**2011** SUSTAINABILITY REPORT

Building your tomorrow today

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2011 Doosan Heavy Industries & Construction Sustainability Report

# About this report

#### **Report Overview**

With world-class quality and technology, Doosan Heavy Industries & Construction Co., Ltd. is a key contributor to Korea's plant industry. Our efforts in quality innovation and new technology development led to tangible economic results, and based on this we continue to fulfill our responsibilities to the environment and our society as a global company. This report is the first sustainability report published by Doosan Heavy Industries & Construction, focusing on our Korean business units as well as some overseas units for select activities and achievements. Covering our activities from January 1, 2011 to December 31, 2011, the qualitative data in this report focuses on our activities in 2011, with additional information drawn from our efforts up to August 2012 highlighting some of our especially meaningful activities or results. Quantitative data includes the past three years (2009-2011) and allows a time series analysis. Doosan Heavy Industries & Construction aims to publish annual sustainability reports to share with all of our partners and stakeholders.

#### **Core Reporting Principles**

This report was created following the GRI (Global Reporting Initiative) G3.1 guidelines. TFTs were formed for each field for the purpose of compiling this report, tasked with analyzing the opinions of various stakeholders and with reporting the main issues thus identified. Financial performance data from 2009 in this report were created following the Korean Generally Accepted Accounting Principles (K-GAAP), with performance data from 2010 and 2011 created using Korean International Financial Reporting Standards (K-IFRS).

#### Assurance

This report was checked for data and content by Samil PwC, a specialist in reviewing sustainability reports. Detailed information about the assurance process can be found in an independent assurance report.

#### Additional Information

This report is published in Korean and English and can be downloaded from the homepage of Doosan Heavy Industries & Construction.

# Contents

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**CEO MESSAGE** 

66 Doosan is committed to sustainability management that fulfills our responsibilities to businesses, people and society.



**99** 

2011 Orders

10.1 trillion won

2011 Sales

8.496 trillion won

Founded in 1962. Doosan Heavy Industries & Construction has served as a key contributor to Korea's economic development by localizing and exporting industrial plants and technologies such as power generation, freshwater treatment, casting and forging, and construction. Over the past five decades Doosan Heavy Industries & Construction has grown into a truly global company.

Throughout the history of our company, we have engaged in a variety of sustainability management activities in economic, environmental and social areas. We have prepared our first sustainability report to share our achievements and plans with all of our partners and stakeholders.

Despite the recent global economic downturn, Doosan Heavy Industries & Construction successfully executed large-scale power generation and desalination projects in the Middle East and India with over ten trillion won in orders for two consecutive years. We are on our way to breaking the 10 trillion won mark in sales this year as we celebrate our 50<sup>th</sup> anniversary. Doosan Heavy Industries & Construction's growth is the culmination of the management philosophy that has formed the central pillar of Doosan for the past century, and the relentless dedication of all of our employees for innovation that is founded upon our core values.

Doosan Heavy Industries & Construction will now carry forward sustainability management that fulfills our responsibilities to business, people and society through the "Doosan Way", our management philosophy that will lead our growth for the next 100 years. To achieve this goal, Doosan Heavy Industries & Construction will focus on the following initiatives.

#### First, world-class technology and innovation are the core principles of sustainable corporate management.

Doosan Heavy Industries & Construction is committed to continuous innovation in our core business areas of power generation and water - in not only technology, but in product, service and work process systems – to secure the highest level of competitive capabilities. We will also continue to raise our quality standards to maximize customer satisfaction, not only in Korea, but also in the global market.

#### Second, we are working to create an innovative humancentric organizational culture.

This philosophy is reflected in our management philosophy of, "People are the Future." We will enhance our corporate value through a virtuous cycle where personal growth leads to business growth, which further boosts personal growth. Since 2010 Doo-

#### san Heavy Industries & Construction has selected medium- and long-term strategic targets for creating an innovative organizational culture. Our "Hall of Master Craftsmen" reflects our commitment to enhancing the skills and capabilities of our technical and manufacturing employees. We will continue our efforts for creating smart office environments to enable mutual growth for both the individual and the company, as part of our organizationwide commitment to "human-centric" growth.

#### Third, we are working with our community to lead efforts in creating a safe and clean society.

Doosan Heavy Industries & Construction is working with the members of our local communities through EHS (Environment, Health and Safety) system as well as CSR partnerships to create a healthful, clean and harmonious society.

We invest over three billion won each year in efforts to curb greenhouse gas emissions, a global problem, through such efforts as greenhouse gas monitoring systems. Doosan Heavy Industries & Construction is also actively engaged in a variety of social contribution programs in Korea and abroad. These include educational programs, support for disadvantaged groups, environmental protection efforts for Masan Bay, "one company six villages" programs, and overseas medical service missions. We are also promoting mutual growth with local economies by supporting our industrial partners through a variety of programs including our "Win-Win Call Center" and mutual growth funds.

Doosan Heavy Industries & Construction will continue to fulfill its economic, environmental and social responsibilities, and keep building and enhancing "Doosan Heavy Industries & Construction sustainability" by communicating the results and achievements of our sustainability management efforts to all of our partners and stakeholders. So, please ensure you never lose sight of us as we work together to sustainably achieve our goals!

Thank you.

Chairman & Chief Executive Officer, **Doosan Heavy Industries & Construction** Ji won Park

g. C. Put



We will lead the world as a company that fulfills all of its social responsibilities by forming and expanding sustainability management structures based on the "Doosan Way."



I am pleased to be able to share our efforts and achievements in sustainability management with all of our stockholders, internal and external customers, corporate partners and our local community through our first-ever sustainability report.

Doosan Heavy Industries & Construction, a company that has grown from one of Korea's leading heavy industry companies into a major multinational corporation, is celebrating the 50th anniversary of its founding this year. The core philosophy that has always stood at the center of our growth during the past 50 years is "corporate management that puts people first", and we have taken this one step further this year by implementing a unique management philosophy and business method called the "Doosan Way." We pledge to continue forming and expanding our sustainability management systems based on the Doosan Way and grow into a truly global powerhouse that is fully committed to carrying out its social responsibilities.

We welcome your continued interest and encouragement.



We will maximize our competitive capabilities in business through technologies that enhance our planet's value while achieving truly sustainability management through human-centric, socially responsible strategies.

## **Editor's MESSAGE**

I would like to express my sincere appreciation to all of our partners and stakeholders.

Doosan Heavy Industries & Construction is proud to present our first sustainability report this year to share with you our achievements in economic, environmental and social sustainability management. We hope to not only share our efforts and future plans for growing into a company that everyone can love and appreciate through this report, but use this as a chance to further boost our efforts in sustainability management. We must internalize the principles of sustainability management into the fundamentals of our corporate management philosophy in order to become a truly sustainable company. We will maximize our competitive capabilities in business through technologies that enhance our planet's value while achieving truly sustainability management through human-centric, socially responsible strategies.

Rather than rest on the laurels of our success, we will continue to devote our efforts to meet the high expectations of all of our stakeholders.

President & chief operation officer Gi sun Han

Vagsuffme

Executive Vice-president Doosan Heavy Industries & Construction Myung woo Kim

M.W KTM

# GLOBAL DOOSAN

DOOSAN IMGB DPS (ŠKODAPOWER) (2) 0 DPS (Babcock) DPS (LENTIJES)

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INDIA

717

 $120 \frac{\text{billion}}{\text{won}}$ 

Enhancement

**Bandel #5 Performance** 

A contract totaling 120 billion won for the performance enhancement

n West Bengal, India gave Doosar Heavy Industries & Constructior

foothold in the market for refu



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West Bengal, Indi

SAUDI

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lination facility contract with the (CC) of Saudi Arabia.

2011.09.13 Yanbu, Saudi

 $124\,$  million dollar anbu Ph.2 Exp. MED

DPS

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#### ISRAEL



IEC Add On Combined cycle units three hybrid thermal power plants in Israel, totaling 342.8 billion won



O Overseas branches

- Overseas corporations
- O Overseas offices
- ▲ Seawater desalination projects
- ☆ Power-generation projects
- (Major projects in 2011 and 2012)



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Doosan Channai Works received an order for five boilers for power plants, totaling 1.5 trillion won.size.

DOOSAN HPL A 60 billion won contract for the

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\*

pany won a contract for a project in

Doosan Heavy Industries & Construction has been actively engaged in an M&A strategy since 2005 aimed at becoming a truly global company, and currently includes nine subsidiaries around the world and 25 overseas companies, branches and offices. Since 2008 we have shifted from focusing on M&As to building partnerships, establishing DE&S, DPSI and VINA in the United States and India.

#### **1** DOOSAN POWER SYSTEMS ŠKODAPOWER, LENTJES, Babc ock, DPSA, DPS LATIN AMERICA)

http://www.doosanpowersystems.com/

In charge of the marketing and project management of the European power generation market. Active in the European BTG (boiler-turbine-generator) package market.

#### **2** DOOSAN IMGB

http://www.doosanimgb.com/

Doosan IMGB, Romania's largest power generation and industrial facility company, operates a 12,000 ton press and is Doosan's second largest material production center with an annual production capacity of 140,000 tons.

## **3** DOOSAN VINA

Doosan Vina, Vietnam's largest heavy industry factory, is an important part of the global production structure of Doosan Heavy Industries & Construction and manufactures major materials and machinery including boilers, HRSG, seawater desalination facilities, and handling facilities.

http://www.doosan-vina.com/



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## **KOREA** 꼸

## Seiong, Korea 305.4 billion

#### Sejong Cogeneration Plant Yangju **Cogeneration Plant**

Order received for facilities totaling 305.4 billion won for KOIMPO and cogeneration plant in Sejong Doosan Hpl.



# Gveonaai-do

Okjeong Complex, Yangju, Gyeonggi-do

billion won

Order received for power gen

eration equipment totaling 170 billion won for the cogeneration

plant planned for constructing in

the Okjeong Complex in Yangju,

#### **4** DOOSAN VINA HAIPHONG

Founded in 1995 through a joint partnership between Doosan Heavy Industries & Construction and Vietnam, HANVICO manufactures power generation and industrial facilities for export to Southeast Asian markets including Malaysia as well as Vietnam itself

http://www.doosan-vina.com/

#### **DOOSAN HF CONTROLS**

http://www.hfcontrols.com/

Doosan HF Controls is a plant control facility specialist that produces electronic control systems and instrumentation control systems for nuclear and thermal power plants

world

Domestic	24,778
Americas	405
Asia	10,657
Middle East	31,364
Europe	14,252
Others	3,499
Total sales	84,955
	///////////////////////////////////////

#### Overseas corporations, branches and offices (25)

- Middle East: Riyadh (2), Dubai (3), Abu Dhabi, Kuwait
- India: New Delhi(3), Mumbai
- Asia: Beijing, Shanghai, Tokyo, Hanoi, Jakarta, Taipei, Bangkok
- North Africa: Cairo
- Americas: New Jersey, Pittsburg, Newington, Santiago, Tampa
- Europe: Frankfurt

#### **Construction offices**

• Korea, Saudi Arabia, UAE, Qatar, Egypt, Libya, India, Vietnam, Taiwan, Thailand, Indonesia, etc

#### 6 DOOSAN E&S

Founded through a partnership with Burns & Roe, a worldleading power generation engineering firm based in the United States, Doosan E&S is responsible for engineering the power plant projects of Doosan Heavy Industries & Construction around the world

#### 9 DOOSAN HPL (HANJUNG POWER LTD.)

Founded in 1996 jointly with Daewoo International, Doosan HPL operates power plants and supplies electric power.



8 DOOSAN HYDRO TECHNOLOGY



#### **5** DOOSAN POWER SYSTEMS INDIA OSAN CHENAI WORKS

Three existing companies were merged as a single company in February 2011. We are enhancing our capabilities in design, project management, purchasing, construction, and process/quality control through a localization strategy. Our medium- and longterm goal is to enhance our competitive capabilities in the Indian market to maximize both growth and profit.

#### **B** DOOSAN HYDRO TECHNOLOGY

Doosan Hydro Technology specializes in reverse osmosis (RO) water treatment technology, and is currently carrying out major desalination and water treatment projects in the United States. South and Central America, and other major markets around the

# **COMPANY PROFILE**

Doosan Heavy Industries & Construction was founded on September 20, 1962 and was privatized in March 2001 and renamed as Doosan Heavy Industries & Construction. Doosan Heavy Industries & Construction has localized and exported a wide range of products and solutions, from basic industrial materials such as cast and forged products to major industrial facilities for power generation, desalination, and construction. The company has been focusing on EPC (Engineering, Procurement & Construction) projects by building upon decades of technology and know-how to deliver entire project processes from design and engineering to material construction, instillation and testing to markets around the world seeking the most advanced power generation and desalination facilities. Doosan Heavy Industries & Construction not only holds core technologies in boilers and turbines, the key components of power generation facilities, but also a wide range of eco-friendly future technologies, as well as environmentally friendly boiler technology, fuel cells, wind power, and IGCC.

Overview			Organizationa	l Chart				
Company Name	Doosan Heavy Indust	ries & Construction			CI	EO		
Founded	September 20, 1962							
CEO	Park Ji-win, Han Gi-s	eon		Financial			Technology	
Major Business Areas	en e	, desalination / water treatment plant casting, construction		management			research center	
Places of Business		adquarters, Seoul Office, Daejon and enters Overseas: Overseas companies, (25)			CC	00		
Total Assets	13.5892 trillion won							
Total Capital	4.7969 trillion won	* As of December 31, 2011 (49th period)						
Total Sales	8.4955 trillion won	By consolidated financial statements						
Operating Incom	569.6 billion won							
Employees	8,252	<u> </u>	Nuclear Power BG	EPC BG	Power BG	Water BG	Casting & Forging BG	Maintenance
Credit Rating	A+		r ower bu					

## WORLD CLASS Products

The Ministry of Knowledge Economy has been selecting "World Class Products" since 2001 to enhance the quality of export products and expand future export drivers. Criteria include a global market share of 5% or above and ranked 5th in the world or higher, with global markets exceeding \$50 million in total, twice the size of the domestic market, or total exports of \$5 million or more. A total of 11 Doosan Heavy Industries & Construction products have been selected as World Class Products from 2001 to 2011, which is clear proof of our technological capabilities and leadership.



## ACHIEVEMENTS

Doosan Heavy Industries & Construction is constantly reforming itself to boost product competitiveness in power generation and desalination by securing core technologies, as well as to strengthen profitability and improve our organizational culture. Total orders in 2011 stood at 10.1 trillion won, breaking the 10 trillion won mark for two straight years. In 2012, Doosan Heavy Industries & Construction received new orders for large-scale power generation and desalination projects in major markets such as the Middle East, India and Southeast Asia, despite the global economic downturn. Thanks to rising sales from these large projects, Doosan Heavy Industries & Construction is on its way to reaching 10 trillion won in sales for the first time since the company's foundation. We will build upon the foundations of these financial achievements to continue our efforts in working to meet the high expectations of all of our shareholders, investors, employees and stakeholders.



Materials for generation	
Materials for shipbuilding	
Materials for steel making	
Mold & tool steel	
Chemical / Industrial materials	





Our cast and forged steel products include components and materials for power generation and industrial plants, shipbuilding and engine components, and tool & die steel products. Doosan Heavy Industries & Construction has been a major force behind the localization of major materials as well as the expansion of export competitiveness. Seven products including low-pressure rotors for power generation (2010) and rotor shafts for turbine generators (2011) were selected by the Ministry of Knowledge Economy as World Class Products in an acknowledgement of the global competitiveness of these products developed by Doosan Heavy Industries & Construction.

Wind power
Fuel cell
Superconductivity generator/Motor
• USC
• PCC
Oxy Fuel Combustion Capture



Doosan Heavy Industries & Construction continues to invest both capital and capacity into developing eco-friendly energy technologies and new and renewable energies including IGCC (integrated gasification combined cycle), fuel cells, CCS (carbon capture and storage), and pure oxygen combustion technology. The company received the WinDS3000™ certification, a 3MW-class wind power system, in March of 2011 as its first step into the wind power market. And became the first Korean company to receive an international certification for a 3MW offshore wind power system by DEWIOCC, Germany's wind power certification agency.



ate new revenues







In the global power generation facility market, the Asian region has developed around thermal power plants while the American region has focused on hybrid thermal power plants. Korea has experienced even growth between thermal, hybrid and nuclear power facilities. Doosan Heavy Industries & Construction is a global manufacturer that holds key technologies in every area in power generation, from coal-fired plants to third-generation nuclear power. In 2009 the company acquired Skoda Power of the Czech Republic, a company that holds original technology in turbines. This move gave Doosan Heavy Industries & Construction all three of the core technologies in power plants: boilers, turbines and generators. For the past 50 years Doosan Heavy Industries & Construction has supplied major facilities and machinery to Korea's thermal and nuclear power plants, and is a major OEM company in the global power generation market.

Power plant

- Power generation facilities
- Plant performance enhancement
- and service

# CONSTRUCTION & MATERIAL HANDLING EQUIPMENT

Doosan Heavy Industries & Construction has been strengthening its market competitiveness through active marketing and construction technology development. As a result the company won orders for the Vietnam Noibai-Laocai highway project in 2009, and the New Caledonia Koniambo CFB project in 2010, and is currently engaged in the Rabigh EPC project in Saudi Arabia and the Mongduong project in Vietnam.

### Plant

- Civil engineering
- Construction
- Container processing facility
- Raw material handling facility
- Specialized cranes



# Doosan's Technology, the Power that Moves Markets Worldwide

For a nation striving for economic growth, Doosan Heavy Industries & Construction was at its side. Doosan Heavy Industries & Construction brought the warmth and hope of light and energy to both the nation's growing industrial sites as well as the homes where our workers returned to their families. In the days when the company was still called Korea Heavy Industry & Construction, Doosan Heavy Industries & Construction was responsible for a total of 14 major national power generation plants including Boryeong 1-6 (thermal), Dangjin 1-4 (thermal), and Uljin 1-4 (nuclear), generating the power that made the nation's incredible growth possible. Now with this rich legacy and mission, we are picking up our pace. The birth of Doosan Heavy Industries & Construction was the first stage in the creation of a company that can take charge of the entire process of power generation, and the first step toward becoming a global leader in the power industry. It was the start of a dream to provide light and power to the entire globe beyond the borders of our country, sharing our experience and passion to developing nations that are working night and day, as we ourselves did, to secure a better tomorrow.



#### Preparing for a sustainable future despite the risks

The first keyword towardachieving that dream was "technology." The foundations of the power generation business of Doosan Heavy Industries & Construction were in manufacturing key machinery such as boilers, turbines and generators. The problem was that all of these products were based on licenses held by leading overseas companies such as Alstom (boilers) and GE (turbines).

"The fact that we were a licensee using original technologies from other companies began to feel like shackles around our ankles. It was the same with boilers, turbines. We could not independently bid in markets in which license companies were already operating, and there were times when product development went off on an unintended direction because of their policies. These were all factors limiting the global aspiration of Doosan Heavy Industries & Constructions. Our technology was ready for the world, but there was something always in our way. There was a growing desire to break through this barrier throughout the company." (Shim Jaehyeon, Vice president / Power Marketing and Boiler Sales)

An offer for acquisition in 2006 by Babcock, an original technology company in Europe, seemed like the perfect gift for Doosan Heavy Industries & Construction. There were concerns within the company about the cultural differences between Doosan and Babcock, and worries outside the company about the fall in profits a break with Alstom would bring.

#### **Completing Doosan's Core Technology through EPC Projects**

Our steps toward ensuring a sustainable future include an expansion in EPC projects. Encompassing the entire process from plant design and engineering to machinery manufacturing, installation and testing, EPC was a decision that highlighted the core strengths of Doosan Heavy Industries & Constructions. Unlike its competitors who carry out projects using primarily external resources, Doosan Heavy Industries & Construction can greatly enhance its competitive capability in terms of quality, price and time by independently designing, manufacturing and installing key machineries and facilities.

This drive and passion shared by everyone in the company, and the fluid exchange of experiences and technologies throughout the company's various business units has enabled Doosan Heavy Industries & Construction to win major contracts in recent years, including the UAE Fujairah desalinization plant in 2001, UAE Jebel Ali project in 2006, and the Mundra project in India in 2007, the largest thermal power generation plant in the world.

"EPC capabilities meant the completion of our independent technologies. However, just because we were now a total engineering company didn't mean that everyone acknowledged our technological level. There were clients who insisted that 'Doosan take charge of the project, but use the machinery that we choose.' But the high barrier of the world market actually turned out to be in our favor. It allowed us to set a goal that did not limit us to just technology development, but better technology." (Hur Jong-churl, Vice president / (EPC) EPC 2PD)

Doosan Heavy Industries & Construction combined Bab-





cock's original technology with Doosan Heavy Industries & Construction's commercialization technology to create stronger and more innovative products. For example, the 800MW boiler that Babcock was to supply to an American firm was 120% the weight of Doosan Heavy Industries & Construction's boiler. Babcock had relied on negotiated contracts and thus placed more importance on reliable operation than price, mainly releasing "heavier" products with a greater design margin. A new task force team composed of Babcock's chief engineer and Korean and Indian engineers began working together to enhance boiler design and efficiency, succeeding in cutting product weight by 30% in a year and a half. Babcock's R&D organization was also involved in the development of a 1,000MW USC (ultra super critical) boiler \*conducted independently by Doosan Heavy Industries & Construction. Thus was formed a partnership structure that was capable of producing the eco-friendly, high-efficiency boilers that could allow everyone on our planet to enjoy the fruits of civilization and modern technology.

Efforts to advance Doosan's own technology continued with turbine development, the component that drives a power generation plant. Doosan Heavy Industries & Construction worked hard to enhance the brand value of both itself as well as Skoda Power in the Indian market, where the latter had an especially strong foothold, as well as the global market. In November 2009, these efforts led to the successful development of a 180MW gas turbine, the largest in Korea. Another achievement came in 2011 when the company successfully developed a proprietary 5MW compact gas turbine, which also gave the company original technology in large-scale gas turbine models. Turbines with higher efficiency and new technologies that cut carbon dioxide emissions began to draw the attention of the global market onto to the technology leadership of Doosan Heavy Industries & Construction's. A watershed event was the Rabigh 2 project in 2010 in Saudi Arabia, the most important market in the Middle East.

#### For Humankind that Dreams of Economic Growth but **Toils Today**

The largest single power plant project awared to a Korean company in history (worth 4 trillion won), the Rabigh 2 project was the first export of a heavy oil-firing power plant (Oil-Conventional Type). It was a relatively new area for Doosan Heavy Industries & Construction that had mostly constructed coal and nuclear power plants, but Babcock's capabilities more than made up for it. Above all else this project was special because Doosan Heavy Industries & Construction had offered its own steam turbine, a sub-critical pressure boiler. Doosan Heavy Industries & Construction was confident about the functions and efficiency of its machinery that had been proven in Southeast Asian projects after 2008. Even conservative clients in the Middle East who insisted on only using products with proven reliability were won over.

There are many more nations that dream of becoming rich through light and energy. Main markets include Vietnam, India and other nations in Southeast Asia. Vietnam is a nation where power generation is unable to meet the demands of an explosively expanding economy. The nation imports a considerable amount of electricity from China, and the government must sometimes discourage the operation of factories that consume large amounts of energy such as ironworks or cement factories. To overcome this power crisis the Vietnamese government has launched a number of power plant construction and power generation facility nationalization projects. The nation plants to expand power supply through greater foreign investment and independent power plants (IPP), while at the same time achieving energy technology independence in the long term by bringing in advanced technologies. The 1,200MW Mong Duong II coal-fired plant, a contract won by Doosan Heavy Industries & Construction in 2010, signaled the start of these efforts. Since then, Vietnam has selected Doosan Heavy Industries & Construction as its coal power generation localization project partner through a consortium with LILAMA, a local construction company, and NARIME, Vietnam's national mechanical engineering institute.

Many people talk about the sincerity of Doosan Heavy Industries & Construction's that became apparent during the partner selection process. Doosan Heavy Industries Vietnam Co., launched in 2008 as the global production center of Doosan Heavy Industries & Construction's has become a company that everyone in Vietnam wants to work for. Around 2,100 local Vietnamese workers are employed at the factory, comprising 91% of the entire workforce. The people began to see the sincere desire of Doosan Heavy Industries & Construction to create a company that can benefit both the nation and the people of Vietnam. Doosan Heavy Industries & Construction became Vietnam's strategic partner and a leader of the positive relationship and mutual growth between the two nations of Korea and Vietnam.

Widely known as the world's greatest gold mine for coal-fired power plants and "the 2nd home market", the Indian market is currently supported by a solid partnership with Doosan Chennai Works, the local corporation (acquired in January 2011) of Doosan Heavy Industries & Construction's. Having already executed a number of successful large-scale power plant products including Sipat in 2004, Mundra in 2007 and Raipur in 2011, Doosan Heavy Industries & Construction won a contract for a large-scale power generation facility (1.5 trillion won) for NTPC India in 2012 thanks to a strict localization strategy. India has long been a nation where power transmission is often disrupted with blackouts a common occurrence. The northern Indian blackout of July 2012, which deprived 670 million people of power, illustrated the seriousness of this problem. Doosan Heavy Industries & Construction is taking a step closer to relieving the burden placed on the people of India who must endure aging plants and

# (Carbon Capture & Storage)

Carbon capture & storage technology (Completion expected in 2015)

#### Oxyfuel is a technology that captures condensed CO2 by supplying only oxygen to the boiler for combustion

Now developing the technology jointly with Doosan Bobcock in addition to major European power generation companies such as Scottish Power and E.ON, Doosan Heavy Industries & Construction will complete commercialization of a fullsized pilot plant based on the technology by 2014 to advance to global markets, securing the same level of CCS technology as Alstom, IHI and B&W.



## 66

We were able to become a new force in the power generation market through a corporate culture that shares the entire company's experience and technology as well as the heart and passion of every one of our employees in their relentless drive for our goals.





<sup>\*</sup> USC (Ultra Super Critical) Boiler: The efficiency rate of most commercial power plants ranges between 33% to 48%. It is important to produce high-temperature, high-pressure steam in order to fundamentally raise the efficiency of thermal power plants. In 2008 Doosan Heavy Industries & Construction independently developed the world's most advanced eco-friendly (increased efficiency means lower carbon dioxide emissions), high-efficiency large-capacity 1000MW USC thermal power plant technology. A nationalized project to commercialize this technology is now underway in the New Boryeong Thermal Power Plants Nos. 1 and 2. The completion of these USC boilers will give them the new title of being's the world's largest of their kind.



#### History

The history of Doosan Heavy Industries & Construction's boiler and turbine technology is a history of growth, advances and self conquest. Having steadily developed manufacturing technology through the original technologies of leading companies. Doosan Heavy Industries & Construction eventually secured its own original technology by acquiring Babcock (boilers) and Skoda Power (turbines) and managed to significantly boost the company's technology profile.





In a way, Doosan Heavy Industries & Construction's greatest core capability is the willingness to look beyond immediate risks to a more sustainable future.







facilities that cannot fulfill the demand placed on the power infrastructure by rapid economic growth.

#### Internationalization of Technologies that can **Guarantee Corporate Sustainability**

"Eco-friendly" is another top priority when discussing the future. An era of green energy will be opened by Doosan's eco-friendly technologies that can create the energy needed by people while minimizing the emissions of substances that harm the environment. One of the company's main future growth drivers is wind power, a new and renewable energy. Doosan Heavy Industries & Construction developed the WinDS3000<sup>TM</sup>, a 3MW offshore wind power system as part of a national project, and oversaw the successful operation of Korea's first operation plant off the coast of Weoljeong, Jeju, in July 2012. Even more significant is the fact that Doosan Heavy Industries & Construction localized key technologies including black and gearbox systems. Unlike competitors that are content to bring in key machinery from overseas, Doosan Heavy Industries & Construction, as always, focused on the core aspect of the project-the technology.

Another area where environmental regulations are creating rising demand is R&M, or renovation and modernization. Involving the replacement of key machinery that affect function and efficiency, this field of business requires expert knowledge of key machinery and plants. Doosan Heavy Industries & Construction is the ideal partner for this area, and has been building its portfolio from the Eraring power plant in Australia in 2007 to the Uljin and Yeonggwang nuclear power plants in Korea and power plants in Sabarmati and Bandel, India.

Doosan Heavy Industries & Construction also boasts a clear leadership in developing technology for reducing environmentally harmful materials associated with power plants. Major items include IGCC (integrated gasification combined cycle) and fuel cells. IGCC technology, which turns coal into gas to generate power, is undergoing operational trials in

APPENIDIX

Taean in Korea's first IGCC plant. Fuels cells, which combine hydrogen and oxygen to create electricity, heat and water, has been selected as a nationally-important project. Development for a 300kW-range product is underway with commercialization expected by 2012. The development and commercialization of CCS (carbon capture and storage) technology, which traps and stores the carbon dioxide emitted by thermal power plants, is another part of Doosan Heavy Industries & Construction's plans for a green future.

#### A New Future is on the Way

"According to the International Energy Agency, the world's consumption of power will rise 40% by 2030. Supplying the energy that we need to grow and develop as a planet is an issue directly related to the future of humankind. Doosan Heavy Industries & Construction's roles and responsibilities in that huge market will only continue to expand. Technological growth of the power generation industry and the expansion of the value chain as a high-profit market are important considerations for Doosan Heavy Industries & Construction's growth as a global leader. We will continue to develop future growth drivers and become a true green energy company." (Kim Sung-won, Vice president / Corporate Strategy)

A new future is on the way. A future where light is provided to a world that needs light, and energy is supplied to any country that needs it without restriction. A future where all of humankind can dream of a better future and sustainable lifestyles. Doosan Heavy Industries & Construction has exceeded itself toward realizing that future and committed itself fully to R&D and global business. The entire company is united in its pursuit to develop a great power that can move the market and the world. That is why the past 50 years of remarkable growth for Doosan Heavy Industries & Construction will lead to an even brighter future.



# Water of Life, the Sustainable Future for Humankind

SPECIAL STORY



#### Desalination as the only source of water

The Middle East, where it is not water but oil gushing out of the ground. The wealth from the oilfields expanded the population of Middle Eastern nations and led to the creation of numerous urban centers. But oil, the source of all the wealth of the region, could not replace that basic resource for humans and civilization: water.

Desalination plants were a new opportunity for Doosan Heavy Industries & Construction. Evaporators, a key component of such facilities that boil seawater and condense the vapor, are closely related to thermal exchangers and boilers, in which Doosan Heavy Industries & Construction has considerable competitiveness. Large-scale evaporators began appearing in the production yards of Doosan Heavy Industries & Construction's Changwon plant since the late 1970s. This was Doosan Heavy Industries & Construction's newest challenge in a market dominated by American, European and Japanese firms.

At first we had to be content with using someone else's plans and technology to manufacture machinery. Our company grew in a market environment where there is a strict division in EPC projects, and the Middle Eastern market and its requirement for integrated EPC project capabilities was unfamiliar to us at first. We would actually get excited whenever there was a rare chance to check a site first-hand. As time passed, however, many opportunities found us and we steadily built up our experience and technology." (Park Keum-seo, Vice president / Water



The only way to produce water in a land without rainwater or groundwater, rivers or lakes is through seawater desalination. This explains the seawater desalination plant construction boom that took place in the Middle East.





desalination projects (1985~2012)

# 20 million persons

**People's daily requirements** 



Freshwater production capacity (as of July 2012)

SUSTAINABILITY MANAGEMENT SUSTAINABILITY ISSUE

#### Planning)

Doosan Heavy Industries & Construction continued to expand its portfolio by including the Asir project in Saudi Arabia (1985), Jebel Ali project in the UAE (1986), and the second stage of the Shoaiba project in Saudi Arabia (1993). The Shoaiba project was the first turn-key EPC contract and is widely regarded as the project that allowed Doosan Heavy Industries & Construction to secure original technology in MSF (multistage flash distillation). Since then, Doosan Heavy Industries & Construction was able to take advantage of the desalination infrastructure boom of the early 2000's in the Middle East and continue building its strength in EPC and O&M projects. The company won 100% of the contracts for major projects during 2004 in the region in countries such as Kuwait (Sabiya project), Libya (Benghazi project), Oman (Sohar project), and Qatar (Ras Laffan project), a further testament to the business capabilities of Doosan Heavy Industries & Constructions.

#### The only company with technology and experience in seawater desalination.

However, Doosan Heavy Industries & Construction was not content with being just a "strong competitor in the MSF seawater desalination plant industry."

Doosan Heavy Industries & Construction began focusing on reverse osmosis (RO). While MSF plants were dominant in the Middle East, RO methods began gathering more popularity





in other regions due to the lower energy requirement and better use of space. Doosan Heavy Industries & Construction acquired the RO water treatment arm of AES Co. of the United States to form Doosan Hydro Technology.

"MSF requires a huge amount of steam for operation, which means more power. In markets such as the Middle East where fuel is cheap and a large volume of water needs to be supplied at a stable pace, MSF is appropriate. However, the trend for the plant industry has already become energy efficiency. If we ignored this trend, we decided that we couldn't guarantee the sustainability of Doosan Heavy Industries & Construction." (Jeon Kap-jin, Senior Manager / Water PLM)

It was not easy to accept a new method such as RO when MSF was already the clear advantage. However, Doosan Heavy Industries & Construction began preparing for the expansion of RO for a bigger future. The results came quickly. Just two years later the Shuaibah expansion project became the first RO contract for Doosan Heavy Industries & Construction that was over 40 times the size of the original plant constructed by AES, a company with original technology in the field. Doosan Hydro Technology's RO technology and Doosan Heavy Industries & Construction's project execution capability were combined to create a great opportunity. In 2011 Doosan Heavy Industries & Construction won the contract MED plants including Saudi Arabia's Yanbu II and Marafiq projects, become the only company in the world to have both the technology and experience in desalination plants. Today, the ratio between RO (reverse osmosis) and MSF MED (distillation) projects is around 55:45. Doosan Heavy Industries & Construction's strategy of accurately reading the market and transcending its own technologies found its mark. The unique technological capability of being able to offer the best method to a client anywhere in the world according to the client's needs is the strongest advantage of Doosan Heavy Industries & Construction's.

#### Changing the paradigm in the order process

Doosan Heavy Industries & Construction's risk management

begins from when the order process starts. In a market where competitive bidding is the norm, four or five global companies compete for the lowest bid in MSF and MED and more than ten companies for RO projects where the barrier to entry is somewhat lower.

"Even the company with the best technology and the most experience can't escape the fierce bidding war. The client of course places the greatest emphasis on the ability to reliably carry out the EPC process, but the actual moment of decision is often determined by price competitiveness; in other words, market principles rule. A well-prepared and tight proposal being overturned by a company that offers a ridiculously low bid is always a danger in an industry based on orders." (Koo Bon-geun, General Manager / Water Proposal Team)

Of course, Doosan Heavy Industries & Construction's main strength and the source of its EPC process competitiveness is the ability to manufacture key machinery such as evaporators and turbines. However, Doosan Heavy Industries & Construction continues to carefully manage and analyze entire processes to find new and innovative ways to cut costs. A good example is the one-module process for ultra-large evaporators. In the early 2000s Doosan Heavy Industries & Construction realized that much of its production period was spent assembling the evaporator on site, and developed a new way of shipping assembled evaporators to the installation site. This cut the total construction time by five to six months. In addition, direct production from the company's Changwon and Vietnamese plants instead of relying on partners allows Doosan Heavy Industries & Construction to achieve both technological independence while considerably cutting production time and enhancing quality.

"In those days some projects would be delayed up to six months or even a year. Several projects would be launched at the same time thanks to the flood of oil money, and it was difficult to assign EPC resources in a timely fashion. That is why Doosan Heavy Industries & Construction's ability to dramatically reduce project times could not be ignored by everyone in the industry." (Park Jae-bong, General Manager /

#### Water Machine Technology Team)

In 2011, Doosan Heavy Industries & Construction transformed the very paradigm of competing for bids through a two-year proactive marketing campaign. The company received the orders for the Saudi Arabian SWCC Yanbu II MED project not through open bidding but as an offer. It was the clear leadership displayed by Doosan Heavy Industries & Construction in the form of a complete project plan package, from a feasibility report analyzing the water and energy in the Yanbu region to budgets and EPC O&M planning, that won over the client. Slated for completion in 2014, the Yanbu II plant will be the world's largest single-unit plant capable of supplying water for 150,000 to 200,000 persons per day. Offering a value that had been unknown to the client has now become one of Doosan Heavy Industries & Construction's potent tools in corporate sustainability.

## **Main Project**





#### **Shuweihat S2 IWPP**

Freshwater plant that uses MSF (Multiple Stage Flash Distillation), planned for construction in the Jebel Dhanna region 250km west of Abu Dhabi. Daily freshwater production canacity will be 450,000 tons (100MigD), enough for 1.5 million persons per day.

- Country: UAE
- Ordered: 2008 - Size: 100MIGD
- Features: fresh water plant
- project that was perfectly executed

MSF (Multiple Stage Flash distillation)

#### evaporator MED (Multiple Effect Distillation)

- Ordered: 2011

- Size: 15MIGD

A process of producing fresh water by heating seawater and passing the water through different pressure levels to be evaporated and distilled. Suitable for large-scale production.

A process that uses residual heat from a power plant or a boiler to pass steam through several tubes while seawater is spraved or the suitable for small and medium scale production.

- Country: Saudi Arabia

SPECIAL STORY

SUSTAINABILITY MANAGEMENT SUSTAINABILITY ISSUE

#### **Project Portfolio**

- Marafiq Yanbu MED, Saudi Arabia, 12 MIGD. MED
- · Yanbu Ph. 2 Expansion MED, Saudi Arabia, 15 MIGD, MED
- Ras Al Khair Ph. 1, Saudi Arabia, 228 MIGD, MSF+RO (Hybrid)
- Babigh Power No. 2 MSE Unit. Saudi Arabia 2.16 MIGD, MSE (Captive)
- Jeddah Ph. 3 RO. Saudi Arabia, 52 8 MIGD, RO. Qurayyah Add-on CCPP MSF Unit, Saudi Arabia, 1.32 MIGD, MSE (Captive)
- Shuweihat S2 IWPP, UAE, 100 MIGD, MSF
- Shuwaikh RO, Kuwait, 30 MIGD, RO
- Shuaibah Ph. 3 Expansion RO, Saudi Arabia,
- 33 MIGD, RO Shuaibah Ph. 3 IWPP Saudi Arabia, 194 MIGD, MSF
- Sabiya Stage 3, Kuwait, 50 MIGD, MSF
- Zawia MED, Libya, 1.1 MIGD, MED (Captive)
- Bas Laffan 'B', Oatar, 60 MIGD, MSF Shuaiba South Rehabilitation, Kuwait,
- 36 MIGD (20% increase), MSF
- Sohar IWPP, Oman, 33 MIGD, MSF
- Benghazi North MED. Libva. 1.1 MIGD. MED (Captive
- Sabiya Stages 1 & 2, Kuwait, 50 MIGD, MSF
- Eujairah Hybrid LIAE 100 MIGD MSE+B0 (Hybrid
- Shuaibah Pumping Station 'C', Saudi Arabia, 43.5 MIGD (Pumping station)
- Umm AI Nar Station 'B', UAE, 62.5 MIGD, MSF
- Az Zour South Ph. 2, Kuwait, 28.8 MIGD, MSE
- Al Taweelah A2 IWPP, UAE, 50 MIGD, MSF
- Shuaibah Ph. 2, Saudi Arabia, 100 MIGD, MSF
- · Jebel Ali Station 'E', UAE, 24 MIGD, MSF
- Assir Ph. 1, Saudi Arabia, 21 MIGD, MSF
- Yanbu Desalination Plant, Saudi Arabia, 6 MIGE MSF (Fauipment)
- Farasan Desalination Plant, Saudi Arabia, 0.5 MIGD, MSF (Equipment)

### Yanbu Ph.2 Expansion MED

Freshwater plant that uses MED (Multiple Effect Distillation). Site will be the Yanbu region 350km northwest of Jeddah. Saudi Arabia, with a daily production capacity of 68,000 tons.

#### — Features: World's largest MED



#### **Shuwaikh RO**

Freshwater plant that will be constructed in Kuwait harbor. The first large-scale RO project in Kuwait, the plant will produce 140,000 tons per day, enough for 450 000 nersons

- Country: Kuwait
- Ordered: 2008 - Size: 30MIGD
- Features: Kuwait's first fresh water plant

#### RO (Reverse Osmosis

A process that uses reverse osmosis, forcing seawater through a membrane to produce fresh water. Suitable for residential, agricultural and industrial water



#### **Ras Al Khair Ph.1**

Freshwater plant to be constructed in the Ras al Khair region, with the world's largest freshwater evaporator that will be 123m long, 33.7m wide, 11.5m high, weight 4 150 tons and cover the area of a football field. Production will exceed 1.04 million tons.

- Country: Saudi Arabia
- Ordered: 2010
- Size: 228MIGE
- Features: The world's largest fresh water plant

#### Hybrid method (MSF/MED+RO), (MSF/MED+RO)

A process that combines evaporation (MSF. MED) with reverse osmosis (RO) to produce fresh water. Suitable for large-scale production.

#### **Creative innovation for clients and our neighbors**

"Doosan Heavy Industries & Construction is at the top of the seawater desalination industry because our clients trust us. A good example of this took place during the recent bidding for the Ras Al-Khair project when the client chose us instead of a competitor that submitted a lower bid. The client had seen the value of Doosan Heavy Industries & Construction that goes beyond simple price." (Yun Seok-won, Executive vice president)

Widely known as a reliable long-term partner that can take charge of quality, safety, time efficiency and innovation in the entire EPC process, Doosan Heavy Industries & Construction also has a reputation of being "the leader of creative innovation for the client." An example is the development of the hybrid method that combines RO and MSF methods. First attempted in 2001 for the UAE Fujairah project, hybrid plants were developed to suit the needs of the Middle Eastern region where extra power is generated because of the need for water. The MED plant that uses steam is activated in summer when demand for both water and electricity is high, while the RO plant that uses a membrane is used in the winter when demand is high and energy efficiency can be maximized.

#### Social contribution through technology, going where water is scarce

This creative innovation transcends the market to reach our most distant neighbors. The seawater desalination plants developed by Doosan Heavy Industries & Construction's technology are supplied to all corners of the world where water is scarce. Having launched its social contribution effort in this area by providing water treatment facilities to Cambodia in 2006, Doosan Heavy Industries & Construction provided at no cost a 30-ton freshwater production facility to the Korean island of Dokdo in 2007.

Another great piece of news about water came via Doosan VINA, the local corporation in Vietnam. On August 30, 2011, Doosan VINA signed a memorandum of understanding (MOU) for the donation of seawater desalination facilities to Quang Nga Province and An Vinh Island in Vietnam. The plant opened in August of this year, capable of producing 100 tons of fresh water that can supply a day's worth of water to 500 people. Located 40km east of Quang Nga, An Vinh Island has no groundwater. Residents are forced to rely on rainwater or water shipped from outside the area. Having actively engaged in social contribution efforts since the moment the company was founded in 2006, employees of Doosan VINA took charge of every aspect of construction from ground testing to foundation construction, visiting the island several times by boat. These efforts built a highly positive impression of Doosan Heavy Industries & Construction while at the same time creating the framework for further private-sector contact and exchange between Korea and Vietnam.

"To our soldiers guarding Dokdo, the residents of An Vinh Island and indeed to everyone on the planet water is the

source of life. Being able to share this vital substance by using Doosan Heavy Industries & Construction's unparalleled technology makes it even more meaningful. Doosan's management philosophy of 'sharing dreams and hope throughout our society' is being realized through water, and through the better quality of life that water brings to all of humankind." (Park In-won, Managing Director / Water Planning)

#### **Technology and sincerity are Doosan Heavy Industries** & Construction's greatest weapons

Since three years ago many Doosan Heavy Industries & Construction employees have been finding themselves on flights bound for South America. Supported by the company's local branch in Santiago, Chile, which was established in 2009, they are knocking on the doors of markets in Chile, Peru and Ecuador. Top prospects include northern Chile and the copper mines of southern Peru. There are signs of mine operators shifting from using groundwater to more eco-friendly seawater desalination. Mexico and India are also potential markets. In Mexico 90% of lakes and rivers suffer from pollution, and Doosan Heavy Industries & Construction signed an MOU in 2010 as a partner of a large seawater desalination project being led by private capital. Demand for industrial water is also surging in India, a newly developing nation, and plans for supplying residential water in the long term through seawater desalination makes India a market with a high potential of growth. Doosan Heavy Industries & Construction's numerous seawater desalination projects undertaken in the Middle East during the past 30 years are now poised to expand into markets in Central and South America, North America, Southeast Asia, India and China.

When we worked to build the world's greatest water technologies, seawater desalination underwent a rebirth as the life-giving resource of humankind. When we moved forward without fear for any challenge, the result of the innovation became the new standard for the entire water industry. The technology and the sincerity of Doosan Heavy Industries & Construction that strive to create a sustainable future for all of humankind are blossoming today - where in the glass of water held by a child in Saudi Arabia, in the plants lining the streets of Dubai, in the faucet that the old man on An Vinh Island in Vietnam was able to call his own for the first time in his life, and in the hearts and minds of everyone on this planet.



66

Provided Dokdo with a facility capable of producing 30 tons of freshwater at no cost

**100** Tons/ day



Water is the source of life for all of humankind. Being able to share this vital substance by using Doosan Heavy Industries & Construction's unparalleled technology makes it even more meaningful.

# Stakeholder Engagement

Doosan Heavy Industries & Construction has selected its stockholders, customers, employees, partner companies, local communities, governments and related agencies, and competitors as our major stakeholders, as we implement sustainability management through a cooperative structure with all of our stakeholders. In order to make possible a systematic sustainability management system, we pay careful attention to a variety of communication channels to determine the needs of our stakeholders and apply them to our management activities.

## Shareholders



### ISSUE

• Maximize corporate value

Doosan Heavy Industries & Co struction uses presentation onferences and other method to communicate with stakeholder and review detailed manageme plans and business results. These Heavy Industries & Construction to carefully determine the needs of stakeholders and apply them to the company's strategies and poli cies.

#### **Communication Channels**

- Business Presentations
   Conferences
- Overseas NDR

Customers

ISSUE

Delivery of product and price

#### **Doosan Heavy Industries & Con** struction selects key clients ir each business division who receive personalized attention from sales and technology developclient companies and PAM (proactive marketing) allow Doosan Heavy Industries & Construction to suggest technologies tailored for the client, thereby enhancing trust in the capabilities of Doosan Heavy Industries & Construction as well as boosting overall cus-

#### **Communication Channels**

Road shows Technology presentations VOC

Employees



## ISSUE

Work satisfaction and welfare enhancement

Inder the motto of "People are he Future". Doosan Heavy Inlustries & Construction has se ected human resource manage nent as one of the company's itled "2G (Growth of People Growth of Business) Strategy". The 2G strategy is aimed at enhancing corporate value through a virtuous cycle where the growth of people leads to the rowth of the company, which

#### **Communication Channels**

Occupational health and safety committee



**ISSUE**  Mutual growth Better communication

Doosan Heavy Industries & Construction has formed the "mutua growth promotion team" under the auspices of the office of the COO to create the foundations of mutually beneficial relationships by strengthening the competitive capabilities of partner companies. By participating in mutual growth promotion meetings and utilizing a diverse array of communication channels, Doosan Heavy Industries & Construction pays careful attention to the issues affecting partner companies, determining their key needs

#### **Communication Channels**

• Win -Win Call CENTER

## Local Community





ISSUE

Product quality

Delivery and price

# ISSUE

Doosan Heavy Industries & Cor struction both oversees and sur orts scholarship programs fo the development of the local co nunity. In addition, specialized cu grams through industry-acaden high-quality human resources a well as leaders for the communit Building close relationships wi the members of local communiti Heavy Industries & Constructior

## **Communication Channels**

**Communication Channels** seminars and conferences

# Stable power and water supply Corporate social responsibility



## Government

Doosan Heavy Industries & Construction maintains close working partnerships with government agencies from the moment a development strategy is formed. The company is currently carrying power generation system in cooperation with related agencies and using public funds. Doosan Heavy Industries & Construction also works together with kev

## Competitors



ISSUE Comprehensive cooperation

Doosan Heavy Industries & Con struction regards its competitor: not as enemies vying for the same business but as potential partners, and works to determi knowledge in forming strategies and policies. Competitor informa-tion is collected through visits, quarterly IR reports, and press releases.

#### **Communication Channels**

- Quarterly IR reports
  Press releases
  Visits

#### DISTRIBUTION **OF ECONOMIC VALUE**

**Stakeholders** unit: millions of wo



8,403,101

# Identifying Material Issues

Doosan Heavy Industries & Construction carried out a five-step Materiality Assessment to determine the management environment and the most pressing issues being faced by stakeholders and systematically manage and report on the results. The assessment identified the issues that have the highest levels of social importance as well as potential effects on management activities.

Step 1	Step 2	Step 3	Step 4	Step 5
<b>ISSUE IDENTIFICATION</b> Organize a CSR issue pool of 700 separate Issues and determine 30 categories and themes	SOCIAL CONCERN Determine the importance of issue by surveying major stakeholders	BUSINESS INFLUENCE Evaluate importance through sustainability TFT	MATERIALITY CHART Determine the order of prior- ity based on social interest and effect on business	REPORT FRAMEWORK Identify and report on the material issues

issue categories to evaluate their materiality.

# STEP 1

**ISSUE IDENTIFICATION** 

### **1. Issue Pool**

**Internal materials** 

- 1 New quality overview report
- 2 IR materials
- 3 ESG assessment data
- 4 Website materials

#### **External materials**

- 5 Peers
- 6 Global standards
- 7 Media analysis

#### 2. Raw Data

Identified over 700 Issues

#### **3. Categorization**

**Classified into 30 Issue** categories



Over 700 internal and external issues related to sustainability were identified then classified into 30

STEP 2.3 SOCIAL CONCERN

**BUSINESS EFFECT** 

In order to identify major issues on sustainability, social interest was determined by analyzing media exposure, sustainability trends in leading companies, and materials on global standards and business effects were studied by examining strategic connections, financial impact, risks and reputations, and other factors that affect management.

## STEP 4 MATERIALITY CHART

Doosan Heavy Industries & Construction's most important and pressing issues were identified based on social interest and their effect on business, and submitted as a report.

Priority 1 - Priority 2

STEP 5

FRAMEWORK

REPORT

50

Anti-corruption / ethical management • External communication • Labor relations • Stronger environmental management • Economic results • Merit-based compensation / benefits • Sustainability • Staff healthcare / safety • Social contribution • Governance structure • Protect staff rights, expand diversity •

Identify 7 Sustainability Agenda by Assessing Importance Levels

## Sustainability analysis Best practices in sustainability involving companies listed on the Dow Jones Sustainability Index were studied to examine issues in four categories, including general sustainability issues, internalization of sustainability, and stakeholder directivity, and reporting methodology.

SPECIAL STORY SUSTAINABILITY MANAGEMENT 29

nhancing technology uality/reliability	<ul> <li>Financial/ non-financial risk management</li> <li>Contaminant and hazardous material management</li> </ul>	<ul> <li>Economic results</li> <li>Sustainable development project (PDS)</li> <li>Result-based compensation and employee benefits</li> </ul>	<ul> <li>Labor relations</li> <li>Stronger environmental management system</li> <li>Anti-corruption / ethical management</li> <li>External communication</li> </ul>
Aanage waste missions trengthen security nanagement	<ul> <li>Develop eco-friendly technologies</li> <li>Manage greenhouse gas emissions</li> <li>Train staff, boost experience</li> <li>Self-compliance with international standards</li> </ul>	<ul> <li>Governance structure</li> <li>Social contribution</li> </ul>	<ul> <li>Staff healthcare / safety</li> <li>Protect the rights of staff and employees and expand diversity</li> </ul>
'articipate in public olicy taw and secondary naterial management nd recycling	Staff communication	<ul> <li>Energy use and higher efficiency</li> <li>Support partner companies</li> </ul>	<ul> <li>Create and maintain jobs</li> <li>Manage water resources</li> </ul>
Partner CSM nanagement labitat / protection of iodiversity			
LOW	SOCIAL	CONCERN	HIGH

**Priority 1** 

## Introduction

**Business Overview** Special Story(Power&Water) Sustainability / Ethical management

#### 7 Major Issue

- 1. Strengthen technology competitiveness 2. Gain customer admiration 3. EHS management 4. Creative organizational culture 5. Smart office 6. Mutual growth
- 7. Social responsibilit

#### Appendix

Financial and non-financial scorecards

## **Priority 2**

- · Employee education and career development
- · Self-compliance with international standards
- · Manage contaminants and harmful materials
- Manage water resources
- Create and maintain jobs
- Manage financial / non-financial risks
- Control greenhouse gas emissions
- · Develop eco-friendly technologies
- Staff communication
- · Energy use and efficiency enhancement
- Support partner companies

# **Corporate Governance**

#### **Shareholder Overview**

Shares of Doosan Heavy Industries & Construction were listed on the Korea Exchange (KRX) on October 25th, 2000, with a total of 105,843,467 shares of common stocks issued as of December 2011. The largest shareholder is Doosan Corp., holding 41.24% of the total stock as of December 2011. An overview of the business management status is presented during the annual shareholders' meeting, with the business report concurrently disclosed to the Financial Supervisory Service to ensure maximum transparency. Quarterly and annual business results as well as medium-term management plans are posted on the company's homepage, and shareholder's needs and expectations are carefully determined through conferences and road shows to be reflected in management activities.

DOOSAN

Doosan Heav

Industries & Construction

41.2%

15.9%

12.9%

13.4%

16.6%

100%

#### Shareholders

Total

1

2

2

4

5

(As of December 31, 2011) Doosan Corp.

Doosan Heavy Industries &

Institutional investors

Foreign investors Individuals and others

Construction (treasury stock)

### **9** SPECIAL INTERVIEW



Jang Myeong-ho, Senior Vice President & CFO Cornorate Finance Devision

#### 66

I believe that CSR activities create a virtuous cycle that boosts the positive image of the company, attracts high-quality human resources, which leads to corporate growth

### 99

I believe that CSR activities create a positive relationship that boosts the image of the company, attracts high-quality human resources, which leads to corporate growth. This sustainability report will provide an opportunity for our various stakeholders to understand Doosan. Internally, the report will aid us in carrying out CSR training as well as function as the link between our various business areas and sustainable management. Future sustainable management reports will provide a more specific look into the future vision and mission of Doosan.

#### **Board of Directors**

The board of directors is composed of three inside directors and four outside directors for a total of seven on the board. Outside directors are selected from a pool of candidates twice the number of available seats recommended by an outside director candidate nominating advisory panel. An outside director candidate nominating committee selects a candidate for voting during the shareholders' meeting. Doosan Heavy Industries & Construction recommends candidates with expertise in different fields as directors, and maintains an audit committee, internal transaction committee, and an

### **Current Board of Directors**

(As of June, 2012)

	Name	Position	Role
Inside directors	Park Yong-sung	Chairman, Korea Sports Council Member, International Olympic Committee	
	Park Gee-won	Vice-Chairman and CEO, Doosan Heavy Industries & Construction	Chairman, Board of Directors
	Han Key-sun	President and COO	
Outside directors	Kim Sang-yeol	Vice-Chairman, OCI Co.	Member, Internal transactions committee Chairman, Outside director candidate nominating committee
	Lee Jong-yul	Dean, Sejong University Graduate School of Business	Chairman, Audit committee Member, Outside director candidate nominating committee
	Yoon Kun-young	Professor of Economics, Yonsei University	Member, Audit committee Chairman, Internal transactions committee
	Kim Hyoung-joo	Professor of Computer Engineering, Seoul National University	Member, Internal transactions committee Member, Audit committee Member, Outside director candidate nominating committee

#### INTRODUCTION

outside director candidate nominating committee under the board of directors in order to strengthen the board's overall level of expertise and facilitate efficient decision-making.

The board of directors is the final decision-making body for the company's management, speaking on behalf of not only the investors' interests, but also the long-term growth of the company as well by monitoring and voting on major management issues. The board of directors reviews and votes on issues related to laws and articles of association, issues delegated to the board by the shareholders' meeting, and major issues related to the basic management and operation of the company. Decisions made by the board of directors is based on the presence of the majority of the board, approval by vote of the majority of the board, or approval by vote of two-thirds of the total body of members as determined by the nature of the issue and related regulations. Directors who have a special interest in the issue are restricted from exercising their vote. Eleven meetings of the board were held in 2011 to address a total of 29 major management items and related issues.

#### Activities of Board of Directors

### Classif

Meetin Proposa Board n Outside

#### **Evaluation and compensation**

Compensation for inside and outside directors are issued based on the parameters approved during the shareholders' meeting. Members of the management body are compensated according to a performance-based salary system that links management achievements with the compensation scale.

## **Governance structure rating**

31

**Current status of Committees under Board of Directors** 

Committee	Members	Major roles
Outside director candidate	Three outside directors	Recommend outside director candidates recommendation committee
Audit committee	Three outside directors	Audit accounting and finances - Evaluate the operation of the internal accounting management system - Approve the appointment of outside auditors, etc.
Internal transaction committee	Three outside directors	Review and approve any internal transactions between subsidiaries worth KRW 5 billion or more

#### **Operation of Board of Directors**

ification	2009	2010	2011
ngs held	14	11	11
sals voted	32	22	29
member participation rate	85.2	86.1	83.3
e director participation rate	88.6	86.7	82.3

Doosan Heavy Industries & Construction strives to achieve qualitative growth that enhances corporate value through a transparent governance structure. According to the "Governance structure assessment rating" conducted by the Korea Corporate Governance Service, Doosan Heavy Industries & Construction was rated 'Good+' in 2009, and 'A' in 2010 and 2011

#### INTRODUCTION

# **Ethical Management**

#### **O** SPECIAL INTERVIEW

#### 66

I believe that honest and transparent ethical management creates corporate's trust and eventually raises the value of a company.

#### 99

#### Kim Bok-yun, Vice president | Audit

The audit focuses on the most ethical management among major CSR initiatives in Doosan Heavy Industries & Construction. It is very important for every employee to understand the code of ethics, business standards and processes, and other established corporate regulations. Doosan Heavy Industries & Construction maintains policies that protects the identity of internal and external whistle blowers, and an anonymous ombudsman allows us to continuously improve our business procedures. We plan to add a monitoring system and an assessment framework for ethical management.

#### **Code of Ethics**

- The company and its staff will make the greatest effort to provide good products with reasonable price to satisfy our customers
- The company and its staff seek to achieve mutual profit with any partner and entity
- The company and its staff work in good faith
- complying with the laws and respecting good social practices The company treats all staff fairly and equally based on ability
- and achievement
- The staffs carry out their tasks with passion and supreme effort
- The staffs take a leading role in work innovation through
- expert and professional knowledge

#### **Ethical Management System**

Doosan Heavy Industries & Construction holds integrity and transparency as values that must be upheld by a company, and that raises trust in the company through these values, which eventually raise the value of the company itself. Doosan Heavy Industries & Construction aims to create a culture on the basis of value and a fair pursuit of profit without resorting to expediency, honestly acknowledging mistakes and keeping promises, Doosan Heavy Industries & Construction aims to achieve sustainable growth through transparent management based on its code of ethics. The company shares staffs and stakeholders with its "ethical regulations" and "guidelines on staff responsibilities and on dealing with companies with conflicts of interest", to be used as the value standards for all staff members in carrying out their business tasks. Ethical management training for all staff members to comply with the code of ethics raises the awareness of its importance and such training will be expanded to our partner companies to assist them in their ethical management efforts as well.

#### Internal Audit System

The company operates an audit and internal control mechanism to prevent legal infractions, fraud waste and abuse for the purpose of ensuring full compliance with business standards, processes, corporate regulations and laws and regulations. Periodic audits for all aspects of business and internal control activities ensure that fairness, transparency and integrity are the standards to uphold in business activities rather than unscrupulous practices These efforts aim to instill a sense of respecting proper business practices free from expediency and adhering to standards, ultimately raising the company's overall integrity and value.

#### **Putting Ethical Management into Practice**

Every new employee joining Doosan Heavy Industry & Construction is obligated to complete an ethical management practices pledge, and ethical management practices are further strengthened by creating a system where all employees above the position of team leaders are required to complete conflict of interest statements. The company also sends letters requesting support for ethical management practices to partner companies each holiday, summer vacation season and at the end of the year in order to prevent fraud and corruption.

#### Cyber Reporting Center

The cyber reporting center receives suggestions on improving the ethical management or information on unfair business activities committed by other companies. Doosan Heavy Industries & Construction evaluates each piece of information for verification, improving business practices or addressing unethical practices according to proper laws and regulations. The identity of the person or group submitting the report, ae well as its contents, are kept strictly confidential.

#### **Company-wide Risk Management**

Doosan Heavy Industries & Construction's risk management can be divided into the project risk management activities conducted by each business division, and a company-wide risk management system that deals with the rapidly-changing business environment carried out at the company level. The nature of Doosan Heavy Industries & Construction means that there is a high ratio of metallic raw materials in the production cost, with large amounts of non-ferrous metals used to provide thermal proofing, corrosionresistance, and wearresistance. There is also a greater importance placed on overseas exports. Thus business activities can be highly affected by fluctuations in global metal prices and foreign exchange rates. Companywide risk management focuses on closely monitoring these fluctuations and applying the emergency contingency plans prepared for different scenarios

# Sustainability Management System

#### SPECIAL INTERVIEW

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Seeking mutual benefit for all of our company's family members and every one of our stakeholders is the core of Doosan's CSR.

#### 

#### Jeong Hyung-rak, Senior Vice president | Head of Strategic Planning

Forming a common theme for diverse efforts to improve our organizational culture as well as sustainability in order to seek mutual benefit for all of our company's family members and every one of our stakeholders is the core of Doosan's CSR. Doosan looks ten years or more ahead in social and environmental issues according to the company's goals and strategies. These corporate values are reflected in social contribution efforts such as the hiring of local employees, transferring technological knowledge, and strategic activities that help boost the independence of the beneficiaries or the host nation. These are all part of the unique social contribution activities of Doosan Heavy Industries & Construction.

#### **Management Philosophy**

The "Doosan Way" has not only been at the core of Doosan's growth in the past 100 years, but is Doosan's unique management philosophy and business method that increases future competitive capabilities. The Doosan Way provides the guidelines for setting targets and making strategic decisions, The Doosan Way is composed of "Aspiration" and the "Doosan Credo"

#### **Management Strategy**

Doosan Heavy Industries & Construction is working to provide water and electricity to all corners of the globe, using the company's high-efficiency eco-friendly technologies and cost competitiveness to allow all humankind to enjoy rich and fulfilling lives, while at the same time boosting corporate profits to deliver value to shareholders and fulfill the needs of customers. In 2007 the company created the "Global Leader in Power & Water" vision for 2015, selecting the advancement of the company's business portfolio, enhancement of core business leadership, and development of business systems as core strategic tasks. Advancing the business portfolio means shifting from traditional fixed-asset businesses into more high value-added techno-centric businesses while constantly developing new projects. Core business leadership will involve securing core independent technologies for key projects and taking the lead in future eco-friendly energy technologies. The development of business systems will include the optimization of the company's overseas outposts and production centers to achieve efficiency resource utilization and maximize global operational results.



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#### VISION

## **Global Leader in Power & Water**

This is a clear expression of Doosan Heavy Industries & Construction's desire to become the global market leader in the power generation and desalination industries, building worldwide leadership in technology, cost competitiveness and quality, sales and profitability, human resource development, and corporate culture. Doosan Heavy Industries & Construction will also strive to lead global technology trends and market movements to become a true global powerhouse.



#### **Management Strategy Process**

Doosan Heavy Industries & Construction's policy and strategy creation and revision process includes [Strategy formulation -> evaluation -> Assessment] at both the top as well as business group levels. A ten-year longrange plan (LRP) is established at the top level, augmented by five-year plans at the business group level. Both company-wide and business group also create annual operation plans (AOP) to specify long range plans and determine execution strategies. Management by objectives (MBO) goals are given for each strategic assignment to appropriate staff members and executives, and the MBOs are evaluated during the fourth guarter for all staff including the CEO to be reflected in the final assessment.

#### Strategy formulation / evaluation / revision process 1 QUARTER **3** QUARTER 4 QUARTER Marketing $\rightarrow$ Pre-LRP strategy (Long range plans) (Annual operation plans) meeting NEW BUSINESS COMMISSION NEW BUSINESS COMMISSION → MB0 Assessment Establish OBB (Quarterly business **MBOs** report)

# **SUSTAINABILITY** ISSUE

Doosan Heavy Industries & Construction is proud to provide products and services that can enhance the quality of life for every community around the world. As part of our unyielding efforts to become a global innovation leader, we have selected sustainability agencies of Doosan Heavy Industries & Construction sustainability agenda based on a solid understanding of the "Doosan Way" and wish to share them with all of our stakeholders.

#### 1 Enhancing Technology **Customer Service EHS Management** Competitiveness **1.1** Technology development 2.1 Quality assurance system **3.1** EHS management system process 2.2 Product responsibility **3.2** Long range environmental **1.2** Technology development management goals 2.3 Providing Information investment **3.3** EHS prior evaluation process 2.4 International certified **1.3** Technology development results calibration support **3.4** Environmental technology **1.4** Eco-friendly future technology development and investment **2.5** Technical advisory support development **3.5** Responding to climate change **2.6** Technical support **3.6** Green energy monitoring system **2.7** Voice of the customer (VOC) **3.7** Eco-friendly green purchasing 2.8 Customer satisfaction index process **3.8** Environmental quality management

- 3.9 Habitat protection
- **3.10** Safety and health management
- **3.11** Emergency management

# **Creative Organizational**

## **Smart Office**

- 4.1 Staff and employees
- **5.2** Capability development
- **4.3** Providing equal opportunities **4.4** Respect for human rights
- 4.5 Fair evaluation and compensation

Culture

4.7 Human resource development

5

- 5.1 Background **4.2** Attracting top talents
  - roadmap
  - 5.3 Smart office effect
- 4.6 Benefits

# 6

#### **Shared Growth**

6.1	Creating partnerships built
	on virtuous cycle

- 6.2 Newly build up shared growth team
- 6.3 Enhancing partner company competitiveness
- 6.4 Financial support expansion
- 6.5 Supporting joint expansion into overseas markets
- 6.6 Stronger Communication
- 6.7 Partner company evaluation system
- **6.8** Self-compliance program for fair trade practices
- 6.9 Carrying out self-compliance of fair trade practices

#### **Social Responsibility**

- 7.1 Themes in social responsibility\_ Human growth and independence
- 7.2 Volunteer activities
- 7.3 Community contribution
- 7.4 Social responsibility around the world

# ENHANCING TECHNOLOGY COMPETITIVENESS

ISSUE

#### VISION

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#### **Creating Value in Power & Water Technologies**

We are working to achieve technology leadership by developing new projects in the power and water industries as well as boosting our technological competitiveness. We also aim to contribute to national energy security and the development of related domestic industries by strengthening internal competitiveness and promoting open innovation.

## - New Technology development process

PROJECT

- USC power generation technology
   WINDS 3000<sup>™</sup> 3MW offshore wind power
- system (development complete) — Independent HRSG mode — Korean NSSS (nuclear steam supply system)
- development (APR1400) and I&C technology — Large-capacity MED design technology

#### 2012 PLAN

- Integrated monitoring and control system for thermal power generation
- Integrated Coal Gasification Combined Cycle (IGCC) technology
- Power output and efficiency enhancement technology for 500MW coal-fired power plants
- 3.5MW Superconductor generator for ships
   Membrane distillation (MD) for seawater
- desalination system technology

Heavy industry patents

#### Eco-friendly technology development status



generation technology

## CO2 capture & storage technology



IGCC(Integrated Coal Gasification Combined Cycle) PCC(Post Combustion Capture) Oxygen Fuel Combustion



\* Korean patents: 532, Korean utility models: 410, Overseas patents: 20

#### **Eco-friendly technology investment**

(unit: - hundreds of millions of won, ... projects)





We will continue to invest in eco-friendly technology development to create new future growth drivers and help create a new, eco-friendly society.

#### **SPECIAL INTERVIEW**



Lim Jae-koo, Vice president, Technology Planning I Technology Research Center

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Not only should we focus on strengthening our current technological capabilities but also develop new technologies that will draw out future growth drivers.

### • • •

Providing the technology that our society needs at the right time and place can be regarded as the technological aspect of a company's social responsibility. In this sense, not only should we focus on strengthening current technological capabilities but also develop new technologies that will lead to future growth drivers. Doosan Heavy Industries & Construction will continue to invest in and develop new technologies such as green growth energy in order to reduce our reliance on overseas power generation technologies and processes. **1.3** Doosa gover wind ship µ ment: cuttir

#### SUSTAINABILITY ISSUE APPENDIX

#### 1 Enhancing Technology

- Competitiveness
- 2 Customer Service 3 EHS Management
- 4 Creative Organizational Culture
- 5 Smart Office
- 6 Shared Growth
- 7 Social Responsibility

#### 1.1 Technology development process

The power and water industries are highly exposed to outside political, economic and other influences, and the internal core capabilities of a company do not always guarantee success. Doosan Heavy Industries & Construction develops new business opportunities by constantly determining the needs of the market and customers, drawing up long-range strategic plans to secure the necessary technology through the company's optimized technology development framework. A BG new business committee is convened semi-annually to propose new R&D tasks and review current research projects. A technology incubation (TI) process is established from the initial stages of new product development to secure technology that fits the needs of the business group, and product line management (PLM) organizations are set up in each business group. Development processes acquired through participation in key public projects are used to enhance the commercial viability of the development process, allowing Doosan Heavy Industries & Construction to provide advanced products and services to the market. All technology development is carried out within the regulations established for technology development task management. The BG PLM oversees technology development for existing business areas, while the technology development center is tasked with discovering and developing new businesses and technologies. The results of these research efforts are evaluated by the new business / technology committee. The results of all technology development projects are managed online through the Doosan R&D management system (DRMS).

#### 1.2 Technology development investment

Technology development takes the form of either boosting the technological competitiveness of existing businesses or developing new businesses and technologies. Enhancing product functions as well as investing in new products and technologies in existing business areas allow us to deliver new technologies and products to our customers. Technology development for new businesses is aimed at securing key original technologies, via technology partnerships with leading companies, independent development, M&As, and other methods. In 2011 over 70% of the total development budget was invested in enhancing the functions and improving the efficiency of existing business areas, which boosted the competitive capabilities of core products such as boilers, turbine HRSG and nuclear power. The other 30% was invested in development of new business areas in eco-friendly future energy to build pioneering technologies.



#### **1.3 Technology development results**

Doosan Heavy Industries & Construction has a solid joint technology development process with government agencies and clients. The company is currently carrying out 29 public projects including wind power and nuclear reactor coolant pumps, and has completed 10 overseas technology partnership projects with outside partners. The commercialization of 50 technology development achievements from 2006 to 2010 led to 433.3 billion won in orders and 707.8 billion won in sales while cutting costs by 12.1 billion won. Continuous efforts in technology development are adding to the company's long list of patent applications and registrations. Doosan Heavy Industries & Construction is also working to minimize the risk of disputes and secure core patents by carefully analyzing existing patents in new technologies, and will expand its patent portfolio even further in 2012.



#### 1.4 Eco-friendly future technology development

Doosan Heavy Industries & Construction is working to develop next-generation sources of energy such as wind power, fuel cells and other new and renewable energy technologies as future growth drivers, which will ultimately reduce greenhouse gas emissions and environmental pollution. The company developed, tested and began the commercialization of Asia's first 3MW offshore wind power system, the WinDS 3000<sup>™</sup>. The company is also developing a molten carbonate fuel cell for 300kw generators for commercialization by 2013. Green energy technology development is at the core of all of Doosan Heavy Industries & Construction's policies and strategies including Korea's first IGCC technology, which generates electricity by turning coal into gas, and CCS technology. The company has signed a partnership agreement for IGCC technology development with KEPRI and Korea Western Power Co. to boost technology development and build trial plants. Doosan Heavy Industries & Construction will strive to maintain a leadership position across the entire range of eco-friendly technology development, including CO2-free technologies, CO2 reduction technologies, and CO2 trapping and storage technologies.



#### Technology name Effect of commercialization Technology overview Acquired independent design technology by Received order for New Boryeong USC power Nos. 1, 2 developing core design technologies and tools, and generation developed a 1000MW ultra supercritical boiler and • Performance enhancement order for technology Boryeong Nos. 1, 2 boilers turbine modelt (2010~2015) - Steam conditions: 265kg / cm2g/ 610°C/ 621°C • Developed and prepared for commercialized a Received order for three units for the Wind power Jeollanam-do Shinan wind power 3MW wind power generation system generation system complex - 3MW rated output, 13m/s rated wind speed • Supplied and currently operation two (2005~2012) - Type class and equipment lifespan: IEC 1A, over 20 years units for the Yeongheung complex • Ten units for Tamra offshore wind power Korea's first international equipment certification for 3MW unit • Developed Doosan's proprietary HRSG model • Received order for the Mapna Independent HRSG 22 Units Project in Iran model (2003~2004) Integral head Developed the technology for integrated R/V closure • Four orders including the AP1000 in Shanmen, China, and Vogtle AP1000 head, S/G elliptical head and transition cone, and technology PJT in the United States channel head into a single unit that can enhance the (2006~2009) safety and reliability of nuclear reactor and steam generator chambers Near-net shape integral head manufacturing technology - Recovery rate (final finished weight / ingot weight): over 20%



Technology name	Technology overview	Effect of commercialization	
APR 1400-class RCP localization technology (2007~2012)	<ul> <li>Developed key technologies for designing and developing APR 1400 reactor coolant pump (RCP), applied to new nuclear power plants</li> <li>Aquired RCP design and technology</li> </ul>	<ul> <li>Received orders for the New Uljin Nos. 1, 2 plants</li> <li>Ready for application in new reac- tors in Korea and abroad</li> </ul>	
Combined verification technology for commercializing nuclear power MMIS <sup>1</sup> (2007-2010) 1 MMIS: Man-Machine Interface System 2 KNICS: Korea Nuclear Instrumentation & Control Systems	<ul> <li>Established the functions of the protection/monitor- ing/control systems developed through the KNICS<sup>2</sup> R&amp;D project</li> <li>Developed main control room equipment and reac- tor model interface methods not developed through the KNICS project</li> </ul>	<ul> <li>Received orders for the New Uljin Nos. 1, 2 plants</li> <li>Ready for application in new reac- tors in Korea and abroad</li> </ul>	
Large-capacity MED design technology (2005-2011)	<ul> <li>Independently developed large-capacity MED- TVC technology for over 10MIGD facilities for the important Middle Eastern MED market</li> <li>Basic design for 20MIGD high temperature MED- TVC, pilot test for compact high-temperature MED</li> </ul>	<ul> <li>Received order for Yanbu Ph. 2 MED, largest in unit capacity in 2010 (15MIGD x 1unit)</li> <li>Received order for Marafiq MED (2011) (6MIGD x 2unit)</li> </ul>	
Brackish water RO ZLD technology (2009~2011) 1 HPRO: High Pressure RO 2 UF: Ultra Filteration	<ul> <li>Zero Liquid Discharge system for water reuse and brackish RO process</li> <li>Achieved high recovery rate (over 93%) using HPR01 technology</li> <li>Developed concentrated water treatment technology combining UF2 membrane with chemical water softening</li> <li>Developed Doosan's proprietary membrane ZLD original technology</li> </ul>	Received order for WTP#2 ZLD in Palm Coast, Florida (2011)	

#### APPENDIX

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# **CUSTOMER SERVICE**



#### VISION

The customer is always at the center of Doosan Heavy Industries & Construction's management philosophy Customer satisfaction "action guidelines" are posted in offices and on field locations to reinforce the importance of putting the customer first. As a company we are working to maximize customer satisfaction by understanding the customer, determining the needs of the customer, and delivering value that exceeds these needs and expectations

- Global quality assurance system for quality, environment and safety - Nuclear service center capable of maintenance and repair services
- Service manager group overseen by the COO — Mutual development through partnerships with clients

PROJECT

#### 2012 PLAN

- Continuous quality enhancement activities — Analysis of overseas customer satisfaction surveys to ensure the satisfactory execution of the roles of a global EPC player

**VOCs received and processed** 63.5% Nuclear (unit: processed / received) power Thermal. 67.5% Hybrid powe  $\bigcirc$ Water Forging & Casting 58.8 66.5% 59.7% Construction total 65 4% ETC Others Job notices 70.3% IR 58.7% PR 64.2% Related 66.7% R Websites Products & services 64.2% Others 62.9% the number of received cases
 the number of processed cases

## **Customer technology support overview**

(unit: cases)





Park Min-chul, Vice president | Quality Innovation

**SPECIAL INTERVIEW** 

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We aim to manage our clients' needs through quality, technology and service in order to maximize customer satisfaction. 

While there are many stakeholders associated with CSR in quality innovation, we place the greatest importance on our customers. "Creating customer value" is one of our main missions. We aim to manage our clients' needs by quality, technology and service in order to maximize customer satisfaction. Serious issues in quality are carefully analyzed through RCA to find the fundamental source of the issue as part of our overall social and environmental quality issue management. We expect to adopt a system for managing our customers by the business group in the very near future.

Others Total

Doosan Heavy Industries & Construction is working to provide perfect quality in production, construction and project execution- in order to deliver the highest level of satisfaction to the customer regarding the guality of the product delivered to the customer as well as in function, maintenance and service. The company has written and distributed guidelines on "Working with zero faults" in order to prevent human errors during work processes. When problems occur, every employee takes part in analyzing the fundamental cause and correcting the deficiencies thus discovered in order to prevent the recurrence of such issues. Doosan Heavy Industries & Construction is also working to eliminate hazards that may affect customers through a product liability (PL) hazard evaluation process. Manuals that can be easily read and understood by the user, the client, are created as a display fault prevention process, and a user manual checklist is used as a final check to find and correct parts of the manual that can be improved or made more understandable. In addition, should the customer require liability coverage for the product, we offer a higher level of trust through a product liability insurance process.

#### Fault rate

**Busine** Power ge Water Construct Casting 8

- 2 Customer Service
- 3 EHS Management 4 Creative Organizational Culture
- 5 Smart Office
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- 7 Social Responsibility

#### 2.1 Quality assurance system

Doosan Heavy Industries & Construction monitors product features at each stage in order to fulfill customer needs. The quality policy is to ensure that the engineering, manufacturing, construction and service of power-generation and water projects fulfill the requirements of customers as well as regulatory agencies. The standard process is composed of a project quality manual, standard quality manual, quality management procedures, and various other quidelines. Doosan Heavy Industries & Construction is known throughout the industry for maintaining a world-class quality assurance system by continuously monitoring the sustainability of the system's effectiveness, Doosan Heavy Industries & Construction has built world-class engineering and construction capabilities and an extensive supply chain through constant guality innovation activities, ensuring total control assurance from the moment materials enter the factory to when the final product is shipped.

#### **Quality certifications**

Area	Certification Type	Quantity
KEPIC(Korea Electric Power Industry Code)	Production: MN, SN, EN Construction: MN, SN, EN, MH	7
ASME(The American Society of Mechanical Engineers) Nuclear	N, NPT, NS, N3, NA, Site NA, Site NPT	7
ASME Non-Nuclear	U, U2, S, A, PP, H, R	7
ISO(International Organization for Standardization)	9001: 3834-2 14001(Production, Construction)	4
PED(Pressure Equipment Directive)	H, H1, Module	2
Others	OHSAS, Shipping Registers etc	25
Total		52

#### 2.2 Product responsibility

ess Group	2009	2010	2011
generation (average)	0.42	0.43(including service)	0.41(including service)
	0.39	0.56	0.73
iction	0.45	0.51	0.6
& forging	0.08	0.08	0.08

\* BG fault rate calculate using the arithmetic mean of each BU's fault rate

#### 2.3 Providing information

When changes are made in quality manuals and procedural quidelines. Doosan Heavy Industries & Construction informs customers, regulatory agencies, certification bodies and other stakeholders of the changes to request and receive prior approval before completion of the changes. The company holds periodic customer road shows and new product demonstrations in order to promote existing and new technologies and provide technology consultation and discussion on issues being faced by customers. Annual conferences in Korea as well as overseas events are held to maintain constant ties with the customer base, and the publication of research papers promotes the capabilities of Doosan Heavy Industries & Construction to customers around the world.

#### Providing and sharing information

#### 2009 2010 2011 31 5 13 Technology support visits, customer training seminars Overseas conferences, domestic & overseas academic presentations 7 9 16 Road shows, new product demonstrations 3/ 17 51

#### 2.4 Internationally certified calibration support

Doosan Heavy Industries & Construction's expert calibration technicians, armed with experience and the latest equipment, carry out precise and accurate calibration support activities. Advanced calibration chambers that comply with environmental standards as well as a proprietary calibration management program form a perfect support structure. Doosan Heavy Industries & Construction provide research and development as well as a wide variety of calibration and testing services and support for casting and forging, the basic material foundations of industry, to power generation equipment, seawater desalination plants, environmental facilities, and handling and unloading facilities. The company has been designated as a KOLAS-certified testing agency by the Agency for Technology and Standards of the Ministry of Knowledge Economy, and operates an internationally certified calibration and testing agency.

#### 2.5 Technical advisory support

Doosan Heavy Industries & Construction promotes its technological capabilities to existing as well as future customers and helps client companies cut costs by addressing and solving technology issues submitted by customers in Korea and abroad as well as by related agencies. A partnership and periodic meetings deliver mutual profit as well as solutions for various issues. Quality engineers from the Korea Hydro & Nuclear Power Co., a major power industry client, meet with their counterparts from Doosan Heavy Industries & Construction each month to respond jointly with major issues by boosting mutual understanding and solving problems together.

#### 2.6 Technical support

Doosan Heavy Industries & Construction operates a rapid support system that responds to customer requests or complaints for products and services in order to provide the maximum level of customer satisfaction. From installation to after the equipment becomes operational, customer complaints and claims are carefully studied from the moment they are filed to produce remedies and even carry out design changes if needed. Customers are given rapid feedback to prevent the claim from being unsatisfactorily addressed and leading to a secondary claim from the client. A rapid response team is always standing by to respond to customer complaints that occur on the job site. The rapid support TFT is composed of customer supporters and solution experts.

#### CUSTOMER SATISFACTION ACTION GUIDE

#### 1. The customer should be the standard for every decision

- We must always find the answers to questions such as:
- What do customers want, and why are they dissatisfied?
- What are the customers' desires and how are they changing?
- What are the ways we can satisfy clients?
- 2. We take full responsibility for our products
- We must be ready to promptly address and solve any defect or problem.
- 3. The products of our partners are our mirrors
- Materials and machinery supplied by our partner companies are also our responsibility, and we must lead the efforts to address problems.
- Meet often with customers 4
- Out of sight, out of mind. Meeting the customer is the first step to satisfaction.

Doosan Heavy Industries & Construction provides customer support services through its homepage. The power company support center specializes in rapidly responding to the needs of power companies and operators, our major clients, and customer requests and inquiries submitted to the support center are rapidly addressed by the appropriate employees working closely with other related departments. A total of 161 cases were processed in 2011, and the results of power company customer support and support activities are monitored through the customer service rapid response request management system. We also operate the "Site Issue" management system that can monitor minor issues and solutions that arise at the job site, allowing the company to deal guickly and efficiently with similar issues. Questions or service requests submitted through the homepage are assigned to a staff member who responds to each request, and the questions are organized and managed by type for future reference.

Doosan Heavy Industries & Construction developed its own satisfaction survey model to be conducted periodically, the results of which are used to determine major areas of improvement and build systematic plans to address these issues. Doosan Heavy Industries & Construction carries out customer satisfaction surveys every three years for the company's customers in the power-generation industry in order to assess the expectations and needs of internal and external customers, along with in-depth face to face interviews with high-level managers and team leaders of customer companies. A total of 75 high-level and 146 team leader surveys were carried out in 2010 to identify the customer's needs and VOC(Voice of Customer). In additions, internal employees were surveyed to determine the level of customer satisfaction from the viewpoint of the customer in order to close the gap between customers and employees and apply these lessons in actual company-wide service innovation systems. A service manager council under the auspices of the COO is charged with accelerating service improvement activities in diverse business areas and sharing the results of such efforts. A nuclear power service center capable of carrying out maintenance and repair services was established in August 2011, and the "DOORE" (Doosan Robot for Engineering Service) was launched. Doosan Heavy Industries & Construction constantly carries out customer satisfaction surveys for its Korean customers, and these surveys will soon be expanded to include overseas customers as well.

## (unit: %)

Project managemen Quality

Testing

SPECIAL INTERVIEW

Choi Yeong-tae, Senior vice president | EPC 1PD

Doosan Heavy Industries & Construction actively responds to environmental, social and other issues that occur within the community during every construction process. **99** 

Doosan Heavy Industries & Construction actively responds to environmental, social and other issues that occur within the community during every construction process. We carry out social responsibility management in our host countries by improving the welfare of our employees, hiring local workers and training them, and engaging in other environmental, ethical and social initiatives. Local companies are managed the same way as any other business unit, free from discrimination. However, there are issues that arise while building consensus on safety issues due to cultural differences. Related EHS (environment, health and safety) issues are all made public and reported to proper channels, with impendent reporting for accidents that involve contractors and subcontractors.

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#### 2.7 Voice of the customer

#### 2.8 Customer satisfaction index



# **EHS** MANAGEMENT



#### VISION

Having received the ISO14001 certification in 1997 and the OHSAS 18001 certification in 2004. Doosan Heavy Industries & Construction has constantly focused on EHS in every production facility and project site around the world. The company is responding effectively to global warming as well as fulfilling its roles as an opinion leader in the machinery industry by taking part in public projects each year.

#### PROJECT

- Selected as one of the five leading participants of the CDP (Carbon Disclosure Project)
- Green energy monitoring system — Zero major incident rate
- Greenhouse gas prior reduction certification

#### 2012 PLAN

- Casting process environment improvement
- Greenhouse gas emissions trading pilot project
- Changwon factory / construction site EHS
- management system integration - Monitoring and operation of a healthcare program
- Diverse capability enhancement programs (EHS personnel
- Personal security for employees dispatched

135,000 TCO<sub>2</sub>e

19,000 TCO<sub>2</sub>e

2,000 TCO2e 0.6%

12,000 tons/year

41%

53%

5.8%

|--|

1	Electricity	340,080 MWh/ year	56.4%
2	LNG	47,829,000m <sup>2</sup> / year	36.9%
3	B-B	536 kl	0.4%
4	By-product material No.1	9,730 kl	6.3%
5	LPG	141.7 kg	0.0%

#### WATER USE

2	water supply) Use Ground water supply	3,748 tons	0.25%
	Total	1,475,124 tons	

#### **RAW MATERIAL USE**

1 R	eclaimed metal (recycled)	102,852 tons	38.7%
<b>2</b> So	crap metal / Alloy metal	144,956 tons	54.5%
3 Quick lime		10,764 tons	4.0%
4 Fl	uorite / lump coal	7,444 tons	2.8%

# $CO_2$

MA

Total	328,000 TCO <sub>2</sub> e
WASTEWATER PR	OCESSING

2 Indirect emissions (power) 172,000 TCO<sub>2</sub>e

**GREENHOUSE EMISSIONS** 

1 Direct emissions (fuel)

3 Mobile combustion

4 Process emission

Recycled water

	RAW MATERIAL PRO	CESSING OVERVIEW	
2	1 Landfill	14,257 tons	19%
2	2 Incineration	2,129 tons	3%

	3 2 Incineration 3 Recycle	Incineration	2,129 tons 3%			
Ι		3	Recycle	58,888 tons	78%	

2009

2010

2011



## Sustainable EHS management organization





agement regime.

## **3.2 Long range environmental management goals**

Doosan Heavy Industries & Construction has established three strategic goals and specific missions in order to accomplish the long range environmental management vision of "reaching the global top tier in energy & environment".

#### Environmental management vision / strategy, long range plan

VISION	Reach
MISSION	Doosai specific missions
STRATEGIC GOALS	Proactive risk man
	2 Integrated energy environment syste
	B Expansion and dis to create energy/
STRATEGIC TASKS	Domestic and overseas Create early inform acquisition syst
	Establish interna management sy
PRIORITY TASKS	<ul> <li>Pre-check regulatory informative they are made into law</li> <li>Compile checklist of internal resolutions</li> <li>Strengthen and integrate emersystem</li> <li>Strengthen networks (governmorganizations, community, loca</li> <li>Participate in trial emission trained in trial emission trained and the second to ESG and other integrated and the second to Strengthen social contribution</li> </ul>



2009 2010 2011 2012 2020

2009

2010

2011

- 1 Enhancing Technology
- 2 Customer Service
- 3 EHS Management
- 4 Creative Organizational Culture
- 5 Smart Office
- 6 Shared Growth
- 7 Social Responsibility

#### 3.1 EHS management system

To ensure a working environment that is eco-friendly, safe and emphasizes the person and the environment, Doosan Heavy Industries & Construction uses a well-organized system composed of expert personnel as well as an integrated certification of the EHS system that encompasses all three fields (environment, health, safety) that searches for new EHS issue each year and involves the entire staff in addressing these issues. Sustainable EHS management organizations form company-wide EHS (planning team, management team, energy environment team) and each BG EHS team. EHS specialists are also dispatched to EHS posts in the Middle East as well as overseas production facilities in Vietnam, Romania and India as part of a management system that keeps track of the entire company's EHS man-



#### EHS prior evaluation process



#### SPECIAL INTERVIEW



Chung Han- Woo, Vice President | EHS

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Our top values are based on the interests of people and the environment, and we are trying our utmost to create a world filled with health and vitality.

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Doosan Heavy Industries & Construction responds to corporate social responsibility issues by adhering to the company's "human-centric" management philosophy. The company's EHS (environment, health, safety) regime includes partner companies as well as overseas project sites. EHS-related issues are organized into a system with feedback progressing from members to the BG chief, manager, plant director (senior production manager) and the senior site supervisor. In late 2011 the company launched a Green Energy Monitoring System (GEMS) to respond to climate change issues.

#### 3.3 EHS prior evaluation process

Doosan Heavy Industries & Construction makes a careful assessments of environmental elements and risk factors that can have EHS implications from the raw material to production and supply. and evaluates and manages environmental impact and risks of various activities and processes. An EHS prior evaluation process makes an early assessment of the EHS impact as well as the relevant regulations for new investments and construction projects, eliminating legal risk and environmental hazards before they can develop.

#### 3.4 Environmental technology development and investment

The development of eco-friendly products was selected as the company's greatest core strategic mission during a technology development strategy session. The company is actively pursuing ecofriendly business projects under the motto of "Technology that enhances the value of the Earth". These efforts have created results including the international certification of a 3MW offshore wind power system, the development and commercialization of carbon dioxide capture and storage technology, Korea's first IGCC project, and the successful development of a 300kW fuel cell technology.

#### 3.5 Responding to climate change

To actively respond to climate change Doosan Heavy Industries & Construction has set up a dedicated climate change team tasked with analyzing and responding to the risks and opportunities associated with climate change. Doosan Heavy Industries & Construction takes part in a variety of government projects in this area including the trial run of the greenhouse gas energy target management system project and the machinery industry MVR (measureable verifiable reportable) standardization project. These efforts were acknowledged to be early reductions of greenhouse gas, giving the company emission rights for 15,855 TCO<sub>2</sub>e in 2010 and 11,444 TCO<sub>2</sub>e in 2011 for a total of 27,000 TCO<sub>2</sub>e. The company established the GEMS (green energy monitoring system) to cut greenhouse gas by allowing any staff member to access and utilize carbon information, and the company's greenhouse gas management system performs real-time monitoring of greenhouse gas emissions by factory/ facility, CO<sub>2</sub> emission per unit and emission reduction tasks. Doosan Heavy Industries & Construction invests over three billion won each year in fuel conversion, adopting high-efficiency equipment, optimizing heating facilities, and LED lighting. The company also strives to save energy in every aspect by checking for leakages and complying with heating and air-conditioning standards. Since 2009 the company has been a member of the carbon disclosure project (CDP) to promote the open sharing of greenhouse gas information. In 2011 Doosan Heavy Industries & Construction was selected, along with Doosan Co. and Doosan Infracore as one of the five corporate groups taking part as leading companies in the CDP.

#### Climate change response organization

Roles are assigned to the Business Groups that operate the carbon emitting facilities to fulfill the Energy Target Management Scheme which is launched by Korean Government since 2012.



#### 1. Report system policies

BG tasks are reported to the BG operational committee once a month. Company-wide tasks are reported to the company-wide operational committee should a decision need to be made, which will lead to the inclusion of the emission-reduction activity to the MBO's OE(Operation Excellence) goals for management

#### 2. Roles and procedures

#### Dedicated team Respond to government policies. Manage company-wide GHG(Green House Gases) emission control achievements

- BG operational committee
  - Check the overall progress and set projects direction
  - Solve the limitations and problems occurring with the Operational team during executing enhancement.
- Operational team Collect and specify ideas for improvement Execute energy efficiency improvement activities Monitor results to verify effects

#### 2011 greenhouse gas emission reduction task results

Project	Reduction (TCO2e)	Cost reduction (hundreds of millions of won)
Furnace fuel conversio project	on 628	-
Dust collectors operat process improvement	ional 1,980	2.1
Adopting of high-effici facilities	iency 2,205	4.0
Adjusting of combusti condition	ion 1,143	4.3
Total	5,956	10.4

TCO<sub>2</sub>e.



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#### Climate change response strategy road map



#### 3.6 Green energy monitoring system

Doosan Heavy Industries & Construction was certified in December 2008 for its greenhouse gas inventory that analyzes and manages the type of greenhouse gases produced by every production process, reduction technologies, and potential levels. The company launched the GEMS (green energy monitoring system) in October 2011 to fall in step with global green growth initiatives, which monitors the total carbon emissions produced by each factory and facility, and helps to meet the emission target of company. The company plans to reduce greenhouse gases by 7.6% (emission target: 403,000 TCO<sub>2</sub>e) by 2020, with a 1.1% reduction targeted for 2012 for a total emission of 341,005

#### 3.7 Eco-friendly green purchasing process

Doosan Heavy Industries & Construction signed a voluntary green purchasing agreement in September 2005, A green purchasing guideline was established in 2011 in compliance with the "Framework Act on Low Carbon, Green Growth" that formed a green purchasing process. This system checks the purchase at the ERP (Enterprise Resource Planning) stage and automatically monitors improvement initiatives via a GEMS(Green Energy Monitoring System). The company has expanded its purchasing range to include as many products certified as eco-friendly products, recycled products, energy-saver products, hazardous substance reductions products and waste reduction projects in order to promote the consumption and use of green products.





#### 3.8 Environmental quality management

Doosan Heavy Industries & Construction applies eco-friendly elements to every production and service activity including product design, purchasing, production, storage, handling, supplying and service. This green production system allows Doosan Heavy Industries & Construction to take a leading position in the local community's environmental protection efforts as well as help preserve the entire planet's environment. As of 2011 the company has not committed a single infringement of environmental regulations, and due to the nature of the company's businesses no ozone-destroying substances are released.

#### Raw material management

Scrap metal accounts for 95% of all raw materials used in the steel making process, and the scrap metals, waste molds, casts and processed chips that are internally generated are recycled. The recycling rate of recovered steel rose every year to reach 38.7% in 2011, and we will continue to expand our recycling efforts.

#### Water resource management

Doosan Heavy Industries & Construction adjusts the water pressure of every piece of equipment that uses municipal water in its factories and installs water saving devices as part of the company's efforts to conserve water. Future plans in the works include utilizing rainwater for landscaping and cleaning purposes and re-processing and recycling the final processed water for use in the most heavily water-demanding tasks.

#### Atmospheric environment management

The atmospheric emission and prevention systems for 137 locations including the electric arc furnace, reheating furnace and Derusting facilities are closely monitored. Facilities that are older than 15 years along with painting, acid cleaning and large-scale facilities are specially managed. Contractors specializing in air guality management check the atmospheric environment management facili-



A view of the final rainwater release section



Semi-automatic pollutant collection system

#### Water environment management

Waste water produced by Doosan Heavy Industries & Construction is classified into three categories (oily water, dusty water, and acidic or alkaline water). All waste water is sent to the waste water treatment facility that uses physical treatment(condensation, settling, filtering) as well as chemical methods to process an average of 700 tons of waste water over 10 hours of operation per day (maximum capacity: 1,590 tons / day). The processed water is maintained at less than 40% in all 17 of the waste processing regulatory standards before being sent to the final sewage treatment plant operated by Changwon city. A 24-hour remote monitoring and notification system keeps track of 21 locations in the company where sewage and waste water collects, preventing the release of environmentally hazardous materials and allowing a rapid response in the event of an accident.

90 (Company standards

> 36 (Regulatory standards

#### Green resource management

Waste products generated by Doosan Heavy Industries & Construction are considered to be "precious resources," and have been relabeled as "green resources" to allow the employees to accept recycling practices from the beginning. These green resources that are generated and separated by the established recycling guidelines at the factory or the business department are collected safely and effectively by dedicated equipment (dump trucks and fork lifts). Since 2009 the company has also focused on determining the exact characteristics of green resources and hired a recycling specialist to improve the green waste handling process, which led to an increase in the recycling rate (10% increase over 2009) as well as a reduction in full-function services costs

To achieve a zero rate of accidents involving the release of environmentally hazardous materials at the Changwon plant of Doosan Heavy Industries & Construction the company has established preventive as well as reactive solutions for recognized as well as unrecognized sources of pollution such as outdoor tanks and storage facilities based on the type of environmental release accident. Three 20-meter oil fences are installed at the final drainage pipe to prevent contaminants from entering Masan Bay. Oil skimmers and other mechanisms are utilized to ensure that rainwater runoff is free of contamination.

Doosan Heavy Industries & Construction adheres to the "Soil Environment Conservation Act" and conducts annual soil contamination tests to monitor the level of pollution in locations where plants

### TMS facility dust emission concentration





A cleaning vehicle to prevent TMS

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ties in all plants every week, and signal the alarm immediately to the relevant department if they find problems. The entire factory is maintained to be under 40% of the allowed emission standards. Cleaning vehicles and vacuum cleaners are used to control dust in outdoor job sites, and an investment package totaling 500 million won will be devoted to improving the environment in the scrap metal storage vard.

#### Water quality management



#### Hazardous material management

#### Soil environment management

are constructed or closed down. Soil contamination is also prevented through soil quality tests conducted at seven subterranean tanks, five indoor tanks, 18 outdoor tanks, and 21 other locations. In 2011 soil tests were conducted around storage tanks, pipes and surrounding areas, with the soil guality found to be adequate. Daily environmental inspections at outdoor work sites and major water conduits prevent the improper storage of hazardous materials or the accidental release of contaminants. Eleven major rainwater drainage pipes are checked each day for contaminant release, and four outdoor work sites are inspected once a week to check for improper storage of oil or paint. The results of these inspections are reflected in the EHS evaluation.

#### 3.9 Habitat protection

A habitat for the red-clawed crab (Sesarma intermedium), a protected species, was discovered in the Bongam mudflats (0.1km<sup>2</sup>) in Changwon, which is is within the boundaries of Doosan Heavy Industries & Construction's facility. The area was designated as a wetland protected area in December of 2011. In addition, seven plant colonies were discovered along the seashore near the Bongam mud flats. Colonies of halophytes identified in this area included reeds, sea arrows, seepweeds. the Artemisia fukudo, and the Michaelmas daisy. After the Bongam mud flats of Masan Bay were designated as a protected wetland, Doosan Heavy Industries & Construction has been carrying out environmental purification projects each year for the Masan Bay coastal area and sea. In addition, non-point pollution sources (tree branches weeds, soil, etc) are removed from the final rainwater dewatering outlets in rainy conditions in order to help protect the marine ecosystem in the Masan Bay.

#### Accidents and incidents (Changwon factory)



#### 3.10 Safety and health management

Hands-on safety training helps maintain the safety of a work site along with various activities aimed at removing hazards. Annual physical examinations are conducted, and employees who require surgery for unexpected illnesses receive support (up to 15 million won). A clinic and a physical therapy facility in the company services the needs of the employees, and an integrated healthcare program helps prevent accidents and management illnesses. Chronic patients are classified into low-risk. medium risk and high-risk groups and receive appropriate treatment including exercise (aqua-robics, exercise prescription after careful physical examination) and dietary improvements (diet guidelines prescribed after consultation, smoking session program). Employees who fall in the medium- and high-risk groups receive daily blood pressure and blood sugar checks through the company's own clinic. The health promotion center maintains a staff of eight (two doctors, three nurses, two physical therapists, one exercise therapist) and helps manage chronic patients (musculoskeletal/cardiocerebrovascular/noise-induced deafness). A company employee welfare center offers various facilities that promote health and wellness among employees such as a swimming pool and fitness center. Seasonal flu as well as H1N1 vaccinations are provided to employees as well as their family members as part of efforts to ward off illnesses and maintain physical well-being.

#### 3.11 Emergency management

Doosan Heavy Industries & Construction maintains an emergency communication system with related support organizations, government agencies, and area businesses. Emergency drills conducted at the factory as well as department level train employees to respond properly in each stage of a situation, from blocking the source and preventing further contamination to recovery and restoration, waste oil and water processing, and cleanup. Prior training also helps prevent such instances from occurring. A disaster prevention center carries out emergency tasks such as fire suppression and emergency rescue, as well as daily checks of the firefighting equipment and hazardous materials. The disaster prevention center is a part of the company's efforts to pre-empt situations before they occur and respond quickly when they do, and periodically carry out firefighting and emergency rescue training.









#### Major environmental cleanup activities

- **1** Cleaning up the underwater environmen
- 2 Cleaning up the coastal area
- 3 Weeding
- **4** Collecting abandoned fishing nets
- **5** Collecting discarded tires
- 6 Collecting garbage on uninhabited islands in the region



As one of Korea's top companies located in a coastal region, Doosan Heavy Industries & Construction has been carrying out ocean cleanup efforts of the Masan Bay as part of the company's community-based social contribution efforts. The program is one of the main marine environmental cleanup efforts in the entire Changwon region. The Masan Bay ocean cleanup initiative that took place on May 28, 2011 was the first community-based social service activity that took place after the signing of a social contribution agreement with the city of Changwon. The project promoted the 2012 "4th East Asia Seas Congress" hosted by Changwon to the local community while at the same time enhancing the awareness of the importance of marine environmental preservation among local residents. Specific activities includes a cleanup effort along a three-kilometer section of the Samgui coast, from the Doosan plant to the coast in front of Guisan village, using their teams that cleaned up the coastal area, nearby roads, and recovered fishinglines, styrofoam containers and other trash left among the rocks. On June 2, 2012, about 200 Doosan Heavy Industries & Construction employees joined 100 volunteers from Changwon's municipal government as well as the local community as part of the "17th Sea Day," taking part in the cleanup efforts along the Guisan-dong coast. The volunteers collected over 30 tons of waste including fishing equipment, tires and other detritus from fishing activities as well as garbage. Doosan Heavy Industries & Construction's cleanup efforts not only involve the enthusiastic participation of the company's employees but excavators, dump trucks, waste collection vehicles, and other heavy equipment provided freely by the company that befits its reputation as a community leader. Doosan Heavy Industries & Construction plans to continue to actively engage in social responsibility projects.

# **CREATIVE ORGANIZATIONAL CULTURE**



#### VISION

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We have selected people-oriented management as our most important strategy task. The 2G strategy is under way as part of this initiatives along with a long range framework for human resource management strategy that focuses on mid to long-term HR strategic initiatives. Titles of technical positions were changed to become identical to titles for office positions, and our "Hall of Master Craftsmen" increases the selfrespect of our technical staff.

#### PROJECT

- Numerous workplace improvement and organizational culture activities
- Pre-recruiting and internships — Functional competency training programs.
- Team-level vision workshops

#### 2012 PLAN

- Function / work management system
- Planned iob rotation system
- Functional competency development roadmap
- Diverse competency development programs such as management education, work-related training
- Better training opportunities for overseas staff
- More opportunities for contract workers to transfer to permanent employees

#### Improving organizational culture and working conditions

Doosan Heavy Industry & Company is carrying out a variety of company-wide as well as BG/department activities aimed at creating a "Fun & Soft" organizational culture.

#### **IMPROVING ORGANIZATIONAL CULTURE**

## **CHIEF Session**

8 to 5 culture

Achieve work efficiency to

create a working schedule that

begins ateight and ends at five,

fostering a balance between

work and quality of life.

Meetings between the COO and new employees (3rd or 4thyear employees) to compare the company's vision with the individual's vision from a value nerspective

#### **IMPROVING WORKING CONDITIONS**

# to 5



## 119 culture Launch the "119" initiative

to foster a more responsible drinking culture.

#### **Create Telepresence**

Operate a telepresence system at the Changwon plant and the Seoul headquarters office to allow more fluid meetings with overseas companies. subsidiaries and branches

## team level 75

⊲ 2hr



Concentrated work

design department

Carry out two hours of intensive

work per day, starting with the

Family DOO program

Support program for the

family members of employees

dispatched overseas (English

camp and mentoring program

invitations to work locations.

and psychiatric counseling)

bus service

daily

Shuttle bus service for

**Seoul-Changwon Shuttle** 

employees commuting between

Seoul and Changwon (twice

Support for sports competitions and other organizational culture events Support for sports competitions.

Flexible hours

BG/department events

Introduce a flexible work system (at work by ten, out by seven) for the water BG to give more flexibility for working with local workers at overseas locations

Provide new employees with

#### Others

Workplace childcare facilities for the Seoul/Changwon region, nursing room and break room for female employees, rest area in the Kvobo Tower

#### **2G Strategy**







Jeon Byung-il, Vice president | HR

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Doosan Heavy Industries & Construction emphasizes the importance of "people".

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Doosan looks to "People" as the causaproxima that guided the company's growth during the past 100 years, and continues to place the highest level of importance on people for the next 100 years. The core values of the Doosan Credo emphasize the importance of the human factor. The unrelenting and continuous development of the "Doosan Employee" requires the foundations and the framework that waits patiently for the individual to achieve growth and development, which is made possible through an advanced and scientific work process. To build these foundations and framework, the company's HR assets will focus on developing missions that focus on its people, secure fundamental competitive capabilities, and qualitatively and scientifically advance

core work procedures.

2009 2010 2011

## Newcomers' Smart Handbook

a guidebook on work, benefits and wellness facilities to allow better acclimatization

GUIDE

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# Team vision workshop Vision workshops at the

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#### 4.1 Staff and employees

The total number of employees in all of Doosan Heavy Industries & Construction Korean and overseas locations is 8,252. Among them 6,775 are permanent employees in both office and technical positions, with the rest employed as contract workers due to the necessities of operating in an order-based industry. Experienced contract workers are given the opportunity to be converted into permanent employees. There are 538 female employees, with male employees outnumbering female employees due to the nature of Doosan Heavy Industries & Construction's main business. The company, nevertheless, actively recruits female workers. The average number of years worked for the company is 12.5. Local employees are hired whenever feasible in overseas companies and subsidiaries in order to give a positive impact to the host economy, and a total of 10,370 men and women are working in overseas locations.

#### 4.2 Attracting top talents

New employees are drawn in through campus-recruiting activities across the country to find top talent, and experienced hires are brought in through high-level recruiting programs. The company is actively hiring science and engineering Ph.D.s from top overseas universities in order to boost R&D capabilities and strengthen cooperative links with R&D units around the world. Interns are recruited via a recommendation system through universities and faculty networks in order to attract top talent before the main hiring season. The company is also seeking employees with advanced degrees for R&D by signing industry-academic partnership MOUs with universities in Korea, which will aid in acquiring new growth drivers in the energy industry as well as expand the company's R&D pool. "Youth energy" programs are carried out as pre-recruiting efforts to expand the human resource base, and the Doosan Baseball Championship with 16 university baseball clubs taking part increased the profile of the company among the nation's college students. A pre-intern school promotes the company among college sophomores and juniors majoring in the sciences or engineering. New programs are constantly being developed that will enhance the company's brand power and attract top talents from around the world.

#### 4.3 Providing equal opportunities

Doosan Heavy Industries & Construction prohibits discrimination based on race, gender, age and physical characteristics for hiring, employment and promotion. There are no salary differences among new hires, and male and female employees in the same position receive the same level of pay and benefits. New employees are paid at 330% of the mandated minimum wage. Applicants are not required to enter the names and jobs of family members on their resumes in order to level the playing field for everyone. In addition, the company has actively taken part in the government's efforts to hire high school graduates and relieve the chronic employment problems with high school graduates in the nation. The company initiated an open recruit for technical positions for high school graduates in 2011, and is working to provide equal opportunities to provincial residents and minority groups. Doosan Heavy Industries & Construction grants extra points in the hiring process for "National Merit" recipients.

Office positions (new/experience)	Technical positions	Industry-academic partnership	Internships	Disabled employees	National Merit recipients	Women
235/ 101	98	7	-	4	5	24
352/ 225	126	8	-	1	15	39
426/ 173	122	15	79	2	9	61

#### **Employment overview**

#### Support for backpacking trips



#### SPECIAL INTERVIEW



Park Joon-young, Vice president | Labor

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Determining the needs of employees first to proactively improve working conditions and address hiring issues.

### **99**

The management strategy of Doosan Heavy Industries & Construction's labor department is to determine the needs of employees first to proactively improve working conditions and address hiring issues. These efforts are not only investigating limitations to wages and benefits but also improvements for the job hierarchy of technical positions, better promotion structure for technicians, and employee capability development process. We carry out leadership and job training programs to boost the core capabilities of all of our employees, and we are planning to work jointly with universities to develop new education packages. We are also reviewing various programs for improving our retirement program and fostering knowledge transfers as the population continues to age.

#### 4.4 Respect for human rights

Doosan Heavy Industries & Construction complies with all internal and external regulations governing working conditions, strictly prohibiting child labor and forced labor in all business locations as per the Employment Standards Act and International Labor Organization (ILO) policies. The education standard for new employees is the junior college level, and high school graduate employees are hired only after graduation to prevent the occurrence of child labor. Collective agreements project employees from excessive or forced labor, and arbitrary transfers are also forbidden to make sure employees are not moved or given work against their will. We limit the working hours of pregnant women in order to uphold the rights of our female employees and their family responsibilities, and provide a rest area for female employees, maternity leave, and company childcare facilities. We conduct sexual harassment awareness education each year to protect the rights of our employees, and a joint training session was held in 2011 as part of the senior management / team leader and team member training programs. Labor-related issues are processed according to established grievance handling procedures.

#### Employee human rights

		2009	2010	2011
On childcare leave	e Persons 4		4	5
	Return rate	100%	100%	100%
Employees who	Management training	-	-	149
completed sexual harassment	Team leader training	391	405	454
awareness training	Team member training	5,075	5,564	5,762

#### 4.5 Fair evaluation and compensation

Doosan Heavy Industries & Construction abolished the standard promotional structure in order to get rid of seniority-based promotions, instead adopting a logical compensation system based on fair and systematic evaluation. Employee evaluations are based on Doosan's personnel standards in the form of a DCM assessment conducted via MBO management. Compensation is determined by competency & performance, with a salary and reward system that guarantees the industry's best compensation package to top employees as determined through annual competency and performance evaluations. The evaluation process is computerized and is composed of a self-assessment, manager assessment, HR review meeting, and manager calibration process to ensure a fair assessment. Individual feedback is provided following the evaluation through a meeting with the evaluator. The evaluation also highlights areas of further development to be applied to a growth plan, linking the evaluation process with the development process. Promotions are carried out once a year, and candidates are selected based on individual competency assessment, performance evaluations, and other scores for aptitude in foreign language, accounting and other fields.

#### 4.6 Benefits

Doosan Heavy Industries & Construction's benefit policy includes scholarships for the children of employees, housing and financing support, fitness management such as physical examinations and support for fitness centers, insurance-related support such as individual pensions and group insurance, financial support for family events and emergencies, and support for personal hobbies. The company operates nursing rooms and a company daycare center in order to support both the workplace and the home. Doosan Heavy Industries & Construction also provides a hotel-style dormitory (900 rooms) with the best facilities and amenities in Korea in Changwon. Another unique culture at Doosan Heavy Industries & Construction is company support for backpacking trips, which was launched by Doosan Group in 1995 to help employees build a global mind-set and expand their horizons and ad-



#### Training system diagram





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opted by Doosan Heavy Industries & Construction in 2001. The company will also begin operating a retirement pension system from late 2012 to provide retirees with life stability. Top employees who are slated for retirement are also given an opportunity to sign for three additional years of work. The Doosan Festival is held in the spring and fall to build stronger bonds between employees as well as family members.

#### 4.7 Human resource development

Doosan Heavy Industries & Construction believes that sustainable results can only be achieve by the right people, and strives constantly to develop high-quality human resources. This effort is based on the 2G strategy, the human resource development philosophy of Doosan Group that can be defined as a virtuous cycle where the growth of the person leads to the growth of the company, which in turn leads to future growth for the individual. Human resource development programs can be classified into the value program, leadership program, global program, and expert program. A new employee receives training that is specific to his or her business group for a year through the incubating program (OJT), with a senior employee designated as a mentor in order to help the new employee fit in. A development plan outlines the process for enhancing the capabilities of every employee in the company, helping individual members build their experience and expertise. The development plan creates realistic plans by following manager assessment, and is linked with transfers/assignments and training. Company-wide education programs are held in order to boost employee capabilities, while a wide variety of programs are carried out at the business group or unit level as well. A "One Doosan" program with oversees companies and host-country employees is underway through training programs including "Knowing DHI (understanding heavy industry businesses)" and "Doing business with Koreans."

# **SMART OFFICE**

ISSUE



#### VISION

Since 2011, Doosan Heavy Industries & Construction has been carrying out smart office activities under the motto of "Individual and corporate growth through work & life balance." Improving work processes will eliminate inefficiency and waste while offering greater leisure hours for employees, which can be invested in personal development as well as rest and refreshment that leads both to personal development as well as higher workplace satisfaction

- Establish personal development roadmap - Improve inefficient work processes

PROJECT

- Adopt concentrated work and flexible hour systems
- 2012 PLAN
- Systematic employee development based on personal development roadmaps
- Achieve optimization based on high value-added business tasks

cut working hours while increasing achievements

— Expand flexible work systems

#### Smart office activities



#### Smart office roadmap

environment for eliminating inefficiency



#### **SPECIAL INTERVIEW**



Kim Seong-soo, Vice president | Management Innovation

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In management innovation we will create the "Smart office" that focuses on cutting costs, increasing work efficiency, and establishing the best work environments.

Doosan emphasizes corporate social responsibility as one of its core values by carrying out a wide variety of corporate ethics and social contribution efforts. The company is also seeking to integrate the CSR activities of every subsidiary to solidify Doosan's unique CSR image and disseminate core values to every subsidiary and business unit. Doosan's CSR seeks to achieve social contribution on a broader level by linking corporate growth with the host city's growth. In management innovation we will create the "Smart office" that focuses on cutting costs, increasing work efficiency, improving various policies, and establishing work environments and infrastructure in order to carry forward Doosan's sustainability.

#### Capability development road map and program

Create and eva	luate capability developm	ent road map	Establish capability de	velopment road map
Step 1	Step 2	Step 3	Step 4	Step 5
Set evaluation categories & standards	Individual capability evaluation	Consolidate and analyze evaluation results	Establish capability development road map	Plan and execute individual capability development plan
Define the knowledge requirement for each organization	Establish the grade standards for specific ability categories	Define the master levels for each capability category	Determine individual capability gaps	Create individual capability development plan
Define core experiences	Conduct capability evaluation for every team member	Define the capability level required for each position	Prioritize capability development	Develop capabilities through education, project experience

There has been a constant demand for a systematic approach to individual development, but the rapid growth of the company has highlighted this need anew. As a result the company began formulating an ability development road map in 2011 with the launch of the PE center tasked with evaluating each individual's capabilities and setting development goals. The roadmap organizes the various categories for carrying out work tasks by organization, position and number of years employed, allowing employees to assess their own capabilities, identify areas for development, and set and execute a development plan alongside the road map. Regular communication with supervisors after initiating the development plan allows the individual and the superior to monitor the evaluation and goals.



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#### 5.1 Background

Doosan Heavy Industries & Construction has grown rapidly in the past 10 years. Significant expansion occurred not only in the number of orders and total sales but in corporate value as well, and the company has become a truly global company with over 50% of its employees overseas and 70% of total orders coming in from outside of Korea. Behind this growth was the company's human resource philosophy epitomized in "2G" (Growth of People, Growth of Business), sparing no expense for investing in the selection and development of human resources that made possible the changes and growth. Doosan Heavy Industries & Construction is working to create a smart office system that can strengthen work capabilities by enhancing employee job satisfaction while reinforcing the company's total capability package as well.

#### 5.2 Capability development roadmap

#### 5.3 Smart office effect

Smart office activities can help enhance cooperation between departments that can build trust and boost productivity, as well as strengthen relationships by linking fair compensation to results and maintaining open communication channels between employees and their supervisors. A smart office system also allows the employee to accurately assess his or her own work capabilities, the value of which can be then enhanced through focused support. Flexible employment systems such as concentrated work and flexible hours can allow the employee to spend more time with his or her family as well as devote more time to personal development. Doosan Heavy Industries & Construction is constantly looking for new ways to create an infrastructure where employees can maintain their passion as well as develop their core capabilities.

# SHARED GROWTH

# ISSUE

#### VISION

Following Doosan Group's shared growth philosophy of "building virtuous-cycle partnerships", Doosan Heavy Industries & Construction is carrying out various programs to strengthen shared growth with partner companies, including support for enhancing competitive capabilities, financial support and better communication. Doosan Heavy Industries & Construction is carrying out shared growth programs based on the trust the company has built with its partner companies.

- Establish shared growth task team - Organize support group for pantner companies
- Create a shared growth fund, provide funding — Strengthen communication

PROJECT

— Operate a task group for the national human resource development consortium

#### 2012 PLAN

- Expand support programs for enhancement of the competitive capabilities of partner companies
- Initiate a benefit sharing system
- Expand financial aid
- Support joint overseas market expansion



#### **Major financial support activities**

(unit: hundreds of millions of won)

# 2,107 376

#### Network loans

Doosan Heavy Industries & Construction works with financial institutions to & Construction has maintained a provide production financing to partner shared growth fund for direct financial companies that hold advanced techno- support, greatly aiding partner comlogical capabilities but have financing panies that seek to invest in facilities difficulties.



Since 2011 Doosan Heavy Industries or obtain operational funds.

#### Strengthen partner company Fair trade education competitive capabilities

#### **Competitiveness enhancement**

National HRD consortium project



6,148

\*Number of personnel trained

Persons



education

**Employees who received fair trade** 

#### Partner company off-line education



#### SPECIAL INTERVIEW



#### Lee Sang-gyu, Senior Vice president | Management Support & Shared Growth

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Doosan Heavy Industries & Construction is pursuing shared growth in order to build the core capabilities for future growth and develop into a global company with world-class competitiveness.

## ••

Doosan Heavy Industries & Construction settled "creating partnerships built on virtuous cycles" as the motto for shared growth aimed at acquiring and maintaining global competitiveness alongside our partner companies. We aim to develop our partners into powerful global small enterprises through the fair and transparent support of their competitive capabilities. Doosan Heavy Industries & Construction has outlined four main growth areas that include support programs for enhancing the competitive capabilities of partner companies, financial support, joint overseas expansion and better communication as part of the company's efforts to provide the next level of mutual growth support. Doosan Heavy Industries & Construction includes the results of shared growth initiatives as part of the end-of-year MBO evaluation for the purchasing and manafacturing managing directors of each BG as well as the chief executive to ensure careful adherence to shared growth strategies and plans. These shared growth activities are being carried out at all levels of the company, serving as the industry role model for enhancing the competitive capabilities of partner companies.

growth

#### 6.2 Newly build up shared growth team

To meet the government's efforts in promoting shared growth between large conglomerates and small and medium-sized enterprises as well as mutually-beneficial cooperation, Doosan Heavy Industries & Construction launched the shared growth team on September 10, 2010 that is under the direct control of the COO (chief operating officer). The shared growth team establishes and carries out shared growth road maps and specific plans and operates the company's fair trade practices compliance program. The creation of the shared growth team established the foundations for enhancing the system competitive capabilities of the entire supply chain.

in 2011.



#### 6.1 Creating partnerships built on virtuous cycle

The competitive capabilities of business partners are a critical component of building the longterm growth foundations of a company. Doosan Heavy Industries & Construction regards its partners as long-term companions in growth and constantly works with them to mutually improve competitive capabilities. The company has chosen "creating partnerships built on virtuous cycles" as the motto for shared growth to transcend relationships based on enhancing the competitiveness of the entire production and supply chain instead simple purchases and contract work. Doosan Heavy Industries & Construction shares the profits generated through these efforts to build even stronger partnerships.



#### 6.3 Enhancing partner company competitiveness

To enhance the competitive capabilities of its partners, Doosan Heavy Industries & Construction operates the support group for pantner companies' competitiveness enhancement" composed of approximately 100 experts from within and outside of the company. Since 2011 the group has carefully assessed each partner's core capabilities to provide support programs tailored to the needs of each partners, building them up as long-term strategy partners through by established a stable supply chain. The company also launched a "management doctor" program in conjunction with the Federation of Korean Industries Small and Medium Enterprise Center that provides consulting services for all management-related activities. Since 2010 the company has also operated a national human resource development consortium with authorization from the Ministry of Employment and Labor to provide training for nine core fields vital to partner companies including design, quality management and welding. Doosan Heavy Industries & Construction is also Korea's only company to provide sustained plant-related training programs, The company was placed in the top 5% of Korea's 102 companies operating the consortium and classified as an "A-class" consortium management agency. A total of 6,148 people from 181 companies completed the program

## 6.4 Financial support expansion

Doosan Heavy Industries & Construction is expanding financial support for its partner companies through the shared growth fund. In 2011, the company provided 3.6 billion won in direct support to 18 partners and created a 34 billion-won shared growth fund with the Korea Development Bank to provide loans at below market rates to partner companies. The company has also expanded network loans and other types of financial support for partner companies, and boosted the cash percentage of contract payments in order to ease the financial burden of partner companies.

#### 6.5 Supporting joint expansion into overseas markets

Doosan Heavy Industries & Construction helps partner companies receive pre-gualification from the ordering company for participating in power plant or seawater desalination projects being conducted abroad. These efforts allow Doosan Heavy Industries & Construction and its partners to expand into overseas markets together. The company also works closely with Korean small and medium-sized enterprises(SMEs) engaged in civil engineering and construction in EPC construction projects around the world to provide more opportunities for Korean SMEs to expand into the global market.

#### 6.6 Stronger Communication

Communication between Doosan Heavy Industries & Construction and its partner companies are smoother than ever thanks to period communication activities and diverse support programs. The "partner cooperative organization" was launched in April 2011, with 152 external partners and 54 internal partners. The body holds annual councils as well as quarterly meetings to share success stories in promoting shared growth and to listen to various problems and issues. The council bestows honors on top companies, and works to enhance the satisfaction of partner companies by providing benefits that include support for family events, family movie-watching and vaccinations for the H1N1 flu.

#### Win-Win call center

Doosan operates the "Win-Win call center" that is always open to comments and suggestions from partner companies, providing as a rule a response within 24 hours. Partner companies can use the call center for inquires , consultations and suggestions about registering as a partner company or shared growth program, as well as consultations regarding support for enhancing competitive capabilities, financial support, and the job training consortium. The call center also receives reports on fair trade practices, and it can be reached by a dedicated phone line (080-069-5000) as well as through the company's homepage, the e-Sourcing homepage, fax and e-mail. Personal information and the identity of the caller, both internal and external, are kept strictly confidential.

#### 6.7 Partner company evaluation system

Doosan Heavy Industries & Construction conducts a 'partner capability evaluation' each year, using an assessment process for each business area including internal and external partners as well as construction subcontractors to carry out a fair and equal evaluation.

#### Monitoring and inspection activities

## Prior management Review guarterly fair trade check sheet A checklist is used at the team level for self-diagnosis of fair trade issues, which are relayed to the self-compliance work team for feedback and suggestions on making improvements. • Prior agreement on possible areas of infraction before carrying out work tasks Systematic self-compliance education • Verify the process of internal control action plans

The results of the evaluation are applied to shared growth plans for the following year and used to provide support for boosting the competitive capabilities of partner companies. A computerized evaluation system has also been established to further enhance the fairness of the evaluation and efficiently manage the results.

#### 6.8 Self-compliance program for fair trade practices

In June, 2004, Doosan Heavy Industries & Construction launched a selfcompliance program for fair trade practices and adheres to all related laws and regulations in order to create a transparent and fair corporate culture through self-motivated and active commitment to fair trade practices. The company complies with all fair trade practices and principles with the aid of a number of fair-trade self-compliance organizations within the company, A fair trade self-compliance handbook, which contains explanations on fair trade regulations and a collection of case studies, is placed in each department to be used as a quick and easy reference while carrying out work tasks. The company received "A" grades in 2006 and 2008 for the CP evaluation, and received an award for excellence in "Mutual cooperation and fair contracting practices agreement" in 2009. The status of the company's fair trade self-compliance activities is reported to the board of directors twice a year.

#### 6.9 Carrying out self-compliance of fair trade practices

#### Fair trade education

Doosan Heavy Industries & Construction conducts a wide variety of education and training programs targeting both employees and partner companies such as group training, specialized training, and online training in order to raise awareness of fair trade issues and maintain fair business relationships in all aspects of the company's business



Launching the Doosan Heavy Industries & Construction partner cooperative organization



Win-Win Call Center



Partner company fair trade agreement and CP launch event

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- 1 Enhancing Technology
- 2 Customer Service
- 3 EHS Management
- 4 Creative Organizational Culture
- 5 Smart Office
- 6 Shared Growth
- 7 Social Responsibility

Follow-up management Semi-annual contract status inspection Compliance to laws and regulations of contracts are monitored twice a year and reported to the self-compliance director and the management for feedback and improvement Receive and handle reports • Receive and handle issues filed by partner companies • Carry out improvements and sanctions as per audit results

activities. Purchasing directors are encouraged to participate in these sessions to raise the training impact, and employees with high class achievement receive awards and recognitions. Employees in purchasing teams are also evaluated carefully to ensure strict adherence to fair trade principles in all business activities.

#### Unfair trade practice reporting system

Doosan Heavy Industries & Construction operates a reporting system for complaints and reports related to any concerted actions, unfair insider transactions, abuse of authority and other unfair trade practices involving transactions and businesses with the company. Any reports filed through the system are checked and processed by the shared growth team, the main work group that oversees fair trade self-compliance, and the team is required to respond to any report or inquiry within one day. Doosan Heavy Industries & Construction strictly protects the identity of anyone making a report or filing a complaint to prevent any adverse effects or penalties arising from the action. The company also prohibits revealing the identity of the internal whistleblower or releasing related materials, and reports and claims are processed by a small, carefullyselected group whose members sign strict nondisclosure agreements.

#### Creating a culture of fair trade

Doosan Heavy Industries & Construction provides support for fair trade and shared growth agreements between primary and secondary partners as part of the company's efforts to expand a culture that emphasizes fair trade and mutual growth. As a result, 19 primary partners and 64 secondary partners signed fair trade and shared growth agreements in 2011. Doosan Heavy Industries & Construction also helps primary partners adopt fair trade self-compliance programs, including self-compliance consulting and handbooks, in order to assist partner companies in their own fair trade and sustainability efforts.

# SOCIAL **RESPONSIBILITY**

ISSUE

#### VISION

Doosan Heavy Industries & Construction is working to create a sustainable society where everyone can nurture their hopes and dreams. The company's volunteer group, carries out expert and systematic localized service activities to form a sustained and growing CSR partnership with the local community, working with local residents in Vietnam, India, Europe and other regions around the world to build a global lifestyle of sharing and service.

#### **Social contribution activity** accomplishments



#### **Volunteer activities**





— Social responsibility agreement signed with the city of Changwon — Cooperative partnership with Changwon

PROJECT

- Science High School - Industry-academic agreements (three "Meister" and specialized high schools, four junior colleges).
- Partnership ties with 70 child welfare facilities
- "One Company-Six Village" partnership - Global social responsibility activities

## 2012 PLAN

- Continuously develop local human resources
- Expand aid to neglected groups, children and youth
- Strengthen local-based social responsibility activitio
  - Boost employee volunteer activities
  - Develop the one company-six village program
  - Strengthen global social responsibility activities

### **Corporate Citizenship**



SPECIAL INTERVIEW

Yim Bong-kyun, Vice president | Corporate PR

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Based on our social responsibility philosophy based on "human growth and independence" we are leading efforts to develop top talents and human resources and redoubling our efforts in local and world-wide CSR activities.

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We have set our social responsibility theme as "human growth and independence" of each individual person, which is based on Doosan's human-centric business philosophy. We provide hope and visions to children and young people who need a helping hand and are always working to develop highly qualified people in the local community. We will continue to strengthen our local community-based business activities as well as boost global CSR activities related to our core business areas such as water treatment and desalination.

We have joined Changwon Science High School in an agreement to develop high-quality human resources in local community through financial support, factory tours, and special lectures by senior managers. We have also signed industry-academic partnerships with specialized high schools and "Meister" high school as well as four junior colleges in the region, creating special "Doosan classes" designed to nurture leaders who acquire specialized knowledge and training in Doosan's key business areas and become valuable members of Doosan's future.

## Support for disadvantaged children and youth

Doosan Heavy Industries & Construction helps bring dreams and visions for the future to children and young people in our community who need a helping hand. We have signed partnership agreements with 60 local children's welfare facilities, six foster facilities, and four group homes. In addition to operational funding and financial support to help children gain independence, the company provides study materials from Doosan Donga to enhance the academic abilities of students. Scholarships for children of low-income families in the area with top grades as well as financial support for private learning schools for elementary and middle school students are part of the company's financial support activities aimed at helping raise the children and youth of our community into healthy and happy members of our society.

## 7.2 Volunteer activities

Eight social service groups and four expert service groups in the Seoul and Changwon areas carry out monthly volunteer activities. These service groups support children and youth in the community through partnerships with 70 children's welfare facilities, and perform service activities in senior centers, single-parent shelters, and facilities for the disabled. The company's volunteer organization received the "Gyeongnam Social Welfare Grand Award" in the social responsibility category during the Social Welfare Day ceremonies in September 2011, as well as the "Minister of Public Administration and Safety Award" during the Korean Volunteer Awards ceremony in December of that same vear. In 2011 a total of 16.868 hours of volunteer service were performed by 3.726 employees and 217 family members.

Doosan Heavy Industries & Construction also operates "expert service group" that are composed by employees who can share their talents and take part in social participation projects by utilizing their professional knowledge or technical expertise. The "Technical service team" is carrying out the "Clean House" program aimed at improving the housing conditions of disadvantaged groups, while the "Environmental safety education service team" composed of EHS employees provide education to children in child welfare facilities on such topics as environmental protection, safety, firefighting, and health.

The company provides a full range of support for volunteer service groups through paid volunteer activities, matching grants, and a social service management system. The company offers volunteer mileage, insurance for the volunteer and service work, awards and recognitions for top volunteers, and handbooks for volunteer service in order to encourage every employee to participate in volunteer and service programs. The company also works closely with related agencies such as Gyeongsangnam-do Welfare Fund, Gyeongsangnam-do chapter of the Red Cross, and the Changwon Volunteer Service Center to form a close social responsibility network.

SUSTAINABILITY ISSUE APPENDIX

- 1 Enhancing Technology
- 2 Customer Service
- 3 EHS Management
- 4 Creative Organizational Culture
- 5 Smart Office 6 Shared Growth
- 7 Social Responsibility

#### 7.1 Themes in social responsibility – "Human growth and independence"

#### Cultivating top talent

#### Social contribution through volunteer service groups

#### **Professional Volunteers**

#### Volunteer service infrastructure



Changwon and Doosan Heavy Industries & Construction sign social responsibility agreement



abor-management Kimchi-making event



Employees take part in a blood drive

#### 7.3 Community contribution

Doosan Heavy Industries & Construction signed a social responsibility agreement with the city of Changwon to join the city in supporting the regional government's policies, nurturing high-quality human resources, and providing aid to disadvantaged groups. Diverse communication channels with local community and a stronger feedback system allows the company to engage in a wide range of social responsibility activitie.

#### Local area programs

Doosan Heavy Industries & Construction is working with the city of Changwon, Gyeongsangnam-do Social Welfare Fund and other agencies to carry out local projects. The company has formed a sisterhood partnership with six rural villages as part of the "One Company-Six Village" movement and is taking part in a number of rural development programs such as the joint Masan Bay water cleanup effort. The company provides financial support for the residents of Ungnam-dong, the residential area adjacent to the company, buses for special events, school lunches for the students of Yanggok Elementary School, purchasing drives for regional produce and farm products, and farming assistance for local villages. Period meetings with local residents help enhance communication between the company and the community as part of the company's overall social responsibility efforts. Doosan Heavy Industries & Construction's employees also take part in various community events such as the "Blood Drive of Love Campaign", the "Making Kimchi Together" event, in which both employees and executives take part, and the "Share a Package" campaign by the Beautiful Store, a charity organization.

#### 7.4 Social responsibility around the world

In Vietnam, the home of a large production plant, Doosan Heavy Industries & Construction carries out medical volunteer services, provides support for freshwater facilities, and numerous other service activities that involve over 1,000 local employees. A social service team in the India region works together with elementary schools in poor areas to improve the education environment and carry out other social responsibility programs. Emergency supplies were donated to disaster-stricken residents in Pakistan and Indonesia, and the company took part in the recovery efforts following the Sichuan earthquake in China. The company also provided the support for building a water treatment plant capable of treating 60 tons of water per day in the Angkor Wat region of Cambodia.

#### **Special programs**

#### **Special programs for** disadvantaged children

The company provides a variety of handson programs to help our children become strong prospective leaders and healthy leaders, including creative experience events. invitations to movies, participation in the Doosan Family Culture Festival, Dream for Tomorrow soccer class, swimming class, and track meets.



#### Love for Our Rural **Neighbors campaign**

The company has signed sistership agreements with six rural village communities in the Gvegonsangnam-do region to share in a number of activities such as assisting with planting and harvests, purchasing local products, and inviting village residents for company tours as part of the company's efforts to build strong ties with rural communities.

#### **Environmental cleanup** activities

The company has been taking part in environmental cleanup activities in the Masan Bay, Gwangreo stream, Mt. Cheonju, Mt. Palyoung, Junam Reservoir, the Yangjae stream in Seoul as well as numerous other coasts, mountains and streams around the nation in order to preserve the environment and protect fragile habitats.

#### International marriages in rural regions

The company supports immigrant women who marry men from rural villages through programs such as invitations to the company's facilities, day, trips on trains and boats, Kimchi-making events, house renovations, and rural helping hands as part of Doosan Heavy Industries & Construction's efforts to assist immigrant women's assimilation into the local community and overall society.







## Corporate growth with values, living with our neighbors

43 persons Surgery assistance for cleft lip and palate

19 persons Assistance for elderly cataract patients

8,224 persons Medical support for residents

in Quang Ngai Province, Vietnam

1 Providing medical assistance to Quang Ngai residents 2 Director Kim Seong-deok of the Chung-Ang University Medical Center and a young Vietnamese cleft palate

#### INTERVIEW



I believe that medical service is a particularly meaningful service activity since it benefits disadvantaged groups such as children or the elderly. The medical service missions we have been carrying out for the past four vears together with the Chung-Ang University Medical Center will continue thanks to the enthusiastic reception we received from local Vietnamese residents

Ryu Hang-Ha, Vice president



I'm pleased and very proud to be able to participate as an employee of Doosan VINA in medical service missions for the local Vietnamese residents. It was beautiful to see the hard work and dedication from the doctors dispatched from the Chung-Ang University Medical Center, I would like to thank Doosan Heavy Industries & Construction, Doosan VINA, and the volunteers from the Chung-Ang University Medical Center on behalf of our local residents here in Vietnam.



#### Nguyen Thi Hieu, Doosan VINA ADMIN Team

#### Medical service missions with Chung-Ang University Medical Center

Following the signing of an MOU between "Doosan VINA" and the government of Quang Ngai province in Vietnam in July 2009, the company together with the Chung-Ang University Medical Center has been inviting patients suffering from cleft lips and palates to Korea for free medical care. For three years 43 young patients received support from the company and the hospital to have their conditions repaired, restoring both their looks as well as their physical functions. In addition, 19 elderly patients received support for cataract surgery. In addition to support for surgery procedures, Doosan VINA and the Chung-Ang University Medical Center dispatch medical service teams to the Quang Ngai region every summer, providing medical service to over 8,200 residents to date. In addition, the company donated \$30,000 worth of cataract surgery equipment to the Quang Ngai hospital since 2010 and over \$90,000 in physical therapy equipment, nutritional supplements for children, and anemia medicine for pregnant women to local hospitals.

#### GLOBAL CSR DOOSAN VINA





#### Scholarship programs for growth and independence

Doosan VINA is active in scholarship and student aid programs. The company provided a scholarship of \$10,000 in July, 2009 to four universities with Korean language departments including the Ho Chi Minh University of Social Sciences as part of the "Overseas Korean language department support program," followed by scholarships totaling \$200,000 to students in nine universities including the Hanoi University of Science and Technology and the Da Nang University of Foreign Languages.

## Social responsibility activities based on technological capabilities

Doosan VINA also donated a 100-ton capacity seawater desalination facility to An Binh Island, located in Centraleastern Vietnam, in August of 2012 that will solve the island's chronic water shortage problem for over 500 residents in 100 households. This program was part of the company's global service effort that combines the company's world-leading desalination technology with social responsibility initiatives.

#### Local employees volunteer from the heart

Doosan VINA has also launched social service teams with local employees as their center that uses funds collected from salary donation programs, matching grants, and donations from Korean employees to provide services for disadvantaged groups including renovations for local elementary schools and the homes of area residents.

#### Awards for social resposibility management

The numerous social responsibility efforts of Doosan VINA, Doosan Heavy Industries & Construction's local company, revitalized the local economy and boosted the income level of Quang Ngai Province, which had consistently ranked in the bottom 10 of Vietnam's 64 special cities and provinces, to the top 10. For these achievements Doosan VINA was awarded the grand prize for "social responsibility management" by Vietnam's Ministry of Planning and Investment in December 2011.

# APPENDIX

Sustainability Management Achievements GRI Index Independent Assurance Report Thanks to You Awards and Memberships

## SUSTAINABILITY MANAGEMENT ACHIEVEMENTS

## **ECONOMIC ACHIEVEMENTS**

	CATEGORY	UNIT	2009 (K-GAAP)	2010 (K-IFRS)	2011 (K-IFRS)
Economic	Sales	millions of won	18,069,999	7,928,868	8,495,506
achievements	Income	millions of won	355,767	515,766	569,632
	Net income	millions of won	-645,482	1,362,500	261,695
Financial information	Total assets	millions of won	28,040,634	16,977,142	13,589,169
	Total liabilities	millions of won	22,625,932	11,800,938	8,792,241
	Total capital	millions of won	5,414,702	5,176,204	4,796,928
	Credit rating	Corporate bonds	А	A+	A+
Future growth drivers	R&D	millions of won	261,665	148,067	144,090
	R&D / sales ratio	%	1.45	1.87	1.70
Shareholder value	Earnings per share	Won	-3,826	13,937	3,063
	Dividends per share	Won	500	750	750

## **ENVIRONMENT ACHIEVEMENTS**

	CATEGORY	UNIT	2009	2010	2011
Energy usage					
All	Energy usage	TJ	5,359	5,669	5,862
	Fuel usage	TJ	2,354	2,501	2,532
	Electricity usage	TJ	3,005	3,168	3,330
Headquarters	Energy usage	TJ	5,276	5,576	5,755
	Fuel usage	TJ	2,348	2,491	2,521
	Electricity usage	TJ	2,928	3,085	3,234
Seoul Office	Energy usage	TJ	44	43	39
	Fuel usage	TJ	6	6	5
	Electricity usage	TJ	38	37	34
Daedeok R&D Center	Energy usage	TJ	30	39	58
	Fuel usage	TJ	-	2	4
	Electricity usage	TJ	30	37	54
Suji DC Center	Energy usage	TJ	6	8	7
	Fuel usage	TJ	-	1	1
	Electricity usage	TJ	6	7	6

	CATEGORY	UNIT	2009	2010	2011
Hapcheon	Energy usage	TJ	3	3	3
Training Center	Fuel usage	TJ	-	1	1
	Electricity usage	TJ	3	2	2
Greenhouse gas emi	ssions				
All	Total emissions	TCO <sub>2</sub> e	301,499	316,972	327,690
	Direct emissions	TCO <sub>2</sub> e	145,728	152,753	155,100
	Indirect emissions	TCO <sub>2</sub> e	155,771	164,219	172,590
Headquarters	Total emissions	TCO <sub>2</sub> e	297,164	312,075	322,009
	Direct emissions	TCO <sub>2</sub> e	145,453	152,234	154,472
	Indirect emissions	TCO <sub>2</sub> e	151,711	159,841	167,537
Seoul office	Total emissions	TCO <sub>2</sub> e	2,195	2,269	2,087
	Direct emissions	TCO <sub>2</sub> e	234	365	316
	Indirect emissions	TCO <sub>2</sub> e	1,961	1,904	1,771
Daedeok R&D Center	Total emissions	TCO <sub>2</sub> e	1,570	2,071	3,032
	Direct emissions	TCO <sub>2</sub> e	6	109	223
	Indirect emissions	TCO <sub>2</sub> e	1,564	1,962	2,809
Suji DC Center	Total emissions	TCO <sub>2</sub> e	361	380	387
	Direct emissions	TCO <sub>2</sub> e	-	-	39
	Indirect emissions	TCO <sub>2</sub> e	361	380	348
Hapcheon	Total emissions	TCO <sub>2</sub> e	209	177	175
Training Center	Direct emissions	TCO <sub>2</sub> e	35	45	50
	Indirect emissions	TCO <sub>2</sub> e	174	132	125
Water resource man	agement				
Water usage	Water supply usage	tons	1,326,901	1,280,634	1,471,376
	Groundwater usage	tons	4,955	4,702	3,748
	Water supply usage cost	millions of won	734	698	785
Wastewater	Wastewater treatment	tons	261,466	281,618	276,145
generation	Wastewater treatment chemicals	millions of won	107	102	131
Waste treatment					
All	Total waste treatment	tons	71,466	72,264	75,275
					E 000
	Hazardous wastes	tons	5,235	5,598	5,266

## **SOCIALITY ACHIEVEMENTS**

	CATEGORY	UNIT	2009	2010	2011
Corporate governance	Board of directors participation rate	%	85.2	86.1	83.3
	Outside board member participation rate	%	88.6	86.7	82.3
Employee diversity	All employees*	number of employees	6,835	7,633	8,252
	Korea	number of employees	6,101	6,847	7,531
	Overseas	number of employees	734	786	721
	Office	number of employees	4,604	5,319	5,921
	Technical	number of employees	2,231	2,314	2,331
	Permanent	number of employees	5,871	6,393	6,792
	Contract	number of employees	964	1,240	1,460
	Male	number of employees	6,444	7,149	7,714
	Female	number of employees	391	484	538
	Disabled	number of employees	184	196	206
	Seniors	number of employees	331	434	653
Minority Employees	Women	%	5.72	6.34	6.52
	Disabled	%	2.69	2.57	2.50
	Seniors	%	4.84	5.69	7.91
Childcare and	Employees who used childcare leave	number of employees	4	4	5
maternity leave	Return to work rate	%	100	100	100
	Employees who used maternity leave	number of employees	6	11	10
	Return to work rate	%	100	91	70
Labor relations	Number of eligible employees	number of employees	3,168	3,610	3,941
communication	Number of members	number of employees	2,097	2,165	2,278
	Labor union membership	%	66.2	60.0	57.8
Job stability	Average number of years worked	number of years worked	14.6	13.2	12.5
	Turnover rate	%	1.8	2.4	1.7
Social service activities	Total number of volunteer activities carried out	number of volunteer activities carried out	4,210	3,650	16,868
	Total number of participating employees	number of participating employees	1,262	1,177	3,965
Regulatory compliance	Number of legal and regulatory violations	number of legal and regulatory violations	1	-	-

	CATEGORY	UNIT	2009	2010	2011
Landfill	Total	tons	20,458	14,534	14,257
	Hazardous wastes	tons	4,246	4,435	3,931
	General wastes	tons	16,212	10,099	10,326
Incineration	Total	tons	2,278	2,044	2,129
	Hazardous wastes	tons	837	470	568
	General wastes	tons	1,441	1,574	1,561
Recycled	Total	tons	48,730	55,686	58,888
	Hazardous wastes	tons	151	693	767
	General wastes	tons	48,579	54,993	58,121
Atmospheric en	vironment management				
TSP		ug/m <sup>2</sup>	73.7	77.2	61.3
SOx		ppm	0.004	0.004	0.004
NOx		ppm	0.018	0.022	0.019
СО		ppm	0.3	0.4	0.3
03		ppm	0.024	0.028	0.023
Pb		ppm	ND	ND	ND
Water environm	ent management				
COD		mg/l	14.07	13.61	11.67
SS		mg/l	1.37	2.56	1.72
T-N		mg/l	11.20	4.38	9.70
T-P		mg/l	-	-	0.02
n-hexane		mg/l	0.41	0.38	0.44
Cr		mg/l	0.03	0.01	0.08
Zn		mg/l	0.09	0.10	0.22
Pb		mg/l	0.11	0.05	0.05
Fe		mg/l	0.24	0.05	0.24

# GRI INDEX(G3.1)

		Description	Page	Application level	ISO26000
Profile Disclosure					
Strategy	1.1	Statement from the most senior decision-maker of the organization.	2~3	•	6.2
and Analysis	1.2	Description of key impacts, risks, and opportunities.	2~5	•	6.2
Organizational	2.1	Name of the organization.	8	•	
Profile	2.2	Primary brands, products, and/or services.	8	٠	
	2.3	Operational structure of the organization, including main divisions, operating companies, subsidiaries, and joint ventures.	6~8	٠	6.2
	2.4	Location of organization's headquarters.	8	٠	
	2.5	Number of countries where the organization operates, and names of countries with	6~7	٠	
		operations or that are specifically relevant to the sustainability issues covered in the report.			
	2.6	Nature of ownership and legal form.	30	•	
	2.7	Markets served (including geographic breakdown, sectors served, and types of customers/beneficiaries).	6~7	•	
	2.8	Scale of the reporting organization.	6~11, 68	•	
	2.9	Significant changes during the reporting period regarding size, structure, or ownership.	30	•	
	2.10	Awards received in the reporting period.	80	•	
Report Parameters	3.1	Reporting period (e.g., fiscal/calendar year) for information provided.	Cover	•	
	3.2	Date of most recent previous report (if any).	N/A	First report	
	3.3	Reporting cycle (annual, biennial, etc.)	Cover	٠	
	3.4	Contact point for questions regarding the report or its contents.	Cover	٠	
	3.5	Process for defining report content.	Cover	٠	
	3.6	Boundary of the report (e.g., countries, divisions, subsidiaries, leased facilities, joint ventures, suppliers). See GRI Boundary Protocol for further guidance.	Cover	٠	
	3.7	State any specific limitations on the scope or boundary of the report (see completeness principle for explanation of scope).	Cover	٠	
	3.8	Basis for reporting on joint ventures, subsidiaries, leased facilities, outsourced operations, and other entities that can significantly affect comparability from period to period and/or between organizations.	Cover	٠	
	3.9	Data measurement techniques and the bases of calculations, including assumptions and techniques underlying estimations applied to the compilation of the Indicators and other information in the report.	Cover	•	
		Explain any decisions not to apply, or to substantially diverge from, the GRI Indicator Protocols.			
	3.10	Explanation of the effect of any re-statements of information provided in earlier reports, and the reasons for such re-statement (e.g.,mergers/acquisitions, change of base years/periods, nature of business, measurement methods).	N/A	First report	
	3.11	Significant changes from previous reporting periods in the scope, boundary, or measurement methods applied in the report.	N/A	First report	
	3.12	Table identifying the location of the Standard Disclosures in the report.	72~75	٠	
	3.13	Policy and current practice with regard to seeking external assurance for the report.	76~77	٠	7.5.3
Governance, Commitments,	4.1	Governance structure of the organization, including committees under the highest governance body responsible for specific tasks, such as setting strategy or organizational oversight.	30~31	•	6.2
and Engagement	4.2	Indicate whether the Chair of the highest governance body is also an executive officer.	30~31	٠	6.2
	4.3	For organizations that have a unitary board structure, state the number and gender of members of the highest governance body that are independent and/or non-executive members.	30~31	•	6.2
	4.4	Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body.	30~31	•	6.2
	4.5	Linkage between compensation for members of the highest governance body, senior managers, and executives (including departure arrangements), and the organization's performanc (including social and environmental performance).	30~31	•	6.2
	4.6	Processes in place for the highest governance body to ensure conflicts of interest are avoided.	30~31	•	6.2
	4.7	Process for determining the composition, qualifications, and expertise of the members of the highest governance body and its committees, including any consideration of gender and other indicators of diversity.	30~31	•	6.2
	4.8	Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance and the status of their implementation.	32~33	•	6.2
	4.9	Procedures of the highest governance body for overseeing the organization's identification and management of economic, environmental, and social performance, including relevant risks and opportunities, and adherence or compliance with internationally agreed standards, codes of conduct, and principles.	30~31	•	6.2

		Description	Page	Application level	IS026000
	4.10	Processes for evaluating the highest governance body's own performance, particularly with respect to economic, environmental, and social performance.	30~31	٠	6.2
	4.11	Explanation of whether and how the precautionary approach or principle is addressed by the organization.	32	•	6.2
	4.12	Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or endorses.	72~75	٠	6.2
	4.13	Memberships in associations (such as industry associations) and/or national/international advocacy	80	•	6.2
	4.14	List of stakeholder groups engaged by the organization.	26~27	•	6.2
	4.15	Basis for identification and selection of stakeholders with whom to engage.	26~27	•	6.2
	4.16	Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group.	26~27	•	6.2
	4.17	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.	28~29	٠	6.2
conomic Perfo	rmance In	dicators			
conomic chievements	EC1	Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.	9, 27	•	6.8 6.8.3 6.8.7 6.8.9
	EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change.	46	•	6.5.5
	EC3	Coverage of the organization's defined benefit plan obligations.	54~55	•	6.4.4 6.8
	EC4	Significant financial assistance received from government.	27	•	
	EC5	Range of ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation.	53	٠	6.4.4 6.8
	EC6	Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation.	48	•	6.6.6 6.8 6.8.5 6.8.7
	EC7	Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation.	53	<b>A</b>	6.8 6.8.5 6.8.7
	EC8	Understanding and describing significant indirect economic impacts, including the extent of impacts.	62, 65~66	•	6.3.9 6.8 6.8.3 6.8.4 6
	EC9	Understanding and describing significant indirect economic impacts, including the extent of impacts.	65~66	•	6.3.9 6.6.6 6.6.7 6.7.8
nvironmental P	erformance	e Indicators			
aw materials	EN1	Materials used by weight or volume.	44	٠	
	EN2	Percentage of materials used that are recycled input materials.	44, 48	•	6.5 6.5.4
ergy	EN3	Direct energy consumption by primary energy source.	44, 68~69	•	6.5 6.5.4
	EN4	Indirect energy consumption by primary source.	44, 68~69	•	6.5 6.5.4
			40 47	•	6.5 6.5.4
	EN5	Energy saved due to conservation and efficiency improvements.	46~47		
	EN5 EN6	Energy saved due to conservation and efficiency improvements. Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives.	46~47	٠	6.5 6.5.4
		Initiatives to provide energy-efficient or renewable energy based products and services, and		•	6.5 6.5.4 6.5 6.5.4
ater	EN6	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives.	46~47	-	
ater	EN6 EN7	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives. Initiatives to reduce indirect energy consumption and reductions achieved.	46~47 46~47	•	6.5 6.5.4
ater	EN6 EN7 EN8	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives. Initiatives to reduce indirect energy consumption and reductions achieved. Total water withdrawal by source.	46~47 46~47 44	•	6.5 6.5.4 6.5 6.5.4
	EN6 EN7 EN8 EN9	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives. Initiatives to reduce indirect energy consumption and reductions achieved. Total water withdrawal by source. Water sources significantly affected by withdrawal of water.	46~47 46~47 44 49	•	6.5 6.5.4 6.5 6.5.4 6.5 6.5.4
	EN6 EN7 EN8 EN9 EN10	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives. Initiatives to reduce indirect energy consumption and reductions achieved. Total water withdrawal by source. Water sources significantly affected by withdrawal of water. Percentage and total volume of water recycled and reused.	46~47 46~47 44 49 49	• • • •	6.5 6.5.4 6.5 6.5.4 6.5 6.5.4 6.5 6.5.4
	EN6 EN7 EN8 EN9 EN10	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives. Initiatives to reduce indirect energy consumption and reductions achieved. Total water withdrawal by source. Water sources significantly affected by withdrawal of water. Percentage and total volume of water recycled and reused. Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of	46~47 46~47 44 49 49	• • • •	6.5 6.5.4 6.5 6.5.4 6.5 6.5.4 6.5 6.5.4
	EN6 EN7 EN8 EN9 EN10 EN11	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives. Initiatives to reduce indirect energy consumption and reductions achieved. Total water withdrawal by source. Water sources significantly affected by withdrawal of water. Percentage and total volume of water recycled and reused. Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas. Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas	46-47 46-47 44 49 49 50	• • • • • • • • • • • • • • • • • • • •	6.5         6.5.4           6.5         6.5.4           6.5         6.5.4           6.5         6.5.4           6.5         6.5.6
	EN6 EN7 EN8 EN9 EN10 EN11 EN12	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives. Initiatives to reduce indirect energy consumption and reductions achieved. Total water withdrawal by source. Water sources significantly affected by withdrawal of water. Percentage and total volume of water recycled and reused. Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas. Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.	46-47 46-47 44 49 49 50 50	• • • • •	6.5 6.5.4         6.5 6.5.4         6.5 6.5.4         6.5 6.5.4         6.5 6.5.6         6.5 6.5.6
/ater iodiversity	EN6 EN7 EN8 EN9 EN10 EN11 EN12 EN12	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives.         Initiatives to reduce indirect energy consumption and reductions achieved.         Total water withdrawal by source.         Water sources significantly affected by withdrawal of water.         Percentage and total volume of water recycled and reused.         Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.         Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.         Habitats protected or restored.	46-47 46-47 44 49 49 50 50 50	• • • • •	6.5 6.5.4         6.5 6.5.4         6.5 6.5.4         6.5 6.5.4         6.5 6.5.6         6.5 6.5.6         6.5 6.5.6
	EN6 EN7 EN8 EN9 EN10 EN11 EN12 EN12 EN13 EN14	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives.         Initiatives to reduce indirect energy consumption and reductions achieved.         Total water withdrawal by source.         Water sources significantly affected by withdrawal of water.         Percentage and total volume of water recycled and reused.         Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.         Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.         Habitats protected or restored.         Strategies, current actions, and future plans for managing impacts on biodiversity.         Number of IUCN Red List species and national conservation list species with habitats in areas	46-47 46-47 44 49 50 50 50 50 50	• • • • • •	6.5 6.5.4           6.5 6.5.4           6.5 6.5.4           6.5 6.5.4           6.5 6.5.6           6.5 6.5.6           6.5 6.5.6

#### ● Fully reported ▲ Partially reported O Not reported N/A not applicable

		Description	Page	Application level	ISO26000
Air emissions,	EN18	Initiatives to reduce greenhouse gas emissions and reductions achieved.	47	•	6.5 6.5.5
water emissions	EN19	Emissions of ozone-depleting substances by weight.	48~49	•	6.5 6.5.3
ind wastes -	EN20	NOx, SOx, and other significant air emissions by type and weight.	48~49	•	6.5 6.5.3
-	EN21	Total water discharge by quality and destination.	49	•	6.5 6.5.3
-	EN22	Total weight of waste by type and disposal method.	44	•	6.5 6.5.3
-	EN23	Total number and volume of significant spills.	49	•	6.5 6.5.3
-	EN24	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of	44, 49	•	6.5 6.5.3
	LINZ4	the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally.	44, 43		0.0 0.0.0
	EN25	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff.	50	•	6.5 6.5.4 6.5.6
Product/ Service	EN26	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.	38~39	٠	6.5 6.5.4 6.6.6 6.7.5
-	EN27	Percentage of products sold and their packaging materials that are reclaimed by category.	N/A	-	6.5 6.5.4 6.7.5
Regulatory compliance	EN28	Monetary value of significant fines and total number of non-monetary sanctions for non- compliance with environmental laws and regulations.	48	٠	6.5
Transportation and handling	EN29	Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce.	44	٠	6.5 6.5.4 6.6.6
All	EN30	Total environmental protection expenditures and investments by type.	36, 46	•	6.5
Labor Practices and			00, 10		0.0
	Decen				
Employment	LA1	Total workforce by employment type, employment contract, and region, broken down by gender.	53, 71	•	6.4 6.4.3
	LA2	Total number and rate of new employee hires and employee turnover by age group, gender, and region.	71	•	6.4 6.4.3
	LA3	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations.	53	•	6.4 6.4.3 6.4.4
Labor relations	LA4	Percentage of employees covered by collective bargaining agreements.	71	٠	6.4 6.4.3 6.4.4 6.4.5 6.3.
	LA5	Minimum notice period(s) regarding significant operational changes, including whether it is specified in collective agreements.	-	0	6.4 6.4.3 6.4.4 6.4.5
Occupational health and safety	LA6	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.	-	0	6.4 6.4.6
-	LA7	Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region and by gender.	50	٠	6.4 6.4.6
-	LA8	Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases.	50, 55	٠	6.4 6.4.6 6.8 6.8.3 6.8.4
-	LA9	Health and safety topics covered in formal agreements with trade unions.	50	•	6.4 6.4.6
Education and training	LA10	Average hours of training per year per employee by gender, and by employee category.	55	<b>A</b>	6.4 6.4.7
-	LA11	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.	55	٠	6.4 6.4.7 6.8.5
-	LA12	Percentage of employees receiving regular performance and career development reviews, by gender.	54	<b>A</b>	6.4 6.4.7
Diversity and equal opportunity	LA13	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity.	71	•	6.3.7 6.3.10 6.4 6.4.3
-	LA14	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation.	53	•	6.3.7 6.3.10 6.4 6.4.3 6.4
-	LA15	Return to work and retention rates after parental leave, by gender.	54	•	
Human Rights Perfo					
Investment and procurement practices	HR1	Percentage and total number of significant investment agreements and contracts that include clauses incorporating human rights concerns, or that have undergone human rights screening.	60	<b>A</b>	6.3 6.3.3 6.3.5 6.6.6
-	HR2	Percentage of significant suppliers, contractors and other business partners that have undergone human rights screening, and actions taken.	60	<b>A</b>	6.3 6.3.3 6.3.5 6.4.3 6.6.6
-	HR3	Total hours of employee training on policies and procedures concerning aspects of human rights	54	<b>A</b>	6.3 6.3.5

		Description	Page	Application level	ISO2600
Anti-discriminatory	HR4	Total number of incidents of discrimination and corrective actions taken.	53	<b>A</b>	6.3 6.3.6 6.3.7 6.3.10 6.4.3
Freedom of unionization and collective bargaining		Operations and significant suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and actions taken to support these rights.	-	0	6.2 6.3.3 6.3.4 6.3.5 6.3.8
Child labor	HR6	Operations and significant suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor.	54	٠	6.3 6.3.3 6.3.4 6.3.5 6.3.7
Forced labor	HR7	Operations and significant 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.	54	•	6.3 6.3.3 6.3.4
Security practices	HR8	Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations.	-	0	6.3 6.3.5 6.4.3 6.6.6
Indigenous rights	HR9	Total number of incidents of violations involving rights of indigenous people and actions taken.	N/A	-	6.3 6.3.6 6.3.7 6.3.8 6.6.7
Evaluation	HR10	Percentage and total number of operations that have been subject to human rights reviews and/or impact assessments.	54	<b>A</b>	
Improvements	HR11	Number of grievances related to human rights filed, addressed and resolved through formal grievance mechanisms.	54	<b>A</b>	
Society					
Local community	S01	Percentage of operations with implemented local community engagement, impact assessments, and development program	is. 46	٠	6.3.9 6.8 6.8.5 6.8.7 6.6.7
Corruption	S02	Percentage and total number of business units analyzed for risks related to corruption.	32	•	6.6 6.6.3
-	S03	Percentage of employees trained in organization's anti-corruption policies and procedures.	32	<b>A</b>	6.6 6.6.3
-	S04	Actions taken in response to incidents of corruption.	32	•	6.6 6.6.3
Public policy	S05	Public policy positions and participation in public policy development and lobbying.	27	٠	6.6 6.6.4 6.8.3
	S06	Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country.	N/A	-	6.6 6.6.4 6.8.3
Economically harmful activities	S07	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes.	N/A	-	6.6 6.6.5 6.6.7
Legal compliance	S08	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations.	71	•	6.6 6.6.7 6.8.7
Local community	S09	Operations with significant potential or actual negative impacts on local communities.	N/A	-	
	S010	Prevention and mitigation measures implemented in operations with significant potential or actual negative impacts on local communities.	46, 50~51	٠	
Product Responsibil	it				
Customer health and safety	PR1	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures.	41	•	6.3.9 6.6.6 6.7 6.7.4 6.7.5
Product/	PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning health	41	•	6.3.9 6.6.6 6.7 6.7.4 6.7.5
Service labelling -		and safety impacts of products and services during their life cycle, by type of outcomes.			
_	PR3	Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements.	41~42	٠	6.7.5 6.7.6 6.7.9
	PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes.	42	<b>A</b>	6.7.4 6.7.5 6.7.6 6.7.9
	PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction.	40, 43	•	6.7.5 6.7.6 6.7.8 6.7.9
	PR6	Programs for adherence to laws, standards, and voluntary codes related to marketing	-	0	6.7 6.7.3 6.7.6 6.7.9
		communications, including advertising, promotion, and sponsorship.			
Marketing Communications	PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcomes.	71	•	6.7 6.7.3 6.7.6 6.7.9
Customer personal information	PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.	N/A	-	6.7 6.7.7
Regulatory compliance	PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision	N/A	-	6.7 6.7.6

● Fully reported ▲ Partially reported O Not reported N/A not applicable

## INDEPENDENT ASSURANCE REPORT

#### To the management of Doosan Heavy Industries & Construction

We have been engaged by Doosan Heavy Industries & Construction (the "Company") to perform an independent assurance engagement in regard to the following aspects of the 2011 Doosan Heavy Industries & Construction Sustainability Report (the "Report").

#### Scope and subject matter

The information for the year ended December 31, 2011 (hereinafter, collectively referred to as the "Sustainability Information") on which we provide limited assurance consists of:

- The Company's conclusion on meeting the principles of Inclusivity. Materiality and Responsiveness in the AA1000 Accountability Principles Standard 2008 ("AA1000APS");
- The "SUSTAINABILITY MANAGEMENT ACHIEVEMENT" information on pages 68 through 71 in the Report (the "Sustainability Data") which is based on the reporting standard set out on "About this report" (the "Reporting Standard").

With regard to the financial data included in the key figures on page 68, our procedures were limited to verifying that they were correctly derived from the Company's audited consolidated financial statements. We read the other information included in the Report and consider whether it is consistent with the Sustainability Information. We consider the implications for our report if we become aware of any apparent misstatements or material inconsistencies with the Sustainability Information. Our responsibilities do not extend to any other information.

#### Assurance work performed

We conducted our engagement in accordance with ISAE 3000(1) and AA1000AS(2). The term 'moderate assurance' used in AA1000AS is designed to be consistent with 'limited assurance' as articulated in ISAE 3000. Our assurance is a Type II assurance engagement as defined in the Guidance for AA1000AS.

Our work involved the following activities:

- 1. Interviews with the personnel responsible for internal reporting and data collection to discuss their approach to stakeholder inclusivity, materiality and responsiveness.
- 2. Visits to the Company's Changwon headquarters and Seoul Office to understand the systems and processes in place for managing and reporting the Sustainability Data.
- 3. Review of a sample of internal documents relevant to output from the risk assessment process, sustainability-related policies and standards, the sustainability Materiality Assessment Matrix and other documents from stakeholder engagement activities.
- 4. Evaluating the design and implementation of the key processes and controls for managing and reporting the Sustainability Data
- 5. Limited testing, through inquiry and analytical review procedures, of the preparation and collation of the Sustainability Data.

#### Respective responsibilities of the management of the Company and Samil Pricewater**houseCoopers**

The management of the Company is responsible for establishing assessment criteria that meets the principles of Inclusivity, Materiality and Responsiveness in the AA1000APS, measuring performance based on the "Assessment Criteria", and reporting this performance in the Report. Our responsibility is to provide a conclusion based on our assurance procedures in accordance with ISAE 3000 and AA1000AS. This report, including the conclusion, has been prepared for the management of the Company as a body, to assist the management in reporting on the Company's sustainability performance and activities. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the management of the Company as a body and the Company for our work or this report save where terms are expressly agreed and with our prior consent in writing.



#### Inherent limitations

Non-financial performance information is subject to more inherent limitations than financial information, given the characteristics of the subject matter and the methods used for determining such information. Qualitative interpretations of relevance, materiality and the accuracy of data are subject to individual assumptions and judgments. A limited assurance engagement is less in scope than a reasonable assurance engagement under ISAE 3000. Consequently, the nature, timing and extent of procedures for gathering sufficient, appropriate evidence are deliberately limited relative to a reasonable assurance engagement. In particular:

- nanv
- to assurance by us.

#### Conclusion

• On the AA1000APS principles;

## INCLUSIVITY

and opinions through stakeholder communication channels that include customers, partners companies, shareholders/ investors, the government, NGOs, employees and local communi-

- Nothing has come to our attention to suggest that material stakeholder groups were excluded in these channels

#### **Recommendations**

From our work, we have provided the following recommendations to the management.

- In order to maintain continued corporate growth, the Company needs to establish vision and goals for corporate sustainability management, and maintain and establish internal system and processes to identify and perform relative strategic tasks.
- In order to reflect the performance data of corporate sustainability on management decision making process, we recommend enhancing relative data collection and evaluation procedures.

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• We did not attend any stakeholder engagement activities. Therefore our conclusions are based on our discussions with management and staff of the Company and our review of selected documents provided to us by the Com-

• The scope of our work was restricted to 2011 performance only, as set out in the scope and subject matter section above. Information relating to the year ended December 31, 2010 and earlier periods have not been subject

Based on the results of the assurance work performed and the Assessment Criteria, our conclusion is as follows:

- The Company has collected concerns

MATERIALITY

- The Company has identified most relevant and significant sustainability issues through process for identifying material issues.
- Nothing has come to our attention to suggest that material issues were omitted in this process

#### RESPONSIVENESS

- The Company has included in the Report its response to the material sustainability issues which are defined through process for identifying material issues.
- Nothing has come to our attention to suggest that there is material deficiency in issue management system.

 Nothing has come to our attention that causes us to believe that Sustainability Data for the year ended December 31, 2011 are not fairly stated, in all material respects, in accordance with the Reporting Standard.

· A dedicated sustainability management team should be established to actively respond to the changing management environment in relation to corporate sustainability.

Samil Priseantabouse Cogous

Seoul, Korea September 7, 2012

## THANKS TO YOU



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#### **Doosan Heavy Industries** & Construction Sustainability Report TF TEAM

01 Seo Jin-soo, General Manager (Management Division) EHS planning team / Sustainability Report T/F Team Leader 02 Jeon Young Joo, Manager (Management Division) Energy Environment Team 03 Chung Young-chae, (Management Division) EHS Planning Team 04 Park II-woo, Assistant Manager (Management Division) Energy Environment Team **05 Jang Ji-ho**, Senior Manager (Strategic Planning) Strategy Team 06 Lee Yang-woo, General Manager (COO) Quality Management Planning Team 07 Lee Dongwook, (Research) Technology Strategy Team 08 Lee Sang-rok, Senior Manager (Management Division) Management Planning Team 09 Kim Kiwoon, Assistant Manager (Management Division) HRM Team 10 Kim Dong-hyang, Senior Manager (Management Division) HRD Team 11 Lee Seungyong, Senior Manager (Management Division) Social Responsibility Team 12 So Seop, Senior Manager (Finance) GS Team 13 Lee Eung-jun, Senior Manager (COO)HR Development Team 14 Kim You-hyun, Manager (COO) Shared Growth Team 15 Lee woon-sang, Assistant Manager (COO) HR Management Team 16 Kim Ki-bum, Assistant Manager (COO) Operational excellence Team 17 Seo Kang-chul, General Manager (Management Division) PR Team 18 Lee Bin, Senior Manager (Management Division) PR Team **19 Cho Dong-in,** General Manager, (Power) Thermal Process Development Team 20 Cho Limhyun, General Manager (Water) Water Marketing Team 21 Choi Ki-chang, General Manager (EPC) JBL PCM, Han Gene-kwon, General Manager (Power) Power Purchasing Planning Team



## AWARDS AND MEMBERSHIPS

Corporate Awards			
NAME OF AWARD	ORGANIZER	DATE OF AWARD	ORDER/CLASS
2011 Global Water Awards	Global Water Intelligence, International Desalination Association	2011.04	Desalination Company of the Year
12th Social Welfare Day events (Gyeongnam Social Welfare Award)	Gyeongsangnam-do	2011.09	Corporate Service Award
Vietnam Investor Corporate Social Responsibility (CSR) Award	Ministry of Knowledge Economy, Vietnam Ministry of Planning and Investment	2011.10	Grand Prize, Corporate (Minister of Planning and Investment Award)
2011 Gyeongnam Volunteer Conference event 2011Korea Volunteer Award	Ministry of Public Administration and Security	2011.12	Ministry of Public Administration and Security

#### **Individual Awards**

NAME OF AWARD	ORGANIZER	DATE OF AWARD	RECIPIENT	ORDER/CLASS
Meritorious Service Award for Industrial Plant Export Expansion	Korea Plant Equipment Industry Association	2011.02	Kim Jeong-min	Minister of Knowledge Economy Commendation
Meritorious Service Award for	Korea Electrical Manufacturers Associations	2011.04	Jeong Yeong-seok	Minister of Knowledge Economy Commendation
2011 Korea Green Management Awards	Ministry of Knowledge Economy / Ministry of Environment	2011.06	Kim Myeong-wu	Industrial Service Medal
Meritorious Service Award for Yeongheung Korean Wind Power Commercialization Complex	Ministry of Knowledge Economy	2011.07	Jin Jong-wuk Commendation	Minister of Knowledge Economy
Iron Tower Order of Industrial Service Merit	Ministry of Employment and Labor	2011.09	Kwon Sun-beom	Medal
Master Craftsmen of Korea (welding) Master Craftsmen of Korea (machinery assembly)	Ministry of Employment and Labor	2011.09	Hyeon Jong-ho Baek Seung-hak	Mater Craftsman
New and Renewable Energy Award	Ministry of Knowledge Economy / Korea Energy Management Corporation	2011.10	Park Jong-po	Industrial Service Medal
Open Employment Leader	Ministry of Employment and Labor	2011.11	Park Ji-won	Minister of Employment and Labor Award
Nuclear Power Safety and Development Day Award	Ministry of Knowledge Economy	2011.12	Park Jun-beom An Seung-jin Park Su-yong	Minister of Knowledge Economy Award
Special Meritorious Service Award for Commemorating \$1 Trillion in Exports	Ministry of Knowledge and Economy / Korea Trade Association	2011.12	Yun Seok-won	Industrial Service Medal
Korea Quality Management Contest Bronze Tower of the Order of Industrial Service Merit	Ministry of Knowledge Economy / Korea Standards Association	2011.12	Seong Jong-wan	Order of Industrial Service Merit
Korea Quality Management Contest Quality Master Craftsman	Ministry of Knowledge Economy / Korea Standards Association	2011.12	Seong Jong-wan	Master Craftsman

#### Memberships

Construction Environment Management Council	<ul> <li>Korea Industrial Council</li> </ul>
Gyeongnam Employers Federation	- Korea Electricity
Gyeongsangnam-do Region Defense	Technology Ass
Industry Security Council	- Business Institu
Gyeongsangnam-do Region Industrial	Development
Security Council	- Changwon Char
Korean Medical Association	Industry
Korean Nurses Association Gyeonsang	- Wind Power Ind
nam-do Nurses Association	- Plant Engineerir
Construction Association of Korea	- Korean Carbon (
Korea Mechanical Construction	Association
Contractors Association	- Korea Federatio
Korean Red Cross	Contractors
Korea Electric Association	- Korea Construct
Korea Specialty Contractors Association	Association
Korea Housing Builders Association	- Korea Society f
Federation of Korean Industries	- Korea Associati

rea Industrial Corporate Health Testing Organizations - Fair Competition Federation rea Electricity power-New chnology Association Technology Societies siness Institute for Sustainable angwon Chamber of Commerce and - Korea Management Association lustry ind Power Industry Council nt Engineering Council rean Carbon Capture and Storage rea Federation of Construction rea Construction New-Technology rea Society for Construction Quality rea Association of Standards & Korea -Fire Safety Construction

Association - Korea Federation of Science and Association - Korea Energy Council - Korean Customs Logistics Association - Korea Association of Machinery Industry Association - Korea Engineers Club - Korea Coating Experts Society - Women in Nuclear Korea - Korea International Trade Association - Korea Radioisotope Association Association - Korea Atomic Industrial Forum - Korea Defense Industry Association - Korea Principal Engineers Association - Korea Industrial Technology Association - Korea Listed Companies Association - Korea Facility Maintenance Council Association - Korea Fire Safety Association - Korea Fire Safety Association, Contractors Association

- Korea Industries Confederation for - Korea New & Renewable Energy commercialization of Superconductivity - Korean Standards Association - Korea Project Management Association - Korea Plant Industries Association - Korea Engineering & Consulting - Korea Fusion Industry & Technology Association - Korea Chemicals Management - Korea Nuclear Energy Qualification Association - International Contractors Association of Korea - Korea Academy of Nuclear Safety - Korea Environmental Engineering - Korea Electrical Contractors Association Association - Korea Railway Electrical Technology - Korea Environmental Preservation Association - Korea Electric Engineers Association - Korea Information Communication



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