Internal failure	Company B	345kV	BD	Connection failure	Training	500	50	10	Open
Customer claims	Company C	FA cables	Cracks	Mishandling	Package enhancement	1,000	100	30	Open

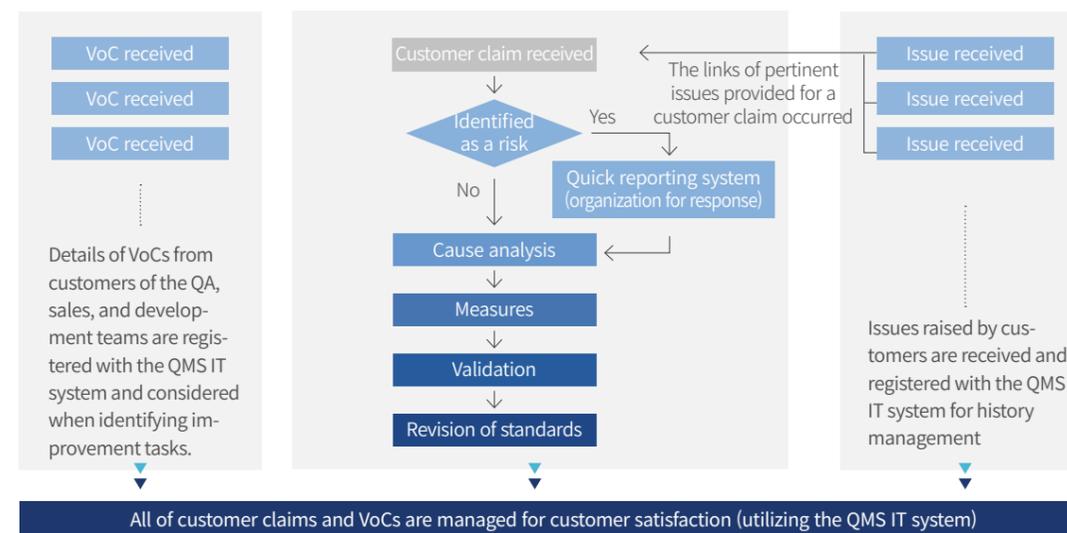
- Quality risks are classified as S, A, B, or C grade in consideration of their impact and urgency. S- through A-grade risks are immediately reported in the form of a 5W1H report to the management and to stakeholders.
- In the QMS IT system, S-, A-, and B-grade risks are numbered to monitor their status in real-time. Under the supervision of the quality division, those risks can be tracked and managed until a resolution is achieved.
- C-grade risks, ideas, and feedback from customers and stakeholders are being instantly shared on the VoC and issue management pages within the system.

- Monthly monitoring results of key risks and VoCs are reported to management at an enterprise-wide meeting to promote quality production. The progress of the related issues are tracked in the quality meetings of each Group.
- To prevent the reoccurrence of similar risks, resolved risks or VoCs that should be referenced by other Groups or during product development are placed on the 'lessons learned' list in the QMS IT system.

I Quality risk classification I

Grade	Criteria	Examples of risks
S	•Risks that could cause a serious problem for customers, the company, and the society •Risks that could impact the overall business	Causing serious business issues such as contract termination or reduction Causing troubles in society, violating laws and regulations and going against ethical management
A	•Product quality issues that could cost USD 8,944 and more •Incidents that could lead to a product recall or to suspending production/shipment	Causing casualties in building fire Accidents impacting social overhead capital facilities
B	•Product quality issues that could cost less than USD 8,944 (approved by a division head)	Causing environment issues such as harmful chemical spills Causing conflicts with local communities
C	•Product quality issues that could cost less than USD 894 (approved by a team leader)	Product liability issues and product recalls Causing the stop of customer production lines and defects in a large quantity of products

I Customer claim risks and VoCs management I



Strengthening efforts for quality management

For product quality management, CTQ and CTP tasks by product/process are identified. The tasks are incorporated into improvement tasks for Six Sigma, quality circle activities and engineers.

Activity 1

Innovation activities on site in 2018 (Speed up! 2018)

'Speed Up!' was the 2018 theme under which activities in terms of quality, cost and delivery were conducted devised based on the results of the last three years to achieve the management targets of the year. Our motto for 2019 is 'Clean Factory!' as we work to achieve the goals of reducing product losses and internal failure costs and ensuring an accident-free workplace through safety promotion. To support the innovation activities of LSHQ, our subsidiary in China, employees from the head office were dispatched to check the state of progress and provide training. In the second half of 2019, LSHQ will visit the head office to present their achievements at a performance-sharing meeting.

I Performance in 2018 I

Case(s)	Theme task	Clean task	Safety task	Total
	128	22	26	176

Activity 2

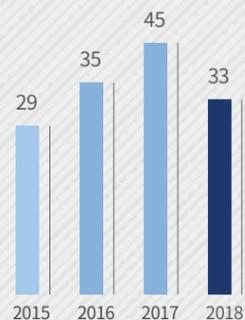
Securing evaluation technology for product quality

To prevent the potential impact of product defects on industries and people's lives, we continue our efforts to develop evaluation technologies. In response, we have secured technologies related to long-term reliability, electrical and material tests to ensure high product quality and win the trust of customers. Meanwhile, we are developing available substitute characteristics.

I Evaluation technology secured in 2018 I

<p>Energy (10cases)</p>	<ul style="list-style-type: none"> · HV/EHV PQ test monitoring system · HV/EHV Quality evaluation system for superconducting cables · Submarine Integrated management system for DC cable test voltage, current and temperature
<p>Distribution / Overhead (8cases)</p>	<ul style="list-style-type: none"> · Distribution Long-term service life diagnosis system · Overhead Composite core bending tests
<p>Telecom -munication / Industrial cables (8cases)</p>	<ul style="list-style-type: none"> · Optical fibers Data processing software for optical fiber inspection equipment · Automotive wire Evaluation of cycling tests under complex environment conditions (temperature, humidity, current, voltage) · Industrial / Specialty Evaluation of fire-resistance properties of HCF
<p>Materials / Busduct (7cases)</p>	<ul style="list-style-type: none"> · Magnetic wire Evaluation of PDIV in a low air-pressure environment · Busduct Long drum-length sample PD test

I Evaluation technology secured I
(2015-2018) (unit: case)



Activity 3

Quality training

To resolve any potential quality issues through risk management, in-house or external programs, on-the-job training, and task force activities are all provided. In particular, employees directly responsible for QA, development, and production all attend annual Quality School events.

In 2018, we focused on improving our quality process in line with the revision of IATF 16949 and on operating a Quality School that provides key personnel in each function with consultation and training. In particular, a course providing qualifications for supplier inspectors was operated and four employees from the procurement and production management teams were qualified in supplier evaluation.

A total of 109 employees are currently serving as quality examiners, internal inspectors and supplier inspectors. Considering that their actions can directly impact our product and process quality, their qualifications are re-evaluated every year through the QMS IT system.

I QMS IT inspector and examiner management I



I Purpose and action plan I

	Curriculum	Target	Date & Venue
<p>1 Awareness raising</p>	<p>Global quality management</p> <ul style="list-style-type: none"> - Risk Thinking, development quality, improvement at worksites, preventive management, and processes 	<p>All employees</p>	<p>July morning assembly</p> <ul style="list-style-type: none"> - Head office, and auditoriums at the Donghae and Gumi plants
<p>2 Understanding of global quality systems</p>	<p>Quality management in development</p> <ul style="list-style-type: none"> - Changing global trend in quality management systems - Quality management in product design (APQP, CP) - Failure mode and effects analysis (FMEA), and production part approval process (PPAP) <p>Quality management in production</p> <ul style="list-style-type: none"> - Changing global trend in quality management systems - Production process development and management (CP) - Statistical analysis and SPC measurement system (MSA) 	<p>Engineers (QA and development)</p> <ul style="list-style-type: none"> - (Mandatory) Internal inspectors, and trainees from the QA team - (Optional) Engineers responsible for development and R&D <p>Engineers (QA and production)</p> <ul style="list-style-type: none"> - (Mandatory) Internal inspectors, and trainees from the QA team - (Optional) Engineers responsible for production 	<p>Jul. 4-5, Jul. 18-19</p> <ul style="list-style-type: none"> - Gumi training center <p>Gumi training center</p> <ul style="list-style-type: none"> - Gumi training center
<p>3 IATF renewal</p>	<p>Understanding of IATF</p> <ul style="list-style-type: none"> - Understanding of IATF standards and GAP diagnoses - Risk analysis and measures <p>Inspector qualifications</p> <ul style="list-style-type: none"> - Internal inspectors and supplier inspectors <p>Strengthening processes</p> <ul style="list-style-type: none"> - Strengthening processes and reviewing the results 	<p>Employees responsible for certifying automobile parts (QA, QM)</p> <ul style="list-style-type: none"> - (LS C&S) Indong and Gunpo QM - (Subsidiaries) G&P and LSCW QM <p>Internal inspectors for certifying automobile parts</p> <ul style="list-style-type: none"> - (LS C&S/Subsidiaries) Those who qualified as internal inspectors <p>Teams responsible for certifying automobile parts</p> <ul style="list-style-type: none"> - (LS C&S/Subsidiary) Persons in charge for each team 	<p>Oct. 18-20</p> <ul style="list-style-type: none"> - Gumi training center <p>Oct. 26-27</p> <ul style="list-style-type: none"> - Gumi training center <p>Nov. 15, Nov. 29, Dec.13, Dec. 27</p> <ul style="list-style-type: none"> - Gumi training center

Quality Control Tower

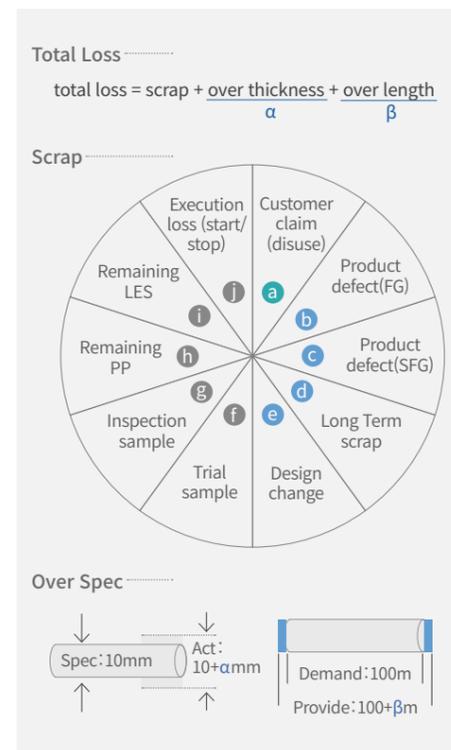
The Quality Control Tower aims to cut Q-costs by comparing rates of defects or losses within a given product group between the head office and eight overseas subsidiaries and devising and implementing benchmarking and support tasks. In 2018, the volumes of production scrap were compared. In 2019, an index will be developed as a tool to allow more accurate comparisons.

Activity 1 Establishment of Q-cost management standards for overseas subsidiaries

I Q-cost management I

	Item	ERP
Customer claim	Disposal of defective products	-
	Loss compensation, defect repair	-
Loss	Shipping of returned products	-
	Business travel	-
	Delayed shipment (delayed repayment)	-
	Back claim (negative adjustment)	-
Internal failure	Discarded defective products (finished products)	ERP
	Discarded defective products (semi-finished products)	ERP
	Repair and rework	ERP
	Disposal of long-term inventory	ERP
	Design change	ERP
	Back claim	-
Production scrap	Execution loss for start and stop	ERP
	Remaining PP	ERP
	Remaining LES	ERP
	Disposal of inspection samples	ERP
	Trial samples	ERP
Material loss	Over-thickness	-
	Over-length	-

I Definition of scrap and loss I



Activity 2 'Level-up' activities for suppliers

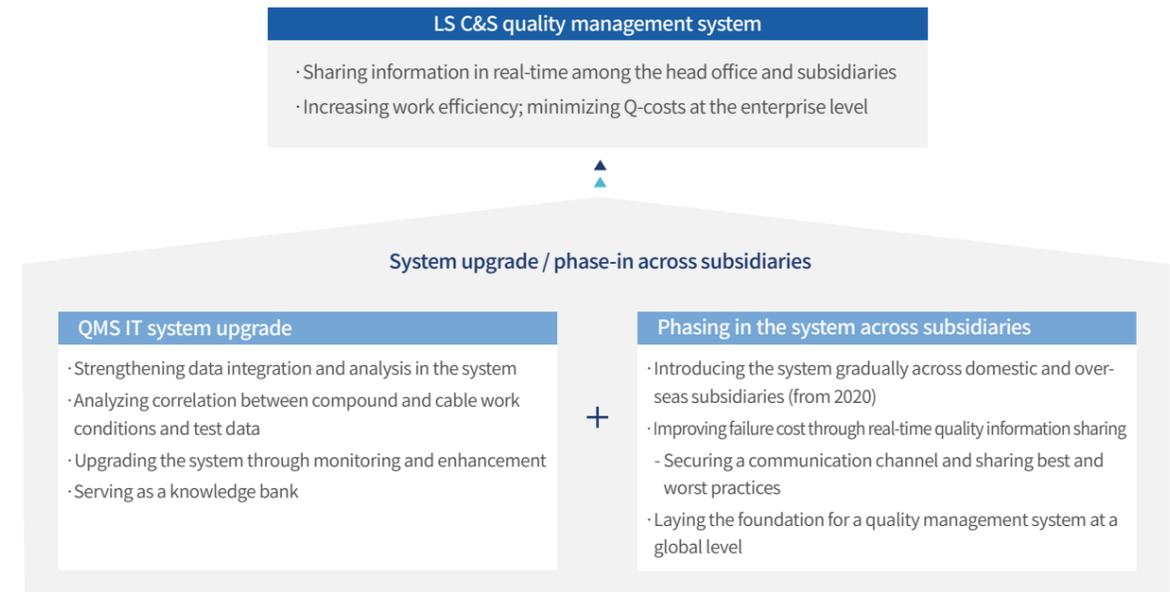


We developed and implemented a module for supplier within the QMS IT system in order to strengthen quality management of raw materials and products from suppliers. Briefing sessions were held not only to inform them of the purpose of the system but also to provide training on product specifications check, quality checklist creation, and inspection result management. Despite many trials and errors, active cooperation from suppliers has helped the system take root. Furthermore, their raised awareness allowed them to be able to supply materials with better quality.

Future plans

Upgrading the QMS IT system and phasing the system in across overseas subsidiaries

With the upgrade of the QMS IT system, a framework for quality accident prevention using big-data analyses will be established. This system will be gradually phased in across our overseas subsidiaries to create a quality management system operating at the global level.



Promoting proactive quality management

- To prevent potential quality risks, real-time monitoring and history management of any changes in the process stream will be conducted so that stable production quality can be maintained.
- On-site inspection (QC Patrol) will be conducted without a prior notice to check the status of quality management. According to the result, the pertinent plants will be requested to take measures for identified issues and devise plans to prevent their re-occurrence. This process will be reflected in the QMS IT system, allowing us to monitor and follow up on the state of progress.
- CTQ by Group and by product will be identified utilizing the QMS IT system. In order to minimize failure costs, test results will be analyzed through control charts and Cpk (Process Capability Index) in real-time. Chronic issues will be addressed by operating a company-wide Skill Team and the state of progress will be regularly monitored.

Implementing a 5W1H report system in overseas subsidiaries

The scope of our 5W1H report system will be expanded to overseas subsidiaries so that they can quickly report in the event of quality-related emergency situations. Once a report is made, the head office will support them in identifying the cause, taking preventive measures and minimizing loss.

ONE LS C&S

Social Contribution



//

We strive to realize the vision Enable the Cabled World which allows everyone to have access to energy and information. As part of the efforts, activities such as donation of talent and sharing events with local communities at home and abroad are conducted to fulfill our social responsibility. By promoting social contribution, we would like to create opportunities for shared and sustainable growth.

Strategic direction

Promoting social contribution to achieve shared and sustainable growth

Key tasks

Local community support

Designated donation to Donghae
Employee activities

Donation of talent

Electrical safety checks in traditional markets

Nurturing future talent

LS Dream Science Class (science class for children)
Industry-academia cooperation

Global sharing activities

LS overseas volunteer group
Local community support by overseas subsidiaries

Performance in 2018

Conducted electrical safety checks in traditional markets	Operated on-site training programs for industry-academia cooperation	Sharing activities by employees: visit to social welfare centers and children welfare facilities; kimchi- and coal briquette-sharing events
Made a designated donation to Donghae (USD 89,437 per year)	Ran the LS Dream Science Class	LS overseas volunteer group activities: participation by employees; support for children's education; LS Dream School construction projects

Targets in 2019

- Expand the scope of electrical safety checks in traditional markets
- Make a designated donation to Donghae (USD 89,437 per year)
- Promote the participation of employees at plants in supporting their local communities
- Conduct national projects through industry-academia cooperation, and provide on-site training programs for college students
- Upgrade the LS Dream Science Class to increase the satisfaction of participants
- Operate the LS overseas volunteer group program

Local community support

Designated donation to Donghae

LS C&S has been making an annual donation of USD 89,437 to the city of Donghae to support people with disabilities. On October 17, 2018, a donation ceremony was held at which the Donghae City Hall provided five welfare centers in the city with two passenger vans (Dream Cars) and support for facility repairs and equipment purchase through the Community Chest of Korea.

Since our submarine cable worksite was built in the city in 2009, a special bond has been formed between LS C&S and Donghae. We are striving to sustain our efforts to contribute to local communities through designated donation and sharing activities by employees.

Sharing activities by employees

All employees of LS C&S have voluntarily donated up to USD 1 from their monthly salary, and the company matches its employees' charitable contributions. The funds collected through employee donation is used to support children living with their grandparents, people with disabilities, and senior citizens living alone. In 2018, we donated USD 40,247.

Our employee volunteer groups have supported people in need to help them stand on their feet. These groups cooperate with public agencies and the local governments to meet the needs of local communities.

Chamsarang Society, a volunteer group established in 1999 at the Gumi and Indong plants consists of 600 employees, while 200 employees at the Donghae worksite are working as volunteers of Jeongnangum Society that was started in 2009. They visit local social welfare centers on a regular basis and conduct a variety of activities, including cleaning, repairs, birthday parties, sports events, free meals, and free haircut services. In addition, fuel and food support, scholarships to child breadwinners, and cultural heritage protection are provided. At the end of the year, coal briquette delivery and kimchi making events for the elderly living alone are held.

Donation of talent

Electrical safety checks in traditional markets

We have been providing monthly electrical safety checks in traditional markets since September 2017. Employees with cable inspection expertise visit shops to check cable insulation performance, sheathing, and possible short-circuits. They offer education on the risks posed by cable misuse.

As of March 2019, such activities had been conducted at 200 shops in thirteen traditional markets not only in Anyang, Gumi, and Donghae where our worksites are located but also in Busan, Daejeon and Gwangju.



//

It was rewarding to see that our activities were so helpful to vendors who had been worried about outdated electric installations. We are going to continue working to bring such meaningful results to more vendors.

Choi Jin-Wook,
a Research Engineer of the
Energy Research Group



//

I feel grateful to all of the LS C&S employees who visited our market, checked our outdated lines, and replaced electrical installations to help reduce the risk of fire. I feel relieved now, and I can more fully focus on my work!

Cho Myeong-Geun,
Yongwoon butcher shop owner
at the Daejeon Yongwoon Market



Ceremony for donation and Dream Car handover



Coal briquette delivery event



Electrical safety checks in traditional markets

Nurturing future talent

LS Dream Science Class

The LS Dream Science Class has served as a program helping children to increase their interest on basic science since 2013. College students majoring in science and engineering participate as teachers during summer and winter vacations and teach science classes to the elementary school students in Anyang, Gumi and Donghae where our headquarters and worksites are located. In addition, a variety of cultural activities and a 'vision' camp are conducted to help children think about their ambitions and how to make them come true.

Our researchers with master's and doctoral degrees also take part in as one-day lecturers to provide in-depth classes. This program helps children to raise their interest in science by making magnetic levitation trains, transformers and optical fiber photo frames for themselves and learning about scientific principles

Industry-academia cooperation

We are actively promoting cooperation between industry and academia in order to develop basic science and nurture talent. Technological information regarding our power transmission and telecommunication projects is shared with universities. Our employees with expertise serve as mentors, which allows college students to have chances to learn on-the-job skills.

The Job Schooling, an internship program started in 2012, provides the students of Kangwon National University majoring in electricity and electronics and IT engineering with education and employment opportunities. We signed MoUs with Kangwon National University to provide training programs.

The curriculum includes lectures on the systems, design, and manufacturing quality management of submarine, industrial, and specialty cables. In particular, our researchers with master's and doctoral degrees and senior-level employees with expertise and

experience participate as lecturers, allowing students to learn both theories and practices.

Global sharing activities

LS overseas volunteer group

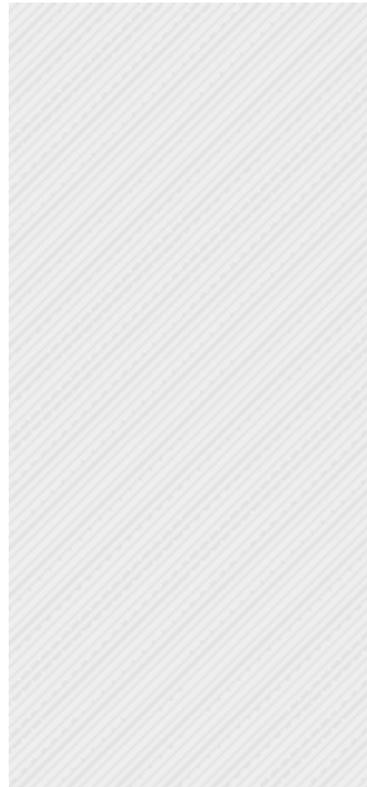
We have participated in the LS overseas volunteer group program and elementary school construction projects in developing countries, including Vietnam, India, Bangladesh, and Cambodia, to improve their educational environment. Since 2007, 23 teams consisting of 900 college students and employees have joined these program for 12 years. Volunteer activities include outdated classroom repair, taekwondo demonstrations and K-pop concerts.

In addition, as part of LS overseas volunteer group activities, the construction of LS Dream School buildings is underway near the location of our subsidiary to provide students with better educational environments in Vietnam.

Local community support by overseas subsidiaries

LS-VINA and LSCV, our subsidiaries in Vietnam raise funds to support the socially vulnerable. Employees regularly make a visit to schools for the blind and orphanages for volunteer activities and donate PCs to rural schools. Moreover, they are also sponsoring the LS-Vietnam national go competition and the Hải Phòng fireworks festival, contributing to promoting cultural exchanges with Vietnam.

For subsidiaries in China, LSCW provides a support fund for the local Korean vendor association and visits nursing homes as a volunteering activity. Meanwhile, LSHQ selects employees in need and offers their families monthly financial support. It also donates to low-income families selected from a list recommended by the city hall, and provides financial support for volunteering activities organized by the Consulate General of Korea in Wuhan.



LS Dream Science Class (science class for children)



Industry-academia cooperation with Kangwon National University



LS Dream School in Vietnam

Social contribution in 2018 (domestic)

Volunteer and sharing activities

(unit: USD)

	Activities	Beneficiary / Organization	Frequency	Participants	2018
Head office	Electrical safety checks in traditional markets	Traditional markets	12 times/year	60	21,465
Chamsarang Society	Activities to keep children company; birthday parties; a sport day	Aehyang Welfare Home	15 times/year	30	3,130
	Free meals; meal box delivery to the elderly living alone; cleaning and repairs	Gumi social welfare center	12 times/year	240	7,602
	A Support of daily necessities and house visits; fuel expense support; bathing support; cleaning	Uiseung Ansa Community (nursing home)	6 times/year	10	2,236
	Free hair cut services; birthday parties; event sponsorship	Sunsan Seongsim sanatorium and nourishing home	6 times/year	10	2,236
	Kimchi sharing events	The socially vulnerable	Annually	50	6,529
	Coal briquette-sharing events	The socially vulnerable	Annually	25	1,163
	Monthly donation	Korean Red Cross (Gyeonsangbukdo-Province) / Hwangsang Children Center / health centers / Seongsim nourishing home	12 times/year	-	8,586
Jeongnanum Society	Donghae Dream Start (science program)	Elementary students from low-income families	2 times/year	2	21,465
	Kimchi sharing events	The elderly living alone and senior citizen centers near the location of the Donghae plant	Annually	25	6,605
Total					81,017

Donation and sponsorship

(unit: USD)

	Activities	Beneficiary / Organization	Frequency	Participants	2018
Enterprise-wide	Donation	Community Chest of Korea	Annually	-	277,256
	Donation from monthly salary	Children living with their grandparents; senior citizens living alone; children's home	12 times/year	-	39,889
Donghae plant	Sponsorship for local events, including the Donghae Mureung festival	Donghae city; the Donghae Mureung festival organization committee	Annually	-	2,236
	Youcheon cultural festival (environmental writing and drawing contests)	Bugok-dong Living Ethically Campaign Center	Annually	-	89
Total					319,471

Social contribution in 2018 (overseas)

(unit: USD)

	Activities	Beneficiary / Organization	Frequency	Participants	2018
LS-VINA	Donation for the needy and for housing construction	The needy; Hải Phòng Federation of Labor	Annually	-	2,236
	Presents for low-income families; support for schools for the blind, Support for children with HIV/AIDS and for orphanages	Low-income families; welfare centers; orphanages in Hải Phòng	Annually	-	4,830
	Support for the family members with disabilities of employees and for retirees	Families of employees/retirees	As need	-	2,348
	Global Friends activity support (presents and computers for elementary/middle/high school students in underdeveloped areas)	Students in Bất Xát	Annually	-	4,025
	Sponsorship for the Hải Phòng fireworks festival	Hải Phòng City	Annually	-	4,472
	Donating PCs to Confucian schools in rural area	Hải Phòng Federation of Labor	Annually	-	8,944
	Sponsorship for the LS-Vietnam national go competition	Go players; the Vietnam go association	Annually	5	894
	Support for the flood victims in Hu'ong Khê-Hà Tĩnh	Orphanages in Hu'ong Khê-Hà Tĩnh	Annually	-	10,732
LSCV	Support for employees in need	Employees	4 times/year	-	1,073
	Sponsorship for the LS-Vietnam national go competition	Go players; the Vietnam go association	Annually	-	7,155
	International Women's Day; Women's Day in Vietnam	Employees	2 times/year	80	537
LSCW	Support for employees in need	Employees	Annually	-	626
	Support fund for the local Korean vendor association	Korean vendor association in Wuxi	As need	-	1,789
LSHQ	Donation for the needy	The needy in Yichang	Annually	2	1,207
	Support for employees in need	Employees	12 times/year	1	152
	Sponsorship for the events by the Consulate General of Korea in Wuhan	Consulate General of Korea in Wuhan	Annually	1	760
Total					51,780

ONE LS C&S

4 Shared Growth



In our rapidly changing global environment, shared growth is emerging as one of the key elements for determining a company's competitiveness. Based on the LS C&S Way, we will support and cooperate with our suppliers as we grow together in this Fourth Industrial Revolution era.

Strategic direction

Establishing a system to achieve shared growth in a sustainable manner

Key tasks

Shared growth and fair trade

Transparent procurement processes
Awareness-raising of shared growth

Supplier support

Finance; technology and training; sales channel; local economy

Supplier management system

AVL (Approved Vendor List) program
Evaluation on environmental performance
Credit rating system

Performance in 2018

Provided USD 894 thousand of direct loan support to suppliers and utilized the win-win cooperation fund worth USD 35,775 thousand

Helped suppliers achieve sales worth USD 38,190 thousand through programs for supporting them in expanding overseas and domestic sales

Offered free training programs to strengthen job competency of suppliers (73 employees from 17 suppliers)

Targets in 2019

- Expand programs for supporting suppliers in increasing overseas sales
- Review the feasibility of a Win-Win Payment System
- Strengthen efforts for shared-growth with secondary suppliers

Shared growth and fair trade

Transparent procurement processes



Supplier selection

In order to select suppliers in a fair and transparent manner, the entire process from registration to final selection is managed through our e-Procurement system. In principle, competitive bidding is always conducted except in special cases such as the application of new technologies or customer requests. Applicants are evaluated through both paper screening and on-site inspections. The results based on production capability, quality, price, worksite stability and other evaluation criteria are announced to individual applicants in writing within 15 days of the final selection.

Contract

We use a standard form of contract that includes the following information: payment amount; payment methods; and price adjustment conditions for raw material price fluctuations. In principle, contracting parties' signatures should be included on the contract.

Pricing

We set a reasonable price by considering product quality, quantity, and delivery as well as market price. Unjustly lowering the

unit price without sufficient reason is disallowed. Suppliers can file for a purchase price adjustment at any time. If a valid reason exists, a contract price can be adjusted based on mutual agreement between within 30 days from the date of request.

Delivery/Inspection

After delivery and service are completed, an inspection is performed in accordance with the pre-agreed standards and procedures. We strictly comply with pertinent rules and inspectors' duties and due diligence to prevent the return of supplied goods without sufficient cause.

Payment

Payment criteria set according to transaction type and payment amount are available through the e-Procurement system in an effort to promote transparency.

For suppliers that have signed subcontracting contracts, payment is made on 15th day of the following month after delivery. In addition, we made early payments to suppliers who faced financial difficulties ahead of the New Year and Chuseok holidays.

Payment criteria by supplier type

Subcontracting

USD 268,312 or less
Cash (paid on 15th of the following month of delivery)
More than USD 268,312
45-day maturity cash from the delivery date or the end of the delivery month

Non-subcontracting SMEs

USD 4,472 or less
Cash (paid on 24th of the following month)
More than USD 4,472 and USD 17,887 or less
60-day maturity cash from the delivery date or the end of the delivery month
More than USD 17,887
90-day maturity cash from the delivery date or the end of the delivery month

Large-sized companies

USD 4,472 or less
Cash (paid on 24th of the following month)
More than USD 4,472 or USD 17,887 or less
90-day maturity cash from the delivery date or the end of the delivery
More than USD 17,887
120-day maturity cash from the delivery date or the end of the delivery

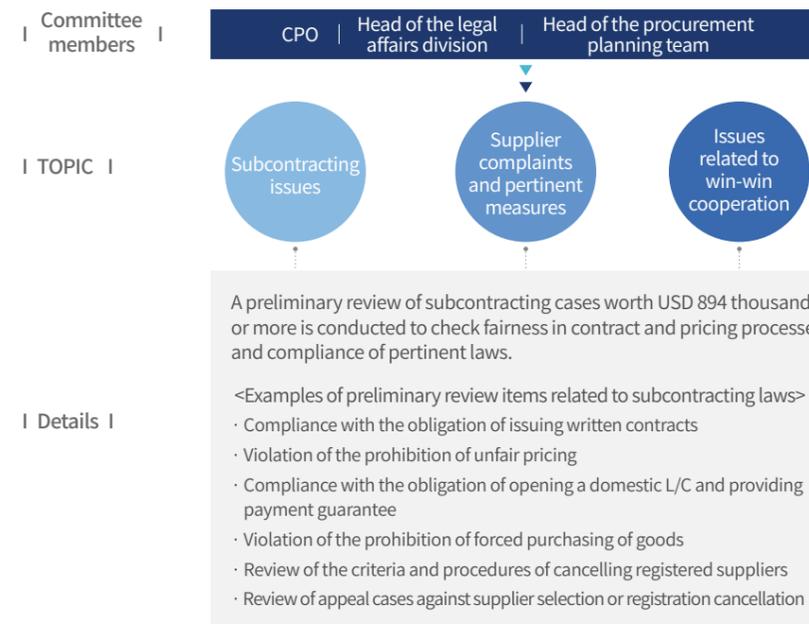


Awareness-raising of shared growth



Subcontracting Review Committee

We are operating an internal Subcontracting Review Committee to enhance awareness of shared growth and fair trade with our suppliers. The committee consists of three members, including a CPO as a chairperson, the head of the legal affairs division, and the head of the procurement planning team. A monthly meeting is held to review risks related to unfair trade.



Information sharing

Fair trade issues and best practices of other companies are shared at the company level on a monthly basis in order to prevent any potential risks of unfair trade. In addition, related information and news from the Korean Fair Trade Commission and Korea Commission for Corporate Partnership are shared. Our internal standard form of contract, detailed rules for work, and subcontracting training materials are updated accordingly based on the information.

Training on purchasing and subcontracting

Our purchasing and logistics division has its own subcontracting training manual for each process. The manual covers potential subcontracting issues that employees may face due to the lack of knowledge or misunderstanding. A quarterly training is being provided to those responsible for purchasing, quality, development and production.



Supplier support

Financial support

To help suppliers improve their cash flow, we operate financial support systems, including direct loans, a win-win cooperation fund, and a network loan. We will further strengthen promotional activities to benefit more suppliers.

Direct support

We offer a program of extending loans to suppliers using internal funds. In 2018, the amount of direct loans totaled USD 894 thousand. A total of 10 suppliers were provided with unsecured interest-free one-year loans of USD 89,437 each.

Indirect support

We also provide a win-win cooperation fund worth USD 35,775 thousand that was created in partnership with KEB Hana bank, as well as account receivable loan programs. These allow our primary and secondary suppliers (who signed contracts with primary suppliers) to secure loans at lower-than-market interest rates. In addition, we and the IBK (Industrial Bank of Korea) have operated a network loan worth USD 44,719 thousand since 2009 to support our partners.

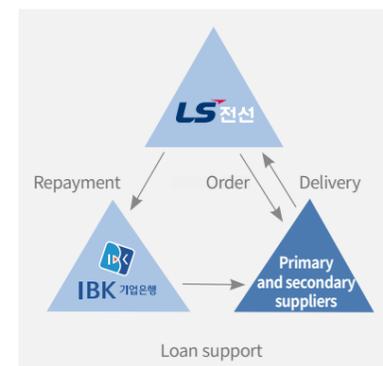
Technological support

We provide technical support to promote cooperation and help our suppliers enhance their competitiveness. Product purchase agreements have been made for the technologies we co-developed and government projects have been conducted together. In 2018, we have completed two national projects and have been working on three co-development projects targeting new customers from the Americas and Oceania, allowing our suppliers to increase sales and secure additional customers. Meanwhile, in annual due diligence for suppliers, our employees with expertise in production process and quality are dispatched to support them in resolving production process and quality issues.

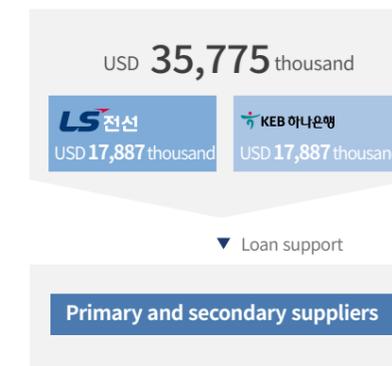
Training support

To support employees from primary and secondary suppliers to strengthen their job competency, free training programs tailored to their needs are provided in partnership with external institutions. In 2018, 73 employees took part in 17 programs. We will plan to expand the scope of training to all suppliers.

I Network loan I



I Win-win cooperation fund I



Total amount of direct loans in 2018
USD **894** thousand

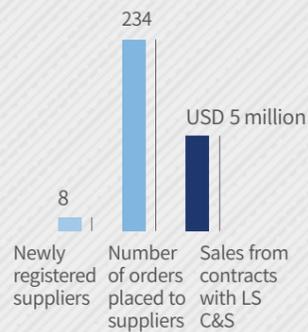


Suppliers provided with loans
10 suppliers



2018 training support
73 employees

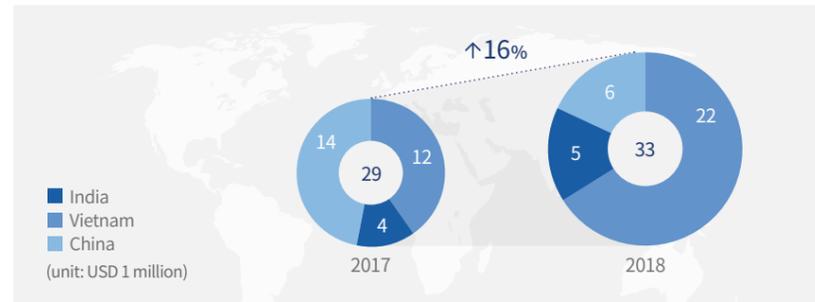
I New domestic suppliers in 2018 I



Support of suppliers in expanding their overseas sales

Not only do we help our suppliers operate their businesses in a stable manner through financial and technological support, but we also provide opportunities for them to achieve growth by supporting them in expanding their overseas sales. As part of these efforts, we share information with domestic suppliers on demand for raw and subsidiary materials by our overseas subsidiaries in China, Vietnam, and India. Moreover, selected suppliers with superior performance are given an opportunity to supply products to our overseas subsidiaries and increase their overseas sales.

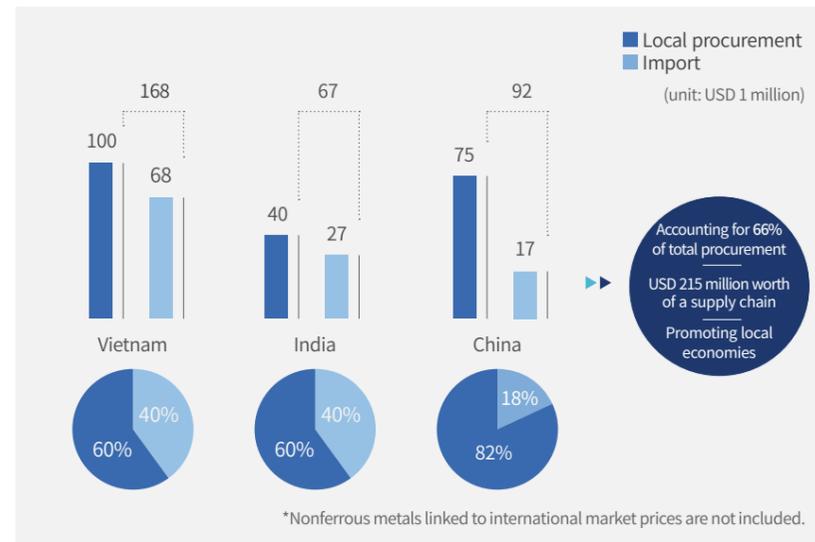
I Suppliers' sales to our subsidiaries I



Promoting local economy

To promote the local economies in our international locations, overseas subsidiaries in China, Vietnam, and India have created a supply chain worth USD 215 million, focusing on their respective local markets. Starting from 2019, our efforts will be expanded to Myanmar and Poland where our new subsidiaries are located.

I Procurement from local markets I



Supplier management system

Approved Vendor List (AVL) system

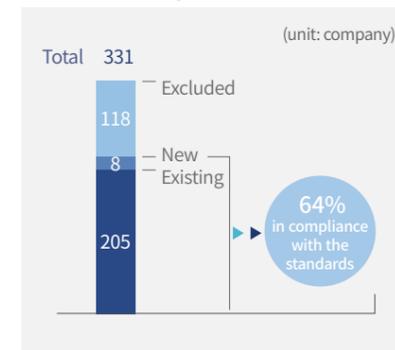
Since the introduction of the AVL system in 2016, we have been working to enhance the competitiveness of key suppliers and manage risks together. Companies selected as key suppliers under the AVL system are guaranteed one year of supply to LS C&S, allowing them to minimize uncertainties in sales. In addition, along with financial benefits, they receive support for conducting improvement activities that are identified together with LS C&S. In 2018, 331 companies were selected as AVL suppliers.



Evaluation of environmental performance

To provide services in accordance with domestic and international market standards, newly registered suppliers are subject to the evaluation of not only their overall management, quality management, and production management, but also their environmental and safety management. In addition, the results are updated in an annual evaluation of suppliers

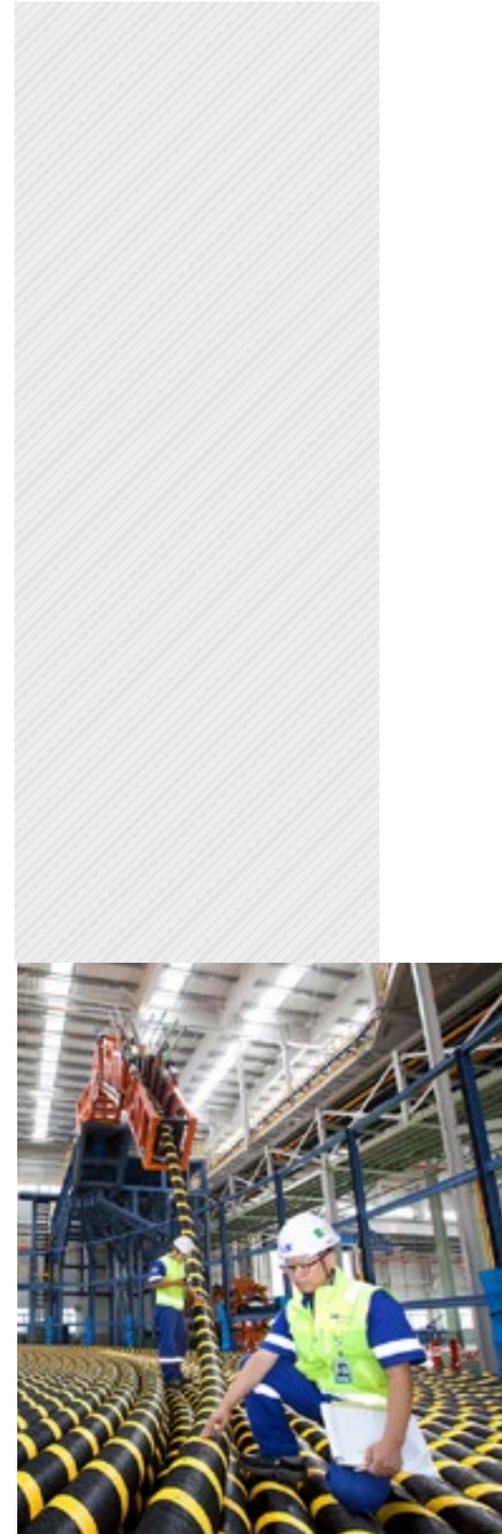
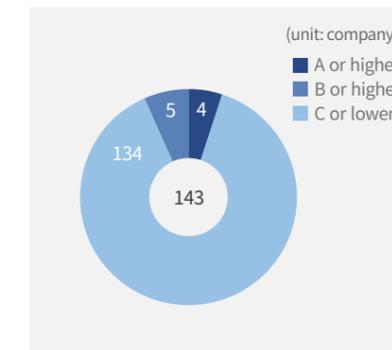
I Suppliers subject to our environment and safety management standards I



Credit rating system

We operate an annual credit rating system for our suppliers with high transaction volumes. The results are utilized as AVL supplier selection criteria. In addition, we monitor their financial risks in order to proactively respond to any signals of bankruptcy. In 2018, the credit of 143 suppliers was evaluated by two credit rating agencies.

I Credit rating results in 2018 I



ONE LS C&S

Respect for Human Rights and Diversity



Employee satisfaction is a starting point that allows us to meet the needs of customers, suppliers, and local communities. Respect for employees is essential to their satisfaction. We respect our employees and treat them fairly. We nurture and secure talent and ensure that people can reach their full potentials and produce the best possible results. To promote work-life balance, a variety of support measures are in place. We also put considerable efforts into creating a pleasant working environment. Our management and labor representatives cooperate fully based on a sound relationship.

▶ Strategic direction

Respecting the human rights and diversity of our employees and pursuing global standards

▶ Key tasks

Respect for employee rights

No discrimination / Education on human rights protection / No child/forced labor

Labor-management relationship for shared growth

Operating a labor union
Facilitating communication
Joint Social Contribution
On-site satisfaction survey

Respect for diversity

Support for female employees
Employment of the disabled

▶ Performance in 2018

Respect for employee rights, and no discrimination	<ul style="list-style-type: none"> · Promoted diversities · Implemented no-discrimination policies
No child/forced labor and ensuring labor-union activities of employees	<ul style="list-style-type: none"> · Implemented no child/forced labor policies · Promoted labor-management relationships for value creation
Support for female employees, and employment of the disabled	<ul style="list-style-type: none"> · Took support measures for female employees · Signed an employment contract with a company for employees with disabilities

▶ Targets in 2019

- Encourage employees to take more vacation time (e.g. by using 'sandwich' days or annual 'refresh')
- Promote measures to support female employees
- Maintain employment policies for people with disabilities



Respect for employee right

No discrimination

According to the Article 6 (Equal Treatment) of the Labor Standards Acts, no employer should not discriminate against workers on the basis of gender, or give discriminatory treatment in relation to the working conditions on the basis of nationality, religion or social status. Our Code of Ethics clearly states discrimination against employees. In the Chapter 5, we prohibit unfair discrimination for reasons of gender, academic background, age, nationality, religion and birthplace in regard to recruiting, promotion, compensation, and education opportunity. All employees are given equal opportunities, and reward is made based on their performance. To prevent any unfair act, we operate support systems, such as the help center, grievance channel, cyber reporting channel and appeal against employee performance evaluation results where anyone can freely get counseling and report in anonymity.

Education on human rights protection

In order to raise employee awareness of human rights based on the understanding of social and cultural diversity, we conduct related educational sessions. In addition, annual training on the prevention of sexual harassment is provided. In 2018, a total of 1,955 employees participated in the program. Ethical management, including sexual harassment prevention is covered in the introductory training programs for newly recruited employees and in the development programs for overseas employees.

No child/forced labor

We strictly prohibit any labor by children under 15 years old and by adolescents who are currently attending school in accordance with the Labor Standards Act of Korea and

the labor principles of the UN Global Compact. As for forced labor, our employees work only based on their free will. We do not force our employees to work at night or on holidays. Working hours are eight hours per day and 40 hours per week. If anyone works at night or on holidays with prior consent, overtime payments are made.

Labor-management relationships for shared growth

Labor union

Our labor union was launched as the Anyang branch of the GoldStar chapter of the Federation of Korean Metal Workers Trade Unions in 1976, and has celebrated its 20th anniversary with 872 members as of the end of 2018. 'Those who work at LS C&S worksites' are eligible for union members and have a right to freely join or discontinue membership at any time. Both the labor and the management are working hard to establish a sound and harmonious relationship. The management strives to ensure employment stability and compensation based on business performance while the labor union actively conducts task and activities to achieve the company's business goals. Based on these relationships, we agreed on the extension of retirement age and introduced a wage peak system in 2007. We have cooperated to address critical issues related to internal and external labor environments. As a result, there have been no labor disputes for the last 30 years since 1989.



Labor union membership in 2018

872 employees

*All of 872 production workers are labor union members.



Sexual harassment prevention training in 2018

1,955 employees

I LS Code of Ethics and Practical Guidelines I

Chapter 5. Corporate Responsibilities for Employees

1. Nurturing talent

1) The company establishes, supports, and promotes the system to nurture employees as autonomous and creative talent.

2) Team leaders give advice and guidance to their team members considering their aptitude and abilities with determination to nurture them as those who are strong and challenge themselves.

2. Treatment based on abilities and performance

1) The company provides employees with equal opportunities for improving their abilities (training, job rotation, and position assignment decisions) and does not discriminate them for reasons of academic background, gender, age, religion, birthplace, age, disability, marital status, nationality, and race.

2) The company establishes, discloses, and complies with the specific criteria for evaluating the abilities and performance of employees in order to create a culture of fair competition.

Facilitating communication

To share corporate management information with our employees, including a labor union, on a regular basis, a variety of communication channels are utilized. We listen to the voices of our employee and work together in order to improve a working environment and welfare benefits.

	A Monthly Meeting	Participation and Cooperation Promotion Council Meeting	Labor-Management working-level meetings
Participant	All employees	Management: six persons including the president Labor: six persons including the head of the union	Management: led by the head in charge of labor-management affairs Labor: led by a member fully dedicated to the union
Frequency	Monthly	Quarterly	Monthly/As needed
Activities	Sharing information on business status, financial performance and pending issues	Sharing information on business status and performance; Discussing systems and working conditions	Discussing improvement on working conditions and employee benefits

Joint Social Contribution activities

Since the labor-management agreement was made in 2007, we have operated a program that all employees of LS C&S donate up to USD 1 from their monthly salary and the company matches its employees' charitable contributions. In addition, volunteer activities, such as living expense support for the underprivileged, and kimchi- and coal briquette-sharing events are conducted. Employees also participate in environmental cleanup activities, including the One Company One Stream campaign, to fulfill corporate responsibility.

On-site satisfaction survey

An annual on-site satisfaction survey is jointly conducted by the labor and management to diagnose and improve a working environment and organizational culture at our plants. The survey consists of the following items: 1) manager; 2) supervisor; 3) communication; 4) organizational culture; 5) labor-management relationships; 6) labor union; 7) working environment; 8) job management; and 9) welfare benefits. Based on the survey results, we take improvement measures for issues identified to raise employee satisfaction level at work. At the same time, a grievance system is implemented by plant to deal with employee complaints regarding their jobs and working environment.

I Labor union membership by plant I

	2016	2017	2018
Anyang	12	7	6
Gumi	495	498	469
Indong	262	273	260
Donghae	200	146	137
Total	969	924	872

(unit: person)

I On-site survey items I

- Manager
- Supervisor
- Communication
- Organizational culture
- Labor-management relationships
- Labor union
- Working environment
- Job management
- Welfare benefits

Respect for diversity

Support for female employees

We put major efforts into creating a women-friendly workplace where everyone can reach their full potential. As of 2018, female employees accounted for 15.1% of all employees and female managers¹⁾ for 5.1% of all managerial positions, but this has been rising for three consecutive years. To nurture more female managers, we plan to provide leadership training programs for female employees and actively support them through applicable welfare benefits, including parental leave and flexible work hours.

1) The ratio of female managers: The percentage of female managers out of all managerial positions

LS daycare center

An LS daycare center that was established in Anyang at the end of 2014 helps employees reduce the burden of childcare and concentrate on their work. Currently, a total of 70 employees from LS Group subsidiaries are utilizing this daycare center.

Space for female employees

There are nursing rooms and lounges for female employees at our worksites. The female employee club Arom Society is operated to provide counseling and promote good fellowship among female employees.

Parental leave

Employees with children aged eight (second graders) or younger can take parental leave up to one year and their return to work is guaranteed. In 2018, a total of 20 employees took the leave, and three of them were male employees. In addition, our working hour reduction system for childcare allows employees subject to parental leave to reduce their working hours over one year rather than taking a leave of absence. A working hour reduction system for pregnant employees is also implemented to help reduce their physical stress with less working hours.

Employment of the disabled

Consideration for employees with physical disabilities

In accordance with the Act on Employment Promotion and Vocational Rehabilitation for Disabled Persons, we hire those who with physical disabilities at our plants. As of 2018, a total of 36 employees with physical disabilities are working in our worksites, which is an increase from 35 of the previous year. We actively support and help them successfully adjust to and do their jobs through guidance and preparatory training so that they can stand on their feet.

Increasing the number of employees with disabilities through indirect employment

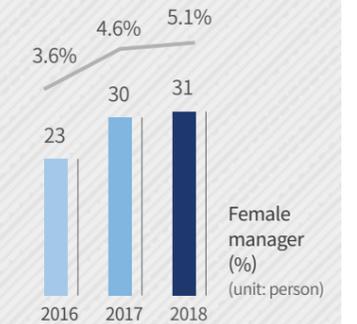
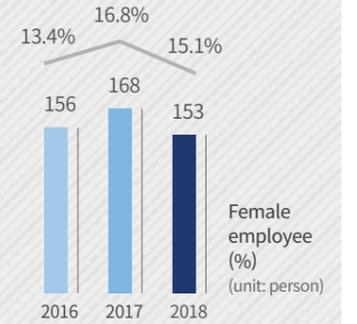
An indirect employment contract was signed with Butyi in April 2017 and it has been renewed on an annual basis ever since. The company was established to provide stable jobs to the socially vulnerable, including the disabled, according to the 'subsidiary-type standard business system' of the Korea Employment Agency for the Disabled and the Act on Employment Promotion and Vocational Rehabilitation for Disabled Persons.²⁾

Butyi helps people with disabilities have jobs and provides related support. Employees are selected from the day-hospital³⁾ center named Haeddeulnal within the Yongin Mental Hospital, the only WHO psychosocial rehabilitation cooperation organization in Korea. They receive training prior to starting work, and all cases of trainees are managed to provide support them to continue working.

2) Legal basis: The Act on Employment Promotion and Vocational Rehabilitation for

3) Day hospital is an outpatient facility where patients attend for assessment, treatment or rehabilitation during the day and then return home or spend the night at a different facility.

I Female employees in managerial positions (as for permanent employees) I



I Employees with disabilities (accumulated) I



RULE & RESPONSIBILITY

Compliance Management



We announced the LS C&S Way and four core values that inspire the principles on which employees act. Under the value of ‘rules and responsibility’ we are pursuing compliance management to fulfill our corporate responsibility and win the trust of our stakeholders. Heightened employee awareness of compliance will lead to a reduction in both internal and external risks. This in turn will bring us closer to our ultimate goal of ‘zero risks’ and lay a foundation for corporate social responsibility.

▶ Strategic direction

Setting a vision for the compliance working committee: spearheading the efforts for promoting compliance management and reducing risks to zero

▶ Key tasks

Strengthening compliance activities

Compliance training

Facilitating the operation of an in-house bulletin board

Analyzing the potential impact of revision and enactment of laws and sharing analysis results

Conducting risk prevention activities on international projects

Reviewing checklists for each step of bidding process

Providing support for bids on large-scale project

Upgrading the standard form of contract and providing legal consultation

Reviewing contracts and the related laws

▶ Performance in 2018



▶ Targets for 2019

- Provide task force team support to minimize risks in overseas business
- Refine checklists for each step of bidding
- Minimize cash outlays due to lawsuits or damages
- Strengthening activities with an increased number of CP¹⁾ officers

1) Compliance Program

Strengthening compliance activities

Compliance training

To help our employees internalize the value of compliance management, we provide regular training targeting newly-hired career and non-career employees. This training aims to provide guidance on the standards for conduct at work. In addition, we operate regular sessions on competition and anti-corruption laws. To prevent risks associated with expanding overseas sales, we are also working on practical programs that can be utilized on-site.

For newly-hired employees (4 sessions)	<ul style="list-style-type: none"> · Fair business transactions (career employees): LS Miraewon (Feb. 6) and Gunpo research center (Feb. 27) · The Agency Act and the Fair Trade Act (career-/non-career): LS Tower (Jul. 25) · Introductory legal course (career): LS Miraewon (Sept. 13)
For sales employees (3 sessions)	<ul style="list-style-type: none"> · Receivables management: LS Miraewon (May 31) · International project contract and claim management: LS Tower (Aug. 28) · The Subcontracting Act: LS Tower (Aug. 28)
Compliance bulletin board	<ul style="list-style-type: none"> · ‘One-strike out’ system (subcontracting), and anti-corruption laws
	<p>//</p> <p>To help our employee internalize the value of compliance management, we provide training targeting newly-hired employees (career/non-career) on a regular basis.</p>



Training for newly-hired employees

4 sessions



Training for sales employees

3 sessions



Conducting risk prevention activities on international projects

To prepare for saturation in the domestic cable market and to become a leading company on the global stage, we are focusing on expanding overseas sales. As our management views elevated customer requirements and market entry barriers to be the risk factors involved, activities are being conducted to address these challenges. From 2018, efforts are being made to support bidding on large-scale projects through a variety of tools applicable to work and with legal assistance.

I Checklists for each step of bidding I

	Focus	Contract terms	From the perspective of construction management
1 Bidding preparation (bidding announcement)	Conducting a thorough analysis of contract/ construction terms	<p>Limitation of liability</p> <ul style="list-style-type: none"> - Less than 100% of the contract amount - Consequential and indirect damages excluded - A minimum level of exceptions in the limitation of liability 	<p>Cable laying depth</p> <ul style="list-style-type: none"> - Applying reasonable endeavors rather than best endeavors - Specifying the criteria for achieving laying depth
2 Contract preparation (before the final notification)	Identifying advantages/ disadvantages and receiving a quotation	<p>Data provided from the owner</p> <ul style="list-style-type: none"> - Making the owner responsible for the data - Reviewing whether it is possible to extend construction duration and charge additional construction cost if geological features are different from the data provided 	<p>Method of construction</p> <ul style="list-style-type: none"> - Checking owner's requirements of construction methods - Simultaneous cable pulling and laying, and pre-trenching - Route clearing (PLGR) - Back-fill: engineering/natural back-fill - Cable laying, dredging, and HDD (Y/N) - Construction for cable protection (Y/N) - Deep sea: cable pulling (Y/N)
3 Construction	Preparing a plan A and plan B for negotiations	<p>Bidding document structure</p> <ul style="list-style-type: none"> - Checking which information in bidding documents will be used for a contract <p>Variation / Change Order</p> <ul style="list-style-type: none"> - Identifying what is subject to variation, and checking whether it is possible to make a proposal for the variation and what are the compensation procedures 	<p>Soil data check</p> <ul style="list-style-type: none"> - Analyzing data provided by the owner and reviewing the need of an additional survey - Determining the construction method based on the analysis
4 Maintenance period	Increasing the odds of winning future contracts with the owner	<p>Terms on construction impracticability</p> <ul style="list-style-type: none"> - Standby rate criteria and payment - Force Majeure 	

*Subcontracting contract: strengthening bargaining power in negotiations by bringing multiple subcontractors to the table.

Upgrading the standard form of contract and providing legal consultation

We review contracts from the perspectives of risk identification, customers, suppliers, fair competition, and CSR. This approach is reflected in the compliance guidelines upon which our employees act. These guidelines will help our employees remain fully in compliance with laws and regulations and serve as a basis for us to prevent economic loss to the company and to society.

I Contract review and legal consultation I

		2016	2017	2018
Domestic	Contract review	167	138	170
	Legal consultation	1,886	2,369	2,606
Overseas	Contract review	173	216	223
	Legal consultation	2,295	2,585	2,885



RULE & RESPONSIBILITY

Ethical Management



Ethical management means conducting business activities in a transparent and fair manner by putting ethical values on top priorities. It allows companies to give trust and confidence to their customers, employees, competitors, suppliers and shareholders. Our management philosophy is that we should fully abide by principles, laws, and regulations and be ethically responsible while doing business. Based on our philosophy, we would like to achieve our goal of becoming "Your No. 1 Creative Partners".

Strategic direction

Strengthening the foundation for ethical management and raising employee awareness

Key tasks

Strengthening the foundation for ethical management

Refining the Code of Conduct and guidelines for implementation

Operating an organization and systems

Counseling center

Ethical management website

Cyber Reporting Channel

Reporter protection program

Reward for reporting

Clean Company

Raising awareness of stakeholders

Ethical management training / Promotion / Official document for cooperation to suppliers / Evaluation of ethics

Performance in 2018

Feasibility assessment for the need of revising the Code of Conduct	The evaluation result of ethics was utilized to review the need of the revision of the Code of Conduct.
Reporting cases	A total of eleven reporting cases from Cyber Reporting Channel and in writing were received, investigated and addressed.
Employee training	Training on ethical management was provided to employees to be dispatched overseas.

Targets in 2019

- LS C&S Code of Conduct and implementation guidelines: refining the Code of Conduct and guidelines for implementation
- Promotion activities: introducing programs for implementation and diversifying promotional content
- Intensive training : for employees of the head office and subsidiaries to be dispatched overseas

Strengthening the foundation for ethical management

Implementation of the Code of Conduct

We established our Code of Conduct to provide a framework in which employees perform their work ethically and in compliance with laws and regulations and fulfill our corporate social responsibility. This is applied to LS C&S and all of its subsidiaries. The Code of Conduct consists of six categories: responsibilities and obligations toward customers; basic ethics for employees; fair competition; fair business transactions; corporate responsibilities for employees; and responsibilities toward the country and society.

In addition, implementation guidelines help our employees understand our Code of Conduct and act upon it. The guidelines serve as criteria for making decisions and taking actions in ethically challenging situations at work. Meanwhile, an ethics evaluation has been conducted on an annual basis to assess the utilization of the Code by employees and review the need for revisions or refinements to it and related guidelines.

Operating organization and systems

Counseling center

The Ethics Secretariat is operating a counseling center for employees who face ethical issues. They can not only have counseling on ethical conflicts at work but also

get general information on ethical management and advice on how to interpret and apply the Code through the Cyber Reporting Channel, phones or emails. Reports are received and handled confidentially, and the secretariat does not disclose the personal information of anyone reporting and the reported details without their consent.

Ethical management website

To introduce ethics management and promote the implementation of its values, a dedicated website is being maintained. Information, including a full text of the Code of Conduct and the pertinent programs for its implementation, can be found on the website. It also features a Cyber Reporting Channel that allows employees as well as stakeholders, including customers and suppliers, to report any unethical activities they witness or disadvantages they suffer.

Cyber Reporting Channel

The Cyber Reporting Channel allows employees as well as stakeholders, including customers and suppliers, to report any unethical activities they witness or disadvantages they suffer. We keep personal information and reporting details of all reporters confidential. Their identities are strictly kept confidential to protect reporters. All of reports received, including anonymous ones, are properly handled and addressed and results are delivered to reporters.

Code of Conduct in LS C&S

Responsibilities and obligations for customers	Basic ethics of employees	Fair competition (with competitors)
<ul style="list-style-type: none"> Respect for customers Provision of credible information Response to customers Value to customers Protection of customer interests 	<ul style="list-style-type: none"> Prohibition of unjust action using position or duty Honest and unbiased report Sense of decency Avoidance of conflict of interest Prevention of sexual harassment in the workplace Self-development 	<ul style="list-style-type: none"> Utilization of information obtained in a fair manner Advantages secured through fair competition Prohibition of collusion Compliance with laws and commercial practices
Fair business transactions (with suppliers)	Corporate responsibilities for employees	Responsibilities for the country and society
<ul style="list-style-type: none"> Supplier selection through a fair process Fair business transactions and evaluation Clean business transaction process Support to suppliers 	<ul style="list-style-type: none"> Nurturing talent Reward based on performance Sound expression of will ensured Workplace safety and health 	<ul style="list-style-type: none"> Prohibition of unethical and anti-social business activities Contribution to the development of the country and society Protection of shareholder interests Protection of the environment



Reporter protection program

We operate programs to protect reporters from being disadvantaged due to the reporting. Their identities, evidence presented by them, any other information that could identify them, and measures taken based on the results are strictly kept confidential to protect reporters.

Reward for reporting

To prevent unethical acts and create a sound organizational culture, those who report irregularities such as cases of bribery are offered a reward of up to five times of the amount of the bribe (USD 4 thousand in maximum). Those who voluntarily report unethical acts are exempted from responsibility and the money they received is used for volunteer activities.

Clean Company

We established a system called Clean Company that helps employees voluntarily report any past acceptance of money or gifts. Once they fill out a report form and submit it to the Ethics Secretariat, any money or gifts received are returned to the givers with an explanation regarding our ethical management policies. If there is a situation in which the received items are difficult to return, they are donated to social welfare facilities or to religious groups under the name of the giver.

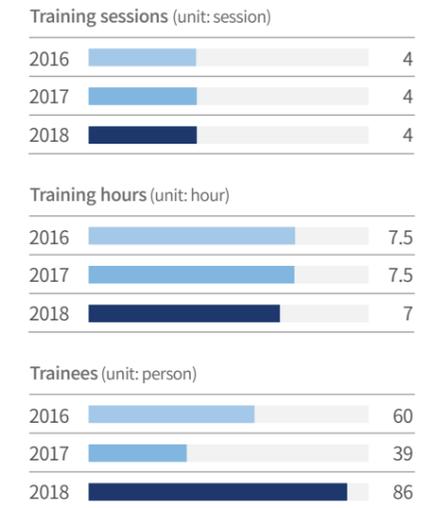
Raising awareness of stakeholders

Ethical management training

To prevent any possible violation cases of the Code of Conduct, ethics training is provided to employees from the head office and subsidiaries to be dispatched overseas before leaving. The training programs include: the concept of ethical management; internal ethical management system and the Code of Conduct; and violation cases. In 2018, four ethical training sessions (7 hours) were conducted for 86 employees.

Promotion of ethics management

The secretariat has been posting articles on ethical management, including news, the Code of Conduct, ethics systems, im-



plementation guidelines and cases on the company intranet. In 2018, articles on whistleblowing systems, win-win management, and inclusive organizational culture were posted. They received total 2,764 hits.

Official document for cooperation to suppliers

Before the Chuseok and Lunar New Year's holidays, we send an official document asking suppliers for cooperation in eradicating practices of giving and receiving gifts, entertainment, and money and informing them of our Code of Conduct and reporting channels. After the document is sent, it is also posted on the company purchasing intranet so that all of suppliers can check the information

Evaluation of ethics

Since 2010, an ethics evaluation has been conducted for all employees on an annual basis to identify improvement areas for our ethical management activities. The evaluation survey consists of 25 questions in three categories: the basis of ethical management, implementation of corporate ethics, and ethics being practiced in our workplaces. The results are reflected in the next year's activities.

Reporter protection program

Confidentiality
Identities of reporters, or any other information that could identify them are strictly kept confidential.

Guarantee of status
We protect those who report violations from being disadvantaged or discriminated against in their teams or business relationships due to reporting, providing testimony, or submission of evidence.

Reduction and exemption from responsibility
Those who voluntarily report unethical acts are exempted from responsibility or receive consideration in the disciplinary response.



2018 trainees

86



Hits of promotion materials posted

2,764

RULE & RESPONSIBILITY

Workplace Safety



To ensure the right of employees to a healthy, safe, and pleasant environment, we make employee safety and health our top priority. To this end, an occupational safety and health management system is operated in accordance with the safety and health management system OHSAS 18001 to ensure a disaster-free workplace. In addition, labor and management are working together to strengthen the management of accident and disaster prevention.

Strategic direction

Ensuring a healthy workplace and achieving the goal of zero-accidents by strengthening safety activities

Key tasks

- Conducting activities to promote safety
- Five safety rules at worksites / Workplace safety / Zero-accident campaigns / Safety passage for pedestrians
- Eliminating risks of potentially dangerous equipment
- Risk evaluation of all processes
- Safety diagnoses of cranes and forklifts
- PSM evaluation at the Gumi and Indong plants

- Creating a healthy workplace
- Occupational disease / lifestyle disease prevention activities
- Safety and health management activities
- Occupational Safety and Health Committee / OHSAS 18001

Performance in 2018

Safety promotion activities	<ul style="list-style-type: none"> Established five safety rules at worksites for compliance Provided safety training: offline for managers/supervisors (16 hours) and online for office workers (12 hours); and revision of daily report format Repaired exterior pedestrian passages at all worksites
Risk elimination of potentially dangerous equipment	<ul style="list-style-type: none"> Conducted risk evaluation of all processes Examined the safety of cranes and forklifts Provided the PSM evaluation at the Gumi and Indong plants

Targets in 2019

- Conducting activities focusing the prevention of four critical risks
 - Cranes, forklifts, rotating equipment, and fires/explosions
 - Create and promote risk prevention rules; and revise safety rules of each process
- Strengthening the safe management of suppliers
 - Promote safety activities of suppliers: monthly meetings, and programs for safety diagnosis
 - Prevent risks related to subcontracting : improvement in work permission processes
- Conducting activities to promote a healthy workplace
 - Integrated MSDS management, work environment measurement, and special examinations
- Responding to internal and external safety issues
 - Review the enforcement decree of the revised Industrial Safety and Health Act

Safety promotion activities

Establishing five safety rules at worksites

To create a workplace that emphasizes safety as its top priority, five safety rules were established. We are conducting promotion activities, including handouts to employees and visitors, postings on our intranet, campaigns, and in-house broadcasting. To strengthen compliance, employees who frequently violate the rules are subject to penalties.

Five safety rules at worksites [head of labor relations and environment division]

Safety means saving lives.

- No one is exempt from safety accidents.
- Always identify risk factors and stick to the rules to protect yourself and your colleagues

Always use safety passages and crosswalks while walking. Do not enter working areas outside your own designated areas!

Do not use cell phones or earphones while on the move. Always remain aware of your surroundings while walking.

Operate forklifts at 10km/h or slower. Steer clear of areas where forklifts are working.

Do not jeopardize yourself with risky behaviors! Alert colleagues of any unsafe acts.

Always report issues and act as directed.

Strengthening a workplace safety

Safety management system at worksites

We have refined the safety management system to ensure the safety of our employees and suppliers. Managers and supervisors are given certificates of responsibility for safety to encourage them to take greater responsibility for these roles.

Strengthening safety training

For a total of 221 employees, on-the-job training focusing on practical exercises was provided to managers and supervisors (16 hours), while quarterly three-hour online programs were operated for office workers,

including researchers. In addition, the daily report format was revised to improve the effectiveness of group training.

Promoting safety communication

Safety communication activities are conducted to identify potential risks and raise awareness. Monthly meetings with supplier representatives are held to discuss pertinent issues and improvements. A safety reporting channel is maintained so that employees can present suggestions and ideas. Communication regarding external safety issues takes place through text messages sent within teams/divisions/plants.



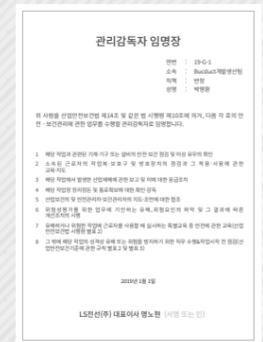
Establishing five safety rules at worksites



Strengthening safety training



Repairing pedestrian passages



Certificates of responsibility for safety



Employees subject to safety training

221

I Number of accidents occurred I

	2016	2017	2018
Accidents (case)			
Gumi	1	3	1
Indong	0	0	0
Donghae	0	0	1
Company total	1	3	2
Company-wide industrial accident rate (%)	0.08	0.22	0.16
Industry-wide industrial accident rate (%)	0.19	0.29	0.28

I Frequency rate of injury I

	2016	2017	2018
Frequency rate of injury			
Gumi	0.75	2.12	1.53
Indong	0	0	0
Donghae	0	0	0
Company total	0.40	1.17	0.83

* Frequency rate of injury = Number of industrial accidents / (Yearly working hours X 1,000,000)

Zero-accident campaign

A zero-accident campaign is launched every February and employees write a safety pledge to raise awareness of safety. In the winter, each team conducts fire prevention activities, including elimination of fire risks and a slogan contest.

Repair of exterior pedestrian passages

To ensure employee safety, we repaired a 1,360-meter pedestrian passage: sidewalk blocks were installed and painted; safety fences were erected to separate the paths for forklifts and trucks from pedestrian passages; and a door was installed at the access road to a crosswalk.

Eliminating risks of potentially dangerous equipment

Risk evaluation of all processes

Regarding the potential risks in each process, we have continued to evaluate their frequency and degree, identify critical risks, and devise related improvement measures. The pertinent company rules have been revised to more systematically re-examine our full range of improvement measures spanning from risk elimination to safety gear.

Conducting safety diagnoses of cranes and forklifts

Safety examinations are regularly performed on potentially dangerous machines and devices. Monthly safety checks of cranes are provided by an on-site subcontractor. For six cranes and 66 hoisting accessories identified for their potential high risk, detailed examinations were conducted by external specialists. A total of 43 issues were found and addressed, and one crane will be replaced in 2019.

Forklifts are being managed by an on-site subcontractor. In a non-destructive inspection of 54 high-load forklifts, a minor crack was found in one forklift and improvement measures were taken.

PSM evaluation at the Gumi and Indong plants

We implement process safety management (PSM) to prevent fires and explosions at copper smelting furnaces and boilers that use LNG. This covers twelve categories, including process safety material management, emergency measures, and internal audits, according to which our PSM status is evaluated by the Ministry of Labor every four years. We have so far maintained an acceptable S rating.



1) Conducting safety diagnoses of cranes and forklifts
2) Establishing five safety rules at worksites
3) Installing safety fences at worksites

Creating a healthy workplace

Occupational disease prevention activities

Working environment measurement and general/special health checkups

Work environment measurement is conducted biannually for all processes (233 sites) to create a pleasant working environment. The results are monitored to determine whether harmful factors are exceeding set limits or abnormal phenomena are occurring. In addition, general and special health checkups are provided for all employees (980 and 514 employees respectively) on an annual basis.

Lifestyle disease prevention activities

Smoking cessation programs

As part of the efforts to promote employee health, smoking cessation programs were operated for six months from February to July. Ten employees at the Gumi and Indong plants successfully completed the programs and were able to quit smoking.

Employee health management

Employees who receive abnormal findings in their health checkups are provided with consultations with doctors and drug prescription benefits. In addition, flu vaccinations are offered to employees and their families in partnership with local clinics to promote their health.



Safety and health management activities

Occupational Safety and Health Committee

The Occupational Safety and Health Committee is operated under the labor relations and environment division/CLO. Key health and safety issues are jointly reviewed and decided by representatives of labor and management through this committee.

It is composed of 15 members from management, including a person responsible for safety management, and 15 labor representatives, including the head of the labor union. Key considerations include: making a plan to prevent industrial accidents; establishing and revising pertinent regulations; providing training to workers; checking and improving the working environment; managing employee health; and collecting statistics on industrial accidents.

The committee meets on a quarterly basis to consider and vote on key issues. Approved items are announced to all employees. In 2018, a total of 65 items were considered and decided, and actions have been taken in response.

OHSAS 18001

We have been carefully maintaining OHSAS 18001, an international standard for safety and health management.

Every year, management reviews the performance over the previous year, sets goals for the current year, and operates programs for improvement. Each team internally analyzes implementation status, identifies issues, and conducts independent improvement activities.

Our OHSAS 18001 compliance status is evaluated by the certification organization UL on an annual basis to ensure we are meeting global standards for safety and health management.

4) General and special health checkups for all employees
5) Smoking cessation program



EXPERTISE

Talent Management



Based on our belief that sustainable performance can be achieved only through the efforts of the people involved, we strive to secure and nurture creative talent. The talent we seek includes: professionals with outstanding job competence; members leading the development of the organizational culture by implementing its core values; and global leaders actively responding in an ever-changing environment. We aim to create an environment in which the company and its employees grow together, thereby creating greater value.

Strategic direction

Supporting employees with a sense of ownership in their jobs to make a great achievement together

Key tasks

Improving employee satisfaction

Organizational competence and vitality / Worksite satisfaction

Securing talent and ensuring fair HR management

Employment / Performance management / Fair evaluation / Appropriate compensation

Employ welfare benefits

C.O.R.E.Prize

Nurturing talent

Launching a mobile app training program (Touch Class) / Offering leadership training / Strengthening job competence / Promoting One LS C&S for suppliers / Supporting overseas subsidiaries

Performance in 2018

Securing talent and ensuring fair HR management	C.O.R.E. Prize	Nurturing talent
---	----------------	------------------

- Operated a performance management system
- Appropriate rewards: Customer First and R&R prizes

- Launched a mobile app for employee training
- Offered leadership training: an assimilation workshop, and training for each job position
- Strengthened job competence: technology sales training, DX academy, and growth facilitator course
- Supported overseas subsidiaries: leadership training for team leaders at LSHQ
- Promoted One LS C&S for suppliers: 20 power distribution suppliers

Targets in 2019

- Improving employee satisfaction
 - Enhance organizational vitality index
 - Increase worksite satisfaction index
- Securing talent and ensuring fair HR management
 - Optimize HR management
 - Enhance employee competitiveness
- Nurturing talent
 - Focus on the training of Korean and local employees in overseas subsidiaries (local team leaders, and dispatched employees)
 - Operate programs for job competence

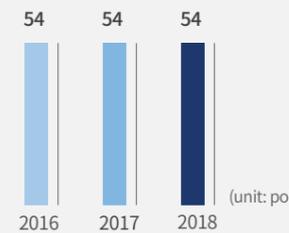
Improving employee satisfaction

Organizational competence/vitality indexes

Organizational competence recently recorded 54/100 points, the same as in the previous year, while organizational vitality rose two points from 2017 to reach 72 points. Among the five elements on the organizational competence index, the score for team member capacity rose slightly (two points). Organizational vitality, an element of organizational effectiveness showed a significant increase of four points.

I Organizational competence index (three-year trend) I

Organizational direction	66	▶▶	66
System capacity	44	▶▶	45
Functional capacity	46	▶▶	47
Leadership capacity	60	▶▶	60
Team member capacity	64	▶▶	66



I Organizational vitality index (three-year trend) I

Organizational effectiveness	58	▶▶	62
Work effectiveness	70	▶▶	71
Individual effectiveness	73	▶▶	75
Relationship effectiveness	83	▶▶	84



Worksite satisfaction level

The company-wide composite satisfaction level increased 0.9 points from the previous year. For the worksite satisfaction level, it has improved at all worksites except the Gumi plant. We will continue in our efforts to improve the working environment at all our facilities.

I Company-wide composite satisfaction level I



I Worksite satisfaction level I

Year	Gumi	Indong	Donghae
2016	71	73	80
2017	71	74	78
2018	71	77	79

I 2018 organizational competence/vitality indexes I



Organizational competence

54



Organizational vitality

72



Securing talent and ensuring fair HR management

Employment

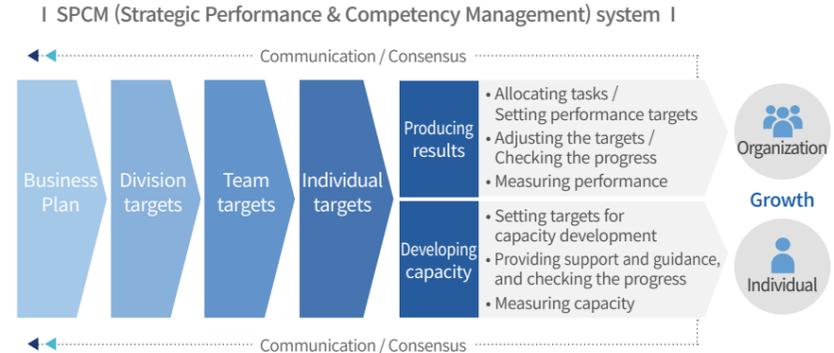
We strive to find the right people for the company who are positive, creative, and professional. We employ people for non-career, career, and job-type tracks through the process of paper screening → personality and aptitude tests → working level interview → executive interview.

In order to strengthen our competitiveness, we also hire international professionals through an overseas recruitment network.

Performance management

We operate the SPCM (Strategic Performance & Competency Management) system to achieve outcomes that align the company's goals with individual goals.

Once key tasks are set to ensure each functional organization and team achieves its management goals, employees establish a development plan for the competencies required for reaching performance targets for the defined key tasks. The advantages of SPCM are as follows: employees feel more responsible for their work when they take part in the setting of performance targets. They are motivated to determine a direction for their career development in a systematic manner by analyzing their strengths and identifying what needs to be improved and developed.



Fair evaluation

In order to evaluate performance in a fair and objective manner, we disclose our evaluation criteria and follow a pre-defined process. Coaching and progress check are provided to help employees produce results and develop capacity. The results are released to the pertinent employees, teams, or divisions to ensure transparency and they are allowed to raise their objections to the results. While doing so, employees become more receptive to evaluation results.

We also make a variety of efforts, including self-development planning and coaching, to efficiently link the evaluation of employees to nurturing talent.

Appropriate compensation

Based on our HR policy, we operated a compensation system reflecting employee performance. Compensation is provided based on the evaluation results of group and individual performances in the form of annual base salary, management incentives, and individual incentives. Employees with outstanding performance are provided with overseas training and awards as well.

Employment welfare system

We operate a welfare system that covers six areas crucial to employee health and economic stability, thus allowing them to take pride in the company and concentrate on their work. In addition, we are offering programs to promote family-friendly management so that a positive working environment can be created.

In 2018, as part of these efforts, we invited the family members of employees to an event named "Homepany." This helped lessen the barriers between them and the company. In 2019, we will encourage employees to take their vacation days on sandwich days falling between two holidays in March, April, May, October, and December so that they can refresh themselves and restore their energy.

Healthy life	Cultural life	Energetic life
<ul style="list-style-type: none"> Medical expense reimbursement for employees Medical expense reimbursement for family members of employees by using a company welfare fund Free medical checkups for employees and their spouses Sports facilities for employees Healthcare rooms or clinics at worksites Counseling programs at the head office and R&D center 	<ul style="list-style-type: none"> Support for in-house club activities Gift cards for anniversaries, including birthdays or wedding anniversaries Cultural events such as the provision of sports game tickets and lectures for family members of employees 	<ul style="list-style-type: none"> Reward for long-term employees: vacation and financial gifts for employees with 5, 10, 20, 25, 30, and 35 years of service Free recreational facilities such as condominiums and a Baekam training center Company outings: twice per year (in spring and autumn)
Stable life	Hopeful life	Prosperous life
<ul style="list-style-type: none"> Family occasion support: money gift or condolence money for family occasions of employees such as weddings or funerals Dormitories or employee apartments at local worksites Group life and health insurances for employees Commuting support: commuting bus services 	<ul style="list-style-type: none"> Monthly in-house online training programs on job skills, leadership, foreign languages Mid-/long-term educational support for graduate schools, MBA, and intensive foreign language programs Outside training programs on job skills and foreign languages 	<ul style="list-style-type: none"> Financial aid of middle school, high school and college tuitions for the children of employees Housing loan support Discount for our sister company products (LS Networks) Retirement gifts

I Employee welfare fund I

		2016	2017	2018
In-house welfare fund provided	Beneficiaries (person)	322	339	361
	Amount (USD thousand)	440	447	447
School expense support	Beneficiaries (person)	577	420	365
	Amount (USD thousand)	2,302	2,100	1,914

Retirement pension system

Since 2011, the retirement pension system has been operated for all employees. They can choose between DB (defined benefit) and DC (defined contribution) plans.

I C.O.R.E.Prize I

I C.O.R.E. Concept I

C.O.R.E. represents four principles on which our employees should act. Just like a cable has a core at its center, our C.O.R.E. values should stand at the center of the minds of all our employees.

Customer First

LS C&S is always thinking about its customers. We work to understand their needs, put ourselves in their place, and stand at their side. To strengthen customer-oriented management, employees with outstanding sales performance are awarded the Customer First Prize.

One LS C&S

LS C&S values benefits that are shared by all. We listen to one another and work together for sustainability. We are one. The One LS C&S Prize goes to employees who produce substantial results through support/cooperation on behalf of all LS C&S.

Rule & Responsibility

LS C&S sticks to the principles and fundamentals for all processes. We take initiative, work honestly, and learn lessons from failures. To enhance compliance with principles and basics, we award the Rules & Responsibilities Prize to employees with excellent performance in production/development.

Expertise

Expertise provides the foundation of LS C&S. We are professionals committed to innovation and to challenging ourselves to go beyond the bounds of what had been considered possible. The Expertise Prize is designed to strengthen the expertise and is granted to employees who contribute to business performance through R&D activities.



Nurturing talent

Launching a mobile app for employee training

As part of the efforts to proactively respond to changes in IT stemming from the Fourth Industrial Revolution, we launched a mobile app for employee training. To enhance productivity and performance by concentrating working efforts and ensuring work-life balance, 'LS C&S WorkWay' mobile-based programs were put into operation on June 1, 2018.

Employees can take courses on our products using this app, including 'LS Biz Master' and Understanding Product Technology in the Energy Business, or complete compulsory programs such as on sexual harassment prevention and awareness-raising on people with disabilities.

Offering leadership training

Assimilation workshop

We provide an assimilation workshop early in each year to help newly-promoted or transferred executives and heads of Groups or teams to win the trust of their team members and ensure continuity in the work environment and the results of their Groups or teams. For this three-hour program, the management principles and directions of Groups and questions and requests from members are shared with their leaders.

Leadership training by job position

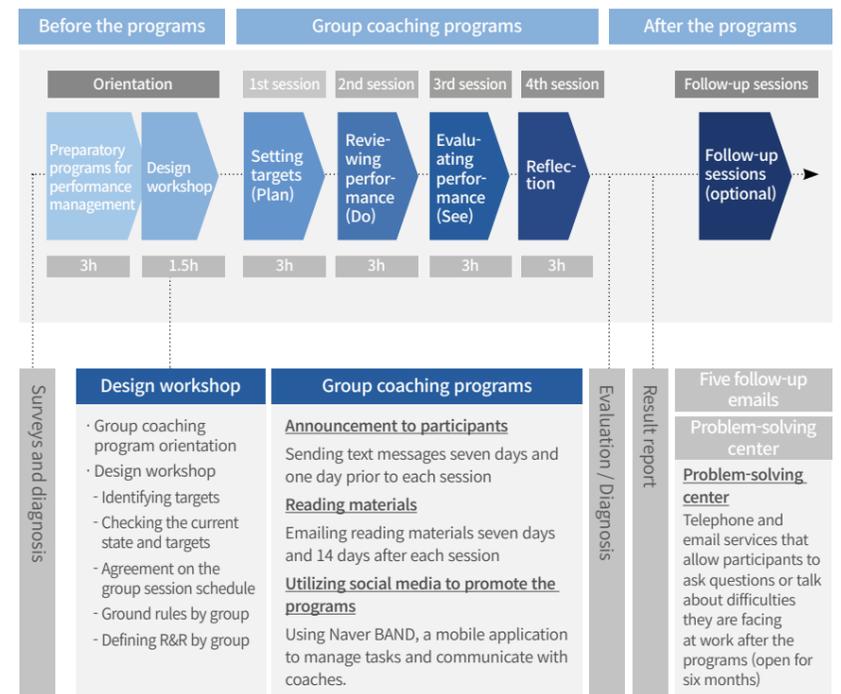
We provide leadership training to promotion-track employees, newly promoted employees, and team leaders to help them define the leadership required by their job position and fulfill their roles as leaders.

Group coaching programs for team leaders

These programs aim to help team leaders strengthen the ability to guide their teams and produce results. In 2018, CORE coaching programs were conducted for newly-promoted team leaders at headquarters and the Gumi plant. They were provided in four three-hour sessions (three hours per session) from mid-August to early-December. On the theme of performance management from establishing targets to evaluation and follow-up, a variety of methodologies including scenario practices and video toolkit were applied to enhance their implementation. Participants reported that they will apply what they learned during the training to running their teams and it will be useful in carrying out their roles as team leaders.

Group coaching programs for team leaders

16.5 hours



Lectures for executives

We invite renowned experts from different fields to give quarterly lectures to executives and the leaders of teams, divisions and Groups. These lectures on topics ranging from AI to technology trends to leadership as seen through the lens of psychology, literature, and classical music serve as opportunities for them to learn more about current trends and issues and respond more positively to changes.

I Five programs for strengthening job competence I



Technology sales training



Understanding of DT, DT Academy



DT course for team leaders and members



Capacity-strengthening program



Growth facilitator program

DT: digital transformation

Strengthening job competence

Technology sales training

Our technology sales training consists of 41 programs, with job competence tracks for general sales and technology sales, targeting assistant managers and rank-and-file employees. We plan to operate these programs on a regular basis.

Understanding DT and DT Academy programs

Understanding DT is a program to help executives and division heads understand digital transformation (DT) to recognize the direction of social changes and prepare for the future. Meanwhile, working-level employees join a DT Academy, a four-day program with five sessions covering the background of DT, utilization of big data, and programming with R and Python.

DT course for team leaders and members

In this program, team leaders learn the process of understanding DT, big data utilization, and analysis and planning. Designated team members identify tasks related to their work for analysis and planning using big data and implement the results. This program is provided to the production group and will be expanded into other areas, including sales, R&D, and support.

Capacity-strengthening program

Following a similar program for managers in 2017, the scope has been expanded to include assistant managers and rank-and-file employees and support them in achieving performance targets.

Growth facilitator program

This Core Communicators program aims to enhance communication and facilitation skills for cooperative work, discussion, and decision-making and promote the use of these skills on teams.

Promoting One LS C&S for suppliers

For our suppliers in the power distribution area, lectures on the roles and responsibilities of leaders were given to CEOs. We also provided sales employees with training programs, including on understanding LS C&S and raising loyalty, sales capacity building for new products, bond management and marketing and promoting networking and cooperation between LS C&S and its suppliers. Participants from 20 suppliers showed a positive response.



Supporting overseas subsidiaries

Leadership training at LSHQ China

We provided leadership training to team leaders at our Chinese subsidiary LSHQ. This action-learning-based program is aimed to help them proactively seize the initiative by recognizing changes in the role of leadership. They learned not only about prioritizing tasks for their teams and conducting tasks through performance management, but identifying the roles of leaders in contributing to interactions with team members and achieving results throughout the process. We plan to phase in this program across other overseas subsidiaries.

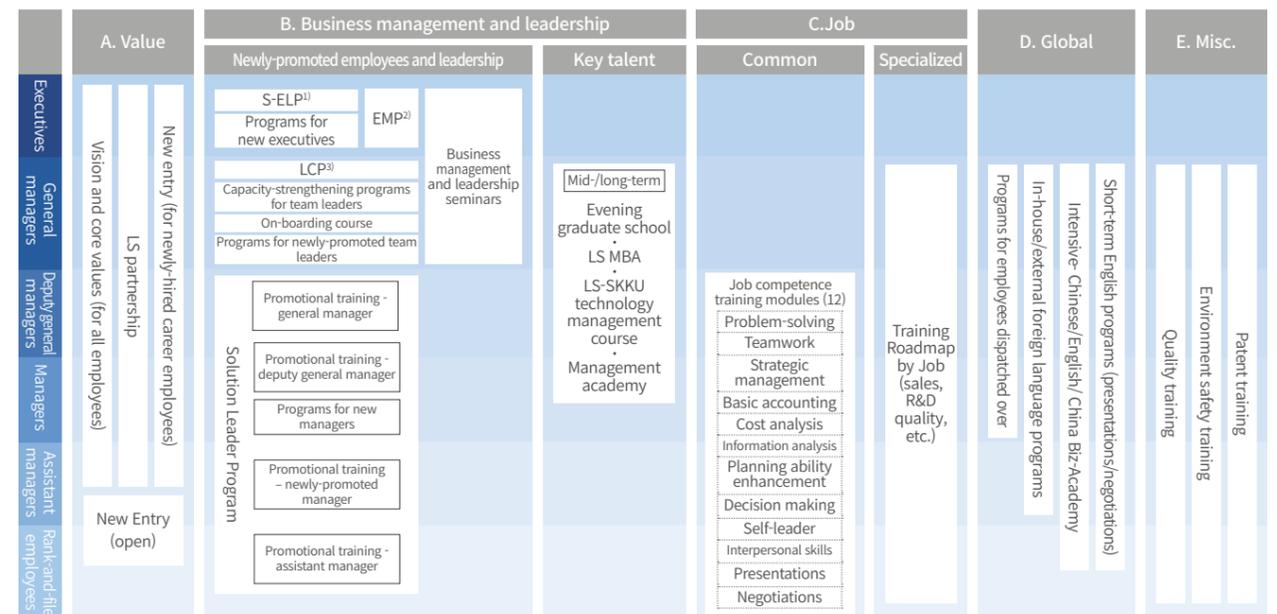
Dispatch programs for exemplary local employees

Local employees of overseas subsidiaries who show exceptional performance at work were given opportunities to gain experience at our domestic production worksites and receive LS C&S Way training. These programs are aimed at motivating them to take pride in the company and contribute to producing results by learning our management philosophy and culture. Local employees from Vietnam, China, and India took part and reported that the programs were highly useful and satisfactory. In addition, they received positive evaluation results from their mentors and team leaders at the head office and domestic worksites. We will continue to devise increasingly effective programs through a continuous program of improvement.

HR development system

Our HR development system is classified into five tracks and six development stages. They include programs for newly recruited career/non-career employees, the SLP (Solution Leader Program) course, leadership programs, common/specialized training courses, and foreign language programs. There are also programs on sexual harassment prevention, awareness-raising on people with disabilities, workplace quality, and environment safety and that are compulsory for all employees.

I Our HR development system I



1) Senior Executive Leadership Program. 2) Executive Management Program. 3) Leadership Challenge Program.



I Three-year employee training status I

	2016	2017	2018
Average training hours per employee (including production workers)	51	42	54
Average training hours per employee by job position			
Executives (including heads of divisions)	41	20	24
Managers (from managers to general managers)	102	77	78
Assistant managers and rank-and-file employees	30	97	136
Training expenses (USD thousand)	2,755	2,728	2,773

10 EXPERTISE Advanced Green Management



LS C&S is pursuing the goal of becoming a leading company in the areas of health, safety, and environment (HSE). To this end, we have promoted green management to perform our business in an eco-friendly manner. We are striving to minimize the environmental impact of every aspect of our business by applying standards that surpass the legal requirements for pollutant management. Considerable efforts are being made at our domestic plants and overseas subsidiaries to manage HSE on behalf of our employees and local communities.

Strategic direction

Strengthening environmental management for zero accidents and pleasant work environment and contributing to a green society by reducing greenhouse gas emissions.

Key tasks

Operation of an environment management system

HSE system / Investment in environmental facilities

Efficient use of resources

Usage of key resources / Water resource at plants / Plastic collection and recycling

Use of green materials

Product lifecycle management / Chemical management at plants / Chemical management of products

Response to climate change

Climate change response system / Energy use and GHG emission management / Reduction of GHG emissions

Emissions and waste discharge management

Air management / Waste water management / Waste management

Performance in 2018

Operation of an environment management system	<ul style="list-style-type: none"> Conducted the certification transition to ISO 14001: 2015; established a company-wide HSE database; and supported subsidiaries in HSE
Efficient use of resources	<ul style="list-style-type: none"> Strengthened the efforts to implement the agreements on product plastic collection and recycling
Use of green materials	<ul style="list-style-type: none"> Built a system to manage harmful chemicals; and complied with the Act on the Registration and Evaluation of Chemicals in regards to imported chemical substances
Response to climate change	<ul style="list-style-type: none"> Established GHG inventories for domestic and overseas subsidiaries
Emissions and waste discharge management	<ul style="list-style-type: none"> Conducted activities to reduce risks of harmful materials; and responded to laws on fugitive dust emissions

Targets in 2019

- Operation of an environment management system: strengthen the role of HSE Control Tower enhance HSE management; and upgrade the HSE certification version.
- Efficient use of resources: make a plan for facilitating product resource recycling
- Use of green materials: strengthen chemical management conduct Clean Factory activities, and build inventories of imported chemicals.
- Response to climate change: provide training on company-wide response to climate change
- Emissions and waste discharge management: proactively respond to the pertinent laws and regulations

Operation of an environment management system

HSE¹⁾ System

Certification transition to ISO 14001:2015

Since we announced our HSE policy for the sustainable development of the surrounding environment and local communities, we have been pursuing environmental management that enables both business growth and environmental conservation. In 2018, we contracted with a professional consulting firm and worked together on an ISO 14001:2015 transition plan. A gap analysis was conducted based on the changed requirements. Internal review by the company and verification by an external agency were performed for new specifications, including 'opportunities and crises in an organization,' and 'lifecycle-thinking in environmental risk assessment.'

In September, we completed the transition following the Stage 1 and primary evaluations performed respectively in July and August. We have been maintaining OHSAS 18001 through an annual evaluation. For the transition to ISO 45001 by 2020, we have initiated working-level training and a contract with a professional consulting firm. We will systematically continue these sustainable development efforts.

I The 2018 ISO 14001:2015 certification I



I The 2018 OHSAS 18001:2007 certification I



HSE support activities for overseas and domestic subsidiaries

To support our domestic and overseas subsidiaries and perform health, safety, and environmental management at the global level, we conduct diagnoses on their HSE processes. From 2016 to 2017, all of our domestic overseas subsidiaries were examined in the areas of environment, safety, health, and firefighting. We confirmed the actions to be taken for identified issues and the state of progress of established improvement plans.

We regularly met with subsidiaries to discuss issues and response measures regarding their HSE activities. For new subsidiaries, we provided support for environmental facilities and the approval process.

In addition, our HSE rules were translated into English to build an enterprise-wide database, and disaster and environment management indexes for HSE were analyzed. In 2019, we will launch an HSE planning team to improve our support for domestic and overseas subsidiaries as they reduce their risks.

1) Health Safety Environment

HSE diagnoses

- [LSEVK] Internal evaluation for ISO version upgrade
- [LSHQ] Proposal of wastewater treatment measures
- [G&P] Support in devising plans to manage fugitive dust emission facilities

June / May / First quarter

HSE activities by subsidiaries

- [G&P] Training on transition to ISO 14001: 2015
- [LSHQ] Support in establishing safety management rules

First quarter / August

HSE cooperation

- [LSEVK] HSE workshops (issues and response measures)

February

Support for new subsidiaries

- [LSEVP] Specifications of environment facilities
- [LS AlSCO] Approval process

First to third quarters / First to fourth quarters

Securing transparency in HSE

Report and disclosure of a chemical release survey

A chemical release survey aims to encourage companies to voluntarily reduce their release of chemical substances by reporting to the government on the release and transfer of chemical substances in their business operation. We will commission an external agency to conduct a survey on the chemicals used by our plants (15 types of chemicals including copper for Gumi, ten including aluminum for Indong, and three including copper for Donghae). This annual survey is conducted in April. The survey results will be submitted to the Ministry of Environment and disclosed in its PRTR (pollutant release and transfer register) system.



Disclosure of corporate environment information

To fulfill our corporate social responsibility, we disclose the environment information of all of our worksites, including headquarters and plants, in accordance with the Act on the Support for Environmental Technology and Industry. The information includes green management, resource and energy conservation, GHG emissions and environment pollution.

Purchase of pollution insurance policies

To compensate for any environment and pollution accidents that could occur in our business operations, we have environmental pollution liability insurance in line with the guidelines of the Ministry of Environment.

Investment in environment facilities

Improvement of treatment facilities for harmful chemicals

We repaired two harmful chemical treatment facilities for the magnet wire production process through the replacement of leakage protection walls and firewalls and the installation of forced exhaust systems in accordance with the Toxic Chemicals Control Act.

I Replacement of leakage protection walls and firewalls and the installation of forced exhaust systems I



Installation of chemical leakage sensors

Chemical leakage sensors and gas leak detectors were installed at chemical treatment facilities, along with related processes allowing an immediate response to any possible chemical or gas leakage.

I Leakage sensors / Gas leak detector I



Disclosure of environment information



Pollution insurance policy

Efficient use of resources

Usage of primary resources

We conduct a variety of activities to efficiently use resources, such as metals and plastics, to establish a resource recycling system. Our development and production teams review and develop ways for efficient use of primary resources, including electrolytic copper and aluminum used for conductors, and polyethylene and polyvinyl chloride for insulators, and identify measures to recycle raw materials and products. In addition, we successfully completed the resource recycling performance management system projects with the Ministry of Environment to further promote the recycling of wastes.

I Usage of primary resources I

(unit: ton)

	2016	2017	2018
Electrolytic copper (Cu)	256,910	289,494	288,368
Aluminum (Al)	34,784	32,113	22,302
Polyethylene (PE)	12,803	23,474	15,626
Polyvinyl chloride (PVC)	7,660	4,165	3,629

Water resources at our plants

Use and management of water resources To address global water resource issues, we are engaging in activities to minimize risks related to water supply needed for our business operations. Water resources use at plants includes cooling water for both the cable extruding process and for the melting furnace for electrolytic copper and aluminum. Water is also required for human uses such as drinking and sanitation. As a result of water conservation activities in 2018, total water consumption dropped by 27,000 tons from the previous year. Due to an 10.1% decrease in production volume, water use intensity rose by 3.1%. Going forward, we will continue our efforts to conserve water resources based on our medium-/ and long-term plans.

I Water usage and water use intensity I

(unit: ton)

	2016	2017	2018
For human uses	491,678	514,951	447,904
For industrial uses	33,127	16,250	25,966
Underground water	6,538	5	0
Company total	531,343	531,206	503,870
Water use intensity [Usage (ton) / Production volume (ton)]	1.38	1.27	1.31

Plastic collection and recycling

Collection and recycling of plastic from power/communication cable wastes

As our power and communications cables have long-term durability, products that were sold decades ago are now generating wastes. To promote the recycle of plastic from power/communication cable wastes, we signed a voluntary agreement on plastic waste collection and recycling with the Ministry of Environment. Since then, we have collected and recycled plastic from power/communication cable wastes. We are providing support to recycling companies who also signed the voluntary agreement in order to explore new markets through increasing the volume of recycled plastic and enhancing the quality of recycled compound.

I Voluntary collection and recycling of plastic from power/communication cable wastes in Korea* I

	2016	2017	2018
Plastic used (ton)	20,966	21,708	22,799
Plastic collected and recycled (ton)	3,627	3,578	4,163(E)
Plastic collected and recycled (%)	17.30	16.48	18.26(E)



2018 volume of water resource saved

27,000 tons



Water use intensity

3.1%

I The flow chart of water resources I



Source of supply
Gumi/Indong:
Nakdong River
Donghae:

▼ Dalbang Dam



Public water supplies:

514,951 tons

Industrial water:

25,966 tons



Manufacturing processes



In-house treatment plants:

59,318 tons

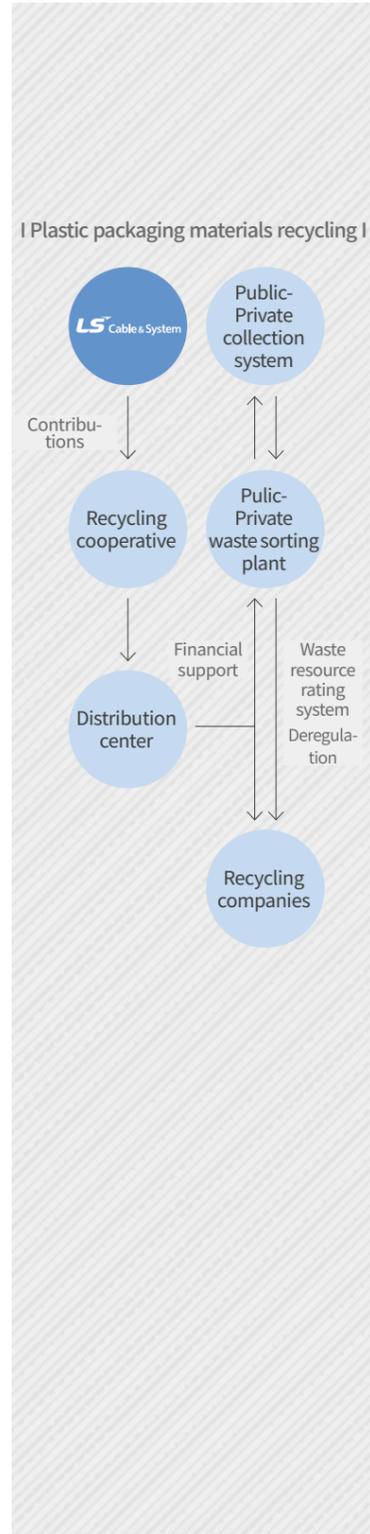


Sewage treatment plants



Discharge

*Products for collection and recycling are limited to finished products sold to end-customers. The 2018 recycling volume will be confirmed after June 2019.



Extended Producer Responsibility for plastic packaging materials

The EPR(Extended Producer Responsibility) is being implemented in which domestic producers using plastic packaging materials are required to collect and recycle wastes. To fulfill our obligations for recycling plastic packaging materials, we have joined the Recycling business mutual aid cooperative and are proactively reporting on the volume of packaging materials delivered, including OEM products. We are regularly paying our recycling contributions.

I Plastic packaging delivery and recycling in Korea I

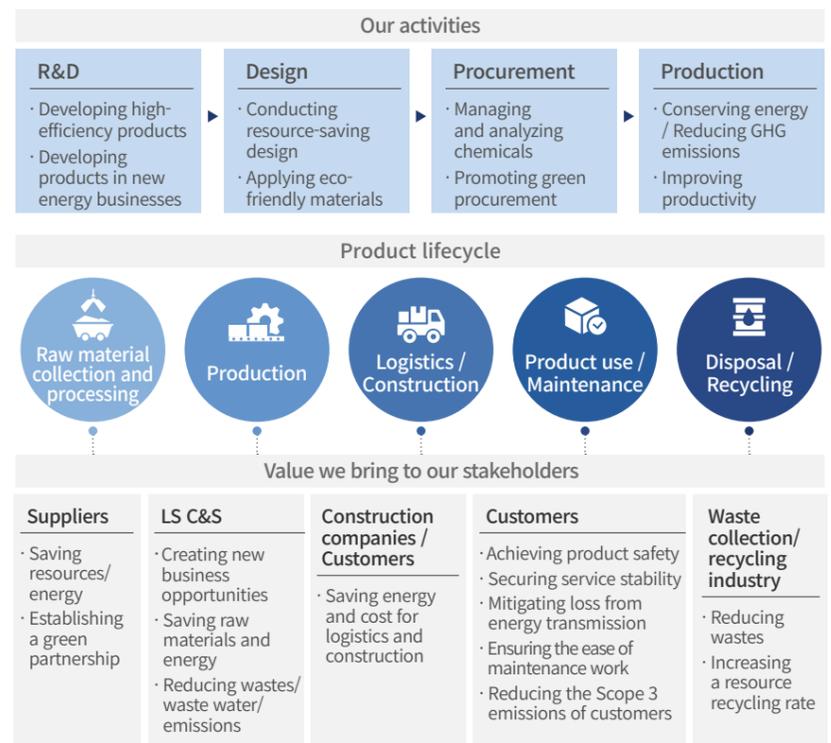
	2016	2017	2018 ¹⁾
Plastic packaging delivered	235	211	-
Required volume of recycling	178	156	-
Recycling volume	235	212	-

1) The 2018 recycling volume will be confirmed after June 2019.

Use of eco-friendly materials

Product lifecycle management

The goal of our product lifecycle management is to bring value to customers by manufacturing products that efficiently transmit energy and information with a minimal impact on the environment. In response, we are concentrating our efforts on developing products that meet a variety of user environments, allow the transmission of large volumes of electricity, and can be utilized for new and renewable energy. Meanwhile, we are operating a chemical management system, promoting the recycling of collected wastes, supporting the recycling industry, and conducting activities for energy conservation in production and for reducing GHG emissions.



Chemical management at plants

Chemical management

The use of toxic chemicals in our plants has steadily decreased as a result of efforts to minimize such substances. However, with the solid lead used in the lead sheathing process being placed on the list of toxic chemicals under the revised Toxic Chemicals Control Act, our designated use of harmful chemicals significantly increased. In response, we took necessary measures in accordance with this revision, including gaining approval for our processes using lead, conducting off-site risk assessment, and supplying all employees handling chemicals with pertinent training and personal protective gear. We are also maintaining an emergency response system for any possible chemical leakage, fires, or explosions. Since detailed diagnoses were conducted in 2017, facility improvements have been made. In 2018, we replaced firewalls and lights, repaired leakage protection walls, applied corrosion-resistant paint, and installed forced-air exhaust systems.

Strengthening harmful chemical management process

To promote the safe management of harmful chemicals and prevent accidents, we launched chemical safety communities in cooperation with the Ministry of Environment. Worksites joining the communities share information on pertinent laws and regulations and on measures to safely manage chemicals. They also benchmark best practices of others. In addition, mock exercises are practiced to respond to any potential accidents. Joint emergency rescue drills are being conducted with the Ministry of Environment and local governments. As part of the efforts to reduce the use of harmful substances, we are testing chemicals to replace currently-used methyl ethyl ketone in printing. When the tests are completed, the findings will be applied to production.

Moreover, the introduction of the CMS (Chemical Management System) is being reviewed. After the decision-making process is complete, the findings will be implemented for more efficient and systematic management.

Product chemical management

We monitor trends in domestic and international environment regulations through various channels and reflect them in our in-house chemical substance management rules. Seminars on environmental laws are provided to our employees and suppliers, allowing them to proactively manage any risks related to the enactment or revision of laws and fulfill their legal obligations.

Compliance with the Act on the Registration and Evaluation of Chemicals

Domestic companies importing or manufacturing more than one ton of phase-in chemical substances or 100 kilograms of non phase-in are subject to conducting hazard evaluations and submitting the report to the Ministry of Environment. We annually report to the government the volume and purpose of imported chemical substances and fulfill the obligation of registration of the pertinent chemicals in consultation with their suppliers.

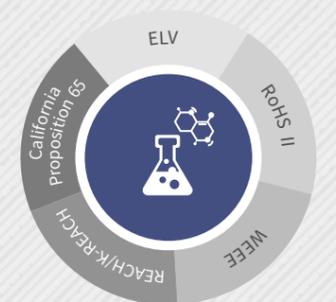
I In-house and external seminars on environmental regulations I



I Use of harmful chemicals I



I Management of chemicals I



I Climate change risks and opportunities I

Risks

- R Weakening price competitiveness due to increased carbon cost for the response to the domestic emission trading scheme
- P Additional cost for damage prevention/recovery and clean-room management
- O Possible loss of business opportunities for not being able to meet customer needs
- O More efforts required for GHG emissions reduction and energy transition

Opportunities

- R Increase in sales of products related to new and renewable energy (superconducting, submarine, industrial and new-and-renewable-energy-related cables)
- R Strengthening competitiveness through high-strength, heat-resistant, and fire-resistant cables
- P Enhancing competitiveness through advanced construction technology for climate anomalies
- O Enhancing corporate images by strengthening external communication

- R Regulatory factors
- P Physical factors
- O Others

Response to climate change

Climate change response system

Strategies for climate change response

To respond to climate change at the company level, different teams from HSE, facilities, production, finance, and legal affairs are working closely together. They are required to report on trends and their performance to management. We provide customers with information on our responses to climate change through the CDP (Carbon Disclosure Project) supply chain. Internal experts monitor trends in the carbon market and international climate change agreements and share them at the company level in order to refine the understanding of the pertinent laws and customer requirements.

Management of energy use and GHG emissions

Energy use

We set a target for energy use by worksite and production team and follow up with tasks to meet them. The state of progress is monitored based on monthly energy use and cost data. A variety of activities to reduce energy use are being conducted and best practices are shared and benchmarked among worksites through technology exchanges.

I Energy usage and intensity I

(unit: TJ)

	2016	2017	2018
Fuel	734	719	656
Electricity	2,152	2,133	1,999
Steam	147	157	159
Total	3,033	3,009	2,814
Energy use intensity (TJ / KRW 100 million)	1.190	0.987	0.844

* Based on electric energy conversion: 9.6MJ/kWh (including loss from power transmission/ distribution and production)

GHG emissions

We have been monitoring and managing the Scope 1 and 2 GHG emissions of our worksites on a regular basis, and independently calculating Scope 3 emissions, indirect emissions regarding waste disposal, use of fuel, energy production, and leased assets.

I Scope 1+2 GHG emissions and intensity I

(unit: tCO₂eq)

	2016	2017	2018
Scope 1	40,937	40,077	36,595
Scope 2	112,519	112,058	105,638
Total	153,457	152,135	142,233
GHG emission intensity (tCO ₂ eq/KRW 1 million)	0.060	0.050	0.043

I Scope 3 GHG emissions I

(unit: tCO₂eq)

	2016	2017	2018
Waste disposal	2,677	3,396	1,767
Fuel/energy production	6,087	5,962	5,430
Leased assets	4,885	5,182	7,030

* Calculation is internally made based on domestic and international criteria.

GHG inventories for domestic and overseas subsidiaries

As part of the effort to find opportunities to reduce GHG emissions, we identified the sources of GHG emissions at four domestic and overseas subsidiaries and established an inventory. Our GHG emissions calculations and management activities will be expanded to all of our subsidiaries.

I Sources of GHG emissions of domestic and overseas subsidiaries I

		LSHQ	LSCW	LS Buildwin	G&P
Scope 1	Stationary combustion	o	o	-	o
	Mobile combustion	o	o	o	o
	Process emissions	o	-	-	-
Scope 2	Electricity	o	o	o	o
	Steam	-	-	-	-

Reduction of GHG emissions

Energy conservation and GHG emissions reduction at worksites

We have continued with investment in energy conservation and GHG emissions reduction. Energy conservation activities worth USD 1,342 thousand were conducted focusing on UT optimization, facilities and UT efficiency, and improvement of energy-consuming processes (facilities). As a result, GHG emissions were successfully reduced by 1,311 tCO₂eq.

Publication of a mobile company magazine

The publication of a mobile monthly company magazine starting in 2018 allowed us to reduce the monthly number of printed magazines by 300. As a result, we saved 468 kilograms of resources and eliminated 524kg-CO₂eq of GHG emissions generated from paper production.



Solar farms construction plan by LS Buildwin

LS Buildwin will construct 2.5MW solar farms utilizing rooftop at an industrial cable building within the Indong plant to respond to growing energy transition requirements and the government's "Renewable Energy 3020" policy.

Emissions and waste discharge management

Air pollutants management

To address PM10 issues and comply with the Clean Air Conservation Act, we have continued our efforts to reduce air pollutants. We have upgraded outdated facilities, and operated air pollution control facilities in an optimal manner to reduce pollutants.

The air pollutants we produce are mainly dust, NOx, HCl, and HF. In 2018, due to a decrease in facility investment and production volumes and facility operation hours, NOx, accounting for over 90% of our air pollutants, was drastically reduced. As a result, the intensity dropped 46%. Meanwhile, in order to efficiently reduce NOx, known as substances causing PM10, we plan to invest in RTO (regenerative thermal oxidizer) and SCR (selective catalytic reduction) systems and introduce low-NOx burners.

I Refrigerating machine replacement at the Gumi and Indong plants I

Low-performing refrigerators were replaced by high-efficiency versions, allowing plants to reduce their use of electricity and minimize their impact on the ozone layer through a new refrigerant.

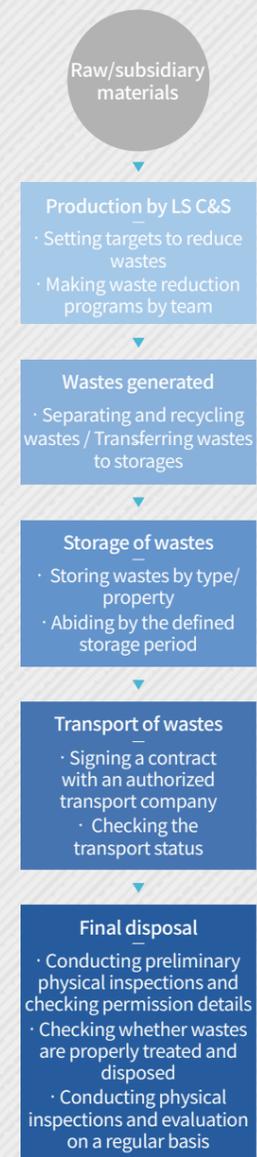


I Fuel economizer (feed water preheater) replacement at the Donghae plant I

The replaced fuel economizer increases the temperature of boiler feed water from 90°C to 120°C, resulting in lower consumption of boiler fuel.



I Waste disposal process I



I Primary air pollutant emissions I

(unit : kg)

	2016	2017	2018
Dust	1,667	1,856	1,326
NOx	40,567	44,224	20,621
HCl	1,456	2,120	1,746
HF	298	202	144
Total	43,988	48,402	23,837
Intensity [kg / Production volume (1,000 tons)]	117.0	117.6	63.6

Waste water management

The cooling water for the cable manufacturing process is re-used for a specific period, treated, and then discharged. As we apply in-house limits on water contaminants that are stricter than the legal limits, all of our worksites are operating waste water treatment systems. Due to a decrease in production volume and water usage, water contamination material dropped 28% and an intensity was reduced 18%. Although none of our worksites are located in or near water source protection areas, restricted zones, special management zones, or biodiversity protection areas, We have worked continuously to reduce water contamination by effectively operating wastewater treatment plants.

I Discharge of primary water contamination materials and intensity I

(unit : kg)

	2016	2017	2018
BOD	62	109	25
COD	1,003	1,128	940
SS	191	203	112
T-N	313	396	247
Total	1,569	1,836	1,324
Intensity [Discharged volume (kg) / Production volume (1,000 tons)]	4.4	4.4	3.5

Waste management

To properly manage wastes and protect the environment in local communities, we keep in place a waste disposal process from product development to final disposal. To recycle wastes into resources, we signed a resource recycling performance management agreement* with the Ministry of Environment and has strived to increase our waste recycling rate. Due to the characteristics of energy/communication cables, wastes generated during the manufacturing process are wastes made of plastic such as HDPE and PVC. In 2018, wastes totaled 12,319 tons. Incinerated wastes fell 59% but landfill wastes rose 10%. Recycled wastes decreased by 948 tons year-on-year. However, the recycling rate increased from 84% in the previous year to 90% as some previously incinerated wastes became recyclable.

I Wastes generated and intensity I

(unit: ton)

	2016	2017	2018
Designated wastes ¹⁾	1,981	2,234	2,021
General wastes ²⁾	10,331	12,147	10,298
Total	12,312	14,381	12,319
Intensity [Wastes generated / Production volume (1,000 tons)]	32.1	34.4	32.1

1) Designated wastes: waste oil, waste organic solvent, paint waste, and waste acid
2) General wastes: cable scrap, waste synthetic resins, rubber wastes, and residential wastes

I Waste disposal I

(unit: ton)

	2016	2017	2018
Incineration	2,103	1,830	756
Landfill	443	395	434
Recycling	10,307	12,055	11,107
Recycling rate (%)	84	84	90

Resource recycling performance management system

Resource recycling performance management refers to activities for increasing recycling and decreasing disposal across the processes from the generation of wastes to their final disposal. In other words, it is a system to minimize incinerated or landfill wastes and maximize recycling rates.

I Work process of the resource recycling performance management system I

	Target year-2years	Target year-1years				Target year	Target year+1years	
	End of Jun.	Mar.	End of Jul.	End of Sep.	End of Dec.	Jun. to Dec.	Mar.	End of May
Ministry of Environment			Discussion on setting targets (Ministry of Environment and a group of business operators)					Follow-ups (preference)
K-eco	Announcement		Data validation/gathering	Target setting	Plan review			Evaluation of performance results
Business operators		Submission of performance data			Submission of action plans	Implementation	Submission of performance results	

Continuous analyses of air and water pollutants

We continuously measure and analyze both raw materials and emissions to identify air/water pollutants generated during business operations. Analyses are made regarding substances defined as harmful materials under the pertinent laws. Root causes are recognized and improvement actions are performed. In 2018, an overall inspection was conducted for newly-added air pollutants and periodic analyses of water pollutants were made to minimize any risk.

Activities for dioxin reduction, including checking dust collectors, reduction catalyst replacement, and facilities upgrades, were conducted to operate facilities and equipment in an optimal condition. In addition, an environmental facility maintenance system consisting of internal experts is in place to provide regular repairs and maintenance and prevent environment-related risks and accidents.

Response to laws on fugitive dust emission facilities

Fugitive dust (HAPs) emission facilities management We manage fugitive dust emission facilities through which hazardous air pollutants (HAPs) are directly released to the air in accordance with pertinent laws. Since an overall inspection was performed in 2016 upon the enforcement of a new law, we have conducted annual examinations and submitted the results to the Ministry of Environment. In addition, with a plan to invest in emissions facilities for the magnet wire processes in place, facilities upgrades will contribute to reducing environment risks.

Violation of laws and regulations To comply with laws, our management standards are set at levels 20% to 30% stricter than the legal limits. We disclose compliance with environment and safety laws and regulations while monitoring their status. Revised laws and regulations are applied to our management standards and pertinent risks are reviewed. In addition, to prevent such risks we identify potential violations that could occur during our business operations.

City/Province performance management

- Household wastes within the jurisdiction
- Wastes generated from businesses operated by local governments

Setting and managing targets considering national policies and conditions of the jurisdiction

Achieving national goals of resource circulation

- Final disposal rate
- Recycling rate

Target setting and implementation management

Business operators subject to performance management

- Business operators generating a large volume of wastes (18 business types)
- Based on the average volume of three-year wastes
- 100 tons of designated wastes, 1,000 tons of general wastes

APPENDIX

Consolidated Statements of Financial Position	95
Consolidated Statements of Comprehensive Income	96
Consolidated Cash Flow Statements	97
Separate Statements of Financial Position	98
Separate Statements of Comprehensive Income	99
Separate Cash Flow Statements	100
Independent Assurance Statement	101
GRI Standards	103
Additional Information	105

Consolidated Statements of Financial Position 'December 31, 2018, 2017 and 2016'

(Unit: USD million)

	2016	2017	2018
Total current assets	1,631	1,870	2,211
Cash and cash equivalents	164	201	179
Financial deposits	39	27	48
Trade receivables	788	829	1,129
Other receivables	42	62	60
Available-for-sale financial assets	1	-	-
Financial assets at fair value through profit or loss	17	19	4
Derivative financial assets	34	89	17
Firm commitment assets	33	23	52
Inventories	349	458	549
Other assets	165	161	173
Non-current assets held for sale	17	44	41
Total non-current assets	785	758	1,077
Assets	2,416	2,628	3,288
Property, plant and equipment, net	640	608	899
Intangible assets, net	37	38	50
Investment properties, net	10	12	20
Financial deposits	1	1	1
Trade receivables	24	29	34
Other receivables	25	26	32
Investments in joint ventures	-	-	0.5
Available-for-sale financial assets	5	2	-
Financial assets at fair value through other comprehensive income	-	-	2
Financial assets at fair value through profit or loss	-	-	1
Derivative financial assets	4	8	4
Firm commitment assets	0.4	0.1	3
Deferred tax assets	21	15	11
Other assets	18	20	20
Total assets	2,433	2,671	3,329
Total current liabilities	1,270	1,372	1,557
Trade payables	544	504	586
Borrowings	390	493	623
Derivative financial liabilities	28	20	45
Firm commitment liabilities	43	99	19
Other payables	127	113	126
Current income tax liabilities	12	20	9
Provisions	12	2	12
Other liabilities	113	122	138
Total non-current liabilities	515	559	779
Liabilities	1,785	1,931	2,337
Borrowings	474	514	705
Derivative financial liabilities	0.4	0.4	4
Firm commitment liabilities	4	8	0.2
Other payables	0.03	0.1	0.2
Net defined benefit liabilities	10	9	11
Deferred income tax liabilities	1	3	45
Provisions	24	25	13
Equity attributable to owners of the Parent Company	578	628	703
Share capital	84	84	84
Share premium	485	485	485
Accumulated other comprehensive income	0.1	(23)	(21)
Other components of equity	263	301	312
Accumulated deficit	(254)	(220)	(157)
Non-controlling interests	70	112	289
Total equity	649	740	992
Total liabilities and equity	2,433	2,671	3,329

Consolidated Statements of Comprehensive Income

(Unit: USD million)

	2016	2017	2018	
Continuing operations	Revenue	2,727	3,174	3,756
	Cost of sales	2,462	2,868	3,415
	Gross profit	265	305	340
	Selling and administrative expenses	186	206	232
	Credit loss (reversal)	5	(0.6)	10
	Operating profit	75	100	99
	Other income	234	313	300
	Other expenses	238	296	234
	Interest income	5	4	4
	Other finance income	0.3	2	0.3
	Finance costs	33	37	45
	Share of profit of equity method investments, net	-	-	77
	Other non-operating expenses	9	4	93
	Profit before income tax	34	82	108
	Income tax expense	6	32	24
Profit from continuing operations	28	50	84	
Discontinued operations	Loss from discontinued operations, net of tax	16	1.5	3
Profit for the year	12	49	81	
Profit is attributable to	Profit from continuing operations	22	46	80
	Loss from discontinued operations	16	1.5	3
	Profit is attributable to Owners of the Parent Company	6	44	77
	Profit from continuing operations	6	5	4
	Profit from discontinued operations	-	-	-
Profit is attributable to Non-controlling interests	6	5	4	
Other comprehensive income	Items that will not be reclassified to profit or loss	0.3	(1.2)	(4)
	Remeasurements of post-employment benefit obligation	0.3	(1.2)	(4)
	Items that may be subsequently reclassified to profit or loss	1.3	(18)	2
	Gain (loss) on valuation of available-for-sale financial assets, net	(0.04)	(0.8)	-
	Gain (loss) on valuation of financial assets at fair value through other comprehensive income, net	-	-	0.02
	Cash flow hedges	-	0.3	0.4
	Exchange differences	1.4	(17)	2
Other comprehensive income (loss) for the year, net of tax	2	(19)	(2)	
Total comprehensive income for the year	13	30	79	
Total comprehensive income for the year attributable to	Owners of the Parent Company	9	20	75
	Non-controlling interests	5	10	3
Earnings (losses) per share	Earnings per share from continuing operations	\$1.2	\$2.4	\$4.3
	Losses per share from discontinued operations	\$0.9	\$0.1	\$0.2
	Basic earnings per share	\$0.3	\$2.4	\$4.1

Consolidated Statements of Cash Flows

(Unit: USD million)

	2016	2017	2018
Net cash outflows from operating activities	145	(79)	(206)
Cash generated from operations	188	(29)	(140)
Interest received	4	3	3
Dividends received	0.05	0.1	0.03
Interest paid	(29)	(36)	(45)
Income taxes paid	(17)	(17)	(25)
Net cash outflows from investing activities	(40)	(93)	(49)
Decrease (increase) in financial deposits	(2)	11	(3)
Decrease (increase) in other receivables	7	(3)	8
Proceeds from disposal of available-for-sale financial assets	2	4	-
Proceeds from disposal of financial assets at fair value through profit or loss	53	81	44
Proceeds from disposal of property, plant and equipment	4	20	1
Proceeds from disposal of intangible assets	-	2	-
Proceeds from disposal of other investment assets	-	0.01	-
Payments for acquisition of property, plant and equipment	(30)	(63)	(107)
Payments for acquisition of intangible assets	(2)	(2)	(2)
Payments for acquisition of available-for-sale financial assets	-	(0.1)	-
Payments for acquisition of financial assets at fair value through profit or loss	(61)	(82)	(29)
Loss of control over subsidiaries	-	4	0.02
Payments for acquisition of investments in subsidiaries, associates and joint ventures	-	-	(2)
Payments for acquisition of business	-	(30)	-
Decrease (increase) in derivative financial instruments	(11)	(34)	40
Net cash inflows from financing activities	(172)	215	232
Proceeds from borrowings	45	161	206
Repayments of borrowings	(400)	(49)	-
Proceeds from issuance of debentures	143	159	224
Repayments of debentures	-	(98)	(210)
Cash inflows from consolidated equity transactions	47	40	33
Cash outflows from consolidated equity transactions	-	-	(10)
Dividends paid	(10)	(11)	(11)
Issuance of shares	3	15	2
Others	(0.5)	(0.5)	(0.9)
Net increase (decrease) in cash and cash equivalents	(67)	44	(23)
Cash and cash equivalents at beginning of the year	229	164	201
Effects of exchange rate changes on cash and cash equivalents	1.5	(6)	0.6
Cash and cash equivalents at end of the year	164	201	179

Separate Statements of Financial Position 'December 31, 2018, 2017 and 2016'

(Unit: USD million)

	2016	2017	2018
Assets			
Total Current assets	1,168	1,412	1,470
Cash and cash equivalents	92	109	106
Financial deposits	13	16	8
Trade receivables	628	717	826
Other receivables	17	55	62
Derivative financial assets	27	79	13
Firm commitment assets	32	23	43
Inventories	227	296	276
Other assets	132	116	135
Non-current assets held for sale	2	2	-
Total Non-current assets	796	822	915
Property, plant and equipment, net	460	443	435
Intangible assets, net	29	29	36
Investment properties, net	9	10	11
Financial deposits	0.02	0.02	0.02
Trade receivables	24	29	34
Other receivables	24	24	24
Available-for-sale financial assets	4	1	-
Financial assets at fair value through profit or loss	-	-	0.2
Financial assets at fair value through other comprehensive income	-	-	0.5
Derivative financial assets	2	8	4
Firm commitment assets	0.4	0.1	1
Investments in subsidiaries	231	267	358
Investments in joint ventures	-	-	0.5
Deferred tax assets	12	11	10
Other assets	0.5	0.4	0.4
Total assets	1,966	2,236	2,385
Liabilities			
Total Current liabilities	869	1,058	1,046
Trade payables	454	462	407
Borrowings	137	282	381
Derivative financial liabilities	27	15	34
Firm commitment liabilities	37	90	17
Other payables	106	86	94
Current income tax liabilities	11	18	8
Provisions	-	-	11
Other liabilities	96	104	94
Non-current liabilities	503	519	605
Borrowings	473	485	596
Derivative financial liabilities	0.4	0.1	1.3
Firm commitment liabilities	1.7	7	0.1
Other payables	0.05	0.2	0.1
Net defined benefit liabilities	9	6	6
Provisions	19	20	0.9
Total liabilities	1,372	1,577	1,651
Equity			
Share capital	84	84	84
Share premium	485	485	485
Reserves	0.4	0.4	0.4
Accumulated other comprehensive income	(1.5)	(16)	(15)
Other components of equity	(0.1)	(0.1)	(0.1)
Retained earnings	26	105	180
Total equity	594	658	734
Total liabilities and equity	1,966	2,236	2,385

Separate Statements of Comprehensive Income

(Unit: USD million)

	2016	2017	2018
Continuing operations			
Revenue	2,257	2,709	2,980
Cost of sales	2,058	2,467	2,730
Gross profit	199	242	250
Selling and administrative expenses	138	153	154
Credit loss (reversal)	4	(0.3)	2
Operating profit	57	90	94
Other income	221	276	187
Other expenses	221	271	173
Interest income	3	2	2
Other finance income	4	2	0.6
Finance costs	24	26	30
Share of profit of equity method investments, net	-	9	35
Other non-operating income (expenses)	39	32	(3)
Profit before income tax	80	112	114
Income tax expense	3	21	16
Profit from continuing operations	77	91	97
Discontinued operations	15	3	8
Profit for the year	62	88	90
Other comprehensive income			
Items that will not be reclassified to profit or loss	0.2	(1.1)	(4)
Remeasurements of post-employment benefit obligation	0.2	(0.7)	(4)
Remeasurements of post-employment benefit obligation of subsidiaries	-	(0.5)	(0.2)
Items that may be subsequently reclassified to profit or loss	(0.05)	(14)	1.3
Gain (loss) on valuation of available-for-sale financial assets, net	(0.05)	(0.8)	-
Gain (loss) on valuation of financial assets at fair value through other comprehensive income, net	-	-	(0.001)
Cash flow hedges	-	0.3	(0.2)
Share of other comprehensive income (loss) of equity method investments, net	-	(14)	1.5
Other comprehensive income (loss) for the year, net of tax	0.2	(15)	(3)
Total comprehensive income for the year	62	73	87
Basic earnings per share			
Earnings per share from continuing operations	\$4.1	\$4.9	\$5.2
Losses per share from discontinued operations	\$0.8	\$0.2	\$0.4
Basic earnings per share	\$3.3	\$4.7	\$4.8

Separate Statements of Cash Flows

(Unit: USD million)

	2016	2017	2018
Net cash outflows from operating activities	155	(60)	(160)
Cash used in operations	183	(29)	(112)
Interest received	2	1.4	1.3
Dividends received	4	4	4
Interest paid	(22)	(25)	(30)
Income taxes paid	(12)	(11)	(23)
Net cash outflows from investing activities	(10)	(74)	(41)
Decrease (increase) in financial deposits	11	(3)	8
Decrease (increase) in other receivables	11	(15)	(13)
Proceeds from disposal of available-for-sale financial assets	-	4	-
Proceeds from disposal of investments in subsidiaries	47	45	36
Proceeds from disposal of property, plant and equipment	0.6	20	24
Proceeds from disposal of intangible assets	-	2	-
Payments for acquisition of available-for-sale financial assets	-	(0.05)	-
Payments for acquisition of investments in subsidiaries	(38)	(56)	(76)
Payments for acquisition of property, plant and equipment	(24)	(44)	(56)
Payments for acquisition of intangible assets	(2)	(1)	(0.4)
Decrease (increase) in derivative financial instruments	(16)	0.01	2
Others	-	0.01	2
Net cash inflows from financing activities	(211)	153	197
Proceeds from borrowings	45	129	193
Proceeds from issuance of debentures	143	159	224
Repayments of borrowings	(389)	(27)	-
Repayments of debentures	-	(98)	(210)
Dividends paid	(8)	(8)	(8)
Others	(0.5)	(0.4)	(1.1)
Net cash outflows from others	-	(1.2)	-
Decrease due to split-off	-	(1.2)	-
Net increase (decrease) in cash and cash equivalents	(65)	18	(4)
Cash and cash equivalents at beginning of the year	157	92	109
Effects of exchange rate changes on cash and cash equivalents	(0.1)	(0.05)	(0.1)
Cash and cash equivalents at end of the year	92	109	106

Third Party's Assurance Statement

To the Readers of 2018-2019 LS C&S Sustainability Report:

Foreword

Korea Management Registrar Inc. (hereinafter "KMR") has been requested by of LS Cable & System (hereinafter "LS C&S") to verify the contents of its 2018-2019 Sustainability Report (hereinafter "the Report"). LS C&S is responsible for the collection and presentation of information included in the Report. KMR's responsibility is to carry out assurance engagement on specific data and information in the assurance scope stipulated below.

Scope and standard

LS C&S describes its efforts and achievements of the corporate social responsibility activities in the Report. KMR performed a type2, moderate level of assurance using AA1000AS (2008) and SRV1000 from KMR Global Sustainability Committee as assurance standards. KMR's assurance team (hereinafter "the team") evaluated the adherence to Principles of Inclusivity, Materiality and Responsiveness, and the reliability of the selected GRI Standard indices as below, where professional judgment of the team was exercised as materiality criteria.

The team checked whether the Report has been prepared in accordance with the 'Core Option' of GRI Standards which covers the followings.

| GRI Reporting Principles

| Universal Standards

| Topic Specific Standards

· Management approach of Topic Specific Standards

· Economic Performance: 201-1, 201-3, 201-4

· Market Presence: 202-1

· Indirect Economic Impacts: 203-1, 203-2

· Procurement Practices: 204-1

· Anti-corruption: 205-1, 205-2, 205-3

· Anti-competitive Behavior: 206-1

· Materials: 301-1, 301-2, 301-3

· Energy: 302-1, 302-2, 302-3, 302-4

· Water: 303-1, 303-2

· Emissions: 305-1, 305-2, 305-3, 305-5, 305-7

· Effluents and Waste: 306-1, 306-2, 306-3, 306-5

· Environmental Compliance: 307-1

· Employment: 401-2, 401-3

· Labor/Management Relations: 402-1

· Occupational Health and Safety: 403-1, 403-2, 403-4

· Training and Education: 404-1, 404-2, 404-3

· Diversity and Equal Opportunity: 405-1, 405-2

· Child Labor: 408-1

· Forced or Compulsory Labor: 409-1

· Security Practices: 410-1

· Rights of Indigenous Peoples: 411-1

· Human Rights Assessment: 412-2, 412-3

· Local Communities: 413-1

· Supplier Social Assessment: 414-2

· Socioeconomic Compliance: 419-1

This Report excludes a data and information of joint corporate, contractor etc. which is outside of the organization, i.e. LS C&S, among report boundaries.

Our approach

In order to verify the contents of the Report within an agreed scope of assurance in accordance with the assurance standard, the team has carried out an assurance engagement as follows:

| Reviewed overall report

| Reviewed materiality test process and methodology

| Reviewed sustainability management strategies and targets

| Reviewed stakeholder engagement activities

| Interviewed people in charge of preparing the Report

Our conclusion

Based on the results we have obtained from material reviews and interviews, we had several discussions with LS C&S on the revision of the Report. We reviewed the Report's final version in order to confirm that our recommendations for improvement and our revisions have been reflected. When reviewing the results of the assurance, the assurance team could not find any inappropriate contents in the Report to the compliance with the principles stipulated below. Nothing has come to our attention that causes us to believe that the data included in the verification scope are not presented appropriately.

Inclusivity: Inclusivity is the participation of stakeholders in developing and achieving an accountable and strategic response to sustainability

· LS C&S is developing and maintaining stakeholder communication channels in various forms and levels in order to make a commitment to be responsible for the stakeholders. The assurance team could not find any critical stakeholder LS C&S left out during this procedure.

Materiality: Materiality is determining the relevance and significance of an issue to an organization and its stakeholders. A material issue is an issue that will influence the decisions, actions, and performance of an organization or its stakeholders.

· LS C&S is determining the materiality of issues found out through stakeholder communication channels through its own materiality evaluation process, and the assurance team could not find any critical issues left out in this process.

Responsiveness: Responsiveness is an organization's response to stakeholder issues that affect its sustainability performance and is realized through decisions, actions, and performance, as well as

communication with stakeholders.

· The assurance team could not find any evidence that LS C&S's counter measures to critical stakeholder issues were inappropriately recorded in the Report.

We could not find any evidence the Report was not prepared in accordance with the 'Core Option' of GRI standard.

Recommendation for improvement

We hope the Report is actively used as a communication tool for stakeholders and recommendation for improvements.

LS C&S publishes an annual sustainability report to share both financial and non-financial performances with transparency. The organization is advised to improve intuitiveness (understandability and credibility) of the sustainability achievements by using quantitative data and hire outside directors for greater transparency, thereby establishing the culture of sustainability in the organization.

Our independence

With the exception of providing third party assurance services, KMR is not involved in any other LS C&S's business operations that are aimed at making profit in order to avoid any conflicts of interest and to maintain independence.



May, 21th, 2019

CEO *E. J. Hwang*

GRI Standards

Topic	Disclosure	Page	Assurance	
GRI 102: General Disclosures				
Organizational Profile	102-1	Name of the organization	6	O
	102-2	Activities, brands, products, and services	6, 8-9	O
	102-3	Location of headquarters	6	O
	102-4	Location of operations	6	O
	102-5	Ownership and legal form	18	O
	102-6	Markets served	12-13	O
	102-7	Scale of the organization	6-7	O
	102-8	Information on employees and other workers	78	O
	102-9	Supply chain	56-61	O
	102-10	Significant changes to the organization and its supply chain	1	O
	102-11	Precautionary Principle or approach	19-21	O
	102-13	Membership of associations	7	O
	Strategy	102-14	Statement from senior decision-maker	2-5
102-15		Key impacts, risks, and opportunities	22-23	O
Ethics and integrity	102-16	Values, principles, standards, and norms of behavior	70	O
	102-17	Mechanisms for advice and concerns about ethics	69-71	O
Governance	102-18	Governance structure	18	O
	102-22	Composition of the highest governance body and its committees	18	O
	102-23	Chair of the highest governance body	18	O
	102-24	Nominating and selecting the highest governance body	18	O
	102-30	Effectiveness of risk management processes	19	O
	102-32	Highest governance body's role in sustainability reporting	24	O
	102-35	Remuneration policies	18	O
	102-36	Process for determining remuneration	18	O
	102-37	Stakeholders' involvement in remuneration	18	O
Stakeholder engagement	102-40	List of stakeholder groups	25-27	O
	102-41	Collective bargaining agreements	105	O
	102-42	Identifying and selecting stakeholders	25-29, 105	O
	102-43	Approach to stakeholder engagement	25-29	O
	102-44	Key topics and concerns raised	28-31	O
Reporting practice	102-45	Entities included in the consolidated financial statements	12-13	O
	102-46	Defining report content and topic Boundaries	28-31	O
	102-47	List of material topics	28-31	O
	102-48	Restatements of information	1	O
	102-49	Changes in reporting	1	O
	102-50	Reporting period	1	O
	102-51	Date of most recent report	1	O
	102-52	Reporting cycle	1	O
	102-53	Contact point for questions regarding the report	1	O
	102-54	Claims of reporting in accordance with the GRI Standards	101-102	O
	102-56	External assurance	101-102	O

GRI Standards

Topic	Disclosure	Page	Assurance	
GRI 103: Management Approach				
Management Approach (DMA)	103-1	Explanation of the material topic and its Boundary	DMA	0
	103-2	The management approach and its components	28-31	0
	103-3	Evaluation of the management approach	28-31	0
GRI 200: Economic topics				
GRI 201: Economic Performance	201-1	Direct economic value generated and distributed	6-7, 25	0
	201-3	Defined benefit plan obligations and other retirement plans	79	0
	201-4	Financial assistance received from government	105	0
GRI 202: Market Presence	202-1	Ratios of standard entry level wage by gender compared to local minimum wage	105	0
GRI 203: Indirect Economic Impacts	203-1	Infrastructure investments and services supported	52-55	0
	203-2	Significant indirect economic impacts	25-27, 55	0
GRI 204: Procurement Practices	204-1	Proportion of spending on local suppliers	25-27	0
	205-1	Operations assessed for risks related to corruption	105	0
GRI 205: Anti-corruption	205-2	Communication and training about anti-corruption policies and procedures	67, 71	0
	205-3	Confirmed incidents of corruption and actions taken	71	0
GRI 206: Anti-competitive Behavior	206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	105	0
GRI 300: Environmental topics				
GRI 301: Materials	301-1	Materials used by weight or volume	87	0
	301-2	Recycled input materials used	87, 92-93	0
	301-3	Reclaimed products and their packaging materials	87, 92-93	0
GRI 302: Energy	302-1	Energy consumption within the organization	90-91	0
	302-2	Energy consumption outside of the organization	90-91	0
	302-3	Energy intensity	87, 90, 92	0
	302-4	Reduction of energy consumption	90	0
GRI 303: Water	303-1	Water withdrawal by source	87	0
	303-2	Water sources significantly affected by withdrawal of water	87, 105	0
GRI 305: Emissions	305-1	Direct (Scope 1) GHG emissions	90	0
	305-2	Energy indirect (Scope 2) GHG emissions	90	0
	305-3	Other indirect (Scope 3) GHG emissions	90	0
	305-5	Reduction of GHG emissions	91	0
GRI 306: Effluents and Waste	305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	91-92	0
	306-1	Water discharge by quality and destination	92	0
	306-2	Waste by type and disposal method	92-93	0
	306-3	Significant spills	105	0
GRI 307: Environmental Compliance	306-5	Water bodies affected by water discharges and/or runoff	87	0
	307-1	Non-compliance with environmental laws and regulations	105	0
GRI 400: Social topics				
GRI 401: Employment	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	79	0
	401-3	Parental leave	65	0
GRI 402: Labor/Management Relations	402-1	Minimum notice periods regarding operational changes	105	0
	403-1	Workers representation in formal joint management-worker health and safety committees	75	0
GRI 403: Occupational Health and Safety	403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	74	0
	403-4	Health and safety topics covered in formal agreements with trade unions	75	0
GRI 404: Training and Education	404-1	Average hours of training per year per employee	83	0
	404-2	Programs for upgrading employee skills and transition assistance programs	80-83	0
	404-3	Percentage of employees receiving regular performance and career development reviews	83	0
GRI 405: Diversity and Equal Opportunity	405-1	Diversity of governance bodies and employees	78	0
	405-2	Ratio of basic salary and remuneration of women to men	105	0

Topic	Disclosure	Page	Assurance	
GRI 408: Child Labor	408-1	Operations and suppliers at significant risk for incidents of child labor	63	0
GRI 409: Forced or Compulsory Labor	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	63	0
GRI 410: Security Practices	410-1	Security personnel trained in human rights policies or procedures	63	0
GRI 411: Rights of Indigenous Peoples	411-1	Incidents of violations involving rights of indigenous peoples	105	0
	412-2	Employee training on human rights policies or procedures	63	0
GRI 412: Human Rights Assessment	412-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	105	0
	413-1	Operations with local community engagement, impact assessments, and development programs	55	0
GRI 413: Local Communities	413-1	Operations with local community engagement, impact assessments, and development programs	55	0
GRI 414: Supplier Social Assessment	414-2	Negative social impacts in the supply chain and actions taken	59	0
GRI 419: Socioeconomic Compliance	419-1	Non-compliance with laws and regulations in the social and economic area	105	0

Additional Information

Indicators	Additional information																						
102-41	All employees are subject to the results of collective bargaining agreements.																						
102-42	Our stakeholders are: (1) those who are affected by business activities; (2) those who affect business performance; and (3) those who are legally, financially, and operationally responsible. We listen to their voices through a variety of communication channels and reflect them in our business activities.																						
201-4	<p>Government subsidies (unit: USD thousand)</p> <table border="1"> <thead> <tr> <th>Category</th> <th>2016</th> <th>2017</th> <th>2018</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Tangible assets</td> <td>Land</td> <td>13,928</td> <td>13,928</td> <td>14,402</td> </tr> <tr> <td>Buildings</td> <td>1,596</td> <td>1,475</td> <td>1,353</td> </tr> <tr> <td>Machines and equipment</td> <td>233</td> <td>201</td> <td>172</td> </tr> <tr> <td>Intangible assets</td> <td>Development cost</td> <td>207</td> <td>72</td> <td>191</td> </tr> </tbody> </table>	Category	2016	2017	2018	Tangible assets	Land	13,928	13,928	14,402	Buildings	1,596	1,475	1,353	Machines and equipment	233	201	172	Intangible assets	Development cost	207	72	191
Category	2016	2017	2018																				
Tangible assets	Land	13,928	13,928	14,402																			
	Buildings	1,596	1,475	1,353																			
	Machines and equipment	233	201	172																			
Intangible assets	Development cost	207	72	191																			
202-1	The ratio of entry level wage to legal minimum wage is 150%.																						
205-1	None of our worksites were found to have risks of any corruption cases according to the analysis results																						
206-1/419-1	We are striving to promote transparent and fair competition. However, some violation cases that occurred before implementing our compliance programs are still under investigation and subject to lawsuits. For further details, please refer to our 2018 audit report. Going forward, we will further strengthen our efforts to promote compliance activities of our employees and prevent any violations that could lead to market disruptions.																						
303-2	Our water resources are from the Nakdong River for the Gumi/Indong plants, the Paldang Dam for the Anyang plant, and the Dalbang Dam for the Donghae plant. They are purified by the K-Water and provided through water supply offices in each area.																						
306-3/307-1	There were no cases of harmful substance leakage and environmental violations in 2018.																						
402-1	We disclose key information and major changes regarding management and employee welfare in real time through our website.																						
405-2	Employees with the same positions and jobs are equally paid. There is no wage discrimination for reason of gender.																						
411-1	There were no violations involving the infringement of the rights of local residents during the reporting period.																						
412-3	When deciding new investment, including the establishment of a worksite, acquisition, and joint venture, we review and consider local labor practices. As of now, there have been no human rights issues. However, if newly invested worksites do not meet the international human rights standards, actions will be immediately taken to address these issues.																						

2018-2019 LS Cable & System Sustainability Report + Annual Report

Publication date May 31, 2019 (Korean version April 30, 2019)
Publisher Myung Roe-Hyun
Company LS Cable & System
Design redden branding
Production management The Sustainable Management Secretariat
(Joo Wan-Seob, Kang Byung-Yoon, Choi Woo-Jin, Park Eun-Sung and Lee Ye-Lim)

Contributors

Working Committees

Technology Management Team Yang Hoon-Chul and Heo Gwang-Jin
Quality Management and Planning Team Lee Doo-Han and Kim Ho-Eun
Purchasing Planning Team Park Jun-Yong and Oh Seok-Jun
Public Relations Team Keum Dong-Hee and Han Jin-Hee
Corporate Culture & HRD Team Ahn Seung-Keun and Choi Jong-Wook
Labor Relations Planning Team Yang Kyeun-Woong and Koh Dong-Jin
Internal Audit and Consulting Team Choi Chang-Won and Hyun Jin-Young
Compliance Management Team You Chang-Woo and Kang Jong-Gu
HSE Team/HSE Planning Team Park Seok-Ho, Jang Jeong-Wook, Lee Jin-Tak and Kang Jeon-Lim

Others

Corporate Strategy Division Kwon Oh-Heung, You Yong-Phal, Jang Gue-Seong,
Hwang Yeo-Jeong, Dong Ju-Young and Kim Hee-Jeung
Human Resources Team Kim Tae-Hyun and Kang Eun-A
Accounting Team Choi Ji-Eun
Legal Affairs Team Kim Do-Han
Public Relations Team Kim Yoon-Suk and Hwang Hye-Rin
Business Support Team Kim Han-Soo and Kim Hyun-Kyung
HSE Planning Team Jeong Seong-Kyu and Lee Bong-Yi
Facility Management Team (Gumi/Indong) Koo Bon-Hag
Submarine Design and Production Team Kim Kyung-Soo
Underground Cable System Development Team Kim Jong-Soo
Underground Cable System Engineering Team Lee Chung-Hwan
Optical Fiber & Cable Development and Production Team Kim Jung-Mok
Automotive Wire/Tube Components Development/Production Team Son Ba-Reun
Communication/Industrial Cable & System Research Team Kim Jin-Woo
Distribution Research Team Seo Ju-Mi
LS Buildwin Cho Hyun-Ho and Kim Choong Gi
G&P Park Shin-Hwan and Lee Jung-Sook
LS-VINA Park Joo-Hwan
LSCV Lee Hyung-Woon
LSCI Lim Dong-Wook
LSCW Lee Ki-Hoon
LSHQ Lee Sang-Gab