

# Jasu,

## Embroidering the Long Night of Winter



Jasu, Korean traditional embroidery has been an aesthetic symbol in Korea for a long time. In the Silla Dynasty, people embroidered flags&clothes for the ruling class to express their status. Jasu spread to the common people during the Goryeo Dynasty. Mainly created by women, it, later developed as interior furnishings to decorate the palace&home. Typical figures are dragons, flowers, and mandarin ducks with gold, silver, red and blue thread on not only clothes, large furniture such as closets and bookshelves, but also household items including folding screens, sewing kits, and gift boxes. **HHI**

Source – The Museum of Korean Embroidery

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# Keeping Our Sights on the Horizon



Lee Jai-seong, Chairman & CEO

With 2013 quickly drawing to a close, we are pleased to look back and say that Hyundai Heavy Industries has coped well with the global economic slowdown that continues to persist. More than anything else, we were able to do so largely because we read the shifting trend in the energy industry and respond accordingly. Such timely response has translated into a substantial increase in orders for energy-related specialty vessels.

In about a month's time, the New Year will be upon us, bringing fresh hopes and opportunities. Many economists offer cautiously optimistic outlooks that major roadblocks to the recovery of the global economy will be out of the way. This does not mean, however, that it will be all sunshine and rainbows; while the European and US economies have been making a slow but steady rebound, emerging economies such as China, Latin America, and India are still beset with sizable problems of their own.

Against this background, Hyundai Heavy Industries finds itself at a critical juncture. Over the past decade, we have made spectacular growth both in sales and orders but in recent years our growth seems to have reached a plateau. As such, we are renewing our focus on reinvigorating our

traditional growth engines with a view to overcoming the current doldrums and paving the way for sustainable, long-term growth in the future.

The next few years will be a very exciting time for Hyundai Heavy Industries. We will focus our efforts on strengthening our core competencies while exploring further advances in all areas of our businesses. With creative wisdom, positive thinking, and unwavering drives, we will aim higher, keeping ourselves at the forefront of innovation.

In all our endeavors, our clients will be our greatest priority and we will continue to provide the best products and services that not only fulfill the needs and expectations of our clients but also touch their hearts and minds.

We will continue to sail full steam ahead in the sea of challenges and opportunities. The compass guiding us in our voyage will be to continue maximizing the value our clients gain by providing the best quality products through constant innovation. All the while, we will keep our sights beyond the horizon and never let ourselves be consumed by the pursuit of shortsighted goals. We thank you for your patronage and we appreciate your continued support. **HHI**





# Saudi Power Plants Boost Hope

By Alex Lee

“Saudi Arabia is the strategic market which we have long focused on,” said Mr. Chun. The latest success in Saudi Arabia is the result of strenuous efforts made to build trust.

A pair of multi-billion-dollar power plant projects in Saudi Arabia, currently undertaken by Hyundai Heavy Industries (HHI), represent a major boost for the South Korean industrial giant diversifying its business portfolio as a hedge against the cyclical shipbuilding market.

Hyundai Heavy won the two massive thermal power plant construction

orders from the state-run Saudi Electricity Company (SEC) in a span of merely 10 months. When completed in 2017, the power plants will cover around 10% of total electricity generation in Saudi Arabia.

This also constitutes a major triumph for Hyundai Heavy's Industrial Plant & Engineering Division which has been under huge pressure main-



“There may be some issues as we proceed with the Saudi projects at the same time, and our top priority is securing manpower,” said Mr. Chun.

ly because of excessive competition among major Korean builders trying to win major power generation and water projects in the Middle East.

As a number of big Korean construction companies raced to cut out a slice of the market in the region, sometimes offering ridiculously low bidding prices, Hyundai Heavy saw its new orders halved from the previous year to about USD 1 billion in 2011.

But thanks to the two mega projects won in Saudi Arabia after beating out a number of rivals, the Industrial Plant & Engineering Division is forecast to win USD 5.6 billion in new orders this year after winning more than USD 4.0 billion in 2012, said Mr. Chun In-soo, the senior executive vice president in charge of the division.

“Saudi Arabia is the strategic market which we have long focused on,” said Mr. Chun. He said the latest success in Saudi Arabia is the result of strenuous efforts made to build trust and friendship for a long time in the country and will serve as a stepping stone for the company to cement its reputation as a global onshore power plant builder.

In August this year, Hyundai Heavy won a USD 3.3 billion order from SEC to build the Shuqaiq Steam Power Plant, a 2,640 MW heavy-oil-fired supercritical pressure thermal power plant to be constructed on the Red Sea coast as part of SEC’s long-term program of expanding power

generation facilities. SEC awarded a USD 3.2 billion contract to Hyundai Heavy in October last year for a similar-type power plant known as Jeddah South. Hyundai Heavy will carry out both projects on a turnkey basis including engineering, procurement, testing, and commissioning.

Hyundai Heavy has already built power plants in Marafiq and Riyadh, and when Jeddah South and Shuqaiq power plants are completed, the company will have built four power plants in Saudi Arabia with a total capacity of 12,000 MW, representing about 20% of the entire power output in the country.

Awarding such large orders to the same company consecutively within a short span of time is very rare in the plant construction industry because it may cause glitches in securing design, manpower, management of construction work, and supply of materials.

Hyundai Heavy has steadfastly built trust with customers in Saudi Arabia and elsewhere in the Middle East with its excellent technological know-how and the ability to carry out big plant projects, never failing to meet the deadline that it promised clients, Mr. Chun said.

“There may be some issues as we proceed with the Saudi projects at the same time, and our top priority is securing manpower,” said Mr. Chun, who is regularly visiting Saudi Arabia to oversee the two mega projects.

Mr. Chun said the company will

use its vast network of talented workers from around the world as it proceeds with the Saudi projects.

“We will be able to overcome the problem with multi-national operations,” he said.

#### Make a Difference

Mr. Chun said the company can offer something rivals cannot by manufacturing and supplying highly efficient supercritical boilers to the Saudi power plants which will burn less fuel oil per unit of electricity produced. The boilers will be produced by HHI’s joint venture company in Yantai, China.

Both the Shuqaiq and Jeddah South plants adopt the highly fuel-efficient supercritical pressure power technology.

Mr. Chun said his division is also leveraging the expertise of other HHI divisions. By having a stable supply of world-beating switchgears, pumps, compressors, excavators, and other equipment necessary for plant construction, the Industrial Plant & Engineering Division can tender the best complete solutions to clients.

Hyundai Heavy, whose main business is shipbuilding and offshore engineering, has a strong competitive edge in the construction of seawater intake facilities and other marine civil work in connection with the Saudi power plant projects, Mr. Chun said.

Another competitive advantage is the division’s hundreds of talented in-house engineers who can quickly







respond to changing needs from the design stage through to the implementation of projects.

“We didn’t just win the Saudi order by chance. Our seasoned plant engineering team worked very hard and very systematically,” said Mr. Chun.

Mr. Chun said the company would increase its engineering team in Seoul to about 330 members next year as part of a program to induce more talent. The division currently has 380 engineers in Ulsan and 250 in Seoul.

In addition to the Saudi projects, Hyundai Heavy expects that it will be able to win more mega-sized deals this year, including the USD 1 billion order for Az-Zour North IWPP power plant in Kuwait and the USD 900 million Zubair project in Iraq.

Mr. Chun said Middle Eastern countries have been investing heavily in infrastructure thanks to high oil prices and steady population and economic growth.

He said demand for construction of onshore oil-fired power plants in the Middle East will remain robust over the next five years. But the demand for construction of gas plants or refinery will likely to be hit by shale gas devel-

opment in the United States.

Though political unrest has dented hopes for a business rebound in some Middle Eastern countries, Saudi Arabia remains stable politically and economically. Mr. Chun expects more orders for power plants and desalination facilities in the future from Saudi Arabia.

Hyundai Heavy expects the bulk of contracts will keep coming from the Middle East, but will try to diversify its expansion into markets in Africa, South East Asia, South America, and Central Asia.

Over the years, Hyundai Heavy has solidified its presence as a major EPC contractor in the Middle East by successfully handing over mega-sized projects in Saudi Arabia, Kuwait, and Bahrain in partnership with the world’s top developers like GDP Suez.

Analysts said Hyundai Heavy is well-placed to capture more projects in the Middle East due to the company’s extensive experience and sophisticated engineering capabilities.

Mr. Chun said intensive competition among major Korean construction companies in the region seems to have abated after some Korean construction companies incurred heavy losses due

to overseas projects awarded at cheap prices.

“The price-cutting was most intensive during 2011 and 2012. Now they seem to be containing themselves,” said Mr. Chun.

“We are interested in securing a differentiated competitiveness rather than lowering prices,” he added.

Mr. Chun said sales at the Industrial Plant & Engineering Division will be around KRW 1.5 trillion this year, accounting for only 6% of the company’s total sales. The sales figure will more than double next year due to large size projects started last year.

“In the mid-term, we aim to establish a stable structure in which about 5 trillion won in (annual) sales is steadily achieved,” he said.

He also noted the company needed to secure more ‘project managers’ who can oversee various aspects of overseas plant projects competently.

“We have only 11 years of experience as an EPC contractor. I am very grateful to our foreign partners who have awarded big projects to us so far,” he said. **HHI**

*The writer is a journalist based in Seoul.*

# HHI Roundup

Companywide  
Shipbuilding  
Offshore & Engineering  
Industrial Plant & Engineering  
Engine & Machinery  
Electro Electric Systems  
Construction Equipment  
Green Energy





Companywide

# Hyundai Heavy Strengthens Cooperation with Global Top-tier Companies



Mr. Lee Jai-seong, Chairman & CEO of Hyundai Heavy; met Mr. Evgeny

Dod, president of RusHydro; and his party on October 17, to strengthen co-

operation in hydroelectric equipment in Far East Russia and Siberia. Mr. Lee also had a pleasant conversation with Mr. Oleg Budargin, CEO of Rosseti in Daegu on October 16 during the 2013 Daegu World Energy Congress.

Mr. Lee had another meeting with Mr. Steve Bolze, head of GE's Electric & Hydroelectric Division; and his party on October 15, to discuss cooperation in new business. In this discussion, GE and HHI shared their views on enhancing competitiveness in the global market.

In addition, Mr. Lee also met Mr. Philippe Cochet, head of Alstom's power plant division; and his party on October 14, to discuss technical cooperation in the power generation business and jointly developing the European market.

Companywide

## Education Support Center for Corporate Partnership Opened

HHI opened an Education Support Center for Corporate Partnership to provide various educational opportunities for employees of HHI's subcontractors on October 14.

HHI offers subcontractors' employees 22 courses for business management such as labor relations, personnel, and accounting, and 38 technical training courses for welding, piping, electricity, and others. Along with these programs, they can access HHI's online education program and take 931 courses for computer and information, lan-

guages, and other on-the-job training.

Through this win-win program, HHI expects its subcontractors to increase productivity and quality, leading to sustainable skill development.



Shipbuilding

## HHI Wins USD 1.4 Billion Order for Ultra-large Boxships

HHI announced on August 30 that it won a USD 1.4 billion order to build five 18,000 TEU class and five 14,000 TEU class containerships from United Arab Shipping Company (UASC).

The 18,000 TEU class boxships and 14,000 TEU class boxships are scheduled to be delivered from late 2014 and the first half of 2015, respectively. The contract also includes options exercisable by UASC to order an additional 18,000 TEU class containership and six additional 14,000 TEU class boxships.

The ships HHI will deliver to UASC will use an electronically-controlled main engine to maximize fuel efficiency, and reduce noise, vibra-

Shipbuilding

# Hyundai Heavy Wins USD 850 Million Order for Moss type LNG Carriers



HHI won a USD 850 million order to build four 150,000 m<sup>3</sup> Moss type LNG carriers from Malaysian oil company Petroliam Nasional Bhd (Petronas) on October 11.

The contract also includes an option exercisable by the owner to order

four additional same class LNG carriers. The double-hulled LNG carriers are scheduled to be delivered to the owner from the second half of 2016.

The tankers for carrying liquefied natural gas will be constructed with four independent self-supporting spher-

ical tanks that have more reliable performance when loading and unloading cargo, and have greater resistance to sloshing forces compared to membrane tank systems. These features play a crucial role in Moss type LNG carriers being the preferred choice for offshore storage work where harsh sea conditions are a significant factor.

Mr. Ka Sam-hyun, senior executive vice president of Hyundai Heavy's Shipbuilding Division; said, "We see this order as the first of many for LNG carriers as regulations for carbon dioxide emissions tighten and demand for LNG increases as an alternative energy source."

HHI is the only Korean shipbuilder that can build Moss-type LNG carriers. The company has built 15 Moss type LNG carriers since 1994.

tions, and carbon emissions by automatically controlling fuel consumption to suit sailing speed and sea conditions.

Hyundai Heavy's rich experience of building 550 quality containerships over the last 40 years and its capacity to deliver the massive volume of ships in the short period in cooperation with its shipbuilding affiliate Hyundai Samho Heavy Industries played a key role in winning

the order for the ten containerships.

Shipbuilding

## HHI Develops Three-wing Propeller for LNG Carriers

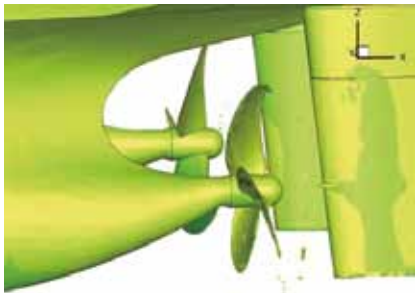
Hyundai Heavy's Maritime Research Institute and Advanced Technology Institute developed a three-wing propeller on September 10.

With 2% higher fuel efficiency than five-wing propellers, the newly designed three-wing propeller is slated to be installed on a 174,000 m<sup>3</sup> LNG carrier built by Hyundai Samho Heavy Industries.

While this three-wing propeller has better propulsion efficiency, it

could have some vibration, noise and erosion issues. To solve this problem, the research institute used CFD (Computational Fluid Dynamics) technology, and won the shipowner's approval.

HHI expects to produce and apply more three-wing propellers to LNG carriers for enhancing fuel efficiency competitiveness.





Offshore & Engineering

# Hyundai Heavy Uses 3D Technology in Offshore Plant Construction



HHI announced that it successfully applied a “3D Smart Precision Management System” to the floating production, storage, and offloading (FPSO) unit on September 30, for more accurate error measurements. This cutting-edge IT system uses light wave distance measurement with a 3D scanner to make a stereoscopic

image which it then automatically compares to a 3D blueprint for error detection. 3D scanning technology develops stereoscopic images using digital information collected by projecting a laser on objects with a 3D scanner. Recently, this technology has been used for surveying cultural properties, and

played a crucial role in the latest restoration of Seoul’s historic gate, Sungnyemun. The system developed by HHI will project about a million laser beams per second in 3 mm terms to the offshore plant for its stereoscopic image. Through this, HHI can receive a complete image of the plant more quickly and more accurately than through the original light wave measuring system, and use that to find any errors. The error measuring time will be reduced from ten hours to two hours per plant, which greatly improves productivity. Another benefit is that problems can be prevented prior to assembling the two structures by running a simulation and spotting any possible errors. HHI applied the newest IT technology to offshore plant construction because recently, offshore plant construction has moved further into the open oceans and extreme locations where higher safety and quality requirements are required.

Shipbuilding

## HHI Launches New Frigate

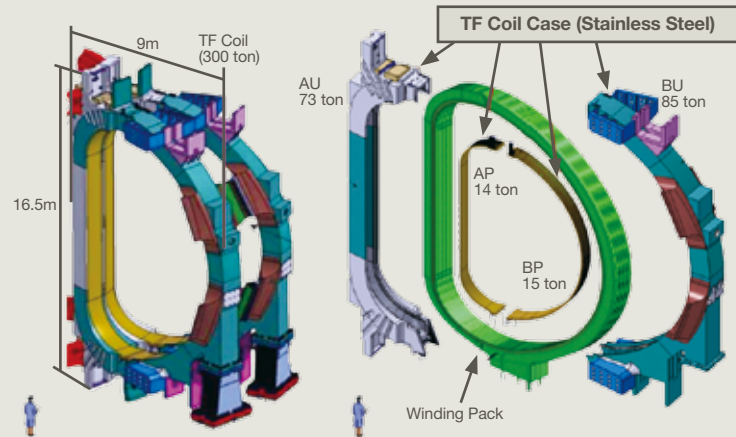


HHI held a launch ceremony for its fifth frigate, *ROKS Jeonbuk* on November 13. The launch ceremony was attended by the Chief of Naval Operations, Admiral Mr. Hwang Ki-chul; governor of North Jeolla Province, Mr. Kim Wan-ju; Hyundai Heavy’s Chairman & CEO Mr. Lee Jai-seong, and other government and military officials in Ulsan shipyard. The *Jeonbuk* has greatly improved capabilities with its weapon and sensors including new 3D radar, anti-aircraft &

anti-ship missiles, and sonar & torpedo acoustic countermeasures. In addition, the vessel uses stealth technology to minimize the exposure to electromagnetic waves. More than 90% of major equipment is locally developed and sourced. The 2,300 tonne frigate, measuring 114 m long, 14 m wide, and 25 m deep, can sail at a maximum speed of 30 knots with a crew of 120. The frigate will be delivered to the Korean Navy in December 2014.

Industrial Plant & Engineering

# Hyundai Heavy Wins ITER Magnet Structure Order



HHI won a USD 60 million order to build a Toroidal Field Magnet Structure for the International Thermonuclear Experimental Reactor (ITER) through public bidding on November 4. Weighing 180 tonnes, the second allocation of the TF magnet structure is a heavy metal structure designed to protect the doughnut-shaped magnet in the ITER. The structure is a critical component of the reactor. ITER is an international project

to design and build an experimental fusion reactor. It is jointly run by China, the European Union, India, Japan, Korea, Russia, and the United States. The core components for building ITER are slated to be delivered to the Cadarache facility in France where the nuclear fusion reactor will be installed. Hyundai Heavy’s winning of this order is followed by the USD 90 million order for the first allocation of TF magnet structure last year.

HHI delivered its third frigate *ROKS Incheon* in January this year and is also currently building its fourth frigate *ROKS Gyeonggi* scheduled to be delivered in October 2014. Since constructing and delivering the first Korean-built frigate *ROKS Ulsan* in 1980, HHI has grown as a leading naval shipbuilder by delivering 63 naval ships including the first and the third Korean Aegis destroyers, 3 KDX-II destroyers, 5 frigates, 3 submarines,

and 29 patrol salvage ships.

Offshore & Engineering

## Barzan Platforms Sail Out

HHI completed and sailed out three topsides and one living quarters for Barzan Gas Project on August 30. The offshore facilities will be installed at the Qatar site by October 2013. HHI received the order from RasGas Company, a joint venture between

state-run Qatar Petroleum and Exxon Mobil in January 2011. HHI, as an EPIC contractor, is carrying out engineering, procurement, fabrication, transportation, installation, hook-up, and commissioning of three offshore wellhead platforms and subsea pipe lines and cables at the offshore site located 80 km northeast of Ras Laffan Industrial City, Qatar. The Barzan Project consists of onshore and offshore gas-processing facilities to be operated by RasGas Company to produce 1.9 billion cubic feet of gas a day. Production is scheduled for 2014.

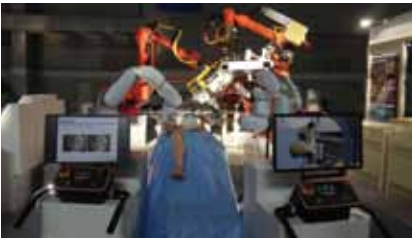


Engine & Machinery

## HHI Attends Mecha-Tronika Automation Fair

HHI attended the inaugural Mecha-Tronika Automation Fair in Milan, Italy from October 23 to October 26. It is a biennial event for displaying industrial robotics systems. Over 300 companies and 20,000 visitors attended the event.

HHI displayed spot welding system, arc welding system, and handling system at the show. The Company also showed real movement of robotics systems in virtual industrial working field.



Engine & Machinery

## New Construction Equipment Plant Completed



Hyundai-Cummins Engine Company completed its new construction equipment factory in Daegu, Korea in September 2013. Production will commence in 2014 with a capacity of 50,000 engines per year at full production.

Hyundai-Cummins Engine Com-

pany, a joint venture partnership between HHI and Cummins, will build mid-range engines for Hyundai excavators, wheel loaders, and industrial equipment built in Ulsan and other locations worldwide. The new plant is equipped with state-of-the art engine

production lines and highly advanced test cells.

HHI and Cummins are expected to power Hyundai equipment in markets with high growth potential, such as Russia, the Middle East, and South-east Asia.

Electro Electric Systems

### HHI Begins Transformer Test Facility at Mabuk-ri



Hyundai Heavy's Electric Power Machinery Research Department installed Transformer Cooling System Test Facility in its Mabuk-ri Research Institute. Operations began on October 10.

One of the roles of this facility is to test main components of cooling devices including fans and pumps, and to analyze the characteristics of insulating oil used as refrigerant.

By developing this facility, the department can test variables such as the

location of the radiator, fuel flow for the pump, and the type of insulating oil.

Main data to be collected will be inlet and outlet temperature, oil circulation flow rate, inlet and outlet pressure losses, and airflow rate of the cooling fan.

**Mining Indonesia 2013**

HHI exhibited nine models of its product line of excavators and wheel load-

Construction Equipment

Construction Equipment

## Hyundai 9-series Forklift Truck Wins Red Dot Design Award



HHI won a Red Dot Design Award for its brand-new 9-series forklift truck on October 21.

HHI has long been improving product design enhancing performance and utility. Since 2000, HHI's Industrial Design Research Department has been developing exterior design and space environmental design.

9-series forklift trucks are reaping the rewards of R&D innovative development work, which has resulted in products that meet the environmental and technical security needs of today's market. Effectively, large front operator visibility, controlling equipment system and the addition of rear ramps make the machine safer and more efficient.



from September 4 to September 7.

Mining Indonesia is the biggest construction equipment exhibition in Indonesia. This year there were around 13,000 exhibitors from 34 countries attending this exhibition.

**HHI Wins Order for Wheel Loaders in Brazil**

HHI signed a contract with Brazil's

Construction Equipment

government for the supply of 731 wheel loaders on October 10.

Under the contract, the wheel loaders will be built by HHI's construction equipment factory in Rio de Janeiro for delivery by April 2014. This order represents 18% of Brazil's market demand for wheel loaders, marking the largest order HHI has ever gained from this region.

The new wheel loaders will be mobilized to six states in Brazil to build up its agricultural infrastructure for farmland cultivation and waterways.



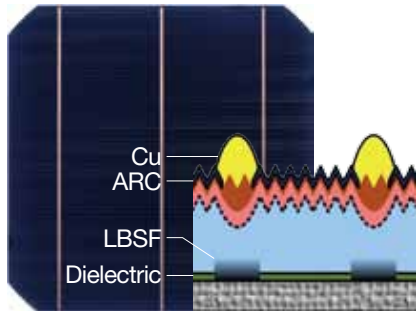
Green Energy

**Hyundai Heavy's New Solar Cell**

HHI developed new p-PERL solar cells with conversion efficiency of 21% (156\*156 mm) on October 15.

By replacing relatively expensive silver electrodes with copper electrodes, HHI reduced manufacturing costs while increasing conversion efficiency.

The technology of the new solar cells attracted many industries' attention in the photovoltaic conference held in Paris, France this year.







## EVENT

Hyundai Samho Heavy Industries, a shipbuilding affiliate of Hyundai Heavy Industries, launched a 162,000 m<sup>3</sup> LNG carrier built using the on-ground shipbuilding method on October 6.

The vessel, designed for delivering chilled natural gas, was ordered by Golar LNG in February, 2012. Measuring 289.0 m in length, 45.6 m in width, and 26.0 m in depth, it is scheduled to be handed over to the owner by late July 2014 after outfitting and painting work.

About 270 large blocks, LNG containment system, an engine, and a propeller go into making this vessel. After assembly with a 1,200-tonne gantry crane and four jib cranes, the assem-

bled LNG carrier is loaded out onto a floating dock by hydraulic skidding, then the LNG ship is launched out by submerging the floating dock. Striking balance for the LNG carrier, which is about 30% heavier than other types of ships, on the hydraulic skidding facility and on the floating dock is the critical point of launching.

Since on-ground shipbuilding method allows higher productivity and cost effectiveness, facilitates efficient utilization of yard facilities and resources, and improves the safety of working conditions, Hyundai Samho Heavy Industries plans to build 10 of 12 LNG carriers in its order book using this method. **HHI**

# World's First LNG Carrier Built On-ground Launched



Though a relative newcomer to North Sea offshore projects, HHI is working closely with clients to be the builder of choice as the sector expands.

By Son Chang-hyun

# FPSO Challenges in North Sea



While the North Sea has harsh climate conditions, it is still a biologically rich and productive region. The densely populated, highly industrialized countries bordering the North Sea usually carry out offshore oil & gas activities. In addition, the North Sea is one of the most frequently traversed sea areas of the world and two of the world's largest ports are situated on the North Sea coast. So there are a number of oil majors with their eyes set on this area.

As part of this trend, Hyundai Heavy Industries (HHI) has won several projects in the North Sea area but is facing a lot of challenges in design, engineering, procurement, and construction due to the harsh environmental conditions and the concomitant regulations to operate in this area. To overcome this situation, HHI is designing appropriate offshore facilities according to client needs.

### North Sea Environment

The principal characteristics of the North Sea and Arctic environments are cold temperatures, high winds, high

swells, and heavy snow. Darkness, low visibility, and remoteness also need to be considered when designing offshore facilities to operate in these areas.

Another big challenge for North Sea projects is stringent rules and regulations associated with safety and environmental preservation, which includes UKCS and NORSOK.

UKCS is a regulation applied to all offshore plants installed in the UK continental shelf. There are also many parallel requirements for health, safety, and the environment. The other major standard is NORSOK, a Norwegian regulation. It also has many different requirements including Working Environment regulations.

### Project Experience

There are several North Sea and Norwegian Sea project orders Hyundai Heavy has won from UK and Norwegian clients over the last few years. They are Goliat FPSO, Glen Lyon FPSO, Rosebank FPSO, Aasta Hansteen Spar Project, and Clair Ridge Project.

The first project is Goliat FPSO.

The client is Eni Norge and its field is located 85 km northwest of Hammerfest, in the Barents Sea. The unit's water depth is 400 m and oil storage capacity is 1 million barrels. It can produce 104,000 barrels of oil and 3.9 million m<sup>3</sup> of gas per day. It has a cylindrical hull about 100 m in diameter.

One of the special features of the Goliat FPSO is its hull type. The Sevan design has excellent motion characteristics without needing a turret system. It is cylindrical to reduce the impact of oncoming waves and currents. Goliat FPSO is designed for operation under the challenging conditions encountered in the Barents Sea and introduces a new winterization system.

The Glen Lyon FPSO was ordered by BP to operate on the Schiehallion Field, 50 km west of the Shetland Islands. The FPSO's hull size is 270 m long and 52 m wide. It will be replacing the existing Schiehallion FPSO. It has oil storage capacity of 1,006,000 barrels, and it can produce 130,000 barrels of oil and 2.2 million m<sup>3</sup> of gas per day.

Glen Lyon FPSO uses a turret



Glen Lyon FPSO

Production	Storage Capacity
Oil Storage	1,060,000 BBL
Oil Production	130,000 BBL / DAY
Gas Production	2.2 MIL M <sup>3</sup> / DAY
Water Injection	380,000 BBL / DAY
Living Quarters	125 People (MAX. 180)



# Building offshore equipment for North Sea work presents unique challenges for HHI.

mooring system that allows the vessel to move freely according to sea state and prevailing winds and currents.

The Rosebank FPSO, ordered by Chevron, will be installed 175 km north-west of the Shetland Islands. With water depth of 1,100 m, its hull dimensions are 296 m long by 59 m width. It has an oil storage capacity of 1,050,000 barrels.

HHI also has two other projects in the works; Aasta Hansteen Spar and Clair Ridge projects.

### Design Feature

In order to operate in the severe weather of the North Sea, those FPSO have several features.

Winterization protects individual personnel and equipment from strong winds, heavy snow, and icing. Semi-enclosed panels are built to protect Goliat's topside area from heavy snow. The panel has been designed and manufactured through special analysis and simulations.

Heat tracing is considered one of the most important winterization methods. A heating system is required for melting ice and snow on the floor or equipment and systems for all operation and maintenance areas. It is usually required in exposed deck areas, heli-deck, piping, and instruments.

For North Sea projects, special deck coating is applied to protect the deck from mechanical forces in breaking ice on the floor and heavy equipment operation as it has high durability and

wear resistance.

The other crucial design feature is working environment. In line with NORSOK S-002, a lot of requirements need be considered for each working environment such as arrangements, ergonomics, technical appliances, and noise and vibrations.

### Market

Recently, we have seen lots of projects planned in the North Sea and Arctic areas due to the growing interest of oil and gas exploration in the deep sea. This will be a good opportunity for Korean EPC contractors to get new orders for offshore facilities. But still, there are a lot of challenges in completing these projects. Harsh climate conditions and stringent safety and environmental requirements need to be carefully considered. Hyundai Heavy is running several North Sea projects at the moment and continuous focus will be put on development of technology and experience for these challenges.

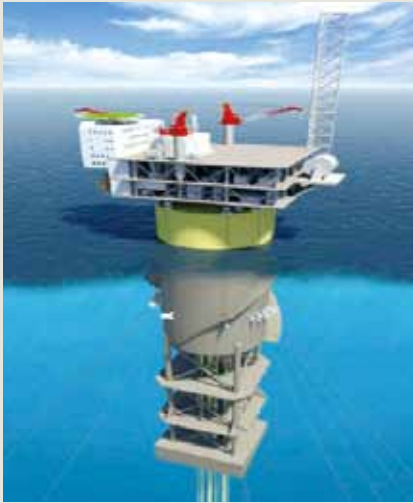
*The writer is a vice president in HHI's Offshore & Engineering Division*

### Rosebank FPSO

Production	Storage Capacity
Oil Storage	1,050,000 BBL
Oil Production	100,000 BBL / DAY
Gas Compression	190 MMSCFD
Water Injection	260,000 BBL / DAY
Living Quarters	160 People



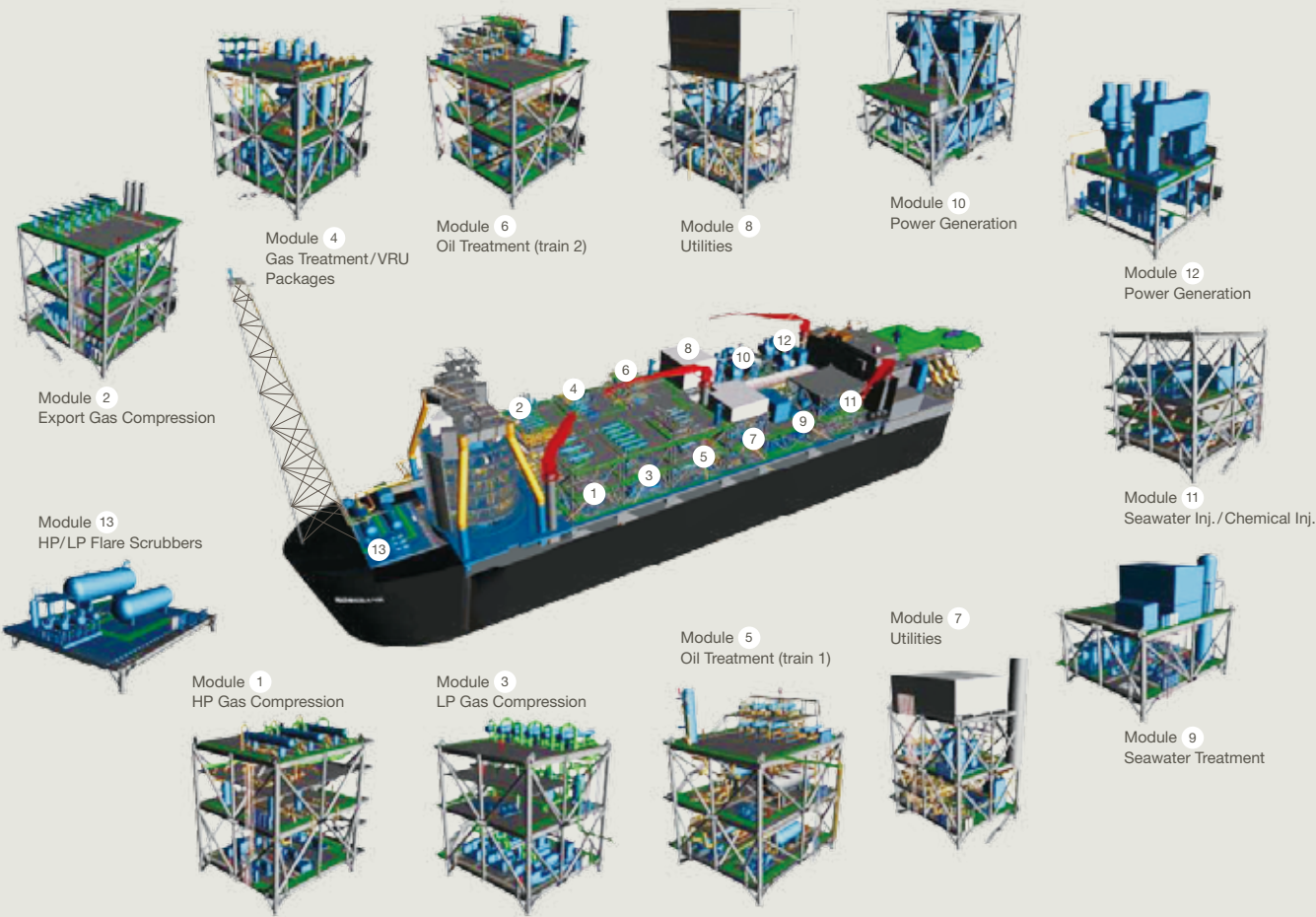
GOLIAT FPSO



AASTA HANSTEEN SPAR



CLAIR RIDGE FIXED P/F





# Development of Traction Motor for Monorails

Hyundai Heavy Industries has developed a 120 kW traction motor for monorail cars.

A monorail is a rail based transportation system which has one or more cars similar to buses. Monorail systems are generally built in central business districts and are used as mid-small scale public transportation. The traction motor of a monorail should be small in size, lightweight, and have a suitable cooling system because it is placed in the narrow and covered space under the car unit. Moreover, the traction motor requires structural reliability, wide speed range, and operating performance considering voltage-speed control. In 2010, HHI already developed the induction motor for an electric bus, which has been installed in the commercial electric bus in Seoul. Both motors have the same power and outline, but the monorail traction motor is different from the electric bus motor in terms of speed-torque characteristics, parts used, and components.

In order to satisfy these requirements, HHI developed an induction motor with high power density, ingress protection code IP65 and water-cooling system. The motor has more advanced performance of speed control and torque than our prior one. Also, the motor is equipped with a durable bearing for high speed, and a vibration-resistant speed sensor and connector. An aluminum frame is used for the motor in order to reduce weight of mo-

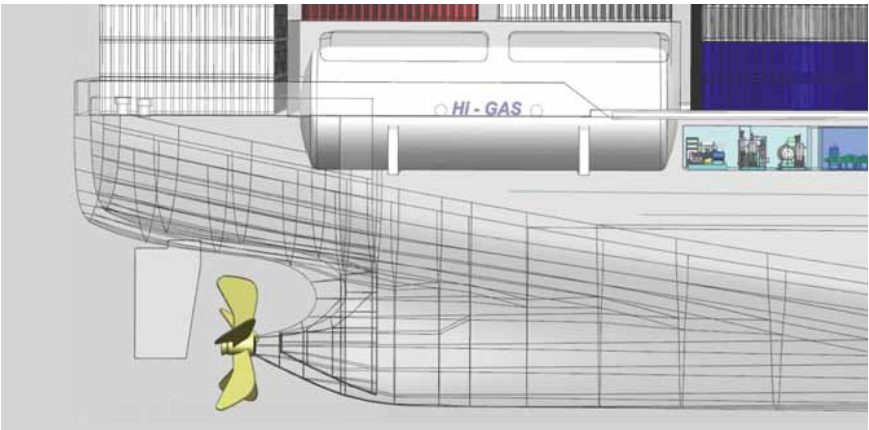
tor and car. Thus HHI has increased the power-to-weight ratio for the developed motor.

The developed motor based on the described design technologies has verified its design validity and durability through performance tests. It is now being tested on rail for common use overseas. **HHI**



# Green Light for Gas Power

By Doug Woodyard



No shipowner – whether operating small or large tonnage in harbour, coastal or deepsea traffic – can now afford to ignore the potential of an LNG-fuelled propulsion and auxiliary power plant when planning a new-building or retrofit.

Continuing deliveries, orders, projects, and design concepts underline that gas is getting a grip in diverse shipping sectors, driven by emissions legislation and a desire for fuel flexibility.

Gas-powered installations are serving or projected for LNG carriers, offshore supply vessels, tugs, ferries, tankers, FPSO tonnage, and inland waterway vessels. Among notable additions to the fleet in the past year were a Baltic Ro-Pax cruise ferry - the world's first large passenger ship to be fuelled by LNG - and a 25,000 DWT product tanker. The first cruise ship with a power plant incorporating a gas-fuelled engine is also under construction, and designs have been completed for LNG-

powered long haul containerships.

A looming driver stimulating the wider adoption of LNG as a marine fuel is 2015, when stricter rules enter force under IMO Marpol Annex VI in Emission Control Areas and the maximum allowable sulphur content in marine fuel falls to 0.1%. Around 80-90% of shipping will enter an ECA during their lifetime and such areas are expected to proliferate in Europe and Asia.

Distinct environmental advantages over fuel oil are offered by natural gas as an intrinsically clean-burning fuel, with almost negligible particulate matter and zero sulphur oxides emissions. The need for expensive and bulky exhaust gas treatment, such as SOx scrubbing and NOx-reducing SCR systems, may be eliminated.

Major classification societies are keen to promote LNG-fuelled shipping and can support operators with comprehensive guidance and expertise. The recent establishment of the Society

for Gas as a Marine Fuel (SGMF) by the Society of International Gas Tanker and Terminal Operators is another significant development, aiming to encourage safe and responsible operation of vessels using LNG as a fuel and to develop guidance for best practice.

A current lack of LNG bunkering infrastructure worldwide will be addressed by fuel suppliers, while systems have already been developed to secure safe onboard gas storage and handling.

Variations in fuel availability and prices in local markets and the growth of different emission control areas favour engines that can cope with a variety of fuels and adapt to conditions while retaining the highest possible shaft efficiency. Ship operators can bunker and burn the most convenient fuel taking into account cost and environmental restrictions.

A promising newbuilding and conversion market for LNG-fuelled vessels has encouraged major two-stroke and four-stroke engine designers to develop products capable of burning marine gas oil, marine diesel oil, heavy fuel oil or natural gas. In gas-burning mode, such engines can meet the tough IMO Tier III NOx emissions limits dictated in the future. Wide propulsion applications are facilitated by dual-fuel and pure gas engines that can be specified for electric or mechanical drives. **HHI**

*The writer is a contributing editor of Marine Propulsion*





# Engineer, Traveller, Guide

By George Deftereos

“My wife and I see ourselves as guides for friends and families when they come to visit us,” says Mr. Haldor Fottland on their role in Korea and everywhere else he has been posted during his career in the oil & gas industry. Now heading the Höegh LNG FSRU team in Ulsan, this pioneering attitude is sure to be an asset as the team builds four LNG floating stor-

age and regasification units in Hyundai Heavy’s shipyard. Höegh LNG is the market leader in floating regasification and a leading provider of floating LNG services with vessels operating all over the world. Four more vessels are under construction at Hyundai Heavy Industries. Three new vessels have already been launched and steel cutting has started

for the fourth. The first of the four vessels built in Ulsan will be used as an LNG import terminal in Lithuania and will be delivered on February 28, 2014. Two more will follow quickly in April and June while vessel number four shall be delivered in March 2015. Unlike many other regasification units, Höegh’s FSRUs are newbuilds. This means Hyundai Heavy can build

“The most amazing thing with HHI is the logistics, how thousands of tonnes of steel are moved around to fit the schedules.”

the new units to the specifications that Höegh LNG and its clients require. Looking at the LNG market, both Europe and Asia are projected to double their LNG imports between now and 2030. This comes at a time when shale gas technology in the USA has caused the price to drop relative to oil, making LNG a much more attractive fuel for consumers. As the global liquefaction capacity is growing at the same rate, the number of LNG import terminals is expected to grow by 60% by 2020. For short distances, the most economical way to transport natural gas is by pipeline. For longer distances the gas is cooled down to -160°C to become liquified natural gas (LNG). In this process the volume is reduced 600 times. The LNG is transported by specially insulated LNG carriers to maintain the low temperature of the cargo and delivered to LNG import terminals. Traditionally, the LNG import terminals were built on shore, but in the last few years an increasing number of floating LNG import terminals have been put in operation. These are called floating storage and regasification units, or FSRU. A floating storage regasification unit essentially replaces an onshore facility. While an onshore plant can take up to seven years to complete (including planning, permits, construction, and commissioning) and cost more than USD 700 million, an FSRU can be built and brought to market in about 28 months for around USD 300

million. Another advantage of FSRUs is that they can be moved to wherever they are needed to regasify the LNG and send it ashore as natural gas in the national pipeline grid. The FSRU units Höegh is building will have a storage capacity of 170,000 m<sup>3</sup> of LNG. For instance, the vessel going to Lithuania will be able to supply the country with more gas than needed. While this is Mr. Fottland’s first project with Höegh LNG and his first time in Korea, he has worked on onshore and offshore projects in Norway, Iran, the UK, and China. Over his 37 years in the industry, the two things he says that have changed the most are safety and the construction process. Safety has improved a lot, as well as the very concept of vessel construction has changed. Where oil companies used to build a vessel or platform by hiring many different companies for each role, shipyards like Hyundai Heavy now take full responsibility for the project, including engineering, procurement, and even testing. In addition to cutting down on construction time, this new concept ensures the opportunity for better quality from Day 1. “The most amazing thing with HHI is the logistics, how thousands of tonnes of steel are moved around to fit the schedules. There must be millions of steel parts in the shipyard and it’s all in the system. We’ve traced materials all the way back to the steel mill and have never found any problems. It’s

perfect. This kind of traceability is very reassuring for us,” Mr. Fottland says. When he’s not in the office, he’s travelling around Korea with his wife, especially mentioning Gyeongju. “Every time we are up there we see something new. What fascinates me most are the burial mounds and the displays of artifacts from these mounds in various museums. We have the same type of burial mounds in Norway for the old kings and Vikings, but almost all of them have been visited by grave-robbers. In Korea, they say virtually none of them have been robbed.” He says that the respect for ancestors and for things that belong to others are some of the areas where others can learn a lot from the Koreans. The couple makes a point of meeting as many locals and expats from other countries as they can, wherever they happen to be posted. He plays football with a group of expats and Koreans once or sometimes twice a week, normally at the small pitch within Seobu Hyundai Foreigners’ compound but sometimes also at the larger Spanish Field. On the full size field the opponents may be from HHI Safety Department or even the Ulsan Wanderers. No matter which team wins, the most important issue in football is the same as it is during working hours at the yard; to get the teamwork going! **HHI** The writer is a copy editor of New Horizons



# Power for China's Growth



Hyundai Heavy Industries Electric Company (China) was established in February 2004, in Yangzhong, Jiangsu Province. We are focusing on the manufacturing and sales of electrical products and expanding our business areas in China, the world largest electrical market.

HHI (China) has more than 800 employees, mainly producing 72.5 kV to 1000 kV SF6 GIS, LV circuit breakers, industrial & marine switchgears, and 40.5 kV SF6 C-GIS for subways and high-speed railways. Since 2006, we have been meeting the needs of our customers and China's industrial development.

HHI (China) has established a full range of business activities in China. We supplied the 220 kV & 550 kV SF6 GIS for state power suppliers of State Grid, China Southern Power Grid and the Top 5 Power Generation Group. We also provided the highest voltage SF6 GIS (800 kV) in China for the Hy-

droelectric Power Station.

HHI (China) cooperates with Hyundai Heavy in Ulsan and Hyundai Shanghai Institute of Technology for technology development, product, development, design, and manufacturing for all kinds of circuit breakers, industry & marine switchgear and vehicle products to meet the different needs of customers in hydropower, thermal power, nuclear power, shipyard, subway, and high-speed railway applications. Our products are well received and we are consistently increasing our market share.

HHI (China) actively fulfills its social responsibility and takes an active part in public welfare and charitable activities with staff activities such as spring outing, autumn games, summer vacation, training courses, and so on. From our safety publicity activities with the slogan "No Accident Enterprises", we were awarded the "5.1 Labor Medal" by the General Labor

Union of Jiangsu Province this year.

HHI (China) conscientiously abides by all kinds of policies and laws, especially for environmental protection. Compliance with the import and export business process is rated AAA level.

HHI (China)'s enterprise management, credit management, staff welfare & legal education mode has been recognized by Yangzhong's government as a model policy. Both the senior leadership (Provincial Party Secretary, Governor, State Minister) and guests have visited the company. HHI (China) has been rated as Top 10 enterprises among Top 30 companies in Yangzhong since 2006, while it was ranked as the Top 10 taxpayer enterprise last year.

Yangzhong has advanced industry and distinguished features with three leading industries; electrical engineering, new energy, and manufacturing industry; known as "Electrical Engineering Island" and "Photovoltaic Industry Island." **HHI**

With barely 10 years experience under its belt, HHI(China) is punching well above its weight in China's lucrative power supply market.







# Nanjing’s Fuzimiao: One of China’s Most Famous Confucian Temples

Nanjing was the capital city of China’s Wu, Song, and Liang dynasties. It was chosen for this role both because of its proximity to the Yangtze River and for the high hills surrounding it as a natural barrier to impede the advance of enemy troops. In addition to being famed for its magnificent scenery and its myriad places of historical interest, Nanjing is also located near Yangzhong, the Chinese home of Hyundai Heavy Industries.

The name Fuzimiao is a direct Chinese translation of the term “Confucian Temple.” Along with the mausoleums of Sun Yat-Sen, one of the fathers of modern China, and Ming Xiaoling, for the founder of the Ming dynasty, it is one of the most famous symbols of China’s long and rich history. Although the site where it is located also includes a facility for writing the entry examinations for positions in the bureaucracy of Imperial China and an equally-venerable Imperial Academy, it is revered among the locals for its role as a shrine to the memory of Confucius.

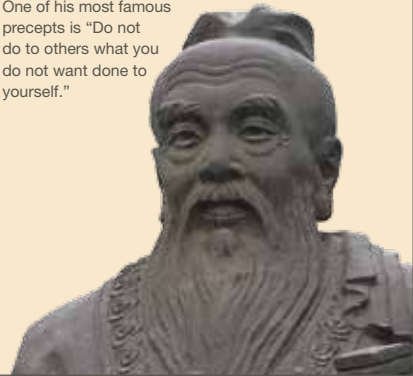
Confucius (551-479 BC) was a scholar of the Zhou Dynasty, and his principles reflect the values and precepts of the Wen, a catch-all term that refers to the culture,

thoughts, institutions, and traditions of the Zhou. Confucius’s beliefs were based on common Chinese traditions and values: he championed family loyalty, ancestor worship, respect for parents and elders by their children, and the nuclear family as the basis for an ideal government. One of his most famous precepts is “Do not do to others what you do not want done to yourself,” which is really another version of the “Golden Rule.” Even though much time has passed since the death of Confucius, his thoughts and beliefs still dominate the lives of many people in China and other countries in East Asia.

Temples honoring the thought and memory of Confucius can be found throughout China. The one in Nanjing is among the most famous, having played host to 80 million or so visitors to date. It was designated as one of China’s forty most sacred places in 1991. Although it was originally built in 1034, it has been destroyed several times by fire and invaders. Following its designation as a significant cultural heritage property in 1984, it was rebuilt to its former glory. One of its most famous artifacts is a 6.5-metre-high portrait of Confucius—the largest of its kind in all of China. The temple also holds 38 paintings depicting seminal events during his lifetime.

Another wonderful reason to visit the temple is to savor the breathtaking view of the scenic Qinhuai River, complete with flotillas of small ships drifting slowly past. There are also two very dramatic dragon statues standing on top of a wall near the river, while the neighboring residential area boasts an outdoor market and a large number of traditional Chinese houses. These many features combine to make the area near the temple the most picturesque part of Nanjing. **HHI**

Confucius (551-479 BC)  
One of his most famous precepts is “Do not do to others what you do not want done to yourself.”



# Change the World with Eco-ship Cycle

By Park Mu-hyun

## Shipbuilding Market is Recovering Due to Fuel Efficiency

Although the shipping market remains weak, the newbuilding market is showing signs of recovery. Newly designed eco-ship investments are increasing not because of freight rates but because of fuel efficiency. In fact, shipping companies that have already invested in eco-ships are reaping profits. Fuel efficiency has become an irresistible trend in global shipping markets. Last year, Scorpio Tankers released a statement on eco-ship’s improvement of fuel efficiency. Since then, most shipping companies and shipowners who are ready to invest in eco-ships placed orders with Korean shipyards building these ship.

## Importance of Fuel Efficiency has been Verified

Eco-ship demand needs an obvious comparison advantage on fuel efficiency due to the replacement of all existing vessels. Maersk Line’s performance trends show that the core of profits is cost competition. Maersk Line released their outstanding second quarter performance showing EBIT margin at 7.0% and EBITDA margin at 14.0%. Maersk Line has been focusing on improving fuel efficiency for roughly 10 years. Maersk Line’s result trends show that the way to make money is cost competition. Scorpio Tankers moved up to leading shipping liner with their eco-ship fleet. Scorpio Tankers released numbers that their newly designed eco-

ships’ charterage premium is around 30%. Hence, as the number of eco-ship deliveries increases, competition in fuel efficiency will intensify.

## Limited Competition & Rising Newbuild Prices

Newbuild prices are rising due to limited competition and new eco-design. As a result of limited competition, upward newbuild prices pressure at Korean shipyards is higher. Fuel efficiency has become a new variable for rising prices. Due to limited competition, the rise in newbuild prices of orders placed with Korean shipyards is currently concentrated on mid-sized vessels. This trend of vessel prices specifically around mid-sized vessel will eventually move up to larger vessels. Moreover, since DSME started to deliver 18,000 TEU class Triple-E vessels, new orders of larger vessels are expected to increase from next year.

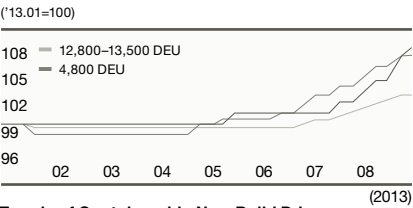
Although China highlights eco-design, the price gap has grown compared to Korean shipyards. Recently, three Chinese shipyards received eco-designed bulkier orders from Scorpio Tankers. However, their price is 10% lower than Hyundai Vinashin Shipyards (HVS). Besides, considering the fact that Chinese shipyard’s eco-design has not been certified by classification societies, and with considerable delivery delays, vessel prices might actually go down after delivery. Therefore, shipowners prefer verified Korean

shipyards over Chinese shipyards even though they have to raise their vessel prices. Once again, limited competition and verified eco-design in Korea are the driving forces of newbuild prices. This aspect is different from before.

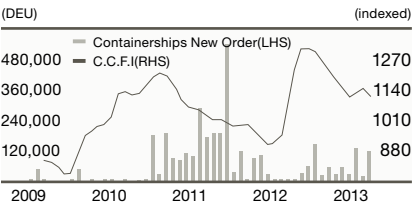
## Eco-ship Cycle Will Last for at Least 10 Years

After all, all existing vessels could be replaced by newly-designed eco-ships. Eco-ship cycle will last for at least 10 years. The shipping market has transformed to focus on cost competition. The more eco-ships shipowners and shipping companies own, the more competitive they will be. Korean shipyards will reap the benefits most through eco-ship cycle. **HHI**

The writer is an analyst at E\*Trade Securities



Source: Clarksons



Source: Bloomberg



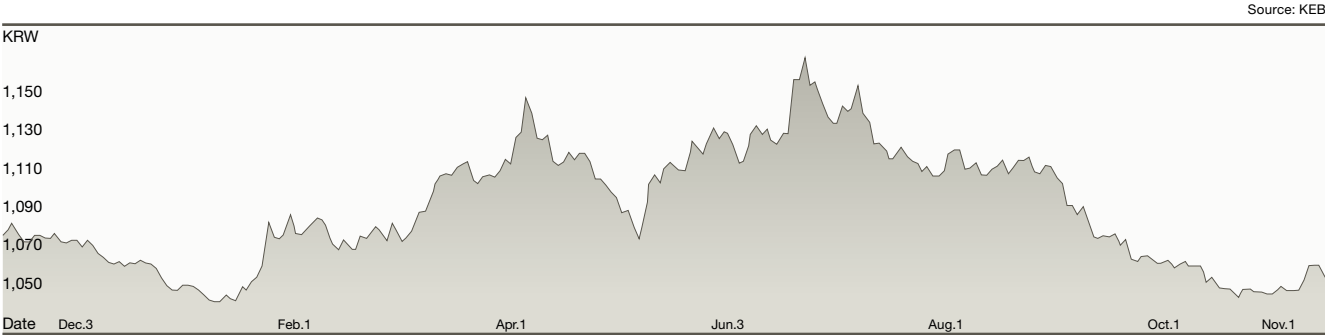
# Ready to Bounce Back in 2014

## New Orders & Backlog

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

Divisions	2013 Plan	2013 Oct. (YTD)	2012 Oct. (YTD)	Achievement (%)	YoY (%)	Backlog (Delivery basis)
Shipbuilding	7,750	7,834	5,295	101.1	48.0	21,617
Offshore & Engineering	6,000	6,239	1,623	104.0	284.4	20,595
Industrial Plant & Engineering	6,000	3,418	3,772	57.0	-9.4	9,341
Engine & Machinery	3,100	2,198	1,754	70.9	25.3	3,987
Electro Electric Systems	3,160	1,538	2,100	48.7	-26.8	2,280
Construction Equipment	3,272	2,185	2,457	66.8	-11.1	-
Green Energy	394	196	267	49.7	-26.6	51
Total	29,676	23,608	17,268	79.6	36.7	57,865

## USD Exchange Rate



## 3Q Results in Sales

Hyundai Heavy Industries posted KRW 13.14 trillion in sales ended September 30, down half a percentage point from the same period last year. The main drag is due to the slump in the shipbuilding and engine businesses from weak commercial vessel prices.

The Shipbuilding Division achieved KRW 3.8 trillion in sales, down 7.4% from a year earlier, as most sales in shipbuilding now come from orders won in 2011-2012 when vessel prices were falling. The Engine & Machinery Division’s sales also dropped 33.6% to KRW 405 billion, down from the third quarter of 2012 due to the

concomitant decrease in demand for marine engines.

The Electro Electric Systems Division saw a decrease in sales to KRW 674.6 billion, down 5.7% from the same period last year as sales tapered off in Europe and the US.

On the other hand, the Offshore & Engineering Division and Green Energy Division performed better than a year earlier, achieved KRW 1.1 trillion and KRW 70 billion, rising 8.1% and 4.6%, respectively.

## Operating Margin

The company’s operating income in the third quarter decreased to KRW

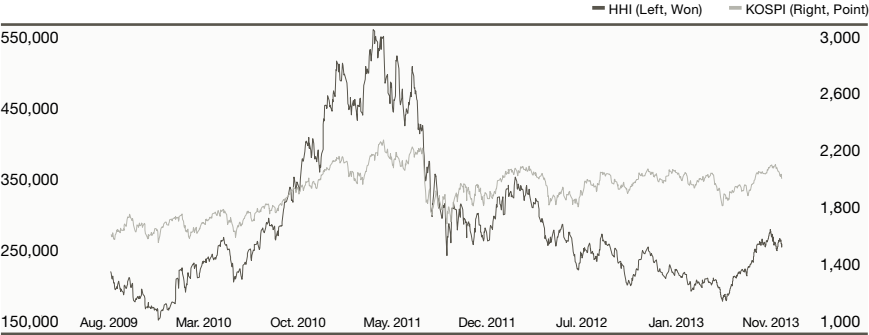
222.4 billion, down 63% y-o-y mainly due to profit declines in Shipbuilding and Engine & Machinery Divisions as the recession in the shipbuilding market continues and the decline in the refinery segment is worsening due to the oil product market was getting worsening.

While the Shipbuilding Division turned to an operating loss on losses at Hyundai Mipo Dockyard, an affiliated company, as there are still a few low-margin orders in the backlog, the Industrial Plant & Engineering Division’s operating margin improved due to cost reduction with the completion of the Riyadh combined thermal plant. In the meantime, the Electro Electric Systems

## Stock Metrics

	2009	2010	2011	2012	Nov 14, 2013
High for the Year (Closing, KRW)	250,000	456,500	554,000	345,000	288,500
Low for the Year (Closing, KRW)	148,500	171,000	235,500	195,500	176,000
Closing, KRW	173,500	443,000	257,000	242,000	261,000
Market Cap. (Closing, KRW billion)	13,186	33,668	19,532	18,392	19,836
Foreign Ownership (%)	17.38	20.20	16.91	18.89	18.35
PER (H/L)	7.0/4.2	9.8/3.7	17.4/7.4	19.1/10.8	N/A
EPS (KRW)	35,705	46,594	31,751	18,031	N/A

## Stock Performance



Division’s sales decreased, but the division accepted orders selectively as it is focusing on margins, and this bolstered operating income.

## New Orders

As of the end of September, Hyundai Heavy took cumulative orders of USD 21.9 billion, achieving 74% of its annual order target.

In particular, the Offshore & Engineering’s orders have already surpassed the division’s target, and commercial vessel orders remain well on track, achieving 88.2% of annual target. Although the Industrial Plant & Engineering Division’s orders have lagged

behind, at USD 3.4 billion, accounting for 56.3% of its new order target, the division’s year target is expected to be reached as winning mega-sized deals including the order for Az-Zour North IWPP power plant in Kuwait and the Zubair Project in Iraq is around the corner.

Even though the non-shipbuilding divisions appear less likely to achieve their order targets, both shipbuilding and offshore plants, the areas responsible for the bulk of the company’s profits, are continuing to grow. As such, the company’s order target for this year remains within reach.

## Projection 2014

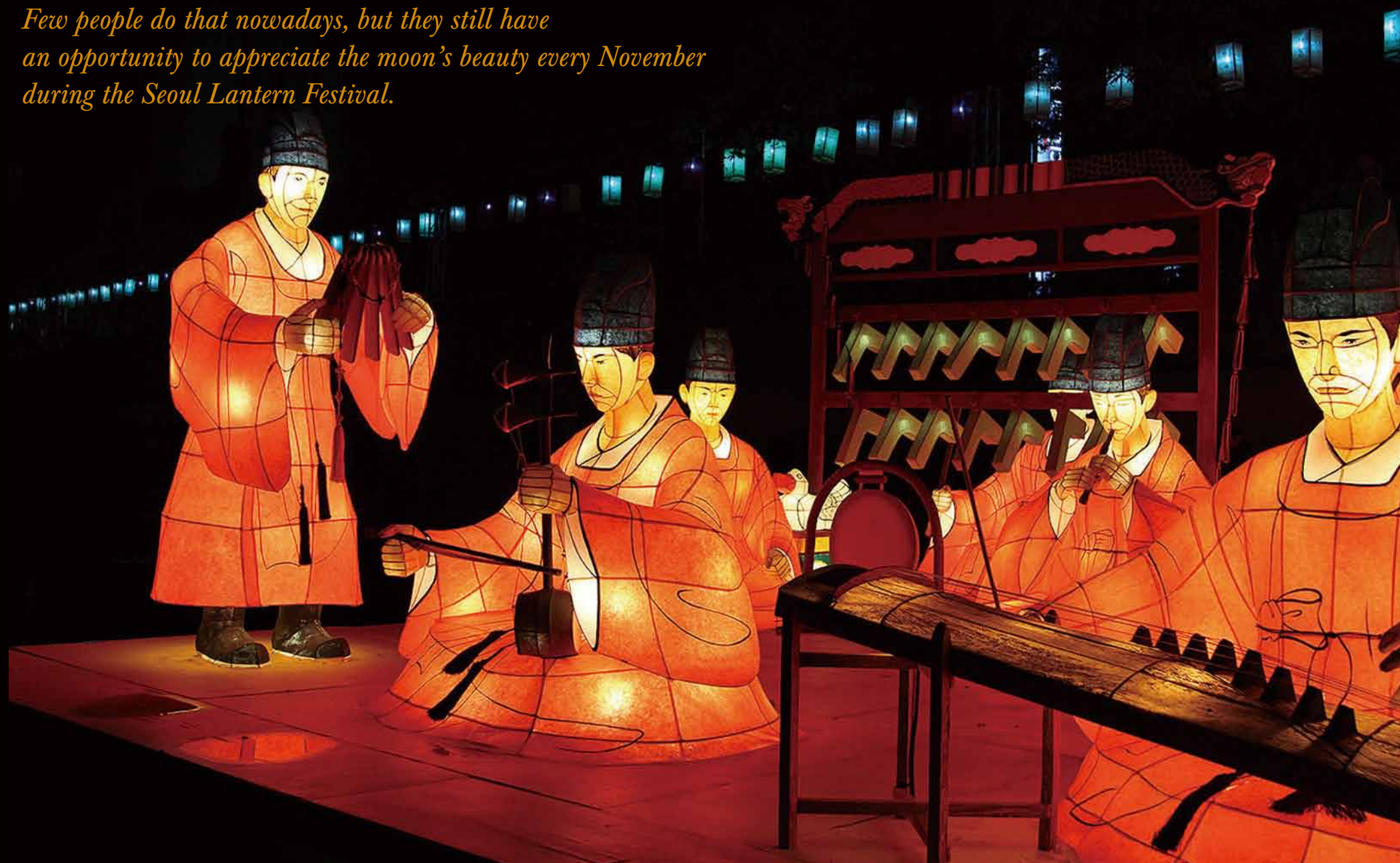
Although the mixed signals from the US economy continue to add uncertainty to the global economy, Hyundai Heavy will be focusing on rising newbuilding prices fueled by a commercial ship market recovery. The new orders are expected to be picked up later this year, and this will lift newbuilding prices. Furthermore, shipping volume on the Asia-Europe routes is growing, backed by improving economic conditions in advanced markets. In this case, the uptick in newbuilding prices should accelerate, and HHI will be the beneficiary of it. Earnings will bounce back in 2014. **HHI**



# Lighting

## South Korea's Capital City

*Few people do that nowadays, but they still have an opportunity to appreciate the moon's beauty every November during the Seoul Lantern Festival.*



In past times, many people wished upon the moon for good luck and happiness. Although few people do that nowadays, they still have an opportunity to appreciate the moon's beauty every November during the Seoul Lantern Festival. At this time, a flotilla of over 35,000 lanterns lights up the Cheonggyecheon, which runs through central Seoul for 1.5 km from Cheonggye Plaza to the Gwangun Bridge. They illuminate the waterway, lighting up the black, late-autumn sky beside a forest of skyscrapers as they recount the story of the city's long, long history. The main theme of the Seoul Lantern Festival 2012 is the restoration of the fortress wall of Hanyang, which was the old name for the city.

### How Lanterns Once Helped Save Korea

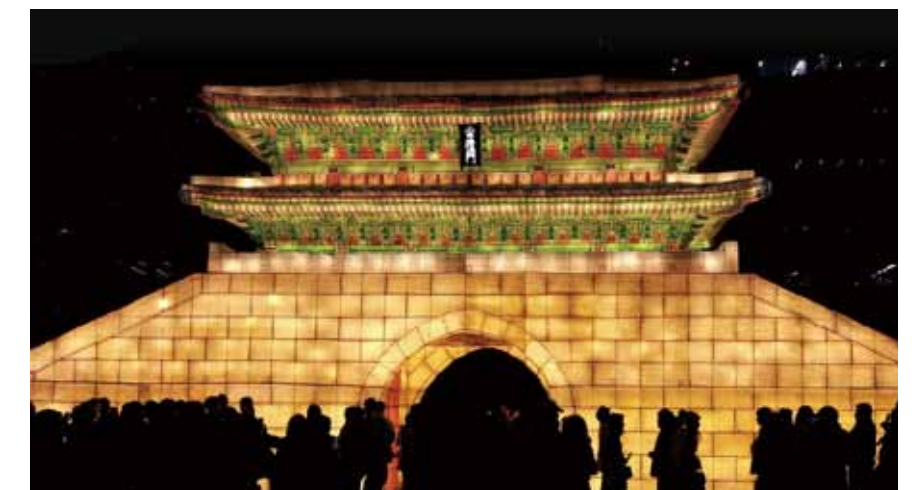
Lanterns made a stirring contribution to the Korean victory during the Imjin War. In the Battle of Jinju in 1592, General Kim Shi-min and his army hoisted lanterns into the wind and down Namgang River, so that they could stay in touch with soldiers camped in nearby Jinju. The modern-day Lantern Festival

is dedicated, in part, to remembering the agony of that war, the glory of the eventual Korean victory, and the wisdom and bravery of the Korean people's ancestors, who sacrificed so much to ensure the survival of their beloved homeland.

### Flooding "Old Seoul" with Lantern-Light


The Seoul City Wall stretches for 18.6 km, following along the ridges of Inwangsan, Bukaksan, Naksan, and Namsan mountains. During the 2012 Festival, the city's four gates, which are located at the four cardinal points, along with palaces Gyeongbokgung, Gyeonghuigung, Changgyeonggung, Changdeokgung, and Deoksugung, were recast as huge sculptures, stirringly aglow with the light of thousands of lanterns. The landscapes along the ancient Seoul City Wall were beautified in the same fashion.

The 2012 festival also honored several historical artifacts. They included the Jagyeongnu water clock, the Honcheonui celestial globe, which measured the location and movement of the heavenly bodies, and the Hun-





The true meaning of the Seoul Lantern Festival is to celebrate South Korea’s past, present, and future through the cheerful and intimate beauty of lantern light.

minjeongeum, containing the basic elements needed for the creation of Hangeul, the Korean alphabet. Many courtly events and ceremonies, such as the Jongmyo Jeryeak (royal ancestral ritual music inside the Jongmyo Shrine) were performed, along with kite-flying and reproductions of traditional Korean weddings. The Lantern Festival is not just limited to a celebration of Seoul’s past, however. Many people attend in traditional dress from around the world, while younger visitors are thrilled to see such famed icons as Superman, Pororo the Little Penguin, and Batman, brightly beaming at them from a host of lanterns. In addition, visitors to the celebration can write down their wishes on the sides of lanterns and then watch them float away down Cheonggye Stream. The true meaning of the Seoul Lantern Festival is to celebrate South Korea’s past, present, and future through the cheerful and intimate beauty of lantern light. It should also be obvious that one evening cannot possibly suffice to allow people to enjoy its many attractions. The festival also provides visitors with a variety of experiential programs, such as building a 60-metre wall and coloring and decorating traditional lanterns. Further information about the festival can be obtained in several languages, including Korean, English, Japanese, and Chinese, by accessing any of the many QR codes that have been posted at major points along the way. 



Pororo the little penguin

Overseas Offices

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Overseas Incorporated Firms

<b>ASIA</b> <b>Beijing, China</b> Beijing Hyundai Jingcheng Construction Machinery Co., Ltd. Tel. 86-10-8321-8347 Fax. 86-10-8321-1353	<b>Changzhou, China</b> Hyundai Construction Machinery Co., Ltd. Tel. 86-519-8519-1002 Fax. 86-519-8519-1385	<b>Changzhou, China</b> Changzhou Hyundai Hydraulic Machinery Co., Ltd. Tel. 86-519-8302-1710 Fax. 86-519-8302-1726	<b>Yangzhong, China</b> Hyundai Heavy Industries Electric Co., Ltd Tel. 86-511-8842-0666 Fax. 86-511-8842-0668
<b>Taian, China</b> Hyundai (Shandong) Heavy Industries Machinery Co., Ltd Tel. 86-538-349-0110 Fax. 86-538-349-0098	<b>Yantai, China</b> Yantai Hyundai Heavy Industries. Co., Ltd Tel. 86-535-216-5800 Fax. 86-535-216-5810	<b>Wendeng, China</b> Weihai Hyundai Wind Power Technology Co., Ltd Tel. 86-631-896-6000 Fax. 86-631-896-6799	<b>Shanghai, China</b> Hyundai Heavy Industries China Investement Co.,Ltd. Tel. 86-21-3357-5888 Fax. 86-21-3357-5808
<b>Shanghai, China</b> Hyundai Financial Leasing Co., Ltd. Tel. 86-21-2033-2000 Fax. 86-21-2033-2033	<b>Shanghai, China</b> China R&D Center Tel. 86-21-5013-3393 Fax. 86-21-5013-3393 #105	<b>Pune, India</b> Hyundai Construction Equipment India Pvt., Ltd. Tel. 91-21-3530-1700 Fax. 91-21-3530-1712	<b>Jakarta, Indonesia</b> Pt. Hyundai Machinery Indonesia Tel. 62-21-2945-5019 Fax. 62-21-2945-5020
<b>AMERICAS</b> <b>Norcross, US</b> Hyundai Construction Equipment Americas, Inc. Tel. 1-678-823-7777 Fax. 1-678-823-7778	<b>Mansfield, US</b> Hyundai Ideal Electric Company Tel. 1-419-522-3611 Fax. 1-419-522-9386	<b>Montgomery, US</b> Hyundai Power Transformers USA, Inc Tel. 1-334-481-2000 Fax. 1-334-481-2098	<b>Itatiaia, Brazil</b> Hyundai Heavy Industries Brazil Tel. 55-24-3352-2338
<b>EUROPE</b> <b>Geel, Belgium</b> Hyundai Heavy Industries Europe N.V. Tel. 32-14-56-2211 Fax. 32-14-59-3405	<b>Sofia, Bulgaria</b> Hyundai Heavy Industires Co, - Bulgaria Tel. 359-2-803-3200 Fax. 359-2-803-3203	<b>Bochum, Germany</b> Jahnel- Kestermann Getribewrke Gmbh Tel. 49-234-339-0 Fax. 49-234-339-257	<b>Paris, France</b> Hyundai Heavy Industries France SAS Tel. 33-1-4637-1761 Fax. 33-1-4637-1295
<b>Budapest, Hungary</b> Hyundai Technologies Center Hungary Ltd. Tel. 36-1-273-3733 Fax. 36-1-220-6708	<b>Artem, Russia</b> Hyundai Electrosystems Co., Ltd Tel. 7-924-730-0321 Fax. 7-423-201-0110	<b>MIDDLE EAST</b> <b>Kuwait City, Kuwait</b> Hyundai Green Industries Co., W.L.L. Tel. 965-6096-6639 Fax. 965-2241-3963	<b>Al Khobar, Saudi Arabia</b> Hyundai Arabia Co., Ltd Tel. 966-887-7602
<b>AFRICA</b> <b>Lagos, Nigeria</b> Hyundai Heavy Industries Co., Nigeria Ltd. Tel. 234-807-764-5718 234-813-704-3075	<b>Abuja, Nigeria</b> Nikorma Transport Ltd. Tel. 234-9-460-85503 234-803-775-6984		