NEW Horizons

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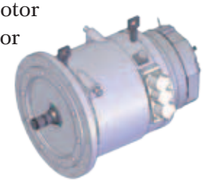
COVER STORY

Driving Growth with Booming Offshore Business

Byeoru
the ink stone

Paper, brush, ink stone, and ink stick were the items regarded as friends of the scholar in ancient Korea. Among them, the ink stone, grinding tool for making ink, has been valued as a precious treasure by Korean scholars because it contains the essence of learning. The ink stone can be either rectangular or round. It is typically made of stone, but other materials such as jade, glass, crystal, gold, silver, and bronze have also been used. Images of dragons, cranes, and orchids are usually engraved on the ink stone. The ink stick is ground on the flat part of the stone to form a powder which would gather in the well. The intensity of the color could be adjusted by changing the amounts of powder and water in the ink mixture. The concentration of the ink was regarded as a means of measuring scholarly fidelity. The ink stone was valued not only because it was a practical instrument but also as objet d'art for its aesthetic design. HHI *Source - BORYEONG COAL MUSEUM*



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Hyundai Heavy is Resolute, and Determined to Chart a Course for Continued Prosperity

Lee Jai-seong
President & CEO

2012 is fast drawing to a close and as we pause to look back over this year, we realize that unabated hardships such as the European financial crisis and slowdown of the Chinese economy have combined to take a toll on the performance of companies around the world.

Determined to rise above these challenges, Hyundai Heavy Industries has been putting its resources behind efforts to make significant new productivity gains and carve out fresh markets through continued focus on technology development.

Taking a closer look at our divisions, the Shipbuilding Division is diversifying its vessel portfolio with more sophisticated, high value-added vessels to offset persistent low demand for commercial vessels. The Offshore & Engineering Division is at the moment carrying out a project from a major oil company and is in the middle of negotiations for new projects.

The Industrial Plant & Engineering Division has not only succeeded in winning an order to build a power plant worth USD 3.2 billion in Saudi Arabia but has also been selected as the priority negotiation partner for various big ticket projects. Despite such active sales efforts and the expansion of the plant construction market in the Middle East, the division is faced with the challenge of seizing the lion's share of this market ahead of competitors engaged in price wars. Making the most of its proven track record of integrated and effective project implementation, the division is confident it has the competitive edge in this market.

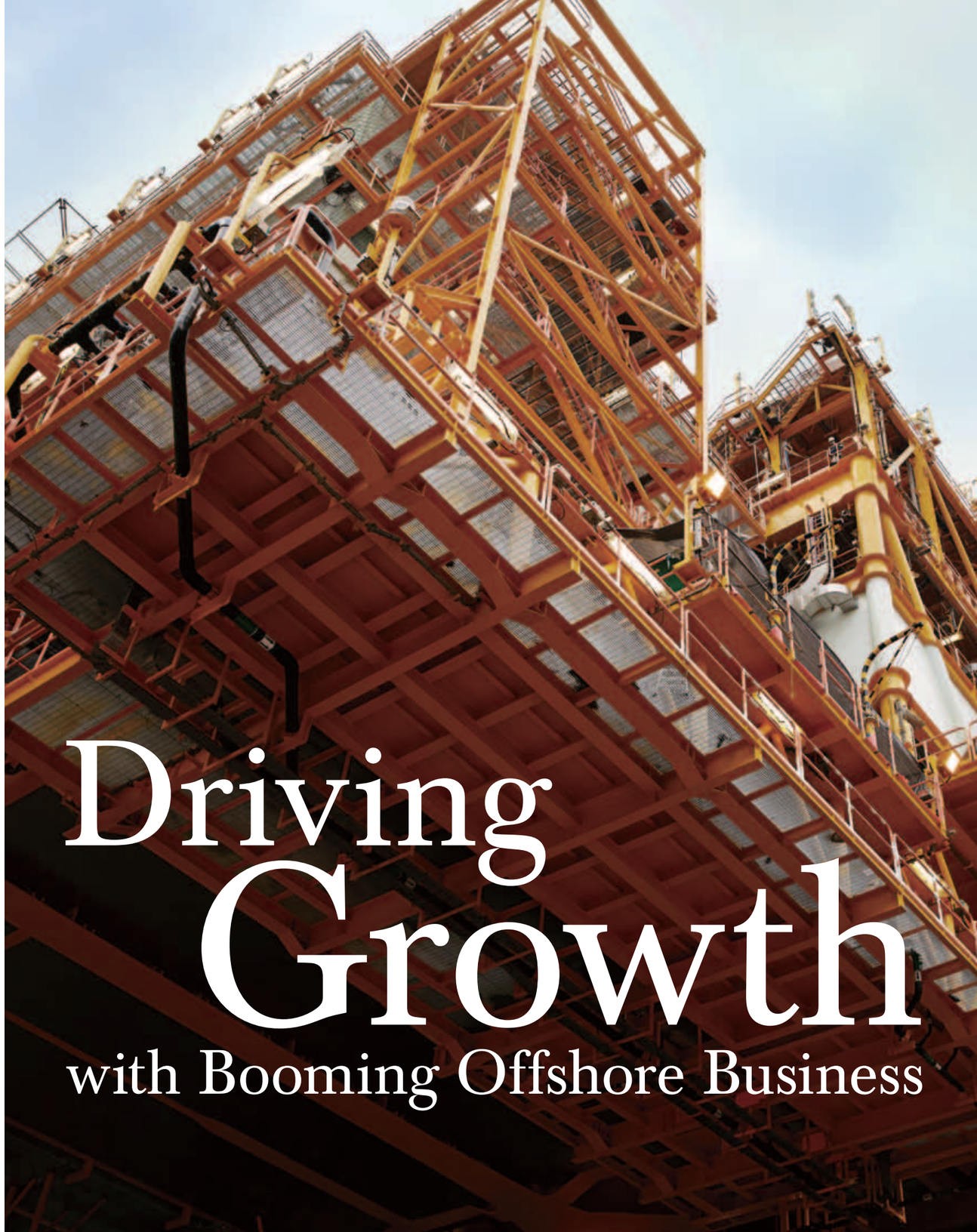
The Engine & Machinery Division's sales in the marine engine market have been hit by the continuing lackluster demand in the shipbuilding market. Despite this setback, the division has cemented its place as the world's largest marine engine maker by further expanding its share of the world's large marine engine market to 36%.

The Electro Electric Systems Division has also experienced its share of ups & downs due to the global financial crisis and world economic stagnation. However, as the operation of its US Alabama firm gets on track, it will be able to get a strong foothold in the North American market. Moreover, as the lack of power supply around the world is expected to lead to the construction of more power plants, the division should see greater sales for its power transmission and distribution equipment.

The Construction Equipment Division has laid the ground work for sustainable growth in the future by setting up a joint venture with Cummins. With this collaboration, the division will reinforce its reputation for the outstanding quality and performance of its products.

Faced with the darkest hour for the global renewable energy industry, the Green Energy Division is focusing on technology development and boosting the competitiveness of its products with its sights firmly set on future opportunities.

Maneuvering through the stormy waters at the moment, Hyundai Heavy Industry remains resolute and determined to chart a course for continued prosperity as the world's leading heavy industries company. We thank you for your continued support and patronage. HHI



Hyundai Heavy's offshore engineering complex in Ulsan dazzles visitors with spectacular views. A pair of 127 m high Goliath cranes dominate the skyline as thousands of workers toil to finish work in and around fixed platforms and super-large vessels occupying much of the space.

Glittering in the bright autumn sun is a huge dome-shaped FPSO (Floating Production, Storage and Offloading) unit which is being assembled in a 490 m long dry dock, exclusively used by the Offshore & Engineering Division. Just next to this, the world's largest semi-submersible heavy transportation vessel, *Dockwise Vanguard*, is being constructed.

The yard is currently operating at full capacity and has a backlog of more than USD 10 billion, enough to keep the division busy for the next two years.

Due to a prolonged downturn in the shipbuilding sector, the booming offshore engineering sector has quickly stepped in to make up the difference for Hyundai Heavy Industries.

The Company is pushing to overcome an increasingly challenging economic environment by securing a steady stream of orders for fixed platforms and FPSO which it hopes will help offset dwindling ship orders.

Mr. Kim Jong-do, executive vice president & chief operating officer of the Offshore & Engineering Division, is optimistic that his division will keep delivering strong results in the coming years.

"Unlike the shipbuilding sector which fluctuates heavily, the offshore engineering market is relatively stable," said Mr. Kim.

He said higher energy prices have spurred oil majors and oil producing nations to explore for oil and gas in deep seas with floating and more sophisticated facilities. Also, the demand for oil and gas has increased in the aftermath of the nuclear disaster at the Fukushima Power Plant in Japan last year.

Mr. Kim said the division has been aggressively pushing to meet its ambitious goal of winning USD 5.2 billion in new orders this year. In 2011, the global leader in the offshore engineering market won a record-breaking performance of USD 3.7 billion.

> "The world is closely watching how we are working on this FPSO."

Competition

Despite the failure early this year to win orders for an FPSO unit and an offshore central processing facility from Japanese oil giant INPEX, Hyundai Heavy seems to be on track to meet this year's target as the Company is close to winning a multi-billion-dollar FPSO order in Nigeria, company officials said.

As in the case of INPEX's Ichthys project off Australia, competition among leading South Korean shipbuilders to win lucrative offshore energy projects is getting more intense, though Hyundai Heavy is still a dominant player.

Hyundai Heavy is facing stiff competition from its local rivals in the area of larger floating units where the big three have a combined global market share of 80 percent.

Mr. Kim said Hyundai Heavy's major strengths are unmatched workforce skill, massive construction infrastructure, and a long experience of handling various types of floating offshore units.

He said Hyundai Heavy's offshore engineering unit will keep growing and its annual sales are projected to reach about KRW 10 trillion within five years. The Company forecasts the offshore division will record KRW 4.37 trillion in sales this year, compared with KRW 3.70 trillion last year.

To help manage a surge of new offshore engineering projects, Hyundai Heavy completed a new dry dock in the complex in 2009. The dock, 490 m in length and 115 m in width, is currently being used to construct the world's largest cylindrical FPSO for Eni Norge's Goliat project.

Hyundai Heavy is undertaking all the project work covering engineering, procurement, construction, and offshore hook-up & commissioning. This FPSO requires high-end design and high quality construction standards to meet strict safety and environmental regulations.

Applied to the project by the operator Eni Norge are the stringent NORSOK standards developed by the Norwegian petroleum industry to ensure adequate safety, value adding, and cost effectiveness. The FPSO is scheduled to be delivered in 2014.

"The world is closely watching how we are working on this different type of FPSO; if done well, there will be more interest," said Mr. Kim.

When completed, the dome-shaped FPSO will be carried to the North Sea by *Dockwise Vanguard*. The semi-submersible heavy transport vehicle, owned by Dockwise, is specially designed to transport more than 110,000 tons of oil and gas production facilities including FPSO units. It has been designated as a 'Type 0' vessel because it is the first to be built of this size.

FPSO units are usually transported by two or three tug boats from shipyards to operating sites, taking months to complete the journey. The

new transport vessel will more than halve the delivery time. Mr. Kim said it will take only about six weeks for the vessel to complete the delivery from Ulsan to the North Sea.

Though Hyundai Heavy is maintaining its strong competitive edge in the fixed platforms, FPSO, and oil pipeline market, the Company is also sharpening its focus on mega-sized LNG FPSO.

Hyundai Heavy has unveiled its new offshore facility model, Hyundai FLNG (Floating Liquefied Natural Gas Plant), designed with German engineering firm Linde AG. The facility will be able to produce, liquefy, and offload natural gas directly to an LNG carrier.

Mr. Kim said he expected orders for this facility to begin coming in at the end of next year.

The Hyundai FLNG has a potential annual production capacity of 2.5 million tons of LNG. The Company says the model will take much less time to build compared with onshore plants, making it an attractive option for oil majors and global shipping companies looking to commercialize gas in remote offshore fields.

Talent

Hyundai Heavy's success in offshore engineering owes much to its 1,400-strong design team which provides a detailed and optimal design solution for clients.

There has been a war for design talent in the offshore engineering sector, and the division has set up a 100-strong design team in Seoul to help attract talent.

The number of designers in Seoul will be increased to 200 next year, Mr. Kim said.

Brief History

Over the past three decades, Hyundai Heavy has transformed itself from a mere fabricator to an industrial giant capable of offering a broader set of end-to-end solutions to worldwide clients for energy development vessels and offshore plants - from design to manufacturing and installation.

Hyundai Heavy Industries' first involvement in offshore structures dates back to the late 1970s with an order for 89 jackets and deck structures for the Open Sea Tanker Terminal (OSTT) as part of Saudi Arabia's Jubail Industrial Harbour Project.

The multiple projects for the OSTT were valued at USD 931 million, equivalent to about a quarter of Korea's national budget at that time. Most of the jackets were fabricated in Korea and transported to Saudi Arabia by barge, a process that went beyond conventional wisdom.

Encouraged by this initial success, HHI has, in less than 30 years, grown into a leading turnkey contractor capable of delivering all types of offshore facilities.

Hyundai Heavy Industries has steadily developed technologies and sophisticated project-management techniques through its FPSO projects since successfully delivering two FPSO to Petrobras 1999. HHI

The writer, Alex Lee, is a journalist based in Seoul.

Companywide

KMAC Selects Hyundai Heavy as 'Best 30 Companies to Work for' For 5th Year in a Row

HHI was selected as one of the 'Best 30 Companies to Work for' for the fifth year in a row on August 20 by KMAC(Korean Management Association Consultant).

HHI ranked No.5 in the manufacturing industry and No.1 in shipbuilding industry on the survey for '2012 Korean Best Companies to Work for'.

HHI ranked No.3 in outstanding vision, No.5 in fair system, and No.8 in happy company culture.

This survey canvassed 4,204 people including industrial workers and human resources directors. Categories in the questionnaire included outstanding vision, fair system, happy company culture, engagement, and general level of happiness.

an opportunity for citizens to be introduced to the arts and culture.

HHI was ranked first for supporting the arts from 2004 to 2008. After dropping to second place in 2009 and 2010, the Company returned to the top spot last year.

Companywide

Ranked No.1 by Korean Business Council for the Arts

According to Korean Business Council for the Arts, HHI is the company that most supported the arts in 2011.

Since 1991, HHI has established seven community centers, including Hanmaeum Cultural Center, that provide various cultural programmes and host exhibitions.

HHI's community centers attract large scale performances and provide

Shipbuilding

USD 270 Million LNG FSRU Order

HHI won a USD 270 million order to build an LNG FSRU (Floating, Storage, Regasification Unit) for Hoegh at GASTECH 2012 in London on October 12.

This contract also includes an option exercisable by Hoegh for an additional same-class LNG FSRU.

The 170,000 m^3 LNG FSRU, measuring 294 m in length and 46 m in width, can store 70,000 tons of chilled natural gas. The vessel is scheduled to be delivered by the first half of 2015.

LNG FSRUs receive liquefied natural gas from offloading LNG carriers. The installed regasification system provides gas send-out through flexible risers and pipelines to shore. LNG FSRUs take a year less and cost half as much as an onshore LNG terminal to complete. This regasification unit is the fourth ordered by Hoegh at HHI.

Shipbuilding

2nd Voluntary Agreement for VOCs Reduction

HHI and five domestic shipbuilders made the 2nd voluntary agreement for VOCs (Volatile Organic Compounds) reduction with the Ministry of Environment on September 21.

Under this agreement, the six shipbuilders plan to use KRW 230 billion over the next five years to reduce 4,538 tons of VOCs. It is an amount equivalent to 13 percent of the average emissions from 2007 to 2011, which was the first agreement period. The companies need to build new painting shops, enhance paint management systems, and install reduction facilities to achieve this goal.

Under the first agreement period, Hyundai Heavy reduced much-higher-than-average of VOCs, 51.8 percent, or 5,607 tons in 2006.

Shipbuilding

Hyundai Heavy Clinches USD 620 Million Drillship Order

HHI won a USD 620 million order to build a drillship for drilling contractor Rowan Companies on September 12. The contract price includes commissioning, project management, and spares, but excludes capitalized interest.

This contract also includes an option exercisable by Rowan to order an additional same-class drillship.

The vessel, measuring 229 m in length and 36 m in width with a maximum drilling depth of 12 km from the surface of sea, is scheduled to be delivered by the first quarter of 2015.

Rowan has exclusively ordered all four of its drillships with Hyundai Heavy since June 2011.

Drillships built by Hyundai Heavy use the drillship-specific Gusto P10000 design making the best use of vessel space for drilling. The design helps stabilize the drillship while operating and uses less fuel by making thrusters operate less. A position controlling system, a computer propulsion system, and seven blowout preventers will also be installed to enhance safety.

The drillship will also be equipped with a thruster canister, saving time in maintenance and operating costs. A thruster canister is housing for the thruster, which helps keep the ship in position while it is drilling. Ships with a canister do not need to be drydocked for maintenance as the thruster can be lifted onto the ship when work needs to be carried out.

Offshore & Engineering

Work Commencement of Two Offshore Projects

HHI began construction of an offshore gas platform for DSO on August 16 and the Quad 204 FPSO topside on September 7.

DSO's project, due for completion in July 2015, will include gas condensation, production, and living quarters. It will be installed in the Escarvos field off the coast of Nigeria. When completed, it will be able to condense 120 million ft^3 of gas and produce 300 million ft^3 of gas.

The Quad 204 FPSO can store 1 million barrels of oil and produce 130,000 barrels of oil and 2.2 million ft^3 of gas per day. The new FPSO, to be deployed at the Schiehallion & Loyal fields in the North Sea, is expected to produce its first oil from the fourth quarter of 2015.

Offshore & Engineering

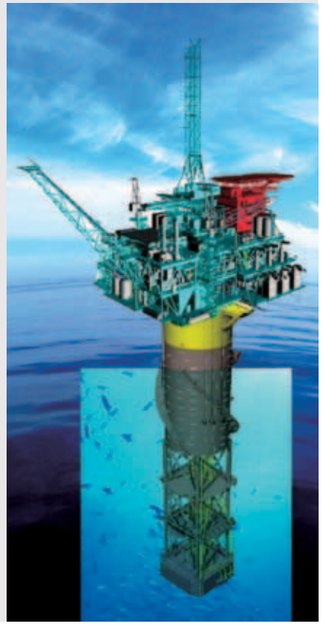
Launching World's Largest Semi-submersible Carrier

HHI launched the world's largest semi-submersible transport vessel on October 7. *Dockwise Vanguard*, measuring 275 m in length, 70 m in width, 15 m in height with a maximum lifting capacity of 110,000 tons, is scheduled to be delivered to Dockwise in January 2013.

The vessel is specially designed to transport offshore oil & gas production facilities including FPSO units. FPSO is usually transported by two or three tug boats from shipyards to operating sites, taking about months to mobilize on the sites. This super-heavy transportation vessel can halve the delivery time, helping move up the installation and commissioning time.

Offshore & Engineering

Building the World's Largest Spar Hull



HHI announced that it was awarded a Letter of Intent to construct the spar hull for a gas production platform by Statoil in a consortium with Technip on July 11. The contract value for this project is about USD 700 million.

Technip will be in charge of engineering and procurement for the tagged equipment.

A spar platform is a cylindrical, partially submerged offshore drilling and production platform that is engineered for deepwater operations.

The spar hull will be the world's largest spar weighing 45,000 tons and measuring 195 m in total hull height. It will also be the first of its kind operating in Norwegian waters.

Upon delivery in 2015, the spar hull will be installed in the Aasta Hansteen field, 300 km off the coast of Norway, to produce natural gas in 1,300 m of deep water.

When operational in the first half of 2015, it will produce 120,000 barrels of oil and 100 million ft^3 of natural gas a day.

Offshore & Engineering

Groundbreaking Ceremony for Clair Ridge Platform

HHI held a groundbreaking ceremony for the Clair Ridge Platform in its pre-assembly shop on October 22. The ceremony was attended by Mr. Chris Rees, site manager of the project, Mr. Kim Jong-do, COO of Offshore & Engineering Division, and 50 guests.

This USD 600 million project, ordered by BP, includes one drilling/production platform and one utility platform. It is scheduled to be installed off the Shetland Islands by the end of 2014.

Industrial Plant & Engineering

Delivery of Fluidized Bed Boiler

HHI successfully delivered the Fluidized Bed Boiler to Hyundai Oilbank ordered in October 2010 on August 31, 2012.

The Fluidized Bed Boiler is eco-friendly equipment which can convert high-sulfur petro cokes, a by-product from refinement of crude petroleum into fuels. The equipment can remove 98 percent of sulphur oxides in the boiler.

HHI completed the project four months ahead of schedule and carried out engineering and commissioning for the project. The completion ceremony was held at Hyundai Oilbank's Daesan plant on September 14.

Engine & Machinery

Type Approval Test for Dual Fuel HiMSEN Engine

HHI received Type Approval for the new dual fuel engine, HiMSEN H35DF, from 9 classification societies including ABS, BV, and DNV on October 18.

HiMSEN H34DF, running on both diesel and LNG, has a rated output of 4,320 kW. When durability tests and fine tuning are complete, the dual fuel engines are scheduled to go into mass production from mid next year.

These new dual fuel marine engines already meet IMO Tier-III

Industrial Plant & Engineering

USD 3.2 Billion Saudi Plant Order

HHI won a USD 3.2 billion order to build Jeddah South Thermal Power Plant from Saudi Electricity Company (SEC) in Saudi Arabia on October 15.

HHI, as the sole EPC contractor, will carry out the construction of the 2,640 MW oil-fired thermal power project on a turnkey basis including engineering, procurement, construction, commissioning, testing, and transferring at Jeddah, Saudi Arabia. HHI will introduce supercritical boiler technology for the first time in Saudi Arabia to maximize the power efficiency of the plant, which is scheduled to be completed by 2017. Upon completion, the power plant will be able to produce enough electricity for about 2 million people or 5 percent of Saudi Arabia's entire power generation capacity.

"In the midst of the global economic crisis, Hyundai Heavy's independent technological expertise and competitiveness was once again acknowledged by winning this mega project as the sole EPC contractor. We expect the successful management of the power plant to serve as a stepping stone for HHI to emerge as a leading industrial plant EPC contractor," said Mr. Lee Jai-seong, CEO of HHI.

The Ulsan, South Korea-based Company has completed or is building power and desalination projects generating total 13,000 MW of power, worth about USD 10 billion in the Middle East.

emissions regulations that will come into effect from January 2016.

Electro Electric Systems

USD 4 Million Solar Inverter Contract

HHI's Electro Electric Systems Division won a USD 4 million contract for 40 units of 500 kW solar inverters from KC Cottrell on September 19.

The solar inverters are scheduled to be delivered to Busan's Shinho Solar Power Plant, by the end of November.

Shinho Solar Power Plant will install the solar inverters at Renault Samsung's car factory and parking lot in Busan. The plant will be able to generate 20 MW of electricity, enough for 6,700 households.

Electro Electric Systems

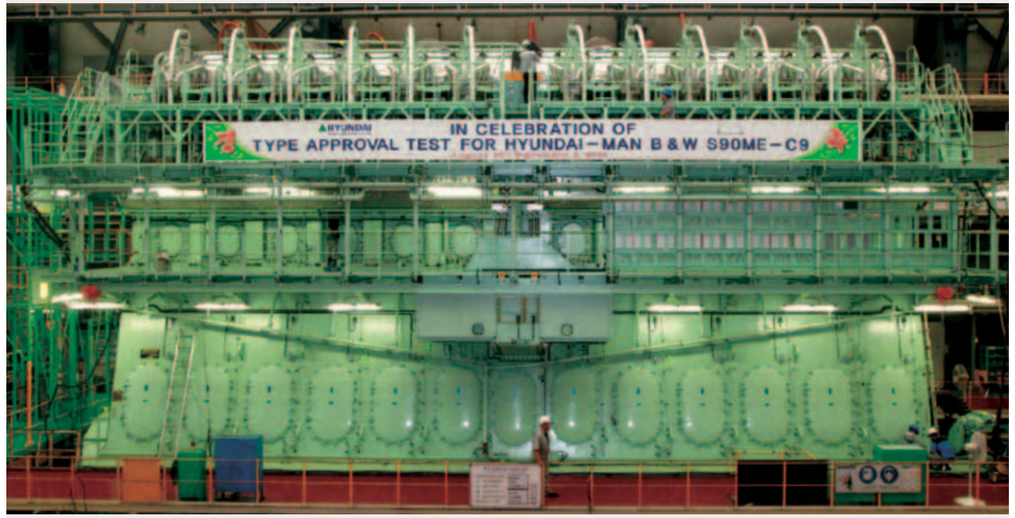
KRW 70 Billion Electro Electric Order

HHI won a KRW 70 billion order for electro electric equipment from Samsung Engineering on September 19.

Under the contract, HHI will install GIS, switchboard, distribution transformers, and emergency dynamo at Samsung Total's Seosan plant by June 2013. A switchboard and housing are slated to be delivered to Iraq's West Qurna oil refinery facility by May 2013.

Engine & Machinery

Engine Test Run Passed



HHI successfully passed the official test run of the newly developed high output eco-friendly two-stroke engine (12S90ME-C9.2) on September 1.

Unlike older engines, which could only be used on bulk carriers and tankers, this new engine can also be installed on containerships. The new engine also performs 10 percent better than engines of the same class while cutting CO^2 and NOx emissions by more than 10 percent.

After the final durability test, HHI will supply a domestic shipbuilder with the engine which will be installed in a 13,000 TEU containership.

Construction Equipment

New Hybrid Forklift

HHI was selected by the Ministry of Knowledge Economy as the lead company to develop 5-7 ton hybrid forklifts on September 3.

The programme organized by HHI, small and medium businesses and research institutes, is planning to invest as much as KRW 6 billion by 2015, to develop eco-friendly hybrid forklifts to cope with Tier IV emission control regulations.

The forklift will have both a diesel engine and an electric motor. It will be able to increase fuel efficiency by 30 percent and reduce emissions.

Engineering for system, parts, structure, and electro electric equipment of the hybrid forklift is scheduled to be completed by 2013. HHI aims to release proto-type models by 2014, and revamp and manufacture electro electric equipment and complete durability tests by June 2015.

Construction Equipment

CSR in India

HHI completed a school supplies donation agreement with a school in Pune, India on October 4. This donation agreement was attended by Mr. Bhalchim, principal of the school, and Mr. Choe Byeong-ku, COO of Construction Equipment Division. HHI donated computers, desks, chairs, and other school supplies worth USD 10,000 to the school in line with its corporate social responsibility activities.

"We donated those materials for children in order to help them reach their potential. We are also thinking of upgrading our CSR (Corporate Social Responsibility) activities going forward," said Mr. Choe Byeong-ku.

Green Energy

HHI Completes 2.7 MW Solar Project in California

HHI completed a 2.7 MW solar and energy efficiency project ordered by Chevron Energy Solutions at Jurupa Unified School District, California, USA on September 24.

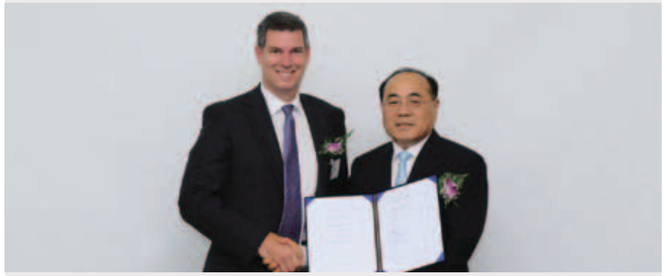
For the project, HHI provided 10,880 high-efficient 250 W single crystal solar panels while Chevron Energy Solutions designed, engineered, and installed the solar energy system, and will operate and maintain the system.

The project consists of photovoltaic panels mounted on parking shade structures at nine campuses, the replacement of 400 air-conditioning units, and upgrading more than 21,000 lighting fixtures. With this project, the district is expected to cut its energy use by 16 percent and to reduce its carbon emissions by more than 3,463 metric tons, which is equivalent of removing about 679 cars from the road.

HHI also contributed USD 54,000 to the district as part of its Hyundai Community Outreach Program. Hyundai Heavy is always eager to help cities, municipalities, and educational institutions with whom the Company does business, and to teach the community and students about the benefits of renewable energy. The contribution will go towards an exchange program supporting international relationships, education, and learning among Korean and American students.

Construction Equipment

Hyundai Heavy & Cummins Set Up Earthmover Engine Joint Venture



HHI signed an agreement with Cummins, the world's largest construction equipment engine maker, to establish an engine factory for earthmovers in Daegu on September 7.

HHI and Cummins each invested USD 33 million for the joint venture, named Hyundai Cummins Engine Company. The factory will start production from 2014 with an annual production capacity of 50,000 engines.

The signing ceremony, held at Hyundai Heavy's headquarters in Ulsan, Korea, was attended by Mr. Rich Freeland, president of Cummins, Mr. Choe Byeong-ku, COO of Construction Equipment Division, and Mr. Kim Jeong-hwan, COO of Hyundai Heavy's Engine & Machinery Division.

The establishment of the joint engine factory will give HHI's Construction Equipment Division a stable supply of high-quality engines.

The Ulsan, South Korea-based company set global annual sales target for construction equipment at USD 4.2 billion for this year, a 14 percent increase from USD 3.7 billion last year.

Starting from KRW 320 billion (USD 282 million) annual sales in 2014, Hyundai Cummins Engine Company aims to achieve aggregate sales of KRW 4 trillion (USD 3.53 billion), and create about 5,300 jobs in the region by 2022.

"We believe Hyundai Cummins Engine Company will play a critical role for expanding our global market presence. Our goal is to become a Top 3 manufacturer of earthmovers by 2016 with annual sales of USD 9.1 billion," said Mr. Choe Byeong-ku.

Frontier of Gas Fuel Supply System

Hyundai Heavy Industries has successfully carried out the world's first ME-GI full scale demonstration test with LNG Fuel Gas Supply System (FGSS).

Process Description

Hi-GAS (Hyundai Integrated Gas Supply System) is characterized by simple configuration, robust operation, reliable components, and high safety system. It is a common module including suction drum, booster pump, high pressure pump, and vaporizer with glycol water heating system.

Hi-GAS can provide a simple solution to build-up high pressure natural gas by cryogenic high pressure pump and vaporizer.

The gas from the LNG tank is sent to the booster pump via suction drum (if it is applied). The cryogenic centrifugal booster pump supplies and pressurizes the LNG to the cryogenic high pressure pump with sufficient Net Positive Suction Head (NPSH). Then, high pressurized LNG by reciprocating piston pump is vaporized and heated by glycol water heating system.

Interface with ME-GI Engine

The preparation, such as cooldown and pump running, of the FGSS is done by Hi-GAS Control System. Before Hi-GAS enters Ready state, the Local-Fail signal is sent to the GI-ECS which means that Hi-GAS cannot be controlled by the GI-ECS directly. When Hi-GAS has finished preparation, it enters the Remote state and Gas Supply Ready is sent to the GI-ECS indicating that Hi-GAS can be controlled from GI-ECS. After that, gas start and operation are automatically run with interface between FGSS Control System and GI-ECS. Hi-GAS supplies required high pressure natural gas according to Gas Supply Pressure Set point and Engine Actual Gas Load signal from GI-ECS.

Standby Condition

If engine load drops below minimum load for gas running or Hi-GAS gives Gas Standby Request, ME-GI engine will change over to running on diesel. In this state, Gas Pressure Set Point is set to zero (0) which is the event for the Gas Supply System to enter its Gas Standby state. When Hi-GAS detects this situation, and booster pump and high pressure pump are running, the high pressure pump will go to minimum speed to minimize LNG circulation and the heat ingress in the LNG timer will start. This timer has a time-out after specified periods. When it times out, it will send a stop signal to the high pressure pump. The booster pump will continue running to keep the system in a cooled state.

Total LNG Package Solution

HHI has verified the performance and functionality of Hi-GAS with 8S70ME-C8.2-GI engine based on high pressure gas supply.

In addition, HHI is extending the development program of Hi-GAS for HiMSEN DF based on low pressure natural gas. The detailed design for low pressure gas supply system is ready, and will be verified with HiMSEN H35DF, Type Approved by major classification societies in October 2012. HHI

LNG Package Solutions for LNG-fuelled ships.

Main Engine: **ME-GI Engine**
Generator Engine: **HiMSEN DF**
LNG Fuel Gas Supply System: **Hi-GAS**

Hi-GAS
Hyundai integrated GAs Supply system

CHEONG HAE GWAN

Hyundai Heavy Industries' Guest House

The motto of Hyundai Heavy Industries is "nation-building through shipbuilding." The Company began its history at Mipo Bay near the city of Ulsan on March 23, 1972. Since then, it has grown into an integrated heavy industries company with seven business divisions: Shipbuilding, Offshore & Engineering, Industrial Plant & Engineering, Engine & Machinery, Electro Electric Systems, Construction Equipment, and Green Energy.

The guest house was built in 1974 to provide accommodations for guests from Korea and abroad who attended the launching of the first ships. It had three stories above-ground and one below, and a two-storey annex.

HHI built a new guest house in 2008 to replace the original. The main building resembles a ship, with straight, simple, modern lines. It has

three stories above-ground and one below. It consists of Asan Hall on the first floor, Cheongun Hall on the second, and an observatory, two business rooms, and a lounge on the third.

According to Mr. Kim Bong-ryeol, a professor of architecture at Korea National University of Arts. who collaborated on the project's design and construction, HHI had initially planned to build both the convention hall and the guest house in a traditional Korean style. "We realized, though," he says, "That such a structure would clash badly with its surroundings. As a result, we persuaded HHI to build the convention hall in a modern style and only have the guest house as a Korean-style building. Thanks to this decision, the combination of the modern-looking convention hall with the traditional Korean-style building offers visitors and guests quite an unrivalled atmosphere."

The annex building was named "Cheong Hae Gwan" to symbolize the spirit of Hyundai Heavy Industries' advance toward the sea. It consists of *Uillu*, which can be used for both indoor and outdoor banquets, *Chwiseonjae*, which is modeled after a traditional Korean inner house, and two buildings that would have served as servants' quarters in earlier times.

"The guest house has two yards. The bigger one is an open space that is used for greeting visitors. Its appearance is like an elevated room with a wooden floor, and it is used to enable people to enjoy nature and cultural events, like concerts. The cozy smaller courtyard is reserved for VIP guests. It has been designed to allow for secluded, private conversations that can't be heard from outside. This is the place where public and private, groups and individual, social life and relaxation are allowed to coexist," said Mr. Kim Kwang-soo, a co-designer.

All in all, the guest house complex has been designed to function as a warm and welcoming place in which guests from both home and abroad can experience traditional Korean hospitality and get to know Korea better. HHI

"...the combination of the modern-looking convention hall with the traditional Korean-style building offers visitors and guests a quite unrivalled atmosphere."

Design of Key Component for 21-ton Electric Excavator – Electric Motor & Generator

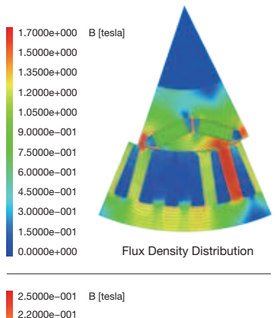
In 2011, HHI developed permanent magnet synchronous motor & generator for hybrid excavators that is 25 percent more efficient than conventional units. (Fig.1) The Company is now developing four types of electric machines for 21-ton electric excavators. The roles of the electric machines for the electric excavators are hydraulic pump drive, rotating of the rotating parts, electric power generation from the auxiliary engine, and hydraulic energy regeneration. It is expected that the energy cost of the electric excavator will be reduced by 60 percent compared with conventional generators.

In/output voltage level of the electric machines is battery voltage, so it is important that the electric machines have the same level of induced voltage. Thus, the winding details and magnet shapes are chosen to meet these requirements and constraints. All the electric machines are designed for 95 percent efficiency or higher to improve fuel efficiency and irreversible demagnetization and structural stress are considered by a numerical analysis (Fig.2).

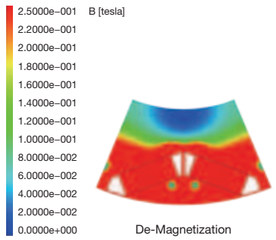
To verify characteristics of the electric machines under an inverter driven condition, Finite Element Analysis (FEA) co-simulation with control circuit was conducted. Torque of the electric machines is controlled by current vector, and PI controllers are applied for the current control. As a result, the electric machines met the design requirements.

Prototypes of the electric machines will be developed within this year and performance test and environment resistance tests are also scheduled to verify its design validity. HHI

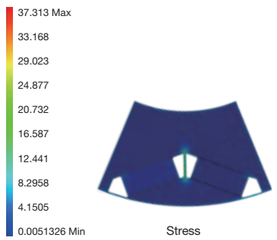
Figure 1
Virtual Equipment Model of Excavator



Flux Density Distribution



De-Magnetization



Stress

Figure 2
Verification of Strain History During V-cycle Working

The Market for Gas-fuelled Marine Engines

By Bill Thomson

Ships carry about 90 percent of world trade, and produce about 3 percent of world greenhouse gas emissions. That makes shipping sound environmentally sound, as indeed it is. 3 percent is still too much, and ships also emit harmful sulphur and nitrogen oxides, so responsible shipowners are looking to clean up their image.

Pressure comes from the law too. The International Maritime Organization's Marpol (Marine Pollution) convention has established emission control areas (ECAs), and set a limit of 0.1 percent sulphur for ships in ECAs from 2015 onwards.

Heavy fuel oils used by large ships are high in sulphur; containing from less than 1 percent to over 3.5 percent. It is also proposed to impose a global sulphur limit of 0.5 percent from 2020 so future ships will have to find ways of reducing their sulphur emissions.

The easy solution is to switch to low-sulphur distillate fuel, as burned by road vehicles. But this is a lot more expensive, and after 2015 the spread between heavy fuel and distillate is likely to widen further. Another solution is to fit a 'scrubber' to remove sulphur from the exhaust gas, allowing continued use of cheap heavy oil. This looks attractive for large tankers or container ships undertaking long ocean voyages. The disadvantage is that scrubbers are large and heavy as well as having a high capital cost.

The third option is to burn LNG as a fuel. And the nearer we get to 2015 and 2020, the more attractive this looks. In Norway, where emissions legislation is particularly tight, there have been a few gas-fuelled ships for the last 10 years or so, mostly coastal ferries and offshore supply ships. Also, specialised tankers designed for transporting LNG have long used the 'boil-off gas' as fuel, mostly to produce steam to drive turbines but lately in dual-fuel gas-diesel engines. Now, interest is growing in gas as a fuel for other types of vessel. There are some gas-fuelled cargo ships on order, as well as a large cruise ferry. And there are several concept designs on the table for bulk carriers, tankers, and container ships fuelled by LNG.

All of the present generation of LNG ships are comparatively small, using four-stroke engines. The two main designers of large two-stroke engines as fitted in ocean-going ships – MAN and Wärtsilä - have now both perfected technology for fuelling these by gas. And Hyundai Heavy Industries, as a MAN licensee, is playing a major role in developing and testing such an engine.

It is often pointed out that no infrastructure exists to supply gas to ships. It has been referred to as a 'chicken and egg' situation. But at the recent 'Motorship' gas fuelled ships conference in Bergen, Norway, gas supplier Gasnor said that 'the chickens are here'. There are fuelling arrangements in Norway that can easily be replicated, and expanded, elsewhere. It will soon be possible to supply LNG all over Europe, and further afield.

As for the future potential, at the same conference Ong Lay Hwa of Shell presented forecasts that showed that 20 percent of the world's ships will soon adopt LNG engines, and by 2030 LNG-fuelled vessels will capture half of the new build market. Gas is surely the fuel of the future. HHI

The writer is the editorial director of The Motorship.

CIO Hwang Chews on Work After Work

By Grace Choi

As his name has the meaning of long run or longevity, Hyundai Heavy Industries' Chief Information Officer Mr. Hwang See-young has been walking a single path as an engineer for the past three decades.

Most of his engineering career began from mathematics. Mr. Hwang was so immersed in mathematics during his school years that he studied applied mathematics at the Seoul National University. And he majored in network computing system closely connected with mathematics at the Korea Advanced Institute of Science and Technology, or KAIST.

He was only 26 years old when he graduated from the KAIST in early 1978 and his appetite for computers grew stronger than ever.

"I did not hesitate to apply for Samsung Advanced Institute of Technology (SAIT) instead of teaching students as professor as I did want to learn how to make a computer," said Mr. Hwang who is now 60. SAIT was a think tank of Samsung Electronics Co.

He spent nearly eighteen years at Samsung taking part in countless projects including the one with Intel Corp. to manufacture a computer called workstation and export it to global markets. He also briefly worked for Samsung SDS, a information-technology solutions provider in mid-1990s.

What lessons did he learn from his time at Samsung.

Looking back on those years, Mr. Hwang said 'survival of the fittest' was the single rule of the country's biggest conglomerate, with less attention paid to collaboration and respect among colleagues.

"I was not the exception at that time," he said. "I was so focused on improving my capability that I didn't come along with my colleagues."

But today, it is hard to imagine what he was at Samsung considering his gentle way of talking and smiling to others. Mr. Hwang is now with the world's largest shipbuilder whose businesses range from shipbuilding to renewable energy.

He seems to have accustomed to a totally different corporate culture in which employees show more respect to each other and enhance their strength at the same time.

"At Hyundai Heavy, experts have their own say and the management gives a full support to help them push their plans through," he stressed.

Back in 2005 when he came to Ulsan, the infrastructure for data processing and telecommunications fell far short of meeting his expectations and had much to be improved.

"Communication did not go smoothly among colleagues in the vast shipyard and blueprints were carried over to the office to be typed in a computer," he said, adding there was a sea change in the past seven years.

The Ulsan shipyard went digital as he successfully completed the project to build a data-processing center and telecommunications network on a full-scale financial support from the Company.

Faced with challenges from Chinese shipbuilders and sharp declines in orders due to the global economic slowdown, Hyundai Heavy badly needed to differentiate itself from others to stay ahead.

As a result, the company developed a "smart ship" which is remotely monitored and its maintenance and repair is also possible through a remote control, the first of its kind in the world. Some clients prefer this cutting-edge ship.

Fast and smooth communication at the yard through wireless broadband internet (Wibro) and long term evolution (LTE) networks helped improve productivity as well.

It was a big achievement for the veteran but he did not stop there. The company has approved his next project to build an integrated data center in Seoul by 2014 to help Hyundai Heavy Group's affiliates share data among them regardless of time and place.

Moreover, the CIO took on a new job early this year to head the group's R&D Center. Korean shipbuilders are unrivaled in building ships but it is time for them to make more investment in R&D to help develop new types of hull and anchor and other equipment, he said.

"At Hyundai Heavy, experts have their own say and the management gives a full support to help them push their plans through."

"I asked research fellows to speak out their targets and timeframe in terms of technology development," said the R&D chief who reads at least five of their reports a day.

He also participates in presentations by the team every week in order to encourage them to share views and make up for each other's faults.

Given his restless appetite for work, Mr. Hwang looks like a workaholic. Yes, he does.

"To be honest, I do not know how to spend my leisure time," he confessed. But he as a single golf handicapper enjoys playing golf over the weekends.

As for balancing work with family, he said, "As I am still busy with work, I think I can spend more time with my beloved ones sometime later."

Mr. Hwang has lived in Ulsan since 2005 and makes it a rule to go to Seoul to be with his wife twice a month. Mr. Hwang's were a campus couple and have a son and a daughter who are both married.

No doubt, grandchildren will be the apple of his eye but the man of energy already has a plan to serve as an advisor to the IT industry or Hyundai Heavy after retirement.

"In fact, there is no retirement in the IT sector," he added. HHI

The writer is a journalist based in Seoul.

Mr. Hwang See-young, Senior Executive Vice President

Dockwise Vanguard: Harbinger of Change

By George Deftereos

"My role was to oversee the new build activities and go out and capture new business. Dockwise was one of the first projects we captured."

The *Dockwise Vanguard* is many things to different stakeholders. To Dockwise, it is a new paradigm in the heavy marine transport industry. With a bowless design, it certainly is at the forefront of the industry. To Hyundai Heavy Industries, it is an opportunity to open a new market and showcase the shipyard's technical prowess by building a 'first of its kind' vessel. And for Mr. David Scott and Tritec Marine Consultants, it is a chance to be part of an unprecedented construction project.

Mr. Scott has been working in the oil & gas industry for 22 years, starting out with Northern Marine Management in 2000, a Stena Group Company. On his first visit to Korea in 2005 he was an inspector for the oil tankers *Stena Arctica* and *Stena Antarctica* at HHI's Ulsan shipyard. He then spent some time on Geoje Island as Site Manager at Daewoo Shipbuilding Marine & Engineering before returning to Scotland where a new opportunity arose.

"Our company decided to develop the consultancy side of the business into projects so I became joint head of project services. My role was to oversee the newbuild activities and go out and capture new business. Dockwise was one of the first projects we captured," says Mr. Scott. The move was a response to the growth in offshore newbuilding because even in the current depressed market, there is a great

Mr. David Scott, Site Manager

resurgence of LNG for energy. As the demand for LNG has increased, especially since Japan (the world's No.1 LNG consumer) greatly increased imports following the earthquake and tsunami, so too has the demand for drillships and offshore platforms.

As the current largest semi-submersible heavy lift vessel can only carry structures up to 76,000 metric tons (*Blue Marlin*, also owned by Dockwise), oil & gas majors have been somewhat limited in how large and heavy they can specify their offshore units. Also, units such as spar buoys and FPSO can only be transported up to a certain size. Larger units need to be towed to the production field which increases costs and time before production on site can begin. With *Dockwise Vanguard*, operators and contractors can now consider much larger units with the confidence that they can be transported fully integrated from the shipyard to the offshore field.

Leveraging Stena's 'can do' philosophy, Tritec has been approached for specialized ships such as deep water pipe layers, accommodation platforms, LNGc, new generation VLCCs, LPGc and Semi-Submersible Heavy Transport vessels. But Tritec and Mr. Scott's role is more than just supplying plan approval and site supervision. "It was clear to us that Dockwise was embarking on more than just a concept. It was a product-changing move and market changer. So for us, it is more than build supervision. It is helping them realize their objective."

However, taking a concept vessel from the proverbial drawing board through construction, approval, and commissioning is not without its challenges. According to Dockwise, the reasons Hyundai Heavy was awarded the contract for this project were the Company's flexibility with new-build design, record of on-schedule delivery, and budget discipline. Backed by HHI's vast experience in building huge offshore structures, and Tritec's knowhow in managing ships in the oil and gas industry, the project is well on its way to being completed on time to serve under its first contract.

Immediately after launch, *Dockwise Vanguard* has been chartered to transport the Jack St. Malo platform from Korea to the Gulf of Mexico. Following that delivery, the vessel will come home to HHI to pick up the *Goliat FPSO* and in 2015 the Aasta Hansteen Spar.

Unlike other vessels currently on the market, *Dockwise Vanguard* is classed as a Type 0 vessel because of its size and carrying capacity. For comparison, Type 1 semi-submersible heavy transport vehicles can carry between 41,000 metric tons and 73,000 metric tons, depending on their dimensions. *Dockwise Vanguard* measures 275 m long and 78 m wide and will be able to carry up to 110,000 metric tons. The way the semi-submersible heavy lift ship works is by ballasting down to allow the cargo to be floated aboard. The ballast tanks are then de-ballasted to raise the deck over the water surface for lifting its cargo.

Dockwise Vanguard also features a revolutionary bowless design and a unique accommodation block. The bowless design allows entire, intact structures to be transported as the entire length (even beyond allowing cargo overhang of the stern and bow) of the deck can be used. The accommodation block is located on the starboard (right) side of the vessel to give it a good vantage point over the deck. It will house up to 40 seafarers and stands as tall as a 15-story building.

A surplus of propulsion power, set up in a redundant configuration allows *Dockwise Vanguard* to manoeuvre in deep sea areas. Two Wartsila 6L38 engines and two Wartsila 12V38 engines will allow the vessel to sail at up to 14 knots, or about 12 knots loaded to its maximum capacity. This means *Dockwise Vanguard* will be able to deliver offshore units in nearly half the time it takes any existing vessel. In all, it is not only the biggest semi-submersible heavy lift vessel ever built, but also the most innovative. HHI

The writer is the English editor in HHI's Overseas Public Relations Department in Ulsan.

Sabiya CCGT Power Plant: The New Frontier in Kuwait

Communication is always a key factor to the success of a project

Sabiya Combined Cycle Gas Turbine (CCGT) Power Plant is located in a remote desert area in Kuwait's northeast. The new CCGT plant is the largest combined cycle power plant in Kuwait, providing 16 percent of Kuwait's total electric power, and also one of the largest in the Gulf region.

A consortium of Hyundai Heavy Industries and General Electric built the 2,100 MW power plant comprising engineering, procurement, installation, commissioning, operation, and maintenance. One of the biggest challenges in building the plant was the tight project schedule to complete the plant within the 32–month timeframe. The HHI-GE team worked very hard to meet the contract completion date.

The Sabiya CCGT plant started commercial operation in June 2012, exporting power to Kuwait Electricity Grid and addressing Kuwait's peak electricity demand during the summer period. With the plant now operating at full capacity, GE will operate and maintain the plant for seven years as per the contract agreement with Kuwait's Ministry of Electricity and Water (MEW).

"Sabiya CCGT has underground (refuge) bunker and overpass Bridge between Central Control Building and Gas Turbine Building. Both Steam Turbine Building and Gas Turbine Building have a centralized air conditioning system with the separate Chiller Building of its own," said Sabiya CCGT Project Director Mr. Sung Moon-sup.

Prescription to Language & Culture Barrier

There were many challenges that HHI had to overcome in the course of the project. Communication is always a key factor to the success of a project. Sabiya CCGT was a melting-pot where people from nine countries worked together in a team that reached 10,200 members during the peak construction period (December 2010 - February 2011). The cultural barrier was just as important as the language barrier when working with local subcontractors. Mr. Sung's prescription to break these barriers was to command HHI people to speak clearly and slowly, be direct, and to respect everyone on site to establish a good working environment.

An Example of Ideal Cooperation with GE

Coordination was another key factor to the project's success. Sabiya CCGT was a multi-tasking worksite where various teams worked in parallel. Each team wanted to finish its own scope on time, and so did each subcontractor. Mr. Sung's daily routine was to decide who would go first and who would give way whenever prioritization in the sequence of work was at issue.

Cooperation and coordination with GE was excellent. As joint venture lead partner, the GE team played its part admirably. Project coordination was a daily routine between HHI and GE Site Office, and project issues were discussed and resolved at a weekly conference call between HHI at site and GE head office in USA. Important decisions were made at joint

venture Management Committee by unanimous vote. Sabiya CCGT set an example of good cooperation between HHI and GE with synergy – GE managerial prowess & HHI driving force.

No Challenges, No Rewards

There were also obstacles that HHI had to tackle all through the project execution phase. Cable pulling which passed through underground duct bank was some of the most strenuous work during the project. Cable pulling in confined spaces on scorching hot days was also a tough challenge. HHI brought an additional 300 electrical technicians from Korea to expedite cable pulling, cable dressing, and termination work to meet the project schedule.

Safety management was another challenge that HHI had to overcome with the local subcontractors. HHI managed to get over the safety issue with persistent training, supervision, and encouragement. As it turned out, HHI's Toolbox Meeting held every morning prior to starting work was the most effective safety tool. Local subcontractors later acknowledged that the safety standard of their companies had been upgraded to the international level thanks to the practices learnt by working with HHI and GE.

Sabiya CCGT Plant came online in two phases, Simple Cycle and Combined Cycle. Six GE 9FA Gas Turbine Generators were initially operated in Simple Cycle that added 1,350 MW to Kuwait's electricity grid in June 2011. The Combined Cycle consists of six Heat Recovery Steam Generators supplying steam to three GE D11 Steam Turbine Generators that generate an additional 750 MW to make the whole plant output of 2,100 MW at full capacity in June 2012. HHI

The Kuwait Grand Mosque

The Essence of Islamic Culture

There is Kuwait City, surrounded by the cobalt-blue Persian Gulf and golden sands swirling with the wind. The Kuwait Grand Mosque reveals its majesty in harmony with modern construction techniques and the opulence of the Middle East. The Grand Mosque is special for the reason that it follows modern construction techniques in harmony with the traditional form of Islamic aesthetics. The Kuwait Grand Mosque is the biggest in Kuwait, with the dome measuring 26 meters in diameter and 43 meters high. As the sunlight bounces off the surface of the dome carved with the different names for Allah, the marble-clad external wall of the building becomes a blaze of colors. In the main prayer hall sunshine beams in through the 144 windows, making the splendid Moroccan tiled-floor look as the blue waves of the Persian Gulf. The 72 m spire allows people to climb to the top or use the elevator installed. These unique spaces in the grand mosque imply many things about Kuwait and its religious culture more than words could. The grand mosque was completed in 7 years and is the grand masterpiece with its exquisite interior and exterior as well as the gigantic scale of the building. HHI

Sustainability amid Uncertainty

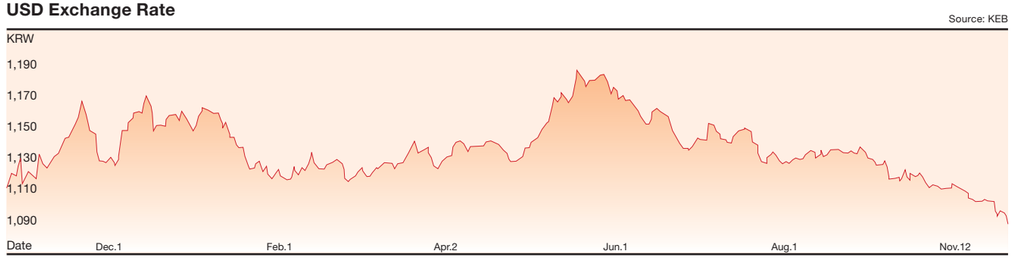
New Orders & Backlog

(unit: USD million, as of the end of September)

Divisions	2012 Plan	2012 Sep. (YTD)	2011 Sep. (YTD)	Achievement (%)	YoY (%)	Backlog (Delivery basis)
Shipbuilding	9,113	5,023	10,032	55.1	-49.9	20,152
Offshore & Engineering	5,200	1,605	3,338	30.9	-51.9	14,317
Industrial Plant & Engineering	5,000	552	983	11.0	-43.8	5,960
Engine & Machinery	3,600	1,575	2,799	43.8	-43.7	3,905
Electro Electric Systems	3,727	1,921	2,342	51.5	-18.0	2,964
Construction Equipment	3,139	2,250	2,216	71.7	1.5	-
Green Energy	773	190	308	24.6	-38.3	174
Total	30,552	13,116	22,018	42.9	-40.4	47,472

USD Exchange Rate

Source: KEB



Stock Metrics

	2008	2009	2010	2011	Nov. 12, 2012
High for the year (Closing, KRW)	438,000	250,000	456,500	554,000	346,500
Low for the year (Closing, KRW)	115,500	148,500	171,000	235,500	203,000
Closing, KRW	199,500	173,500	443,000	257,000	203,000
Market Cap. (Closing, KRW billion)	151,62	13,186	33,668	19,532	15,542
Foreign Ownership (%)	14.80	17.38	20.20	16.91	18.96
PER (H/L)	11.7/3.1	7.0/4.2	9.8/3.7	17.4/7.4	N/A
EPS (KRW)	37,340	35,705	46,594	31,751	N/A

Stock Price

HHI's stock price hit a 52-week low on November 12. This was mainly due to low new orders, as experienced across the industry.

Stock Performance

Sales in 3Q

2012 Hyundai Heavy Industries posted KRW 13.19 trillion in sales for three months ended September 30, an increase of 0.8% from the same period last year. This is mainly due to steady performance from the Offshore & Engineering Division.

The Shipbuilding Division achieved KRW 4.1 trillion in sales, down 4.6% from a year earlier, as low price vessels were delivered. The Engine & Machinery Division's sales rose by KRW 609.7 billion, up 18% from the third quarter of 2011 owing to growing sales of medium speed engines for power plants.

The Construction Equipment Division saw a small decrease in sales as China's construction equipment market remains sluggish.

Operating income in the third quarter sagged to KRW 338.1 billion. This is 35.1% less than the same period last year. Due to low price vessels ordered in 2010, the margin has yet to recover despite the strengthening of the Korean won against the US dollar and strong yen trend.

New Orders

The number of change order in the Offshore & Engineering Division helped to increase the division's performance. However, fierce competition in the power plant and process plant markets hurt sales and profit for the Industrial Plant & Engineering Division.

The Shipbuilding Division has received orders for 10 containerships, 5 LNG carriers, 6 LPG carriers, 4 pure car & truck carrier, 2 drillships, and 1 semi-submersible rig so far. These orders bring the new order value up to USD 5 billion. In addition, as of the end of September, the division has USD 20.4 billion worth of vessels on its order back-log. The Offshore & Engineering Division booked orders worth USD 1.6 billion and has 17 projects worth USD 14.1 billion on its order backlog.

The Industrial Plant & Engineering Division received orders worth USD 552 million, lower than estimated due to bidding results being delayed. The Engine & Machinery Division, with a market share of 36%, has taken USD 1.6 billion in orders, fulfilling 43.8% of its year target of USD 3.6 billion.

The Electro Electric Systems Division received orders worth USD 1.9 billion, accounting for 51.5% of its new order goal. As the outlook on renewable energy is uncertain, the Green Energy Division has struggled to win new orders, only posting USD 190 million worth in the first nine months.

The Construction Equipment Division received orders worth USD 2.3 billion for excavators, wheel loaders, skid steer loaders, and forklifts, making up 71.7% of its new orders target for 2012.

Projection 2013

Orders are expected to rise in 2013. HHI also expects to show much more stable performance in 2013 than in 2012. With demand for deep-sea drilling units expected to remain upbeat in 2013, next year seems to be rosy in terms of drillship sector.

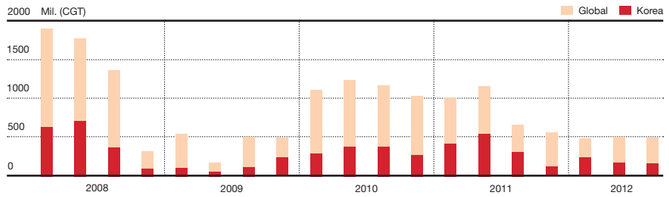
The Electro Electric System Division is facing difficulties due to anti-dumping lawsuits in North America, shrinking order placements from Europe, and low-priced product inflows from China and India.

However, there will be a large replacement demand from the US and power transmission and distribution investment is expected to grow.

Comments

Despite the European financial crisis having a negative impact on business, HHI expects that most business divisions will overcome the tough wave and achieve steady growth based on increasing demand for offshore facilities and power plants as the oil price remains high enough to justify new project ordering. HHI

Global Shipbuilding Outlook



Quarterly Global & Korean New Orders (Source : Ministry of Knowledge Economy)

By Sanjeev Rana

Global Shipbuilding Downturn Continues

Global shipbuilding industry has been going through a downturn for the last four years. The downturn has been felt more in the commercial shipbuilding industry where demand tends to be driven by fixed asset investments and growth in global trade. Global commercial ship orders were down 48% YoY in the first nine months of 2012 and order backlog fell to half of the level in first half of 2008. At this point all lead sector indicators such as freight rates, ship prices, used ship transactions, and used ship prices suggest that commercial shipbuilding demand is unlikely to recover much in 2013 as the sector continues to suffer from oversupply, a weak financing market, and low freight rates. Nevertheless, strength in selective segments such as LNG and offshore should continue to support order flow at big Korean yards although a sustained recovery might take some more time.

Shipowners Still Hesitant to Place Orders

Ship prices have fallen 35-40% from the peak and the Clarkson newbuilding price index (down 8% this year) is now back to levels seen in early 2004. The continued weakness in freight rates, financial markets, declining ship prices, and expectations of further fuel efficiency improvements for "eco ships" have customers waiting on the sidelines as far as placing new orders is concerned. By ship type we expect demand for tankers and bulk carriers to take 1-2 years to show a meaningful recovery whereas containerships and LNG carriers, where demand and supply balance is slightly more favorable, could see modest recovery in 2013.

Big Korean Yards Faring Better Than Small Ones Thanks to Offshore Orders

Despite ongoing problems in commercial shipbuilding, the big three Korean shipyards have done relatively well with Hyundai Heavy, Samsung Heavy, and DSME achieving between 50% and 95% of their 2012 yearly order targets driven by strength in offshore rig and platform orders. Offshore orders accounted for 60% (USD 32.5 billion) of global investment in the shipbuilding sector in the first nine months of this year driven by relatively high oil prices and daily rental rate for rigs. Korean shipyards, with their strong engineering skills and long expertise in building such platforms, were key beneficiaries of offshore orders. In 2013, these shipyards expect orders for offshore production platforms and rigs to support order recovery although there is a chance that some orders/projects might get delayed because of political or technical issues.

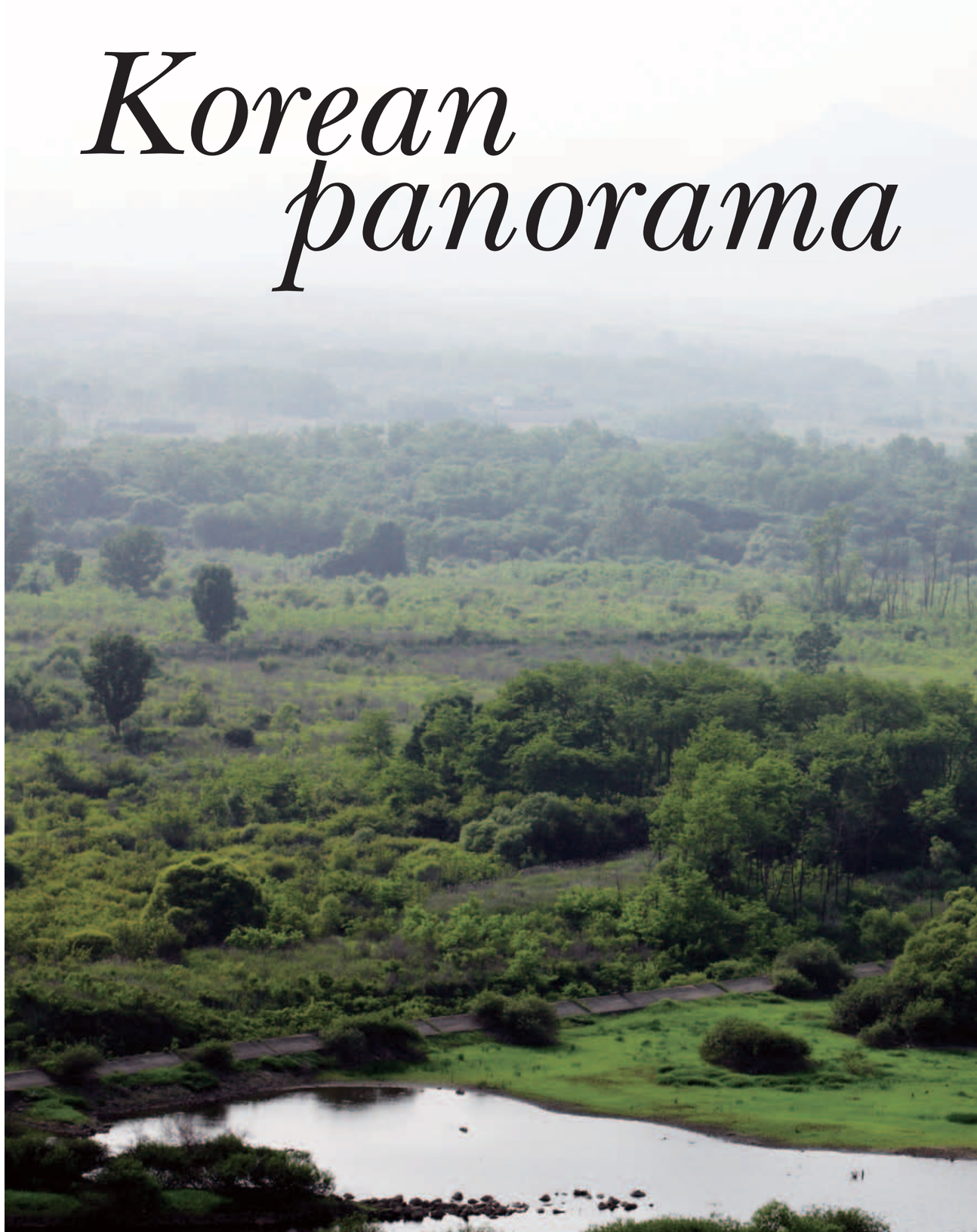
Sector Consolidation and Restructuring to Continue

For the small shipyards in Korea, China, and Japan the painful industry restructuring that started in 2010 is expected to continue as shipyards struggle with lack of orders and tight financing. Despite very low ship prices, shipowners expect prices to fall further due to competition among yards as 45% of global shipyards have no orders to work on post-2012. This means finances of small shipyards are likely to deteriorate further and banks might be unwilling to issue refund guarantees to them, starting a negative feedback cycle. According to Clarkson, the number of active yards globally has declined 44% in the last four years, but further consolidation is needed before any meaningful recovery in ship prices can begin. Although this restructuring process is likely to be very painful for the players involved it will also pave the way for the eventual recovery and surviving shipyards are expected to enjoy better operating environment in the later part of this decade. HHI

The writer is an analyst at Deutsche Bank.

The views expressed in this article reflect the author's personal opinion.

Korean panorama



DMZ
Nature Preserved

The DMZ, a reminder of the tragedy of the war, is a refuge for wildlife

The Demilitarized Zone is a place largely undisturbed by humans for over 50 years. Because of this isolation, the animals not maimed by the thousands of land mines that litter the landscape have been allowed to thrive. Several endangered animals and plants now exist among the fortified fences, landmines, and listening posts. Where there were villages, now one may see salix koreensis Andersson, phragmites communis trin, gastrodia elata Blume, convallaria keiskei miq, and phragmites japonica steud. Extremely rare migratory birds have used the DMZ, including Red-crowned Cranes, Golden Eagles, Eurasian Eagle-owl as well as the Bean Goose. There have even been reports of herds of Himalayan Goral in the area. The DMZ, a reminder of the tragedy of the war, is a refuge for wildlife.

New Life Back in Hometown

Cherwon Daemari Village, the northernmost village in South Korea, is located at the start of the Southern Limit Line. This village is famous for the train at Woljeongri Station which has not been able to go any farther north. The rusted remains of the train show bullet holes and a rusty sign "The iron horse wants to run." This train marks the partition line of the Korean peninsula. Since 1967, 150 veterans and their families have come together and started to cultivate the land. The village has become famous for organic rice.

There is also the Haemaru Village from which you can have a good view of Imjin River. This village was designated as a restricted area in 1958, and civilians were displaced for their safety. In 2001, however, the displaced could re-

turn on a special government permit. Daesong Village is adjacent to Panmunjom, the Third Invasion Tunnel and Dora Observatory, and also historical sites such as, Goryeo-byeokwhamyo(fresco in tomb) as well as Dukjin Fortress. Moreover, this village has fertile ground which grows Jangdan soybeans as the loyal specialty. For these reasons, this village is crowded with visitors all year round.

Peek into the Unknown

The Iron Triangle, the Peace Dam, and Tongil Observatory along the 38th parallel are the best places to look into North Korea. The Yeolsoe Observatory has the DMZ experience program for visitors to walk along the fence. The visitors can actually touch the fence and hundreds of wild flowers around it, and peek into North Korea.

Since the joint communique of 4 July 1972 between the Koreas, several travel spots have been developed. The Imjingak Pavilion, one of the famous places in the DMZ, contains many artifacts and sees over 2 million visitors a year. The Freedom Bridge is the hastily constructed bridge across Imjin River over which some 130,000 allied POWs returned at the end of the Korean War.

From Dora Observatory, the northernmost observatory in South Korea, North Korean military personnel are visible, as is the city of Gaeseong. Dorasan Station was designed to be the station that connects the railroads of both countries.

Beneath these landmarks is the Third North Korean Infiltration Tunnel. Discovered in 1978, the tunnel can easily accommodate 30,000 troops (including weapons) per hour. One can still see the black 'coal' retreating soldiers painted to hide the tunnel's true purpose. HHI

More Information of DMZ
Gyeonggi Tourism Organization - http://www.ggtour.or.kr / **Gangwon Cyber DMZ** - http://www.korea-dmz.com

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