

Integrated solutions for a better life

2016 Integrated Report of Doosan Heavy Industries & Construction



About this Report

Characteristics of the Report

This report introduces the direction of Doosan Heavy Industries & Construction's business strategies and the sustainable management system in place to pursue those strategies. It also includes the activities of Doosan Heavy Industries & Construction to seek sustainable growth and development alongside society by connecting its business areas and the United Nations Sustainable Development Goals (SDGs).

Criteria for Writing the Report

This report has been written in accordance with the integrated reporting framework of the International Integrated Reporting Council (IIRC) and G4 Core Option of the Global Reporting Initiative (GRI). The status of the detailed application of GRI G4 can be checked through the GRI Index in the Appendix.

Period and Scope of Reporting

Doosan Heavy Industries & Construction publishes annual reports to utilize them as a stakeholder communication channel. This report includes financial and non-financial results from January 1st to December 31st of 2016, and the essential aspects that may influence stakeholders' decision-making contain results up to the first half of 2017 in order to facilitate understanding. To ascertain the trends of financial and non-financial outcomes, 3 years of quantitative results are reported while the financial performance has been reported in consolidated statements based on K-IFRS. Moreover, in the event that the information presented in previous reports has been modified or re-written, the details have been explained in the footnotes. The scope of reporting includes 100% of the headquarters, local and international projects and, for certain data, also includes overseas subsidiaries.

Verification of the Report

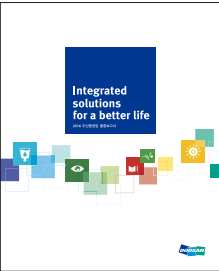
This report received third party assurance for the audits of financial information through an independent audit corporation. And the non-financial information are written based on DNV-GL's Verisustain 5.0 and ISAE 3000 standard, this report has undergone an external verification by a third party. Through a third-party verification operating with objectivity and independence, the overall reliability of the report has been increased. Detailed results regarding the verification can be checked through the verification statement in the Appendix.

Additional Information

This report is to be published and distributed in Korean and English, and may also be downloaded in PDF format from the website of Doosan Heavy Industries & Construction (www.doosanheavy.com). For any inquiries about the report, please contact us through the following:

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Cover Story



Utilizing a square, the motif of Doosan's brand identity, and the icon of SDGs presented by the UN, an active and continuously progressive movement towards the goal has been formed into an image in which Doosan's philosophy of "Commitment to People" and the UN's aim for sustainable growth are in great harmony.

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Doosan Group

Introducing Doosan Group

Footsteps of the Group

As Korea's first modern corporation, Doosan has emerged as a global enterprise with as many as 40,000 employees spread throughout 38 countries and based on a 120-year history. Doosan's storied history began when the Park Seung-Jik Store opened its doors in 1896 and, through the start of the trading business and foundation of OB Beer in the 1950s, eventually formed a group. In the 1960s, the company entered a broad range of areas such as construction, food and beverages, engineering, media and culture, and established the foundation of the corporation by modernizing and diversifying its management. Since the 1980s, it has been actively pioneering foreign markets centered on construction, electronics, glass, machinery and trading and, by pursuing various new businesses, has continued its remarkable growth and strengthened its global competitiveness with a focus on technology enhancement in each area. In celebration of the company's 100th anniversary, its 2G strategy (Growth of People, Growth of Business), which would form the backbone of management activities for the next 100 years, was established in 1955, and a successful business transformation to the infrastructure support business (ISB) started to take place. Since 2006, it acquired global companies in the infrastructure support business such as Bobcat, a construction equipment manufacturer, and Skoda Power, a power generation facility company, to lead the market as a global brand. It continues on its path of new challenges and opportunities through opening the Doota Duty Free outlets and acquiring Doosan GridTech in 2016. Founded upon the notion of "Trust in people," we will contribute to the betterment of people's lives and the future of the world to become a "Proud Global Doosan."

Overview of Affiliates

ISB (Infrastructure Support Business) Companies

Doosan Heavy Industries & Construction | Doosan Infracore
Doosan Engineering & Construction | Doosan Engine
Doosan Bobcat | Doosan Mecatec

Doosan Co., Ltd.

Doosan Corporation Electro-Materials | Doosan Corporation Mottrol
Doosan Corporation Glonet | Doosan Corporation Industrial Vehicle
Doosan Corporation Fuel Cell | Doosan Corporation Information & Communications | Doosan Corporation Doota Duty Free

CSB (Consumer & Service Business) Companies

Oricom | Hancom | Doosan Magazine | Doota Mall
Doosan Bears | Doosan Cuvox | Neoplux

Affiliated Agencies

Doosan Yonkang Foundation | Doosan Art Center | Doosan Leadership Institute (DLI)

Group Vision

We will become a Proud Global Doosan through people-oriented management and the establishment of processes that meet world-class standards, the source of our global competitiveness.



2016 Group Financial Performance



Doosan Way

Doosan Way, our belief and philosophy

Doosan Credo

The Doosan Credo is a set of principles that represents Doosan's philosophies and unique way of doing business. These principles have been the foundation of Doosan's success for the past century. The Doosan Credo is integral to every aspect of our business and people, clearly guiding our decisions and the way we conduct business. It is by realizing these values that Doosan accomplishes its ultimate goal. The Credo consists of Doosan's "Aspiration" and "Core Values."

Aspiration

Doosan's ultimate goal is to create a Proud Global Doosan. It is our vision that each of our employees and stakeholders will not only benefit from Doosan but that they will take pride in their association with us. We envision every employee being proud to be a member of Doosan; every customer recognizing and appreciating our high-quality goods and services; and every shareholder valuing the fair and high levels of profit that we generate.

Core Values

Doosan people practice the nine core values of the Doosan Credo wherever they operate, every day, in order to build a Proud Global Doosan. These values guide our business conduct, the manner in which we treat one another and the way we work with all of our partners. These nine core values are as follows:

People	Cultivating People	Integrity and Transparency
Inhwa	Customers	World-class Technology and Innovation
Profit	Social Responsibility	Safety and Environment

CSR Value System

Doosan Aspiration	Proud Global Doosan
CSR Goal	To rank among the world's Leading 100 CSR Companies in 2025: Based on the World Economic Forum (Davos Forum)
CSR Mission	Supporting Responsible and Sustainable Growth
CSR Pillars	Respect for People Reliable Operation Responsibility in Engagement CSR Value Creation
CSR Priorities	1. Establishment of a culture that values human rights 2. Fair employment 3. Establishment of a safe work environment 4. Reinforcement of CSR in process operations and the supply network 5. Green management and responsiveness to climate change 6. Reinforcement of responsibilities in products/services 7. Advancement of social contribution activities reflecting the value of work 8. Reinforcement of activities that disclose company information (CSR) 9. Pursuit of businesses that create CSR values 10. Advancement of CSR performance monitoring
Enabler	Powerful CSR Governance (promotion system / will of pursuit by executives / awareness of employees in social responsibilities)
Doosan Values	9 Core Values (People, Cultivating People, Integrity and Transparency, Inhwa, Customers, World-class Technology and Innovation, Profit, Social Responsibilities, Safety and Environment)
Demand of Society	Global CSR Initiative (UN SDGs · ISO 26000 · UN Global Compact · GRI)

CEO Message



Dear distinguished stakeholders,
Doosan Heavy Industries & Construction is always highly appreciative of your generous support and encouragement.
 It gives us great pleasure to be able to share with you again through our Integrated Report the changes and innovation that we have been pursuing over the year at Doosan Heavy Industries & Construction.
 Even amidst the low-growth trend that has been prolonged by the global recession, Doosan Heavy Industries & Construction has been growing to become a global corporation that adds value to the Earth by offering world-class products and technology to our clients.
 Despite the difficulties of the past year, the company was able to win orders for large-scale projects in strategic markets, including Saudi Arabia and India, and lay the foundation for business expansion by establishing a new subsidiary, Doosan GridTech, winning performance improvement projects for local thermal power plants and participating in national nuclear decommissioning projects. In addition, we achieved significant business results by adopting marketing strategies tailored to each region, which led us to successfully enter the Egyptian and Indonesian power markets.
 Based on the Doosan Way, which is embedded in our work processes, our employees have helped to fulfill the social responsibilities we hold as a corporate citizen and supported our continuous efforts to achieve sustainable growth. Human rights management is being reinforced through town hall meetings and wider efforts are being made to promote the voluntary practice of business ethics, while we have also sought to upgrade our preventive Environment, Health & Safety (EHS) systems and energy efficiency systems. We also had the honor of being presented with the Grand Prize at the Korean Shared Growth Awards ceremony, in recognition of the various supply chain support activities we were engaged in, such as the "Shared Growth Supporters" work.
 We have received favorable recognition both at home and abroad for our performance in sustainability management, which includes receiving the ESG A rating from the Korea Corporate Governance Service and being listed a Dow Jones Sustainability Index (DJSI) Korea company.

Continuing the practice of sustainable growth in the global market
 Doosan Heavy Industries & Construction is pursuing sustainable growth by responding proactively and swiftly to changes in the global power market. As part of these efforts, we launched the Service Business Group this year, through which we are seeking to broaden our service offerings for power plants worldwide and strengthen the area of recurring businesses to contribute to a stable business structure. Furthermore, we are continuing with efforts to expand our business by adopting innovative technology, which harnesses the benefits of information & communications technology, such as the RMS (Remote Monitoring Service) for power plants and Digital Factories, and we are also diversifying our business portfolio to better meet the needs created by the tightening of environmental regulations under the new climate regime.

Faithfully fulfilling our corporate social responsibilities in alignment with the United Nations' SDGs
 Built upon the reinforcement of human rights, environment, safety, supply chain and ethics management activities and the faithful fulfillment of our social responsibilities, mostly achieved through contributions to local communities, we aim to tie together the sustainable development goals (SDGs) proposed by the UN with our core businesses to establish and achieve the goal of contributing to sustainable growth worldwide. We will particularly focus on effectively addressing the areas of energy, water and climate change and make every effort to produce greater outcomes.
 Moreover, Doosan Heavy Industries & Construction seeks to continue the practice of sharing with local communities through events like the Doosan Day of Community Service, a heartwarming event arranged to help the needy and which is led by social volunteer groups composed of employees from 30 Doosan work sites around the globe.
 Doosan Heavy Industries & Construction strives to continuously pursue sustainable growth this year as well and will always endeavor to do its best in line with the company slogan, "Winning Team," all the while forging ahead to realize our vision of becoming the "Global Leader in Power & Water."
 We kindly ask for your interest and support as we continue on our journey towards achieving sustainable business growth.

Chairman & CEO
 Geewon Park
 

Company Profile

Global Leader in Power & Water

Doosan Heavy Industries & Construction, established in 1962 and boasting a storied history that dates back 50 years, is emerging as a global corporation that increases the value of the planet based on world-class quality and technology. Through the domestication and export of various industrial plants in power generation, desalination, casting & forging and construction, it has contributed to the growth of the national economy and, thanks to its specialized and technical capabilities in performing the entire process from design to commissioning, it has been attaining outstanding results in the overseas power generation and desalination markets. At the same time, it accelerates the securing of OEM technology in core power plant facilities and development of future eco-friendly technology in order to contribute to the growth of the local plant industry while aiming to take a bold leap forward as an international corporation.



Panoramic view of the Changwon Plant

Global Network

Major overseas subsidiaries 14
Major overseas branches, offices 28

Asia

Republic of Korea
Headquarters and the Changwon Plant
Technology Research Institute
Seoul Office

Vietnam
Doosan Vina
DCS Vina
Vietnam Operation Center
Hanoi Office

India
Doosan Power Systems India
New Delhi Office
Mumbai Office
Kolkata Office
Chennai Office/Shop

China
Shanghai Office
Beijing Office

Taiwan
Taipei Office

Japan
Doosan Heavy Industries Japan

Philippines
Manila Office

Thailand
Bangkok Office

Indonesia
Jakarta Office

Turkey
Istanbul Office

Europe

United Kingdom
Doosan Power Systems
Doosan Babcock
Doosan Enpure
Service T&E Center

Czech Republic
Doosan Skoda Power

Germany
Doosan Lentjes
Frankfurt Office

Poland
Katowice Office

Romania
Doosan IMGB

America

United States
Doosan Heavy Industries America
Doosan HF Controls
Doosan ATS America
Doosan GridTech
Pittsburgh Office
Newington Office

Chile
Santiago Office

Middle East and Africa

Saudi Arabia
Doosan Power Systems Arabia
Riyadh Office
Dammam Water R&D Center

United Arab Emirates
Middle East Operation Center
Dubai Office
Water Dubai Office
Abu Dhabi Office

Egypt
Cairo Office

Kuwait
Kuwait Office

South Africa
Johannesburg Office

History

Beginning and Challenge
1962~1980

1962

Establishment of the Company

Growth and Development
1981~2000

1982
Groundbreaking of the Changwon Plant (the world's largest)

2001
Privatization and change of the company name to Doosan Heave Industries & Construction Co., Ltd.
2006
Acquisition of Mitsui Babcock Energy
Secured OEM technology in boilers

2009
Acquisition of Skoda Power
Secured OEM technology in steam turbines
Completed Doosan Vina Plant in Vietnam

2011~12
Acquisition of AE&E Lentjes
Secured OEM technology in CFB boilers
Acquire Chennai Works in India
Acquire Enpure
Announced "The Doosan Way"

2016
Acquisition of 1Energy Systems, US energy storage system firm (current Doosan GridTech)

Proud Global Doosan

Growth to a Global Company
2001~

01

Business & Strategy

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Having built power capabilities in the power sector by first constructing thermal power and nuclear power plants dating back to the 1970s and entering the seawater desalination market, Doosan Heavy Industries & Construction now takes position as the world's no. 1 player in the power and water sector.

Strategy for Sustainable Growth

Doosan Heavy Industries & Construction has formed a global network with over 20 countries around the world, including the United States, Europe, Southeast Asia and India to provide the best solutions for the power generation and water industries. Doosan Heavy Industries & Construction's greatest competitive edge is its business portfolio that is optimized for customers' needs and its unparalleled pursuit of technology, which is why the company is highly recognized throughout the global market. The company accomplishes outstanding results in the construction, EPC, and water sector by manufacturing and supplying cast & forged products fabricated with the industry's fundamental materials as well as thermal/ nuclear power plant equipment and seawater desalination plants.

Global Leader in Power & Water

The phrase "Global Leader in Power & Water" emphasizes how strongly determined Doosan Heavy Industries & Construction is to become the world's leading player in the global power and desalination market. Based on the Doosan Way, which values transparency, technology, people and innovation, the company is strengthening its' foothold as a global leader in all aspects, cost competitiveness, quality, sales scale and profitability, people and corporate culture cultivation while at the same time, staying at the forefront of technological trends, marketing and market changes in the world in order to remain an advanced global corporation.

Continually Changing to Realize the Vision

As interest in the environment (e.g., greenhouse gas, fine dust, and etc.) grows and the enduring low growth and low oil prices put strain on the Middle East government finances, private investment is being boosted. Also, Industry 4.0 is expected to bring more opportunities in Distributed Generation (DG) and the digital application sector as well as the services market. To respond to such changes and reach its' vision, Doosan Heavy Industries & Construction set its' strategic direction to focus on expanding new business areas, increasing order intake, and enhancing profitability. The company will pursue the enhancement and diversification of eco-friendly businesses in gas, biomass, waste-to-energy, Its' main areas of focus will be : the development and early commercialization of the large-scale gas turbine, nuclear power biz expansion, services biz reinforcement through acquiring the technology, organization and capability, DG biz expansion, Digital Water IWP (Independent Water Project) biz expansion, and O&M biz enhancement.

Strengthening Core Competencies for Sustained Growth

Doosan Heavy Industries & Construction has successfully evolved from being a mere tool and equipment manufacturer to a bonafide player in the EPC industry and, in 2016, reinforced its business in the after-market based on its expertise in in power plant equipment. Also, the company has acquired the capability to respond flexibly and proactively to market changes by pursuing various business areas including new and renewable energy (wind power), DG (ESS, microgrid), and etc., with its' expertise in the existing conventional power plant sector. Backed by its' outstanding technological competence applied to businesses centered around the domestic market, the company has broadened its' horizons into the Middle East and East Asia (Vietnam, India) market, and is being recognized for its' excellence in technology in emerging markets as well. Doosan Heavy Industries & Construction secures excellent capability and competitiveness in equipment manufacturing but there has always been the need for proprietary technology. To this end, the company acquired Skoda Power (Czech Republic, turbines), Babcock (United Kingdom, boilers) and Lentjes (Germany, CFB) to build its' technological capability to enhance its' capability in the renewable energy sector. Acquisitions were pursued to secure the required technology and as a result, companies of different corporate cultures were merged into one. The increase in overseas projects led to a rise in the number of local manpower resources and thus, a unified corporate culture had to be established to achieve the company's vision and goals. As a result, Doosan Heavy Industries & Construction announced and shared the Doosan Way in 2015 and has been sculpting a corporate culture befitting a global enterprise.

Global Trends

Prolonged period of low growth | Increased awareness of stronger environmental regulations and eco-friendly products | Increased water scarcity risks (e.g., water shortage)

Industry Trends

Prolonged period of low oil prices | Expanded private investments | Accelerated application of Industry 4.0 | Expansion of distributed generation | Expansion of SW/ICT-utilizing services

Expanding new businesses

"Identifying new growth engine & advancing commercialization"

Increase Order Intake

"Build momentum to increase order intake by implementing strategies by region/ product type"

Improvement in profitability

"Improve profitability through strengthened competitiveness"

Global Leader in Power & Water

Seek the diversification of business areas in response to changes in the environment

Obtain technology through acquiring global companies

Expand new markets backed by excellent technological capability

Establish a winning team by implementing the Doosan Way

STRATEGY 1.

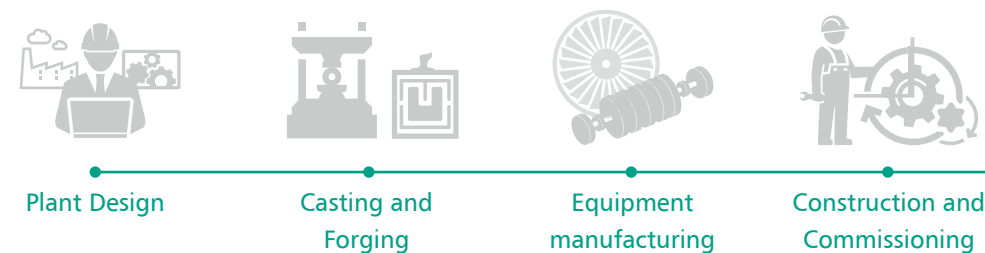
Expanding New Businesses

Taking on Endless Challenges for Growth

Advancing into the After-Market

As service business opportunities in improving the performance and efficiency of aging power plants increase due to the aging of power plants worldwide and stronger environmental regulations, the scale and business opportunities of the after-market are expanding rapidly. Thus, as a means to respond immediately and effectively to such power market trends, the company launched the Service BG. Meanwhile, as the storage facilities in domestic nuclear power plants are expected to reach saturation or the end of its' designed life span, cask (spent nuclear fuel storage) and decommissioning technology development is underway.

Doosan Heavy Industries & Construction Value Chain



Existing Business Areas

In addition to the service business that has been executed on a project basis, Doosan Heavy Industries & Construction has significantly expanded the "recurring" business sector to seek continuous growth in revenue as well as a steady stream of profits by establishing the Service BG. The company will enhance the service business by setting up a differentiated organization and process, and gradually expand its' total solution offerings through closely managing its' clients based on a systematic-approach, identifying related business, and strengthening technological capability. As the world's nuclear power plants are expected to reach its' designed lifespan by the year 2030, a rising demand in the nuclear power plant decommissioning market is expected. Doosan Heavy Industries & Construction focuses on the development of safe and economical technology to enter the decommissioning business

Advancing into the After-Market

Maintenance & Performance Improvement

After-Market Business Areas

After-Market

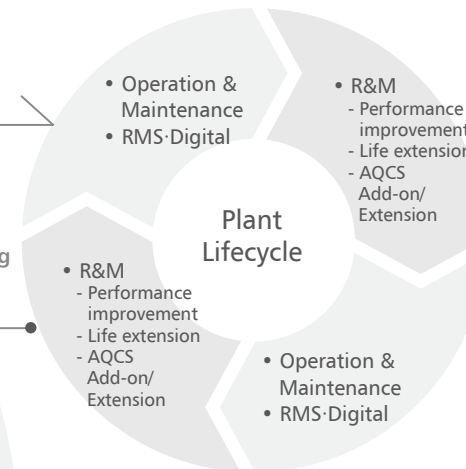
Maintenance and Retrofit Projects

The Service BG has been launched to pursue the after-market business, by integrating the businesses and organizations related to power generation services. It aims to provide a solution that can maximize stability and efficiency of the exiting power plants, through performance improvement of aging power plants, fuel conversion, and enhancement of fine dust related- environmental technology.

The Service BG's Business Scope

New build

Decommissioning of the power plants



The Service BG's Strategic Direction

- Building on the already obtained technology and capability, provide total service solutions across the entire value chain by developing technology and capability dedicated to service biz

Already obtained capability Competencies

- OEM Technology
- Plant Engineering
- Manufacturing, Installation
- Procurement, Quality control

- Service Business-Specific Competencies
- Plant Assessment and Diagnostics
- Non-OEM Technology
- Reverse Engineering
- Field Engineering
- Local Operation
- RMS/Digital, etc.

- Maximize business opportunities for the OEM fleet supplied by DHI
- Expand business opportunities for the Non-OEM fleet supplied by other OEMs by expanding capabilities as total solutions provider

Back-End & Decommissioning

Back-End Nuclear Fuel Cycle & Decommissioning of Nuclear Power Plant

Back-End Nuclear Fuel Cycle

As the spent fuel pools in the Hanbit and Gori nuclear power plant is expected to reach saturation in 2024, casks that allow temporary storage of such spent nuclear pool must be acquired in stages. Since 2015, Doosan Heavy Industries & Construction has partnered with NAC to develop a Korean type proprietary model for cask, with plans to promote it as a new business area in the nuclear power sector.

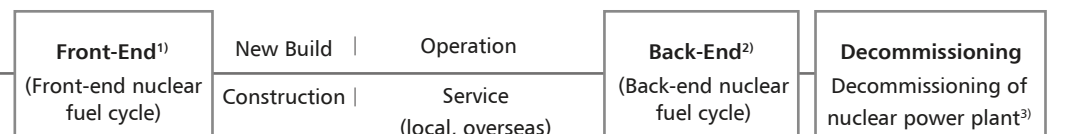
Decommissioning of Nuclear Power Plants

Nuclear power plants that have been shut down goes through a decommissioning process. If such power plants aren't being considered to re-enter operation, a total of 12 domestic units will be expected to be decommissioned. Therefore, Doosan will obtain core technologies (e.g., decontamination, remote cutting, decommissioning) to build up a track record in the domestic market and afterwards, expand into the overseas market including the US and Europe.

- Process which uranium ore goes through a multi-stage process and is supplied to a nuclear power plant
- Process which spent fuels burned in reactor are discharged, separated, re-processed or ultimately disposed
- Restoration a nuclear power plant site to the original natural state prior to the establishment of the facility

Nuclear Power Business

Value Chain



STRATEGY 1.

Expanding New Businesses

Taking on Endless Challenges for Growth

Business Expansion that Considers Environmental Factors

Recently, stronger environmental regulations have led to a favorable atmosphere for business, particularly in the area of improving the performance of environmental facilities and aging power plants. By leveraging such opportunities, Doosan Heavy Industries & Construction aims to solidify its position as an eco-friendly company and actively respond to global issues such as fine dust and greenhouse gases.



The Yeongheung Thermal Power Plant Units 5 and 6

Performance Improvement of Thermal Power Plant Equipment

The Boryeong Thermal Power Plant Unit 3 Performance Improvement Project

Receive order for project on performance improvement of the Boryeong Thermal Power Plant Unit 3 which is 24 years old power plant. The retrofit will not only improve the plant efficiency by modernizing the aged facilities, but also help minimize environmental impact through efforts such as reducing approx. 270,000 tonnes of CO₂ every year.

Improving the Performance of the Latest Facilities

Reducing more than **270,000** tons of CO₂
An annual reduction of more than 270,000 tons of CO₂ generated

Saving about **12** billion KRW
An annual savings of 12 billion KRW in fuel costs

The Yeongdong Thermal Unit 1, an Eco-Friendly Biomass Power Plant

Claimed to release less carbon that result in less air pollution when compared to fossil fuel (e.g., coal, LNG, and etc.), biomass has been growing in popularity as an eco-friendly fuel. By carrying out a project to convert the Yeongdong Thermal Unit 1, an existing coal-fired thermal power plant, into a biomass power plant, 1,270,000 REC (Renewable Energy Certificates) will be obtained, and approx. 860,000 tonnes of CO₂ will be reduced annually.

Eco-Friendly Fuel from a Biomass Power Plant

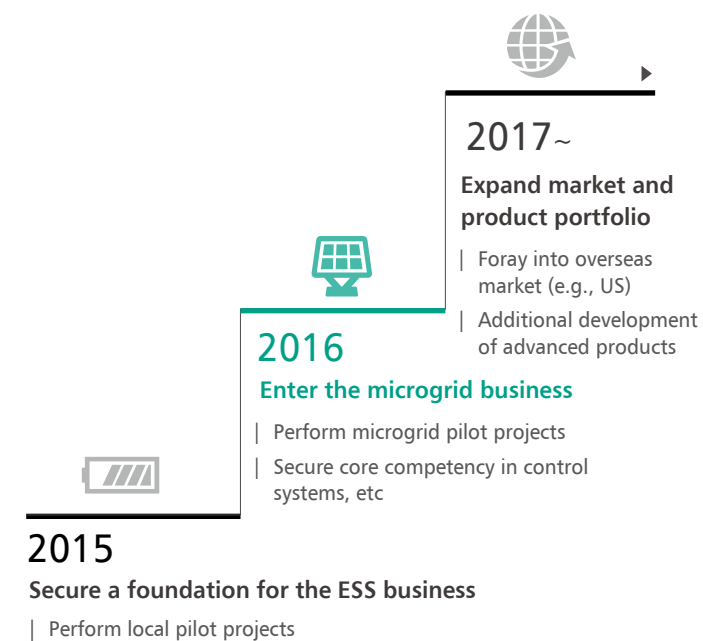
Reducing **860,000** tons of CO₂
An annual reduction of 860,000 tons of CO₂ generated

ESS¹⁾ and Microgrid²⁾

As the importance of renewable energy increases under the Paris Agreement, the market for ESS and microgrid, which are prerequisites for renewable energy and increased energy efficiency, will rapidly grow. Doosan Heavy Industries & Construction has acquired an US-based company that owns proprietary technology in ESS software and changed the name to Doosan GridTech. Through this acquisition, a strategic foothold for the future energy business has been secured, and the entire process from ESS design and installation to commissionings can now be performed.

- 1) ESS (Energy Storage System): A system that changes and stores, via batteries, the electricity produced in thermal power plants and power sources such as solar and wind power, and then discharges the electricity to meet sources of demand
- 2) Microgrid: A system that can independently supply electricity to small regions in a stable manner by linking ESS and small renewable power sources of solar and wind power

Doosan Heavy's ESS & Microgrid Biz Progress & Future Direction



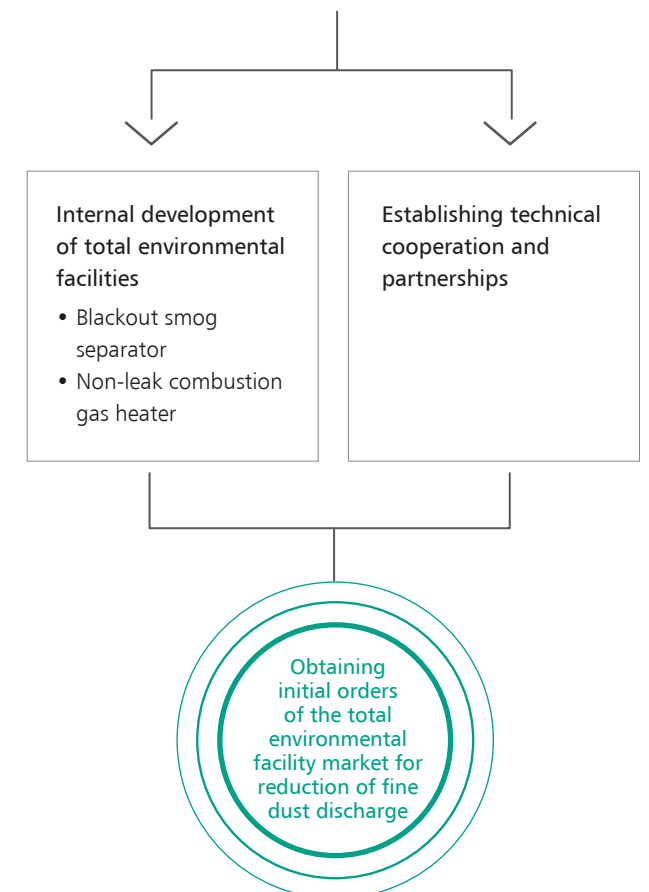
Track record of the ESS business

15 Global Projects **35MW** Total Capacity

Development of Equipment for Integrated Environmental Solutions for Standard/New Standard Power Plants

With growing concerns over rising levels of fine dust pollution, "Special Measures for the management of fine dust" has been implemented since June 2016. Expecting that this will drive the growth of AQCS facilities, Doosan Heavy Industries & Construction will proactively win AQCS facility improvement projects for reducing fine dust at Standard and New Standard power plants. Moreover, it is currently seeking participation in national projects as well as the company is taking part in government projects and pursuing in-house development to meet fine dust emission criteria while shortening installation period. As for short-term projects prior to the completion of development, the company will forge technology alliances and implementation partnerships to win such projects in the early-stage market.

Improving the Performance of Standard and New Standard Power Plants



STRATEGY 2.

Increase Order Intake

Pro-Active Efforts Towards Addressing Customer and Market Needs

Diversification of Business Regions



The Morupule A Thermal Power Plant

First Order in the South African Generation Market

As its' first successful outcome since entering the South African power generation market, Doosan Heavy Industries & Construction has signed a deal with Botswana Power Corp. to improve the performance of the Morupule A thermal power plant. The plant is located northeast northeast of Gaborone, the capital of the Republic of Botswana. The company will replace and repair main equipment including turbines and boilers that have stopped running due to aging since 2012 to successfully improve plant performance, expecting to contribute to stabilizing power supply in the Botswana region. Such achievement is a result of the market diversification strategy that had been pursued, and Doosan will continue to proactively target the South African market with high growth potential.

Re-Entry into the Philippines with 300MW class CFB

The demand for CFB boilers, which are characterized as eco-friendly thermal power generators, is growing mainly in developing countries such as the Philippines and Indonesia in Southeast Asia, Turkey, and South Africa. Utilizing the CFB boiler technology acquired through its German subsidiary, Doosan Lentjes, Doosan Heavy Industries & Construction has obtained a 300MW class CFB boiler project in Subic Redondo. This is the first application of 300MW class CFB boilers in the Philippines, and Doosan successfully re-entered the market after 10 years since the establishment of the Cebu Power Plant in 2007. This is significant in that it has contributed to an increase in orders obtained for CFB boilers in the future.

Re-Entry into the Indonesian Power Generation Market

Through a consortium with an Indonesian state-operated construction company, a conversion project for the Grati Combined-cycle Power Plant worth KRW 180 billion has been obtained. The company will supply three HRSGs and one steam turbine to the existing 300MW gas-fired power plant and convert it to a 484MW combined cycle power plant. This was the most successful re-entry into the Indonesian market in 10 years since the Cirebon Coal-fired Thermal Power plant project in 2007. Along with the Subic Thermal Power Plant project in the Philippines, this deal as well is a case that proves the excellence of Doosan's technological capability and project execution skills, laying the foundation for future order wins.

Gaining a Market-leading Status



The Jeddah PH.3 RO Desalination Plant



India's Obra-C and Jawaharpur Power Plant

The Indian market is one of the world's two greatest power generation markets, the other being China, where USC power plant orders are expected to be continuously placed. We succeeded in winning the Obra-C and Jawaharpur coal fired thermal power plant in northern India. Doosan will be responsible for the engineering, procurement, and construction (EPC2) of the plants that consists of two 660MW units each, producing a total capacity of 2,640MW. This project was a large-scale project that was awarded with international competitive bidding, and we were able to win orders after intense competition with Indian companies. Doosan Heavy Industries & Construction proactively target the Indian market, where orders for coal-fired thermal power plants with annual average output of 18GW are expected to be placed by 2020.

Kuwait's RO Seawater Desalination Plant

Kuwait's Gulf Coast is among one of the regions with worst quality of water. In May 2016, Doosan Heavy Industries & Construction successfully obtained an order for an RO (Reverse Osmosis) seawater desalination plant worth 460 billion KRW in Kuwait. Such a result stems from the trust that has been built between partners when having successfully carried out the Shuwaikh RO project in Kuwait in 2008. Backed by such order wins, the company has solidified its position in the Middle East, the target market for seawater desalination projects. Doosan Heavy holds the greatest share of the thermal desalination market and is determined to target the global RO seawater desalination market that is estimated to be worth \$4.5 billion by 2020.

Saudi Arabian Fadhili Combined-Cycle Power Plant

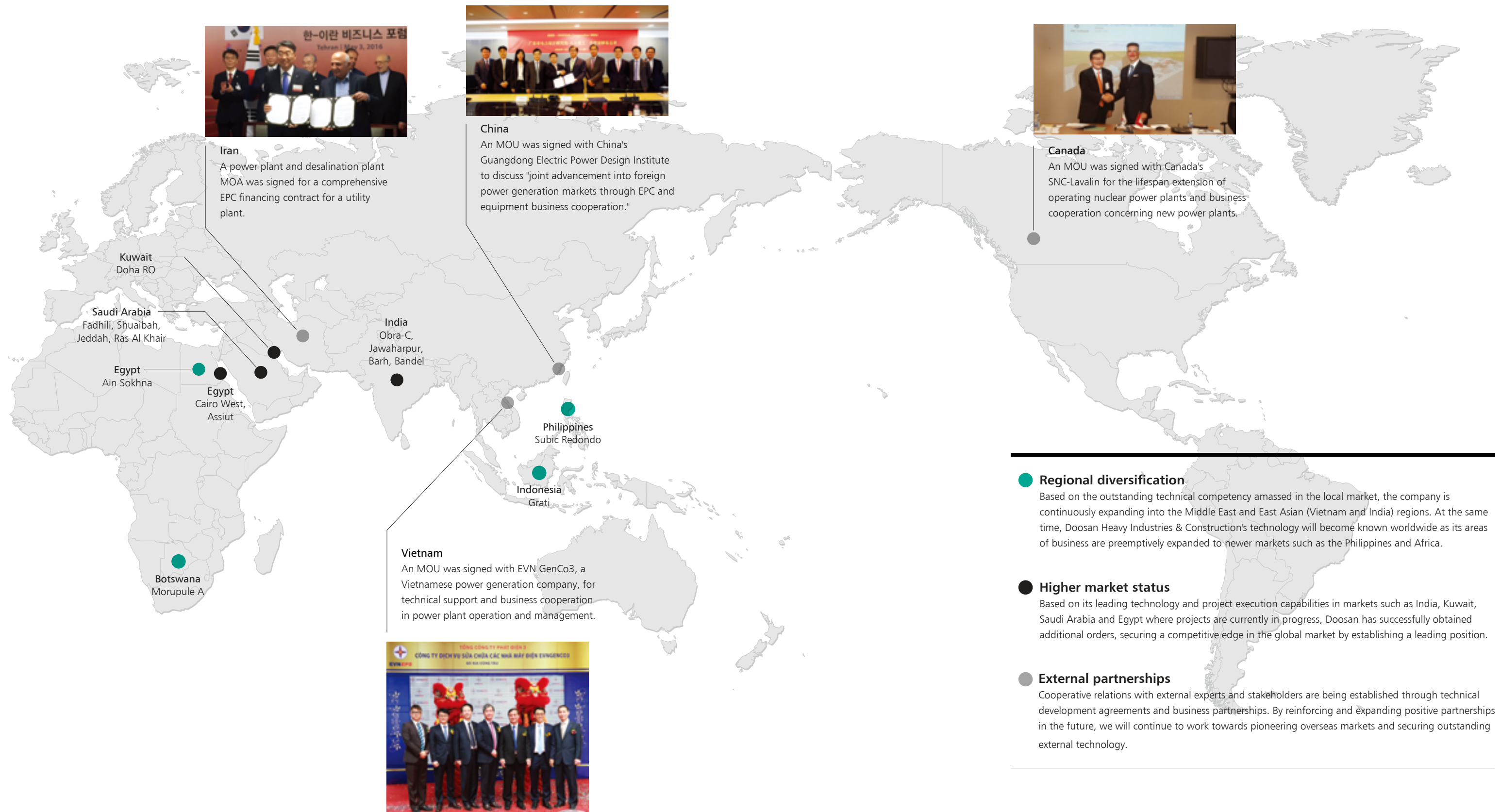
After the successful construction of Rabigh 2 Thermal Power Plant, a project for the Fadhili Combined-Cycle Power Plant in Saudi Arabia worth about 1 trillion KRW has been obtained. It is a large-scale project with a power generation capacity of 1,519 MW, which supplies power and heat to the Saudi Fadhili gas complex. The project will be carried out by EPC, which performs all the processes from design to manufacturing, installation and commissioning. Amidst the slump of local construction firms in terms of orders obtained in the Middle East due to low oil prices, Doosan has acquired this large-scale project and, thus, established an advantageous position in the Saudi Arabian power generation market, which will build additional 50,000MW combined-cycle power plants.

1) GWI (Global Water Intelligence)
2) EPC (Engineering, Purchase & Construction)

STRATEGY 2.

Increase Order Intake

Pro-Active Efforts Towards Addressing Customer and Market Needs



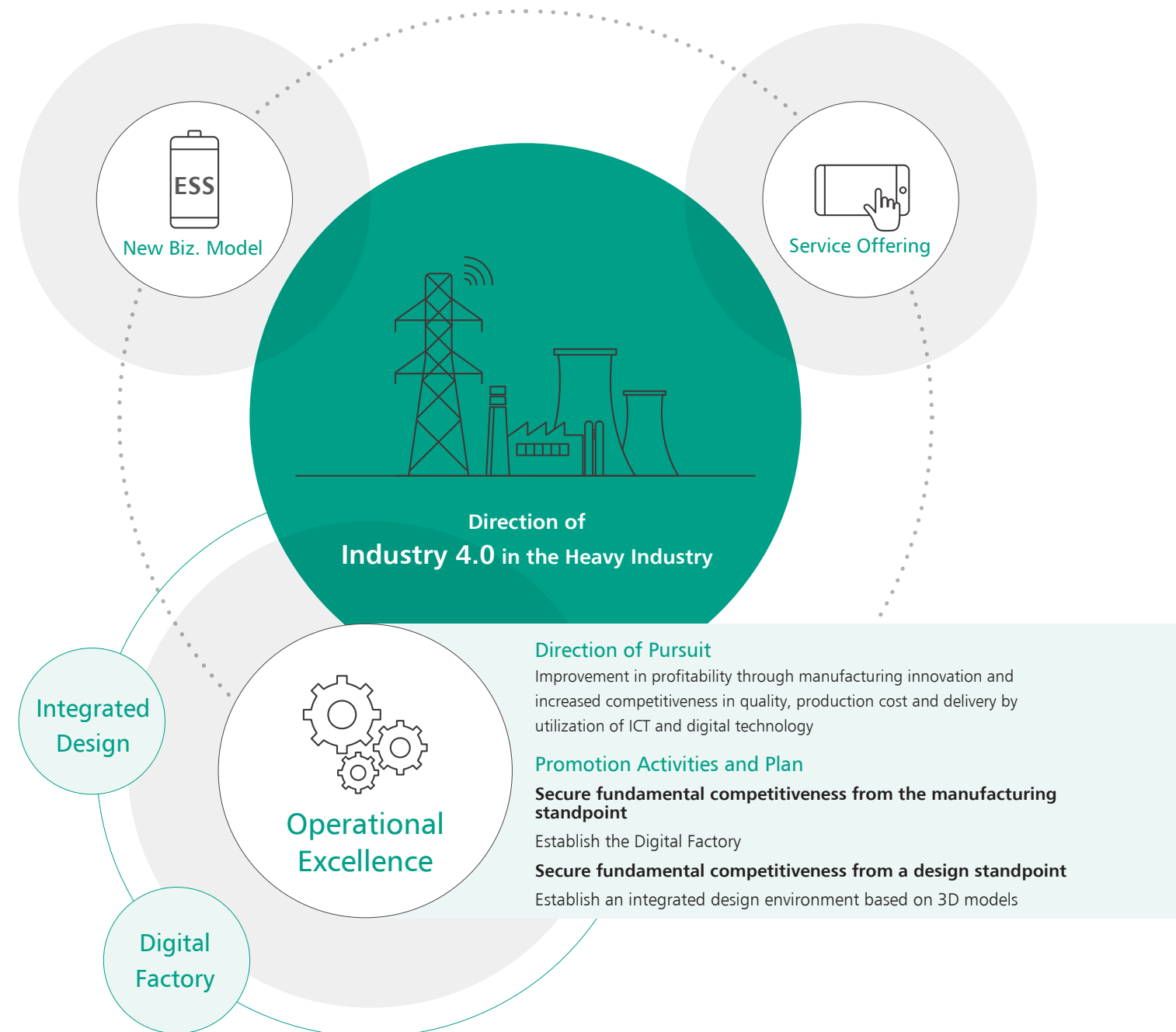
STRATEGY 3.

Improvement in Profitability

Securing Fundamental Competitiveness

Industry 4.0

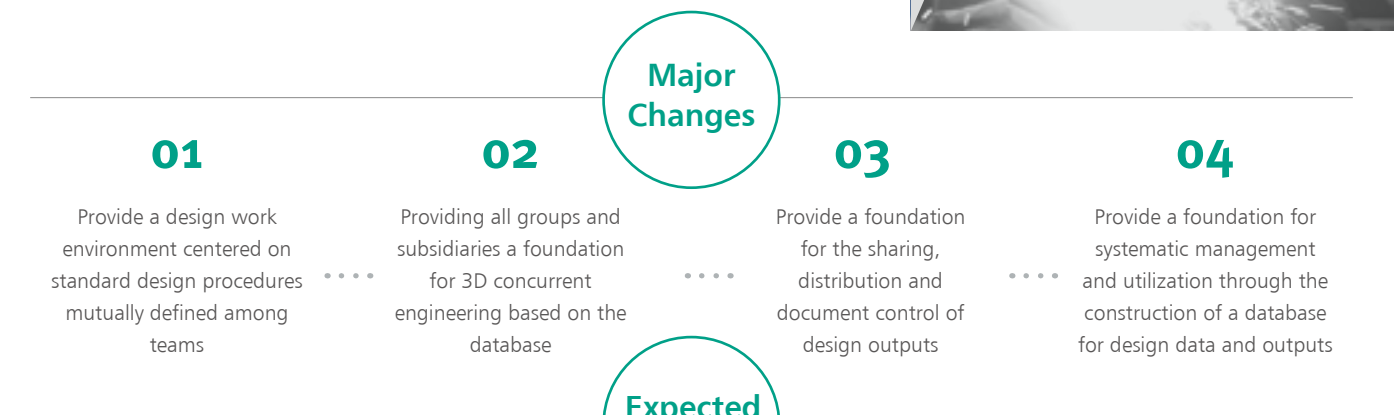
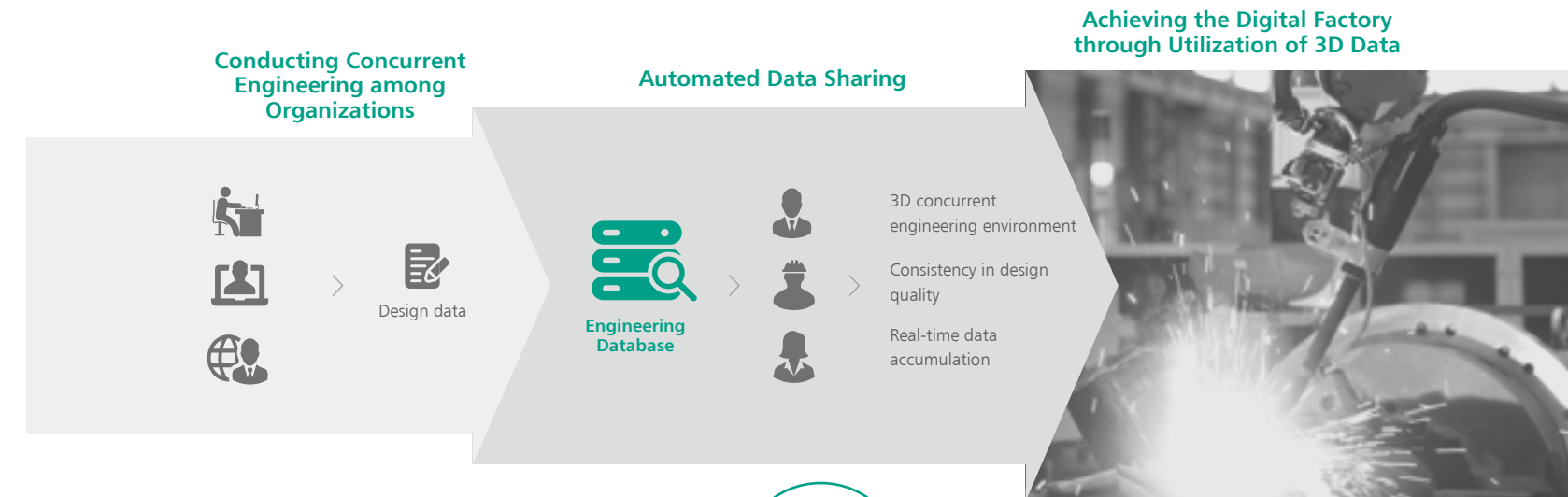
With the advent of Industry 4.0, the Digital Factory is being implemented to improve manufacturing competitiveness by converging digital technology into production sites. In conjunction with this, the Integrated Design System is being also expanded to achieve the Digital Factory. By 2020, a variety of systems for each priority area will be implemented with a consideration of each BG's specificity and current status and, after that, an automatic production system with virtual simulation will be established in phases.



Integrated Design

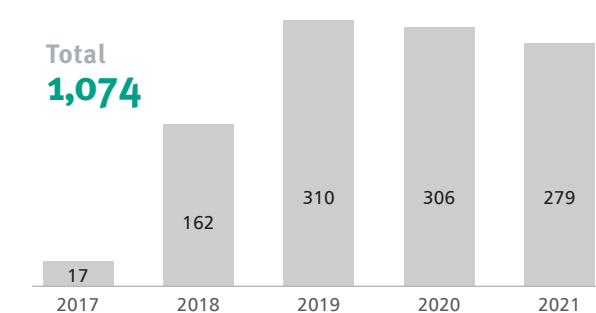
Integrated Design System

To preemptively respond to changes in the external environment and eliminate design quality issues during the progress of a project, an integrated design system has been set up. It comprises 4 systems based on re-defined engineering work process and requests from different sectors of business, and plans to improve consistency and quality of design through the standard engineering process and strengthened utilization of the accumulated data.



Expected Quantitative Effects (based on EBIT*)

(Unit: KRW 100 million)



* EBIT: Earnings before interest and tax

Expected Qualitative Effects

1. Preventing the omission of design change information
2. Understanding the status of the real-time engineering progress by participating design teams
3. Eliminating repeated work and securing consistency
4. Design capitalization possible through the systematic management of data
5. Standardization of the design quality level between heavy industry and overseas subsidiaries
6. Ability to respond immediately to requests from clients and customers by utilizing the databases

STRATEGY 3.

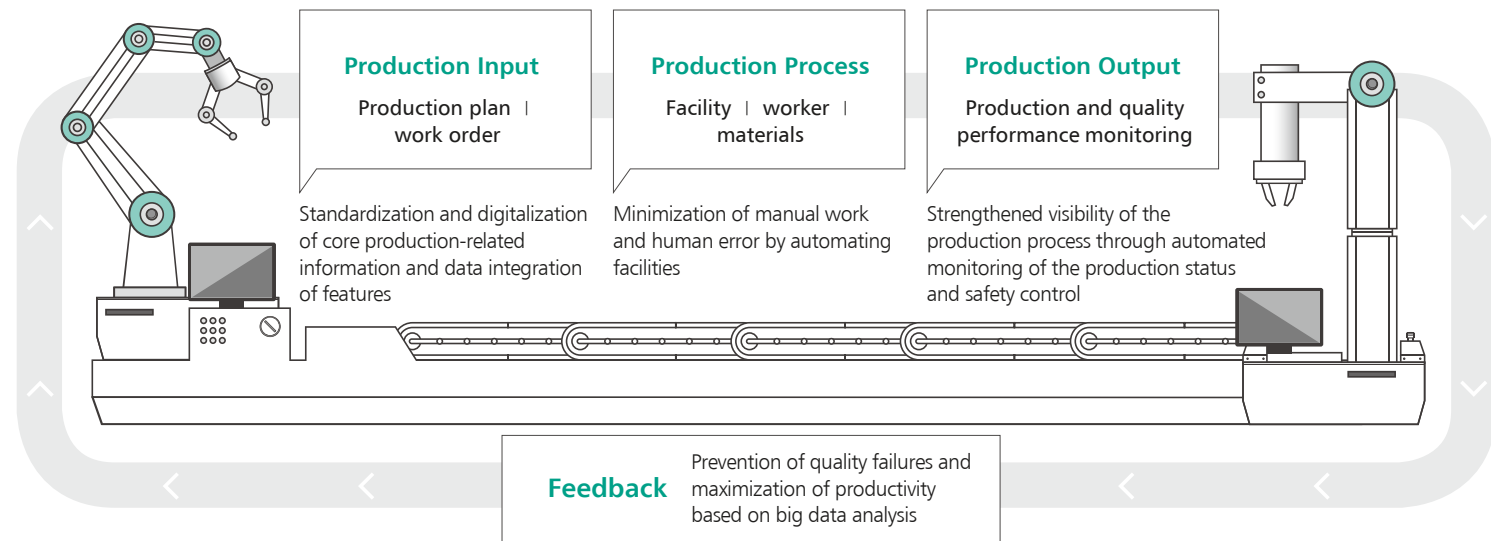
Improvement in Profitability

Securing Fundamental Competitiveness

Digital Factory

Areas to Pursue

The Digital Factory involves technology that converges 3D design and simulation technology to actualize a virtual factory and derive optimized production process. By 2020, Doosan Heavy Industries & Construction aims to establish the Digital Factory in all production processes for increasing production efficiency and manufacturing competitiveness.



Major Functions

Minimization of manual work and human error by automating facilities	Digitalization of on-site production information and ensuring of visibility through automatic creation	Standardization and digitalization of core production information and relation among features	Prevention of quality failures and maximization of productivity based on big data analysis
Automation of production facilities / plant logistics	Production status monitoring	Digitalization of production plan through simulation	Facility operation analysis
Automation of quality inspection devices	Tracking management of production materials based on electronic tags	Digitalization of work orders based on 3D design	Smart energy management
	EHS real-time monitoring	Digitalization of quality information and documents	Big data quality control
	Location-based allocation of heavy equipment		

Achievements and Plan



Risk Management

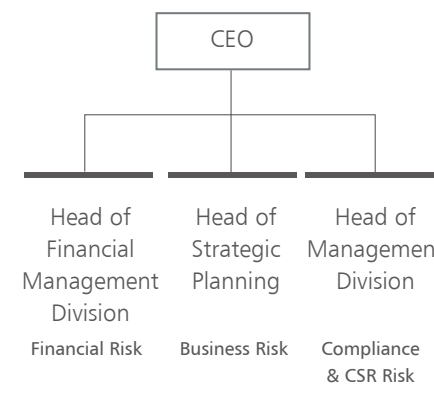
Doosan Heavy Industries & Construction operates an integrated risk management system to effectively manage risk factors that may potentially be generated in the midst of a business operation. Risk factors are categorized into financial, business, compliance and CSR risks and are being properly managed by teams with expertise.

Risk Management

As volatility of the global economy increases, identifying and managing the potential risks that may occur during the operation of a business has become a critical element in a company's sustainable growth. Doosan Heavy Industries & Construction categorizes risk factors by the potential for occurrence and constantly manages them through each responsible team.

Risk Management System

The executives and teams responsible for each risk factor conduct monitoring on a regular basis and, if an issue arises, it is to be reported directly to the CEO. Also, risks that have a great impact on the company are to be discussed in the board of directors meeting for final decision-making. Three directors who are risk assessment experts in each area, once appointed and provided with relevant training, make decisions based on their expertise in laws related to the economy, environment, society, and internal transactions, etc.



Financial Risk

As a global company that operates a number of overseas business sites, Doosan Heavy Industries & Construction strives to minimize risks related to financial factors such as stock prices and accounting standards. To this end, the company has established a "Foreign Exchange Risk Management Guideline" to hedge currency risks.

Business Risk

The risks related to new markets and businesses as well as quality are recognized as business risks. Thus, the stability of the business is sought by establishing a preemptive response system that includes potential risk factors in all stages of business from delivery of raw materials, provision of products and services to post-management. A standardized guideline is provided especially for quality risks to thoroughly review all major aspects related to quality before proceeding to the next stage. Additionally, to manage various risks that may occur over the course of project risk execution, standardized checklists are used in each of the steps to allow for effective decisions and minimized risks in advance. Through this, a standardized process to be applied to future projects has been established and is operational.

Compliance & CSR Risk

Compliance & CSR risks in terms of the environment, human rights, information security, etc. are dealt with immediately by the responsible teams upon their occurrence, and a companywide education and improvement system has been set up and is running to prevent recurrences.

Risk Analysis

The company checks both business opportunities and risks through step-by-step operating profit simulation over the course of a project. Standardized checklists are used to analyze the impact on business and response measures, and the results of such analyses are reported to the CEO every month.

	Finance Major aspects: Sensitivity analysis by scenario including cost, cash flow, taxes, and etc.
	Environment Major aspects: Establishing mid- to long-term reduction plans such as greenhouse gas emissions, water scarcity, etc. as well as an emergency response system
	Others Utilization of a quality gate system on risks, human rights, transparent management, etc., which influence the performance of a project (clarifying major risk factors over the progress of a project and establishing mitigation measures)

Companywide Risk Management Culture

All employees including the CEO are subject to financial compensation through performance assessment in risk settlement. The onset of risk and any relevant issues are reported in regular management performance meetings and project operation committees, and a risk management culture is being established throughout the company through education on management principles and processes for each type of risk.

Power Plant

Power Generation

Thermal Power Plant I Coal-Fired Thermal Power Generation

From the design stage of a coal-fired thermal power plant, a total service that ranges from design, manufacturing and construction to supervision and commissioning of equipment such as boilers, turbines and generators, which are major generation machines, is performed. In 2016, the orders of primary machines for 660MW, ultra-super critical pressure coal-fired thermal power plants in India such as Obra-C and Jawaharpur were obtained, and, by winning the CFB project for an eco-friendly power plant in Subic Redondo of the Philippines, we aim to further expand our dominance in key markets. At the same time, we were able to re-enter the Egyptian power generation market by obtaining the order for the Cairo West and Assiut projects. Moreover, the construction of large-scale projects such as Song Hau 1 and Vinh Tan 4 in Vietnam are underway, and Saudi Arabia's Rabigh 2, Vietnam's Mong Duong and Saemangeum projects have been successfully completed as coal-fired thermal power plants of Doosan Heavy Industries & Construction and are recognized for their state-of-the-art quality.

Combined-Cycle Power Plant I Combined-Cycle Power Generation

Doosan Heavy Industries & Construction supplies core equipment such as steam and gas turbines needed for combined-cycle and cogeneration power plants. Based on its outstanding technology, it has constructed Hwaseong Dongtan 2 and supplied primary tools and equipment while winning the order for designing, the management of equipment and construction. In addition, a large-scale combined-cycle power plant construction project in Fadhili, Saudi Arabia has been acquired, firming up the company's position in the combined-cycle power market. We have supplied essential equipment needed for combined-cycle power complexes in Seoul and Pocheon as well as cogeneration in Yangju and Sejong, and conducted large combined-cycle power plant construction in Jebel Ali M in Dubai and Qurayyah in Saudi Arabia.

Nuclear Power Plant I Nuclear Power Generation

We supply the core equipment needed for nuclear power generation and have the capabilities to perform all services from design and production of devices to their construction and commissionings. Based on this, we successfully carry out not only local but also overseas nuclear power plant projects, promoting our advanced technology all over the world.

Renewable Energy

Renewable Energy Business

Doosan Heavy Industries & Construction has successfully developed WinDS3000™, a 3MW offshore wind power system, a first for a local company, and won a number of offshore wind power supply contracts including the Woljeong project. Also in 2016, the 299MW British biomass projects and the 150MW Danish and 74MW Pakistani projects were obtained to reach 523MW in the total amount of biomass generation projects thus far. We have also entered the wind power service industry starting with maintenance contracts for the Tamna Offshore Wind Power and Woljeong Characterization Village wind power generators, striving for the utmost in satisfaction among customers from equipment supply to services. In the future, by accelerating entry into overseas markets including Europe and Southeast Asia, the renewable energy business within the company's portfolio is slated to expand. By acquiring 5.5MW offshore wind power generation technology, we secured a superior model in the wind power generation equipment market by securing the 3MW model and the large model.



Service

Service Business

By developing specialized service technology and competency based on existing technology and competency, we aim to continue our growth as a "Total Solution Provider" that offers the solutions that our customers need. Thus, we will expand our business portfolio into all areas of power generation services such as parts repair & replacement and R&M, all of which are existing areas of business, as well as power plant asset management and digital solutions development, and, through expansion of the "Recurring" business, we will accomplish not only consistent growth in sales but also in profits. In addition, we will expand our business to not only the power plants in which the company's OEM technology has been applied, but also to non-OEM power plants.

During this process, we will seek a smooth integration with Doosan Babcock, which possesses in-depth business experiences and know-how in the service industry, in order to maximize organizational and personal synergy. As a "Total Solution Provider," the service BG will put a significant amount of effort into supporting the stable operation of our clients' local power plants, expansion of their overseas businesses as well as the establishment of foreign bases for their growth as our sustainable partnerships. The headquarters serves a role of developing and providing core service competency at local bases, while local operations are responsible for close engagement with customers during operation, repair and maintenance activities, thus establishing a virtuous cycle for discovering related businesses opportunities. Based on the service competency that our customers require, we will discover after-sales customers and establish long-term relationships by acting as the sole communication window of the service business.

Water Plant

Water Business

As a global leader in the water industry, we offer solutions for the full spectrum from seawater desalination to water treatment areas. With advanced technology and abundant experiences in supplying seawater desalination plants, Doosan Heavy Industries & Construction is one of only a handful of companies in the world that owns independently patented technology in 3 major processes of seawater desalination including Reverse osmosis, multi-effect desalination and multi-stage flash. It provides desalination production equipment that can supply approximately 6,700,000 tonnes of desalination per day which can be used simultaneously by 22 million people around the world, and also continues to build its reputation as a leading corporation in the seawater desalination EPC (engineering, purchase and construction) and O&M (operation and maintenance). Moreover, it supplies advanced processing technology and recycling equipment tailored to each source of demand based on the engineering competency and experiences it has accumulated throughout the water treatment industry.

Casting I Forging

Casting and Forging Business

From the manufacturing to processing of essential materials in various industries such as generation, shipbuilding, steel and automotive, a total production facility has been established. Furthermore, cast and forged products of outstanding quality have been supplied all over the world based on our excellent technology and deep experience. As demand industries become more advanced, we seek the construction of optimal infrastructure for production of metal materials with high added values and high functionality in order to continuously improve our competitiveness in the materials industry and, based on this, we've been consistently accumulating export results in Korea as well as United States, Japan, Southeast Asia and Europe. Also, by independently developing and supplying various cast and forged goods, we make significant contributions in the localization of materials and improvement of competitiveness in export in relevant local industries. In the future, we will accelerate dominance of the ultra-large crank shaft market based on our special manufacturing technology and exclusive facilities as vessels continue to become increasingly larger. In addition, through 17,000-ton press machines newly constructed to procure a future growth engine, we will improve existing products' productivity and reduce production costs as well as secure competency in the manufacturing of ultra-large forged goods and expand the high-added value product pool, in order to promote the company's status as a leader of the global forging industry.

Securing Core Foundation Technology

Technology of Doosan Heavy Industries & Construction to Change the Future of the Planet and Mankind

Plant Behavior Performance Prediction Technology

By applying a system, which has combined individual elements that constitute a plant, to a virtual operation, design costs are reduced and issues in operation are checked for in advance. Based on this, data on temperature, pressure, etc. of the inside of a plant is obtained in advance for the development of a module that can secure reliability as well as safety, and has been applied to actual projects including the Yeongheung and Sinboryeong Plants as well as Song Hau and Karabatan located overseas, completing successful field tests.

Nuclear Power Service-Based Technology

By developing repair technology and an inspection system of BMI nozzles that are not possible to be replaced in high radiation zones, we have been selected as a preferred candidate for negotiation over repair of cover materials used in Hanbit 5's nuclear reactor vessels. In addition, in line with the trend of increasing needs in the replacement market due to aging of nuclear reactors, we have successfully developed replacement head manufacturing technology for nuclear reactors and steam generators, and have delivered 112 defect-free products thus far through replacement devices in local nuclear facilities and the Watts Bar Unit 2 Project in the U.S., among others. Doosan Heavy Industries & Construction will continue to expand its O&M services of the nuclear power BG to ensure competency in service-based technology.

Water O&M and Water Treatment Process

The essential element in the seawater RO plant industry is understanding and analyzing the quality of different seawater in each region and selecting the proper pre-processing methods. Doosan Heavy Industries & Construction has led the development of the world's first multi-film pollution prediction technology and seawater precision analysis device that can measure fine pollutants with a size as small as $0.01\mu\text{m}$. Based on this, the most optimal pre-processing method for the water quality of Kuwait's Doha plant has been analyzed and the existing DMF pre-processing method was changed to the UF method, thus achieving a cost reduction of about 10 billion KRW. By securing fundamental competitiveness in the seawater RO pre-processing business, we will continue to expand our business in the water O&M industry based on our competency in RO film pollution diagnosis/analysis.

3D Printing Technology

With advantages such as reduced production costs and manufacturing processes and greater convenience in the production of complex design products, 3D printing technology is widely regarded as a next-generation production technology that can replace existing processes. Doosan Heavy Industries & Construction has sought the development of 3D printing materials and production process technology for manufacturing next-generation gas turbine parts through national assignments given by the government. Also, we plan to create new businesses through the localization of nickel metal powder for 3D printers and, in the long term, reinforce the company's competitiveness in the next-gen gas turbine market by securing parts manufacturing and repair technology to which 3D printing technology is applied.



2016 Highlights



Achieved strong order acquisition results for 2 consecutive years

Despite the global economic recession, we have tallied strong results in order acquisitions for 2 consecutive years. We have won not only local projects such as the Boryeong Thermal Power Unit 3's performance improvement construction but also overseas EPC generation projects in India's Obra-C and Jawaharpur, Vietnam's Vinh Tan 4 extension, Saudi Arabia's Fadhili, and the Philippine's Subic Redondo as well as large-scale RO projects including Kuwait's Doha Stage 1.



Securing a new growth engine based on digital technology

We have established a foundation to procure a new growth engine based on digital technology. We have acquired a U.S. company that owns OEM technology in ESS software to launch Doosan GridTech, and preoccupied an advantageous position in the global ESS market based on positive results in orders we acquired. At the same time, we have established a foundation for Industry 4.0 by introducing the digital factory and the integrated design environment, and expedited ICT by starting a demo project for boiler plant care software services in the Dangjin Thermal Power Unit 5.



Diversification of global EPC projects

We have sought to diversify our orders through expansive local sales activities for global EPC projects. By obtaining a series of large global EPC projects including Saudi Arabia's Fadhili, India's Obra-C and Jawaharpur, and the Philippines' Subic Redondo, a Gold Tower Order of Industrial Service Merit has been awarded from the Korean government in 2016. At the same time, we have conducted various local and global projects such as the Hwaseong Dongtan 2 group energy facility construction based on thorough process control.



Reconfirmation of a solid position in the global RO market

Our status as the global leader in the seawater desalination business has been reconfirmed by obtaining various RO projects. Based on the differentiated level of technology possessed by Doosan Heavy Industries & Construction, we have surpassed many world-renowned competitors and won the project for the large-scale RO-type seawater desalination plant at Doha Stage 1, Kuwait. In addition, a demonstration ceremony was held for joint research on a seawater desalination facility with a research institute under Saudi Arabia's seawater desalination administration, as part of the effort to develop advanced technology in seawater desalination.



Nuclear power establishing a stepping stone for the 2nd leap forward

We have made significant efforts to find new markets. An MOU was signed with a Chinese nuclear facility service company to build a bridgehead for entry into the Chinese nuclear facility service market while a business agreement was completed with a Canadian design firm with key contracts on heavy-water reactors in nuclear facilities in order to advance into the lifespan extension business for aging nuclear facilities. We have constructed the Shin Kori Unit 3, Korea's first-ever, 1,400MW-class advanced nuclear power plant, and successfully carried out water pressure testing at room temperature on the Shin Hanul Unit 1 while producing and supplying RCP (Reactor Coolant Pump) and MMIS (Man Machine Interface System) to the Shin Hanul Units 1 and 2.



Strengthened dominance in the turbine/generator markets

We have proven our outstanding technology in the turbine and generator industries and taken a leading role in the market. While obtaining orders for turbines and generators in Egypt amid fierce competition with global corporations, we have simultaneously signed a technical partnership MOU with a state-operated generation company in southern Vietnam, solidifying a foundation for advancement into the Vietnamese generation service industry. Also, cooperation with KEPCO KPS has been strengthened to prepare for preoccupation of the market for local standard thermal power 500MW performance improvement. Moreover, we have successfully performed synchronization and connection of the Sinboryeong Unit 1, Korea's first-ever 1,000MW-class USC thermal power plant.



Proving technology in boilers, IGCC and wind power

We have successfully constructed the Yeosu Thermal Power Unit 1 to which we applied CFB (Circulating Fluidized Bed) boilers, and also completed the ignition of the Sinboryeong Thermal Power Unit 2's boilers, which are of USC-type and Korea's first-ever 1,000MW-class boilers. Also, through commercial operation of the Tae'an IGCC plant, we now own the world's 7th largest number of commercialized IGCC plants, and have also started the era of large-scale offshore wind power generation in Korea through the flawless construction of the Jeju Tamna offshore project, Korea's first commercial offshore wind power complex.



Building infrastructure for the production of ultra-large forged goods

To reinforce our fundamental competitiveness in the casting and forging business, we have built production infrastructure. We have successfully completed the installation of the main body of a 17,000 ton-level press, which is the world's largest among pneumatic type presses, using 4 supports, and the crankshaft factory recently manufactured its 3,000th product 24 years after it was built. At the same time, we have pursued the diversification of our business by signing an agreement for the localization of tools and equipment of offshore plants.



02

Commitments to Sustainability

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Light and water, this is the heart and soul of Doosan Heavy Industries & Construction. We supply bright light in dark places and clean water to dry places. This is the calling and reason for the existence of Doosan Heavy Industries & Construction.

Contributing to the Sustainable Development Goals (SDGs) through Technology that Increases the Value of the Earth

"The UN SDGs are objectives related to detailed activities for the prosperity of people and the Earth.
By contributing to the achievement of SDGs through innovation and creativity in business, Doosan Heavy Industries & Construction will continue to create new business opportunities and increase the value of the planet."



For sustainable growth that is responsible for both business and society, Doosan Heavy Industries & Construction has selected people-centered, reliable operation, responsible participation and creation of CSR values as core areas to implement a variety of socially responsible management efforts.

For its execution with reinforced connection with the business, we have recently defined the purpose of pursuing the UN SDGs and analyzed potential opportunities in terms of our business. To this end, Doosan Heavy Industries & Construction has chosen clean water and sanitation, affordable and clean energy, climate change action, good health and well-being and quality education as 5 major areas, and set mid- to long-term goals to achieve by 2030. In the future, detailed activities will be conducted for each of the SDGs in association with business strategies, and the progress will be shared through an integrated report.

Purpose

Pursuing the creation of long-term values through core businesses and socially responsible management






Commitment

Proposing objectives for the contribution of social values by 2030 in association with the UN SDGs

Analyzing the Risks and Opportunities of Objectives in Contributing to the SDGs

The worldwide interest in the environment is applied throughout the UN SDGs in diverse ways. In particular, clean water and sanitation, affordable and clean energy, climate change action, etc. are closely related to the water and power plant businesses, which are two of Doosan Heavy Industries & Construction's primary areas of focus. To define the core areas of the SDGs and Doosan's objectives, the current overview and forecasting of water, energy and response to climate change worldwide have been examined and, subsequently, factors of potential risks and opportunities have been analyzed.

	Importance and Current Status	Forecast
<div>Clean Water and Sanitation</div> <div></div>	<p>The Global Risks Report of 2016, published by the World Economic Forum, selected water risk as one of the major economic risks along with the global financial and food crises. As the shortage of the water supply and deterioration of water quality accelerate, water risk has become a factor that threatens not only people's health but also the very existence of communities.</p>	<div>Forecast of clean water supply vs. demand in 2030</div> <div>Below 40%</div> <div>Source 2030 Water Resource Group</div>
<div>Affordable and Clean Energy</div> <div></div>	<p>Unlike the market environment of the past when energy was mass-produced and consumed, today's energy market is entering a new era based on recent global trends of climate change, low oil prices and the expansion of new and renewable energy. Thus, it has become critical to establish strategies by comprehensively considering not only economic but also environmental issues.</p>	<div>Global power demand in 2035 (Compared to 2013)</div> <div>37% increase</div> <div>Source IEA 'World Energy Outlook 2015'</div>
<div>Climate Change Action</div> <div></div>	<p>In response to environmental issues such as greenhouse gas emissions and fine dust, most members of the OECD have strengthened their regulations through introduction of an ecotax. Meanwhile, the number of nations that levy taxes related to the environment is on the rise and it has been analyzed that those countries have actually experienced a significant reduction in energy consumption and greenhouse gases, prompting opinions that the Korean energy tax system needs to be reformed.</p>	<div>Governmental goal to reduce greenhouse gas emissions by 2030 (compared to BAU)</div> <div>37% reduction</div>

Analyzing Risks and Opportunities

WATER



As a response to strengthened environmental regulations and water shortages, demand for desalination and advanced water treatment are estimated to increase. Also, the markets for innovative water reuse, recycling technology and infrastructure that help with supplying safe water will grow, which will further expand the water supply through desalination plants. In addition, the growth of the advanced water treatment market, such as ZLD (Zero Liquid Discharge), will also be accelerated due to reinforced environmental regulations.

ENERGY



Reinforced environmental regulations will also induce an expanded distribution of new and renewable energy while demands on existing sources of power, including coal and gas, are estimated to continue. Coal-fired thermal power will maintain its status as a primary source of power in developing countries whereas gas-fired thermal power will experience a consistent growth in the United States, as well as non-OECD Asian and Middle Eastern countries among others because of its low cost and eco-friendliness compared to coal. Also, strengthened regulations in the construction of new plants will induce a greater number of projects for R&M (Renovation & Modernization) and the improvement of environmental facilities.

ENVIRONMENT



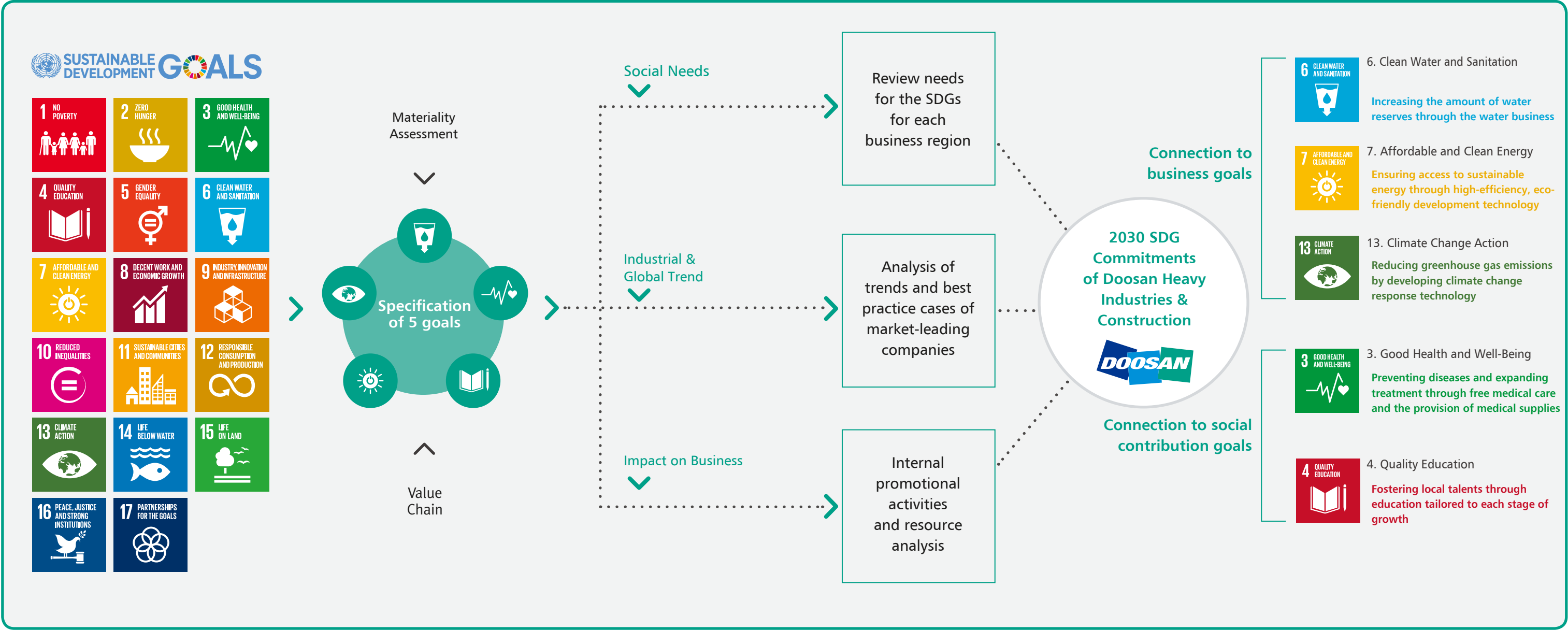
Since the Paris Agreement in 2015, each country has set its own goals for reducing greenhouse gas emissions and conducted energy reduction policies, and, in response, companies have also introduced a carbon pricing system. GE, GM, Google, Nestle and many other global conglomerates have applied the carbon pricing system to deal with the greenhouse gas emission rights and, as of 2015, about 36% of the entire amount of carbon emissions around the world are subject to these systems. Once a simple topic of discussion from the environmental standpoint, greenhouse gas emissions now requires a greater focus of importance in its control and response from the standpoint of social responsibility.



SDGs through Technology that Increases the Value of the Earth

Doosan Heavy Industries & Construction considers the UN SDGs new business opportunities. To actively participate in the execution of sustainable development goals through the technical competency that increases the value of the earth, it has reviewed objective connections, which apply the company action guidelines proposed by the UN SDGs, through a feasibility review, market benchmarking and various innovation activity analyses for each region of business. As a result, the SDGs that appeared to be closely related to business activities conducted by Doosan Heavy Industries & Construction are "clean water and sanitation" (Goal No. 6), "affordable and clean energy" (Goal No. 7), "climate change action" (Goal No. 13), "quality education" (Goal No. 4) and "good health and well-being" (Goal No. 3) among others. For these SDGs chosen through this process, Doosan has established its 2030 goals and aims to continuously pursue them in association with business objectives.




Through diversification of markets and expansion of business execution results, Doosan will continue to review and improve contribution goals. For this, we will not only strengthen data management for each business and project from the social and environmental standpoint but also discover new business avenues that can contribute to the SDGs. Also, we will analyze performance management indices on social contribution activities to manage social and environmental impact values.





2030 SDG Commitments

Doosan Heavy Industries & Construction has been conducting business activities that can increase the value of the earth through technology which increases the amount of water reserves in areas with severe water shortages issues as well as by improving access to sustainable energy in countries with emerging markets. Now, we aim to tie together the SDGs proposed by the UN with the core businesses of Doosan in order to establish and achieve the goals, which are set up to contribute to sustainable growth worldwide.

Based on business characteristics and sustainability activities, Doosan Heavy Industries & Construction has specified SDG commitments in the 5 following areas: 1) increasing the amount of water reserves, 2) ensuring access to sustainable energy, 3) reducing greenhouse gas emissions, 4) preventing diseases and expanding treatment, and 5) fostering local talents.

SDGs	Major Details of the SDG Commitments	
<div><div>6</div><div>CLEAN WATER AND SANITATION</div><div></div></div>	Increase the amount of water reserves	<p>"By 2030, through our water project, we will increase the amount of water reserves in the Arabian Peninsula region by 10% (2 billion tons) compared to BAU and continuously expand the supply of water resources in all regions around the world that face water shortages."</p> <div><div> Continuously expanding supply of water resources in regions facing water shortages such as the Arabian Peninsula, Africa and South America</div><div> 2 billion tons is equivalent to the amount of water that may be simultaneously used by about 13 million people (based on about 400L water usage per person)</div></div> <div>.....</div>
<div><div>7</div><div>AFFORDABLE AND CLEAN ENERGY</div><div></div></div>	Ensure access to sustainable energy	<p>"With our high-efficiency, eco-friendly power generation technology, we will increase the amount of eco-friendly coal-fired thermal power supplied to emerging markets around the world by 6% (40GW) compared to BAU by 2030, and, through enhancement of energy technology in high-efficiency gas turbines, wind power, ESS, etc., we will contribute to the diversification of the overall energy mix."</p> <div><div> Constructing a high-efficiency, eco-friendly 40GW- class coal-fired thermal power plant in the next 15 years in emerging markets</div><div> Diversifying the energy mix through high-efficiency gas turbines, wind power, smart grid technology, etc.</div></div> <div>.....</div>
<div><div>13</div><div>CLIMATE ACTION</div><div></div></div>	Reduce greenhouse gas emissions	<p>"By 2030, we will reduce the amount of greenhouse gas emissions that occur over the course of our business within Korea by 20% (70,000 tons) compared to BAU, and continue to develop climate change response technology to reduce greenhouse gas."</p> <div><div> Actively contributing to INDC (Intended Nationally Determined Contributions) submitted to the UN through energy efficiency and the digital factory</div><div> Continuously expanding investments into R&D in response to climate changes such as energy efficiency and renewable energy as well as energy reduction activities within the supply network</div></div>

<div><div>3</div><div>GOOD HEALTH AND WELL-BEING</div><div></div></div>	Prevent diseases and expanding treatment	<p>"By 2030, we will supply basic medical supplies and support local treatments for 80,000 residents of minority groups residing in impoverished areas of Vietnam and India, thus contributing to the improvement of global health and sanitation."</p> <div><div> Conducting free local medical treatment activities for about 2,800 the underprivileged citizens of Vietnam every year through the social contribution project in cooperation with Chung-Ang University Hospital</div><div> Providing health diagnoses and necessary medical supplies to about 2,000 marginalized citizens of India every year through our health camp program</div></div> <div>.....</div>
<div><div>4</div><div>QUALITY EDUCATION</div><div></div></div>	Foster local talents	<p>"By 2030, through "Youth Energy Project," a renowned social contribution program, we will help foster local talents by providing opportunities for education and career exploration tailored to each growth stage for as many as 50,000 marginalized children and teenagers."</p> <div><div> Providing opportunities for equal education and career exploration for about 3,000 students in elementary, middle and high schools every year in the regions of our workplaces</div><div> Fostering engineering talents and improving the employment rate by providing education in engineering and sciences through Doosan Class and vocational training consortium</div></div>

7 AFFORDABLE AND CLEAN ENERGY



SDG 7. Affordable and Clean Energy

Ensure access to affordable, reliable, sustainable and modern energy for all

- 7.1 By 2030, ensure universal access to affordable, reliable, and modern energy services
- 7.2 Increase substantially the share of renewable energy in the global energy mix by 2030
- 7.3 Double the global rate of improvement in energy efficiency by 2030

Major connected activities

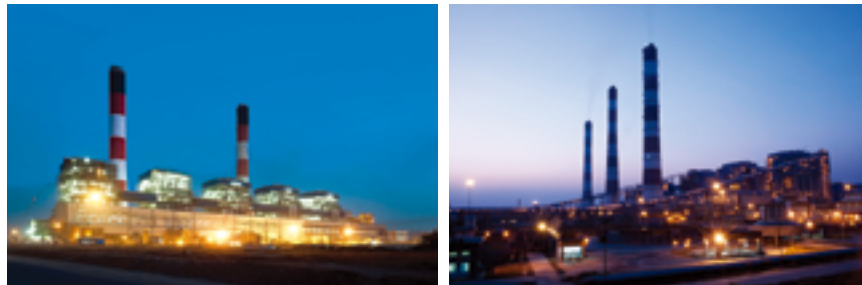
Business

- Improvement in energy efficiency
- Renewable energy
- Collection and reduction of CO₂
- Reinforcement of the after-market business
- Development of green technology and products

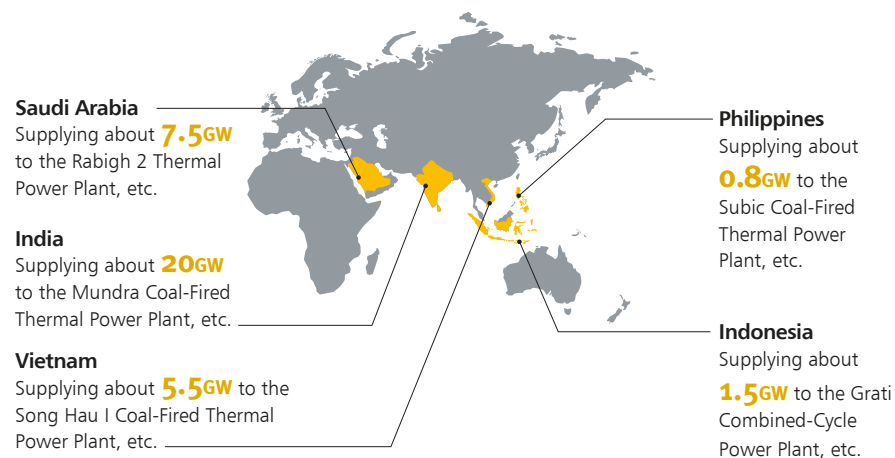
Ensure Access to Sustainable Energy

"With our high-efficiency, eco-friendly power generation technology, we will increase the amount of eco-friendly coal-fired thermal power supplied to emerging markets around the world by 6% (40GW) compared to BAU by 2030, and, by enhancing energy technology in high-efficiency gas turbines, wind power, ESS, etc., we will contribute to the diversification of the overall energy mix."

In order for a society to grow, a stable and economical supply of energy is a necessity. Since the signing of the recent Paris Agreement, the market for eco-friendly and highly efficient 1,000MW ultra-super critical pressure coal-fired thermal power generation, which is favorable for CO₂ reduction, is continuously growing in markets like India and Southeast Asia.



Doosan Heavy Industries & Construction strives to supply eco-friendly and highly efficient thermal power plants with improved power generation efficiency and reduced fuel consumption. This can be accomplished through the popularization of ultra-super critical (USC) power generation facility models in emerging markets, which have rapidly increasing demands for electricity. Recently, the Service Business Group has been launched to actively deal with needs such as add-ons and retrofits in the local and overseas markets. It contributes to the purchase of a stable supply of electricity through power plant performance improvement projects and reduced emission of air pollutants including NO_x and CO₂. In addition, through the commercialization of highly efficient gas turbines, we will contribute to the improvement of combined-cycle thermal power technology, the expansion of the 3MW and 5.5MW offshore wind power system market, and the operation of stable grid networks in low-development countries through ESS technology.



13 CLIMATE ACTION



SDG 13. Climate Change Action

Take urgent action to combat climate change and its impacts

- 13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries

Major connected activities

Business

- Reduction of greenhouse gas (power plant technology)
- Renewable energy
- Development of advanced D-NO_x burner and eco-friendly combustion technology

Operation

- Realization of Smart Industry 4.0 by establishing an energy integration system
- Step-by-step application of the microgrid system

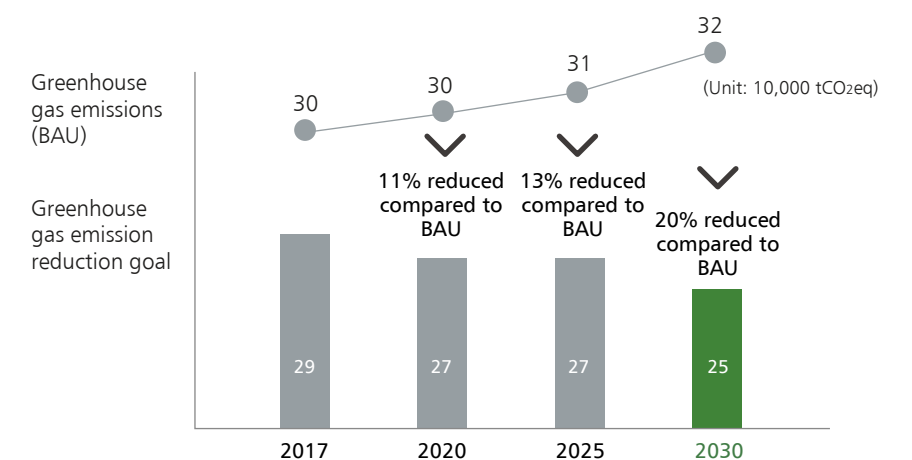
Reduce Greenhouse Gas Emissions

"By 2030, we will reduce the amount of greenhouse gas emissions that occur over the course of our business within Korea by 20% (70,000 tons) compared to BAU, and continue to develop climate change response technology to reduce greenhouse gas."

Climate change has a significant impact on the earth's ecological environment through extreme climate phenomena, rising sea levels and the acidification of oceans.



In response to climate change, Doosan Heavy Industries & Construction has set up and is executing the goal of reducing greenhouse gas emissions by 20% compared to BAU by 2030. We will accomplish this by seeking an energy efficiency roadmap centered on smart energy control, which includes improvements such as the establishment of an integrated energy control system as well as improved equipment and facility efficiency at work sites. We will also conduct waste power energy supply network improvement activities through, for example, improving power generation efficiency by utilizing waste heat. Also, we have developed green technology and products via wind power energy, combustion-and-collection technology and oxyfuel combustion in order to contribute to the reduction of air pollutants such as CO₂, sulfur dioxide and NO_x. As well, we have actively supported business partners' climate change response activities through green partnerships.



3 GOOD HEALTH AND WELL-BEING



SDG 3. Good Health and Well-Being

Ensure healthy lives and promote well-being for all at all ages

3.4 By 2030, reduce by one-third premature mortality from non-communicable diseases (NCDs) through prevention and treatment, and promote mental health and well-being

Prevent Diseases and Expand Treatment

"By 2030, we will supply basic medical supplies and support local treatments for 80,000 residents of minority groups residing in impoverished areas of Vietnam and India, thus contributing to the improvement of global health and sanitation."

Health is fundamentally related to human rights. Poor health and sanitation conditions restrict economic opportunities and expand poverty, preventing people from leading lives with the basic necessities. Doosan Heavy Industries & Construction has conducted social contribution activities in medical health near work sites with insufficient medical infrastructure in order to respond to issues related to people's basic rights including health and nutrition.



Vietnam and India have an inadequate level of medical infrastructure and manpower and also require a significant burden of medical expenses compared to GDP, so local residents exhibit a great deal of need for high-quality medical services. Doosan Vina, a Vietnamese subsidiary, has carried out social contribution projects through free medical treatment and surgery support activities. Together with Chung-Ang University Hospital, they provide medical services and required nutrition to as many as 30,000 Vietnamese residents and students and supporting free surgeries for 110 incurable disease patients up to 2016. Since 2014, India's DPSI, a subsidiary in the heavy industry, has provided support to improve the health of about 5,000 local residents through Health Camp, which offers oral and ophthalmology checkups, health diagnoses and basic medical supplies for marginalized residents in 6 regions near construction sites. Doosan Heavy Industries & Construction will continue to expand its contribution to enhanced medical access of marginalized citizens in Vietnam, India and other impoverished areas.

Major connected activities Social contribution

- Free local treatment activities by Doosan Vina and Chung-Ang University Hospital (Vietnam)
- "Q-Health" medical consulting program (Vietnam)
- DPSI "Health Camp" program (India)
- Bone-marrow donations by Doosan Skoda Power employees (Czech Republic)
- Blood donation of love campaigns and 5 other activities

4 QUALITY EDUCATION



SDG 4. Quality Education

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

Major connected activities Social contribution

- Technical training for the unemployed
- Operation of industry-academia cooperation, Doosan Class
- Supporting science high schools to foster talents in engineering and science
- Operation of M.Y. Dream (Make Your Dream) Career Exploration Group
- Themed programs at local children's centers
- DPS STEM support (Europe) and 14 others activities

Foster Local Talents

"By 2030, through "Youth Energy Project," a renowned social contribution program, we will contribute to fostering of local talents by providing opportunities for education and career exploration tailored to each growth stage for as many as 50,000 children and teenagers of marginalized people."

Ensuring opportunities for quality learning to everyone in the world who needs education forms the basis for the virtuous cycle growth and development of the global economy. Through "Youth Energy Project," which provides education tailored to each stage of growth for everyone from children to teenagers and young adults, Doosan Heavy Industries & Construction contributes to offering quality, equal educational opportunities for all future talents including marginalized people in local communities.



Through this project, Doosan operates a variety of programs from basic competency reinforcement programs to foster children and teenagers to industry-academia cooperation, fostering of outstanding engineering talents and technical training for the unemployed. By supporting educational activities at local children's centers through themed programs and love-sharing reference book activities for about 2,000 students every year, we support career exploration for about 100 teenagers per year to help establish proper job mindsets, thus helping to foster the talents that the society needs. Doosan Heavy Industries & Construction will continue to secure positive educational conditions and establish the right vocational values to increase our efforts to provide equal and quality education opportunities.



University students/youth	Reinforcing competencies that society needs
High school students	Fostering creative and scientific talents
Middle school students	Exploring future dreams and hopes
Elementary school students	Fostering the right atmosphere and establishing values

03

Sustainable Management

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The faith that the greatest value is people, the technology that makes tomorrow bright. The solution of innovation leading mankind to hope. This is the path of sincerity on which Doosan Heavy Industries & Construction is running.

The Board of Directors is the highest-level decision-making entity of Doosan Heavy Industries & Construction, reviewing and deciding mid- to long-term business plans and other major agenda.

95.1%

Participation rate of outside directors

The rate of participation of outside directors in 2016 was 95.1%, 2.5% higher than the previous year

Grade A

Received Grade A in a governance structure assessment

A designation of Grade A was obtained in the governance structure category of an ESG (Environment, Social, Governance) assessment conducted by the Korea Corporate Governance Service.

Our Approach

An independent and professional Board of Directors performs healthy, efficient monitoring of corporate management. For this, outside directors who satisfy the requirement of independence are appointed in accordance with commercial law and a broad pool of potential candidates is reviewed regardless of gender, race and nationality in pursuit of diversity.

2016 Results

The Board of Directors of Doosan Heavy Industries & Construction reviewed and decided on the company's major agenda including approval of subcontracts between overseas subsidiaries and the signing of land and building sales contracts, all of which were conducted through an independent, transparent process. To reinforce the members' understanding of the company and professionalism, we hold factory tours and also introduce a variety of ways for minority shareholders to participate including a letter voting system to protect their rights.

2017 Goals

In the appointment and operation of the Board of Directors, we aim to establish a solid foundation for transparent corporate management by continuously reinforcing institutional fairness. Through various tools such as letter voting and electronic voting systems to reflect the opinions of minority shareholders, we will seek the independence of the Board and its efficient operation.

Status of the Board of Directors

As the highest-level decision-making organization of Doosan Heavy Industries & Construction, the Board of Directors reviews and decides on major corporate agenda including mid-to long-term business plans, and the disposal or acquisition of primary assets. As of late 2016, it comprises 5 people in total: 2 executive directors and 3 outside directors There are no restrictions in terms of gender, religion or educational level when electing a director.

Composition of the Board of Directors (as of December 31st, 2016)

Position	Name	Gender	Position/experiences
Executive directors	Geewon Park	Male	(Current) Chairman of Doosan Heavy Industries & Construction (Current) CEO (chairman of the board)
	Ji Taik Chung	Male	(Current) Vice Chairman of Doosan Heavy Industries & Construction (Current) COO
Outside directors	Dongsoo Kim ¹⁾	Male	(Current) Chair professor, Korea University (Current) Head of Institute for Future Growth
	Youngrok Lim	Male	(Former) Chairman of KB Financial Group
	Dongmin Cha	Male	(Current) Lawyer, Kim & Chang Law Firm

1) Appointed outside directors
* Appointed a new outside director, Ickhyun Nam, professor at the Department of Business Administration of Seoul National University Business School, at the 54th general meeting of shareholders held on March 31st, 2017. (The Board of Directors is constituted of 6 members)

Status of Board Operation

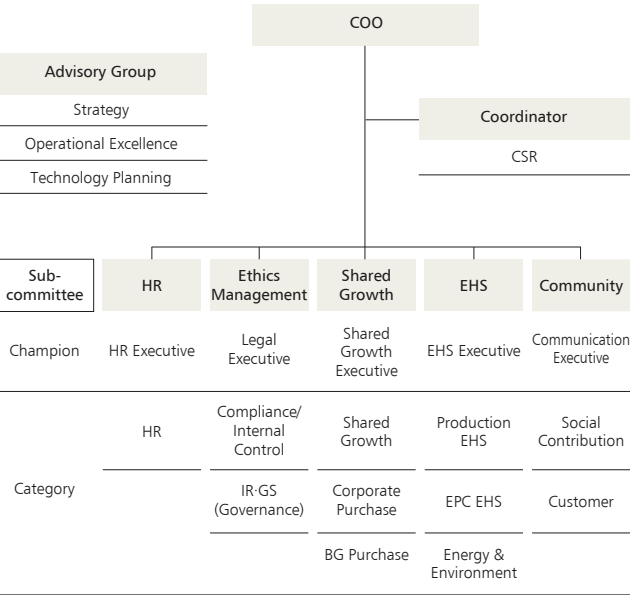
Category	Unit	2014	2015	2016
Number of board meetings held	time	10	9	12
Participation rate of outside directors	%	100.0	92.6	95.1

Committees under the Board

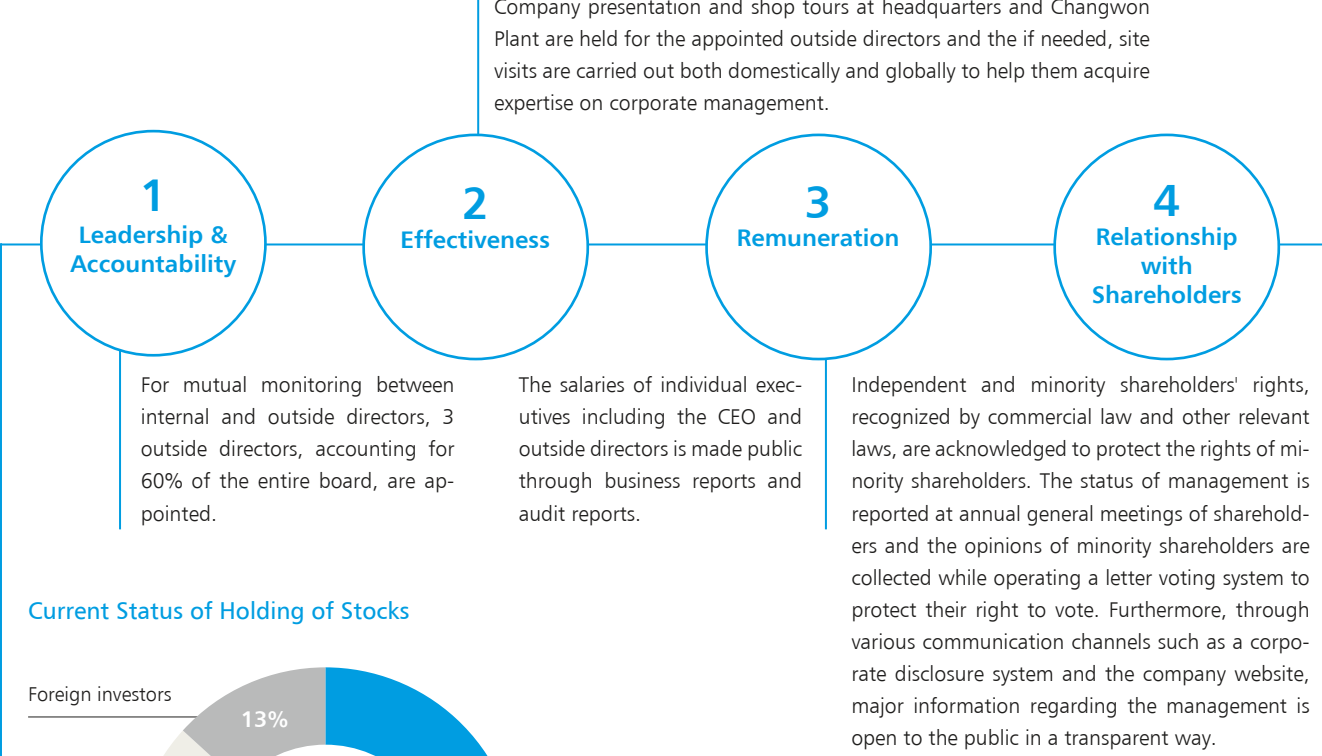
Under the Board of Directors, the Audit Committee, Internal Transaction Committee and Outside Director Candidate Recommendation Committee are in operation. Each committee is composed of three outside directors who strengthen their roles and functions in checking and supervising management based on professionalism and independence.

CSR Committee

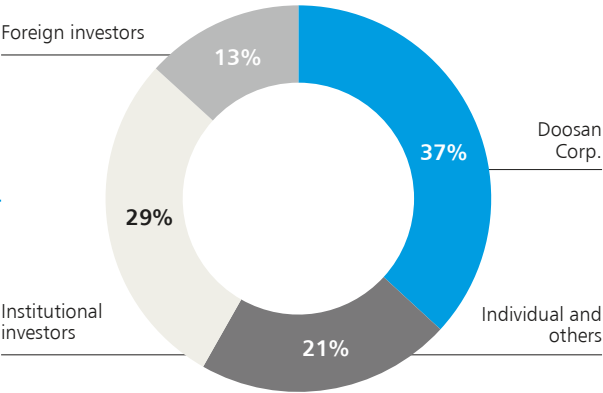
Doosan Heavy Industries & Construction operates five CSR Committees including Shared Growth, Ethics Management, EHS, HR, and Community, all consisting of champions (great people), with the COO as the chairman. These committees share global trends and discuss pursuing strategies through CSR performance evaluation.



Direction of Board Operation



Current Status of Holding of Stocks



Best Practice Case

Electronic Voting System

An electronic voting system is in place to allow a shareholder to be able to exercise his/her right to vote via the Internet (computer or smartphone) without having to physically attend a shareholders' meeting.

Doosan Heavy Industries & Construction will recognize ethical responsibilities as a duty of the company, and adopt transparent and fair corporate ethics.

99.5%

Percentage of enrollment of research ethics

Research ethics were enacted in response to the increasing risk of local and overseas research. We also enhanced the observance of research ethics through propagation and education.

12,502 persons

Enrollment in ethics training

To establish the ethical value of employees, ethics training is mandatorily included in the introductory curriculum for New Employees and experienced employees, as well as educational courses for promoted or newly posted employees.

Our Approach

Propagation of an ethics management culture will positively influence the members' basic grounding and attitude to eventually act to bring about an increase in the company's productivity and value. One of the prerequisites of a sustainable company stems from its efforts to expand ethics management, which is why most companies apply companywide ethics management that conforms to social ethics standards.

2016 Results

For an improved sense of ethics throughout the company, various programs including ethics training and conferences for ethics management-seeking leaders are continuously held for employees. Of particular note in 2016, programs on research ethics were newly established for employees in research and development, and the employees' autonomous ethics management is constantly encouraged by expanding the internal control system.

2017 Goals

Promotions and education to instill a sense of ethics in employees will continue to be performed and, by expanding internal education and risk inspections led at the team level, ethics management activities will be encouraged to settle autonomously within each division. Moreover, as local and global laws on anti-corruption are being strengthened, improvements in the current ethics management system are sought and relevant actions are taken.

Ethics Management

By conforming to laws and principles and practicing the fair operation of business, Doosan Heavy Industries & Construction aims to be a respectable organization and become an ethically leading company that can instill a sense of pride in its members. 2016 was a year during which a consensus on the autonomous practice of ethics was formed through close communication among ethics practice groups and ethics activities led by each BG/department.

Vision	Become an ethically leading company that can be respected, and instill pride through conformance to laws and principles and the fair operation of business		
Pursuing strategies	Establish the right path to increase the value of Doosan Heavy Industries & Construction along with the technology to improve the global value		
	Improve sense of ethics and reinforce prevention activities	Establish infrastructure for ethics management	Install a corporate culture in which compliance with ethics is commonplace

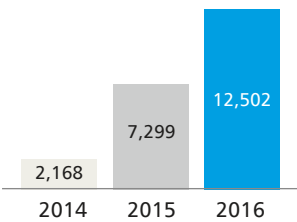
The infrastructure for ethics management has been established based on the strong will of executives, ethical standards, a cyber reporting system, employees' sense of ethics and operating organization, and this structure is used to carry out the planning, execution, inspection, countermeasure and improvement activities for the continuous growth of ethical prevention.

Ethics Management Program

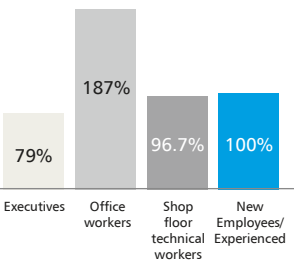
Research Ethics

As risks in local and overseas research ethics continue to be on the rise, we have enacted research ethics guidelines and conducted training for employees involved in research, development and design. Through the establishment of a research ethics system and operating structure and inspection of research ethics on major tasks by BG, we focus on creating a genuine, transparent atmosphere in R&D while striving to prevent violations in research activities in advance.

Enrollment in Ethics Training (Unit: person)



Training by Position/Type in 2016 (Percentage of enrollment)



* The enrollment results for each class are the total number of people enrolled, and the increase in 2016 stems from the expansion of education for the promotion of regulations explanation of rules due to the introduction of the Anti-Corruption Law.

Prevent Unfair Trading and Support the Ethics Management of Business Partners

To prevent unfair transactions, education on fair trading and subcontracting law is consistently provided to company employees, and we diagnose the level of social responsibility and ethics management of suppliers and support their activities.

Unfair trading prevention education for employees in 2016

3,299 persons

CSR/ethics management education for the CEOs of business partners in 2016

106 companies

Conduct Autonomous Activities to Practice Ethics at the Employee Level

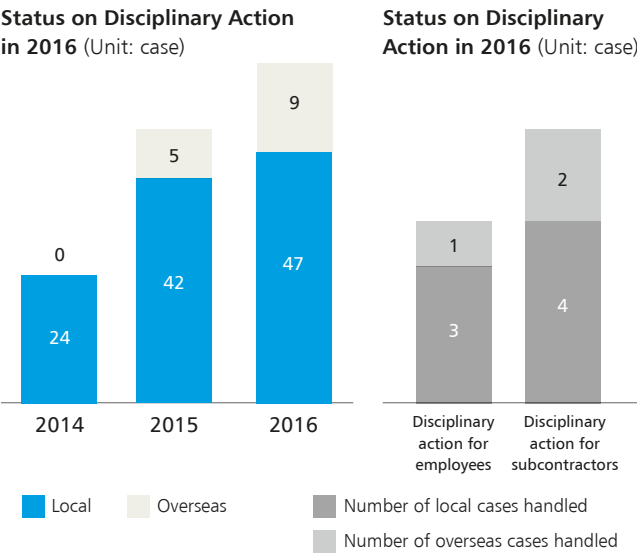
Ethics practice activities are carried out at employee and team levels to establish an autonomous ethics management culture. Ethics training with elements reflecting the characteristics of each division is provided internally, and voluntary risk inspection activities are also conducted to check, understand and prevent potential risks within a division.

Operate Conferences for Ethics Management-Seeking Leaders

Meetings and workshops are hosted to share the direction and status of ethics management throughout the company or within a division and, through research on local and global trends and case studies, the capabilities of the leaders are being strengthened. Additionally, for the promotion of ethics management activities, a regular newsletter (Ethics Management Briefs) that introduces ethics management trends and related activities is being published.

Operate a Whistle Blowing System and Counseling Center

To easily report ethics violations from both inside and outside, a cyber reporting center and internal report box are in operation. Furthermore, since 2015, the internal reporting system exclusively for overseas subsidiaries, operated by a third party, has been introduced and produced positive results.



Strengthen the Internal Control System

We are strengthening our preemptive prevention activities through the operation of an Early Warning System, which manages early indicators associated with risk in each business area to alert the relevant organizations to danger signals.

Reinforce the Capabilities of Overseas Subsidiaries in Compliance

A regular cooperation system with compliance organizations of overseas subsidiaries is in operation for ethics risk management at global work sites, and knowledge is being shared to strengthen the compliance of the overseas subsidiaries.

Best Practice Case

Participation in the for UNGC "Fair Player Club"

The "Fair Player Club" is a local, anti-corruption public-private cooperation forum to create a fair and transparent corporate environment. Having signed up as a member of "Fair Player Club" overseen by the UN Global Compact Network Korea, Doosan Heavy Industries & Construction has publicly demonstrated its strong commitment towards ethics management and strengthened the sense of ethics in its employees.



Based on technology that increases the value of the earth, we will deliver eco-friendly value to customers and preserve a place of life for the future of humanity.

69%

Invest in green R&D
We pursue research and development in environmentally-friendly future energy sources. In 2016, we invested 69% of our entire R&D.

175,182 tons

Certification of early carbon emissions early warning certifications
Starting in 2012, as much as 175,182 tons of greenhouse gas have been reduced, which has led to the acquisition of certification of early carbon emissions early warning certification.

Our Approach

For a company, practicing green management is no longer an option but a requirement. We conduct proactive response and management for both current and future generation environmental issues through more active practices from reduced environmental effects among production processes to development of eco-friendly technology.

2016 Results

We are internalizing a green management system into corporate management and expand eco-friendly investments that reflect recent environmental issues such as greenhouse gas and ultrafine dust emissions. Moreover, we continue to reinforce the introduction of eco-friendly equipment to respond to climate change-related policies and systems, and carry out activities related to the reduction of environmental effects and preservation of biodiversity in the local community.

2017 Goals

We aim to perform various activities to expand a global-level green management system and continuously improve policies and activities at workplaces. By closely monitoring environmental laws, which will be further reinforced in the future, a proactive structure will be established to allow the company to respond more actively.

Green Management

Proud Global Doosan

MISSION Reduce 20% of GHGs by 2030
Reduce 25% of energy usage by 2020
(as of 2017)

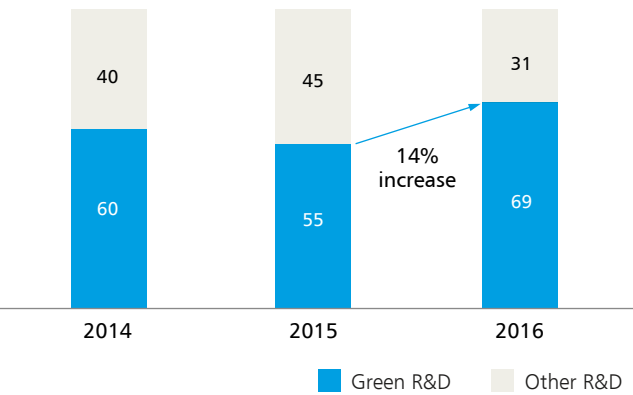
GOAL Support responsible and sustainable growth

Strategic assignment	
Eco-efficiency	· Resources recycling · Sewage recycling · Water risk management
Operation	· Reduce the emission of pollutants (air and water pollutants, wastes, harmful chemical substances, etc.) · Reduce energy usage
Green products technology	· Establish a management structure for green products and technology · Reviews for commercialization and the performance management plan
Response to emission trading	· Improve energy efficiency · Reduce greenhouse gas emissions
Environmental responsibility	· Procure green products from business partners · Protect the ecosystem

Product Stewardship

Doosan Heavy Industries & Construction pursues eco-friendly and future energy source assignments in 3 categories – minimize greenhouse gas emissions, minimize ultrafine dust emissions and eco-friendly water treatment.

Status of Green R&D by Year (Unit: %)



Greenhouse Gas Area

Mineral Carbonation

This is a carbon resource technology to extract the Ca ion from industrial by-products such as steel slag and coal fly ash and create a reaction with CO₂ to manufacture Precipitated Calcium Carbonate (PCC) with high added value. It can reduce about 20% to 30% in energy costs compared to existing technology and has been gathering attention as a form of eco-friendly technology that can fixate 0.2 to 0.25 tons of CO₂ for each ton of industrial by-products. Doosan Heavy Industries & Construction has developed core process technology, which enables the production of Precipitated Calcium Carbonate (PCC), for process optimization and scale-up research. In the future, we aim to expand our applied products and dominate the carbon resource plant market through an independent business model.

Wind Power Energy

For 10 years since the launch of wind power business, we have delivered a total of 200MW of wind power generators. Two models have been developed and a new model for a lower wind speed is at the final stages of development. It is expected to achieve a similar level of efficiency as those of advanced companies overseas, securing competitive edges of products. Starting with the Tamra offshore wind power O&M contract signed in 2016, we plan to enter the wind power services industries and expand our businesses related to renewable energy.

Eco-Friendly Burner

Eco-friendly burner systems are supplied through a technical cooperation with a U.K. subsidiary, Doosan Babcock. It is a low-carbon generation technology in which only oxygen is injected when burning coals to generate only water and carbon dioxide without any other combustion gases after combustion. Efforts will continue in the future for the commercialization of this technology.

Ultrafine Dust Area

AQCS (Air Quality Control System)

As local regulations of fine dust emissions are reinforced and the global environmental pollution issue intensifies in, for example, India and China, the growth of the power plant AQCS market has gathered much attention. Based on the government's special measures for fine dust, Doosan Heavy Industries & Construction currently pursues national projects centered on boiler facility improvement and conducts research to acquire comprehensive diagnostic and prediction solutions technology of the AQCS system. Optimum AQCS equipment that is suitable for the operating conditions of each power plant has been diagnosed from our own boiler combustion/analysis and operation control technology, and we have also begun acquiring total solutions technology that optimizes operation and maintenance by integrating it as a platform. Based on this, we will perform a demonstration of the

commercialized system and secure competitiveness in R&M construction in the long-term, in order to enter and expand our business in the retrofit market.

Eco-Friendly Water Treatment Area

Electrochemical Desalination

This is desalination technology that selectively eliminates ion and salt in water via electrochemical reactions and, thus, produces eco-friendly water resources at a lower cost than the existing technology. A joint research agreement was signed with the Korea Electric Power Research Institute and system development activities were performed. In 2017, the development of high-efficiency electrodes and basic system design will be carried out and entry into power plant coolant processing and industrial wastewater reuse markets will be pursued with the goal of 2022.

Anammox

Anammox (low-energy, high-concentration shortcut nitrogen removal technology) is technology that utilizes microorganisms to remove nitrogen, minimizing energy consumption in the water treatment process and significantly improving the nitrogen removal speed. About 30% of O&M costs can be saved, and it is an eco-friendly technology that reduces the amount of electricity used, amount of sludge generated and amount of CO₂ generated by 63%, 80% and 90%, respectively. Doosan Heavy Industries & Construction has been pursuing entry into the local and overseas centrate, landfill leachate, food wastewater and local sewage treatment markets by starting the development of the Main-Stream process technology by 2018 and completing its verification by 2022.

Desulfurized Wastewater Don-Discharge System

It is the latest, environmentally-friendly facility that purifies the wastewater discharged from a thermoelectric power plant's desulfurization facility through a reverse osmosis and vaporization method, and is capable of processing not only suspended solids and heavy metal elements, which can be filtered by existing water treatment facilities, but also nitrates and selenium, which are deemed as elements that need to be regulated around the world. Based on its world-class seawater desalination technology, Doosan Heavy Industries & Construction has developed a desulfurized wastewater non-discharge system, which is expected to be supplied to the Yeungheung Thermoelectric Power Plant after completing an entire cycle of design, manufacturing and commissioning by August 2018. After this construction, the Yeungheung Thermoelectric Power Plant is now able to purify 1,250 m³ of desulfurized wastewater on a daily basis.

Minimizing Environmental Effects

Responding to the Emissions Trading System (ETS)

By obtaining various information on climate changes in advance, Doosan Heavy Industries & Construction aims to minimize impact on the company and carry out systematic responsive activities. A committee constituted of experts in energy and greenhouse gas as well as executives monitor risks related to climate changes annually on a regular basis and also pursue improvement in operational efficiency and development of reduction technology. Furthermore, due to the greenhouse gas Emissions Trading System (ETS) introduced in 2015, the company would face a significant, direct financial burden as it has to purchase certified emission reductions from the market for the amount of greenhouse gas it emits in excess of the allocated amount. Thus, through a detailed analysis of climate change risk factors and potential scenarios, the amount of greenhouse gas emissions, as well as the degree of financial burden, are estimated. Also, by considering the cost and convenience that entails the introduction of ETS, lists of priorities are deduced for each response plan and applied to decision-making at the management level while objective management for each BG is being implemented to meet its quota of carbon emissions. In addition, we strive to reinforce internal competency by conducting training on energy management and certified carbon emissions at each BG.

Reduction of Greenhouse Gas

We have been pursuing energy efficiency through the installation of high-voltage inverters and replacement of LED lights in manufacturing factories. From this efforts, a total of 175,182 tons of greenhouse gas emissions have been reduced since 2012, leading to the acquisition of early reduction certification for Certified Emission Reduction. In the future, a phased action plan for the total energy management system will be established to reduce carbon emissions by 20% from business-as-usual (BAU) levels by 2030.

Air Pollutants

We thoroughly manage 300 air pollutant emitting and prevention facilities at manufacturing factories. Pollution levels are monitored periodically to check if any additional pollutants have been generated during the manufacturing processes and permission is obtained for newly detected pollutants, and monitoring continues to be reinforced. Moreover, air quality and noise inspections are conducted near work sites every quarter to constantly monitor the any changes in environmental effects surrounding them.

2016

Signed up for insurance that guarantees liability for damages when bodily and/or property damages have occurred to a third party due to installation and operation of environmental facilities (in preparation for the Act on Liability for Environmental Damage and Relief Thereof)

2017

Expanded the application of the automatic creation process concerning environmental facility legal records using smart devices

2018

To participate in the work site investigation led by the Nakdong River Basin Environmental Office (in preparation for the Act on the Integrated Control of Pollutant-Discharging Facilities)

Improvement in Energy Efficiency

We simultaneously seek economic and environmental feasibility while strengthening essential competitiveness through the efficient use of energy. Through a variety of energy reduction activities such as the use of a heat recovery steam generator, standby power shutdown, improved facility efficiency and replacement of LED lights, we achieved a 145% performance improvement in energy efficiency in 2016, as compared to our original goal. In 2017, we plan to continue various forms of reduction activities including the application of an energy management system, gradual replacement of ceiling lights with LED lights in manufacturing factories plants, new energy-related technology, operational efficiency by reducing the size of boilers, and enhancement of GEMS (Green Energy Management System).

Responding to Fine Dust Regulations at the Changwon Plant

It has been reported that the production processes of the manufacturing industry have an immense effect on the generation of fine dust. Therefore, it is anticipated that the relevant regulations will become more stringent. Doosan Heavy Industries & Construction has put forth efforts to minimize the amount of fine dust emissions that is generated among businesses. We control the amount of emissions within the legal standard of 30%, and continuously pay attention and prepare in advance according to the trends in the government's detailed guidelines. In addition, when replacing aging facilities, long-term countermeasures on fine dust are established to reflect eco-friendly conditions.

Harmful Chemical Substances

A monitoring system to identify the status of all chemical substances' usage within the company has been established and is in operation since 2015. Sixteen harmful chemical supervisors are trained and assigned at all sites where chemical substances are handled to ensure

safety and prevent accidents. From 2015, we have begun to install and operate volatile organic compound removal facilities within all painting booths. At the same time, we have reinforced facility inspections of activated carbon absorption columns installed in a large painting booth, which has led to a 130% reduction of harmful chemical substances, far exceeding the initial goal. In 2016, we replaced nine hazardous chemical substances with non-harmful chemical substances, which exceed the initial goal of six chemicals (64%). As a result, this has reduced chemical substance control costs of about KRW 1.2 billion. In 2017, we plan to replace two more harmful chemical substances. We will continuously search to replace the remaining hazardous chemicals in order to eliminate the use of any harmful chemical substances within the next five years.

Water

We plan to reduce the amount of water usage through the recirculation of slag coolant, replacement of leaking pipes, reduction in toilet water usage, etc., and recycle water by establishing a rainwater non-discharge (recycling) system. In order to comply with local laws, used water will be sent to a wastewater treatment facility before flowing into a total sewage treatment facility operated by the local government for an additional treatment.

Rainwater Non-Discharge (Reusing)

The Changwon Plant directly adjoins the Masan Bay due to which there is a great risk of pollutant leakage accidents from a geopolitical standpoint. Doosan Heavy Industries & Construction has introduced a rainwater non-discharge (reusing) system which is applied with the Water BG's water treatment technology, thus solving potential pollutant leakage accidents at the source. This system, which normally reuses rainwater in a large cooling tower inside the manufacturing factory and collects and processes entire pollutants under emergency situations, will be constructed by June 2017.

Waste Management

We use a specialized vehicle to pick up the waste discharged from each manufacturing factory and team in accordance with segregation waste standards. The segregated waste is safely transported and processed by an authorized waste management company by authorized transport vehicles under the law. In particular, we preemptively prevent issues that can be generated during the waste transport and disposal processes by only allowing companies that can conform to waste transport regulations to participate in waste transportation. We have recycled nearly 88% of waste in 2016 and will continue to seek out competitive recycling certified partners that fit the characteristics of green resources in 2017.

Provision of an Environmental Guide

To minimize the environmental pollution generated during the operation, maintenance and repair of power plants installed by Doosan Heavy Industries & Construction, an environmental guide is provided

to prevent environmental pollution caused by abnormal operations. As an example, a manual on operation and maintenance has been provided for selective catalytic reduction facilities, which are installed in Mong Duong II of northern Vietnam, to eliminate NOx.

Environmental Clean-Up in Masan Bay

On the 21st Marine Day, underwater and coastal cleaning activities in Masan Bay were held for the 8th time. On this day, 25 tons of waste, including old nets, buoys and ropes, were collected and disposed. We plan to continue such environmental cleaning activities that represent the local communities.



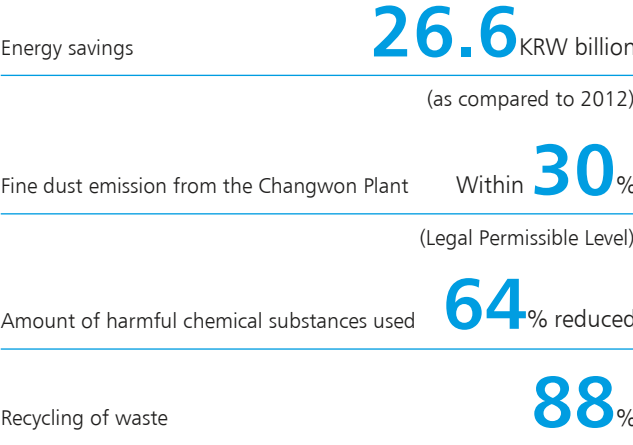
Best Practice Case

Awarded as an Outstanding Case of Construction Waste Recycling

We have won the Minister of Land, Infrastructure and Transport award for being an outstanding example of "Utilizing Recycled Aggregate." Instead of typical sand, Doosan Heavy Industries & Construction utilized recycled aggregates* as primary materials used in the construction of the Incheon-Gimpo Expressway, and successfully reduced construction time and cost.

* Recycled Aggregate: Aggregate that makes it possible for construction waste to be recycled through physical and chemical processing

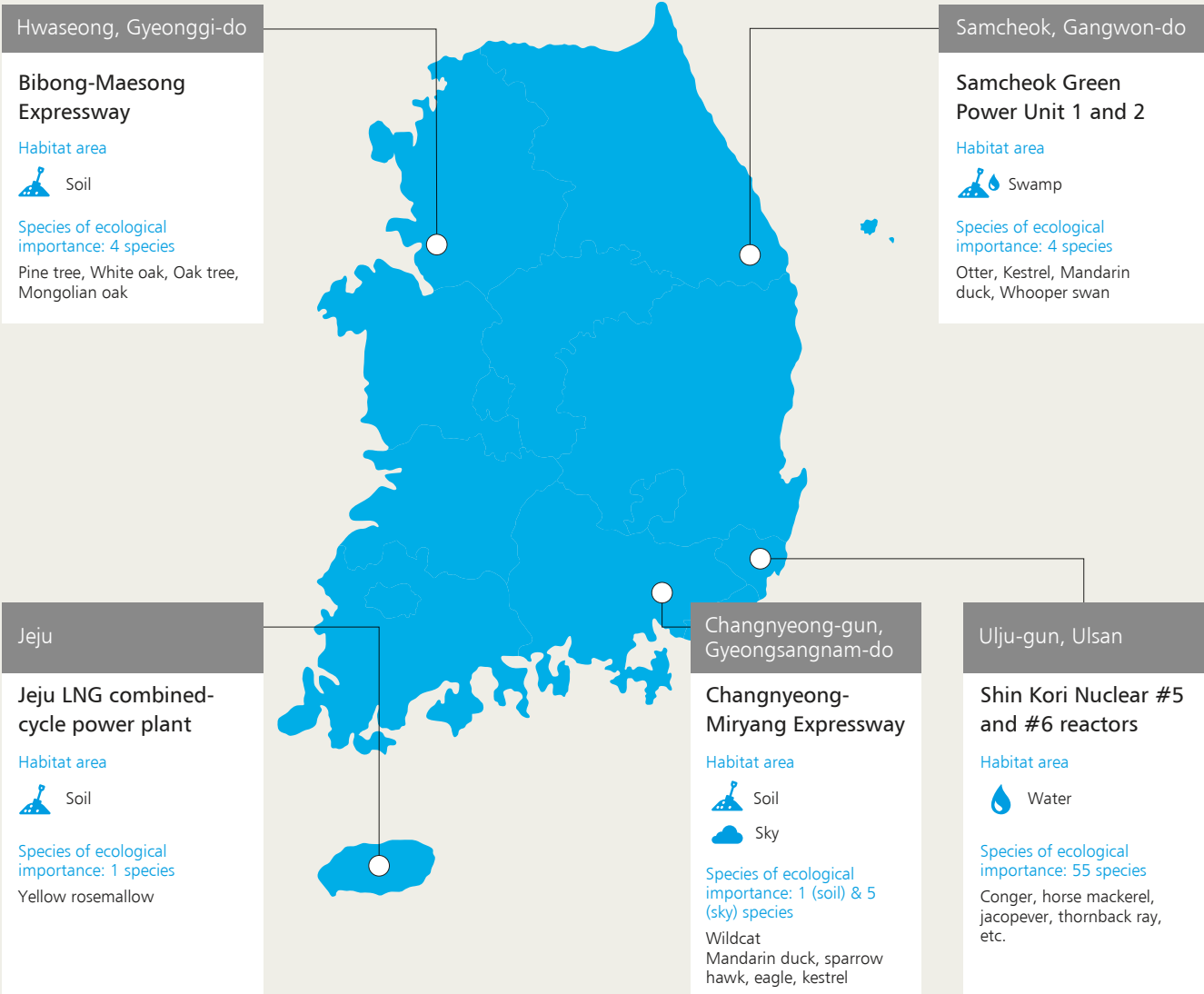
Green Management Results



Preservation of Biodiversity in Local and Overseas Construction Sites

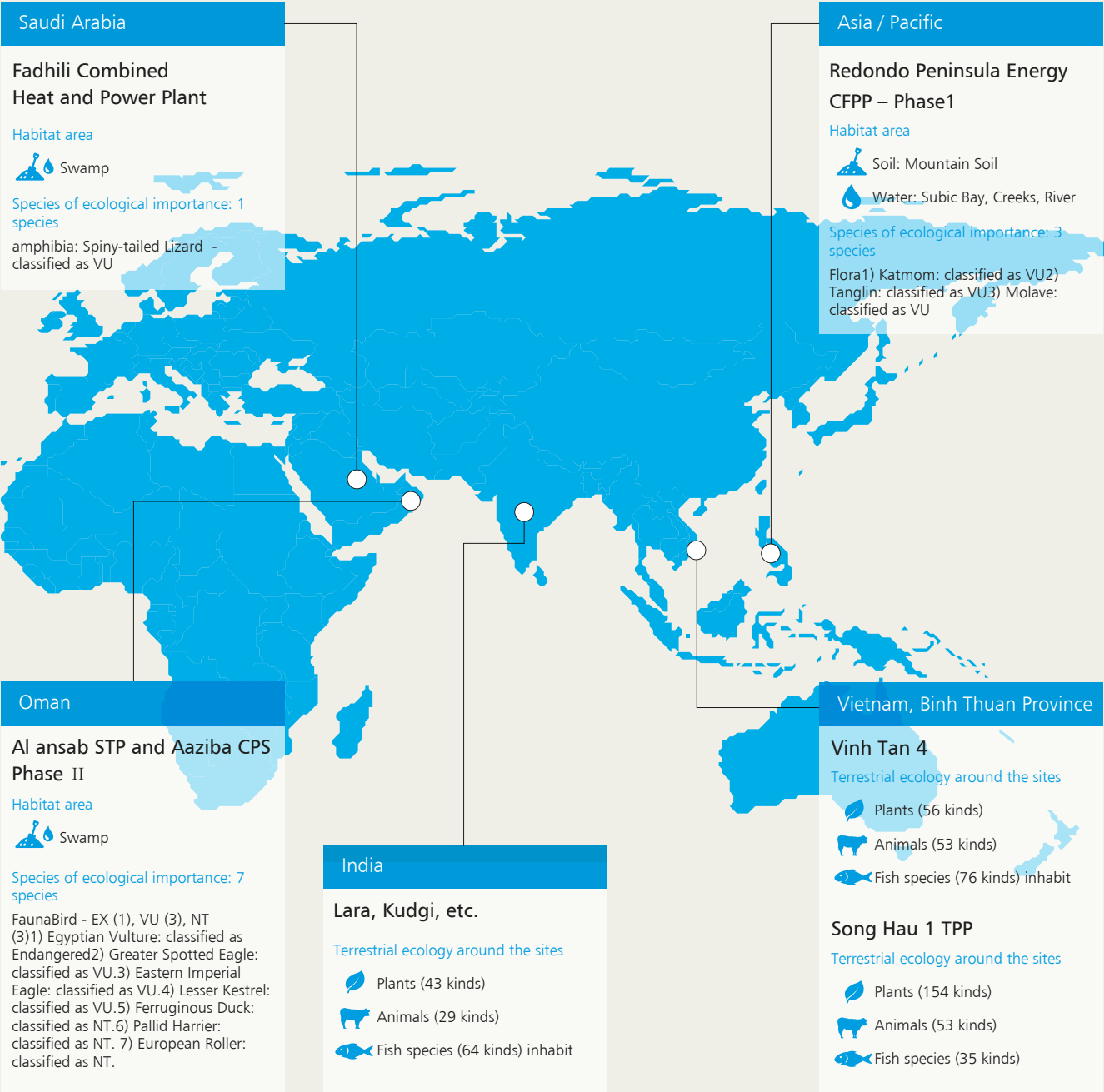
Local Construction sites

In general, local construction sites have efforts to minimize adverse impacts on their ecosystem from their business by managing relevant environmental aspects including at least noise, vibration, air and water quality. In particular, the Jeju LNG Combined-cycle Power Plant site preserves the yellow rosemallow which is one of endangered species through transferring it to the client's area. In addition, provided that any plant on the ocean and land may be threatened during the construction phase, ground transport paths and the specific area for caring for marine biology only would have been made to preserve biodiversity and do business at the same time. Major endangered species under protection at the Samcheok Green Power I and II construction sites include otters, kestrels, mandarin ducks and whooper swans.



Overseas Construction sites

Overseas construction sites hold responsibilities to preserve flora and fauna classified from the local community. Doosan Heavy Industries & Construction including the project management team has conducted a field survey prior to the start of the project to identify details about protected species in environmental impact assessment reports and to also comply with any measure described on the reports as part of preserving flora and fauna. In addition, overseas construction sites should regularly monitor the project environmental aspects including air, water quality, noise and vibration as per the project requirement, and issue the monitoring reports to relevant project's clients as part of minimizing environmental impacts. We officially identify 11 species to be preserved around 3 sites as 3 flora and 8 fauna in 2016.



We are going to contribute to making safe, healthy workplaces in line with implementing the globally recognized health and safety management system.



Actively participated by workers in health and safety

We will encourage all workers to actively participate on our health and safety management to safer workplaces.



Zero accident promotion on construction sites

Construction sites have been maintaining safe man-hours without any accidents and have been globally recognized from various clients and the Korean government. In particular, the Lara Super Thermal Power Project has been recognized by National Thermal Power Cooperation Ltd., (NTPC) from India. Additionally, the Yanbu Phase 3 Desalination Plant Project have been certified by the Saline Water Conservation Corporation (SWCC) from KSA as achieving zero accidents in 2016.

Our Approach

Recently, the EPC power plant market is becoming an independent power plant business based on private financial investments. It is widely believed that EPC power plant construction projects are classified as having significant social and environmental impacts, which can cause greater social and environmental requirements for EPC contractors and let their EHS management systems meet its social and environmental requirements. In addition, ISO 14001 requirements will be updated and are expected to be effective in 2018. We will seek to begin applying the newly updated environmental system around the globe.

2016 Results

We have strengthened safety and health management capabilities throughout the entire value chain both inside and outside the company including headquarters, local and overseas offices and business partners. Additionally, workers' self-participation activities are carried out with a focus on increased awareness on safety, and health monitoring of the employees continues to be expanded. Guidelines and countermeasures for infectious or endemic diseases are particularly provided to workers at overseas construction sites.

2017 Goals

We plan to not only constantly reinforce activities to prevent serious disasters at construction sites, but also strengthen legal observance programs to reduce business risks that may be induced from violations of the local law concerning the opening of the new construction site. To apply the overseas environmental management system that constantly changes over the mid- to long-term, we will prepare a preemptive work response structure to improve the capabilities to operate the EHS management system at construction sites and working environments.

Health and Safety Philosophy

Doosan Heavy Industries & Construction believes that the occupational health and safety for employees are the No.1 priority in our business. Therefore, occupational health and safety management is anchored in our business processes. We are going to regularly identify relevant hazards and to actively conduct their respective control measures as part of implementing health and safety management to minimize the likelihood of any incident in the workplace.

Safety



Practical Training Facilities of Hazard Identification

Construction sites have been making practical training facilities for all employees to raise their awareness of unsafe conditions and behaviors, which are easily identifiable on construction sites, as part of efforts to prevent major accidents. Particularly, overseas construction sites encourage all new comers to take part in the practical training for identification on construction hazards and refresh training is required for relevant employees if necessary as per each site rule.



Reporting Safety Measures for High Risk Processes

Since the latter half of 2016, project managers are directly making regular reports to the top management about hazards from the main high-risk activities for the commitment to safety leadership. Each project site is making efforts to implement control measures from reported major hazards at each schedule.

EHS Legal Compliance

We have been proactively identifying the local EHS-related regulations at each site and complying with them including the local laws because of the increasing need from the local communities and relevant governments. In 2016, we developed an EHS law register in Kazakhstan to respond in advance to risks in the field operation and legal violations, and also to conduct periodic field conformance assessments. In the future, we plan to develop EHS law registers in new project regions in advance, fulfilling our social duty and responsibilities.

Self-Safety and Health Activities by Workers

Unlike previous safety and health activities led by managing supervisors, we enable workers to take a leading role and participate in such activities.

Category	Description	2016 results
Safety discussion	Discuss safety work by videotaping the progress of the work	Developing the safety discussion culture using videos of actual work situations: 719 cases
Risk assessment	Discover risk factors for each work process based on the results of safety discussions and inspect the items to be checked prior to the work	Performing risk assessment in which actual workers participate by utilizing the videotaped work situations: 92%
Critical Check sheets	Place the written check sheets at the workplace based on risk assessments at the particular site	Preparing the check sheets for each site based on risk assessments and placing them at all sites: 100%
TBM education	During TBM, educate on risk factors and items to inspect in advance of the daily tasks according to the mandatory safety inspection sheet	Daily TBM monitoring (Sept. to Dec.) and improvement activities (63 times) for daily TBM
Safety Observation Card	Stop all tasks when an unsafe action is discovered during any point of work and subsequently issue a safety observation card for self-awareness	Issuing co-worker safety observation card to those who have performed unsafe actions: 500 cases

Reinforce Autonomous Execution of Safety and Health by Suppliers

We support 40 of our in-house suppliers in acquiring risk assessment approval and 25 companies in obtaining KOSHA 18001 certification. We also perform consciousness reform education and special legal safety education for the CEOs and managing supervisors of suppliers, strengthening their autonomous execution.

Operate the EHS Academy

To reflect the trends of local and overseas environments as well as to be equipped with the level of EHS competency similar to that of advanced corporations, we have introduced the heavy industry's unique training program for improvement in EHS competency, which is operated on a yearly education schedule.

Zero Accident Promotion on Construction Sites

Site Managements make reports on weekly-based major activities with high risks to top management for review and take care of the hazards every week to raise safety awareness and risk perceptions at each site as well as implement safety training at the safety practical training facility regarding fall, falling objects hazards and others to be likely happening on construction site. As a result, all construction sites have maintained accident-free manhours. Particularly, 7 local and overseas construction sites have been recognized as accident-free workplace from various global clients and Korean Government for achieving their targets.



Saemangeum group energy facilities site
Achieved 1.82 million zero accident hours



Oman Al ansab site
Achieve 1 million zero accident hours



India Lara site
17 million zero accident hours



India Kudgi site
22 million zero accident hours

Overseas Site Security

Crisis management plan and emergency care plans are in operation to protect the personal safety and local properties for sojourning employees who are dispatched to overseas sites and their family members in case of war, terrorism, riot, epidemic, or natural disasters. The headquarters monitors the current status of overseas sites, and any issues in relevant countries are constantly communicated for taking necessary actions.

Workers at overseas sites	Workers in dangerous countries	Those on short-term business trips
<ul style="list-style-type: none">International SOSMonitoring of status of overseas sites, etc.	<ul style="list-style-type: none">Understanding and applying issues in advanceForming a plan to establish measures through collaboration with relevant teams	<ul style="list-style-type: none">Travel TrackerSecuring safety by checking real-time transport routes

Safety and Health Management System Certification

Since 2010, we have been operating an integrated system of ISO14001, OHSAS 18001 and KOSHA 18001 and, through internal and external audits, the compliance with the system is constantly monitored to maintain the certification. Also, by utilizing Doosan EHS Rating System assessments, which is Doosan Group's safety and health management diagnosis tool, we diagnose the current level on a regular basis. Through this, serious disasters and catastrophes are prevented to continuously secure the risk management capabilities.

Emergency Situation Response Structure

We have made detailed response plans for emergency situations such as unforeseen accidents and disasters by treating them as potential scenarios and, thus, carry out emergency training at worksites. We have produced videos as evacuation guides for unexpected situations, and play them prior to all meetings and events while also utilizing smartphone apps to provide relevant information.

BCM (Business Continuity Management) Training

Doosan Heavy Industries & Construction has established a BCM system to secure the safety of employees and their family members in disaster situations. Considering the unique characteristics of each worksite, response processes are prepared and training sessions are held once every six months.



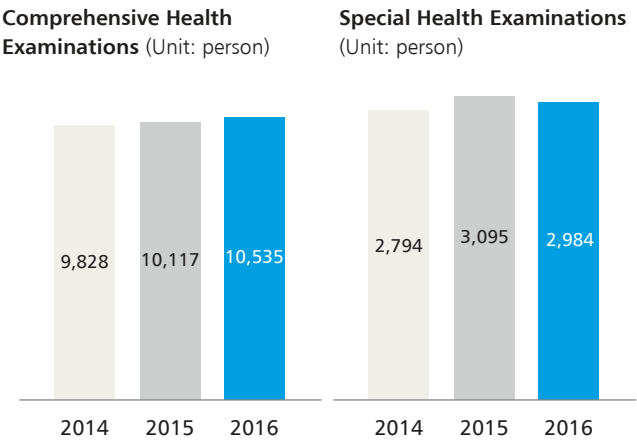
Health

Health Management Program

We operate a "Total Health Care Program" for all of our employees, their families as well as business partners' employees. A variety of healthcare programs that take care of physical and mental health are being conducted with diet improvement activities, aquarobics classes, anti-smoking classes and medical counseling. In addition, medical support is also provided to employees of Doosan, orderers and subsidiaries who currently work at overseas sites with a relatively poor level of medical facilities.

Health Examinations

We support the early discovery and treatment of diseases for employees and their family members by providing comprehensive medical checkups, cancer screenings and special medical checkups. Over the past three years, 29,343 employees and their spouses have received comprehensive health examinations, and medical examinations were offered at large hospitals for those who were deemed to need consistent monitoring. Moreover, for about 3,000 employees who are exposed to harmful elements during work, biannual special medical checkups are conducted to prevent work-related diseases and syndromes.



Prevent Infectious Diseases

We perform safety education for employees dispatched or on a business trip to overseas while, at the same time, support vaccination for various local infectious diseases such as Type A influenza, typhoid, malaria and yellow fever. As a result, not one case of infection overseas has occurred yet. Also, medical teams visit foreign workplaces periodically to aid healthcare management through health counseling and medical treatment, and company-supplied medical clinics are in operation at which doctors, nurses, physical therapists and sports therapists reside at all times. Not only employees but also their spouses and children are benefiting from this system.

Healthcare Program Cycle by Company After Recruitment

From the moment one joins the company to retirement, we offer a healthcare program tailored to the age of each of our employees. Prior to being positioned in different teams, new employees, as well as their spouses and children, are given the rights of health examinations and financial support for surgeries. Employees may also use the mental health program through which they can request counseling sessions with professional counselors for their everyday stresses and difficulties. Also, for those who suffer from chronic diseases including musculoskeletal disorders, high blood pressure and diabetes, aquarobics treatment exercises are provided, and 26 employees were enrolled in this program in 2016.

Newly Recruited Employees

- Health examinations prior to being positioned (technical workers)
- Vaccination for hepatitis A (1st and 2nd)
- Vaccination for the seasonal flu (every year)
- Acquisition of rights of financial support for surgeries (self, spouse, children)
- Medical treatment agreement services at large hospitals
- Completion of CPR training



1st year

- Regular health checkup
- Office workers: General health examination (biennial)
- Technical workers: Special and general health examination (annual)



Dispatched or on a Business Trip Overseas

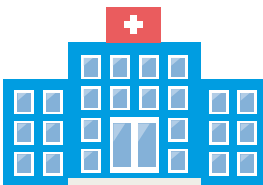
- EHS education prior to the dispatch/business trip
- Signup for foreign travelers' and dispatchers' insurance
- Vaccinations for endemic and infectious diseases
- Signup for the SOS service
- Provision of guidance on how to live safely abroad
- Operating the corporate medical clinic hotline
- Medical treatment services at foreign workplaces

Sanitary Control

We conduct a sanitary diagnosis on the nine canteens within Changwon through a professional sanitary diagnosis company three times per year in addition to more than six internal inspections. Also, a total epidemic prevention system has been established to assure that our employees can be free of infectious diseases. As a result, there have not been any incidents of food poisoning thus far.

After Retirement (for 3 years)

- Supporting discount benefits for comprehensive health examination



20th year

- Screening tests conducted for brain cardiovascular system and cancer
- Those aged 45 or older, or have worked for 20 or more consecutive years



At Work

- Visiting the counseling center (Misodam)
- Visiting the company medical clinic
- Supporting medical treatment (surgery) costs
- Medical treatment connection service with large/special hospitals
- Participating in smoking cessation and aquarobics classes
- Supporting low-salt diets

5th year

- Comprehensive health examinations
- Those aged 35 or older, or have worked for 5 or more consecutive years



We aim to preoccupy a leading position in the market by preemptively responding to the customers' rapidly changing needs.

1,507
persons

No. of participants in the technical exchange meeting

In 2016, 23 technical exchange meetings were held in which 1,507 employees from clients participated.



Received the "Desalination Plant of the Year Award"

We received the global water award known as the "Desalination Plant of the Year Award" after having been approved of the efficiency in business operations through constant communication with customers.

Our Approach

As competition in the market intensifies and customer needs diversify, renowned global companies improve the level of customer satisfaction by strengthening the quality of products and services as well as customer service. A customer satisfaction management system is a key issue that directly affects corporate competitiveness.

2016 Results

A distinguished customer management system throughout the entire process from sales and marketing to after post-marketing was established and operated. In particular, positive relationships with customers were actively created from the initial stage of business operation, and, through consistent customer satisfaction surveys and result analyses, products and services were improved.

2017 Goals

We plan to strengthen growing sales to continuously work on the management of customer relationships. In addition, we will improve to enable faster sharing and responsiveness on various issues by expanding communication channels with customers, through customer satisfaction surveys and visiting technical conferences.

Lifecycle Customer Management

By dividing the customer management process into the four stages of sales and marketing; manufacturing, construction, commissioning, after-sales services; and improvement and post-marketing, we manage the potential complaints that may arise in each of the stages.

Category	Detailed Activities
Step 1. Sales and Marketing	<div><div>· Undertake diverse customer support activities</div><div>· Ensure continuous VOC management</div><div>· Establish standardized CS work procedures</div><div>· PAM activities</div><div>· Support technical exchange meetings and seminars</div><div>· Perform customer satisfaction surveys (annual, regular)</div></div>
Step 2. Manufacturing, Construction, Commissioning	<div><div>· Manufacturing (design and engineering)</div><div>· Construction (quality & delivery)</div><div>· Commissioning (performance & specification)</div></div>
Step 3. After-Sales Services	<div><div>· Operate strategic warranty systems</div><div>· Build an overseas warranty operation system</div><div>· Create new business opportunities through facility lifecycle management</div><div>· Operate the technology support center for power generation companies</div><div>· Respond promptly to a plant shutdown</div></div>
Step 4. Post-Marketing	<div><div>· Reflect on feedback</div><div>· Explore business opportunities through business support for clients</div><div>· Manage database for region/customer</div><div>· Create new business opportunities through facility lifecycle management</div><div>· Support execution of technical collaboration agreement with power generation company</div></div>

Step 1. Sales and Marketing

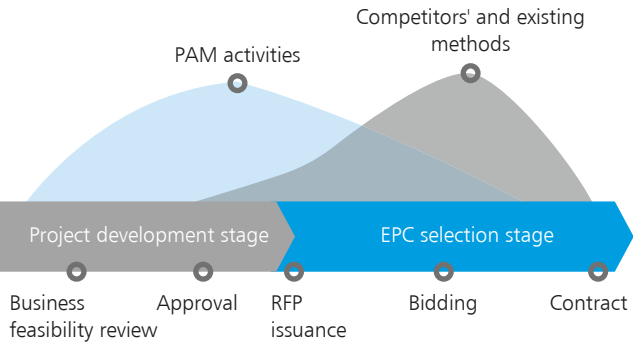
We carry out establishment of marketing strategies and brand marketing activities that are tailored to each region and customer. We particularly induce growing sales* that utilizes differentiated competitiveness to improve the chance of order acquisition as well as profitability. The successful cases of growing sales are shared throughout the company to accelerate the entry into new markets, and solutions of growing sales tailored to each region continue to be developed.

*Growing sales: Projects for which the development has been completed and proposal requests have been issued are "grown" through participation from the initial business feasibility review stage.

PAM Activities

We have been conducting in-depth marketing activities from the initial stage of the project development including the business feasibility review and approval, by inserting resources to improve the chance of order acquisition as well as profitability.

PAM Activities - Level of Resource Input by Project Stage

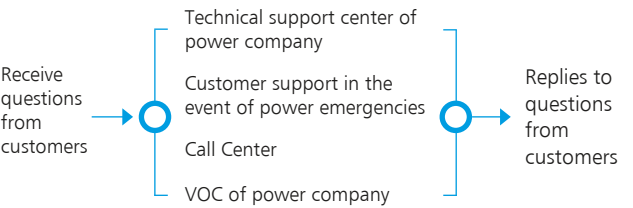


Step 2. Manufacturing, Construction, Commissioning

We also prepare and execute countermeasures in advance, for issues that may be generated in manufacturing, installation and commissioning stages, and also implement preventive diagnoses and measures to equip restoration devices in the management of aging and excessive operation of power generation facilities and, subsequently, potentially dire accidents. By proposing ways to resolve limitations and lack of execution of the power generation company, solutions to customer issues are offered.

Step 3. After-Sales Services

A separate Warranty Team is operated to ensure quality of products and services and a TFT is formed to quickly receive and respond to requests from power generation company clients when generation stops.



Step 4. Post-Marketing

Expanding from the customer management process of the past, which encompasses marketing, design, purchasing, manufacturing, installation, commissioning and warranty, the lifecycle management of the power plant contributes to a better understanding of customers' needs and creation of new markets through various post-marketing activities such as support in execution of technical cooperation agreements, collaboration in switching from free to paid warranty, etc. Also, through the lifecycle management of power plants, we put in a large amount of effort to ascertain the demands of our customers and discover fu-

ture projects based on customer demand. The joint repair project with the Delta Electricity Generation Board in eastern Egypt and the core spare parts project for standard nuclear power plant turbines are ideal examples of this.

Cases of Customer Satisfaction

Based on a corporate culture that places customers as its priority, we communicate with our customers through various online and offline channels to unlock new customer values.

Establishing Communication and Reliable Relationships with Customers

By successfully designing and installing Korea's first-ever protective structure for the RVI Measurement CVAP measuring device, Doosan's OEM technology has been secured and a more reliable relationship with customers has been formed. Through early conference sessions and research paper presentations, we have increased the level of the device's reliability through constant communication with customers and preemptive verification, and also ensured work quality through verification prior to installation. Thus, we have not only provided excellent values to customers through safety and convenience in installation, but also formed a level of trust with them, which will contribute to an increase in future sales.

Dealing with Clients' Complaints

After garnering technical difficulties and complaints from clients, Doosan Heavy Industries & Construction has promoted its new die steel technology to help overcome the issues. The product has been developed by reflecting customers' opinions prior to technical development and, by allowing clients to become involved in the lifecycle evaluation process, the overall sense of reliability has been improved from a customer standpoint. As a result, the product has advanced to the mass production stage and, based on the orders obtained, ongoing ripple effects are expected.

Improving Customer Satisfaction

Placing customers as the top priority of corporate management, we pursue innovation in services to improve customer values. Through diverse and systematic customer satisfaction activities, which includes regular customer satisfaction surveys, lifecycle management of supplied equipment, and operation of technical support centers at power generation companies, we aim to maintain a positive partnership with our customers.

Customer satisfaction survey	Lifecycle management of supplied equipment
<div>· Regular customer satisfaction surveys</div> <div>· Yearly (constant) satisfaction surveys</div> <div>· Continuous collection of VOC</div>	<div>· Operation of rapid support team for power generation shut down</div> <div>· Lifecycle management of supplied equipment</div> <div>· Power plant remote control system</div>
Technical support centers at power generation companies	Technical cooperation with client companies
<div>· Online technical support</div> <div>· Call center</div> <div>· Trend analyses requested as technical support for each client company and provision of proper feedback</div>	<div>· Visiting technical exchange meetings</div> <div>· Technical cooperation agreements with power generation companies</div> <div>· Inviting client companies for field trips to the plant</div>

Customer Satisfaction Survey

We conduct customer satisfaction surveys on a regular basis to listen to customers' opinions and promptly reflect them in our improvements to our products and services. By actively responding to field issues and enhancing our attitude towards customer correspondence, we will continue to increase the degree to which customers rely on us.

Category	Direction of regular customer satisfaction surveys
1 st (2007)	Reinforcing rapid response system - Understanding customer needs and establishing a proper response system - Establishing an active and responsible attitude in customer correspondence
2 nd (2010)	Strengthening technical capabilities - Requesting design and technology in areas of weakness (I&C, etc.) - Reinforcing subcontract control (quality, technology, etc.)
3 rd (2013)	Reinforcing mutual exchanges and relations - Expanding mutual technical exchanges and education opportunities - Expanding service areas and requesting active participation
4 th (2018)	Creating customer values - Creating opportunities to provide values to our customers - Leading provision of customer value to business opportunity

* Although it has been held once every 3 years, it is not being held this year due to the preparation of clear criteria on customer satisfaction surveys; instead, it will be held in 2018.

Best Practice Case

Customer Satisfaction Survey for Power Plants that have been Completed Less than a Year Ago

Annual customer satisfaction surveys have been conducted for power plants that have been completed less than a year ago. In 2016, the survey was conducted on the Shin Kori #1 and #2 nuclear power plants and, measures for improvement, deduced from the results of this survey, are currently in progress.

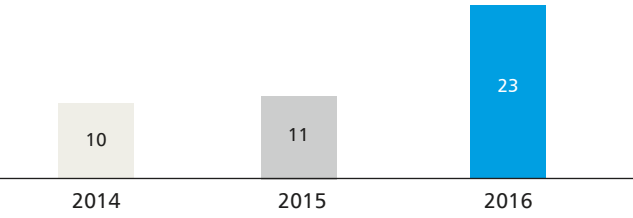
Moreover, by reflecting the opinions of customers who wish to create a place for exchanging the latest information, we have held a "survey results sharing conference" and "technical exchange meetings." The participants enjoyed a time for sharing the annual customer satisfaction survey results, changes in technology trends, and the status of assignments to fix major issues of the past year.

Visiting Technical Exchange Meetings

"Visiting technical exchange meetings" are carried out by visiting client companies to provide information on the latest technology and trends, and share the data on the client's facility enhancement and operation. A form of proactive participation from the client companies has been encouraged with a combination of seminars and discussions.



Status of Technical Exchange Meetings by Year (Unit: times)



The Changwon Plant Field Trip Program Inviting Client Companies

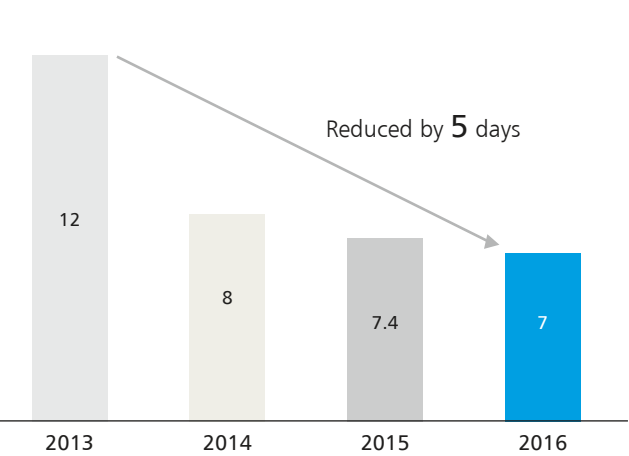
We conduct field trips to Doosan Heavy Industries & Construction's Changwon Plant by inviting newly recruited and experienced employees of client companies. In 2016, there were 12 field trip programs.

Operate Technical Support Center at Power Generation Companies

Online Customer Technical Support

We strive to provide more accurate and faster replies to the technical support requests of our customers, which are received online. The time it takes to reply has been reduced from 12 days in 2013 to 7 days as of 2016.

The Number of Days to Process an Urgent Customer Support Request (Unit: days)



Call Center

We operate a place to which urgent support can be requested via phone when an emergency occurs inside the power plant. Along with online technical support, faster replies and assistance are offered.

Lifecycle Management of Supplied Equipment

Power Plant Remote-Control Service

Based on ICT, a remote-control system has been established to monitor operation data of the power plant in real-time. Since the opening of RMSC (Remote Monitoring Service Center) in 2014, operating capabilities of the power plant have been improving in areas such as real-time operation data and symptom monitoring and defect prediction analysis, through a constant support operating system.

Category	Details
Generation stoppage special response team	Operating a special response team during peak power usage periods and generation emergencies to offer expedient customer support
Lifecycle management of supplied equipment	Providing services on supplied generation equipment before the closing of the plant, and continuously offering lifecycle support on equipment whose assurance periods have elapsed.

Best Practice Case

Ras Al Khair Project

We have been creating values that meet and exceed customers' needs through open communication. We have prepared a rapid response plan and carried out initial actions when a quality issue occurred while transparently sharing the progress with customers on a regular basis. Also, engineer coordinators from ordering organizations were employed for a better understanding of customers' demands and, by finishing the process previously specified with the client by 20 days, we have provided values that meet and exceed the expectations of our customers. At the same time, an efficient process was provided to reduce the amount of fuel and electricity consumed as well as the total cost.



We will become a more reliable company by consistently providing outstanding products and services to customers.

60
certifications

Status on external certifications acquired

As many as 60 external certifications have been acquired in areas including the nuclear power, thermal power and desalination businesses.

7
consecutive years

The gold prize from the national quality management competition

We have achieved the feat of receiving the Excellence Award for the 7 consecutive year from the National Quality Circles Contest.

Our Approach

Providing outstanding products and services to our customers based on the best competitiveness in quality is one of the most important elements in improving customer satisfaction. Thus, many companies establish quality assurance program to offer products and services of a consistent, uniform quality.

2016 Results

We have quality assurance program customized to the characteristics of each business. Additionally, a non-destructive examination system through ICT technology is operated by subcontractor to seek the stability of product quality.

2017 Goals

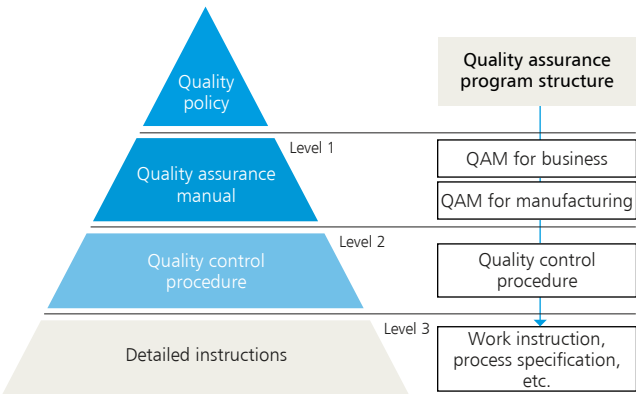
We will be subject to a review for a certification change in 2017 regarding ISO 9001, an overseas standard in quality management system. Unlike ISO 9001:2008, ISO 9001:2015 has changed many requirements. Such changes have been applied to the quality assurance program and will continue to be improved.

Quality Management Strategy

To achieve the management vision of "Global Leader in Power & Water" Doosan Heavy Industries & Construction is striving to be equipped with global-level capabilities in plant design, manufacturing, construction and commissioning. We possess global quality competitiveness and lead the nuclear power, thermal power, desalination and industrial plant markets. We place total customer satisfaction and creation of customer values as our No. 1 priority. We maintain the best quality assurance system that is organized and systematic to fulfill the global standards, which guarantees the performances desired by customers, has no defects, and helps produce the level of quality that customers need. Lastly, all of the organizations and employees of Doosan strictly abide by the conditions required by the quality policy.

Hierarchy of Quality Assurance Program

Doosan Heavy Industries & Construction has established a systematic foundation of the quality assurance program that fulfills various laws, regulations, codes and standards, and helps secure a sufficient level of quality. Using the quality assurance information portal, the contents may be browsed in any environment with Internet access.



Quality Management Result

Status on external certifications acquired (Unit: EA)

Category	Types of certifications	2016
Nuclear power project	ASME N type, KEPIC	16
Thermal power/desalination project	ASME U type, ISO	11
Others	PED, KR, NK, BV, etc.	33
Total		60

The Highest Number of Meisters* in the Industry

Doosan Heavy Industries & Construction possesses 32 meisters, the largest number of its kind in the industry, and has formed a consulting group consisting of these meisters to conduct activities such as reinforcing subcontractors' competitiveness and fostering of talents. Also, an internal selection procedure, which includes internal selection committee and peer reviews, is set up to assure that competent individuals are chosen as meisters.



* Meister: Human Resources Development Service of Korea and Korean Standards Association select technicians and engineers who own the highest level of experienced skills in industries as Meisters, of Korea and National Quality. This contributes to the foundation of a quality innovation climate and activities.

"The Gold Prize" at National Quality Circle Team Contest

In the site improvement and free form categories, Circle "Pro" of the roll plant and Circle "Hanuri" of Nuclear Power QC competed, respectively, and both received Excellent Awards. From 2010 to 2016, Doosan Heavy Industries & Construction received The Gold Prizes at the National Quality Circle Team Contest for 7 consecutive years. "Pro" made a presentation on "Reduction of loss time by improving backup roll processing" while "Hanuri" presented on "Reduction of foreign substances by improving methodology in steam generator cleanliness inspection."

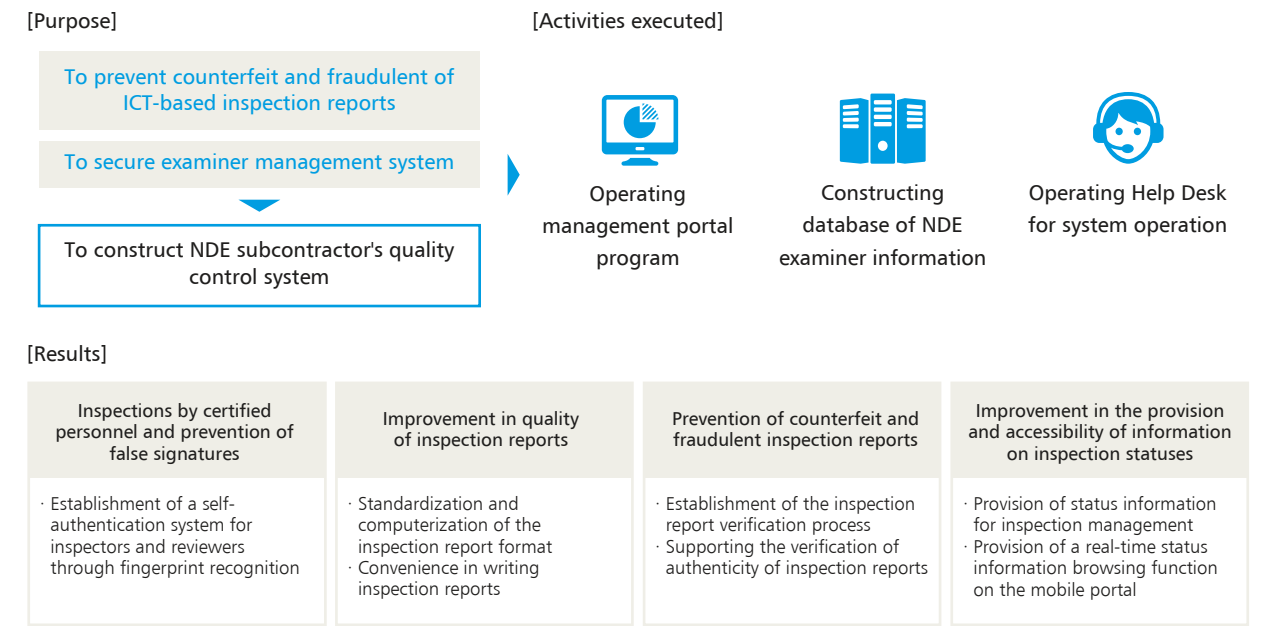
Non-Destructive Examination

Non-destructive examination is a type of examination that inspects internal defects, etc. from the outside without deforming the shape or function of a product. Through this inspection, Doosan Heavy Industries & Construction prevents and fixes defects in products, while systematically controlling their quality.

Best Practice Case

Construction of NDE Subcontractor Management System by Utilizing ICT

The ICT-utilized management system has been established and operated in order to completely prevent counterfeit and fraudulent issues regarding inspection reports written by NDE subcontractors. Through the publication of standardized reports and real-time monitoring of inspection results from subcontractor, quality is stabilized and, simultaneously, customers' satisfaction and reliability on the management system increase.



We will put forth a companywide effort to increase the reliability of Doosan Heavy Industries & Construction by establishing a thorough management system for information assets.



On-site security review at major local power plants

In 2016, information security audits were conducted on local power and corporate security was enhanced.



Establish information security system at overseas subsidiaries

Through the standardization of security policies at Doosan Heavy Industries & Construction, we provide support to be a future reference when overseas subsidiaries establish their own policies.

Our Approach

As the big data management system for customer and business information becomes more advanced, issues regarding the potential danger of cyber terror and personal information security breaches have been constantly raised. To preemptively respond to the potential risks of information leakage, companies establish high-level security systems and also educate employees on appropriate responses to security breaches.

2016 Results

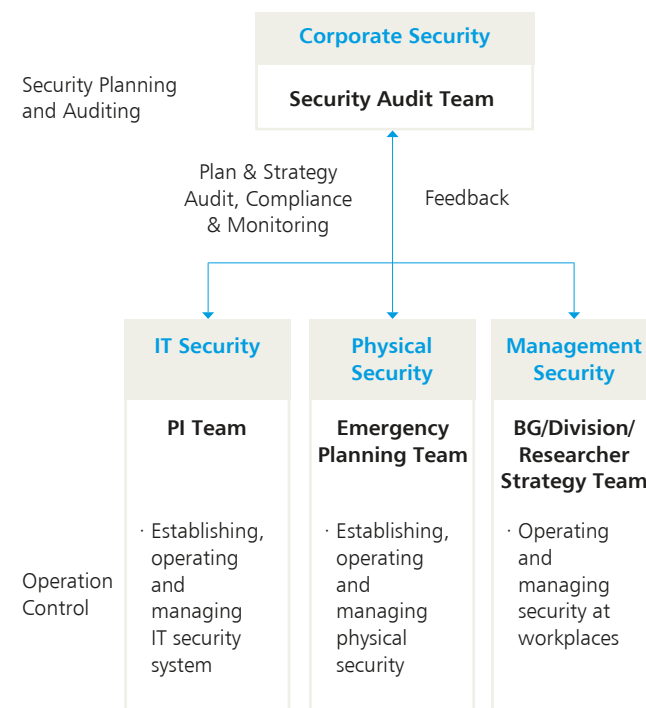
Doosan Heavy Industries & Construction reviews and improves its information system on a regular basis and, in 2016, enhanced the security of its internal work procedures and information systems in order to deal with finance-related security risks. In addition, it provided standardized security policies for improved security in overseas subsidiaries and, to improve reliability to the outside world, has put forth a companywide effort, which includes the establishment of security-related procedures to strengthen security at local plant sites.

2017 Goals

We will continuously improve our security system to respond to information security incidents such as cyber terror that has become more and more intelligent. We will especially construct a reinforced, 24-hour security monitoring system to deal with security threats in real-time, while strengthening the security system at major national facilities such as nuclear power plants, thereby working to maintain the safety of citizens and security of national information.

Corporate Security Strategy

The Security Audit Team is in charge of companywide corporate security and, through continuous security activities, protects company resources from internal and external security threats, and sets the foundation of business competitiveness, thus maintaining a higher level of security system compared to those of competitors in the industry.



Security Enhancement Activities

Auditing, Major Information Systems and Security Procedures

To protect our information system and ensure its operation effectiveness and efficiency, we provide guidelines on the overall IT operations and perform regular periodic reviews. Particularly in 2016, the security of internal work processes and systems were reinforced to preemptively prevent intelligent crime activities that have become society-wide issues such as the stealing of transaction costs through false impersonation as a client, as well as to prepare for finance-related security risks.

Security Enhancement at Overseas Subsidiaries

To improve the level of information security at overseas subsidiaries, company regulations on security have been revised by applying the items of ISO 27001, an overseas information security standard, in 2015.

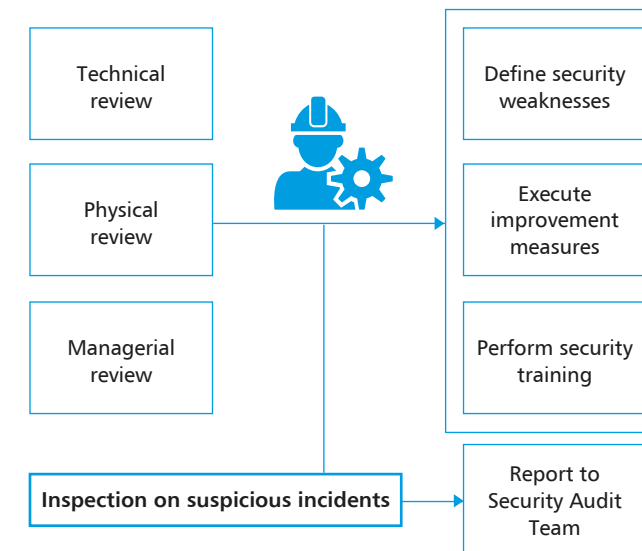
Security Policies

- Personnel Security Policy
- Trade Secret Protection Policy
- Information Asset Management Security Policy
- Information System Security Policy
- Facility Security Policy
- Security Audit Policy
- Security Incident Response Policy
- Research Security and Ethics Management Policy

In 2016, the revised standard security policies of Doosan Heavy Industries & Construction were provided to overseas subsidiaries to help them establish their own security policies that conform to the local environment and internal situations.

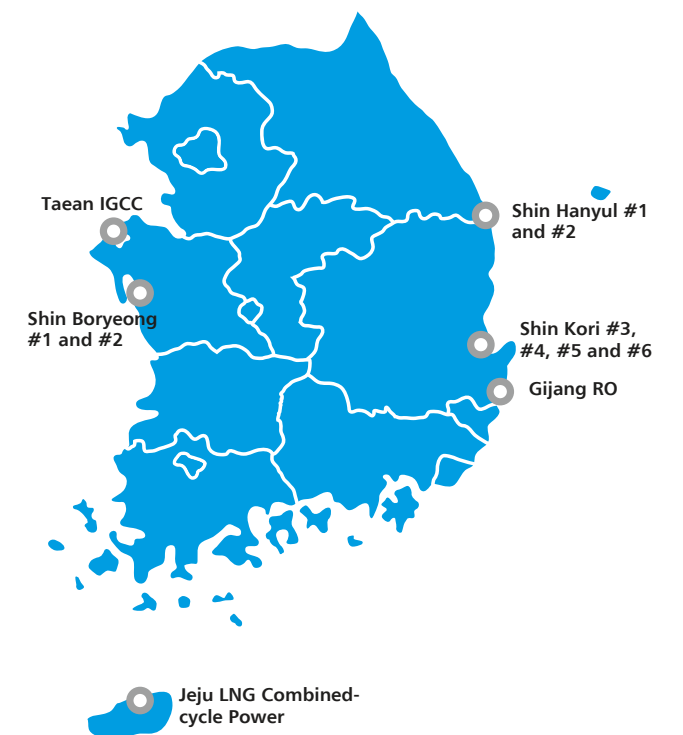
Security Enhancement at Local Plant Sites

To improve the level of information security at major local plant sites and prevent potential security incidents, we have established the field security standard based on companywide security policies, and conducted reviews for each area of security.



Also, we actively comply with the security regulations required by each power generation company in order to prevent hacking attacks on power plants, which are essential national infrastructure, as well as material leaks, and prevent potential security incidents by establishing separate support procedures for employees newly dispatched to the plants.

[Status of Security Reviews at Major Power Plants in 2016]



Based on the understanding that every employee is an essential element to the competitiveness of Doosan Heavy Industries & Construction, we will form an organizational culture that strives to allow employees to autonomously develop their capabilities.

82 hours

Average number of education hours per person

We offer various educational programs to improve the work competency of our employees. In 2016, we conducted 82 hours of training for each employee.

100%

Rate of return of employees after maternity leave

The percentage of female employees having returned to work after maternity leave is 100%. We do our utmost for our employees to maintain a healthy balance between work and life.

Our Approach

A competent talent is one of the company's biggest assets. The selection of capable talents from a fair and transparent process, coupled with the establishment of an advanced organizational culture in which all employees voluntarily focus on developing their own skills and conduct tasks with satisfaction, is an element that determines a company's competitiveness.

2016 Results

A variety of development programs are implemented to increase the competency of local and overseas employees and, at the same time, welfare programs have been reinforced for outstanding talents to form a good balance with work and personal lives. The Smart Office system is especially established for the efficient operation of work hours, increasing our employees' satisfaction levels.

2017 Goals

We will expand our talent cultivation programs and online education courses to invite more students to take the classes. In 2017, we will implement work competency assessments for about 4,800 people in 17 different functions. We aim to establish profession-centered human resources management which can help in developing career maps through which employees can grow. This can also help in securing and managing experts according to their profession.

Talent Management "Doosan People"

"Doosan People" are Doosan talents that represent all members who continuously strive to improve their own competence with skills and have a willingness to contribute to the organization regardless of current level or level of capabilities.

FC (Functional Competency) System

Other than DCM (Doosan Competency Model) that assesses leadership attributes required from all employees, the "FC (Functional Competency)" system, which defines and evaluates skills and capabilities needed for each work aspect or position, has been established in order to strengthen the professionalism and work competency of employees. Based on the evaluation results, competencies required to be developed for each individual and organization is deduced, and professionalism is being strengthened, through establishment and execution of individual growth plans and competency reinforcement activities by the organization.

Cultivating Proud Doosan People

The Doosan Way	
"Cultivating global leaders who have internalized the Doosan Way"	"Cultivating experts who help acquire a strong competitive edge and drive innovation"
DCM System	Work Competency System
Definition <ul style="list-style-type: none">Behaviors identified based on traits of Doosan people and which are required of all Doosan employees	Definition <ul style="list-style-type: none">Knowledge and skills required for successful execution of certain functions
Structure <ul style="list-style-type: none">Main Competency Items, Sub Items, Behavioral IndicatorsTraits of Doosan people defined in the Doosan Way are itemized as specific competencies	Structure <ul style="list-style-type: none">Main Competencies, Sub Competencies, Job Skills/ KnowledgeExpertise that needs to be secured for each function
Utilization & Characteristics <ul style="list-style-type: none">Tied to leadership developmentUsed as reference when deciding on compensation and promotions	Utilization & Characteristics <ul style="list-style-type: none">Functional Competencies of the Organization / Individual assessing competency level & fostering the development of competencies tied to career development

Improvement of HR Information System

The HRIS (Human Resource Information System) was implemented for the purpose of standardizing the HR data, simplifying the HR processes and adopting a more user-oriented concept. The newly introduced HRIS has been designed as a Global One System, one which also encompasses the overseas subsidiaries and which provides closer alignment between the various HR processes, such as the competency assessment, performance evaluation, employee development, training and recruitment.

Global One System



Oversees employees' autonomous learning & development and HR operations which are based on objectives management



Oversees the HR operation of overseas subsidiaries

- Enhanced functionality for deriving HR data and analyzing management indicators
- Supports decision-making in business

Respecting the Human Rights of Employees

All local and global worksites of Doosan Heavy Industries & Construction regard an employee's human rights as an essential value. We strictly prohibit the employment or forced labor of children and teenagers under the age of 18 and, in case a violation occurs, we immediately investigate to take necessary measures. Also, occasional and regular offline meetings are conducted to protect the human rights of minorities such as women and foreigners, in an effort to listen to their grievances and improve the work environment.

Strategy for Fostering Talents

We believe that the greatest asset in a company's growth and development is "people." Based on a balanced growth of talents instead of a selected few, the value of "people" has been instilled throughout the development system and, with a goal of "fostering proud Doosan People," a talent fostering system centered on the "Leadership College" and "Professional College" has been established. The educational curriculum within each growth structure is differentiated by position and level according to individual growth roadmaps and, thus, every employee can select and enroll in classes tailored to his or her level of competency.

Talent Growth Program

Management Intelligence Education

From associates to executives, management intelligence education for each stage has been systematized for effective implementation. We support all employees to continuously expand their business insights in, for instance, basic principles of economy and management as well as strategic thinking throughout the value chain, and reinforce their execution. In 2017, we plan to take the existing management education for team managers and evolve it into a curriculum focused on increasing competency in decision-making and reinforcing a cooperative mindset, all of which are to strengthen their effectiveness at work. In addition, we will develop and operate new education programs for directors and executives to help them exhibit business leadership through the proposal of a new vision, and improvement in innovative competency for the creation of new future business.

Position	Education Curriculum
Associate, Assistant Manager	- Fundamentals of Accounting and Fundamentals of Economy education - Business Communication Competency Improvement education
Manager	- BIG School I (Business Knowledge improvement)
Senior Manager, Head Manager	- BIG School II (Understanding business process and field application)
Team Manager	- BIG School III (Improvement in decision-making capabilities throughout business value chain)

* Planning to reorganize training for team management in 2017 and develop new executive education

Problem-Solving Capability Education Based on Strategic Thinking

The logical thinking process learning curriculum, which is to reinforce problem-solving capabilities based on strategic thinking, has been systematized and executed for all employees, from associates to executives, for continuous learning at their respective levels. This curriculum is conducted for employees not only in Korea but also at foreign offices and worksites in Vietnam, India, Dubai and other sites. Our plan is to have all employees enrolled and complete the curriculum by 2019.

Negotiation Capability Reinforcement Education for PM (Project Manager)

For the establishment and execution of creative negotiation strategies based on the principle concept of win-win, WIN (Winning Intelligent Negotiation) Academy education has been developed and implemented to strengthen necessary negotiation skills for each PM work process. This curriculum has been developed as systematized educational courses for each level from associates to executives and also as a student-participation type through which actual case studies and roleplays form the foundation of the contents, maximizing the applicability to real work. In 2017, the education will be expanded to employees in purchasing, sales and marketing to further improve their competitiveness in negotiations.

Corporate University, "Department of Doosan Heavy Industries & Construction"

30 graduated 56 currently enrolled

An agreement was signed with Changwon National University in 2013 to establish a corporate college named "Department of Doosan Heavy Industries & Construction" in the department of mechanical engineering. It comprises primarily of mechanical engineering classes with liberal arts courses in the department of business administration. By supporting 50% of the total tuition fees, we allow the employees to become satisfied with opportunities for self-development and growth, and to strengthen their fundamental competitiveness by combining the experience gained at work and engineering knowledge obtained from school.

Sales and Marketing Education for Locally Recruited Employees

We have conducted education for locally recruited employees who work at foreign sales and marketing offices in East Asia, India, etc., to increase their work competence, sense of belonging and pride. The education comprises a field trip to the Changwon Plant and a tour of Seoul to improve the technical understanding of each product and major strategic processes for acquisition of orders. In the future, this education will be expanded to locally recruited employees at all foreign offices and newly established business units.

Construct Advanced Labor-Management Relations

Negotiations Settled without Complications for 11 Consecutive Years

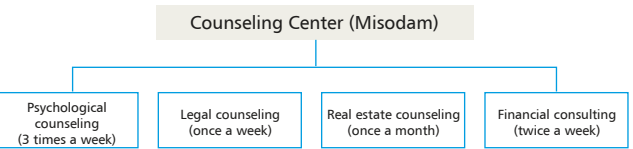
Based on mutual trust that has been accumulated for years, stable and reasonable labor-management relations are in place. Through peaceful collective bargaining, we have settled dispute-free negotiations for the 11th consecutive year.

Labor-Management Communication and Participation

Opportunities for employees to freely participate in the decision-making process are offered through companywide labor-management meetings such as collective bargaining, the labor-management council and system improvement committees. Also, individual windows for communication at the consulting center or through counseling on difficulties by BG are prepared to actively reflect the opinions of employees in corporate operations.

Misodam

A comprehensive counseling center named Misodam, a center for counseling on psychological, legal, real estate and financial consulting, is currently in operation.

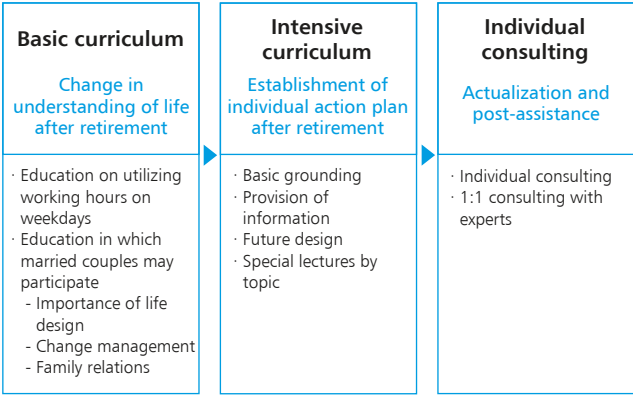


We operate a psychological counseling center to help manage the mental health of our employees and their families. We aim to seek mental stability and maximize work efficiency through counseling on psychological struggles related to self, family and children.

Retirement Assistance Program

Customized retirement support programs are provided for employees whose retirement is imminent, as well as their spouses to guide them in the post-retirement phase. It is comprised of basic and intensive curriculums. Information on individual circumstances of concern is provided, and discussions and consulting are supported to offer more practical assistance especially near the time of retirement.

[Education Process]



Smart Office

The Smart Office system is in operation to encourage members to enjoy work-life balance by improving productivity through the efficient operation of work hours and, subsequently, completing given tasks within the work hours (8 hours).

Major Systems

System	Purpose	Details
Concentration work system	• Create a mood for increased concentration during work hours to improve productivity	• Focuses on own work during the concentration work hours (10:00 – 12:00)
Overtime consultation system	• Prohibits and eliminates needless, habitual overtime as supervisors and employees discuss and agree on the reason for working overtime	• Only allows overtime after supervisors and employees consult about work and register it in the system
Flexible hour work system	• Flexible work hours or assigning alternate vacations for any inevitable overtime due to meetings with overseas personnel, thereby increasing the efficiency in work • Allows the organizations that work primarily with oversea subsidiaries to flexibly adjust their work hours	• Provides alternate vacations or adjusts work hours to refresh employees after frequent overtime • Chooses and operates working hours suitable for each Business Group (BG) (8-5 or 9-6)

Major Activities

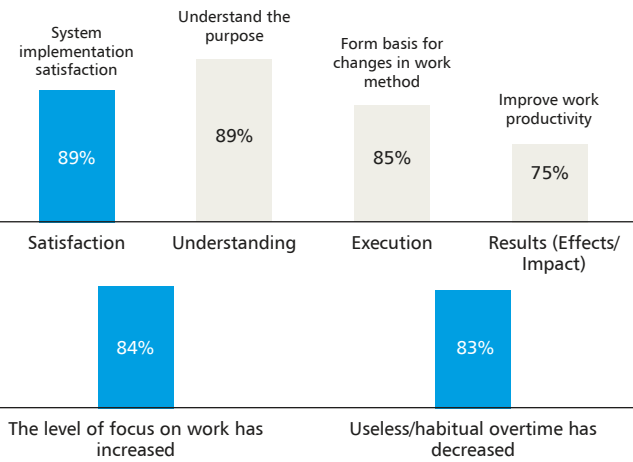
Activity	Details of Activities
Simplify reporting	• Minimizes writing reports by establishing reporting methods based on purpose • Provides guideline on how to use PowerPoint based on reporting types • Eliminates inefficient time through One Stop reporting* • Connects E-mail-electronic approval system to remove inefficiency in reporting or consultation
Minimize meeting time	• Avoids meetings held merely to deliver information and orders or to check the status of progress • Encourages meetings through messenger and video conferences • Performs announcement, reservation and schedule registration all on the meeting reservation system, which is connected with Outlook

* Prior to the final report, the employee in charge shall report simultaneously to the executive(s) and team manager(s) on the report line from the standpoint of growth and motivation.

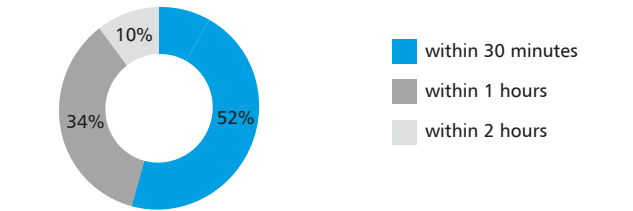
Results/Effects

Survey Results on Level of Satisfaction Felt by Employees Regarding the System and Policies (Ratio of Positive Responses)

The level of satisfaction experienced by the system and policies introduced in March 2016 is generally high, and a great number of positive responses were shown in the areas of understanding, execution and results. In addition to the overall satisfaction, detailed items such as engagement on work and reduction in habitual overtime also show meaningful results.



Results on Average Hours at which Employees Leave Work



Results on Substituted Vacation Days Used
301 cases in one year after implementation

Best Practice Case

TMS (Technology Management School)

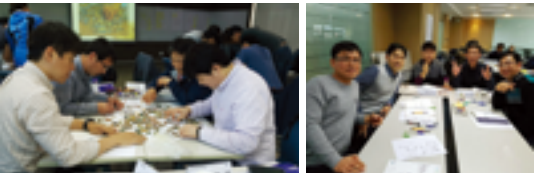
The TMS curriculum is offered for all technical workers every year. It is conducted in a 3-stage curriculum for each position level and, by utilizing a variety of activities and contents, individual competency in communication is strengthened and growth objectives are met.

[Direction of Education]

- Strengthening application of case studies tailored to the field
- Expanding the percentage of management simulations
- Reflecting the latest business trends

[Progress on Education]

In 2016 14 classes operated 352 completed the curriculum
Cumulative status 48 classes operated 1,304 completed the curriculum



By constructing a mutually-beneficial partnership with business partners, we will perform a positive role in not just the local, but also the national economy.

Most excellent grade

Shared growth index assessment

The "Most excellent," or the highest grade was received in the shared growth index assessment. As a result, we will receive incentives for the next 2 years through various schemes. This includes an exemption from the ex officio investigation of subcontractors and bonus points obtained in bidding for governmental construction projects.

743 companies

CSR evaluation of business partners

Doosan Heavy Industries & Construction conducts CSR assessments on 743 of its business partners. We will establish a value chain that fulfills its responsibilities as a member of the local community.

Our Approach

Through shared growth with business partners, a company can fulfill social responsibilities and, simultaneously, achieve sustainable growth. Thus, Doosan Heavy Industries & Construction recognizes business partners as mutually-beneficial partners, and operates various support programs for fair selection and compensation.

2016 Results

Competency reinforcement programs were implemented to strengthen the mutually-beneficial partnership with business partners and, by utilizing an application for the Doosan Heavy Industries & Construction Cooperation Organization Committee, information is shared and communication is performed in a transparent manner. Evaluations are also conducted on a regular basis to deal with business partners' environmental as well as health & safety issues in advance.

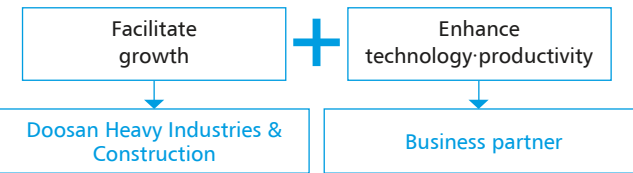
2017 Goals

For the advancement of shared growth activities in 2017, we will help shared growth business partners to become the best in the industry, establish a long-term cooperative system, introduce a business partner fostering system, reinforce support for increased competitiveness and conduct risk management for violations of subcontract law.

Shared Growth Strategy

Foster 200 or so strong global companies by 2020

Develop a "mutually-beneficial partnership" system through which we can grow together with business partners



Mutually-Beneficial Partnerships

By sharing the management, quality and technology systems of Doosan Heavy Industries & Construction such as its technical capabilities and business system with the business partners, the competitiveness of the business partners increases, which will bring win-win results in the global market. Also, going beyond the existing purchasing subcontracting agreements structure, we will continue to improve the competitiveness of our business partners and share the outcome with them, establishing much stronger partnerships.

Doosan Heavy Industries & Construction Cooperation Organization Committee

Since 2011, which is we have been operating the "Doosan Heavy Industries & Construction Cooperation Organization Committee" that is made up of shared growth business partners. Founded for the purpose of mutual growth and communication between Doosan Heavy Industries & Construction and its business partners, Doosan Heavy Industries & Construction Cooperation Organization Committee is a group that aims to establish a long-term, evolving cooperative relationship based on mutual trust. Doosan Heavy Industries & Construction currently conducts a variety of mutual growth programs with the committee in competitiveness reinforcement, financial support, strengthening of communication in joint overseas expansion, etc.

Building Business Partners' Competency

Consulting to Reinforce Competitiveness

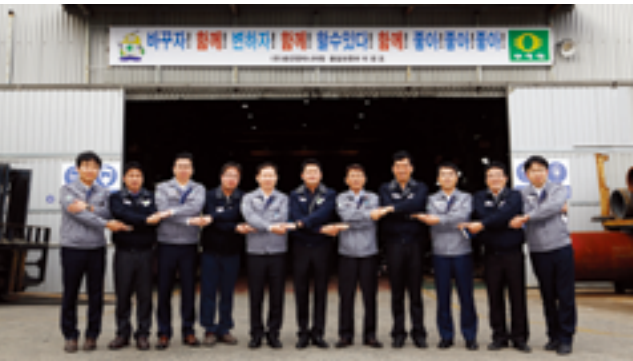
Korea's top-level professional consultant from an external consulting firm visited business partners for four months to derive assignments for improvement and help with execution. The number of business partners supported in the past 3 years is 26 and this was spent as a consulting cost. Through this consulting, the business partners improved in the areas of purchasing, productivity and design and also achieved 10.4% of reduction in cost.

Capacity-Building Training

By providing opportunities to develop work competencies for those employees under employment at our business partners including those who are expected to be recruited. Education and training expenses are fully supported by Doosan Heavy Industries & Construction to our business partners that and additional training allowances is provided to encourage participation in the education and training.

Participation of Business Partners 114 companies participated

Participation of Business Partners' Employees 662 people participated



Management Advisory Group

A business partner that desires effective counsel suitable for its needs and a retired executive who wishes to return the favor to the company from which he/she has gained much are matched to conduct customized consultation. In 2016, counseling in design, quality, business management and technical management was provided to 12 companies.

Support Business Partners' Quality Improvement Activities

For the improved level of quality control at our business partners, quality meisters are utilized to support the establishment of a quality system. In 2016, 16 meisters taught and gave guidance at 4 business partner companies to help improve their overall level of quality.

Support Overseas Advancement

By working on global projects with business partners, within our committee we help them accumulate experiences in overseas projects and contribute to the development of markets and expansion of sales by supporting the approval process of overseas customers for preemptive eligibility review. Additionally, the global network of Doosan Heavy Industries & Construction is utilized to participate in Power-Gen, the world's largest power generation exhibition, year after year. In 2016, we supported the participation of 17 business partners, 3 of which accomplished \$2,280,000 in export sales. In particular, we assist the business partners that participate in the exhibition so that they can directly meet and introduce products to customers, and successfully conduct technical meetings and on-site marketing work, in which we expect to continuously secure new customers and increase sales in the future.



Establish a Culture of Shared Growth

Communication

To resolve major issues that are generated between Doosan Heavy Industries & Construction and business partners, regular discussions and visits to business partner offices by the execution team are held on a regular basis, and we also operate the Win-Win Call Center to which the business partners' issues, complaints and opinions can be submitted for counseling. In addition, a variety of communication activities are performed by inviting employees and their family members from business partner companies to cultural events such as family culture festivals and concerts hosted by Doosan Heavy Industries & Construction.

Fair Trading Compliance Program

A team responsible for and working on fair trading compliance includes a compliance officer and fair trade compliance departments are operated in each BG. To prevent any legal violations in advance, work processes and computer systems have been improved, while education on fair trading and the shared growth mindset is carried out for employees who work directly with the business partners. Furthermore, any cases of unfair trading are investigated from the business partners' standpoint. Education on subcontract law is especially being implemented throughout the company and, efforts to prevent legal violations are being put forth by enacting executing regulations of personnel transfer for law violators.



Purchasing Policies

Doosan Heavy Industries & Construction has endorsed the "Doosan Heavy Industries & Construction Suppliers' CSR Guideline", which was founded based on the United Nations Global Compact's 10 principles of human rights, labor, environment and anti-corruption, and is actively applying it to all of its business partners. This guideline outlines the elements of human rights, labor, environment and anti-corruption.

Suppliers' CSR Guideline

- Human rights (health and safety, working conditions and wages, etc.)
- Labor (freedom of association, child labor, forced labor, etc.)
- Environment (environmental protection and pollution control)
- Anti-corruption (prevention of corruption, compliance with the law)

Status of Business Partners

A business partner is defined as a supplier that selects strategic and cooperation products by considering price, quality, delivery, entry barriers, etc. and maintains the relationship of a supplier over the long-term.

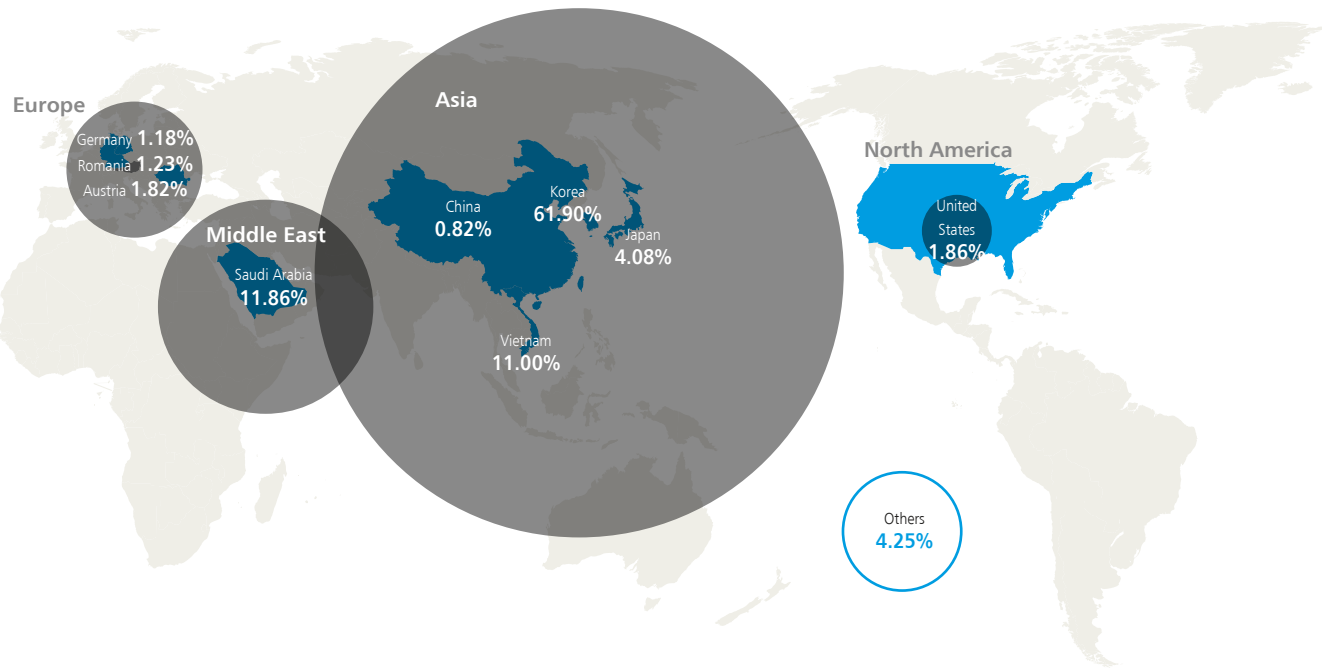
Selecting a New Business Partner

We select new business partners based on fair, transparent criteria. The selection criteria includes items related to the environment, safety and fair trading and, through a credit rating assessment, an evaluation of a company's financial and governance structure is conducted. A company that has ever been at the center of a scandal will be prohibited from registering as a new business partner.

Suppliers' CSR Guideline

"For the company's continuous growth, Doosan Heavy Industries & Construction aims to increase its competitiveness and execute social responsibilities through harmony (inhwa), customer-centered management philosophy, transparent management and innovation. Thus, Doosan Heavy Industries & Construction urges all suppliers to follow the guideline, which is founded upon the United Nations Global Compact's 10 principles of human rights, labor, environment and anti-corruption. Also, it urges you to continue to use this guideline as a sustainable purchasing policy when dealing with other suppliers as well."

Purchase Status of Local and Overseas Supply Chains



Risk Management of Business Partners

We conduct a business partner registration assessment through which cost, delivery, quality, collaboration, CSR, environmental safety, etc. are evaluated based on annual transaction results, thus managing risks of our business partners on a regular basis. Other items evaluated include credit rating, reputation and sales volume. Companies exhibiting high risks as indicated by the evaluation results are excluded from the pool of potential business partners, and the assessment grades are applied as points, when allocating incentives or penalties to business partners. An assessment is conducted by a representative or an auditor designated by Doosan Heavy Industries & Construction who visits the workplaces of business partners to inspect the state of compliance with the CSR guideline. Business partners maintain all documents and data needed to prove their conformance to the guideline within all workplaces related to Doosan Heavy Industries & Construction.

Clarifying Business Partners' Risks	Management Activities
Financial risks	Through regular/irregular monitoring and audits, sanctions and management of potentially problematic suppliers are implemented to control issues such as collusion among suppliers, unfair trading and violation of ethical management. Ongoing education is also being held to prevent these issues.
Environmental risks	While focusing on preemptive actions to prevent accidents, we carry out safety and health symbiotic cooperation projects to improve the business partners' EHS level. Moreover, we continuously stress the importance of suppliers' EHS by reflecting their certification of ISO 14001 environmental management system in a comprehensive competency assessment of the suppliers.
Social risks	Through a comprehensive competency assessment of suppliers that includes elements of competency in cost and delivery, we constantly control relevant risks by special management of or cessation of transactions with suppliers, over whom we are concerned regarding potential illegal actions such as illegal employment, child labor and labor exploitation due to excessive measures to lower the cost of production and increase orders.

In 2016, we conducted CSR assessments on 743 of our business partners and allocated 226 incentives and 4 penalties on companies respectively. Furthermore, we have empowered the business partners to self-diagnose their CSR levels to understand their own strengths and weaknesses, and offer practical support in weaker areas by supervisory visits and sharing of exemplary cases.

Support Social Contribution Activities of Business Partners

Doosan Heavy Industries & Construction is participating in the Doosan Day of Community Service, a strategic social contribution activity, with its business partners. To enable them to conduct social contribution activities on their own, we support the launch and activities of their own volunteer groups at business partners.

April

Business partners participated in Doosan Day of Community Service

- CEOs and employees from 8 business partners participated in a mural painting activity held in Daewon-dong, Changwon

June & October

Supported their own volunteer groups activities by business partners

- June: Participation in the cleaning of a residence for the mentally handicapped (Haman Rosa's House) and delivery of goods

- October: Participation in the preparation and distribution of meals at a soup kitchen (Masan Bohyun's House)

December

5 CEOs from business partners participated in a kimchi sharing activity

Business partners donated money and daily necessities to the needy

Doosan Heavy Industries & Construction will play its role as a partner who shares the trust and love received from customers and grows together with society.

60%

Participation rate in volunteer activities

60% of the employees voluntarily participated in volunteer activities to carry out the social responsibilities of Doosan Heavy Industries & Construction.

91%

Percentage of signup for social volunteer groups

As of late 2016, 91% of the employees had signed up and served in social volunteer groups.

Our Approach

We strive to fulfill our social responsibilities through strategic social contribution activities for the improvement of the community's future competitiveness and corporate values. We seek social contribution through which value is shared throughout society, not merely through one-time charity work, but by establishing a culture of social contribution where the company and employees all participate together.

2016 Results

By establishing a process to systematically manage social contribution activity results, we expect that the restructuring of programs based on performance will be carried out efficiently. We also expand communication channels with the local community and serve a more active role in dealing with community issues such as fostering talents and support for the underprivileged.

2017 Goals

Through Community-based programs social contribution activities, we continuously seek co-existence with the local community in which we conduct business. We plan to participate in an overseas initiative by increasing connection to sustainable development goals (SDGs) as well as establishing long-term objectives to continuously perform social contribution activities.

Direction of Social Contribution

With a goal to increase the future competitiveness of the community and company value, Doosan Heavy Industries & Construction follows the 3 basic principles of Business Oriented, Community Focused and Employee Engagement to set up 3 domains of activity, which includes talent cultivation, support for the underprivileged and local engagement, and to promote a variety of social contribution activities for the local community.

Talent Cultivation

Based on Doosan Group's talent-centered management philosophy, social contribution to nurture the outstanding talents of the future is specified as an area of focus. Considering the nature of the engineering industry, we have a high proportion of individuals from the fields of science and engineering. Therefore, we feel the importance of nurturing talents in engineering and also concentrate on related social contribution activities.

Support for the Underprivileged

We lead social contribution to better the lives of the underprivileged including children, teenagers, senior citizens and the disabled. We continue to expand the scope of welfare policies to include more socially underprivileged people who are currently placed in our society's blind spots and also create an understanding on these issues for increased public awareness and resolution.

Community-Based Programs

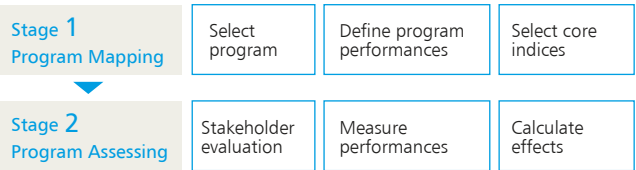
To grow the local community and make lives richer through the participation of various interested parties, we pursue social contribution activities that closely engage with the community. A cooperation network for the growth of the local community is being expanded with diverse interested parties such as local governments, NGOs, social welfare agencies and farm villages. The foundation continues to grow for the enhancement of economic and social conditions as well as harmonious co-existence with the company.

Priority	Direction of Social Contribution	Objective
Talent cultivation in science and engineering	· Talent-centered management philosophy · Reflect the nature of the engineering business	Nurture talents in science and engineering
Support for the underprivileged	· Expand the scope of support for the socially underprivileged · Contribute to solving social issues	Solve and prevent social issues
Community-based programs	· Expand the local community network · Support economic and social growth	Continuous growth of local community

Social Contribution Performance Measurement

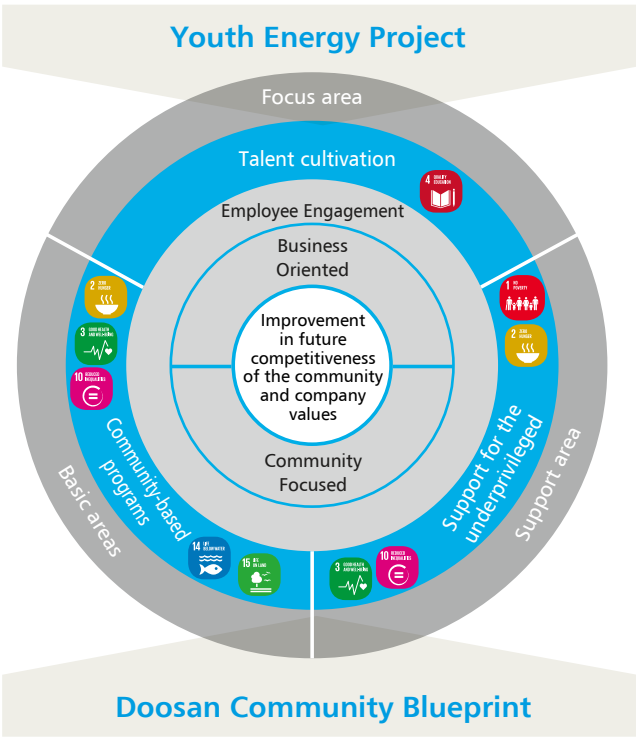
By quantifying and systematically controlling the results of social contribution activities that the company conducts, programs conforming to the environment and purpose of the company's social contribution are discovered and continuously carried out and, through this, the performance of the programs is measured in order to ultimately increase the social and corporate value. The measurement of the social contribution performance of Doosan Heavy Industries & Construction is conducted in 4 steps: 1) selection of representative programs by area, 2) defining key information, 3) specification of measurement indicators, and 4) evaluation and performance measurement by stakeholders.

Social Contribution Performance Process



Results of Social Contribution Performance Measurement

Area	Program	Measurement Indicators	
Nurture talents	Local children's center theme programs	Degree of sociality developed	Increased from 2.95 to 3.07 (out of 5 total)
Support for the underprivileged	Community welfare center programs to increase senior citizens' self-esteem	Psychological and mental health	Result of survey increased from 52% to 80%
Community-based programs	Farm exchange activities between 1 company and 7 villages	Degree of contribution to profits for each farming household	Contributes to approximately 800,000 KRW/household in income for 150 farming households (about 2.3% of an average profit made by a farming household in the Gyeongnam region)



Operation of Social Volunteer Groups

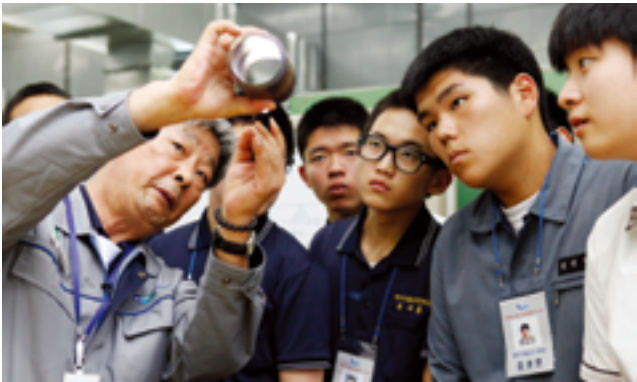
As of December 2016, 91% of all employees are signed up for the Doosan Heavy Industries & Construction social volunteer groups. Through regular social contribution activities primarily in Changwon and Seoul, sharing activities are carried out for the neglected neighbors in our community. In addition, to revitalize social contribution, the company also supports various activities by introducing the matching grant system, weekday volunteer activities, computing system and rewarding outstanding volunteers.

Social Contribution Performance Management

Since the launch of the social volunteer groups, Doosan Heavy Industries & Construction has established the purpose and direction of social contribution and introduced a promoted system, activity management process and acceleration system. In 2016, we focused on developing a performance management system and, thus, selected vitalization of social contribution participation and social contribution performance measurement in Seoul as core assignments.



M.Y. Dream Teenager Career Path Experience Group



Doosan Class



Local children's center theme programs



Kimchi Sharing Event



Environmental improvement mural painting



Programs associated with community welfare centers



Dasarang Dream



Helping impoverished children overseas, Global Sharing

Expanding Engagement in the Seoul Office

Considering the nature of the social volunteer groups, which had been divided into 2 regions, Seoul and Changwon, vitalization activities were conducted in the Seoul region where the performance of participation was relatively lacking.

By strengthening the communication with 5 reorganized social volunteer groups, in Seoul (EPC BG, Water BG, Technology Research Institute, Doorri and Power social volunteer group) and introducing new programs such as operation of regular activities, the participation in the Seoul region, which only reached 33% in 2014, improved to 63% in 2016.

Talent Cultivation

Youth Energy Project

The Youth Energy Project aims to support future talents to grow and be independent as well-rounded individuals with diverse capabilities. All programs included in this project are offered in a personalized fashion depending on the growth stage of the individual.

M.Y. Dream (Make Your Dream) Career Exploration Group for Youngsters

The Career Exploration Group for Youngsters is a program that comprises of 3-stage activities of career path exploration, experience and design through which teenagers are encouraged to develop interest in different professions, and ultimately determine their own career paths in advance.

In line with the implementation of the free-semester system at middle schools, we have signed an MOU with the Changwon Office of Education to operate the program for 86 students at 4 middle schools in the city of Changwon since 2016.

Local Children's Center Theme Programs

Since 2014, 9 theme programs in heritage exploration, ecological experience, Changwon tour, woodworking, gardening treatment, pottery arts, social studies, science and history education have been in operation for 58 local children's centers in Seoul and the Changwon region with which we have formed partnerships. In 2016, 165 activity sessions were held to contribute to the development of sociality and emotional development of nearly 1,500 neglected children.

Operate "Doosan Class," Industry-Academia Cooperation

To support the nurturing of engineering talents, Doosan Heavy Industries & Construction has signed industry-academia cooperative agreements with Changwon Machine Technical High School, Busan Automobile High School and Sudo Electric Technical High School at which "Doosan Class" curriculum is established and is in operation for technical and competency education tailored to Doosan Heavy Industries & Construction. In 2016, 13 students from Doosan Class were recruited as a part of the plan to acquire competent engineering talents.

Youth Dream Up Project

For teenagers who have outstanding gifts and talents but cannot dream big due to financial difficulties, we provide support through the "Youth Dream Up Project" hosted by ChildFund Korea to help 5 students in 3 sports – 2 in archery, 1 in shooting and 2 in Taekwondo – to enable them to pursue their dreams.

Support for the Underprivileged

Programs Associated with Community Welfare Centers

With an aim to reflect the needs of the local community, programs are planned with community welfare centers, which are in direct contact with socially marginalized groups of our society, to carry out volunteers in which our employees participate. Together with 6 and 4 community welfare centers in Changwon and Seoul, respectively, emotional support and sociality development programs are in operation for teenagers, senior citizens, disabled and multicultural families.

Dasarang Dream

Dasarang Dream Project started in 2011 with the Gyeongnam Office of Korea Red Cross in order to assist the teens of the community's underprivileged and, in 2016, we purchased daily necessities at traditional markets and delivered them to 300 households for vitalization of the local economy and supporting of low-income families. Also, we regularly carry out activities to share bread and noodles with children at welfare centers with which we have formed partnerships.

Clean House

Through technical volunteer group consisting of employees' talent sharing, house repair programs are implemented on a regular basis to check electric equipment and perform papering and painting for the underprivileged, farming villages and child welfare centers.

Elementary School Students	Middle School Students	High School Students	University Students
<ul style="list-style-type: none">Theme programs for local child centersMatching the tuition fees for children from low-income familiesSupporting "love-sharing" reference booksSponsorship for the Kumkum-Dda Orchestra	<ul style="list-style-type: none">M.Y. Dream Career Exploration Group for YoungstersScholarships for outstanding students from low-income familiesSharing the love through school uniformsMatching the tuition fees for children from low-income familiesSupporting "love-sharing" reference books	<ul style="list-style-type: none">Supporting science high schools to nurture science and engineering talentsOperating "Doosan Class" at Meister high schools and specialized high schoolsScholarships for outstanding students from low-income families	<ul style="list-style-type: none">Operating "Doosan Class" at industry-academia cooperative collegesTechnical dissertation contests and visits to advanced countries overseas

Social Contribution



Offering Helping Hands to Seven Farming Villages

Community-Based Programs

Offering Helping Hands to Seven Farming Villages

Doosan Heavy Industries & Construction has formed sisterhood relationships with 7 farming villages (Gwisan in Changwon, Janggi in Goseong, Misan in Haman and others), which enables employees to participate during farming and harvesting seasons to lend a helping hand. In every harvesting period during the fall, 450 Doosan employees, as well as members of the Changwon Volunteer Service Organization Association, visit the sister farm villages to assist with the kiwi and sweet persimmon harvest.

Kimchi Sharing Event

Doosan Heavy Industries & Construction conducts the 'Kimchi Sharing Event' activity with the local community to share the love with neighbors every year. In 2016, about 200 people from the civil servant family social volunteer groups, voluntary service organization associations, Danuri Social Volunteer Groups consisting of multicultural families as well as business partners of Doosan Heavy Industries & Construction prepared 5,000 heads of kimchi at the Changwon headquarters, which were delivered to nearly 3,000 people at Changwon child welfare centers, the underprivileged groups, social welfare centers and multicultural households.



Environmental Clean-Up

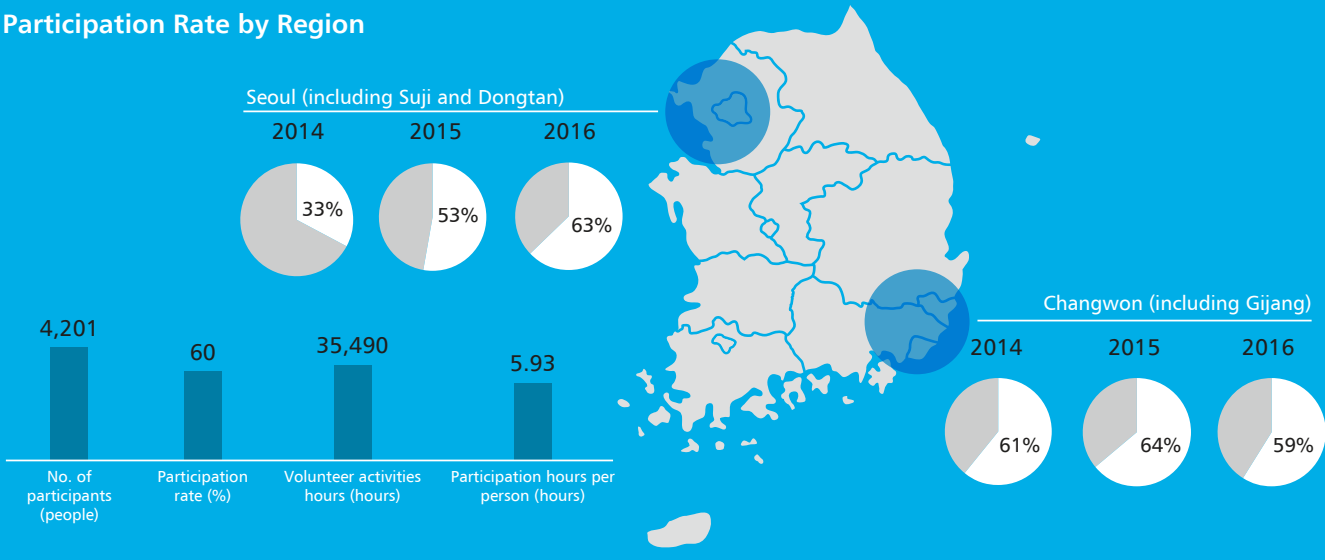
Environmental Clean-Up

To prepare a clean environment in the local community and environmental protection for the future generation, we perform environmental cleaning activities on a regular basis over a broad region including coasts, islands, rivers and mountains. Particularly on the annual World Oceans Day, large-scale coastal and underground cleaning is performed in Masan Bay near the Changwon headquarters, and nearly 100 people including members of in-house scuba diving club, employee volunteers and Changwon's private-public joint social volunteer groups participate every year.

Environmental Improvement Mural Painting

Doosan Heavy Industries & Construction has been operating a mural painting program in deteriorated residential areas and crime-prone districts to ensure safe paths for women, children and teenagers as well as to prevent various forms of crimes. This has been operational with the help of the police department and the city of Changwon.

Participation Rate by Region



Doosan Day of Community Service

12 countries, 30 business sites, 3,333 employees participated in 73 social contribution programs

To fulfill the corporate social responsibilities and the local community's sustainable growth, Doosan Heavy Industries & Construction has been hosting "Doosan Day of Community Service" since October 2014, an event that draws the voluntary participation of all employees from all worksites. In 2016, various community service activities including "Clean Changwon, with Doosan", a well-known program, were conducted in association with interested parties in both the private and public sectors. In 2017, we will continue to maintain it as one of Doosan's leading social contribution festivals and facilitate Doosan People's heartwarming and fruitful sharing.



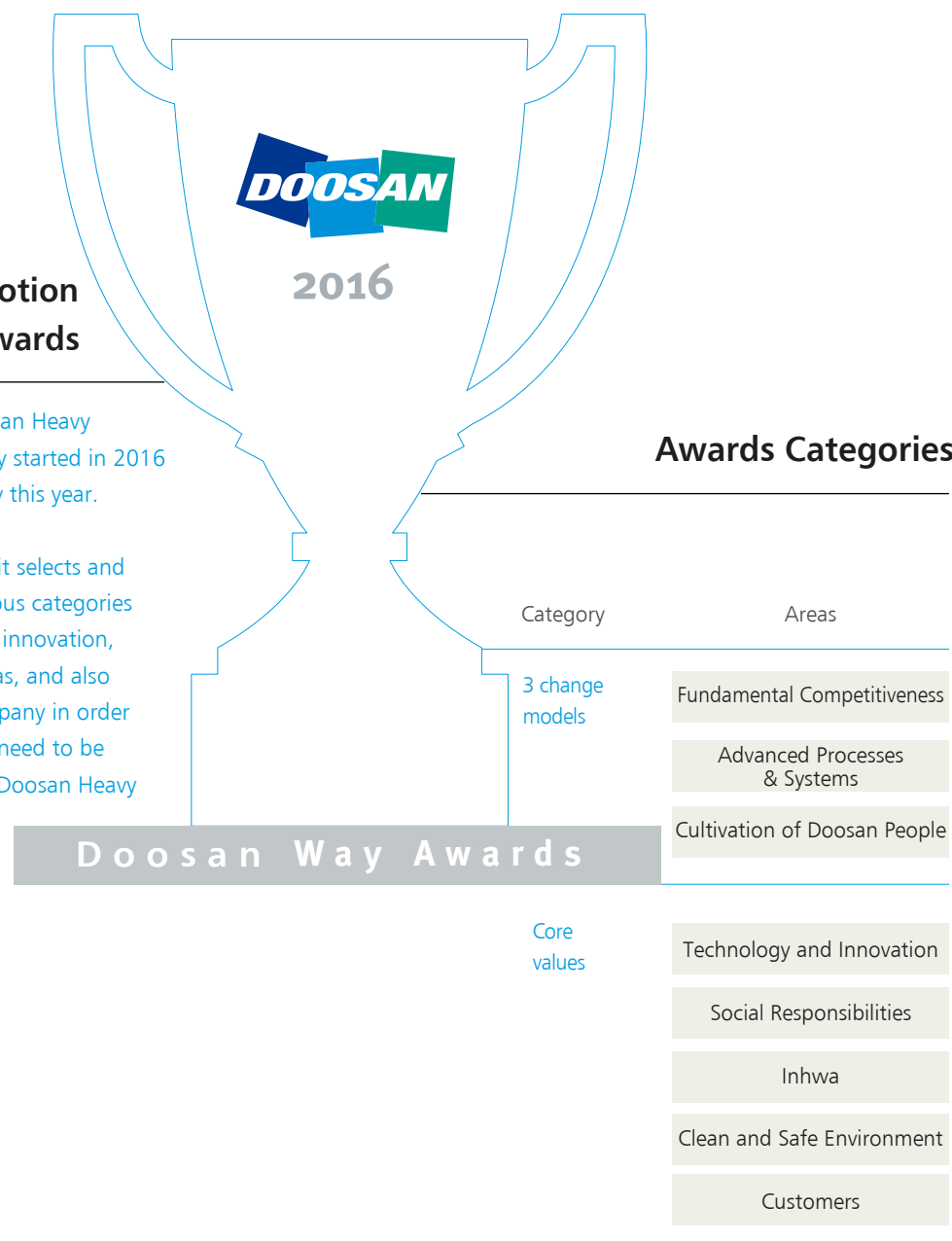
Doosan Way Awards

We implement the Doosan Way, founded upon the faith and philosophy of the company, in an effort to become the "Proud Doosan in the World." the Doosan Way is internalized as a core value to which all employees must conform. Every year, Doosan Heavy Industries & Construction selects outstanding cases that have achieved the value of the Doosan Way through the Doosan Way Awards, where awards are given in categories of fundamental competitiveness advancement and scientification, and core values. This year, 65 outstanding cases were chosen to help distribute and share the value of the Doosan Way throughout the company.

Overview of the Promotion of the Doosan Way Awards

The Doosan Way Awards of Doosan Heavy Industries & Construction officially started in 2016 and celebrates its 2nd anniversary this year.

Founded upon the Doosan Way, it selects and awards outstanding cases in various categories including operational and quality innovation, social contribution and other areas, and also shares them throughout the company in order to distribute the core values that need to be internalized in each employee of Doosan Heavy Industries & Construction.



Fundamental Competitiveness

Water

| Water treatment technology development team

Technical development of thermal ZLD (zero liquid discharge*) leading to advancement into new markets of desulfurized wastewater

The water treatment technology development team has developed the zero liquid discharge technology for entering the eco-friendly water treatment market, which is rapidly growing due to strengthened environmental regulations, and diversification of business models. Despite the difficulties as a second mover, Doosan has secured competitive edges in both technology and cost through the development of 2 types of evaporator design technology and optimization of the sizes of core facilities. In addition, through multidirectional efforts for entry into new markets, including the organization of an exclusive sales department and demonstration in front of selected customers, it has achieved positive results through increased orders and advancement into overseas markets.

* A facility that processes, recycles and minimizes the amount of wastewater, and technology that responds to strengthened environmental regulations and improves economic efficiency

Excellence of the secured competitiveness

- Developing proprietary ZLD technology at the global top tier level
- Securing cost competitiveness through optimization of core facilities
- Creating successful cases of stable demonstrative facility operation
- Solving scale risks, which have been an unsolved issue
- Conducting aggressive customer marketing

Entering overseas markets and expanding desulfurized wastewater and new markets

The Yeongheung headquarters secured an order for a desulfurized wastewater non-discharge treatment facility (February)

The Yeongdong headquarters secured an order for a total nitrogen removal facility (June)

Advanced Processes & Systems Category

Nuclear power

| Nuclear power plant production part

Establishment of remote control welding system inside steam generators

For the first time ever, the nuclear power plant production part has automated the welding of structures inside a steam generator in an attempt to reduce the workers' risks of injury and high defect ratio of manual welding under poor working conditions. Firstly, GMAW*, which has shown satisfying results in speed, property values and automatability, has been decided through a survey on manufactured goods, benchmarking and group activity meetings to be applied to the products that meet the conditions of automation devices. During the application, it was discovered that the existing gas lens generates an excessive amount of eddy current and, thus, cannot shield perfectly. Through a number of subsequent tests, the part invented a new gas lens, for which a patent application has been given. It has also developed its own AAWE99, an auxiliary welding device that moves or transports along a specified path, and applied it to the new process. Through the remote control automatic welding system, approximately KRW 304 million has been saved, and it is expected that KRW 1.7 billion would be saved annually if the system is extensively applied to other processes. Moreover, it strives to reduce the cost of welding quality failure to zero via a preemptive defect alert feature by developed by utilizing big data.

* GMAW (Gas Metal Arc Welding): A semiautomatic welding process that does not generate any slag while using solid wires with shielding gas and without any coating materials

System establishment process

Construction of welding automation facility

Development of automatic path-moving auxiliary welding device

Development of remote control welding system

Preemptive defect alert feature based on big data

Preventing risks of workers' injury

Reducing cost due to welding quality failure (KRW 1.7 billion annually)

Core Value Category (Clean and Safe Environment)

Management

| Energy environment team

Use of replacement substances in place of harmful chemical substances

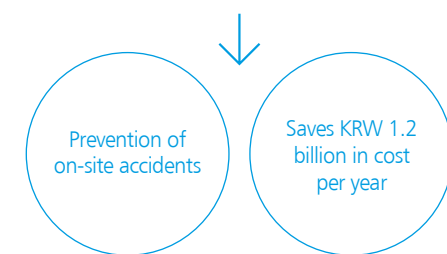
By replacing harmful chemical substances used on site with harmless chemical substances, leak accidents are fundamentally prevented. After examining the status on usage of hazardous chemical substances in work sites, methyl ethyl ketone, sodium hydroxide and hydrazine hydrate have been determined as substances possessing a high degree of harm. Methyl ethyl ketone, needed in manufacturing of generators, is used in the largest number of places while the substance with the greatest scale amount of usage is sodium hydroxide, which is a regenerant of ion exchange resin. Hydrazine hydrate, the most dangerous substance, is used to remove dissolved oxygen to prevent corrosion during water pressure testing. As a result of seeking various means to replace hazardous chemical substances, methyl ethyl ketone and hydrazine hydrate have been replaced with harmless chemical substances and sodium hydroxide is no longer used as water treatment facilities have been introduced.


Sodium hydroxide

Risk of necrosis of skin and/or loss of eyesight when in contact > Reduced the amount of use by 100% through the introduction of water treatment facilities

Methyl ethyl ketone

Causes paralysis, visual impairment when inhaled > Replaced with harmless chemical substances





04 Performance of Overseas Subsidiaries

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Doosan Heavy Industries & Construction is turning the Earth's oceans into drinking water and turning its resources into light.

Doosan Babcock

“ Doosan Babcock is part of a powerful combination of companies united under the Doosan Group to deliver complementary technologies, skills and value to customers the world over. ”



Company Introduction & Financial Performance in 2016

Doosan Babcock is a specialist in the delivery of engineering, after-market and upgrade services to the power generation, oil and gas, petrochemical and process sectors. Based on its world-class technologies and abundant experiences, we provide power plant facilities to around 30 countries around the world, including the US and Europe. With a focus on the delivery of lower-carbon technologies and an industry-leading project management capability, the company builds, maintains and extends the life of customer assets worldwide.



Business Strategy

The business environment in the energy sector continues to evolve at a rapid pace. The Doosan Babcock thermal strategy has focused on maximizing domestic service activity with longstanding key customers. To cope with a sustained oil price depression and changing of industry investment flow , we offer an integrated solution for refinery and petrochemical specialists. As we continue to successfully deliver breakthrough contracts with new customers in the Middle East, we seek to advance to strategic partnership models that have been mutually beneficial for both participating parties in the UK. With the dynamics of energy markets shifting towards distributed and low carbon generation due to a global drive to reduce greenhouse gas emissions, demand for the fuel cell market is increasing. Through our Fuel Cell solution, Doosan Babcock offers continuous, peak or back up power suitable for urban environment. With the energy market evolving to favour distributed and low carbon energy generation, Doosan Babcock are well positioned to capture new opportunities in domestic markets and export core capability internationally.

Business Performance and Goals

Doosan Babcock delivers complementary technologies, skills and value to customers the world over across the following sectors:

- 1. **Thermal:** With a strong heritage of over 125 years enabling thermal production across the world, we have refined our skills to be market leaders in the decarbonization of the traditional thermal generation market.
- 2. **Nuclear:** We are supporting the low-carbon UK civil nuclear industry across the lifecycle of projects. Our market-leading services in life extension, decommissioning and support on new builds will keep the UK energy mix secure and lower carbon into the future.
- 3. **Process:** Our energy innovation is not limited to power stations. We work with pharmaceuticals, oil, gas and the wider petrochemical and process industries to drive efficiencies and improve quality.
- 4. **Asset Management:** Innovation is at the heart of our organization so it's only natural that our multi-specialist teams support the safe through-life management of customers assets, with a range of optimization, repair and maintenance services.
- 5. **Green Power Solutions:** The shift towards more local low carbon distributed energy solutions provides Doosan Babcock with opportunities to utilize our vast experience coupled with our innovative fuel cell technology to deliver integrated solutions that meet the needs of a diverse range of clients.

Doosan Babcock has over one hundred and twenty years of history within the energy sector and long-term sustainable business delivery is ingrained within our heritage. Doosan Babcock continues to grow together with our local communities in order to build truly sustainable relationships and shared value. We are engaged in a wide range of ongoing social contribution in the areas of Education, Environment and Community, of which we actively support the voluntary participation of our employees in these projects. Doosan Babcock has achieved ISO 26000 and a 'rated supplier' on the Chartered Institute of Purchasing and Supply (CIPS) Sustainability Index.

* We were selected as a Rated Supplier according to the Chartered Institute of Sustainability Index, an indicator developed to measure sustainability in purchasing strategies and processes.

ISO 26000

We are operating business in accordance with the ISO 26000 Guidelines on Corporate Social Responsibility. This standard independently verifies that we support the needs of our local and wider community.

Rated Supplier

We have been selected as a Rated Supplier for the Chartered Institute of Sustainability Index, an indicator developed to measure sustainability in purchase strategies and processes.

Strategy for Social Responsibility Management

Doosan Babcock continues to grow together with our local communities in order to build truly sustainable relationships and shared value. We are engaged in a wide range of ongoing social contribution in the areas of Education, Environment and Community, of which we actively support the voluntary participation of our employees in these projects.

Grow the People		Grow the Business
DEVELOPING PEOPLE	RELIABLE OPERATION	RESPONSIBLE ENGAGEMENT
Strengthen people development within the Doosan Babcock influence sphere focussing on Engineering, Education and the Environment. Build a great workplace with a focus on human respect, which is the Doosan Way.	Minimize our emissions and waste through the management, quality and innovation of our products and services. Reinforce ethics and fair operation. There is nothing more important than undertaking any job we undertake safely.	Strengthen customer, employee and supply chain participation. Develop and fully support employee community involvement and development.

Environmental Management

First "Environment Week"

We held our first "Environment Week" internally with employees where we facilitated two-way communication on Doosan Babcock's low carbon ambitions, what we've done to date, and how we can improve further. Our employees gave lots of feedback and provided specific suggestions on how we can all make a difference, making for a successful event.

Improvements

- 1. Zero waste to landfill across all our UK facilities.
- 2. The achievement of the Carbon Trust Standard for Carbon Reduction
- 3. Re-Design of our Tipton Weld School to reduce energy use in ventilation, re-circulate heat and reduce hazardous waste production
- 4. Installation of an improved Building Management System at our Renfrew facility, reducing gas use
- 5. Installation of LED lighting and Passive Infra Red sensors across our Crawley facility and in particular areas of our Renfrew facility

Project Carbon

We introduced our 20% Carbon Reduction by the year 2020 target. In order to help meet this target and focus on carbon reduction across other areas of our business we launched "Project Carbon" with a team comprising senior managers from various areas of our business. Project Carbon aims to reduce carbon in the following areas: Product Performance, Infrastructure, Site Activities, Supply Chain, Individual.

Safety & Health

Health and Safety Industry Recognition

We have held BS OHSAS 18001 Occupational Health & Safety Management Systems Certification for over 15 years. We had outstanding Health and Safety Industry Recognition by winning several prestigious awards including the British Safety Council Sword of Honour Awards at Stanlow Oil Refinery and Heysham 1 Nuclear Power Station, as well as the Engineering Construction Industry Association RISE Award for promoting best practice health and safety standards.

Accomplished 5,500+ Accident-Free Days

Further success was seen at the Grangemouth Oil Refinery and chemicals complex where our team surpassed a staggering 11,000,000 man hours since their last lost time incident (LTI) in 2001. This equates to more than 5,500 days of continuous, safe working across a highly safety-sensitive working environment, incorporating year-round maintenance, turnarounds, construction, EPC projects and specialist technology services.

Thank You Campaign

In 2016, Doosan Babcock launched a campaign called 'Thank You for Staying Safe' to reinforce our safety message and engage hearts and minds. As part of this awareness and our commitment to continual improvement Doosan Babcock developed a Hand and Finger Safety Campaign to heighten awareness of the hazards and the controls,



this centered around monthly briefings delivered by line managers/supervisors, posters focusing on some of the most debilitating injuries and "Your Hands at Work" booklet which was designed and distributed across the workforce. "Push and Pull Sticks" for lifting operations were also introduced allowing focus on keeping the upper limbs away from the line of fire.



Push and Pull Sticks

Quality Management

Obtained International Standard Certification

Doosan Babcock maintains quality (ISO9001), environmental (ISO 14001) and safety and health (OHSAS 18001) management system certifications.

Achilles UVDB Certification Audit and Assessment

Doosan Babcock achieved excellent scores in the 2016 Achilles UVDB certification audit and assessment. Achilles UVDB audits and assessment are a crucial part of validating the capability, competence and compliance of suppliers. The Achilles UVDB audit comprised of a Management System evaluation and an on-site assessment. The scope involved key categories of Health, Safety, Environment, Quality, and Corporate Social Responsibility. The areas covered included purchasing, sustainability, carbon emissions, business continuity and human resources. Doosan Babcock scored 100% across all categories.

Human Resource Management

Recruiting and Fostering Talent

It remains Doosan Babcock's policy to support and encourage appropriate further education opportunities for all employees in order for them to enhance their skills and qualifications to maximize their potential and their contribution to their own and the company's goals. This was demonstrated by our employees winning three awards and two commendations at the renowned industry recognized ECITB Training and Development Awards 2016.

STEM Promotion

Doosan Babcock continues to be actively involved in supporting STEM (Science, Technology, Engineering and Mathematics) events across the UK that enhance the technical, personal and employability skills of young people typically aged between 11 – 21 years old. In 2016, Doosan Babcock "STEM ambassadors" supported the Renfrewshire Chamber of Commerce STEM activities by inviting 70 children and their teachers from local primary and secondary schools to our Technology & Engineering Building Laboratories. This visit to our facility served to inspire the children to consider engineering and science subjects for their further education studies and their careers by offering them to participate in fun opportunities.

Respect for Employees' Rights

In 2016 Selma Hunter, Director of Project Delivery attended the 5th year anniversary of the Hawthorn Club at the House of Commons in the Palace of Westminster. The Hawthorn Club is a professional international network for women in the energy sector which works towards promoting and supporting the professional development of women and facilitates increased gender diversity within the energy sector. More recently, Doosan Babcock attended the third annual Women in Nuclear UK (WiN UK) conference that attracted over 200 people across the industry to raise the profile of WiN UK's work in raising the profile and importance of gender balance.

Social Contribution

Power the Future

Power the Future focuses on the role of science and technology in the UK energy sector and highlights key issues that society is likely to face in the not too distant future. Doosan Babcock was delighted to get involved as part of its efforts to promote STEM education, in line with our CSR program.

Jeans for Genes

Jeans for Genes (United Kingdom) is a national children's charity, which raises money for the care of children and families who are affected by genetic disorders. Staff at Doosan Babcock showed their fantastic generosity with the presentation of a GBP 7,000 check to the Jeans for Genes charity.

Dream Placement

Doosan Babcock is supporting the government's Dream Placement scheme, a leadership program in Cumbria, as part of our commitment to the promotion of STEM and skills development. As part of the scheme, students spent time on-site at our Westlakes office and was given exposure to various areas of the business including project management, quality, health and safety and engineering. This gives them the opportunity to pick up knowledge on project management and leadership skills.

Doosan Skoda Power

“ Doosan Skoda Power is a world-renowned company specializing in turbine OEM technology. ”



Company Introduction & Financial Performance in 2016

Doosan Skoda Power is a world-renowned power generation equipment company with steam turbine OEM technology producing turbines since 1904 and supplying 450 turbines to 62 countries around the world. Doosan Skoda Power is the owner of steam turbine OEM technology, and since supplying the first steam turbine in 1904, it provides total service such as design, manufacture, supply, installation and commissioning of 3~1,200 MW steam turbines. We achieved world-class performance, efficiency and reliability of steam turbines through advanced engineering capabilities and highly developed manufacturing processes. Our steam turbine technologies are constantly evolving to meet the changing needs of our customers.

Order amount

Revenue

219326

Unit: US\$ Million

Business Strategy

As the power market trend changes from coal-fired power to combined-cycle power and new and renewable energy, the specialized technology development of steam turbines for combined-cycle as well as strengthening competitiveness in steam turbine models for CSP (Concentrated Solar Power), WtE and biomass have been the focus of pursuit. A variety of steam turbine models are being developed for specialized technology from the perspective of profitability and convenience of combined-cycle power plant clients and for new and renewable energy. Also, new markets continue to be pioneered in Southeast Asia, the Middle East, etc. while maintaining existing markets of Europe and Central and South America.

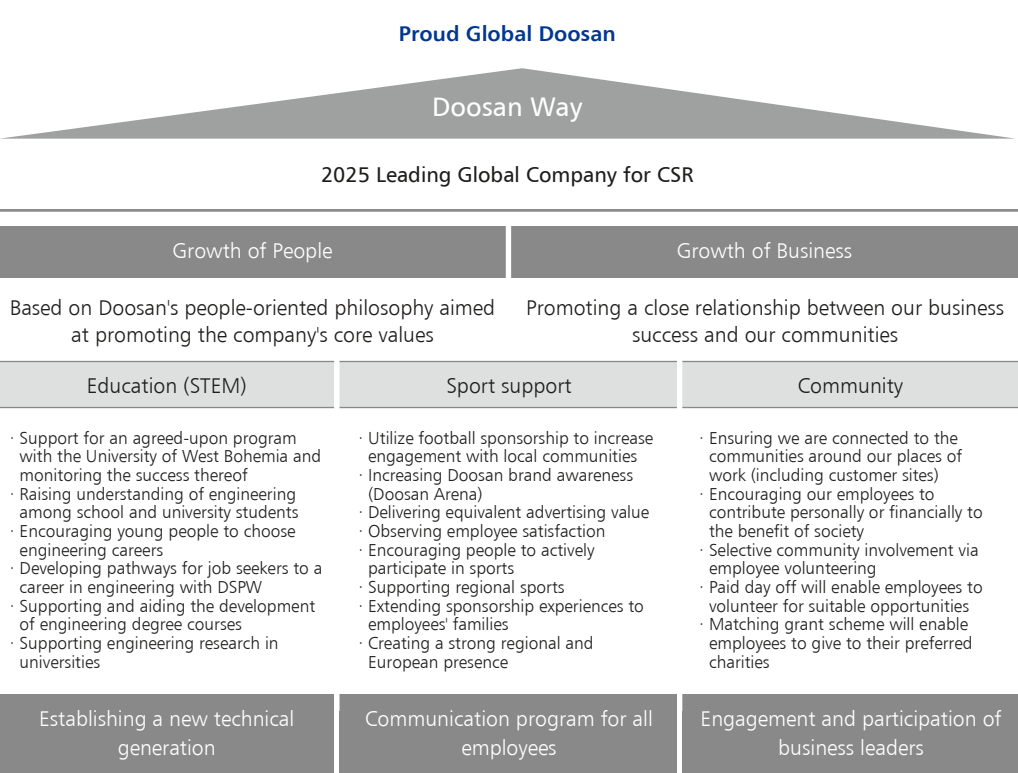
Project Outcome and Mid- to Long-term Goals

In 2016, new markets such as Oman and Indonesia were found and renewable energy orders were received from TEES Rep in the UK and Hofor in Denmark among others. Doosan Skoda Power aims to actively expand the market and product portfolio beyond 2017 to play a leading role in the global market.

Doosan Skoda Power fuses sustainable management into the scope of business. By establishing social responsibility management strategies to reinforce fundamental competitiveness while conforming to rapidly changing domestic and foreign environments, we aim to be a company that dutifully and diligently carries out our social responsibilities.

Efforts for Social Responsibility Management	Conducting CSR conferences with executives twice per year Hosting CSR donation meetings four times per year Publishing monthly CSR reports
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Strategy for Social Responsibility Management



Acquisition and Auditing of International Standards

We retain recertification to BS OHSAS 18001 and ISO 14001 certificates. And our company is required to carry out an Energy Audit and CSR Audit per Energy Management.

Environmental Management

The environmental profile of the company comprises the individual environmental indicators. To assess the trends, individual indicators are referred to the In-house Production Output. We are seeking to reduce our energy use by shifting to high efficiency lighting and installing light control systems. We also installed insulation devices on the outer wall of the building to conserve energy and cut down on heating expenses.

Turbine Modernization, Continuous Product Improvement

By improving turbine technical level and efficiency we contribute to reducing the consumption of natural resources (coal and gas) and emissions.

Safety & Health

Occupational Health and Safety & Fire Prevention

Communication was held with the RHA of Pilsen Region and with the Health Institute in Ústí nad Labem, Pilsen Branch, concerning the issues of working environment, investigation of occupational diseases and hygienic limits not only in periodic measurements but also in newly measured workplaces.

CS Management

Customer Relationships

We are performing regular customer satisfaction surveys during each year to establish positive customer relationships through our prompt response to on-site issues and improved customer responses. We have reorganized the survey methods to focus more on customer value, given that customers' product and quality needs give rise to customized customer service and improved reliability.

Social Contribution

Let's Give Children a Chance

Our last CSR deed in 2016 was giving the sum of CZK 30,000 to the 'Let's Give Children a Chance' organization. Our donation will make the start of an independent life easier for children and young people coming from the children's home.

St. Lazarus' Hospice

St Lazarus' Hospice provides end-of-life care in the Pilsen region to people who are at the final stages of their terminal illnesses. Palliative care is delivered here, which is focused on providing patients with relief from and coping with the symptoms of their illness in its final stage – pain, shortness of breath, insomnia, anxiety and fear. Our company has been working with the hospice on a volunteer basis for two years now – some of our colleagues come regularly on Doosan Day of Community Service in order to help out, and for that they deserve huge thanks.

Doosan Day of Community Service

To fulfill our corporate social responsibility and promote the sustainable development of local communities, we have been celebrating DDCS attended voluntarily by our employees. Examples of cooperation: the blood donation, Hospital elderly care - reading, talking, walks with seniors, LEDOVEC - building of the shelter, preparing bazaar of old furniture, tree trimming, Elementary school - spring cleaning in the garden, Dog Shelter - cleaning, painting of the fence, ZOO Plzeň - spring cleaning, etc.



Best Practice Case

Process Improvement in Blade Machining

In order to process an object, all steps require precision machining. This particular process goes through a pair of machines called TAJMAC and g-MILL, which often takes a significant amount of work time, which results failure to meet a requested deadline. By collaborating with the Engineering Team, Team Blades I has measured the data to reduce the number of processes and improved the software, ultimately increasing the machines' operating speed. This resulted in annual savings of USD 26,400 and shortened the production schedule.



Doosan Lentjes

“ Doosan Lentjes provides processes and technologies for the production of renewable energy. ”



Company Introduction & Financial Performance in 2016

Doosan Lentjes is a global provider of processes and technologies for energy generation from both renewable and fossil fuels. The company's specific areas of expertise include circulating fluidized bed boilers, key technologies for the generation of energy from waste and flue gas cleaning systems. Doosan Lentjes' technologies have been pioneering energy solutions for 90 years and convert millions of tons of waste into energy every year. With its three products lines circulating fluidized bed (CFB) boilers, waste-to-energy (WtE) and air pollution control (APC), Doosan Lentjes contributes to delivering on global efforts to reduce the environmental impact of generation while securing maximum levels of both resource efficiency and cost-effectiveness.

Order amount

17

Revenue

26

Unit: EUR Million

Business Strategy

The performance of the German capital goods sector on the global markets, especially on the emerging ones, has a significant impact on the growth of the German economy. Given the background of low market volumes during the last years, the price pressure will significantly affect all competitors in the industry. Furthermore, new competitors enter the markets, compensating possible technical weaknesses through low prices. Doosan Lentjes will continue to deliver outstanding, integrated solutions to its clients around the globe. The aim is to strengthen the position in key target and emerging markets through a global network of alliances.

Business Performance and Goals

With proven waste-to-energy solutions being part of a modern and sustainable waste management concept, Doosan Lentjes helps customers reliably reduce waste volumes by more than 90% while recovering both energy and materials from the combustion. The WtE processes are designed to flexibly cope with changing waste compositions and qualities while simultaneously securing compliance with all applicable environmental standards. With a focus on reducing the environmental impact of energy generation, Doosan Lentjes' advanced air pollutions control technologies are capable of removing more than 99% of sulphur dioxide and other toxins from the power plant's flue gas. Doosan Lentjes is the global center of competence for CFB, WtE and APC within Doosan Group. Head officeed in Ratingen/Germany, Doosan Lentjes has also regional offices, e.g. in Katowice/Poland and Istanbul/Turkey deploying Doosan business globally while supporting customers locally. Together with its European sister companies Doosan Babcock and Doosan Skoda Power, Doosan Lentjes provides complementary technologies, skills and value to customers the world over.

We see business and society as a close partnership and an opportunity for mutual growth. Our Corporate Social Responsibility (CSR) strategy reflects our commitment to working together with communities for a better future.

City Cycling

105% CO₂ reduction
(compared to the previous year)

We participated in the City Cycling event, achieving 105% CO₂ reduction.

Make-a-Wish Christmas Tree Campaign

33% increase

We participated in the Make-a-Wish Christmas tree campaign and delivered an increase of 33% over the previous year.

Strategy for Social Responsibility Management

Following our mission to become one of Fortune's Most Admired Companies by 2020, we put sustainability and responsibility in the center of decisions we make, technologies we create and the way we improve our business model, products and services. Unified in these shared values, we aspire to create a Proud Global Doosan that improves quality of life for people and communities around the globe.

Proud Global Doosan			
Key pillars	Education	Sustainability	Community
Detailed Action Goals	A commitment to people development and to the promotion of science, technology, engineering and mathematics (STEM) subjects among young people.	Minimizing the environmental impact of the company's operations and prioritizing product quality, health and safety.	Providing benefits to people suffering from difficult living conditions, helping to create a better environment and quality of life for them.
Action	With a regular engagement in a Germany-based initiative called Girls' Day, we aspire to encourage young women to start a career in those typically male-dominated disciplines.	We have developed products and technologies that increase energy efficiency while minimizing pollutants. Simultaneously, we have established our Supplier Code of Conduct that requires our suppliers to follow ethical and sustainable behaviors.	Our CSR-team coordinates a range of initiatives for regional charities including Neander Diakonie or Ratinger Tafel, who support people in financial or health needs.

Environmental Management

Our environmental responsibilities begin with a commitment to minimize any impact on the environment from our work. Our rigorous, systematic approach helps to ensure full compliance with all environmental and legal requirements.

Research and Development

As the global center of competence for our product lines CFB, Waste-to-Energy (WtE) and Air Pollution Control (APC) within our parent company, Doosan Heavy Industries & Construction, it is our responsibility to optimize our processes with respect to conservation of resources.

CFB Boiler Technology

Together with our colleagues at Doosan Heavy Industries & Construction, our focus is on developing advanced CFB boiler technology capabilities for super critical (SC) and ultrasuper-critical (USC) steam conditions with outputs of up to 600 MWe per unit. USC steam conditions achieve net efficiencies of up to 45%. In response to global aspirations to save resources and minimize the environmental impact of generation facilities, this helps to optimize the use of coal while reducing both emissions and the requirements for consumables used for air pollution control equipment such as limestone – milestones to increase combustion efficiency.

Air Pollution Control Plants

Facilities have resulted in both minimized plant footprint and absorber height. This compact design has substantial positive impacts on both optimum flue gas flow conditions and minimum pressure loss resulting in reduced consumption of resources.

Waste-to-Water

Together with our colleagues from Water Division of Doosan Heavy Industries & Construction, we have designed an Integrated Waste-to-Water Process (IWWP) using the steam from the incineration of municipal solid waste (MSW) for the energy intensive desalination in water-stressed regions.

Reduce the Environmental Impact around the Workplace

We participated in the City Cycling – an initiative of the City of Ratingen aspiring to encourage people to use the bicycle instead of the car. With CO₂ savings of more than 610 kg, Doosan Lentjes was ranked 7th in Ratingen.



Safety & Health

Wherever we operate in the world, we are committed to the safety of our people, partners and the local communities where we work. This culture extends to every project, where safety in design, construction and commissioning is systematically planned and implemented. We have a health and safety management systems according to OHSAS 18001:2007 in place which helps to prevent and to minimize occupational hazards identified by the company. This management system is periodically audited internally and by accredited organizations to verify the degree of compliance with legal standards and efficiency levels.

Shared Growth

We have established our Suppliers Code of Conduct that is based on our corporate values. This helps us to make sure our suppliers follow ethical and responsible behaviors, practices and standards while fully complying with all applicable laws and regulations.

Social Contribution

Education

Master Theses' Support

Following our commitment to people development and to promote STEM subjects, we are supporting students at several technical universities in writing their master thesis. We provide internship positions and individual research projects for students, in combination with professional supervision during their thesis research and writing process. This will give the students valuable practical experience by allowing them to convert theory into practical application.



R&D project with student participation

Girls' Day

We participated in the "Girls Day," an initiative of the Ministry of Family Affairs to encourage young women to start a career in typically male-dominated STEM disciplines. During this day we allowed young women from the ninth-grade upwards to explore the exciting universe of the plant construction business by immersing them in a virtual reality world. With our engagement, we aspire to proactively develop the talents of tomorrow, which is vital when it comes to the targeted recruitment of young professionals required to engineer safe and sustainable energy solutions for generations to come.

Community

Metro Marathon Run



Metro Marathon Run participants

In 2016, we continued our engagement in the Düsseldorf Metro Relay Marathon – this year for the third time. On Sunday, 24th April twenty employees divided into five relays participated in the marathon and were running for charity. Thanks to the donations of our staff members, we were in a position to financially support the organization "Ärzte ohne Grenzen" (Médecins Sans Frontières) – an internationally active initiative providing medical care for people in need, e.g. those experiencing the consequences of natural disasters or suffering from local crisis.

Activity Day of the City of Ratingen

On 3rd of June 2016, the "Aktionstag der Stadt Ratingen" (Activity Day of the City of Ratingen) took place – a community-wide day where all Ratingen-based companies had the chance to actively support social institutions. The event is to become a lovely bistro, café, and information centre that provides insurable employment opportunities for disabled people, refugees fleeing war, poverty and political grievances in their home countries as well as people suffering from long-term unemployment.

Make-a-Wish Christmas Tree Campaign



Make-a-Wish-Christmas-Tree-Campaign

On Wednesday, 30 November 2016, we followed last years' tradition and continued our engagement in our annual event "Make-a-Wish-Christmas-Tree-Campaign". Many children wishes written on cards hanging from the tree's branches allowed all Doosan Lentjes' employees to create a festive Christmas time for children by making their wishes come true – a valuable experience for both employees and children.

Book Sale for "Médecins Sans Frontières"

We continue to support social organizations with our book sale donations. Employees have the chance to bring books they no longer require to some canteen based book shelves while in return employees can take the books when paying a small fee. The collected money supports the globally acting organization "Médecins Sans Frontières" in their efforts to deliver emergency aid to people affected by armed conflict, epidemics, healthcare exclusion and natural or man-made disasters.



Doosan Power Systems India

“DPSI wants to be the leading company powering the Indian power industry, with the state-of-the-art technologies for thermal power plants, delivering the best value to our customers.”



Company Introduction & Financial Performance in 2016

Doosan Power Systems India (DPSI) is growing into a comprehensive power plant solutions company based on the OEM Boiler Technology owned by Doosan Heavy Industries & Construction, world-class manufacturing facilities at Chennai and end-to-end EPC solutions capabilities. DPSI has been the pioneer in bringing the super-critical technology to India by successfully commissioning the first super-critical boilers (660MW - 800MW) in India. DPSI is poised for a multi-fold growth, as a national player in the power sector and achieve sustainable business growth.

Order amount

2,355

Revenue

215

Unit: U\$ Million

Business Strategy

India remains one of the fastest growing emerging economies in the world. Although growth did slow down temporarily as a result of disruptions to consumption and business activity from the withdrawal of high denomination banknotes from circulation in November 2016. However, the growth is forecasted to pick up again as the government focuses on accelerating the economic reforms' momentum. The Indian government's flagship program 'Make in India' and ambitious target of 'Power for All' by 2019 will continue to be the key demand drivers for power. Over the mid-term, increase in industrial demand due to 'Make in India' and growing middle class's need for more high-quality electricity, is going to drive an upward pressure on the per capita electricity consumption. DPSI is actively seeking to introduce Doosan Power Group's environmentally-friendly technologies to be deployed in India and become a significant partner in the Indian government's commitment towards reducing the carbon footprint.

Business Performance and Goals

To fulfill the vision of becoming the leading company in India's power plant industry by providing the best value to customers, DPSI has established three strategic directions:

- 1. Strengthening fundamental competitiveness:** Profit driven new order execution by strengthening engineering and operational capabilities and effective risk management.
- 2. Fortifying business execution:** Project process management enhancement with optimized quality, cost, delivery and risk.
- 3. Advancing the foundation for sustainable business growth:** Implement a sustainable management system that meets global standards and creates positive economic & social impact for the local communities, which yields longer term value for all stakeholders.

DPSI has laid the foundation for its comprehensive sustainability management system by integrating key focus areas of Human Rights, Ethical Management, Shared Growth, EHS and Community Development & Involvement (CDI) initiatives within its business execution strategies. This is aligned with Doosan's corporate philosophy of the Doosan Way and 2G (Growth of People, Growth of Business) and drives the overall CSR strategy and its meticulous execution. In 2014, in accordance with the Indian government's CSR legislation, DPSI had formed the Board level CSR Committee. This Committee is the highest level decision-making body regarding CSR strategic direction, periodically reviewing CSR initiatives and their execution. In 2016, by incorporating the comprehensive Doosan Group philosophy, DPSI established the CSR Steering Committee, which further reinforces the DPSI CSR commitment. From 2017 onwards, annual initiatives for these five sub-sectors have been finalized along with execution plans by key executives in their respective domains and progress will be shared periodically with the CSR Steering Committee.

Social Contribution Investment

119% increase

DPSI has invested INR 5.7 million towards its social contribution. This is an increase of 119% compared to the previous year.

Rate of Serious Accidents

0%

Through the systematic safety and health management system, the rate of serious accidents has been 0% in the past three years.

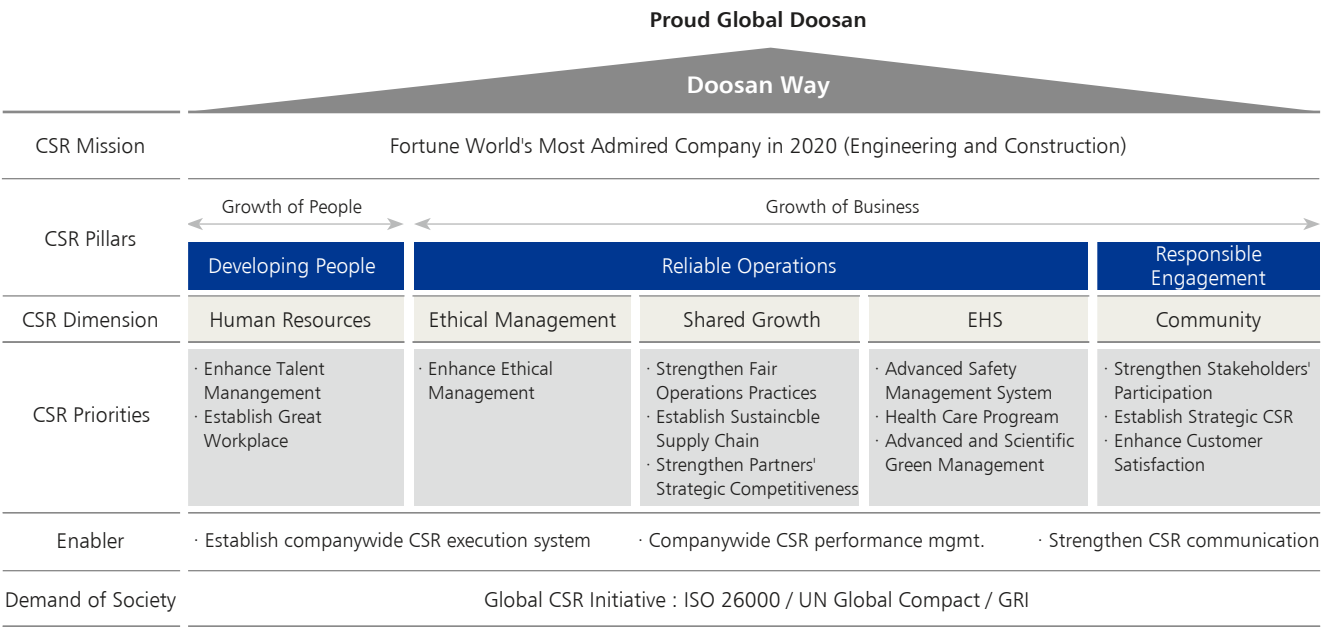
Health Camps Program

5,000 people

DPSI has supported to improve the health of about 5,000 local residents through Health Camps, which offer oral and ophthalmology checkups, health diagnoses and basic medical supplies for marginalized residents in 6 regions near project sites.

Strategy for Social Responsibility Management

DPSI's CSR strategy, underpinned with the Doosan philosophy has been focused on three pillars of 'Developing People,' 'Reliable Operations' and 'Responsible Engagement' for sustaining growth momentum. The focus is on sharing growth with all the stakeholders and communities that we co-exist with, while meaningfully engaging our employees to make a difference in the lives of the less privileged.



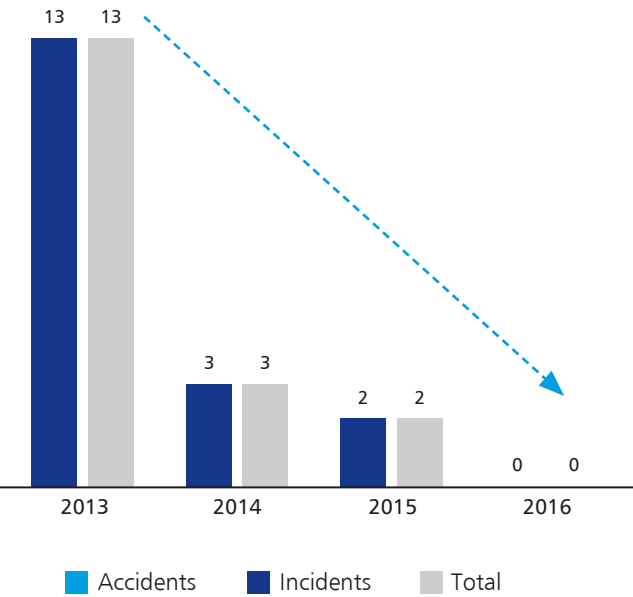
Environmental Management

The DPSI Chennai factory has been optimizing its production processes and has successfully executed numerous innovations focused on reducing its energy usage. Significant innovations focused on energy usage reduction include the online continuous preheating system in the welding process where energy cost savings of ~40% can be attributed to the modified furnace with zonal phased controls. Additionally, energy usage has declined by 32% during Post Welding Heat Treatment (PWHT) by in-house portable furnace modifications of replacing ceramic pads with scrapped strip coils type heating elements. DPSI is also focusing on increasing the use of environment friendly technologies in its operations. Also, DPSI's rigorous focus on pollution control has ensured that it has successfully met all statutory obligations as mandated.

Safety & Health

DPSI is committed to providing a safe and healthy workplace to all employees and stakeholders. The safety mindset is driven by the top management and is permeated across levels by well-structured safety procedures, in addition to safety training programs. The risks are assessed; incidents tracked and corrective and preventive action plans are developed to prevent any mishaps. DPSI has been raising greater awareness among its employees on the importance of safety in efforts to keep the operations accident-free. This awareness is supplemented by varied trainings such as technical safety, general safety, on-job-

trainings, as well as establishing well-defined response scenarios for emergency situations. As reflected in our Accident & Safety Index 2016, DPSI Chennai has reached a new milestone, as we were able to achieve the Status of 'Zero Accident Year' and an improved performance on our incidents trend.



Quality Management

To ensure timely delivery of a quality product, it is essential to have thorough knowledge of products and systems with complete understanding of scope, relevant manufacturing and systematic inspection of delivery requirements by Quality & Expediting (Q&E) Engineers. We, at Doosan, always take it as a responsibility to develop our suppliers by organizing 'Quality Schools' semi-annually. Quality Schools provide a useful platform for exchanging knowledge and learnings amongst Doosan employees, suppliers and industry experts. Doosan takes every single feedback from customers as an opportunity to 'analyze and improve' its processes. DPSI has implemented its commitment towards process improvements by launching an internal Customer Feedback Portal to log all feedbacks.

Human Resource Management

Respect for Employees' Rights

DPSI upholds the sanctity of human rights in letter and spirit and seeks to identify, assess and manage human rights impacts within its sphere of activities. DPSI considers employees' rights as a fundamental freedom and it is being extended to all employees of DPSI. DPSI provides special attention to human rights and employees are sensitized towards employees' rights through conducting 'Human Rights Week,' Policy Awareness Program·Workshop·Training on discrimination or harassment, and unfair treatment.

Recruiting and Fostering Talent

Human capital is important factor for our sustainable growth. Hence, constant review of recruitment process is important to attract and engage best available talent from the industry. Our strength is in-house capability and capacity building through continuous on-the job training and knowledge sharing. We empower employees by providing exciting opportunities and instilling a sense of ownership. As part of our new learning techniques, e-learning is being used to reach out to larger employee base.

Employee Welfare System

With a motto of 'Satisfied Employees are Productive Employees,' our welfare measures ensure well-being of our employees. In addition to statutory benefits, DPSI also provides schemes for health security for employees and their family members. Periodic health checkups, provision of social security, birthday coupons & financial assistance for emergencies are a few other tangible welfare measures extended to the employees. Benevolent policies are also in place for the occasions of marriage (self & children), the birth of children and deaths in the family. Family day celebrations, Doosan Cricket League etc. are an annual feature in order to inculcate team work and a sense of belonging among employees.

Social Contribution

DPSI's community development and involvement initiatives aim at genuine welfare of the society. We believe in promoting self-respect and developing self-reliance among our beneficiaries through structured contribution, creating pride and joy for our employees in return. We emphasize on sincere involvement of DPSI employees for social contribution under three kinds of support - Cultivation of Talent, Support for the Underprivileged and Support for DPSI Competency Related Causes. Under Cultivation of Talent, DPSI has renovated infrastructure in several schools. We also provided them education facilities like laptops, furniture, RO and stationary materials, etc. to enhance their entire educational environment. Further supporting the underprivileged, we have donated generously to the Chief Minister Relief Fund to support flood affected people in Chennai. We also donated an Ultra-Sound Scanner to a Government Primary Health Centre (Hospital) where patients previously travelled long distances for maternity related scans. We periodically organize Health Camps and road safety awareness activities for villagers. We have started to identify and support DPSI's competency related causes wherein we can utilize our employees' skills for greater social impact. This year we successfully aided drought-hit farmers around our Lara site by installing 10 borewells in their fields, ensuring and enhancing their livelihood. To maximize overall impact of our CDI initiatives, in near future, DPSI aspires to support more such competency related causes.

Best Practice Case

Improved Productivity Through Development of Innovative Rotating Jig

With a stringent goal to meet customers' timelines, processes that consume the longest time were improved. Potential issues with welding work that require highly complicated postures, excessive deformation of products and accidents during turning of products have been investigated and evaluated in order to innovate and develop a rotating jig using scrap materials. This innovation has successfully reduced the time taken for product manufacturing and has optimized the overall manufacturing process.

Doosan Vina

“Doosan Vina supports the global production system of Doosan Heavy Industries & Construction as it manufactures boilers, seawater desalination facilities and transport equipment, all of which are major tools in generation and desalination projects.”



Company Introduction & Financial Performance in 2016

Doosan Vina is the one and only generation equipment manufacturers in Vietnam, established in Vietnam's Dung Quat Economic Zone in November 2006. The primary areas of business are boilers, port facilities and seawater desalination facilities in which the company exports to 28 countries around the world including Vietnam based on the experiences accumulated in over 200 projects. With the level of quality that exceeds customers' expectations and outstanding technology, it firmly established a global business network with Doosan Heavy Industries & Construction and strives for continuous growth and development.

Order amount

292

Revenue

227

Unit: USD Million

Business Strategy

Technical capabilities in boilers, port and desalination facilities, etc. are to be continuously improved. In development businesses, we plan to consistently expand the spectrum of our supply range by taking part in India's Obra-C project and signing delivery contracts for boiler materials with global corporations such as Japan's IHI. For port facilities, we plan on successfully manufacturing port cranes set to be supplied to India, and plan to ship the first cranes to Mumbai, India. Moreover, for desalination facilities, we plan to expand our production of desalination facilities in the Middle East region by successfully manufacturing those for Kuwait's Az Zour North project.

Project Outcome and Mid- to Long-term Goals

Even amidst many difficulties that the worldwide development industry has faced, collaboration with Doosan Heavy Industries & Construction in addition to active internal activities to obtain orders has resulted in profits for two consecutive years.

- 1. Development business area:** The Mong Dung II power plant, constructed in Northern Vietnam, was completed earlier than originally planned, achieving outstanding customer satisfaction in quality and development efficiency. Simultaneously, we supply boilers, tools and materials and steel-frame structures to various development projects including Vin Tanh 4, Vin Than 4 Estensing and Song hau 1, which is for supplying energy in the southern region.
- 2. Port facilities area:** We have obtained orders for port crane facilities, which are manufactured and supplied to Singapore, Saudi Arabia, etc. In particular, through independent execution from design to production and shipment, we contribute to not only growth of the Vietnamese machine industry but also to the improved recognition of "Made in Vietnam" products around the world.

Doosan Vina aims to contribute to the locals' improved quality of life as well as development of the machine industry in Vietnam. Though we have contributed to create a healthy local community through a decade of medical and educational community services, we will continue to lead the growth of the Vietnamese machine industry through fostering technically competent professionals and localization.

Settlement Period of CSR Activities (2006-2015)

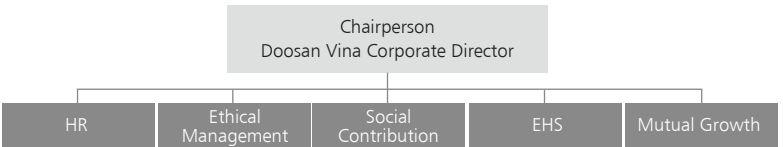
- Seek donations and social contribution activities to improve the welfare of local communities

Growth Period of CSR Activities (2016 and beyond)

- Continuously contribute to the improvement of local residents' "quality of life"
- Continue medical services, improvement of residential environment, and scholarship contribution activities
- Contribute to development of the Vietnamese machine industry
- Foster technically competent manpower, nurture subsidiary companies, teach advanced management techniques, etc.

Structure of CSR Operating Organization

For companywide CSR activities, we have formed a CSR operating organization structure and established and executed activity plans for each department.



Medical Treatment

30,000
people (cumulative)

Providing medical services and required nutrition to many Vietnamese residents and students

110
people (cumulative)

Supporting free surgeries for patients with incurable diseases

Talent Management

Employee Education

Doosan Vina offers a diverse range of training for each level to help cultivate job and leadership competency in employees. For office workers a focus is placed on reinforcing leadership, work and global business competency to develop the next-generation of leaders and, for technical staff, training for the improvement of specialized skills and leadership is conducted on a regular basis. Also, training on Code of Conduct compliance and foreign languages are carried out to internalize the Doosan Way.

Establishing a Positive Workplace

We abide by Vietnam's Labour Standards Act and human rights principles as specified by the International Labour Organization and, provide sufficient opportunities for rest and welfare programs to improve the quality of life of workers. Also, a variety of services such as congratulatory and condolence expenses, dormitory, shuttle service, corporate housing and regular health exams at the company hospital, is being provided for the convenience and health of the employees. In particular, education on human rights is being conducted on a regular basis in order to realize the value of Doosan Way that prevents various instances of human rights violations and is focused on unity.

Contribute to the Growth of the Vietnamese Machine Industry

To contribute to the growth of the Vietnamese machine industry, Doosan Vina performs activities to foster technical manpower (390 engineers, 1,379 skilled workers), instruct subcontractors (2 companies) and teach advanced management techniques.

Response to Climate Changes

Energy Usage Reduction Activities

Through regular inspections on the state of energy usage, energy loss due to waste is being minimized. Also, by implementing the movement of turning off air conditioners 15 minutes before the end of daily work, energy usage is being reduced throughout typical daily tasks and, when an air conditioner is running, we advise the closing all doors and windows. When certain employees work late, we ask them to always turn off all lights and electronic devices when they leave.

Environmental Pollutant Control

Waste water generated within the company is less than roughly 45% of the Vietnamese legal standard on pollutant emissions, and is being released after undergoing internal processing. For facilities that generate air pollutants, air control equipment such as bag filters and wet scrubbers is installed to allow for the release of air pollutants equivalent to less than 45% of the Vietnamese legal standard. We will continue to make efforts to reduce environmental pollutants in the future.

Social Contribution

Social Contribution Activities to Improve Local Residents' Quality of Life

Doosan Vina has selected three primary social contribution activity themes of medical services, educational activity support and residential environment improvement to conduct social contribution activities and, thus, invested more than USD 550,000 up to 2016. For medical service activities, Doosan Vina has performed medical treatments on about 21,600 patients in association with Chung-Ang University Hospital. In addition, we have invited patients to Korea every year to conduct surgeries (85 child patients, 19 cataract patients, 2 heart surgery patients). In addition, we have provided more than 30 physical treatment devices worth about USD 153,000 to four hospitals in the Quang Ngai region, and have conducted medical technique instruction activities through collaboration between Quang Nam General Hospital and Chung-Ang University Hospital since 2012.



In the education area, we have presented 1,077 scholarships to students of 12 Vietnamese universities and signed partnership agreements on education and recruitment with 17 colleges as well as conducted counseling activities every year. Also, we have provided school supplies to local elementary schools and currently conduct various education and community service programs in association with Chung-Ang University students. In the housing area, we have either constructed or performed renovation activities on 31 houses for the needy.










05
Appendix

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Stakeholder Engagement and Materiality Assessment

Communication with Stakeholders

Doosan Heavy Industries & Construction defines stakeholders as individuals or organizations that have a significant influence on the management of the company and divides it into shareholders, customers, employees, suppliers, local community, government and competitors. Active mutual communication is enabled through communication channels for each group of stakeholders, and important issues are examined on a regular and constant basis to reflect to the management.

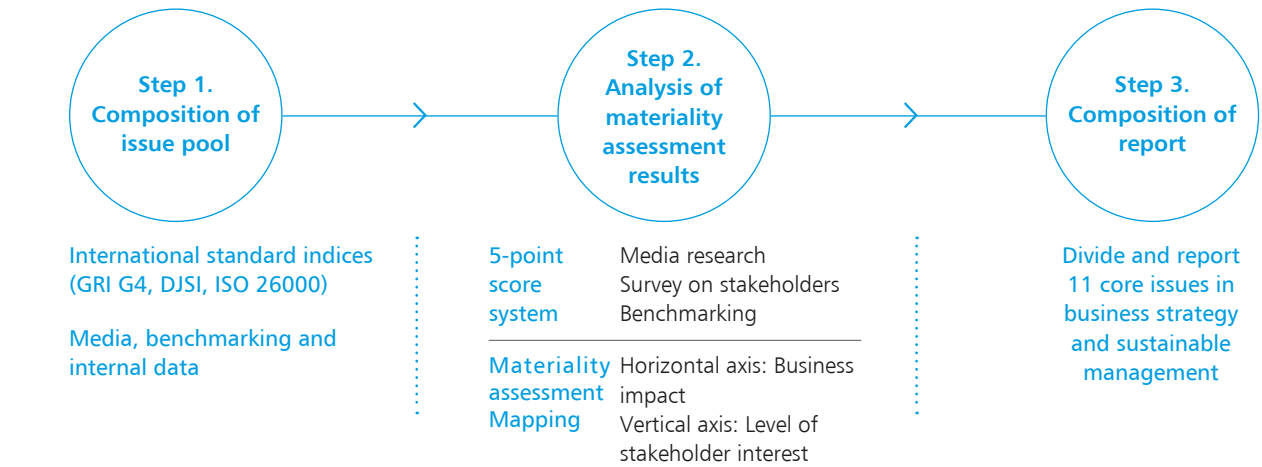
	Detailed categorization	Communication channels
 Shareholders	<ul style="list-style-type: none">Doosan CorporationForeign investorsInstitutional investorsMinority shareholders	<ul style="list-style-type: none">Investment relations (IR) eventsConferencesOverseas NDRs (Non-Deal Roadshow)
 Customers	<ul style="list-style-type: none">Local public power generatorsLocal private power generatorsOverseas clients	<ul style="list-style-type: none">RoadshowsTechnology briefingsVOC (Voice of Customer)
 Employees	<ul style="list-style-type: none">Headquarter employeesOverseas branch offices' employeesOverseas subsidiaries' employees	<ul style="list-style-type: none">Industrial Safety and Health CommitteeLabor-Management CouncilOperation of the Human Rights Committee for minoritiesTraining human rights through two-way communication
 Suppliers	<ul style="list-style-type: none">Tier 1 suppliersTier 2 suppliers	<ul style="list-style-type: none">Consultative groupsTOP (Total Operational Performance)Win-Win Call CenterShared growth conferencesSupplier group discussion meetingsInvitations to cultural events
 Local Community	<ul style="list-style-type: none">Local residentsAcademia, research institutesNGOs	<ul style="list-style-type: none">Consultative groupsSocial volunteer groupsYouth Energy Project/Career Exploration Group for YoungstersPrograms affiliated with social welfare centers and community children's centersDoosan Day of Community Service
 Government	<ul style="list-style-type: none">Central/local governmentsRelated organizations	<ul style="list-style-type: none">Overseas seminarsExhibition participation
 Competitors	<ul style="list-style-type: none">Power generation facility manufacturersDesalination and water treatment plant companies	<ul style="list-style-type: none">Quarterly IR presentationsPress releasesCompany visits

Overview of Materiality Assessment

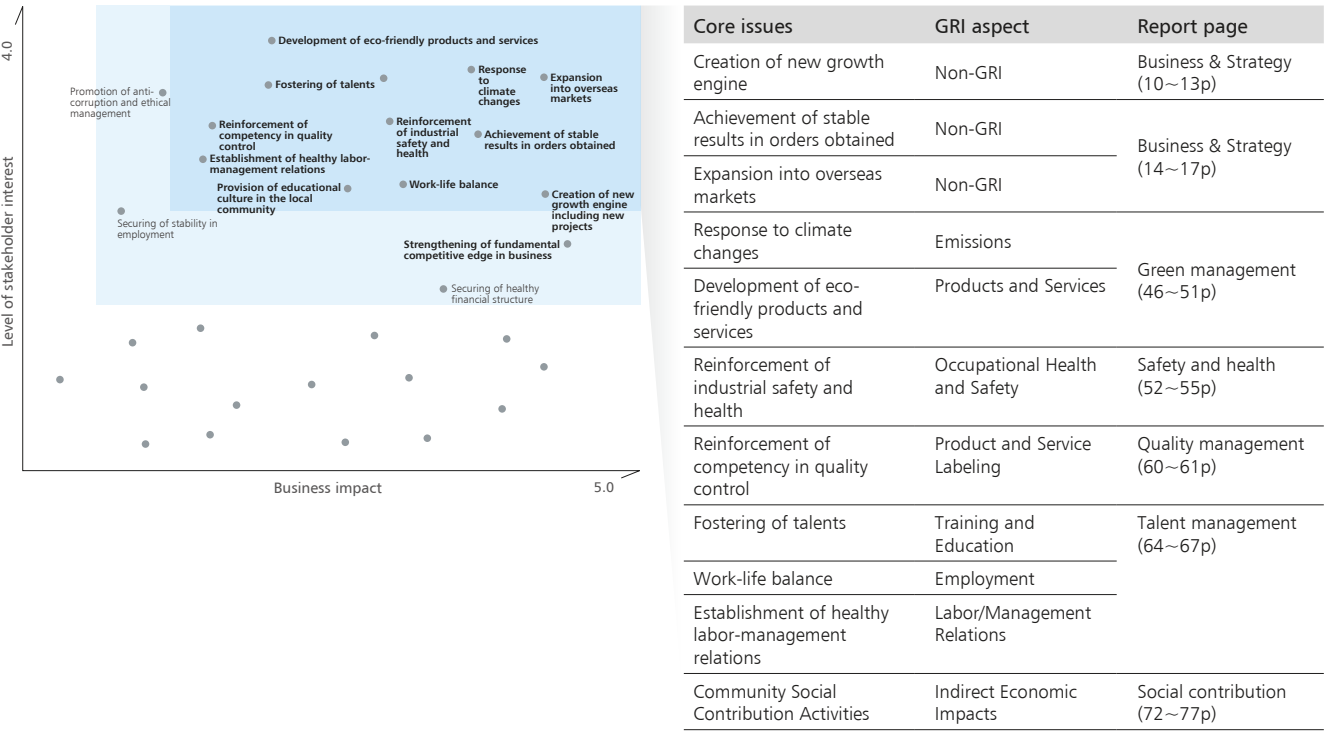
Doosan Heavy Industries & Construction aims to utilize integrated reports as an important channel for communication with stakeholders. Thus, a materiality assessment is conducted every year to verify the issues that significantly affect sustainability. The issues deduced are importantly reflected in the management strategies, and subsequent results and future goals are being reported through the integrated reports.

Process

An issue pool has been formed based on GRI G4, an international standard index of sustainable management, DJSI, ISO 26000 as well as media research, reported issues of advanced companies in the same industry, and internal data. The issue pool has been standardized based on surveys of internal and external stakeholders, media research and benchmarking results to deduce 11 core issues.



Results



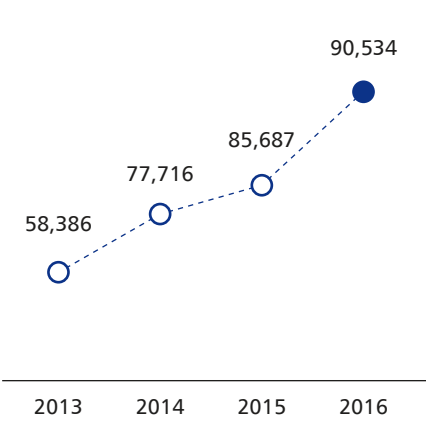
Performance Summary

Financial Results

Financial results

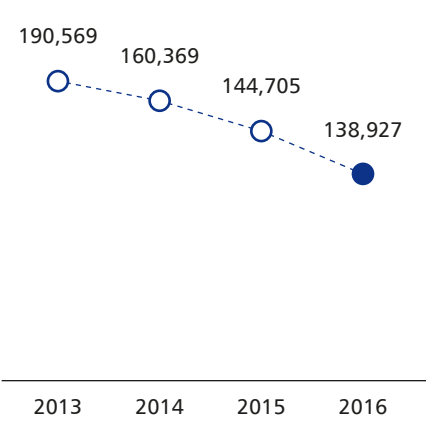
Orders obtained

Unit: KRW 100 million
On a consolidated financial basis



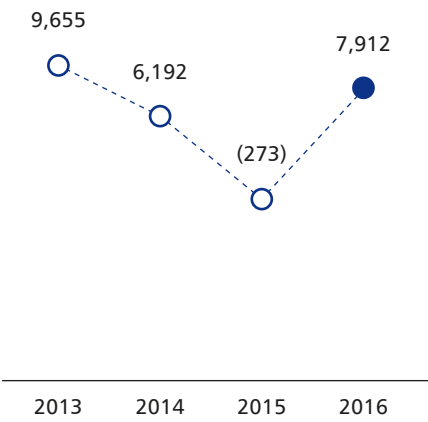
Revenue

Unit: KRW 100 million
On a consolidated financial basis



Operating profit

Unit: KRW 100 million
On a consolidated financial basis



Despite delays in certain target projects, the amount of orders received on a consolidated management basis in 2016 recorded 9.0534 trillion KRW, a figure that is 484.7 billion KRW greater than the previous year, through large-scale EPC orders overseas.

Revenue based on consolidated financial statements recorded 13.8927 trillion KRW, 577.8 billion KRW less than the previous year. Although the heavy industry sector recorded a smaller sales figure than the year before, the revenue of subsidiaries such as Doosan Infracore showed a relatively stable trend. Operating profit increased from the previous year thanks to Infracore's restructuring and other subsidiaries' efforts to improve COGS, and net income also rose significantly by KRW 818.5 billion as interest expense were reduced due to a significant increase in operating profit as well as a reduction in debt. The heavy industry's sales on a consolidated management basis in 2016 was 6.2013 trillion KRW, down from 6.7206 trillion KRW from the previous year. Major reasons include delays in orders for certain projects such as local nuclear facilities and issues with the progress of existing projects. Despite the drop in revenue, operating profit (287.4 billion KRW, YoY +23.6 billion KRW) and operating profit to sales ratio (4.6%, YoY +0.7%) were improved compared to the previous year through various cost reduction efforts. Net income also turned to black (20.5 billion KRW, 2015: -252.3 billion KRW).

In 2017, Doosan Heavy Industries & Construction is expected to attain 10.6 trillion KRW in orders, 7 trillion KRW in revenue and 350 billion KRW in operating profit on a consolidated management basis. If the current positive results of orders lead to an increase in revenue coupled with efforts for cost reduction, profitability will also be improved.

Other Financial and Non-Financial Performance

Economy

Largest contributions and expenditures

(Unit: KRW million)

2014		2015		2016	
Donated to	Amount	Donated to	Amount	Donated to	Amount
Large and Small Business Cooperation Foundation	500	Gyeongnam Center for Creative Economy and Innovation	2,239	Large and Small Business Cooperation Foundation	500
Korea Foundation	205	Large and Small Business Cooperation Foundation	500	Korea Technology Finance Corporation	416
2013, 2014 Association of the Electricity Supply Industry of East Asia and the Western Pacific	100	Korea Nuclear Association for International Cooperation	367	Korea Credit Guarantee Fund	312
Korean Nuclear Society	30	Korea Credit Guarantee Fund	312	Gyeongnam Center for Social Economy and Entrepreneurs	53
Korea Accounting Institute	25	2015 World Water Forum Organizing Committee	250	Korean Nuclear Society	30

* DHIC is not engaged in donation or supportive activities to political campaigns, political organizations, lobbyists or lobbyist organizations according to legal regulations in Korea and Code of Conduct.

Total contributions

Category	Unit	2014	2015	2016
Donations	KRW million	11,683	12,166	8,962

R&D spending¹⁾

Category	Unit	2014	2015	2016
R&D expenses	KRW 100 million	1,568	1,665	1,932
Sales	KRW 100 million	54,968	51,463	47,053
R&D spending as % of sales ²⁾	%	2.85	3.24	4.11

1) Calculated based on Doosan Heavy Industries & Construction Headquarters

2) 2015 data was revised due to internal reasons

Environment

Usage and recycling of raw materials

Category		Unit	2014	2015	2016	Remark
Non-renewable raw materials	Scrap iron	tonnes	133,124	143,694	134,461	Externally purchased
	Recovered iron	tonnes	71,385	78,214	77,908	Internally recycled
	Chips	tonnes	14,247	14,616	12,363	Internally recycled
	Ferro alloy	tonnes	6,826	7,586	7,318	Externally purchased
	Quicklime	tonnes	8,948	9,483	8,934	Externally purchased
	Fluorspar	tonnes	5,957	6,169	5,788	Externally purchased
	Lump coal	tonnes	851	870	950	Externally purchased
Sum		tonnes	241,338	260,632	247,722	
Recycled raw materials	Recovered iron	tonnes	71,385	78,214	77,908	
	Chips	tonnes	14,247	14,616	12,363	
Percentage		%	0.355	0.356	0.364	

Performance Summary

Other Financial and Non-Financial Performance

Energy

Energy usage and purchase

	Category	Unit	2014	2015	2016
Non-renewable raw materials	LNG	Nm³	40,673,946	41,231,486	39,648,695
	LPG	Nm³	172,043	160,512	196,049
	Gasoline (car)	L	1,255,282	2,297,619	587,932
	Diesel (car)	L	1,132,823	1,769,380	1,186,886
	LPG (car)	L	-	6,700	12,582
	Generator gasoline	L	6,088,342	365,688	6,119
	Generator diesel	L	921,821	656,548	1,206,014
	Heating kerosene	L	22,859	38,089	16,750
	Hi-sene	L	5,923,398	4,946,804	4,825,713
	Other (anthracite)	kg	-	-	21,600
	Total		56,190,514	51,472,826	47,708,340
Purchased energy	Electricity	Kwh	340,037,118	325,257,573	315,946,555

Amount of energy reduction

	Category	Unit	2014	2015	2016
	Heating equipment improvement	tCO ₂	2,291	1,803	0
	Operation method improvement	tCO ₂	6,545	5,152	737
	Introduction of high-efficiency equipment	tCO ₂	2,946	2,318	3730
	Minimization of combustion	tCO ₂	9,818	7,727	0
	Total	tCO ₂	21,600	17,000	4,467

Cost and reduction of energy consumption

	Category	Unit	2014	2015	2016
	Amount of usage*	TJ	5,701	5,395	5,158
	Consumption cost	KRW million	94,801	80,283	73,400
	Amount of cost reduction	KRW million	16,260	19,660	26,600

* Reduction goal: 100TJ reduction (2016 and 2017)

Water

Total water intake by source

	Category	Unit	2014	2015	2016
	Surface water	tonnes	53,667	75,619	25,907
	Underground water	tonnes	39,701	74,507	110,251
	Rainwater repository within organization	tonnes	0	50,200	40,000
	Wastewater from another organization	tonnes	0	28,614	4,860
	Water supply system	tonnes	1,326,587	1,844,467	1,928,555
	Total	tonnes	1,419,955	2,073,407	2,109,573

Reuse of water

	Category	Unit	2014	2015	2016
	Recycled and reused water	tonnes	25,900	31,716	40,060

Emissions to atmosphere

Greenhouse gas emissions

	Category	Unit	2014	2015	2016
	Direct greenhouse gas emissions	tonnes	149,189	136,861	127,608
	Indirect greenhouse gas emissions	tonnes	162,509	155,820	150,881
	Total	tonnes	311,698	292,681	278,489

Reduction in greenhouse gas emissions

By conducting greenhouse gas reduction activities such as fuel conversion, process optimization, etc., we have been achieving an annual reduction of about 10% in emissions compared to the previous year.

	Category	Unit	2016 Performance	2016 goal	2017 goal
	Reduction in emissions	tonnes	3,000	4,939	2,500

Amount of air pollutant emissions

	Category	Unit	2014	2015	2016
	VOC (volatile organic compounds)	tonnes	13.67	10.50	10.20
	PM (particulate matter)	tonnes	38.0	37.0	36.7

Amount of hazardous chemical substances consumption

	Category	Unit	2014	2015	2016
	No. substances	type	14	14	5
	Amount of usage	tonnes	800	800	420

* Goal for replacement of hazardous chemical substances: 6 types (2016), 2 types (2017)

Wastewater and waste

Amounts of treated wastewater discharged and recycled

	Category	Unit	2014	2015	2016
	Amounts of treated wastewater discharged	tonnes	261,036	290,493	283,789
	Amount of wastewater recycled	tonnes	25,900	25,900	25,900

* Wastewater treatment method: Physiochemical treatment method

* Final Discharging point is Masan Bay

Quality of treated wastewater

	Category	Unit	2014	2015	2016
	COD	mg/l	12.87	15.76	10.07
	SS	mg/l	2.74	1.89	2.79
	N-H	mg/l	0.73	0.13	0.10
	Cr	mg/l	0.001	0.001	0.001
	Zn	mg/l	0,013	0.08	0.02
	Pb	mg/l	0.001	0.002	0.00
	Fe	mg/l	0.021	0.096	0.031
	T-N	mg/l	4.053	4.095	4.115
	T-P	mg/l	0.022	0.022	0.081

Amount of waste disposal

	Category	Unit	2014	2015	2016
Hazardous waste	Recycled	tonnes	628	679	524
	Incinerated	tonnes	504	677	422
	Landfill	tonnes	7,864	9,562	3,974
	Others	tonnes	3,494	11	3,052
Non-hazardous waste	Reused	tonnes	-	308	269
	Recycled	tonnes	74,496	78,647	68,711
	Incinerated	tonnes	2,073	314	1,442
	Landfill	tonnes	53,675	11,242	4,747
	Others	tonnes	18,694	13,280	49,978

Performance Summary

Other Financial and Non-Financial Performance

Total environmental protection expenditures and investments

Total expenses regarding environment

Category	Unit	2014	2015	2016
Investment	KRW million	8,500	12,000	3,000
Waste disposal cost	KRW million	2,618	1,986	1,293
Waste Test & Analysis cost	KRW million	2	5	5
Recycling cost	KRW million	607	617	577
Waste recycling earning	KRW million	1,227	818	425
Other costs	KRW million	909	1,480	1,480
Total	KRW million	13,863	16,906	6,780

Eco-friendly purchasing

Category	Unit	2014	2015	2016
Amount of products purchased	KRW million	1,779	18,597	29,147

Overview of environmental regulation violations

Regarding environmental regulations, there have not been any violations, penalties and environment-related liabilities for the past 3 years.

Society

Employees

Overview of employees

Category			Unit	2014	2015	2016
Total no. of employees			person	8,388	7,779	7,728
Per employ-ment contract	Permanent position	Male	person	7,148	6,753	6,770
		Female	person	300	284	287
	Contract position	Male	person	836	651	591
		Female	person	104	91	80
Minority group	Disabled	Male	person	197	174	167
		Female	person	3	3	3
		Total	person	200	177	170
	Men of national merit	Male	person	179	176	173
		Female	person	6	6	6
		Total	person	185	182	179

New employment and turnover rate

Category		Unit	2014	2015	2016
New employment	Employees	person	740	442	488
	Percentage	%	8.82	5.68	6.31

Category		Unit	2013	2014	2015	2016
Job turnover	Male	person	43	65	83	86
	- Male (retired, voluntarily resigned)	person	33	333	4	128
	Female	person	21	16	16	14
	Subtotal	person	97	414	103	228
	Turnover rate	%	1.36	4.94	1.32	2.95
	Voluntary employee turnover (net turnover)	person	64	81	99	100
	Voluntary employee turnover rate	%	0.90	0.97	1.27	1.29

Employee education

Category		Unit	2014	2015	2016
Total no. of training hours		hours	617,917	562,253	633,835
No. of training hours per person	Male	hours	100.8	97.6	86.4
	Female	hours	112	101.6	87.2
	Total	hours	83	78	82

Overview of labor union membership

Category		Unit	2014	2015	2016
Total number of workers (subject to membership)		person	4,240	4,287	3,878
unions and the labor-management council		person	2,241	2,241	2,172
Percentage of people who signed up for labor unions and the labor-management council		%	52.9	52.9	56.0

Parental leave

Category		Unit	2014	2015	2016
Employees on parental leave	Male	person	-	2	8
	Female	person	46	38	44
Employees who return to work after parental leave	Male	person	-	-	2
	Female	person	49	36	38
Return rate	Male	%	-	-	100
	Female	%	96	97	100
Employees who work continuously for 12 months after parental leave and return to work	Male	person	-	-	-
	Female	person	19	36	35
Retention rate after return		%	79	73	97

Performance evaluation and compensation

All employees are assessed according to fair, transparent performance evaluation. The criteria for evaluation and compensation are differentiated based on individual work performance and competency, and there is no discrimination based on personal differences in gender, religion, education level, etc.

Proportion of senior management hired from the local community

Category		Unit	2016
Local employees		person	137
Senior manpower among recruited personnel		person	12
Percentage		%	9

Compliance with laws and regulutons

Legal actions for unfair trade practices

Category	Unit	2014	2015	2016
Legal actions for unfair trade practices	case	1	1	2

* We were indicted in 2016 for allegedly carrying out illegal activities, in accordance with the Monopoly Regulation and Fair Trade Act, during the bidding process for the construction project of Wonju-Gangneung high-speed railway in 2013, and charged with a fine of KRW 40 million. Also, we were imposed a penalty by the Fair Trade Commission in 2016 on the grounds that unfairly subcontracting was agreed to in such a way as to make the lowest bid once again without any justifiable reason that took place from 2011 to 2013.

Penalties and sanctions for violations of laws and regulations

Category	Unit	2014	2015	2016
Total amount of imposed fines	KRW 100 million	166	45	3.6
Number of non-monetaty sanctions	case	-	-	-
Number of lawsuits	case	2	-	1

* Paid approx. KRW 360 million in 2016 including a penalty of KRW 40 million for illegal joint activities occurred during the bidding process for the construction project of Wonju-Gangneung high-speed railway, and a penalty of KRW 320 million for an illegal payment of subcontracting fee.

Health & Safety

Lost time incident rate (LTIR¹⁾)

Category		2014	2015	2016
All	Employees	0.44	0.25	0.31
	Suppliers	0.08	0.08	0.16
Local ²⁾	Changwon Direct Operation	0.16	0.21	0.42
	Changwon suppliers	0.07	0.00	0.23
	Local construction	0.08	0.06	0.09
Overseas	Construction	0.01	0.00	0.00
	Subsidiaries	0.16	0.11	0.10

1) LTIR: Lost Time Incident Rate, U.S. OSHA
2) Local lost time incident rate applies the converted accident rate announced by Korean Ministry of Employment and Labor until 2014

Zero accident hours achieved in construction projects

Site		Unit	2016
Local	Saemangeum Group Energy Facility	1k hours	1,820
	Wonju-Gangneung Express Railway	1k hours	1,492
	Incheon-Gimpo Freeway	1k hours	910
	Kudgi, India	1k hours	22,000
Overseas	Al Ansab, Oman	1k hours	1,000
	Yanbu Ph.3, Saudi Arabia	1k hours	14,000
	Lara, India	1k hours	17,000

Human rights and anti-corruption

Human rights and corruption risk assessment¹⁾

Category	Unit	2014	2015	2016
Total no. of workplaces	ea	88	101	104
No. of workplaces that have been evaluated	ea	72	84	86
Percentage of workplaces	%	82	83	83

1) The number of workplaces is calculated including local and overseas workplaces, subsidiaries, and construction sites.

Performance Summary

Other Financial and Non-Financial Performance

Official reporting of complaints related to human rights¹⁾

Category	Unit	2014	2015	2016
No. of complaints officially reported	case	23	47	56

1) Including the number of reports from suppliers

Identified cases of corruption and mitigation measures

Category	Unit	2014	2015	2016
No. of identified cases ¹⁾	case	9	2	5
No. of employee disciplinary action case	case	7	2	3
No. of supplier disciplinary action case	case	14	2	4

1) The data that includes corruption case of supplier

Training on anti-corruption policies and procedures

	Category	Unit	2014	2015	2016
Employees	No. of people subject to education	person	8,388	7,779	7,728
	No. of people who completed education	person	1,795	7,242	7,550
	Percentage of education completion	%	21.40	93.10	97.70
Suppliers	Total no. of suppliers	ea	220	194	170
	No. of suppliers that completed education	ea	220	194	170
	Percentage of suppliers having completed education	%	100	100	100
	No. of education held	time	4	4	4
	No. of people who have received education	person	880	776	680

Major negative impact on society and measures implemented within supply chain

Category	Unit	2014	2015	2016
No. of suppliers that have been evaluated on social impact	companies	1,073	852	743
No. of suppliers that have been verified to actually or potentially have a negative social effect	companies	14	2	2
Percentage of suppliers that have discussed the evaluation results for improvement	%	92.86	100	100
No. of corruption cases in which penalties have been imposed on affiliates	case	14	2	4

Social contribution

Participation in community service activities

	Category	Unit	2014	2015	2016
No. of activities		case	605	412	621
Employee participation	Participants	person	3,721	3,853	4,201
	Participation rate	%	52	58	60
Amount of community service hours	Total	hours	33,775	31,816	35,490
	Per person	hours	5.17	5.19	5.93

Expenses in local community

	Category	Unit	2014	2015	2016
Social contribution expenses	Total	100 mil. KRW	132	127	94
	Charitable donations	100 mil. KRW	22	14	19
	Investment into local community	100 mil. KRW	99	106	63
	Others	100 mil. KRW	11	7	12
Expense details by type	Fostering of talent	100 mil. KRW	83	65	53
	Supporting minority groups	100 mil. KRW	21	13	14
	Community-based	100 mil. KRW	28	49	27

Participation in local community, impact assessment

Category	Unit	2014	2015	2016
Regions in which local community growth programs are run	%	16	37	29
Local development program operation region considering stakeholder needs	%	16	37	29
Operation of local community-wide consulting committees and processes, which includes minority groups	%	16	37	29
Official community grievance handling process workplace	%	100	100	100

UN Global Compact

Doosan Heavy Industries & Construction has joined the UN Global Compact since 2004 and has complied with the ten principles of human rights, labor, environment and anti-corruption. We are committed to fulfilling our social responsibilities and role as a global leader in sustainable management that represents Korea by reflecting international standards for social responsibility management and by solidifying our commitment to social responsibility management.

ten principles		page
Human Rights		
principles 1	Businesses should support and respect the protection of internationally proclaimed human rights	3, 38, 64, 70~71
principles 2	make sure that they are not complicit in human rights abuses.	
Labour		
principles 3	Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining	64, 66, pdf 108
principles 4	the elimination of all forms of forced and compulsory labor	64
principles 5	the effective abolition of child labor	64
principles 6	the elimination of discrimination in respect of employment and occupation.	64
Environment		
principles 7	Businesses should support a precautionary approach to environmental challenges	46~51, pdf
principles 8	undertake initiatives to promote greater environmental responsibility	120~121
principles 9	encourage the development and diffusion of environmentally-friendly technologies.	46~47
Anti-Corruption		
principles 10	Businesses should work against corruption in all its forms, including extortion and bribery.	44~45, 70~71, pdf 109~110

Overview of Association Memberships

Category	Associations that have been joined	Category	Associations that have been joined
Common	Large and Small Business Cooperation Foundation	Welding	Korean Welding & Joining Society
	Korea Technology Finance Corporation		Korea Radioactive Waste Society
	Korea Credit Guarantee Fund	Nuclear power	Korea Nuclear Equipment Advancement Association
	Korea New & Renewable Energy Association		Korea Atomic Industrial Forum
	National Academy of Engineering of Korea		Korea Nuclear Society
	Korean Federation of Science & Technology Societies		Korea Nuclear Association for International Cooperation
	Korea Management Association	EPC	Construction Association of Korea
	Korea International Trade Association		Korea Housing Builders Association
	Korea Industrial Technology Association		Korea Federation of Construction Contractors
	Korea Engineering & Consulting Association		Korea Electrical Contractors Association
	Korean Society of Combustion	Casting & forging	Korea Information Certificate Authority
	Korea Plant Industries Association		International Contractors Association of Korea
Power generation	Korean Institute of Electrical Engineers		Korean Institute of Metals & Materials
	Korean Society of Mechanical Engineers	Quality	Korea Foundry Society
	Korea Electric Association		Korea Iron & Steel Association
	Korea Association of Machinery Industry		Korean Standards Association
	Korea Wind Energy Industry Association		Korean Foundation for Quality (KFAQ)
	Korea Wind Energy Association		

Performance Summary

Consolidated Statements
of Financial Position

As at December 31, 2016
As at December 31, 2015
As at December 31, 2014

(Unit : Korean won in units)

	December 31, 2016	December 31, 2015	December 31, 2014
Assets			
Current assets	9,035,151,846,465	10,724,405,644,031	10,812,341,341,836
Cash and cash equivalents	1,369,500,991,930	1,893,007,747,878	1,297,560,213,962
Short-term financial instruments	213,506,823,569	475,822,932,100	591,481,515,302
Short-term investments in securities	141,391,168,087	440,994,129	31,385,470,088
Trade receivables	2,077,740,448,109	2,512,793,814,167	2,564,431,426,660
Due from customers for contract work	1,930,663,406,075	1,898,305,160,818	2,035,389,942,663
Other receivables	310,731,723,694	389,866,374,113	331,073,026,441
Prepayments	509,753,411,844	617,000,416,576	623,678,714,210
Prepaid expenses	101,614,362,264	80,051,592,909	97,716,964,385
Short-term loans	114,094,313,691	178,384,058,498	541,593,602,039
Derivative financial assets	24,494,373,789	24,409,004,032	37,340,410,136
Firm commitment assets	108,462,686,041	111,500,155,075	64,068,051,449
Inventories	1,730,606,651,053	2,196,491,764,508	2,331,909,520,735
Other current assets	237,819,498,203	227,111,159,002	264,712,483,766
Non-current assets classified as held-for-sale	164,771,988,116	119,220,470,226	
Non-current assets	15,797,416,343,890	16,535,734,966,227	16,739,565,170,467
Long-term financial instruments	31,395,752,125	77,402,476,564	84,712,208,686
Long-term investments in securities	286,332,778,653	190,420,094,063	187,942,074,247
Share of investments in associates and joint ventures	80,681,100,934	62,411,138,388	226,744,904,296
Long-term loans	910,287,291,842	1,019,229,605,248	719,430,932,517
Property, plant and equipment	6,381,539,477,026	7,206,578,365,565	7,190,139,774,839
Intangible assets	6,646,199,554,028	6,657,774,324,948	6,863,345,310,432
Investment property	270,299,018,663	30,516,385,496	68,163,327,038
Derivative financial assets	80,958,564,225	63,996,129,207	27,913,927,369
Firm commitment assets	80,039,145,810	73,771,115,605	56,626,716,041
Guarantee deposits	320,258,434,073	253,322,937,601	309,024,141,234
Deferred tax assets	641,043,930,920	782,988,943,041	944,406,898,458
Other non-current assets	68,381,295,591	117,323,450,501	61,114,955,310
Total assets	24,832,568,190,355	27,260,140,610,258	27,551,906,512,303
Liabilities and equity			
Current liabilities:	11,581,816,879,143	12,455,495,879,242	11,132,072,630,704
Trade payables	2,452,138,916,210	2,259,960,866,728	2,691,130,566,041
Short-term borrowings	2,892,687,287,708	3,943,165,035,852	2,967,464,808,128
Asset-backed loan	432,987,691,317	394,044,438,739	397,347,705,208
Other payables	853,291,882,847	797,731,063,373	720,622,823,183

Advanced receipts	358,558,830,351	346,939,985,983	361,265,911,412
Due to customers for contract work	905,668,479,628	1,200,598,386,238	1,120,201,735,582
Withholdings	71,843,985,942	84,990,443,174	116,998,812,277
Accrued expenses	491,867,768,087	579,421,166,491	488,643,525,511
Current tax liabilities	47,638,985,415	35,923,644,791	69,207,517,934
Current portion of long-term debt	2,531,345,860,669	2,252,663,857,555	1,631,163,514,293
Derivative financial liabilities	174,733,740,322	217,439,689,022	185,685,205,347
Firm commitment liabilities	11,617,547,945	16,325,825,501	65,365,984,651
Other provisions	118,561,044,391	130,417,938,027	137,223,875,500
Other current liabilities	214,167,916,135	195,873,537,768	179,750,645,637
Non-floating liabilities to be sold	24,706,942,176		
Non-current liabilities	6,427,920,395,176	7,778,537,058,884	8,742,832,161,667
Debentures	1,753,691,202,152	2,547,984,215,918	3,009,799,381,248
Long-term borrowings	2,534,990,813,266	3,282,290,330,730	3,597,626,371,249
Long-term asset-backed loan	246,974,997,243	150,408,282,978	42,677,714,962
Long-term other payables	35,611,850,491	41,882,360,478	51,247,058,484
Employee benefits liabilities	866,404,829,367	900,192,936,968	1,020,609,311,678
Deposits received	189,263,467,929	152,617,695,614	223,675,032,387
Derivative financial liabilities	128,882,334,708	147,638,954,643	128,730,391,781
Firm commitment liabilities	18,966,908,638	28,734,919,118	26,648,783,925
Deferred tax liabilities	183,072,101,886	118,224,240,213	82,460,285,676
Other provisions	233,110,602,232	244,242,092,508	237,747,776,849
Other non-current liabilities	236,951,287,264	164,321,029,716	321,610,053,428
Total liabilities	18,009,737,274,319	20,234,032,938,126	19,874,904,792,371
Equity			
Equity attributable to owners of parent	3,475,660,913,667	3,580,669,218,847	4,659,419,568,882
Issued capital	596,808,980,000	596,808,980,000	596,808,980,000
Capital surplus	1,652,835,160,666	1,563,917,672,526	1,828,284,636,585
Other components of equity	(17,273,121,037)	(105,157,160,978)	(101,795,674,821)
Accumulated other comprehensive income(loss)	538,782,208,792	512,011,506,902	220,918,859,061
Retained earnings	704,507,685,246	1,013,088,220,397	2,115,202,768,057
Equity attributable to equity holders of the parent	3,347,170,002,369	3,445,438,453,285	3,017,582,151,050
Hybrid equity instruments	841,535,153,252	841,695,963,991	508,259,603,649
Other non-controlling interests	2,505,634,849,117	2,603,742,489,294	2,509,322,547,401
Total equity	6,822,830,916,036	7,026,107,672,132	7,677,001,719,932
Total liabilities and equity	24,832,568,190,355	27,260,140,610,258	27,551,906,512,303

Performance Summary

Consolidated Statements of Profit or Loss

As at December 31, 2016
As at December 31, 2015
As at December 31, 2014

(Unit : Korean won in units)

	December 31, 2016	December 31, 2015	December 31, 2014
Revenue	13,892,680,512,183	14,470,549,808,958	16,036,926,354,291
Cost of sales	11,477,492,314,794	12,283,242,564,168	13,425,292,815,877
Gross profit	2,415,188,197,389	2,187,307,244,790	2,611,633,538,414
Selling and administrative expenses	1,624,015,375,186	2,214,638,986,828	1,992,432,407,121
Operating profit	791,172,822,203	(27,331,742,038)	619,201,131,293
Finance income	1,016,003,108,731	1,203,283,247,735	888,144,450,500
Finance costs	1,563,194,963,292	1,898,601,312,784	1,724,664,210,367
Other non-operating income	108,705,659,500	93,211,050,263	125,337,412,846
Other non-operating expense	584,176,245,595	901,586,608,247	277,116,594,993
Share of loss in associates and joint ventures	(14,607,721,727)	(81,659,482,860)	(79,859,494,062)
Profit for the year before tax	(246,097,340,180)	(1,612,684,847,931)	(448,957,304,783)
Income tax expense (benefit)	131,564,646,601	131,052,374,555	(162,275,783,774)
Loss from continuing operations	(377,661,986,781)	(1,743,737,222,486)	(286,681,521,009)
Profit (loss) from discontinued operations	162,137,200,834	(7,162,107,023)	201,206,173,829
Profit for the year	(215,524,785,947)	(1,750,899,329,509)	(85,475,347,180)
Attributable to:			
Equity holders of the parent	(170,750,790,211)	(1,038,543,220,644)	(94,675,179,547)
Non-controlling interests	(44,773,995,736)	(712,356,108,865)	9,199,832,367
Earnings per share:			
Basic, profit for the period attributable to ordinary equity holders of the parent	(1,777)	(10,631)	(1,082)
Loss for the year from continuing operations	(2,611)	(10,210)	(2,110)
Profit (loss) for the year from discontinued operations	834	(421)	1,028
Diluted, profit for the period attributable to ordinary equity holders of the parent	(1,777)	(10,631)	(1,082)
Loss for the year from continuing operations	(2,611)	(10,210)	(2,110)
Profit (loss) for the year from discontinued operations	834	(421)	1,028

Consolidated Statements of Comprehensive Income or Loss

As at December 31, 2016
As at December 31, 2015
As at December 31, 2014

(Unit : Korean won in units)

	December 31, 2016	December 31, 2015	December 31, 2014
Profit for the year	(215,524,785,947)	(1,750,899,329,509)	(85,475,347,180)
Other comprehensive income	(28,495,650,754)	319,962,397,817	(339,645,498,514)
1. Items not subsequently reclassified to profit or loss:	(96,116,788,148)	378,588,917,167	(110,653,424,631)
Remeasurement of the net defined benefit liabilities	(68,268,654,681)	18,841,106,569	(110,461,283,972)
Net gain on revaluation of land	(27,848,133,467)	359,747,810,598	(192,140,659)
2. Items that are subsequently reclassified to profit or loss:	67,621,137,394	(58,626,519,350)	(228,992,073,883)
Net change in unrealized fair value of available-for-sale financial assets	19,919,849,838	(3,104,626,549)	1,496,857,115
Effective portion of changes in fair value of cash flow hedges	20,130,625,897	12,063,776,264	(3,822,332,135)
Equity adjustments in equity method	(108,837,338)	1,340,919,348	(2,626,931)
Net gain (loss) on translation of overseas operations	27,679,498,997	(68,926,588,413)	(226,663,971,932)
Total comprehensive income (loss), net of tax	(244,020,436,701)	(1,430,936,931,692)	(425,120,845,694)
Attributable to:			
Equity holders of the parent	(191,711,547,908)	(726,791,363,904)	(277,122,175,008)
Non-controlling interests	(52,308,888,793)	(704,145,567,788)	(147,998,670,686)

Performance Summary

Consolidated Statements of Changes in Equity

As at December 31, 2016
As at December 31, 2015
As at December 31, 2014

(Unit : Korean won in units)

	Issued capital	Capital surplus	Other components of equity	Accumulated other comprehensive income (loss)	Retained earnings	Non-controlling interest	Total equity
As at January 1, 2015	596,808,980,000	1,828,284,636,585	(101,795,674,821)	220,918,859,061	2,115,202,768,057	3,017,582,151,050	7,677,001,719,932
Profit (loss) for the year					(1,038,543,220,644)	(712,356,108,865)	(1,750,899,329,509)
Remeasurement of the net defined benefit liabilities, net of tax					3,500,483,847	15,340,622,722	18,841,106,569
Net change in unrealized fair value of available-for-sale financial assets				(30,340,636,819)		27,236,010,270	(3,104,626,549)
Effective portion of changes in fair value of cash flow hedges				55,555,208,269		43,491,432,005	12,063,776,264
Equity adjustments in equity method (debit)				2,183,896,859		(842,977,511)	1,340,919,348
Net loss on translation of foreign operations				(16,612,368,911)		(52,314,219,502)	(68,926,588,413)
Net loss on revaluation of land				280,306,548,443	17,158,725,052	62,282,537,103	359,747,810,598
Dividends					(84,230,535,915)		(84,230,535,915)
Increase in paid-in capital							
Stock option		2,100,996,093	(1,116,157,779)				984,838,314
Dividends of the subsidiaries						(85,494,554,491)	(85,494,554,491)
Transactions of treasury shares by subsidiaries		23,860,561,032				(33,858,304,362)	(9,997,743,330)
Acquisition of investments in subsidiaries							
Capital increase by issuing new shares of subsidiaries			(231,156,754)			916,908,916,650	916,677,759,896
Issuance of convertible bonds by subsidiaries		(65,478,549,444)				105,988,016,531	40,509,467,087
Others							

	Issued capital	Capital surplus	Other components of equity	Accumulated other comprehensive income (loss)	Retained earnings	Non-controlling interest	Total equity
As at December 31, 2015	596,808,980,000	1,563,917,672,526	(105,157,160,978)	512,011,506,902	1,013,088,220,397	3,445,438,453,285	7,026,107,672,132
As at January 1, 2016	596,808,980,000	1,563,917,672,526	(105,157,160,978)	512,011,506,902	1,013,088,220,397	3,445,438,453,285	7,026,107,672,132
Profit (loss) for the year					(170,750,790,211)	(44,773,995,736)	(215,524,785,947)
Remeasurement of the net defined benefit liabilities, net of tax					(69,873,976,427)	1,605,321,746	(68,268,654,681)
Net change in unrealized fair value of available-for-sale financial assets				15,157,202,176		4,762,647,662	19,919,849,838
Effective portion of changes in fair value of cash flow hedges				8,543,444,308		11,587,181,589	20,130,625,897
Equity adjustments in equity method (debit)				(52,099,346)		(56,737,992)	(108,837,338)
Net loss on translation of foreign operations				35,097,951,303		(7,418,452,36)	27,679,498,997
Net gain on revaluation of land				(36,361,223,176)	26,527,942,918	(18,014,853,209)	(27,848,133,467)
Dividends					(94,483,711,431)		(94,483,711,431)
Stock option		2,015,482,504	(1,690,789,528)				324,692,976
Changes in consolidation scope						12,906,000	12,906,000
Dividends of the subsidiaries						(53,324,066,352)	(53,324,066,352)
Transactions of treasury shares by subsidiaries		6,256,086,126	(739,097)			(18,581,712,073)	(12,326,365,044)
Capital increase by issuing new shares of subsidiaries			584,932,605	8,050,624,034		(7,961,277,354)	674,279,285
Convertible bonds by subsidiaries		(4,791,047,084)				7,112,878,144	2,321,831,060
Stock option of subsidiaries		1,524,014,014	(1,912,830,727)			(21,735,404)	(410,552,117)
Business transfer between subsidiaries							
Changes in non-controlling interests							
As at December 31, 2015	596,808,980,000	1,652,835,160,666	(17,273,121,037)	538,782,208,792	704,507,685,246	3,347,170,002,369	6,822,830,916,036

Performance Summary

Consolidated Statements of Cash Flows

As at December 31, 2016
As at December 31, 2015
As at December 31, 2014

(Unit : Korean won in units)

	December 31, 2016	December 31, 2015	December 31, 2014
Net cash flows provided by operating activities	967,566,785,961	(74,372,146,286)	603,808,922,454
cash provided from operations	1,491,876,388,986	565,940,588,916	1,399,114,247,015
Profit (loss) for the year	(215,524,785,947)	(1,750,899,329,509)	(85,475,347,180)
Adjustments	1,667,514,803,768	2,796,807,824,518	1,830,501,922,424
Working capital adjustments	39,886,371,165	(479,967,906,093)	(345,912,328,229)
Interest received	39,862,994,719	41,862,736,122	55,528,847,058
Interest paid	(495,762,417,342)	(576,553,756,935)	(618,203,026,965)
Dividends received	303,597,150	1,716,215,002	1,558,270,393
Income taxes paid	(68,713,777,552)	(107,337,929,391)	(234,189,415,047)
Net cash flow used in investing activities	804,766,783,274	(379,715,191,840)	(544,738,511,865)
aggregate cash inflows from investing activities	1,970,231,156,575	842,311,411,325	668,610,861,316
Proceeds from disposal of short-term financial instruments	297,898,738,398	202,203,565,224	288,798,834,598
Proceeds from disposal of short-term investments in securities		80,499,361,714	73,071,978,911
Collection of short-term loans	65,275,787,851	103,894,172,141	181,531,790,623
Proceeds from disposal of long-term financial instruments	63,611,006,170	11,158,450,670	4,431,747,297
Proceeds from disposal of long-term investment in securities	2,435,824,713	15,745,912,830	6,911,704,798
Collection of long-term loans	229,701,707,401	132,493,369,838	78,556,516,994
Disposition of Investment & Joint Venture Investments		5,999,506,443	6,474,033,289
Proceeds from disposal of investments in Subsidiaries		126,667,468,493	
Proceeds from disposal of property, plant and equipment	69,257,010,540	30,891,342,577	14,126,457,253
Proceeds from disposal of intangible assets	1,636,717,701	2,863,652,101	3,555,188,974
Proceeds from disposal of investment property	1,173,000,000	1,577,382,829	1,486,728,579
Proceeds from disposal of non-current assets classified as held-for-sale	84,419,819,225		9,665,880,000
Changes in scope of consolidated subsidiaries	(4,573,742,849)		
Business transfer	1,154,821,544,576	128,317,226,465	
aggregate cash outflows from investing activities	(1,165,464,373,301)	(1,222,026,603,165)	(1,213,349,373,181)
Acquisition of short-term financial instruments	(95,091,693,985)	(79,222,803,135)	(95,207,452,344)
Acquisition of short-term investments in securities	(127,937,629,145)	(3,955,604,933)	(65,228,155,478)
Increase in short-term loans	(27,800,272,132)	(155,702,429,216)	(104,582,725,328)
Acquisition of long-term financial instruments	(16,895,446,044)	(56,094,727,889)	(1,117,551,401)
Acquisition of long-term investment in securities	(131,466,690,976)	(12,416,609,062)	(20,269,579,917)
Increase in long-term loans	(179,347,198,041)	(212,259,140,998)	(293,311,264,050)
Acquisition of investments in associates and joint ventures	(9,791,807,060)	(1,108,000,000)	(268,400,000)
Acquisition of investments in subsidiaries	(31,841,144,402)	(54,940,467,860)	

(Unit : Korean won in units)

Acquisition of property, plant and equipment	(290,902,622,062)	(388,747,759,099)	(372,668,244,664)
Acquisition of intangible assets	(248,694,126,605)	(253,851,630,523)	(260,695,999,999)
Acquisition of investment property	(1,122,000,000)	(3,727,430,450)	
Business transfer	(4,573,742,849)		
Cash flows from financing activities	(2,251,618,951,835)	1,058,645,079,958	326,347,849,486
aggregate cash inflows from financing activities	3,041,909,023,273	4,838,023,592,354	5,507,657,268,169
Net increase in short-term borrowings		1,172,995,994,644	580,935,632,821
Proceeds from short-term bonds	180,000,000,000		30,000,000,000
Proceeds from asset backed loans	714,113,619,260	1,294,518,541,269	1,028,000,000,000
Issuance of debentures	735,232,370,028	710,193,878,690	649,688,561,247
Proceeds from long-term borrowings	886,199,800,000	742,556,421,012	2,842,390,469,873
Proceeds from disposal of treasury shares	160,218,812,676		
Disposition of Investment Capital Investments	365,449,720,215		
Proceeds from disposal of treasury shares by subsidiaries			3,963,729,410
Capital increase by issuing new shares			372,678,874,818
Capital increase by issuing new shares of subsidiaries	694,701,094	916,677,759,896	
Changes in non-controlling interests		1,080,996,843	
aggregate cash outflows from financing activities	(5,293,527,975,108)	(3,779,378,512,396)	(5,181,309,418,683)
Net decrease in short-term borrowings	(865,054,268,013)		
Repayment of current portion of long-term debt	(2,189,786,666,558)	(1,255,456,228,592)	(2,030,330,435,447)
Repayment of assets backed loans	(682,900,000,000)	(1,203,450,000,000)	(829,350,000,000)
Repayment of debentures	(300,602,677,526)	(45,694,643,604)	(137,771,678,621)
Repayment of long-term borrowings	(636,852,572,778)	(1,094,394,528,323)	(1,990,867,314,625)
Extinguishment of debt for financial lease	(149,982,177)	(660,278,141)	
Dividends paid	(94,483,711,431)	(84,230,535,915)	(74,134,313,250)
Dividends paid by the subsidiaries	(53,324,066,352)	(85,494,554,491)	(28,418,000,000)
Free charge of subsidiary	(2,860,448)		
Cost of issuing shares of subsidiary	(11,253,730)		
Acquisition of part of investment in subsidiaries	(458,033,551,059)		(4,763,339,000)
Acquisition of treasury shares by subsidiaries	(12,326,365,036)	(9,997,743,330)	(85,674,337,740)
Net foreign exchange difference	(41,177,184,921)	(9,110,207,916)	(30,619,708,487)
Classified as held for sale	(3,044,188,427)		
Net increase (decrease) in cash and cash equivalents	(523,506,755,948)	595,447,533,916	354,798,551,588
Cash and cash equivalents as at January 1	1,893,007,747,878	1,297,560,213,962	942,761,662,374
Cash and cash equivalents as at December 31	1,369,500,991,930	1,893,007,747,878	1,297,560,213,962

Environmental Guidelines

Based on its people-centered management philosophy and technology that enhances the value of the earth, Doosan Heavy Industries & Construction has established environmental guidelines in accordance with Doosan Credo, internal environmental management rules and regulations for the protection of the environment together with employees, suppliers, customers and the local community. Thus, we are promoting the following activities to reduce environmental impact generated during the course of business, and continue to expand the scope to supply networks and business partners.

1. Production and workplace environment management

For efficient environmental management of production and business facilities, 10 procedures including objective management, educational training, document and records management and internal audit as well as 9 directives on, for example, environmental impact assessment, air environment control and waste control, are used for management.

2. Selection of supplier, contractor and service provider and continuous assessment

Doosan Heavy Industries & Construction performs regular environment control assessments on subsidiaries within the company twice a year, and the results are utilized as the basis for incentives or penalties to be levied on the subsidiaries and as reference data for their development planning. Also, areas related to the environment are assessed when evaluating suppliers and supplier CSR guidelines including environmental control are distributed as a part of an effort to reduce environmental risks throughout the supply network.

3. Development of products and services

By recognizing the fact that various environmental issues related to climate changes pose both risks and opportunities for Doosan Heavy Industries & Construction, we have been conducting research and development that can minimize environmental impact when developing products or services.

4. Logistics

To eliminate environmental pollution that may occur during transport, Doosan Heavy Industries & Construction manages it through a guide, etc. Work standards are made and managed based on the best cases for each step, which includes transport quotes, preliminary surveys, transport company selection, contract signing, local transport (inland, barge, air, etc.) and cargo insurance.

5. Waste management

Doosan Heavy Industries & Construction specifies the entire work process from waste generation to final disposal and operates and manages it through a waste management order, which helps control the scope of application, definitions of terms, responsibilities and authorities, waste recycling and storage facilities, generation, collection, storage and disposal of waste, inspection, consignment contracts and monitoring.

6. Engineering and maintenance

To minimize environmental pollution generated during operation and maintenance of power plants, Doosan Heavy Industries & Construction provides an environmental guide to fundamentally prevent environmental pollution that would occur from irregular operations. By offering operation and maintenance manuals based on the characteristics of each power plant, a guide is provided to minimize the environmental impact generated during operations.

7. New projects

Prior to the start of a new project, Doosan Heavy Industries & Construction utilizes its Project Environment Plan, to which detailed means of environmental control are applied, to ensure environmental control in project sites. Primary items of the Project Environment Plan include Project Policy, water supply and waste discharge requirements, hazard substance management, air pollution control, etc.

8. Due Diligence of mergers and acquisitions

Doosan Heavy Industries & Construction conducts due diligence assessment on companies prior to merger and acquisition in order to examine environmental risks and respond in advance, if needed. Major aspects evaluated include soil and underground water contamination, asbestos, hazardous chemical substances, environmental pollution prevention facilities and greenhouse gas emission management, and the assessment results are utilized and managed as important factors to consider during acquisitions or mergers.

Independent Auditors' Report

To the Board of Directors and Stockholders
Doosan Heavy Industries & Construction Co., Ltd.

We have audited the accompanying consolidated financial statements of Doosan Heavy Industries & Construction Co., Ltd. (the "Company") and its subsidiaries (collectively, the "Group"), which comprise the consolidated statements of financial position as of December 31, 2016 and the consolidated statements of profit or loss, consolidated statements of comprehensive income or loss, consolidated statements of changes in equity and consolidated statements of cash flows for the years then ended, and a summary of significant accounting policies and other explanatory information.

Management's responsibility for the consolidated interim financial statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with Korean International Financial Reporting Standards ("KIFRS"), and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the Republic of Korea. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement. An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated financial position of Doosan Heavy Industries & Construction Co., Ltd. and its subsidiaries as of December 31, 2016 and their consolidated financial performance and cash flows for the years then ended in accordance with Korean International Financial Reporting Standards.



J. H. Woon

Deloitte Anjin LLC

CEO Ham Jong-ho

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Management's Assessment on Internal Control over Financial Reporting

The Board of Directors and Internal auditor (Audit Committee) of
Doosan Heavy Industries & Construction Co., Ltd.

I, as the internal control over financial reporting officer ("ICFR Officer") of Doosan Heavy Industries & Construction Co., Ltd. ("the Company"), assessed the status of the design and operations of the Company's internal control over financial reporting ("ICFR") for the year ended December 31, 2015.

The Company's management including the ICFR Officer is responsible for the design and operations of its ICFR. I, as the ICFR Officer, assessed whether the ICFR has been effectively designed and has operated to prevent and detect any error or fraud which may cause any misstatement of the financial statements, for the purpose of establishing the reliability of financial reporting and the preparation of financial statements for external financial reporting purposes. I, as the ICFR Officer, applied the ICFR standards for the assessment of design and operations of the ICFR.

Based on the assessment of the operations of the ICFR, the Company's ICFR has been effectively designed and has operated as of December 31, 2015, in all material respects, in accordance with the ICFR standard.



J. H. Woon

Deloitte Anjin LLC

CEO Ham Jong-ho

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Introduction

Doosan Heavy Industries & Construction Co., Ltd. ("Doosan Heavy Industries & Construction") commissioned DNV GL Business Assurance Korea Ltd. ("DNV GL"), part of DNV GL Group, to undertake independent assurance of the Integrated Report 2016 (the "Report"). DNV GL's assurance engagements are based on the assumption that the data and information provided by the client to us as part of our review have been provided in good faith.

Scope of assurance

The scope of assurance included a review of sustainability activities and performance data over the reporting period from 1st January to 31st December 2016. This included:

- Evaluation of adherence to the principles for defining the sustainability report content set forth in the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines 4.0
- Evaluation of the process for determining material aspects for reporting and the management approach to material issues and the process for generating, gathering and managing the quantitative and qualitative data in the Report.

Basis of our opinion

The assurance engagement was planned and carried out using DNV GL's assurance methodology VeriSustain™¹, which is based on our professional experience, international assurance best practice including International Standard on Assurance Engagements 3000 (ISAE 3000). We provided the limited level of assurance.

The audit was carried out in April through June 2017 and the site visits were made to the Headquarter and Seoul Office of Doosan Heavy Industries & Construction in Changwon and Seoul, Korea. We undertook the following activities as part of the assurance process:

- challenged the sustainability-related statements and claims made in the Report and assessed the robustness of the underlying data management system, information flow and controls;
- interviewed representatives from the various departments;
- conducted document reviews, data sampling and interrogation of supporting databases and associated reporting system and associated reporting systems as they relate to selected content and performance data;
- reviewed the materiality assessment report.

Limitations

The engagement excludes the sustainability management, performance and reporting practices of Doosan Heavy Industries & Construction's associated companies, subsidiaries, suppliers, contractors and any thirdparties mentioned in the Report. DNV GL did not interview external stakeholders as part of this Assurance Engagement. Financial statements of Doosan Heavy Industries & Construction, data announced on DART system of the Financial Supervisory Service (<http://dart.fss.or.kr>), and data on the websites are not included in the scope of assurance. Data assurance was conducted by checking the basis in a limited scope, including inquiry, analysis, and limited sampling method, on the data collected by Doosan Heavy Industries & Construction. The aggregation and calculation process for building economic performances is reviewed by the verification team. Also, environmental and social data were verified using the aggregated data. The directors of Doosan Heavy Industries & Construction have sole responsibility for the preparation of the Report. The responsibility of DNV GL in performing the assurance work is to the management of Doosan Heavy Industries & Construction in accordance with the terms of reference. DNV GL expressly disclaims any liability or coresponsibility for any decision a person or an entity may make based on this Assurance Statement.

Conclusion

On the basis of the work undertaken, nothing comes to our attention to suggest that the Report does not properly describe the adherence to the Principles for defining report content in GRI G4 nor is prepared 'in accordance' with GRI G4 Core option. Further opinions with regards to the adherence to the following Principles in the GRI G4 are made below;

Stakeholder Inclusiveness

Doosan Heavy Industries & Construction has identified internal and external stakeholder groups such as Shareholders, Customers, Employees, Suppliers, Local Communities, Government and Competitors. Doosan Heavy Industries & Construction engages with the stakeholders at the company and business unit levels through various channels. The examples of approaches to engagement with selected stakeholders are described in the Report. In the future, Doosan Heavy Industries & Construction could present the reasonable expectations and interests of stakeholders and report corresponding actions taken in the Report.

Sustainability Context

Doosan Heavy Industries & Construction has established 2030 objectives based on the mapping the UN SDGs with its business strategy. Its efforts to achieve objectives and various performances associated with sustainability are presented in the report. Doosan Heavy Industries & Construction addresses how 10 material issues are managed and what are the key performances achieved in 2016, which would help the stakeholder understand the management approaches toward the material aspects.

Materiality

Doosan Heavy Industries & Construction has conducted materiality assessment to prepare the Report. Various issues have been derived by analysing the topics covered in various global initiatives and standards, major stakeholder expectations, industry peers' reports & journalist reports and internal survey results. Subsequently the issues are prioritized by taking into account of the impact on the business of Doosan Heavy Industries & Construction and the interest of stakeholders. In addition, Doosan Heavy Industries & Construction has grouped the 11 material issues into 8 aspects and presented its management approaches on the respective aspects in the Report. The verification team has reviewed the materiality assessment process. Nothing comes to our attention that would cause us to believe that material issues identified from the assessment are not reported.

Completeness

The Report has covered the sustainability strategy, management approach and sustainability performances of Doosan Heavy Industries & Construction for the reporting period and the performance of overseas business sites that have important implications for sustainability is also reported. Nothing comes to our attention that would cause us to believe that the non-financial sustainability performances associated with material aspects are not reported.

Report quality: Accuracy and Reliability

We found a limited number of non-material errors and these were corrected prior to inclusion in the Report. The data presented in the report were gathered from the teams responsible for data control in Doosan Heavy Industries & Construction. The verification team interviewed the Person-in-charge, reviewed the process of gathering and processing data and information, and the supporting documents and records. The depth of data verification is limited to the aggregated data. Based on sampling verification and other reported information and available evidence, nothing comes to our attention that would cause us to believe that the data and information presented in the Report have any intentional error or material misstatement.

Competence and Independence

DNV GL Business Assurance is part of DNV GL Group and a global provider of certification, verification, assessment and training services, helping customers to build sustainable business performance. Our environmental and social assurance specialists are present in over 100 countries. The assurance work was performed by independent team which meets DNV GL's competence requirements. DNV GL was not involved in the preparation of any statements or data included in the Report except for this Assurance Statement. The verification team has complied with DNV GL's Code of Conduct.

18 June 2017
Seoul, Korea
In Kyoon Ahn Country Representative
DNV GL Business Assurance Korea Ltd.



Ahn Kyoon

¹ The VeriSustain protocol is available upon request at DNV GL Website (www.dnvgl.com)

GENERAL STANDARD DISCLOSURE

Classification	G4	Indicators	Report Rate	Pages
Strategy and Analysis	G4-1	Statement from the most senior decision-maker	●	2~3
	G4-2	Provides a description of Key impacts, risks, and opportunities	●	2~3, 21, 30~31
Organizational Profile	G4-3	Report the name of the organization	●	2~4
	G4-4	The primary brands, products, and services	●	22~23
	G4-5	The location of the organization's headquarters	●	4
	G4-6	The number of countries where the organizaion operates, and names of countries where either the organization has significant operations or that are specifically relevant to the sustainability topics covered in the report	●	5
	G4-7	The nature of ownership and legal form	●	4, 42~43
	G4-8	The markets served (including geographic breakdown, sectors served, and types of customers and beneficiaries)	●	4~5
	G4-9	Scale of the organization	●	4~5, PDF 108, 112~119
	G4-10	Total workforce	●	4, PDF 108
	G4-11	The percentage of total employees covered by collective bargaining agreements	●	PDF 108
	G4-12	The organization's supply chain	●	70~71
	G4-13	Any significant changes during the reporting period regarding the organization's size, sutructure, ownershship, or its supply chain	●	About this report
	G4-14	Whether and how the precautionary approach or principle is addressed by the organization	●	21
	G4-15	List Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or endorses	●	28~39, PDF 120~121
	G4-16	Memberships in associations (such as industry associations) and/or national/international advocacy organizations in which the organization	●	PDF 105, PDF 111
Identified Material Aspects and Boundaries	G4-17	List all entities included in the organization's consolidated financial statements or equivalent documents	●	About this report, 82~100
	G4-18	The porcess for defining the report content and the Aspect Boundaries	●	102~103
	G4-19	List all the material Aspects identified in the process for defining report content	●	102~103
	G4-20	For each material Aspect, report Aspect Boundary within the organization	●	102~103
	G4-21	For each material Aspect, report the Aspect Boundary outside the organization	●	102~103
	G4-22	The effect of any restatements of information provided in previous reports, and the reasons for such restatements	●	About this report
Stakeholder Engagement	G4-23	Significant changes from previous reporting periods in the Scope and Aspect Boundaries	●	About this report
	G4-24	List of stakeholder groups engaged by the organization	●	102
	G4-25	Basis for identification and selection of stakeholders with whom to engage	●	102
	G4-26	Organization's approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group	●	102~103
	G4-27	Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns, including through its reporting	●	102~103
Report Profile	G4-28	Reporting period such as fiscal or calendar year) for information provided	●	About this report
	G4-29	Date of most recent previous report (if any)	●	About this report
	G4-30	Reporting cycle such as annual, biannial)	●	About this report
	G4-31	Provide the contact point for questions regarding the report or its contents	●	About this report
	G4-32	Report the 'in accordance' option the organization has chosen	●	About this report
	G4-33	Report the organization's policy and current practice with regard to seeking external assurance for the report	●	About this report
Governance	G4-34	Report the governance structure of the organization, including committees of the highest governance body	●	42~43
Ethics and Integrity	G4-56	Describe the organization's values, principles, standards and norms of behavior such as codes of conduct and codes of ethics	●	44~45, Homepage ¹⁾

1) <http://www.doosanheavy.com/kr/csr/ethics/creed/>

SPECIFIC STANDARD DISCLOSURE

Classification	G4	Indicators	Report Rate	Pages
Economic Performance	EC1	Direct econmic value generated and distributed	●	PDF 112~119
	EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change	●	37, 46~49
Market Presence	EC6	Proportion of senior management hired from the local community at significant locations of operation	●	PDF 109
	DMA			72~73
Indirect Economic Impacts	EC7	Development and impact of infrastructure investments and services supported	●	PDF 110
	EC8	Significant indirect economic impacts, including the extent of impacts	●	PDF 110
Purchase Practices	EC9	Proportion of spending on local suppliers at significant locations of operation	●	70
Materials	EN1	Materials used by weight or volume	●	PDF 105
	EN2	Percentage of materials used that are recycled input materials	●	PDF 105
Energy	EN3	Energy consumption within the organization	●	PDF 106
	EN6	Reduction of energy consumption	●	PDF 106
Water	EN7	Reductions in energy requirements of products and services	●	46~49
	EN8	Total water withdrawal by source	●	PDF 106
Biodiversity	EN10	Percentage and total volume of water recycled and reused	●	PDF 106
	EN11	Operational sites owned, leased, managed in, or adjacent to, protected areas	●	50~51
	EN12	Description of significant impacts of activities, products, and services on Biodiversity	●	50~51
	EN13	Habitats protected or restored	●	50~51
	EN14	Total number of IUCN red list species and national conservation list species with habitats in areas afected by operaions, by level of extinction risk	●	50~51
Emissions	DMA			46~47
	EN15	Direct greenhouse gas (GHG) emissions (scope	●	PDF 106
	EN16	Energy indirect greenhouse gas (GHG) emissions (scope	●	PDF 106
	EN19	Reduction of greenhouse gas (GHG) emissions	●	PDF 107
Effluents and Waste	EN22	Total water discharge by quality and destination	●	PDF 107
	EN23	Total weight of waste by type and disposal method	●	PDF 107
	EN24	Total number and volume of significant spills	●	PDF 107
	EN26	Identity, size, proteted status, and biodiversity value of water bodies and realted habitats significantly affected by the organization's discharges of water and runoff	●	46~47
Products and Services	DMA			46~47
	EN27	Extent of impact mitication of environmental impacts of products and services	●	46~47
Compliance	EN29	Monetary value of significatn fines and total number of non-monetary sanctions for non-compliance with environmental laws and reglulations	●	PDF 108
Overall	EN31	Total environmental protection expenditures and investments by typ	●	PDF 108
Supplier Environmental Assessment	EN32	Percentage of new suppliers that were screened using enviromental criteria	●	70~71
	EN33	significant actual and potential engative environmental impacts in the supply chain and actions taken	●	70~71
Employment	DMA			64~65
	LA1	Total number and rates of new empyee hires and employee turnover by age group, gender, and region	●	PDF 108
	LA2	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation	●	66~67
	LA3	Return to work and retention rates after parental leave, by gender	●	PDF 109
Labor/Management Relations	DMA			64~65
	LA4	Minimum notice periods regarding operational changes, including whether these are specified in collective agreements	●	119 ¹⁾

1) In the event there are any significant changes in management, employees shall be notified in a timely manner.

SPECIFIC STANDARD DISCLOSURE

Classification	G4	Indicators	Report Rate	Pages
Occupational Health and Safety	DMA			52~53
	LA5	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs	●	52~55
	LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender	●	PDF 109
	LA7	Workers with high incidence or high risk of diseases related to their occupation	●	54~55
	LA8	Health and safety topics covered in formal agreements with trade unions	●	52~55
Training and Education	DMA			64~65
	LA9	Average hours of training per year per employee, by gender, and by employee category	●	PDF 108
	LA10	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	●	65
Diversity and Equal Opportunity	LA12	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity	●	PDF 108
Equal Remuneration for Women and Men	LA13	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation	●	PDF 109
Supplier Assessment for Labor Practices	LA14	Percentage of new suppliers that were screened using labor practice criteria	●	70~71
	LA15	Significant actual and potential negative impacts for labor practices in the supply chain and actions taken	●	70~71
Investment	HR1	Total number and percentage of significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	●	70~71
	HR2	Total hours of employee training on human rights policies or procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained	●	70~71
Freedom of Association and Collective Bargaining	HR4	Operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and measures taken to support these rights	●	64
Child Labor	HR5	Operations and suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor	●	64
Forced or Compulsory Labor	HR6	Operations and suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor	●	64, 70~71
Assessment	HR9	Total number and percentage of operations that have been subject to human rights reviews or impact assessments	●	PDF 109
	HR10	Percentage of new suppliers that were screened using human rights criteria	●	70~71
Supplier Human Rights Assessment	HR11	Significant actual and potential negative human rights impacts in the supply chain and actions taken	●	70~71, PDF 110
Local Communities	SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs	●	PDF 110
	SO2	Operations with significant actual and potential negative impacts on local communities	●	PDF 110
Anti-corruption	SO3	Total number and percentage of operations assessed for risks related to corruption and the significant risks identified	●	PDF 109~110
	SO4	Communication and training on anti-corruption policies and procedures	●	PDF 110
	SO5	Confirmed incidents of corruption and actions taken	●	PDF 110
Public Policy	SO6	Total value of political contributions by country and recipient/beneficiary	●	PDF 105
Anti-competitive Behavior	SO7	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes	●	PDF 110
Compliance	SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	●	45
Supplier Assessment for Impacts on Society	SO9	Percentage of new suppliers that were screened using criteria for impacts on society	●	70~71
	SO10	Significant actual and potential negative impacts on society in the supply chain and actions taken	●	70~71
Product and Service Labeling	DMA			56~57
	PR5	Results of surveys measuring customer satisfaction	●	58
Customer Privacy	PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data	●	62~63

Non-Financial Performance

MEMBER OF

Dow Jones Sustainability Indices

In Collaboration with RobecoSAM

Listed for three consecutive years

DJSI Korea

A

Rated Grade A in the evaluation performed by the Korea Coperate Governance Service

"Excellence Award" at National Quality Circle

Team Contest for seven consecutive years

Celebrated the Human Rights Week Targeting all employees

최우수

Shared Growth Index Assessment 'Most Excellent Grade'

Global Water Awards Received Desalination Plant of the Year Award

175,182tCO₂

Reduction in GHG emissions

69%

Ration of Green R&D to total R&D

12,502people

Provided training on the Code of Ethics to suppliers

In 2016, Doosan Heavy Industries & Construction achieved the lofty accomplishment of being incorporated into DJSI Korea for the third consecutive years based on its consistent commitment to carrying out socially responsible management activities, and obtained an "A" grade in the ESG evaluation conducted by the Korea Corporate Governance Service. It also received the Excellence Award for the 7th consecutive years in the National Quality Circle Team Contest, achieved the most outstanding level in the Shared Growth Index and received the "Shared Growth Company Awards" and Desalination Plant of the Year Award at the Global Water Awards.

Thanks to our diverse efforts to reduce greenhouse gas emissions for strengthening our competitiveness in the fight against climate change, greenhouse gas emissions have been reduced by 175,182 tCO₂ since 2012, and 69% of the total R&D investments has been allocated to green R&D, thus contributing to the preservation of global environment. Through ethics education being conducted for every one of our 12,502 employees, a culture of autonomous competency development has been established and we have been receiving glowing evaluations as a company of which employees would love to continue to work for. Also, through strategic social contribution activities, we fulfill our social responsibilities by continuously improving the overall image of our company, among other related efforts.

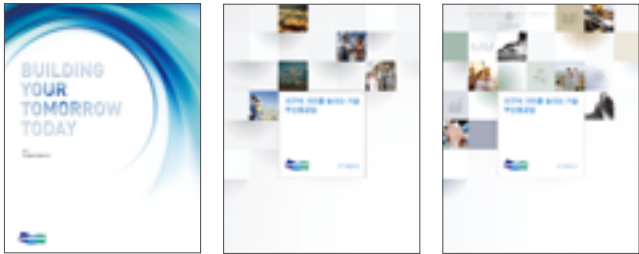
From this point on, Doosan Heavy Industries & Construction will actively serve its role as a corporate citizen to achieve sustainable growth of the company and society as a whole.



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DHIC Integrated Report by Year



2013

2014

2015

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