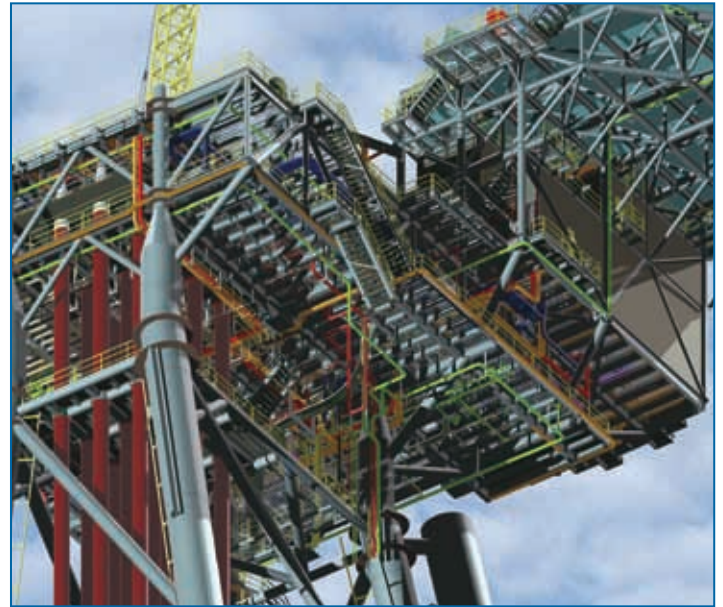
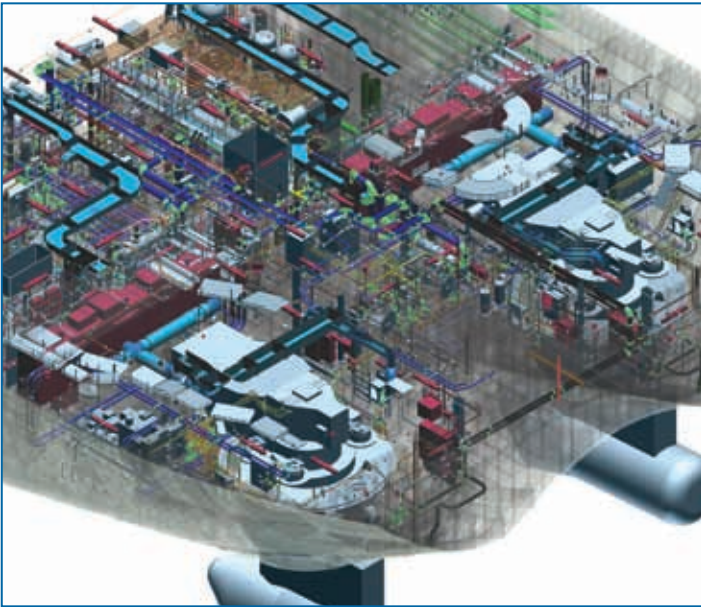


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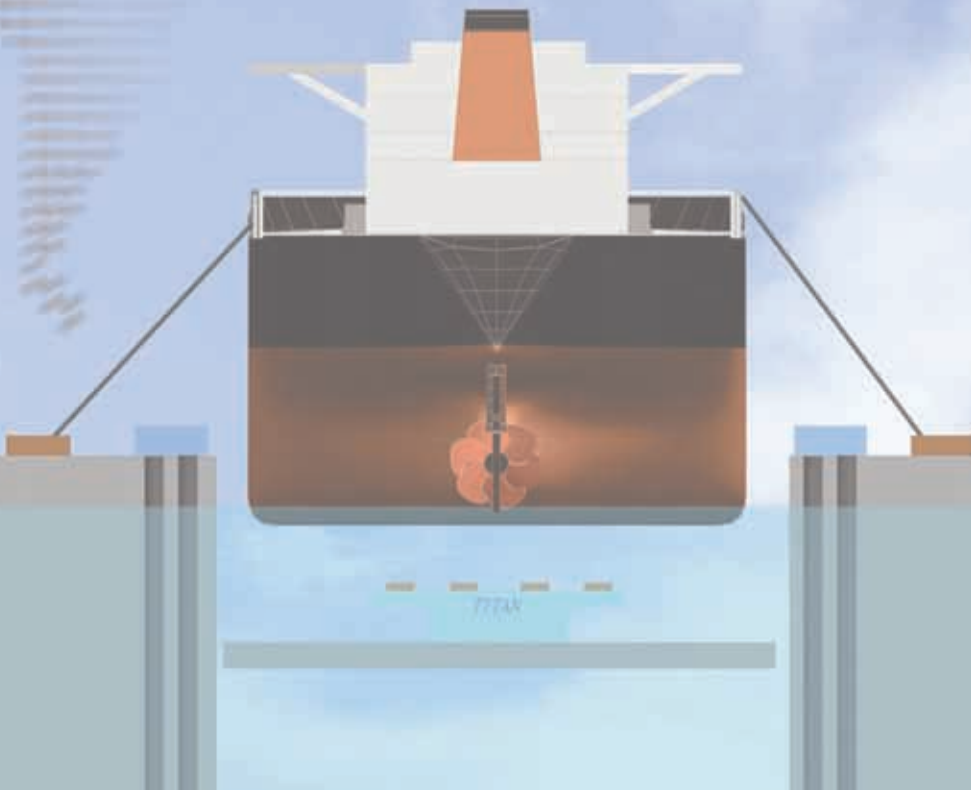
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JUNJIN CSM successfully participated in Bauma China 2010

JUNJIN CSM participated in the 5th Bauma China which ran for 4 days from November 23 to 26 in the Shanghai New International Expo Center (SNIEC) and actively launched promotion campaigns. Bauma China, the largest trade fair in Asia for construction machinery, drew 1,858 exhibitors from 37 countries around the globe.

During the show, JUNJIN CSM showcased its 42m aerial work platform for construction (model name: TJ-420), which was developed for the first time nationwide, 15m bending aerial work platform (model name: P-150A), electrically powered scissors lift (model name: JS-080), and hydraulic crawler drill (model name: SD-1300E).

The bending aerial work platform, welded to have a closed structure, is suitable for blasting works. Scissors lift is essential for the vertical and descending works and indispensable for the works performed close to the external wall. In addition, the hydraulic crawler drill has drawn favorable reaction from customers for its excellent perforating efficiency in the blasting works at the stony mountain and mine.



JUNJIN CSM participated in Bauma China.

The booth of JUNJIN CSM was visited by many companies, specifically, those carrying out national land developments and construction projects in the Chinese and Asian construction markets. They showed huge interest in the aerial work platform for shipbuilding, hydraulic crawler drill, and 60-ton truck crane, a new product, and others. Specifically, JUNJIN CSM successfully signed contracts with Russian and Myanmar companies to supply the hydraulic crawler drills.

Lee Jae-hwan, President of JUNJIN CSM, said, "This trade fair was instrumental very much for us to solidly our status as a global manufacturer of heavy equipments, and we plan to actively participate in foreign trade shows from 2011 onwards as part of effort to provide customers with the best quality products and services."

STX Offshore & Shipbuilding and KBR work closely together in the offshore plant sector

STX Offshore & Shipbuilding has joined forces with Kellogg Brown & Root (KBR), one of the world's leading engineering, construction and services firms, in the offshore plant sector.

On November 30, STX Offshore & Shipbuilding entered into Memorandum of Understanding (MOU) with KBR at STX Namsan Tower for the strategic collaboration in the offshore plant sector during the signing ceremony attended by key officials such as Hong Kyung-jin, President of STX Offshore & Shipbuilding, and Roy Oelking, President of KBR.

With the MOU signed, STX Offshore & Shipbuilding plans to strengthen the col-



Roy Oelking (left), President of KBR, and Hong Kyung-jin (right), President of STX Offshore & Shipbuilding, are taking commemorative photograph after signing the MOU between STX Offshore & Shipbuilding and KBR on November 30 at STX Namsan Tower.

laboration on sharing the information with regard to the global oil and natural gas business and place joint bid for offshore project with KBR. In addition, the company expects that the collaborative tie-up with KBR, a company which has over 70-year experience with the design of offshore plant and engineering technology, will result in the stronger competitiveness in the offshore plant sector.

Also, KBR predicts that teaming up with STX, a shipbuilder with offshore dock at STX Dalian Shipyard in China, will help steadily expand the production facilities and create a "win-win" situation over the long-term.

KBR, based in Houston, Texas in the U.S., is the global leading company which has maintained the top position in the global oil and gas engineering sector and has joined projects in about 40 regions around the globe including the West Africa, the Gulf of Mexico, Australia, and others.

Hong Kyung-jin, President of STX Offshore & Shipbuilding, remarked, "As more orders



are expected to be placed for offshore plants in the period ahead amid the recovery of energy development market, we will redouble efforts to focus on making inroads into new foreign markets and R&D by working closely with KBR.”

Meanwhile, STX jumped into the offshore plant sector in 2007 by winning the order for the pipe laying vessel, and successfully signed the contract with Noble, an American company specializing in drilling in August 2010, for the construction of drillship, the first one ordered this year worldwide, despite the sluggish drillship market conditions.

SSME held the year-end charity bazaar

The social service group of Sungdong Shipbuilding & Marine Engineering (SSME) held the 1st bazaar of SSME on December 2 at Jukrim Stadium in Tongyeong to help low income neighbors and the poor elderly living alone.

The social service group, the in-house club of SSME, played a key role in organizing this bazaar, the first-ever largest event in

Tongyeong.

This event comprised the charity bazaar to sell good donated by the employees of SSME, Kim Dong-jin, the mayor of Tongyeong ('Economy' painted by Chang Chi-gil, a painter), Choi Gyeong-ju, a professional golfer, etc, and music performance by Hanrye Han Em Pil, a community music voluntary service group, and others.

Particularly, goods donated by celebrities were auctioned off in the bazaar, including the 30th home run ball of Korean slugger Lee Seung-yeop, a T-shirt autographed by Seol Ki-hyeon, the former Korean national soccer player, and T-shirt which was autographed by Heo-jae, the basketball head coach.

Jeong Hong-jun, Chairman of SSME, visited the bazaar on that day and donated the meal expenses for citizens and employees, showing his positive support to this event organized spontaneously by employees.

Kang Mahn-seok, the Manager of the social service group of SSME, said, "This is the first-ever large event organized in this region, but I want to be a part in the efforts to make this community a better place to

live in, and I hope that I can share more with more people through events like this every year."

The entire proceeds from the sales of donated items and the donation will be used to help financially-strapped elderly living alone and low income neighbors such as children of families without parents.

Siemens PLM Software held PLM Connection 2010

Siemens PLM Software successfully ended PLM Connection 2010, the nation's largest user conference in PLM industry.

This event which ran for 2 days from December 7 to 8 at Hyundai Hotel Gyeongju drew more than 1,000 experts in PLM and related officials, and spirits were high during the event that showcased many exhibitors displaying products or demonstrating latest technologies, as well as providing many opportunities for sharing success stories.

Specifically, PLM Connection 2010 attracted many strategic partners, including HP, PLM World, Cadians System, C-Tech, ENES Solution, Space Solution, S-Palmsoft, CIMS, Function Bay, Moldex 3D, etc, showcasing the total solutions related to PLM, IT, CAD/CAM/CAE, PDM, DM, and others.

In addition, this event featured dozens of booths with product showcases, demonstrating that PLM Connection 2010 was a mega conference which goes beyond the boundary of a presentation event.

Meanwhile, Kwon Kyung-ryeol, Managing Director of Korea operations, Siemens PLM Software, officially announced in a press conference on the first day of the event that the company will be renamed to 'Siemens Industry Software' in 2011.

He explained, "The name change reflects the intention to focus on the development and supply of integrated solution for the entire cycles of process in tandem with the integrated management of development and production, rather than the PLM which is currently segmented and concentrated in the development and production."



Charity bazaar of SSME held on December 2



STX Offshore & Shipbuilding developed world's first optical communication digital welding system

STX Offshore & Shipbuilding successfully developed the optical digital welding system applying the optical communication technology to the welding system for the first time in the world.

Optical communication refers to the form of the fastest and stable telecommunica-

tion that uses the optical fiber less than 1mm in diameter to convert light pulses into digital signals enabling the transmission of information over distances of hundreds of kilometers, and STX Offshore & Shipbuilding applied the optical communication to the welding system for the first

time across the globe.

Welding is an essential process which determines the quality of ship. Steel plate (back plate) used for shipbuilding is as thick as 10mm to 90mm, and about 5,000 to 10,000 pieces of steel plate of this kind are attached together, depending on the type of ship.

The welding process accounts for 30% of total time spent on the construction of ship. For example, at least 8,000 back plates are used to build 1 unit of supersize 13,000TEU container ship, which requires tremendous workload to weld the total length of approximately 204km.

The welding process involves the attachment of back plates pre-cut according to the outer appearance of ship at the outdoor worksite, and therefore, the welding cables weighing 50kg had to be carried manually by workers over a long distance to another place. That was never an easy task, considering that a circle around 13,000TEU container ship would be equal to a circumference of about 900m.

In the conventional analog welding system, 10 welding cables had to be used to operate the welding machine. However, the digital welding system requires only 2 cables, and as a result, the weight is reduced by 10kg. In addition, maximum output capacity of 600A and 55V can be maintained for up to 4 hours stably because it is not subject at all to the electromagnetic waves emitted during the welding operation.

This equipment digitalized entire operation processes. Workers at the site can check and control all welding conditions such as

Rolls-Royce MT30 powered turbine generator set achieves full power operation



Rolls-Royce powered turbine generator

Rolls-Royce has achieved full power operation of its first production MT30 powered main turbine generator set delivered to the US Navy. The MT30, delivered to the US Navy for the DDG-1000, USS Zumwalt program, achieved full power operation at 36mW during testing at the US Navy's land based test site in Philadelphia, Pennsylvania.

The selection by the US Navy for the DDG-1000 program marks the first large gas turbine engine ordered by the US Navy for use in a generator set providing electrical power for propulsion and on-board systems throughout the ship.

Andrew Marsh, Rolls-Royce, President - Naval said, "The Zumwalt class destroyer

is a highly-advanced vessel, with demanding performance requirements. The MT30 is the world's most powerful marine gas turbine and achieving this important milestone is further proof of its ability to deliver the high-power demands of the latest naval ship designs."

The MT30 has been developed to meet the growing demand by navies for higher power gas turbines in the 34-40mW range and it can be configured for mechanical or generator drive. The MT30 achieves a high power density by delivering high output in a compact space, a key factor in naval propulsion systems.

Lockheed Martin has also selected the MT30 for the Littoral Combat Ship program, with the first ship-of-class, the USS Freedom, bearing two MT30s as part of the combined diesel and gas turbine configuration powering Rolls-Royce waterjets. The MT30 has additionally been selected for the UK Royal Navy's new aircraft carrier class, the Queen Elizabeth which, like the Zumwalt, will benefit from integrated all-electric propulsion.



the current, voltage, gas volume, etc, via a display screen using the wire feeder as a remote controller without need for physical access to the main body of welding machine located at a distance.

STX Offshore & Shipbuilding ensured that even the aluminum welding can be performed with this welding machine, considering the recent increase in the use of aluminum for building special vessels such as warship, LNG carriers and others.

High-priced imported equipment was used for aluminum welding so far. However, this welding machine based on new technology enables basic aluminum welding and is expected not only to become a substitute for imported welding machines but also reduce investment costs and help build up competitiveness.

An official from STX Offshore & Shipbuilding said, "The development of this new equipment shortens the shipbuilding process, which will bring both indirect benefits, such as the improvement in productivity and ship quality, and direct benefits such as the cost-savings of at least KRW 11.5 billion, including the reduction in the cost of equipment purchase, license income, electrical bills, over the 5 years ahead. Currently, the company has applied for domestic patents for the optical communication digital welding system."

HHI set a new record for the World-Class Products

Hyundai Heavy Industries (HHI) has found its additional 2 products among those selected by the Ministry of Knowledge Economy (MKE) as World-Class Products of 2010, setting a new record for the most

World Class Products again.

On December 7, 2010, MKE awarded the certification of World-Class Products to the 2 products of HHI, which are the '145kV Gas Insulated Switchgear (GIS)' and the 'Marine Ring Main Unit', after the screening process.

Thus, HHI has successfully increased the number of World-Class Product to 31 from 29, breaking its previous record of 29 World-Class Products set in 2009.

The 145kV Gas Insulated Switchgear certified as the World-Class Product this time is a high voltage circuit breaker for effective transmission/distribution of power and has been exported mainly to the large-capacity substations in Mid East, and has captured 13.7% share of market, the third largest share in the global market. The Marine Ring Main Unit is the switch board which supplies power to the refrigeration container outfitted on the ship, and has taken up 68% of market share in the global market, the largest.

HHI has seen its 31 products certified as World-Class Products, the largest nationwide, over the last decade since its product was selected as World-Class Product

for the first time in the shipbuilding sector in 2001, the year when MKE awarded the certification of World-Class Products in Korea for the first time. This accomplishment of HHI is attributed to the ceaseless technology development.

In addition, 15 World-Class Products of HHI out of 31 have carved out the largest share of global market, which proves the unrivalled technological power of HHI.

HHI's World-Class Products were related mainly to ship at the outset when the World-Class Product Certification system just became effective. However, the company's World-Class Products which have been recently certified are related to electronics/electrical products, construction equipments, industrial robots, which suggests that HHI is evolving into a global and integrated heavy industry company.

A source from HHI said, "The fact that we set a new record for the most World-Class Products reflects our constant development of technology. We plan to increase the number of our World-Class Products to 39 by 2012 by proceeding with R&D and sharpening out our sales capabilities."



Marine Ring Main Unit



Dassault Systemes sets a new milestone in sustainable Innovation with its latest V6 release

Dassault Systemes launched recently the latest release of V6, V6R2011x.

As a new step towards the company's life-like experience vision, this latest release of V6 delivers new competitive advantages in all 3 domains of the V6 organic architecture; rich applications, online platform and universal services.

V6R2011x rich applications include 479 new functions and 8 new solutions to support Dassault Systemes customers' collaborative creation processes for all targeted industries using CATIA, DELMIA and SIMULIA brands.

V6R2011x ENOVIA online platform delivers 7 new products and 359 cross industry and industry specific functions.

ENOVIA solutions focus on helping customers to implement more efficient, innovation-driven governance and sourcing business processes. ENOVIA solutions rely on the V6 cloud-ready online platform for life cycle and collaboration management. V6R2011x sustains Dassault Systemes' long term commitment to open solutions

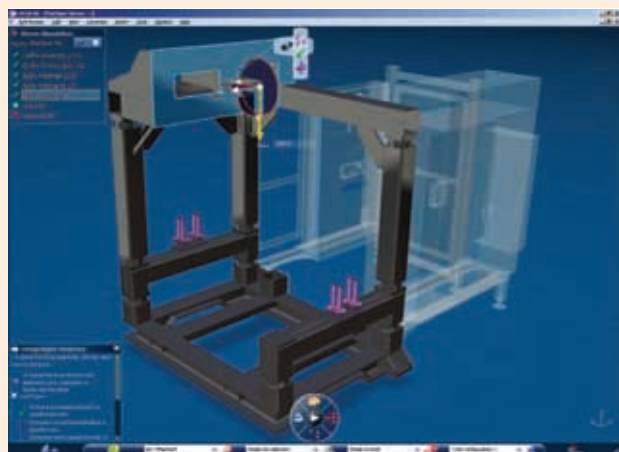
with its enhanced support of standards such as STEP or 3DXML for data, or SOA for architecture.

V6R2011x is a major step in Dassault Systemes Universal Services strategy for sustainable innovation to deliver unique 3D, collaboration and content - based services for lifelike experience for all DS targeted markets.

3DVIA V6R2011x delivers 68 new and unique 3D services for 3D Lifelike experiences applicable in all industries including a special focus in industries such as CPG, retail and energy, or domains such as serious gaming.

V6R2011x collaboration solutions deliver unique values with the award winning V6 3D instant collaboration solution. In addition, Dassault Systemes continues the beta program of 3DSWYM (See What You Mean), its new cloud solution for community-based innovation driven companies.

Finally V6R2011x delivers the first release of EXALEAD Cloudview 360, the leader in next generation search - based applications. The Exalead Cloudview solution is the only open search - based platform providing the speed, scalability and flexibility inside secured data warehouses or on the web for innovative companies.



V6R2011x

SHI was awarded the \$10 billion Export Tower Prize

Samsung Heavy Industries (SHI) was awarded the \$10 billion Export Tower Prize at the 47th Annual Trade Day held on November 30 at the COEX Convention Center, and SHI President Roh In-sik won the Gold Tower Medal of the Industrial Service Merit.

SHI has expanded its export by more than \$1 billion every year, achieving \$3 billion in export in 2004, \$5 billion in 2006, and \$7 billion in 2008. In 2010, SHI earned the glory of winning the \$10 billion Export Tower Prize just in 2 years after it received a \$7 billion Export Tower Prize. The company has successfully increased the export by over 3 times in 6 years since 2004.

The dramatic increase in export by SHI over such a short period is attributed to the unrivalled competitiveness of SHI in the market for high value-added vessels such as drillship, LNG-FPSO, etc, and its excellent shipbuilding ability which has constantly upgraded through the development of new techniques.

SHI President Roh In-sik, the winner of the Gold Tower Medal of the Industrial Service Merit, successfully secured an order from Royal Dutch Shell for the long-term supply of LNG-FPSOs priced at \$50 billion in 2009 when he was just inaugurated as President of SHI, although the shipbuilding market was mired in doldrums at that time. Following that contract, SHI made a successful entry into the U.S. market in 9 months for the first time nationwide after the company launched the wind power generation project.

In addition, SHI President Roh In-sik declared new green management policies



of SHI in early 2010 for the first time in the shipbuilding industry, and has played a leading role in the development of eco-friendly ships which can reduce greenhouse gas (GHG) emissions by more than 30% and has been at the forefront of exploring new markets abroad to expand the customer base of SHI.

STX Metal won the title of World-Class Producer for 6 years in a row

STX Metal earned the glory of being named World-Class Producer for the 6th consecutive year.

STX Metal said that its Turbo charger for large diesel engine was granted the title of World Top Class Product in the 2010 World-Class Product Certification Award held on December 7 at the Education Cultural Hall in Seoul.

The World-Class Product is the official certification awarded by the Ministry of Knowledge Economy (MKE) to foster and promote excellent products that can help rev up the nation's export engine. It is selected through the review process on the basis of the criteria requiring over \$50,000 in global market share, over \$5 million in annual export, and top-5 ranking in the global market share.

Winning the prize this time, STX Metal is seeing its 6 major products such as the cylinder liner, crankshaft, cargo oil pump module, etc, being named world top class products for the consecutive 6th year, a splendid achievement since its Turbo charge for medium-sized diesel engine earned the title of World-Class Product in 2005.

The prize-winning Turbo Charger for large

diesel engine, which was designated World Top Class Product this time, is the core equipment of ship engine which supplies high-density air necessary for the combustion and cooling inside the cylinder using the combustion gas of engine in order to increase the output of engine.

Yu Cheon-il, President of STX Metal, said, "With our product named as the world top class products for the consecutive sixth

year, we have proved once again our world's best technology and competitiveness in the sector related to the core parts of diesel. We will move ahead with the improvement of quality and the expansion of production facilities to sharpen the competitiveness of our current world top class products and make active investment into new product development in our quest to produce more world class products."

Rockwell Automation held RSTechED Korea

'RSTechED 2010' ran from December 7 to 9 in Daejeon Convention Center (DCC), which is the world's largest training event for the customers, distributors, and partners of Rockwell Automation.

RSTechED, held in various locations across the globe, finally came to Korea after the first RSTechED for 2010 took place on June 6, 2010 in LA, California.

'RSTechED 2010' offers an in-depth look into the comprehensive automation products/solution of Rockwell Automation, and all functions of the integrated architecture, and furthermore, provides opportunities for customers, distributors, and partners to gain hands-on experience with the latest products and strategies related to the manufacturing intelligence including MES.

In many unique technical sessions composed of hands-on labs and presentations/demonstrations, 'RSTechED 2010' provided attendees with a detailed look at various technical aspects. Specifically,

the specialized sessions which target customers in many different industries offered insight into new major products and solutions of 2010, captivating the attention.

The event featured sessions in which a variety of new products were demonstrated and presented, including the reinforced integrated architecture based on Ethernet/IP, ControlLogix L7, FactoryTalk View SE v6.0, and information software.

Besides, specialized sessions were featured, which were tailored to the unique situation of customers in many different industries such as the processing industry, pharmaceutical and biotechnology industry, petrol and gas industry, equipment manufacturing industry.



'RSTechED 2010' of Rockwell Automation which ran from December 7 to 9 in Daejeon Convention Center

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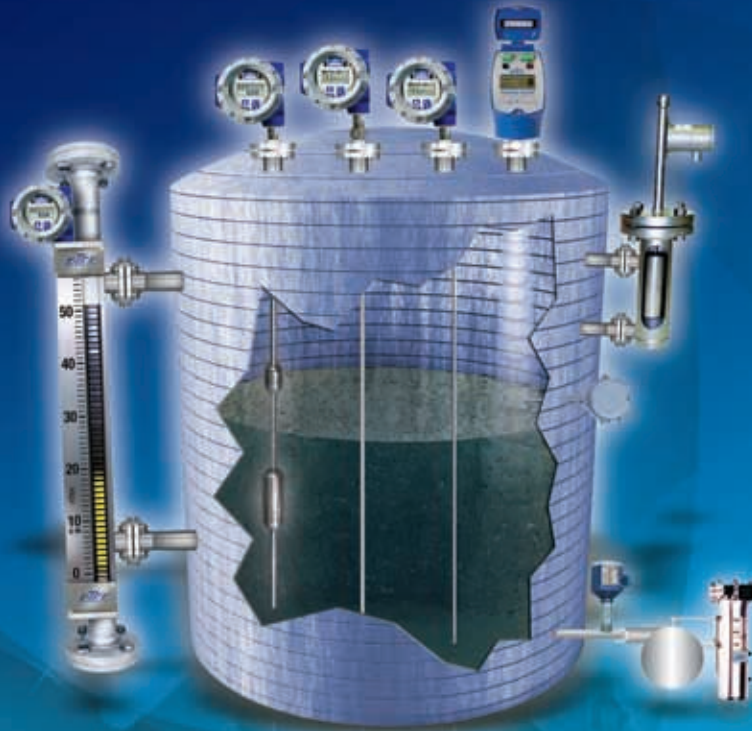
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New Year's Greeting

On the New Year's morning, we extend our heartfelt appreciation to you all who have supported the Monthly Korship.

Major shipbuilders both at home and abroad posted good growth as last year came to a close, aided by the recovery in the shipbuilding industry in 2010 after slumping in the midst of the global financial crisis.

Propelled by that momentum, domestic shipbuilding industry will have to redouble effort to make a greater leap forward in 2011.

This year, the Monthly Korship will continue to do our best to provide in-depth information and marketing support more swiftly in our endeavor to become a partner who supports the advancement of shipbuilding industry.

We wish all the best of luck in your endeavors in 2011.

On the New Year's Morning
All employees of the Monthly Korship

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Shipbuilding industry has entered a strong phase of recovery (1)

Order intake of domestic shipbuilders in 2010

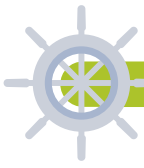
The global shipbuilding market which began to rebound slowly after hitting the bottom in the 2nd quarter of 2009 finally showed strong growth in 2010 with new orders for merchant ships and offshore plants rising to higher levels than expected as the year came to a close.

In addition, major domestic shipbuilders won orders consecutively in late December, demonstrating their status as the leaders of the global shipbuilding industry, and reached or exceeded their annual new order targets of 2010 set at the beginning of the year.

In 2 years after 2008, Hyundai Heavy Industries (HHI) and Daewoo Shipbuilding & Marine Engineering (DSME) surpassed \$10 billion in total order value for 2010, closely followed by Samsung Heavy Industries (SHI) and STX Offshore & Shipbuilding. Specifically, they have achieved an increase in the order inflow from the promising sectors such as very large crude carriers, container ships, offshore plants, cementing the status of the world's leading shipbuilding nation.

The performances of major domestic companies in 2010, including HHI, SHI, DSME, STX Offshore & Shipbuilding, etc, are summarized in terms of order intake as below.





The shipbuilding markets across the globe showed signs of growth from the second quarter of 2009 and achieved strong growth in 2010 as more orders were placed for merchant ships and offshore plants than had been expected at the beginning of the year.

4 major domestic shipbuilders such as Hyundai Heavy Industries (HHI), Daewoo Shipbuilding & Marine Engineering (DSME), Samsung Heavy Industries (SHI), and STX Offshore & Shipbuilding, received consecutive orders as the year draws to an end, solidifying their status as the leaders of world's largest shipbuilding nation.

On December 14, 2010, HHI and DSME successfully secured large-scale orders worth over \$1 billion and surpassed \$10 billion in total order value for 2010. SHI and STX also received orders worth a total of over \$9 billion so far this year.

It is the first time in 2 years that domestic shipbuilders won an accumulated amount of \$10 billion worth of orders. Domestic shipbuilders which enjoyed unprecedented boom in 2007 and 2008 experienced the sharpest fall in order inflow in 2009 since the outbreak of global financial crisis.

HHI received an accumulated amount of only \$5.6 billion worth of orders in 2009, although it accomplished \$25.8 billion in new orders in 2007 and \$22.7 billion in 2008, the largest in history. DSME secured only \$3.7 billion worth of new orders in 2009, although it accomplished \$19.5 billion and \$11.5 billion in 2007 and 2008, respectively. SHI received an accumulated amount of \$1.4 billion worth of orders in 2009, which even falls short of 1/10 of \$21.2 billion and \$15.3 billion recorded by the company in 2007 and 2008, respectively. STX which recorded \$10.2 and \$8.3 billion in new orders in 2007 and 2008, respectively, accomplished only \$2.5 billion in 2009.

Particularly, those shipbuilders reached or exceeded the annual new order target for 2010 set at the beginning of the year, which is an encouraging news to domestic shipbuilders who showed weak performance in 2009. The annual new order target for 2010 for HHI, DSME, SHI, and STX Offshore & Shipbuilding (excluding STX Europe) was \$10.3 billion, \$10 billion, \$8 billion, and \$5.3 billion, respectively.

The outlook for new order growth is even brighter as more orders are being placed for large container ships, LNG carriers, offshore facilities, etc, the sector with a promising prospect.

Industry sources say, "As the tone of shipping market has

become buoyant, ship owners are finally placing more orders for large vessels after postponement, and I expect year 2011 to show strong order growth in sectors such as large container ship, drillship, FPSO, and others."

HHI won orders for 10 VLCCs with annual sales surpassing \$10 billion

On February 8, 2010, HHI signed a contract worth approximately \$1.1 billion with ENI Norge AS of Norway to build the world's largest cylindrical Floating Production, Storage & Offloading Unit (FPSO).

This FPSO, a cylindrical floater type different from conventional ones, will be installed by the end of 2013 in the Goliat field, about 85km northwest of Hammerfest of Norway. This goliath FPSO, which weighs 52,000-ton, will measure 112m in diameter and 75m in height, and can produce and refine 100,000 barrels of oil and 4 million m³ of natural gas per day.

This contract is meaningful as HHI successfully won its bid against prominent global offshore facility companies in Italy, Norway, etc, and will undertake all the project work covering engineering, procurement, construction, onshore commissioning, etc, on the basis of EPC contract.

Following that, HHI was awarded a turn-key construction project worth \$1.4 billion from Daewoo International on February 23 to develop Shwe gas field in Myanmar.

The project aims to develop the Shwe gas fields located about 70km from the western coast of Myanmar. Under the contract, HHI will install 1 unit of 40,000-ton offshore gas platform (capable of producing 500 million ft³ of natural gas per day),



Bird's-eye-view of cylindrical FPSO, the world's first, ordered to HHI on February 8, 2010

underwater production facilities, underwater pipelines, onshore terminal, onshore base, etc, which will be completed by April 2013.

In April alone, HHI received an order for a total of 23 vessels worth \$1.3 billion (including 11 vessels worth \$580 million, ordered to Hyundai Samho Heavy Industries), including 3 Kamsarmax-class very large crude carriers (VLCC) ordered from Restis Group of Greece, LPG carriers, bulk carriers, pure car carriers, and others. Those orders brought the total value of orders received by HHI until the end of April to \$4.3 billion in the shipbuilding and offshore plant sector, which combines

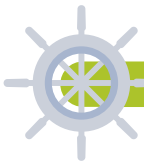
\$1.5 billion in the shipbuilding sector and \$2.6 billion in the offshore plant sector.

Between May and June, HHI won orders for a total of 11 Capesize bulk carriers from various clients such as BHP Billiton (Australia), Golden Bridge Asset Management, Hyundai Merchant Marine (Korea), and SK Shipping (Korea), and furthermore, received the orders for bulk carriers from Daebo Shipping (Korea), Lyras Maritime, Tolani Shipping (India), and Archipelago Shipping (Europe). In addition, HHI secured an order for 2 units of 22,500CBM LPG carriers from Indonesia's state-run Pertamina. Those vessels are worth \$43

Table 1. Order intakes of HHI in 2010

Date	Type of vessel	Size	Unit	Amount (\$)	Client
2010. 2.	Floating Production Storage and Offloading (FPSO)	-	-	110,000,000	Norway / ENI Norge AS
2010. 2. 24	Gas field (Offshore gas platform, underwater production facility, underwater pipeline, etc)	-	-	1,400,000,000	Korea / Daewoo International
2010. 4	Bulk carrier	Kamsarmax class	3 units	112,500,000	Greece / Restis Group
2010. 5	Bulk carrier	82,000DWT	2 units	-	Korea / Daebo Shipping
2010. 5	Bulk carrier	82,000DWT	2 units	-	Lyras Maritime
2010. 5	Bulk carrier	205,000DWT	6 units	396,000,000	Australia / BHP Billiton *
2010. 5	Bulk carrier	81,000DWT	2 units	78,000,000	India / Tolani Shipping
2010. 5	Bulk carrier	180,000DWT	2 units	-	Golden Bridge Asset Management
2010. 5	LPG carrier	22,500CBM	2 units	86,000,000	Indonesia / Pertamina
2010. 6	Bulk carrier	81,000DWT	2 units	-	Europe / Archipelago Shipping
2010. 6	Bulk carrier	180,000DWT	1 unit	60,000,000	Korea / Hyundai Merchant Marine
2010. 6	Bulk carrier	Capesize class	2 units	-	Korea / SK Shipping
2010. 8	Very large gas carrier (VLGC)	-	2 units	152,000,000	International gas trading company
2010. 8	Very large crude carrier (VLCC)	319,000DWT	5 units	537,500,000	China / Brightoil Petroleum
2010. 8	Tanker	195,000DWT	2 units	140,000,000	Turkey / Densa
2010. 9	Very large crude carrier (VLCC)	317,000DWT	2 units	216,000,000	Greece / ASC (Athenian Sea Carriers)
2010. 9. 30	Very large crude carrier (VLCC)	319,000 tons	4 units	428,000,000	Korea / SK Shipping
2010. 11	Tanker (LR2)	112,000DWT	2 units	120,000,000	Kuwait / AMPTC (Arab Maritime Petroleum Transport Company)
2010. 11	Bulk carrier	180,000DWT	2 units (including 1 optional unit)	-	Turkey / Densa Shipping
2010. 11. 25	Very large gas carrier (VLGC)	82,000CMB	1 unit	70,000,000	Korea / SK Shipping
2010. 12. 14	Container ship	13,100TEU	10 units	1,450,000,000	Germany / Hapag-Lloyd

Note : 1. * Vessel chartered to BHP Billiton for 10 years under the long-term contract entered into with Fortis Bank Nedelland, a ship finance company 2. Based on the announcements of HHI and press releases, internal estimation by Monthly Korship



Maersk Edinburgh, the same class with the container ship ordered to HHI on December 14, 2010

million each and scheduled for delivery in the 1st half of 2012. Since August, HHI received many orders in the VLCC sector. HHI clinched an order for 320,000DWT oil tankers from Bright Oil, a Chinese tanker operator, Athenian Sea Carriers (ASC) of Greece, and SK Shipping of Korea, etc, and furthermore, won an order worth about \$152 million for a very large crude carrier from an international gas trading company.

Besides, HHI was awarded a contract in August to build 2 units of 159,000DWT Suezmax tankers, each worth \$70 million, from Densa Shipping of Turkey, and received an order for 2 units of 180,000DWT bulk carriers (including 1 optional vessel) worth \$120 million from the same client.

On November 14, HHI signed a contract worth a total of \$1.45 billion for 10 units of 13,100TEU supersize container ships from Hapag-Lloyd, the operator of the largest container ship fleet in Germany. 6 vessels out of the total 10 were ordered originally in 2008 as 8,600TEU vessels, but will have the capacity for 13,100 TEUs as requested newly by the client. They will be delivered consecutively to the client from July 2012 to November 2013.

Specifically, those orders are considered in the shipbuilding industry to be the signal of full-fledged recovery in the container ship sector in light of the fact that HHI is winning the orders selectively on the basis of its strategy to ensure profitability.

As of December 15, 2010, HHI has received orders for a total of 80 vessels in the shipbuilding and offshore plant sector, valued at \$10.6 billion in all, with an order backlog for 324 vessels worth \$52.7 billion (including the order backlog of Hyundai Samho Heavy Industries).

Meanwhile, Hyundai Samho Heavy Industries (HSHI) secured an order for 2 units of VLCCs - which are said to sell at \$180 million, respectively - in May 2010 from Maritime Holding in Mid East. They will be delivered by 2012. In November, HSHI received an order for 2 units of Suezmax oil tankers from Greek owner NJ Goulandris, an operator of tanker line.

HSHI has won orders for a total of 19 vessels, as of late November, 2010, worth about \$1 billion, and accomplished the operating profit of 19%, which is higher compared to that of 3 major domestic shipbuilders (HHI 15%, SHI 8%, DSME 9%), and is reported to have accomplished a profit, the largest in its history.

According to the industry, the high profitability of HSHI is attributed to the fact that HSHI focuses on high-margin vessels such as oil tankers and container ships and is provided with core parts such as engines from HHI at relatively lower cost, coupled with the joint procurement of backplates, etc, with HHI and Hyundai Mipo Dockyard to slash the cost.

SHI reached annual new order target of 2010 in October first among domestic shipbuilders

SHI accomplished its annual new order target of \$8 billion for 2010 earlier than schedule first among domestic companies as it signed a contract to build 1 unit of Floating Production Unit (FPU) in North America and 1 unit of wind turbine installation vessel for a client in South East Asia.

SHI is considered to have reached its target order values for 2010 earlier than any other domestic shipbuilders mainly because the company was awarded contracts for 20 container ships priced 20% higher on the average than other types of ships and aggressively targeted eco-friendly ship market with its oil tankers outfitted with harmful vapor capture system.

In addition, SHI won a \$550 million worth order in mid December for a drillship from Pride International of the United States. This 96,000-displacement-ton vessel will measure 228m in length, 42m in width, and can drill at a maximum water depth of 12km and is scheduled for delivery by 2013.

This order brings the total number of orders placed with SHI to 75 so far this year, including both ships and offshore plants, worth a total of \$9.65 billion, as of December 15, 2010, surpassing its annual new order target set at the beginning of the year.

In March, SHI received orders for 9 oil tankers from 4 European shipping companies and 1 offshore facility from a



Bird's-eye-view of LNG-FPSO, the largest worldwide, ordered to SHI from Royal Dutch Shell



Very large container carrier ordered to SHI from Evergreen

client in South East Asia, which were valued at a total of \$750 million, and also signed a contract with Royal Dutch Shell to construct 1 unit of LNG-FPSO, the largest worldwide.

This LNG-FPSO will measure 468m in length, 74m in width, and 100m in depth, and weigh 200,000-ton. It will be operating in the offshore gas fields off the coast of Australia from 2016 to produce 3.5 million tons of natural gas every year. The LNG-FPSO will be designed jointly by SHI and France's Technip and built at the Geoje Shipyard.

SHI already signed a long-term supply exclusive contract in late July 2009 to build LNG-FPSOs which will be ordered by Royal Dutch Shell over the upcoming 15 years.

Following that, SHI won a \$500 million worth order in April from a Greek ship owner to build the entire 9 units of 115,000-ton (Aframax class) oil tankers which were ordered for the first time worldwide in 2010.

The construction of those vessels will begin immediately upon the execution of contract because ship owners want earlier delivery to take advantage of the opportunities created by the oil price hike. They will be delivered from the 2nd half of 2011 to July 2012. All of 9 vessels will be built to the identical specification.

Meanwhile, SHI clinched a large-scale order worth \$1.7 billion in July from the Evergreen of Taiwan to construct 10 large container carriers and 9 oil tankers, which were ordered for the first time in 2 years around the globe. Following that, SHI won a \$1.03 billion worth of order in October to build 10 units of container ships, which are the same size as the ones

ordered in July.

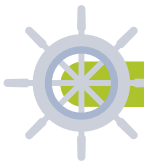
An official from SHI stressed, "It has been the first time for SHI to win a massive order for 20 vessels at a time from one single ship owner since the establishment of the company."

Evergreen, which is the world's top 5 container line, had placed orders for the whole 47 vessels with Japanese shipyards over the last 16 years since 1994, but it is encouraging very much for Korea's shipbuilding industry that Evergreen replaced its 16-year Japanese partner with a shipbuilder of Korea which has the superior technology in building large ships.

In 2010, most of oil tankers and supertanker orders awarded to SHI were 158,000-ton (Suezmax class) tankers. SHI, however, also won orders for shuttle tanker, the oil tanker which transports oil to the onshore base from FPSO, and specialized vessels such as wind turbine installation vessels which can effectively help promote and expand renewable green energy projects in the periods ahead.

Shuttle tanker is a specialized vessel equipped with automatic position control using satellites to maintain the accurate position while oil is loaded on the vessel at sea. SHI won its Green Ship Award from Nor-Shipping 2009 for the shuttle tanker in 2009.

On October 10, SHI clinched an order for 5 units of 100,000-ton shuttle tankers from Vikan Shipping of Norway, which will be delivered consecutively from August 2012 to March 2013. They will be operating in the offshore oil fields of Tupi off the coast of Brazil.



In addition, the wind turbine installation vessel to be built under the contract awarded by a client in South East Asia on October 7 is the world's largest, capable of transporting and installing the 6MW wind turbine at the same time which measure 161m in length and 49m in width.

This vessel enables the wind turbines to be installed at a depth of 75m below the sea level, and can install very large wind turbines of over 10MW-class.

An official from SHI said, "SHI has tapped into the wind turbine installation sector, targeting the wind turbine market

Table 2. Order intakes of SHI in 2010

Date	Type of vessel	Size	Unit	Amount (\$)	Client
2010. 3	Oil tanker	158,000 tons	2 units	134,000,000	Sweden / Stena Bulker
2010. 3. 9	Oil tanker	-	9 units	750,000,000	4 European clients
	Offshore facility	-	1 unit		South East Asia
	LNG-FPSO*	-	1 unit	1,180,000,000	U.S.A / Royal Dutch Shell
2010. 3	Oil tanker	158,000 tons	2 units	140,000,000	Norway / Vikan Shipping
2010. 4	Oil tanker	158,000 tons	1 unit	-	Greece / Centrofin
2010. 4. 15	Oil tanker	158,000 tons	2 units	130,000,000	Greece / NAT
2010. 4. 22	Oil tanker	115,000 tons	9 units (including 3 optional units)	500,000,000	Greek client
2010. 5	LNG carrier	-	2 units	200,000,000	U.S.A / Chevron
2010. 5	Oil tanker	158,000 tons	2 units	-	Greece / Target Marine
2010. 5	Oil tanker	158,000 tons	1 unit	70,000,000	Sweden / Stena Bulker
2010. 6. 10	Oil tanker	158,000 tons	5 units	340,000,000	Greece client
2010. 6	Oil tanker	158,000 tons	2 units	130,000,000	Norway / Viken Shipping
2010. 6	Oil tanker	158,000 tons	4 units	270,000,000	Diamond S Shipping
2010. 6	Oil tanker	158,000 tons	3 units	-	Greece / N.S LEMOS
2010. 6	Oil tanker	158,000 tons	4 units	271,200,000	Malaysia / American Eagle Tanker (AET) **
2010. 7. 2	Container ship	8,000TEU	10 units	1,700,000,000	Taiwan / Evergreen
	Oil tanker	-	9 units		Taiwan / Evergreen
2010. 7	Shuttle tanker	105,000DWT	2 units	-	Malaysia / American Eagle Tanker (AET) **
2010. 8	Offshore wind turbine installation vessel	-	2 units	-	Hong Kong / Swire Pacific Offshore
2010. 9	Oil tanker	158,000 tons	2 units	140,000,000	Greece / Cardiff
2010. 9. 10	Shuttle tanker	100,000 tons	5 units	63,000,000	Norway / Vikan Shipping
	Tension Leg Platform (TPL)	-	1 unit		U.S.A
2010. 9. 29	Container ship	8,000TEU	10 units	-	Taiwan / Evergreen
2010. 10. 7	Floating Production Unit (FPU)	-	1 unit	800,000,000	North America
	Wind turbine unit installation vessel	-	1 unit		South East Asia
2010. 11. 11	Drillship	-	2 units	1,080,000,000	Norway / Seadrill
2010. 12. 14	Drillship	-	5 units	550,000,000	U.S.A / Pride International

Note : 1. *Joint bidding with Technip 2. **Affiliate of MISC Berhad, a state-run company of Malaysia, in the field of tanker 3. Based on the announcements of SHI and press releases, internal estimation by Monthly Korship

which has recorded an annual growth rate of 13%, and anticipate a synergic effect created by the green technology of wind power generation and shipbuilding.”

In relation to the offshore plant, SHI received an order for 1 unit of Tension Leg Platform (TLP), an offshore facility, from a client of the United States on September 10 and an order for 2 units from Seadrill, a Norwegian offshore drilling company, on November 11.

TLP, which was ordered to SHI, will be connected to the 1,000m-deep sea floor with high tensile strength special pipes. This offshore production facility can immediately return to the original position even after being shaken left and right by waves at sea.

In addition, the drillships, a 96,000-displacement-ton vessel measure 220m in length, 42m in width, and can drill at a depth of up to 11km under water. The vessels can drill even in the extreme marine conditions, and powered by electricity, is eco-friendly. From 2013, they will be operating in the offshore oil fields in the Gulf of Mexico and off the coast of West Africa.

DSME enjoys an upswing in new orders for offshore plants

DSME exceeded its order target of \$10 billion for 2010 as it entered into an agreement with a South East Asian country on December 14, 2010 to build a warship. On that day, DSME signed a contract with a local shipbuilder for the construction of navy warships and transfer of technology. The contract is valued at \$1 billion.

DSME will undertake the design of the warships, build and supply the hulls in the form of block, and provide a package of various equipment, including the weapon systems, etc. The warships will be constructed and outfitted at the local shipyard through the transfer of technology, and are scheduled for delivery to the local navy from 2013. Importantly, this contract lays the cornerstone for the full-fledged export of warships based on the complex business model built around the collaboration with local shipyard.

DSME, which has built the largest number of warships and submarines both nationwide and worldwide, received an order for the No. 6 submarine of Jangbogo II-class type 214 submarines of the Korean Navy on September 20, 2010, and won an order for 1 unit of Auxiliary Towing Salvage (ATS-II) from the Korean Navy on October 26.

DSME received the orders in a row throughout 2010. It made

a good start for the new year of 2010 by winning a contract from Angelicoussis Shipping Group on January 9, 2010 to build 2 supersize oil tankers and 2 bulk carriers. On that day, DSME also signed a contract with a global oil major to construct 1 unit of oil production facility. Both deals are worth a total of approximately \$750 billion.

In March, DSME secured an order worth \$210 million from the Greek ship owner Almi Tankers S.A. to construct 2 supersize oil tankers. The vessels will measure 333m in length, 60m in width, and can carry up to 320,000 tons of oil.

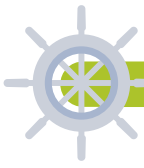
In February, DSME inked a contract with Sociedade Nacional de Combustiveis de Angola (SONANGOL), the state-run oil company of Angola, to build 5 units of 160,000-ton crude oil carriers (274m in length, 48m in width). DSME bagged another contract in July from American Eagle Tanker (AET), a Malaysian-owned tanker operator, for 4 units of supersize 320,000-ton crude oil carriers (333m in length, 60m in width). These vessels will be delivered by 2013.

In July, DSME was awarded a contract from Kuwait Oil Tanker Company S.A.K. (KOTC), a Kuwait-based state-run shipping company, to build 2 units of Aframax-class product carriers and received another order for 2 units of 75,000-ton chemical tankers from an European client. This product carrier measures 250m in length, 42m in width, and 21.5m in height, can sail with a speed of 15 knots carrying 110,000 tons of oil products. The chemical tankers to be built by DSME are the largest of all existing chemical tankers, and will be delivered in 2012 and 2013, respectively.

2010 was a meaningful year for DSME as it saw the first tan-



A vessel of same type as the 8,400TEU large container ship ordered to DSME in July 2010 from a prominent container ship operator



Bird's-eye view of Auxiliary Towing Salvage (ATS-II) ordered to DSME

gible results of DSME's localization strategy for Russia. On October 21, Zvezda-DSME, a joint enterprise between DSME and a Russian company, received an order worth about \$800 million from Sovcomflot, a state-owned shipping company in Russia, to build a total of 12 vessels (including the vessels to

be built in Russia and optional ones) of crude oil carriers and product carriers.

These vessels can carry 120,000 tons of crude oil and refined oil and are optimized for transportation in the geographic environment of Russia, and will be delivered consecutively by 2014.

DSME made an advance in the offshore plant sector in 2010, winning the orders in a row. The company received an order from the South Korean consortium led by Korea National Oil Corporation on April 9 to construct a drillship, the first order in this sector for 2010.

This drillship will be used for the oil exploration project - a project in which the aforesaid consortium is currently partaking - in the Zhambyl oil field in Kazakhstan. The vessel can drill at a maximum depth of 6,000m under water and will be built into a barge type suitable for operations in shallow water as deep as about 5m.

In June, DSME clinched an order worth approximately \$600 million from Allseas Group S.A. of the Netherlands for 1 unit of very large platform installation/removal & pipe-lay vessel.

An official from DSME said, "This vessel is the world's first

Table 3. Order intakes of DSME in 2010

Date	Type of vessel	Size	Unit	Amount (\$)	Client
2010. 1 . 9	Oil tanker	32,000 tons	2 units	750,000,000	Greece / Angelicoussis Shipping Group
	Bulk carrier	180,000 tons	2 units		
	Fixed oil production platform	-	1 unit		Oil company
2010. 2. 20	Crude carrier	160,000 tons	5 units	KRW 400,000,000,000	Angola / SONANGOL (Sociedade Nacional de Combustiveis de Angola)
2010. 3. 30	Very large crude carrier (VLCC)	-	2 units	210,000,000	Greece/ Almi Tankers S.A.
2010. 4. 9	Drilling rig	-	1 unit	-	Korea / Korea Consortium*
2010. 5	Bulk carrier	82,000DWT	2 units	76,000,000	Hong Kong / KC Maritime
2010. 6	Bulk carrier	82,500DWT	2 units	70,000,000	Greece / Carras
2010. 6. 14	Platform installation/removal & pipe-lay vessel	-	-	600,000,000	Netherlands / Allseas Group SA
2010. 6	Tanker	Suezmax class	8 units	480,000,000	Blue Ocean Funding
2010. 6. 17	Very large oil carrier (VLOC)	400,000 tons	3 units	350,000,000	Asian client
2010. 7. 5	Product carrier, chemical tanker	75,000 tons	2 units/2 units	300,000,000	Kuwait / KOTC (Kuwait Oil Tanker Company S.A.K.), European client
2010. 7	Chemical tanker	75,000DWT	4 units (including the optional unit)	260,000,000	Norway / Odfjell Saudi Arabia / NCC **

2010. 7. 16	Pipe-laying vessel	-	1 unit	-	Netherlands / Heerema Offshore Services B.V
2010. 7. 20	Very large crude carrier (VLCC)	320,000 tons	4 units	440,000,000	Malaysia / AET (American Eagle Tanker)
2010. 7. 21	Container ship	8,400TEU	10 units	1,050,000,000	Global prominent container ship operator
2010. 7. 26	Ferry	-	1 unit	KRW 310,000,000,000	Tunisia / COTUNAV (Compagnie Tunisienne de Navigation)
2010. 8. 1	Floating Production, Storage & Offloading Unit (FPSO)	-	1 unit	2,150,000,000	Oil major group
	Offshore plant facility, Onshore plant module	-	1 unit	-	U.S.A oil company
2010. 8. 17	Larger container ship	17,000TEU	2 units	230,000,000	Singapore / NOL (Neptune Orient Lines)
2010. 8. 23	Floating Production, Storage & Offloading Unit (FPSO)	-	1 unit	1,810,000,000	France / Total
2010. 8. 26	Ethylene carrier	12,000m ³	8 units	320,000,000	Singapore / Woodside Holding International shipping
2010. 9. 20	214-class submarine	1,800 tons	1 unit	-	Korea / Korean Navy
2010. 10. 21	Crude carrier, product carrier	-	12 units	800,000,000	Russia / Sovcomflot
2010. 10. 26	Rescue ship	-	1 unit	140,000,000	Korea / Defense Acquisition Program Administration
2010. 11. 2	Offshore platform for gas processing	-	1 unit	510,000,000	U.S.A / Chevron
2010. 11. 16	Tension Leg Platform (TLP)	-	1 unit	KRW 240,000,000,000	Oil major group
2010. 12. 8	Drillship, semi-submersible drilling rig	-	each 1 unit	1,080,000,000	Drilling company in the Americas
2010. 12. 14	Warship	-	1 unit	1,000,000,000	South East Asia

Note: 1. *Led by Korea National Oil Corporation 2. **1 unit for each shipbuilder 3. Based on the announcements of DSME and press releases, internal estimation by Monthly Korship

new-concept platform installation/removal & pipe-lay vessel which can lift and carry even the topside of platform at a time for the installation and dismantling, unlike the conventional vessels.”

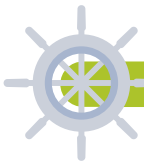
In July, DSME obtained an order from Heerema Offshore Services B.V. of the Netherlands to construct 1 unit of pipe-laying vessel. This vessel will measure 215m in length, 46m in width, and weighs 32,000 tons, and will be mounted with a 4,000-ton crane and a large pipe reel, etc, enabling the pipes to be laid up to 3,000m under water.

On August 1, DSME secured an order from a major oil group, currently operating in West Africa, to build 1 unit of FPSO, and another order from a U.S. oil company to construct 1 unit

of floating plant facility and module-type onshore plant. The contracts are valued at a total of approximately \$2.15 billion. These facilities will be completed by 2013. Specifically, this FPSO will measure 305m in length and 61m in width and weighs 110,000 tons, and can produce 160,000 barrels of crude oil and 6.5 million m³ of natural gas per day and is capable of storing 1.8 million barrels of crude.

On August 23, DSME signed a contract with Total, one of the world's largest energy companies, based in Paris, France, to build 1 unit of FPSO which has the production capacity of 160,000 barrels of crude oil and 6.5 million m³ of natural gas per day. This ordered facility will be delivered in May, 2013.

In November, DSME was awarded a contract from Chevron,



the oil major of the United States, to build 1 unit of offshore platform for producing oil and natural gas, and received another from a global oil major to construct a TPL (hull).

Specifically, the offshore platform ordered from Chevron will measure 62.5m in length, 35m in width, and weighs 18,758 tons, and aims to expand the natural gas processing capacity of existing production facility located on Angola's 'Block O' offshore oil field. Including this order, DSME has received a total of 7 orders for offshore platforms to be installed in the sea off the coast of Angola.

On December 8, DSME received a new order worth \$1.08 billion for a drill ship and a semi-submersible drilling rig from a drilling company in the Americas, which will be delivered in March 2013 and August 2013, respectively.

The drill ship, which will measure 243m in length and 42m in width, will be built into DSME-10000 type, a model developed independently by DSME in 2007. The semi-submersible drilling rig is a supersize model which measures 118m in length, 97m in width, and 134m in height. Using the newest drilling system, both can operate at a maximum depth of 10,000 feet under water and can drill to maximum depth of 40,000 feet.

In addition, DSME won an order worth a total of KRW 1 trillion 200 billion for 10 units of large container ships with the capacity of 8,400TEU from one of the world's most prominent container ship operators in July, which was followed by its announcement of \$230 million contract for 2 units of large

container ships with the capacity of 10,700TEU from Neptune Orient Lines (NOL) of Singapore in August, demonstrating an outstanding performance in the container ship sector.

In July, DSME obtained an order from Compagnie Tunisienne de Navigation (COTUNAV), Tunisia's state-run shipping company, to build 1 unit of luxury ferry of the largest size worldwide, which will measure 210m in length and 30m in width.

An official from DSME said, "DSME has become the only domestic shipbuilder who won its bid against prominent European shipyards specializing in the construction of passenger ship, and this represents a recognition of DSME's excellent ability to build passenger ships from overall perspective, such as shipbuilding technology, financing ability, interior outfitting ability, and others."

In August, DSME received an order for 8 units of 12,000m³ ethylene carriers from Singapore-based Woodside Holding International Shipping. These vessels incorporate the semi-refrigerated system which makes both temperature and pressure decreased at the same time to maximize the efficiency of liquefaction, and can carry ethylene at temperatures of -104°C below zero. Securing this contract, DSME is poised to make its first entry into the market for small and medium-sized chemical tankers with the capacity of less than 20,000m³.

STX sees strong order intake, bolstered by the robust performance of STX Europe

Shipbuilding divisions of STX have accumulated orders for a total of 121 vessels valued at \$9 billion in all, as of December 15, 2010, propelled by the excellent performance of STX Europe in 2010.

Since STX Europe signed a letter of intent in March with MSC Cruises, a joint venture formed by Italy and Switzerland, for the construction of a 140,000-ton (GT) very large cruise ship, STX Europe has won orders for a total of 4 cruise ships in 2010. This order brings the total number of orders for cruise ships awarded to STX from MSC Cruises to 11.

This ship will measure 330m in length and have 1,751 cabins to accommodate about 3,500 passengers, and is scheduled for delivery in mid 2012.

In July, STX secured an order for 1 unit of 139,400-ton (GT) large cruise ship from GNMTC, a state-run shipper of Libya. This vessel will measure 333m in length, 38m in width, and have a total of 2,471 cabins and is scheduled for delivery by late 2012.



Drilling rig of DSME



Platform Supply Vessel



Anchor Handling Tug Supply Vessels

Following that, STX inked a contract worth \$480 million with Viking Line of Finland in October to build 2 units of 57,000-ton (GT) next generation eco-friendly ferries.

This vessel will measure 210m in length and have 870 cabins, and can sail at a maximum speed of 23 knots and is scheduled for delivery by early 2013. Specifically, this vessel is an eco-friendly vessel which dramatically reduces harmful emissions in compliance with more stringent environmental regulations, and designed to minimize the noise generation and wave formation to ensure excellent operation in the shallow water archipelago environment of the Baltic Sea.

In 2010, STX Europe saw strong order intake from the Platform Supply Vessel (PSV) sector. STX Europe was awarded a contract from Norway-based Simon MØkster Rederi for 1 unit of PSV and another from Rem Offshore, also Norway-based, for 2 units of PSVs in May.

Between June and August, STX Europe clinched an order from Norway-based Solstad for the construction of 1 unit of LNG-powered Supply Vessel and another from Island Offshore, also Norway-based, to build 2 units of LNG-powered PSVs. Specifically, these vessels are powered by Liquefied Natural Gas (LNG), and thus can dramatically reduce harmful emissions such as NOx or CO₂. They will be delivered in the 4th quarter of 2011 and 2nd/3rd quarter of 2012, respectively.

All PSVs ordered to STX Europe from the Norway-based shippers meet the environmental standards of DNV (Det Norske Veritas), a classification society.

STX Europe received an order in August from NorSkan Offshore of Brazil to build 2 units of Anchor Handling Tug Supply Vessels (AHTS). AHTS tows the offshore drilling facili-

ties to a location at the sea and positions the drilling facility accurately.

The vessels ordered to STX Europe will measure 93m in length and 22m in width, and is scheduled for delivery in 2012 and 2013, respectively.

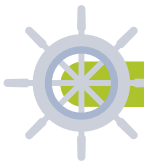
An official from STX Europe said, "We have developed a new ship design enabling the stable drilling even in deepwater, and this new design will be built into these vessels for the first time."

Meanwhile, STX OSV, the offshore vessel building arm of STX Group, secured an order on November 11 for the construction of 4 units of PSV from Norway-based Farstad Shipping, an international supplier of platform supply vessels after the company was listed on the Singapore Exchange.

These vessels will measure 81.7m in length and 18m in width and can accommodate about 30 persons. They will be delivered consecutively from 2012 to 2013.

In relation to the offshore plant, STX Offshore & Shipbuilding was awarded a \$250 million contract on August 6 from Noble Drilling Holding, a U.S. company specializing in the offshore drilling, to construct the hullside of drillship. This drillship order was placed for the first time around the globe in 2010, and the total cost of construction is \$550 million. This drillship ordered to STX Offshore & Shipbuilding will measure 189m in length and 32.2m in width, and can sail at a speed of about 11 knots. It can drill at a maximum depth of 12,000m and will be delivered by 2012.

Meanwhile, STX Europe won a bid in March to build 3 units of Special Purpose Vessels which are designed to meet the requirements for the salvage, rescue and towing operations including fire fighting and pollution prevention. In May, STX



Europe won an order from OAO Sovcomflot, Russia's largest state-run shipper, for the construction of 1 unit of Oil Spill Response Icebreaker. Following that, STX Europe secured an order in July worth a total of \$536 million from Transpetro

of Brazil to build 8 units of LPG carriers.

In relation to the icebreaker, STX Europe clinched an order in August from SC Circle Marine Invest of Kazakhstan to build 2 units of icebreakers. These vessels will be 65m in length, and

Table 4. Order intakes of STX Offshore & Shipbuilding in 2010

Date	Type of vessel	Size	Unit	Amount (\$)	Client
2010. 1. 11.	Bulk carrier	57,300DWT	4 units (including 2 optional units)	-	Turkey / Densa Shipping
2010. 1	Bulk carrier	81,000 tons	2 units (including 1 optional unit)	-	European client
2010. 1.	Bulk carrier	-	2 units	72,000,000	Greece / E Nomikos
2010. 2. 9	Tanker	50,800 tons	2 units	70,000,000	Italy / L.G.R.
2010. 2	Platform supply vessel (PSV)	-	1 unit	KRW 80,000,000,000	Europe
2010. 2	Platform supply vessel (PSV)	-	1 unit	-	Norway / Simon MØkster Rederi
2010. 3. 2	Cruise	140,000GT	-	-	MSC Cruise*
2010. 3. 8	Bulk carrier	37,000 tons	4 units (including 2 optional units)	-	Korea / Segyero Ship Finance
2010. 3. 10	Bulk carrier	58,000 tons	3 units (including 1 optional unit)	-	Korea / Dooseong Shipping
2010. 3. 22	Bulk carrier**	58,000 tons	2 units	-	Turkey / Densa Shipping
2010. 3. 26	Special purpose vessel	-	3 units	-	-
2010. 4. 7	Bulk carrier	Kamsarmax class	1 unit	-	Greek client
2010. 4. 18	Bulk carrier	80,500 tons	1 unit	-	Singaporean client
2010. 5. 4	Bulk carrier	58,000 tons	4 units	-	European client
2010. 5. 12	Bulk carrier	83,000 tons	2 units	-	European client
2010. 5. 12	Platform supply vessel (PSV)	-	1 unit	170,000,000	Norway / Simon MØkster Rederi
2010. 5	Multi-purpose vessel		2 units		Italian client
2010. 5. 26	Platform supply vessel (PSV)	-	2 units	NOK 750,000,000 (KRW 142.5 billion)	Norway / Rem offshore
2010. 5	Oil spill response icebreaker	-	1 unit	-	Russia / OAO Sovcomflot
2010. 6. 17	Platform supply vessel (PSV)	-	1 unit	68,000,000	Norway / Solstad
2010. 6. 17	Bulk carrier	57,300 tons	3 units (including 1 optional unit)	-	European client
2010. 6. 24	Tanker	-	6 units (including 2 optional units)	-	Singapore / Tanker Pacific Management Pte
2010. 6	Product carrier	-	2 units	90,000,000	Norway / JO Tankers
2010. 6	Bulk carrier	80,000 tons	2 units	72,000,000	Greece / John Samoas
2010. 7. 1	Cruise	139,400 tons (GT)	1 unit	-	Libya / GNMTC

2010. 7. 13	LPG carrier	12,000CBM	2 units	53,600,000	Brazil / Transpetro
		7,000CMB	4 units		
		4,000CMB	2 units		
2010. 8. 9	Drillship		2 units	250,000,000	U.S.A / Noble Drilling Holding
2010. 8. 11	Anchor handling tug supply vessel	-	2 units	200,000,000	Brazil / NorSkan Offshore
2010. 8. 25	Icebreaker tug	-	2 units	NOK 450,000,000K (about KRW 85.4 billion)	Kazakhstan /JSC Circle Marine Inves
2010. 8. 27	Platform supply vessel (PSV)	-	2 units	NOK 900,000,000 (about KRW 171 billion)	Norway/ Island Offshore
2010. 8	Bulk carrier	83,000 (Karmsarmax class)	2 units	80,000,000	Turkey/ Densa Shipping
2010. 8	LNG-platform supply vessel	-	-	KRW 170,000,000,000	Norway / Island Offshore
2010. 9. 10	Chemical tanker	-	8 units (including 2 optional units)	370,000,000	European client
2010. 9	Bulk carrier	82,000DWT	2 units	80,000,000	Turkey / Densa Shipping
2010. 9	Platform supply vessel (PSV)	-	1 unit	-	Norway / Olympic Shipping
2010. 9	Tanker	75,000DWT	6 units	270,000,000	European client
2010. 9. 14	Bulk carrier	57,700 tons (Supramax class)	3 units (including 1 optional unit)	-	European client
2010. 10. 12	Container ship	130,000TEU	10 units (including optional units)	1,400,000,000	European client (presumed to be Zodiac Maritime)
2010. 10. 26	Cruise ferry	57,000 tons(GT)	2 units (including 1 optional unit)	80 million Euro (about KRW 75 billion)	Viking Line
2010. 11. 18	Platform supply vessel (PSV)	-	4 units	NOK 1,300,000,000 (KRW 247 billion)	Norway / Farstad Shipping
2010. 11. 23	Container ship	65,000TEU	3 units	240,000,000	India / SCI (Shipping Corporation of India)
2010. 12. 14	Open Hatch general Cargo Carrier (OHGCC)***	57,000 tons	20 units	912,000,000	Korea / STX Pan Ocean
2010. 12. 16	Polar region icebreaker	-	2 units	200,000,000	Russia / Sovcomflot

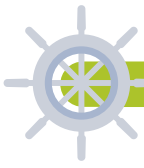
Note: 1. *Joint venture of Italy and Switzerland 2. **Additional optional units for January 3. ***Joint obtainment of order of STX Offshore & Shipbuilding, STX Dalian Shipyard 4. Based on the announcements of STX and press releases, internal estimation by Monthly Korship

16.4m in width, and are scheduled for delivery in 2011. In December, Arctech Helsinki Shipyard Oy, which was formed by STX Finland and Russia's state-owned United Shipbuilding Corporation (USC), clinched an order for 2 units of polar region icebreakers from Sovcomflot, Russia's state-owned shipper.

These vessels will measure 99.2m in length and 21.7m in

width and weigh 3,950 tons. The newbuilds will be delivered consecutively from 2013, and after delivery, put into operation for energy exploration and drilling on Sakhalin Island in the Russian Far East.

Meanwhile, STX Offshore & Shipbuilding obtained a newbuild order, the first one for 2010, on January 11 from Densa Shipping in Turkey for 4 units (including 2 optional vessels) of



MSC Splendida, the sister ship of the cruise ship ordered to STX Europe from MSC

57,300DWT bulk carriers.

These vessels will measure 190m in length, 32.3m in width, and 18.5m in height, and can sail at a speed of 14.5 knots. They will be delivered consecutively from 2011. Particularly, STX Offshore & Shipbuilding showed good performance in the sector of bulk carrier in 2010. It has won orders for bulk carriers of various sizes, including Kamsarmax-class and Supramax-class vessels, from a variety of ship owners such as Global Marine Finance (Korea), a ship fund operator, Duseong Ship (Korea), ship owners of Singapore, Greece, and Europe, etc, since it clinched the first order for 2010 in January.

In the sector of tankers, STX Offshore & Shipbuilding received an order for 2 units of 50,800-ton tankers from L.G.R. (Italy) and another for 6 units (including 2 optional vessels) of 74,500-ton tankers (Crude/Product Oil Carrier) from Tanker Pacific Management Pte (Singapore) in June. The vessels ordered from L.G.R will measure 183m in length, 32.2m in width, and 19.1m in height, and can sail at a speed of 15.2 knots. The newbuilds will be delivered in 2012. The vessels ordered from Tanker Pacific Management will measure 228m in length, 32.24m in width, and 20.65m in height, and can sail at a speed of 15.0 knots. The newbuilds will be delivered consecutively from late 2012.

Meanwhile, STX Offshore & Shipbuilding inked a \$1.4 billion contract with an European ship owner in October to construct 10 units of very large container ships (including the optional vessels) with a capacity of 13,000TEU. The vessels will mea-

sure 365m in length, 48m in width, and 30m in height, and has the deck which is 3.5 times larger than a soccer field. They will be delivered consecutively from the 2nd quarter of 2013.

STX Dalian Shipyard also secured an order for container ships. STX Dalian Shipyard entered into a contract in November with Shipping Corporation of India (SCI), a state-run shipper of India, to build 3 units of 6,500TEU container ships. The contract is worth \$240 million. The vessels will measure 299m in length, 40m in width, and 24.4m in height. They will be delivered consecutively from 2013.

Meanwhile, STX Offshore & Shipbuilding and STX Dalian Shipyard successfully won the bid in November to build 20 units of Open Hatch General Cargo Carriers (OHGCC) with the capacity of 57,000DWT for STX Pan Ocean. These vessels will measure 199m in length, 32.26m in width, and 19.30m in height. 10 units will be built at the Jinhae Shipyard of STX Offshore & Shipbuilding and another 10 units will be constructed at STX Dalian Shipyard. The newbuilds are slated for delivery consecutively from 2012 to 2014.

An official from STX Offshore & Shipbuilding said, "It cannot be overemphasized that the synergy between us and STX Pan Ocean, the global super blue-chip shipper of STX - Group, was crucial in our winning this order, as in the case of the contract awarded to us in 2009 for the construction of very large ore carrier (VLOC)."

< to be continued >

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The leader in compressed air treatment system



Lee Byeong-seung,
CEO of SPX Flow Technology Korea

SPX Flow Technology Korea is a veteran manufacturer of compressed air dryers supplying products to all industries since its foundation in 1987. In the recent years, the company is even further accelerating growth as well as preempting markets by strengthening large and custom-order engineering projects in addition to existing product lines. The company also plans to target domestic South Korean markets in shipbuilding, power production and energy, and EPC through cooperation with SPX Korea founded in November 2010.

SPX Flow Technology Korea Co., Ltd.

SPX Flow Technology Korea (SPX FT Korea), the expert in compressed air treatment system, started its history in 1987 under the name of Jeyang Industry importing and distributing dryers and filters for compressed air. As imported products gradually lost price advantages year after year, the company started manufacturing their own products and changed company brand name to JEMACO around 1994. Three years later in 1997, the company launched a joint venture with Flair, US, now part of SPX Group, under the name JEMACO-Flair. In 2008, the company once more changed its name to SPX Flow Technology Korea, still used today to reflect the expanded activities covering Asia-Pacific markets for the overall management of sales, marketing, production, etc of various SPX Dehydration brands such as Hankison, Deltech, PPC, Delair, and KEMP in addition to JEMACO.

“As we were using JEMACO-Flair as our company name while our product brand is also JEMACO, it was often confusing for our clients when we wanted to sell other SPX brand products”, explained Lee Byeong-seung, CEO of SPX Flow Technology Korea. “We also thought the name limitation should be removed as we were expanding all over the Asia-Pacific region.”

He also said, “We at SPX FT Korea aim to be the cornerstone to help the sales of various products under SPX brands including air dryers and air filters.”

SPX FT Korea continues to provide highest-quality products and services to domestic South Korean clients through R&D and exchanges of latest technologies and information, manufacturing cost management, and so on with affiliates utilizing its global network of SPX group.

Compressed Air dryers indispensable for modern ships

SPX FT Korea is the expert in manufacturing compressed air systems and air dryers that are essential in all industrial sites



Recently released refrigerated dryers - HXK series



performance.

There are also new product lines of HXK series and PSK series for ships. As explained above, the HXK series prevents rust and corrosion due to its patented stainless steel plate heat exchangers providing the best heat exchange efficiency. With its compact design, it also reduces cost by requiring less installation space. The product comes with digital control monitors that are easy to use.

Using part of the dry air as recycle

air, the PSK series are desiccant air dryers providing ease maintenance due to simple design without requiring heat or other electric control panel.

Most of the ships built recently adopt pneumatic control systems to retain maximum safety with the fewest navigation crews with the help of high-technology equipment and facilities. The system generates compressed air, which includes concentrated water and oil, dust, and other matters that can cause the malfunctioning or troubles in various devices and facilities. The installation of air dryers to remove them is essential.

Preempting engineering project market

Compressed air dryer market itself may be already in its mature phase globally. However, on a closer look, the demand of the market requiring ever-refining processes and the advancement of technologies of the industry continues to grow for compressed air cleaning systems for large-size products often called engineering projects.

CEO Lee Byeong-seung says, "For existing product categories in their mature phase, we continue to develop new products and generate brand images to enhance satisfaction in quality and services further. Moreover, we are spreading the corporate image of ours as the global expert brand through technological exchanges among various affiliates for engineering project areas that are in growth phase such as large-size type products and custom-order type products."

Especially for large-size type engineering projects, it is common in the air dryer industry to expand market, as it is highly profitable once sales stabilize for desiccant air dryers. SPX FT Korea built their second factory in 2007 ahead of competing

of the world. The primary products are refrigerated air dryers, desiccant air dryers, and large-scale engineering projects. SPX FT Korea has been especially strong in refrigerated air dryer manufacturing. Small-size type TXK series was the steady seller of SPX FT Korea after its launch in early 2003. They enjoyed high customer satisfaction rates due to the low production defect rate of 1-2%. Static condensers instead of cooling fans helped to reduce both noise and defects from fan motors significantly. It is also the first product to recycle waste heat to condense refrigerants.

SPX FT Korea recently introduced refrigerated mid-to-large-size HXK series based on integrated stainless steel plate heat exchangers. SPX FT Korea expects it to become another steady seller after TXK series with a visually pleasing but practical design as well as providing high efficiency and high



Compressed air dryers of JEMACO, SPX



The headquarter building and the second factory of SPX Flow Technology located in Gijang-gun, Busan

companies. The first factory concentrates on refrigerated air dryers while the second factory produces large-scale engineering products and desiccant air dryers. The strategy is to allow each manufacturing line to specialize by focusing on different manufacturing capacities.

The addition of SPX FT Korea's second factory resulted in the expansion of human infra from onsite engineers to technological research personnel and the increase in manufacturing capacity culminating in a substantial increase in the sales share of desiccant air dryers.

"We expect the largest sales and profits since founding for this year. We have also secured a considerable portion of 2011 sales volume", explains CEO Lee Byeong-seung.

Another differentiating factor of SPX FT Korea is its world-first air dryer automation line installed in their first factory. All air dryer manufacturing lines globally adopt fixed lines. SPX FT Korea focused on the fact that air dryers and air conditioning systems are similar in component configuration and principles before developing and introducing their own automation lines. After the installation of automation lines, the productivity increased four to five times for large-size products and over ten times for small-size products. Moreover, the precision and reliability also increased for such products.

Presently, SPX FT Korea supplies OEM products to affiliates of SPX Group in the US and European region, sells through distributors in Asia, Africa, and Australia, and exports through large-size engineering projects of Korean large businesses. Especially notable is it won the first-of-the-industry the honor

of 10-million-dollar-export tower on the Day of Trade in 2010. "To this date, it is also the first record among our industry to receive one-million-dollar-export tower award, three-million-dollar-export tower award, and five-million-dollar-export tower award successively", added CEO Lee Byeong-seung.

Strengthening customer support

CEO Lee Byeong-seung also said, "As SPX FT Korea was headquartered geographically in Busan until now, there were customer complaints that responses to service requests were slow in other regions. In addition, there was criticism that we were neglecting our domestic clients as we focused on export rather than domestic sales."

In view of this, the Customer Support Team launched in early 2008 reflects the company's determination to strengthen customer service to demonstrate SPX FT Korea is returning to their first resolutions.

With the launch of Customer Support Team, SPX FT Korea continues to take further efforts to satisfy customers providing information to customers in advance and listen to their complaints in addition to coping with product defects.

CEO Lee Byeong-seung also added, "Currently, South Korean domestic market accounts for just 2 to 3 % in the SPX Group's overall sales. That shows how removed we are in marketing capacity and market approach, but that also means there are limitless possibilities for us. We look at the prospect in South Korean domestic market positively and will make it come true."



New Seoul office of SPX Korea opened in November, 2010

SPX Korea launches new Seoul office in November 2010

SPX Korea opened their new Seoul office on November 22, 2010. SPX Korea will cover all domestic industries except Dehydration business, especially concentrating on the shipbuilding industry's shipyards that account for about 40% of the global market share, and EPC area that are aggressively expanding their global market presence for oil and gas, and power industries.

CEO Lee Byeong-seung said, "South Korea has huge potential in the global market of shipbuilding, power and energy, and EPC. Accordingly, SPX expects to witness increases in business sector volumes in the domestic market. Considering our true potential, SPX believes, we can expect our fair share in this market."

He also added, "By utilizing existing business infrastructure of SPX FT Korea including wide sales networks, proven market knowledge and experiences and manufacturing capacities, and so on as the platform, SPX is in the right position to help various SPX business activities in domestic market for flow and thermal businesses to grow to a large scale."


SPX Corporate Headquarter founded in 1911 is located at Charlotte, North Carolina, US. The company also has operations in approximately 40 countries around the world including manufacturing and distribution centers, sales and marketing units, and innovation and research facilities.

SPX's diverse products and services reach customers from Azerbaijan to Zambia. SPX is present in Africa, Asia, Europe,



An Example of large-scale engineering project the area SPX Flow Technology has recently emphasizing.

Australia and other Oceania regions, as well as in the Americas.

The primary products and services of SPX include: dehydration and filtration (filtering air- and gas- powered system), diagnostics and service tools, fluid handling, heating & cooling, hydraulic & pneumatic equipment, industrial products, power plant components, power transformers, and process equipment thermal technologies. Such products are in use in various industries including automotive & transportation, construction & infrastructure, food & beverage, HVAC, oil & gas, power & utility, and so on. 



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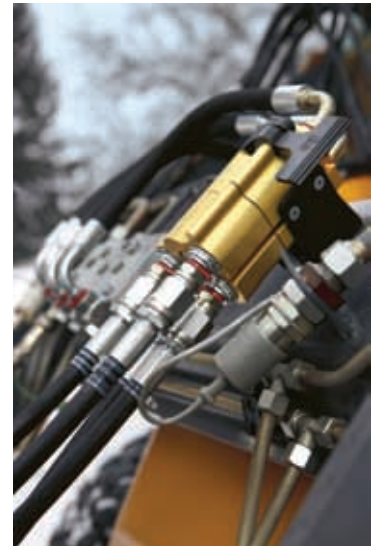
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A new LNG-fuelled concept VLCC - Triality

Recently, DNV has launched a new LNG-fuelled concept very large crude oil carrier (VLCC), named Triality. Compared to the traditional VLCC, the Triality VLCC will emit 34% less CO₂, entirely remove the need for ballast water, eliminate entirely the venting of cargo vapours (VOCs), and consume 25% less energy.

The new crude oil concept vessel, named Triality, has been developed through a DNV innovation project. As its name indicates, it fulfils three main goals: it is environmentally superior to a conventional crude oil tanker, its new solutions are feasible and based on well known technology, and it is financially attractive compared to conventional crude oil tankers

operating on heavy fuel oil.

DNV CEO Henrik O. Madsen, who unveiled the new concept in its very large crude oil carrier (VLCC) version in London said, "I am convinced that gas will become the dominant fuel for merchant ships. By 2020, the majority of owners will place order for ships powered by liquefied natural gas (LNG). As a leading class society, DNV has a crucial role to play in identifying more eco-friendly solutions for the shipping industry, and I am proud of our accomplishments which we have achieved so far in the crude oil tanker segment through this innovation project."

Less harm to the environment

The Triality concept VLCC has been compared to a conventional VLCC. Both vessels have the same operational range and are able to operate in the ordinary spot market.

In comparison to the traditional VLCC, the Triality VLCC will emit 34% less CO₂, entirely remove the need for ballast water, eliminate entirely the venting of cargo vapours (VOCs), and consume 25% less energy.

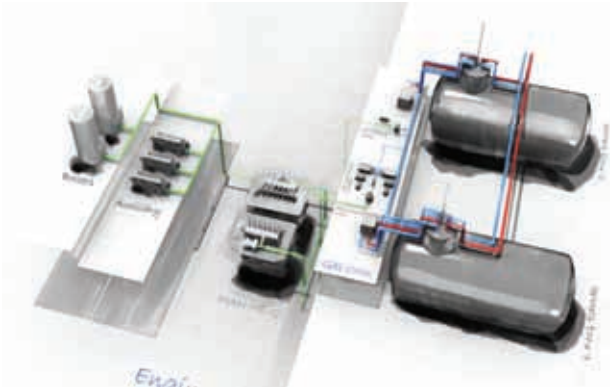
Less harm will be posed to the health of people who live in vicinity of busy shipping routes and ports as NO_x emissions will be slashed by over 80% while emissions of SO_x and particulate matter will be reduced by as much as 95%.

The new concept tanker has two high pressure dual fuel slow speed main engines fuelled by LNG, with marine gas oil as pilot fuel. The next phase of the Triality concept development will review the use of dual fuel medium speed engines and pure gas engines.

Two IMO type C pressure tanks capable of holding 13,500m³ LNG - enough for 25,000 nautical miles of operation - are located on the deck in front of the superstructure. The gener-



Henrik O. Madsen, CEO of DNV



Triality



ators are dual fuel (LNG and marine gas oil) while the auxiliary boilers producing steam for the cargo oil pumps operate on VOCs.

No ballast water

A traditional tanker in unloaded transit needs ballast water to obtain full propeller immersion and sufficient forward draft to avoid bottom slamming. The new V-shaped hull form and cargo tank arrangements completely eliminate the need for ballast water in the VLCC version. There will also be much less need for ballast water on other kinds of crude oil tankers, such as Suezmax, Aframax and smaller ships. The new hull shape results in a reduced wetted surface on a round trip and has a lower block coefficient and thus a more energy efficient hull.


A VLCC in unloaded transit will normally carry between 80,000 and 100,000 tons of sea water containing organisms that can cause damage when released into foreign ecosystems. In addition, a lot of fuel is needed just to transport this extra water. And finally, the initial coating and later maintenance of ballast tanks during operations are among a shipowner's main concerns.

The Triality VLCC can collect and liquefy more than 500 tons of cargo vapours during one single round trip. These liquefied petroleum gases will then be stored in deck tanks and up to half will be used as fuel for the boilers during cargo discharge, while the rest can be returned to the cargo tanks or delivered to shore during oil cargo discharge.

Environmentally superior ship also profitable

In relation to the additional cost of constructing a vessel like

Triality and the reduced cost of operating it, Henrik O. Madsen has reached a clear conclusion: "It is possible to develop an environmentally superior ship and ensure profitability at the same time. Our best estimate is an additional capital expenditure ranging somewhere between 10% and 15% for a Triality VLCC newbuilding compared to a traditional VLCC. Even including this extra cost, we estimate a reduced life cycle cost equivalent to 25% of the newbuilding cost for a traditional VLCC."

"Triality is a concept vessel and a ship builder will need to prepare a detailed design before the first Triality crude oil tanker can be constructed. The Triality concept is based on well known and proven components and systems, so in principle a Triality crude oil tanker introducing all or some of the innovative elements in the concept can be designed. We are convinced that the Triality concept will create great interest among ship builders and crude oil tanker operators, so that the first Triality crude oil tanker will leave a shipyard before the end of 2014," concludes Henrik O. Madsen. 



Opening ceremony of Shipbuilding-Offshore Software Training Center held on December 9

Cultivation of specialized manpower for the shipbuilding and maritime industry

Intergraph has provided the Shipbuilding-Offshore Software Training Center with software

Shipbuilding-Offshore Software Training Center opened on December 9 in Busan. Intergraph has donated a variety of software worth a total of about KRW 8 billion and plans to support education projects of the Training Center in a bid to help foster professional manpower for the shipbuilding and maritime industry.

Shipbuilding-Offshore Software Training Center opened in Busan to stimulate the development of IT convergence technology in the shipbuilding and maritime sector.

Shipbuilding-Offshore Software Training Center aims to help provide site-centric practical education related to the shipbuilding and maritime industry, the strategic industry of the nation's southeastern region, and foster professional manpower specializing in the IT convergence software in the field

of shipbuilding, machinery, and chemistry.

The Training Center plans to push forward with the joint R&D with private-sector companies and strengthen the network for the industry-university-institute collaboration.

Intergraph donated software worth a total of KRW 8 billion

Intergraph has donated a variety of software (a total of 8



Tape-cutting ceremony and commemorative photographing of major officials attending the opening ceremony of Shipbuilding-Offshore Software Training Center



Gerhard Sallinger, President of Intergraph

products, 20 units each) valued at about KRW 8 billion in all, including the SmartMarine 3D, the next generation CAD system for the shipbuilding and maritime industry, and plans to provide support for the education and research projects of the Training Center.

An official from Intergraph said, “Our support for the Training Center aims for three goals. First, it is the purpose of student education. Second, it is the purpose of our customers and industry education. Third, it’s the prospect that it would be used for the events to announce new products and technologies.”

He added, “It is meaningful very much that the Education Center facilitates the finding and deployment for new customers of Shipbuilding & Offshore Industries and the industrial and social advancement of students.”

Shipbuilding-Offshore Software Training Center in full operation since early December

Shipbuilding-Offshore Software Training Center was established with the support of Dong-Eui University and the project incentive fund following the designation of Convergence of IT Devices Institute Busan as Excellent Research Institute in 2009, and has swung into full operation since the opening ceremony that took place in Dong-Eui University on December 9.

Convergence of IT Devices Institute Busan is a regional research institute specializing in IT, established in June, 2008 to further advance IT convergence technology in the field of shipbuilding and transportation systems, the strategic sector of the nation’s southeastern region, and realize the high value-added potential of the region's strategic industry.

The establishment of Shipbuilding-Offshore Software Training Center came after a series of laboratories were put into place, such as the shipbuilding IT convergence parts production lab, IT convergence parts application lab, material analysis lab, spectroscopic analysis lab, shipbuilding IT/SW lab, transportation system IT/SW lab, and MEMS process room.

An official from the Shipbuilding-Offshore Software Training Center, said, “The efficient operation of this Training Center is expected to help foster professional manpower for various industries such as the shipbuilding, machinery, chemistry, energy, plant, and others, and increase the ability of students to adapt.”

Meanwhile, the opening ceremony of the Training Center held on December 9 was attended by officials related to university, industries, and research institutes including Jeong Ryang-bu (Dean of Dong-Eui University), Ji Seok-gu (General Manager of National IT Industry Promotion Agency), Gerhard Sallinger (President of Intergraph), Bae Yeong-soo (Managing Director of Samsung Heavy Industries). 



View of CIMPS exhibition

A shipbuilding trade show with the best reputation

CIMPS awarded 2010 China Top Ten Brand Exhibition

China International Marine, Port & Shipbuilding Fair (CIMPS) has won “the 2010 China Top Ten Brand Exhibition” Award. This award solidifies the position of CIMPS as the shipbuilding trade fair with the best reputation.

China International Marine, Port & Shipbuilding Fair (CIMPS) has won the “2010 China Top Ten Brand Exhibition” Award in the “2010 Annual Conference of China’s Convention and

Exhibition Industry & Awards Ceremony of Chinese Brand Exhibition”, held in Beijing on December 10, 2010.

The 2010 Annual Conference & Awards Ceremony is approved by the Ministry of Commerce of PRC, and jointly organized by Chinese Academy of International Trade and Economic Cooperation, and China Convention and Exhibition Society. With high reputation, CIMPS is the only fair awarded with this reputation among all the shipbuilding industry exhibitions in China.

The award was appraised by the professionals and experts from International



CIMPS awarded 2010 China Top Ten Brand Exhibition

Opening ceremony of CIMPS 2010 and various events

Exhibition Bureau, the International Exhibition Association, the Ministry of Commerce PRC, China Council for the Promotion of International Trade (CCPIT) and some other Chinese and overseas exhibition experts, it is the most authoritative and credible award in the exhibition industry in China by far, representing the highest level in the Chinese exhibition industry.

CIMPS evolving into a global trade fair

CIMPS is oriented to be an international, professional and trade fair, to create an efficient information exchange and trade platform in the shipbuilding industry.

Organized by Jiangsu United Asia International Exhibition (UAEC), co-organized by China Association of the National Shipbuilding Industry (CANSI), The Chinese Society of Naval Architects and Marine Engineering (CSNAME) and so on; and sponsored by Jiangsu Provincial People's Government and China Council for the Promotion of International Trade, CIMPS 2010 is held grandly during May 19-21, 2010.

CIMPS 2010 attracts 22,941 visitors from 16 countries and regions; overseas visitors are from Europe, the Americas, and Southeast Asia areas mainly, reach 3212 persons accounting for 14% of the total. The Exhibition rents an exhibition space of 24,000m² with 416 exhibitors, including 39 brand shipyards. Exhibitors come from 18 countries and regions, totaling 51 foreign exhibitors, with 3 overseas National Pavilions (Korea, UK, and Finland).

At the same time, 10 dynamic events and conferences are held with excellent and infinite commercial opportunities. CIMPS 2010 reaches high internationalization, and all ranking the first in show size, exhibiting country quantity and participating shipyard proportion among all the maritime fairs in China in the year of 2010.

CIMPS 2011 is scheduled to be held in April this year

CIMPS 2011 will be held on April 12-14 at Nanjing International Expo Center. With all the preparation work



smoothly executed, CIMPS Organization Committee has done a lot of professional and meticulous work to guarantee best exhibiting result. Up to now, there have been totally 8 conformed national pavilions to exhibit in 2011 CIMPS, including: UK, USA, Korea, Finland, Denmark, Singapore and so on.

CIMPS 2011 will greatly enhance the quality of the fringe programs during the fair, which will cover shipping, offshore engineering, shipbuilding industry, match-making between shipyards and equipment suppliers, etc. The 5th Shipping-Tec International Summit will bring more than 200 international ship-owners to the fair. Special delegations arranged by the Organization Committee have visited Germany, the Netherlands, Greece, Norway, Finland, Korea, Japan and other countries to promote 2011 CIMPS to invite foreign visitors and international buyers.

During 2011 CIMPS, there will be a Cooperation & Communication Conference between Equipment Suppliers & Shipbuilders, which will offer a free match making opportunity to all the exhibiting foreign equipment suppliers with the purchasing makers from biggest shipyards in China. ⚓

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Large shipbuilders transfer business management expertise and technology to vendors

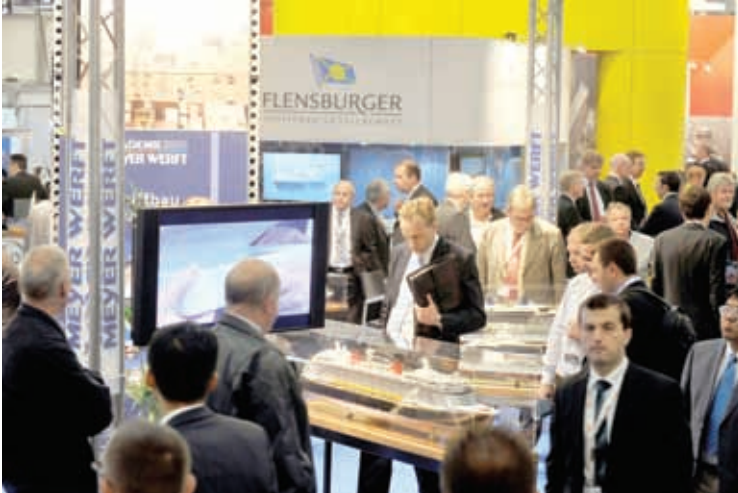
New measures for co-growth of shipbuilding industry were announced

The government unveiled new measures for the co-growth of domestic large shipbuilders and vendors during the meeting of the Co-Growth Council of Shipbuilding Industry held on November 30. The measures announced this time focus on creating a fund for joint technology development in collaboration between the public and private sector, reducing the interest rates on the loan extended by the co-growth fund, support of consulting, organization of business management support council, etc.

From this year, world top class business administration technique, core technologies, etc, will be transferred to marine equipment vendors from global shipbuilders such as Hyundai Heavy Industries (HHI), Samsung Heavy Industries (SHI), Daewoo Shipbuilding & Marine Engineering (DSME), STX Offshore & Shipbuilding, and others.

In the meeting of the Co-Growth Council of Shipbuilding Industry which was held on November 30, Korea's 4 major shipbuilders such as HHI, SHI, DSME, STX Offshore & Shipbuilding, and related vendors, explored ways to promote the co-growth of shipbuilding industry, including the establishment of a fund for joint technology development through the collaboration between the public and private sector, formation of business support council, and others.

On that day, Woo Tae-hee, an official overseeing the matters concerning the policies for major industries at the Ministry of Knowledge Economy (MKE), stressed, "Unlike other industries, shipbuilding industry has an open structure allowing many shipbuilders and many equipment/material development companies to engage in trade at the same time, an advantage which makes the delivery system, etc, of shipbuilding industry relatively more effective. However, the shipbuilding industry need to seek co-growth, so that all shipyards, whether they are small and medium-sized or



large, can accomplish the world's best competitiveness.”

The co-growth measure which the shipbuilding industry mapped out this time will focus on the efforts to be led by large companies such as 1) establishment of a fund for joint technology development involving both public and private sector, 2) decrease in interest rates for loans to stimulate the co-growth, 3) transfer of effective business management techniques, 4) award of certification to excellent marine equipment manufacturers, and the support to be provided by the government such as 1) expansion of direct export of marine equipments, 2) active utilization of technology development projects conditioned on purchase, 3) promotion of excellent domestic marine equipments and expansion of their export, and others.

1. Action Plans Led by Large Companies

First, a fund will be established to promote joint technology development through the collaborations between public and private sectors in a bid to aid vendors (of HHI) with the development of new technology and promote the supply to clients if the development is successful. Small & Medium Business Administration and HHI will put KRW 15 billion each into the fund for the joint technology development between the public and private sector.

Second, large shipbuilders and banks will establish the joint fund and the interest rates on loan by the co-growth fund will be lowered, so that low interest rate loans can be extended directly to the vendors.

In fact, HHI proceeded with the establishment of 'HHI Center for Co-growth With Vendors' in November 2010, and cut interest rates from 5% or 6% to 3% or 4% for the loan extended by the KRW \$70 billion co-growth fund.

Third, large shipbuilders will form a formal council designed to support the business consulting in an attempt to transfer the world top class and

efficient business management techniques to vendors.

HHI will increase its support to vendors for the establishment of the production, sales, and purchase system.

SHI plans to expand the operation of co-growth council for each sector, which will in turn help the current block companies expand their boundaries beyond the steel outfitting and make inroads into other sectors such as the outfitting, bulk products, and others.

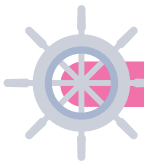
STX Offshore & Shipbuilding provides the education to transfer the expertise of large company through its working-level subcommittee of STX members, and DSME develops and distribute the Enterprise Resource Planning (ERP) tailored specifically to the needs of equipment manufacturers.

Specifically, SHI plans to enter into the green partnership through the support of vendors for green business administration, such as the energy-saving and reduction of greenhouse gas (GHG) emissions. It will transfer its environment management techniques to 5 vendors and aid them in the acquisition of environment management certification (ISO 14001), and help 11 block companies establishing GHG emissions inventories and save energy consumption.

Meanwhile, shipbuilders will directly find secondary vendors with competitive edge in quality, cost, and technology and facilitate their trade with the primary vendors.

SHI has already facilitated the trade between the secondary vendors specializing in the steel, gas, consumables, etc, and the primary vendors, which has resulted in the saving of KRW 3.069 billion. DSME is reported to be introducing overseas marine equipment companies to domestic companies and make the collaborations more likely to happen.

Fourth, the Co-Growth Council of Shipbuilding Industry plans to select and award excellent marine equipment manufacturers every year and carry out follow-up management. In December 2010, it awarded the certifications to 4 companies



which had been selected in August among the shortlist of 11 recommended companies.

Fifth, the ratio of payment in cash for delivery will be increased to 100%, and the materials (back plate, steel, etc) will be provided stably to cash-strapped vendors by launching the material provision system. HHI, SHI, and DSME has already raised the ratio of payment in cash for delivery to 100%, and SHI is poised to establish the material application infrastructure for the delivery and trade with vendors.

Finally, large shipbuilders plan to expand the transfer of the sleeping patents to vendors, and as a result, technologies related to the Hull Stress Monitoring System, volatile corrosion inhibitors, etc, which are part of the proprietary patented technology of SHI will be transferred to vendors.

In addition, measures will be taken to enable the shipbuilders to increase their support to the secondary vendors such as the dispatch of professional manpower, transfer of technology, support for quality, etc, which are the types of support currently provided to the primary vendors.

2. Action Plan on the Government Support

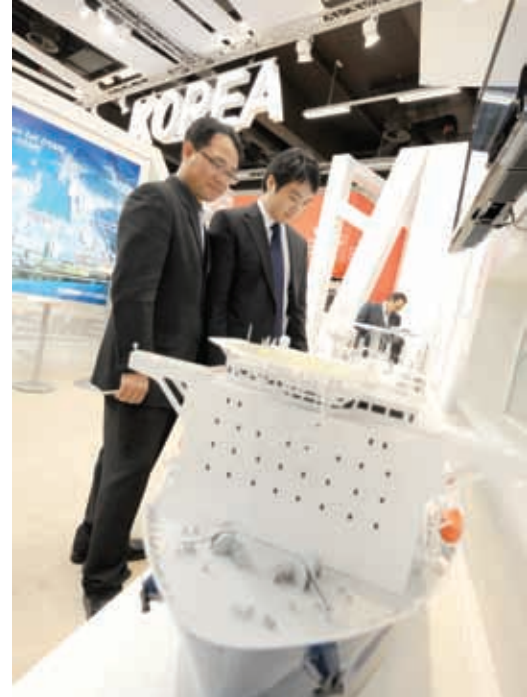
First, the government plans to expand the direct export of marine equipments by establishing the Shipbuilding & Marine Equipment Global Support Center (November, 2010, in Busan), real-time after-sales service system, and others. For that, the government will prime the pump to the tune of KRW 1 billion in 2011.

Second, the technology development projects conditioned on the purchase will be utilized actively to develop core technologies such as the shipbuilding IT, cruise, offshore plants and others.

Marine equipments, once localized, are very unlikely to be frequently outfitted on the ships compared to other industries, considering that the requirements of ship owners (mostly abroad) are reflected intensively. To tackle such frustrating situation, the government has drawn up measures to push ahead with offshore plant R&D plan conditioned on purchase.

Under the plan, 'Offshore Plant Equipment Localization & Co-Growth Subcommittee' (including the Ministry of Knowledge Economy, Korea Shipbuilders' Association, Korea Marine Equipment Association, Korea Marine Equipment Research Institute, 7 large shipbuilders) will be organized within the Co-Growth Committee of Shipbuilding Industry, which will move ahead with the projects in conjunction with the pioneer group dedicated to project implementation in the southeastern metropolitan region (project to establish the offshore plant hub).

Regarding the procedure for implementation, 1) offshore plant equipments which requires the localization will be identified, 2) the specialized equipment manufacturers will be selected, 3) the support will be provided to the selected companies for the R&D in collaboration with large



shipbuilders and contract will be entered into for the purchase, so that the localized equipment can be outfitted.

Finally, the government plans to facilitate joint participation of large shipbuilders and equipment manufacturers in the global trade fairs of the shipbuilding and offshore industry in an endeavor to expand the promotion of excellent domestic equipments and boost their export. For that, the government has already earmarked KRW 670 million to support the trade show organized by Korea Marine Equipment Association.


Large shipbuilders have actively pushed forward with the co-growth of small and medium-sized and large companies in connection with the finance, development of technology, education, etc, but also need to expand and build up excellent practice for the vendors below the secondary vendors. In other words, industry sources say that the shipbuilding industry and government need to take more active measures to share and raise the awareness in the shipbuilding industry towards the co-growth and build up global competitiveness of cash-strapped marine equipment industry. 

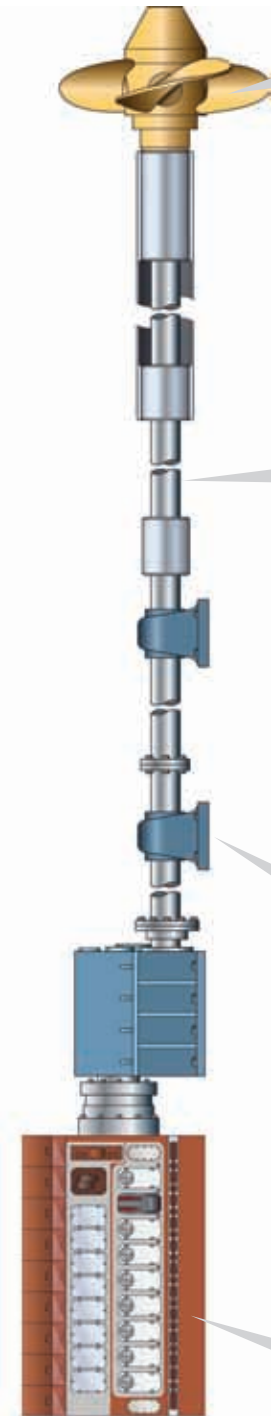
Table 1. Momentum of co-growth in the financial sector of major shipbuilders

Type	Details
Hyundai Heavy Industry (HHI)	<ul style="list-style-type: none"> -Co-growth fund: KRW 70 billion was raised in 2009 (HHI put KRW 10 billion into the fund, and Industrial Bank of Korea put KRW 60 billion into the fund.) -Network Loan (introduced in November, 2004): Facilitated the extension of loan worth KRW 151.7 billion by the first half of 2010 -Network Loan (from 2007 to the first half of 2010): Directly extended the loan worth KRW 51.4 billion to vendors -Expansion of the payment in advance: Provided KRW 1.15 trillion to 480 companies from 2007 to 2009 -Expansion of the payment for delivery in cash (3 times a month): Less than KRW 70 million in 2009 → Less than KRW 100 million in 2010 -Expansion of the provision of materials to vendors: KRW 4.25 trillion to provide materials highly sensitive to fluctuations
Daewoo Shipbuilding & Marine Engineering (DSME)	<ul style="list-style-type: none"> -Co-guarantee fund: As of April, 2009, KRW 60 billion (33 times greater than the ratio of grantee utilization) has been raised with DSME having put KRW 900 million into the fund and Woori-Bank/Industrial Bank of Korea having put KRW 900 million into the fund. KRW 13 billion has been utilized to date. -Support for co-growth, supervised by South Gyeongsang Province: Assistance with the payment of interest when the loan is extended for the operation and facilities (A total of KRW 1.7 billion was extended to 6 companies, as of August, 2010.) -Support of advance payment: Support from the fund to help vendors operate the facilities (KRW 12.2 billion for 3 companies)
Samsung Heavy Industries(SHI)	<ul style="list-style-type: none"> -Payment for delivery in cash: 100% cash payment to 'companies providing excellent quality products' and 'steel outfitting companies', 70% cash payment to excellent vendors and block companies (Tantamount to the payment of a total of KRW 16.13 billion to 117 companies on the average from 2008 to 2010) -Facility Fund Loan: KRW 34.3 billion was provided to 2 companies in loan at low rates of interest. -Network Loan (introduced in 2009): KRW 1.29 trillion was provided in loan by August, 2010.
STX Offshore & Shipbuilding	<ul style="list-style-type: none"> -Co-growth fund: STX Offshore & Shipbuilding put KRW 50 billion into the fund, and Woori-Bank put KRW 50 billion into the fund, as of late 2008. -Network Loan (introduced in September, 2005): A contract was entered into with Industrial Bank of Korea in the same way with HHI.

Table 2. Momentum of co-growth in the technology development sector of major shipbuilders

Type	Details
Joint R&D	-87 cases for HHI, 21 cases for SHI, and 8 cases for STX Offshore & Shipbuilding
Transfer of the sleeping patents	-HHI transferred 11 patents.
Quality and technical instruction	<ul style="list-style-type: none"> -HHI and SHI provided the on-site instruction to 1,306 companies and 566 companies, respectively. -STX Offshore & Shipbuilding provides 50% of consulting cost in cash (Approximately KRW 100 million was provided to a total of 29 companies from 2006 to 2009.)
Dispatch of professional manpower	-60 professionals were dispatched to the block companies of SHI to provide instruction on the quality, safety, and production process improvement.

Marine industry moves forward thanks to laser precision alignment



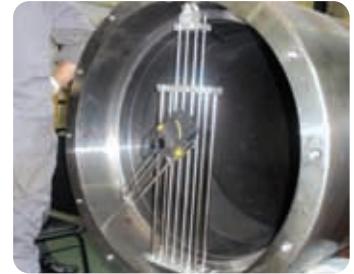
PROPELLER

LEVALIGN Ultra



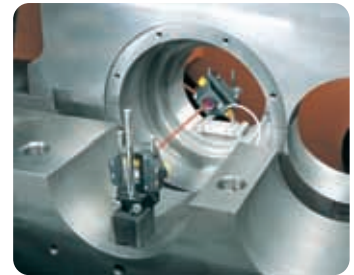
STERN TUBE

CENTALIGN Ultra
(unmounted shaft)



LONG SHAFT

ROTALIGN Ultra
(mounted shaft)
CENTRALIGN Ultra
(unmounted shaft)




MAIN ENGINE

ROTALIGN Ultra
(mounted crank shaft)
CENTRALIGN Ultra
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Big news about the new S-separator

New S-separator of Alfa Laval fits big capacity into a smaller space. Alfa Laval achieved it not by increasing the separation area but by elevating the separation efficiency.

Alfa Laval Korea Co., Ltd.

Boosting the separator capacity requires something more than throughput. Efficiency is essential, and separation area is one of the keys to achieving it.

Big capacity in a smaller space

The new S-separator of Alfa Laval embodies the successful management of what is seemingly impossible. Alfa Laval has greatly increased the separation efficiency, not least by increasing the separation area. But while the separation area is larger, the separator footprint is not.

Smart enhancements in the S-separator disc stack are a big part of the secret. Disc modifications and other improvements allow up to 20% more flow with retained separation performance.

Of course, the physical footprint isn't the only thing that's small. The other side of the document will show that the new S-separator has the industry's smallest lifecycle cost and environmental impact as well.

Even more big news

The other side of this document will point out that the new S-separator fits big capacity into a smaller space.

But capacity and footprint aren't the only things that are important when it comes to choosing a separator. Factors such as ease of installation, ease of use, environmental impact and long-term operating economy are just as high on the agenda.

And that's what makes the new S-separator so valuable. The S-separator is a total package,



The new S-separator

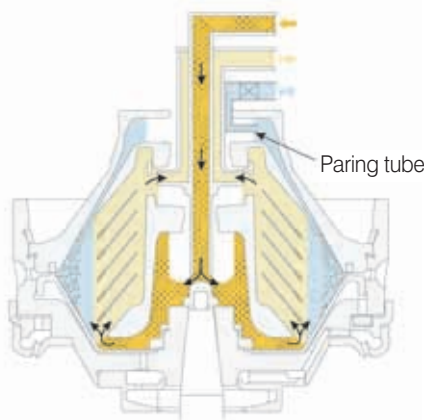


Fig.1 Among the changes in the disc stack is an increase in separation area, a key component of separator efficiency. Paradoxically, this and other refinements lead to smaller separator footprint.



providing a solid range of advantages across the board. The example of typical lifecycle costs is illustrated in the Table 2 and 3.

Fig.2 Typical lifecycle cost (LLC) over 20 years

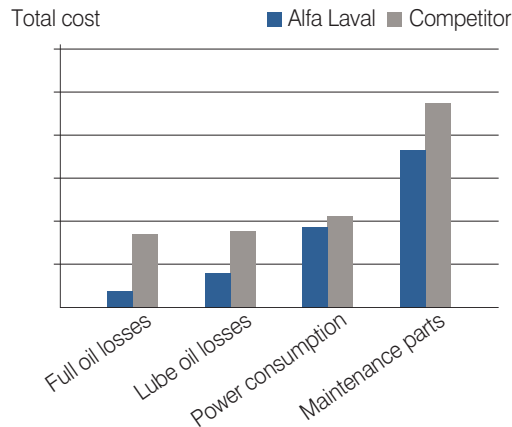
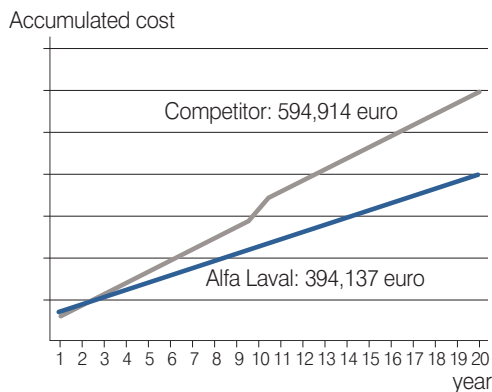


Fig.3 Accumulated cost over 20 years
Packback < 2 years



Combined in the new S-separator are both new advances and existing features, described in brief to the followings. Features like Alcap, CentriShoot and CentriLock are already familiar to many, yet their unique characteristics and revolutionary benefits ensure that they're still big news today. Taken as a whole, these attributes make the S-separator not just a model of separation efficiency, but a model of total efficiency as well.

More robust discs

An increase in separation area isn't the only change in the S-separator bowl. The discs in the disc stack have also been strengthened. Not only does this make them more durable, it

also improves their alignment and stability. In turn, that means high and consistent separation efficiency.

A more robust drive

The drive system of the S-separator has been reinforced, thus increasing its durability and operational reliability. The sturdier friction blocks and more resilient bearing system are able to withstand both long and demanding operation at full capacity. In addition, a more powerful and efficient lubrication system increases the flow of both oil and air, ensuring that oil mist is quickly and evenly distributed throughout the separator.

Alcap performance monitoring

Alfa Laval's landmark Alcap technology - the first technology of its kind - still sets the standard for separation ease and efficiency. With its Alcap functionality, the S-separator detects and automatically adjusts to the nature of your oil, giving you maximum protection while reducing waste and providing the best economy from your fuel.

The EPC 60 controller

Featuring intuitive, easy-to-master text navigation, the PLC based EPC 60 controller connects via Ethernet or Bus communication to any onboard automation system. Its modular construction is based on standard supply and easily exchanged components, which makes it easy to install, troubleshoot and upgrade.



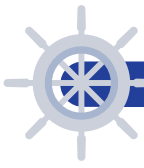
The CentriLock snap ring

The S-separator employs an advantageous, one-of-a-kind bowl-locking system. Instead of a traditional threaded lock ring, which requires a sledgehammer to remove, the CentriLock system has a snap ring, which simply snaps into place and lifts out with the help of an Allen key. This does away with a substantial source of bowl wear and risk.



The CentriShoot discharge system

The S-separator's unique CentriShoot discharge system fea-



tures a discharge slide that is fixed to the bowl body, but which flexes gently to expose the discharge ports. Unlike a sliding bowl bottom, this flexing slide this no metal-to-metal contact, which means it completely eliminates wear and tear. Moreover, it allows controlled discharges that reduce oil loss, water consumption and waste.



Low environmental impact

With its precision-designed bowl, Alcap functionality, CentriShoot discharge system and other features, the S-separator produces far less waste than other separators of its kind. The minimal oil losses, low sludge volumes and low energy consumption are as positive for the environment as they are for your operation economy.

Flexible supply

The S-separator is part of Alfa Laval's modular S and P Flex

delivery concept, which also comprises P-separators based on purifier technology. Included in the concept are :

- Flex system: A Separator with ancillaries in the form of optimized block components provides full say over the use of space. This allows for local modularization or do-it-yourself assembly.
- Flex modules: A compact separator module can be built to a customer-specified configuration from a wide range of skids and machine blocks. Multi-modules and mixed modules are possible for the simultaneous treatment of different types of mineral oils. ⚓



Schneider Electric Korea received the prize of the Best Green Company in 2010 Korea-EU Industrial Cooperation Award

Schneider Electric Korea was chosen as the recipient of the prize of the Best Green Company on the occasion of 2010 Korea-EU Industrial Cooperation Award Ceremony organized by the European Union Chamber of Commerce in Korea.

This award ceremony was held on December 9 at the Dynasty Hall of Shilla Hotel, attended by government officials and entrepreneurs from Korea and 27 EU countries.

Schneider Electric Korea set up the Green Energy Team in 2008 and has provided education on the climate change and energy management more than twice a year to its employees and vendors and has successfully held the education session for consumers and Energy Management Information System (EMIS) 4 times a month.

In addition, the company has made constant contribution to the green growth through the Ecostruxure, an integrated solution based on eco-friendly architecture which can substitute the conventional infrastructure-oriented industrial structure, and Energy University which offers free online courses in energy efficiency and energy awareness.

Eric Leger, President of Schneider Electric Korea, said, "Using this award-winning as springboard, Schneider Electric Korea will redouble effort to fulfill its role and responsibility as an eco-friendly company, as well as a global specialist in the energy management, to play a crucial role in the green technology sector of Korea."

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Fire and Gas Detection Systems



FLIR infrared cameras help to ensure safety at sea

In the opinion of VT (formerly Vosper Thornycroft) Integrated Services (VTIS), thermal imaging excels in the real-time identification of static and dynamic mechanical, electrical and electronic faults. It also plays a key role in ensuring the working environment of the ship's crew is as safe as it can be, especially when at sea.

FLIR Systems Korea Co., Ltd.

VT (formerly Vosper Thornycroft) Integrated Services (VTIS) has recently won several through-life support contracts to provide ship - and shore-based services for Royal Naval ships. Implicit in these contracts is the maintenance of an agreed level of ship availability.

Thermal imaging, together with other condition-based maintenance techniques, is seen as being vital to achieving this aim and accordingly, VTIS chose to invest in its own FLIR infrared camera.

VTIS has chosen FLIR infrared camera

The VT Group is an international government services provider whose activities are divided into two businesses. VT Shipbuilding designs and builds a wide range of vessels for the Royal Navy and indeed navies throughout the world. It also builds smaller boats for the commercial market and supplies specialist marine equipment.

VT Support Services serves both military and commercial sectors, activities that account for over two thirds of group turnover.

VTIS specialises in providing costefficient support programmes and services to customers from both VT business divisions. Responsible for developing this organisation's capabilities for both landbased and marine projects is Head of Maintenance Engineering, David Houghton. He led the team that put various makes of thermal imaging cameras through their paces.

Detector resolution, image update rate, accuracy, thermal sensitivity, instantaneous field of view, image storage and whether the unit had a built-in digital camera, were all assessed. The quality of support for both camera and software, the duration of that service and associated costs were also key components in the final decision in favour of a FLIR infrared camera.

VTIS also chose FLIR Reporter software packages to complement the FLIR infrared camera, all of which are reported by David Houghton to be quick and easy to use.

System defect test

"One of the first applications for our FLIR infrared camera was to help to support the Echo Class and River Class ships operated by the Royal Navy under a Contractor Logistic Support contract," David Houghton explained. "On these ships, the camera is



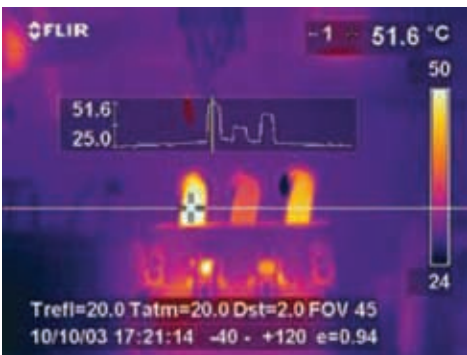
Visual and infrared image of a diesel generator

used to detect and diagnose faults in a wide range of systems and equipment.”

These include the propulsion system - comprising main engines, gearboxes and propeller; the diesel generators, switchboards and distribution panels that make up the power generation and distribution system; fuel oil, lubricating oil, heating, ventilation and



Visual and infrared image of a trip and supply panel



Infrared image of an isolator inspection



i40



A-series

air conditioning systems; fresh, salt, black and grey water systems; fridge and freezing plant; fire, bilge and ballast systems; radar, navigation and communication equipment and emergency power generators.

The regular testing of these systems is required to ensure compliance with the rules and regulations for Classification Societies, the Maritime and Coastguard Agency and the newly introduced SOLAS Regulations. The latter requires areas of a ship whose surface temperature may exceed 220°C to be subject to regular thermal imaging surveys. Machinery, associated flammable fluid systems and adjacent hot surfaces are the obvious candidates.

During a VTIS survey an exhaust sensing line of a diesel generator showed a temperature in excess of that permitted under SOLAS Regulations. Subsequent investigation found the insulation around the line had perished. Left undetected, the line would have undoubtedly ruptured, causing fuel to spray onto the diesel generator exhaust sensor. If this had in turn ignited, a major fire in the engine room would have resulted. Aside from the safety issues, a high capital cost would also have been incurred in replacing the affected plant and associated engine room equipment.

“Already, the camera has well and truly proved its worth,” David Houghton concludes. ⚓



Instrument applications in the port, on board ships or offshore facilities (2)

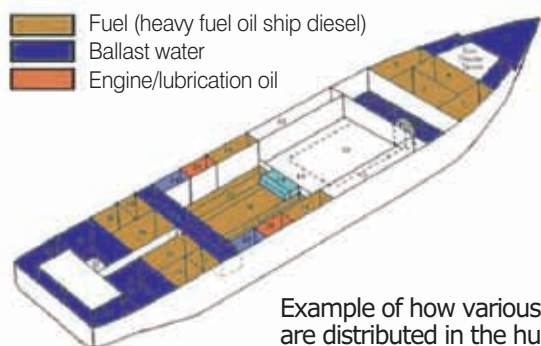
The supplier of process automation solutions, Endress+Hauser has been serving the shipbuilding industry for more than 30 years. Its extensive range of solutions complement this experience and allow its to help customer to drive costs down and increase the efficiency of customer's ship operating facilities.

Endress+Hauser Korea Co., Ltd.

Application on board: Ballast/service tanks

The position of the ship is always secure

Efficient use of the space in the interior of a ship is essential as ships are at sea for several months as a general rule. Clever distribution of the fuel and ballast tanks will ensure that the ship will travel safely at sea even in adverse conditions.



Ships have to be balanced depending on the distribution and weight of the loaded freight. Ballast water is pumped into provided tanks on the ship. This water must be exchanged on high seas to avoid the pollution of flora and fauna at the port of destination. Therefore, it must be possible to monitor and control the complicated distribution of ballast water within the vessel.

Required features are as follows:

- Accurate, reproducible level measurement
- Resistance to seawater (electro galvanic corrosion), temperature fluctuations as well as overpressure/negative pressure
- Reliable activation of flaps and valves

•Draft, trim, list

The position and draft of a ship changes when it is loaded

and unloaded. It is therefore imperative that the draft, trim and list be measured reliably for the resulting ballasting.

•Heel/list

If a ship heels, the occupants, cargo and environment are at risk. The reasons are manifold. Unstable conditions, brought about by wind pressure, load and swell for example, can be identified quickly and safely using modern measurement technology and countermeasures can be implemented. The level and draft are recorded for this purpose and passed to the ship's monitoring system.

•Service tanks

An adequate supply of fresh water, stored in the relevant type of tanks, must be available for the crew and passengers. Wastewater (graywater/black water) that accumulates during a ship's journey is partly treated directly on the ship or is collected in tanks and supplied to a wastewater treatment system in the port. Endress+Hauser provides measuring devices specifically developed for all of these tasks.

•Level measurement in sounding pipes

Most ship tanks have sounding pipes to check liquid levels by manual sounding. Additional electronic measurement is possible through these sounding pipes. This type of instrumentation avoids the need for expensive installation and can also be installed retrospectively.

•Overfill protection

When filling some tanks, it is necessary to know in good time when individual tanks are almost filled to capacity. The limit must be recorded separately at two different levels inside the

tank for this purpose. A cost-effective device version enables sensor positioning by pipes, which may be extended at the shipyard or on board.



Micropilot M FMR240/
Sounding pipe
measurement



Liquiphant M FTL51/
Overfill protection high and
high/high limit value



Liquiphant T FTL20/
Limit (leakage) in
service tanks

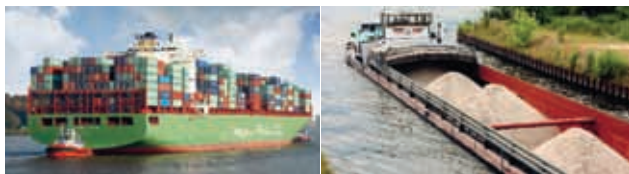


Cerabar S PMC71

Application on board: Freight/cargo

Suitable for all types of freight

Different types of freight are transported in different types of ship. Typically, a distinction is made between liquid maritime freight - e.g. oil, chemicals or liquefied gas - and solid freight - e.g. gravel, grain or coal. In addition to these traditional types of freight, containers have also become increasingly important.



Using instrumentation in the area of freight/cargo

•Water leakage detection

The cargo hold of bulk carriers must be continuously checked for leakage to protect the crew, the ship and the environment. Since excessive water leakage may sink the vessel, the reliability of this measurement and timely alarms are of paramount importance. The BULKGUARD water

inleakage detection system offers three different measurement methods: The hydrostatic measurement method with Waterpilot, the non-invasive radar measurement method with Micropilot and the detection of limits using the vibration principle with Liquiphant. The measurement specified by the IMO is neither endangered nor distorted if cargo holds are filled with fine or coarse material.

Required features of instrumentation are as follows:

- Easy, cost-effective installation without any time spent at the shipyard
- Mechanical robustness
- Verification of instrumentation also after installation
- Low installation/cabling cost
- Same control unit for all three measurement methods

•Cargo tanks

The levels of cargo tanks on board chemical tankers must be monitored at all times due to the strict safety and environmental requirements. The consequences for the crew and environment could be devastating if the tanks were overfilled and the contents leaked on deck or into the sea. Micropilot radar devices - used to monitor the level - and Liquiphant vibration limit switches - used to detect high and high/high alarms - have proven extremely robust and low-maintenance for this purpose.

Required features of instrumentation are as follows:

- Strong chemical resistance
- Safe, reliable operation even when chemicals change



Waterpilot FMX167/
Hydrostatic device,
seawater resistant,
metal-free version



Micropilot M FMR240/
Radar device, stainless
steel version



Liquiphant M FTL50/
Vibration device,
stainless steel version



Liquiphant M
FTL51C/
Vibration device,
coated version

<to be continue>

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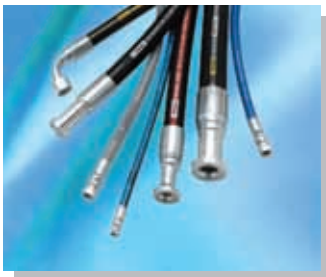
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Mooring Line



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Parker Cabett Subsea
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Monthly KORSHIP, Korea's only shipbuilding magazine in English, serves as the window to the world's shipbuilding industry building a bright future on the horizon at sea.

Monthly Korship provides succinct overview on special features and strength of both current and new products put on the market, and keeps you updated on the shipbuilding orders and construction of ships at major domestic shipyards.

New Order - It is a clean roundup of news on orders placed with shipyards. New shipbuilding orders are reported in detail, along with photos capturing the moment of shipbuilders and clients signing contracts and summary illustrations of order backlog.

Major Performance Gallery - It provides detailed overview on the specification of products with photos.

New Product - It provides updates on new products.



DSME clinched an order for 1 drillship and 1 semi-submersible drilling rig

Daewoo Shipbuilding & Marine Engineering (DSME) was awarded an order for 1 drillship and 1 semi-submersible drilling rig, demonstrating its dominance in the offshore structure sector.

On December 8, DSME signed a contract with a company based in the Americas for 1 drillship and 1 semi-submersible drilling rig. The contract is valued at a total of \$1.08 billion and both vessels will be built at the Okpo Shipyard. The drillship will be delivered by March 2013, and the semi-submersible drilling rig will be delivered by August 2013.

The drillship ordered this time will measure 243m in length and 42m in width, and be built into DSME-10000 type, a model developed independently in 2007 by DSME. And the semi-submersible drilling rig is a supersize drilling rig which will measure 118m in length, 97m in width, and 134m in height.

Both vessels will be outfitted with the Global Positioning System (GPS) and the Dynamic Positioning System, a computerized control and propulsion system, which enable accurate positioning of vessel in the drilling location. Furthermore, both, equipped with the newest type of drilling system, can drill for oil in the sea up to 40,000 feet at the maximum depth of 10,000 feet under water.

DSME has received orders for a total of 9 semi-submersible drilling rigs of the same model as the one ordered this time since 2005, solidifying its dominance in the sector of semi-submersible drilling rig.

Meanwhile the orders for offshore drilling facility have picked up recently after a decline in the wake of the oil spill in the US-Gulf of Mexico in April, and more orders for drilling facilities are expected to be placed on the back of climbing oil prices which have reached \$90 a barrel.

Nam Sang-tae, CEO & President of DSME, said, "We successfully won the order based on the differentiated technology of DSME and the trust that we

have built with ship owners although the orders for deepwater drilling facilities had plummeted since the oil leak in the U.S.-Gulf of Mexico. We will continue to win orders by pushing forward with the strategies tailored to meet the specific requirements of customers on the basis of the world's best technology and quality."



Nam Sang-tae (right), CEO & President of DSME, and the representative (left) of a drilling company based in the Americas, are shaking hands after signing the contract on the construction of offshore facilities.

HHI will supply HiMSEN engines to nuclear power plants for the first time

Engines built with purely domestic technology will be supplied to domestic nuclear power plants for the first time.

Hyundai Heavy Industries (HHI) announced on December 9 that it was awarded an construction contract from Korea Hydro & Nuclear Power to replace emergency power generators of Gori Nuclear Power Plant 1 located at Gori, Jangan-eup, Gijang-gun, Busan City.

This construction is to dismantle 2 old power generators of Gori Nuclear Power Plant 1, Korea's first nuclear power reactor, and replace them with new emergency power generators. For that, HHI will install 2 new 4,000-kW high-output HiMSEN engines, which was developed independently by HHI, in the emergency power generator.

The emergency power generator of nuclear power plant is for supplying electric power to circulating water pump, etc, the apparatus essential for the stable maintenance of nuclear reactor, in case that the operation of the power plant stops in emergency, and this type of power generator requires highly advanced technology because necessary electric power must be supplied within 10 seconds.

The engines, core equipment for emergency

power generator, have been supplied so far by overseas engine makers such as MAN Diesel & Turbo (MDT), Wartsila, and others. However, by winning the construction contract this time, HHI will supply its HiMSEN engine built with domestic technology to a nuclear power plant for the first time across the country.

HiMSEN engine passed all of 100 strict operation verification tests without any failure, proving its stability and reliability. About 1,500 units of HiMSEN engines for power generation purpose were exported to 35 countries around the globe, including Cuba, Brazil, Iraq, and have demonstrated excellent performance, which was positively taken into consideration when the contract was awarded.

This construction will be carried out on a turn-key basis throughout entire processes ranging from the production through the installation to the trial operation, and the emergency power generators are scheduled for replacement during the maintenance period of Gori Nuclear Power Plant in March, 2013.

Yoo Seung-nam, Vice-President (Head of Engine & Machinery Division) of HHI, said, "Securing this construction contract, the excellent technology of

HiMSEN engine built by HHI was proved one again, and we will continue to make effort to win orders both at home and abroad in the forthcoming period."



HiMSEN engine of HHI

STX was awarded a contract to build 20 units of 57,000-ton OHGCC

STX Offshore & Shipbuilding and STX Dalian Shipyard announced on December 14 that they received an order worth a total of \$912 million to build 20 units of 57,000DWT open hatch general cargo carrier (OHGCC) from STX Pan Ocean.

The carriers will measure 199m in length, 32.26m in width, and 19.30m in height. 10 units of the ordered carriers will be built at the Jinhae Shipyard of STX Offshore & Shipbuilding and another 10 units will be constructed at STX Dalian Shipyard, which are scheduled for delivery from 2012 and 2014, respectively.

The OHGCC is the first type of vessel ordered to STX, and has box-shaped cargo holds and outfitted with a deck which can be open and closed completely unlike conventional bulk carriers, and is known to be a high value-added vessel priced 20% to 30% higher than bulk carrier of same size.

Total solution of STX Group - which links the shipping, shipbuilding, and machinery industry - is considered to have played a key part in obtaining this large-scale order.

Both companies have further sharpened their global competitiveness by taking advantage of synergic effects created by the combination of the superb technology/productivity of STX Group' shipbuilding unit and the excellent sales capability of STX Pan Ocean which has gained high credibility both at home and abroad and built vast overseas network.

For instance, STX Offshore & Shipbuilding developed an optimal pulp carrier tailored to meet the requirements of ship owner, playing a crucial part in help-

ing a contract signed for a \$5 billion long-term transportation project in October last year between STX Pan Ocean and Fibria, the world's largest producer of pulp.

Securing this large-scale contract, STX Offshore & Shipbuilding will build new high value-added vessels, and further sharpen its excellent technological know-how and gain reputation. Meanwhile, STX Pan Ocean will make inroads into the global pulp transportation market which has been dominated so far by European shipping companies, and catapult itself into the leading position.

An official from STX Offshore & Shipbuilding, said, "This contract reaffirms the synergic effects between STX Group's shipbuilding unit and STX Pan Ocean, the Group's global super blue-chip business, following the successful contract last year which was entered into for the transportation by supersize ore carrier. Propelled by the strong momentum of synergy between affiliates, we will focus even more on winning large-scale global contracts."



HHI won the orders for 10 units of supersize container ships

Hyundai Heavy Industries (HHI) has received a large-scale order for supersize container ships as the company is aggressively targeting the container ship market recently on the rebound.

HHI announced on December 14 that it signed a contract worth a total of \$1.45 billion for 10 units of 13,100TEU supersize container ships from Hapag-Lloyd, the largest container shipping line of Germany.

Specifically, this order is hailed as a signal of full-fledged recovery of container ship market, considering that HHI is selectively signing deals on the basis of its strategy to secure profitability.

The container market has seen an upswing in the demand among with the growing volumes amid the recovery of global economy, and is rebounding fast as some glut in the market has been resolved by the eco-friendly low speed operation policy of shippers.

Furthermore, there is a strong prospect for additional orders, considering that ship owners continue to focus on large container ships in light of the increased volumes and economic efficiency.

6 vessels out of the total 10 vessels to be built by HHI under this contract surpass previous ones in size. 8,600TEU-class was ordered in 2008, but the ship owner has demanded the ship type to be changed to 13,100TEU-class. An official from HHI said, "HHI has extensive experience and unique technologies in the field of supersize container ship, and will focus on winning new shipbuilding orders on the basis of our technology prowess."

The 10 vessels will be delivered to the ship owner consecutively from July

2012 to November 2013.

Meanwhile, HHI has won orders for a total of 80 vessels, valued at \$10.6 billion in all, in the shipbuilding and offshore plant sector so far as of December 15, 2010, and has the order backlog for 324 vessels worth \$52.7 billion (including the backlog of Hyundai Samho Heavy Industries).



Same class of vessel as the container ship ordered to HHI this time. It is the Maersk Edinburg which was ordered from Ricmers of Germany in July 2007 and delivered to the ship owner in July 2010.

DSME signed LOA, winning a \$1.3 billion order for 1 offshore platform

Daewoo Shipbuilding & Marine Engineering (DSME) signed the Letter of Authorization (LOA) with Chevron, a global oil company, on December 15 to build a fixed offshore platform for offshore natural gas production.

By signing the LOA, both companies have agreed on the total contract amount of the concerned platform, specific schedule of production, and others.

The design process of this fixed offshore platform, valued at a total of \$1.3 billion, will begin in early 2011. This facility will be built at the Okpo Shipyard and delivered to Chevron around in the second half of 2014.

The project is a turnkey package, in which DSME will take responsibility in designing, material purchases, installation and trial operation, etc, including the topside and substructure.

This offshore platform, which will operate in the sea to the northwestern part of Australia, consists of 37,000-ton top side and 27,000-ton steel gravity based substructure which supports the topside weights. The top side is

equipped with the gas-liquid separation facility for refining the natural gas extracted from the underwater deposits, dehydration facility, compression facility, etc, and can process 55 million m³ of natural gas per day.

DSME CEO & President Nam Sang-tae, said, "A new wave of new orders is expected next year amid the continuous increase in oil prices and various energy exploitation projects around the globe."

DSME has maintained solid business relationship with Chevron which has placed orders with it for a total of 10 offshore platforms and 1 unit of Floating Production, Storage and Offloading (FPSO), including this deal.

STX Europe won orders to build 2 icebreakers for the polar regions

Arctech Helsinki Shipyard, a joint venture formed by STX Finland and Russia's state-run United Shipbuilding Corporation (USC), was awarded a \$200 million contract to build 2 polar region icebreakers from Sovcomflot, Russia's state-run shipping company.

The officials of both companies entered into the contract on December 16 (local time) at the Kremlin Palace in Moscow, Russia.

Both vessels will measure 99.2m in length, 21.7m in width, and weigh 3,950 tons. These icebreakers will be built by Arctech Helsinki Shipyard, the joint venture, and delivered consecutively from 2013. These are designed for the energy exploration and drilling in the extreme environmental conditions on the Sakhalin area as part of the energy exploitation project which the Russian government is pushing forward.

On December 10 (local time), STX Finland entered into a contract for the establishment of Arctech Helsinki Shipyard, a joint venture formed with USC, at the signing ceremony in St. Petersburg, Russia, attended by Russian Prime Minister Vladimir Putin and Finnish Prime Minister Mari Kiviniemi.

Arctech Helsinki Shipyard will jointly carry out the projects to win new orders and construct ships necessary for the exploitation of resources in the polar regions. This icebreaker is the first vessel to be built by this joint venture.

Russia's state-run USC was established in 2007 by the Presidential Decrees of former Russian President Vladimir Putin, in which the Russian government owns 100% stake, and puts its primary focus on the modernization of Russia's shipbuilding industry, integration by region, investment, etc, and has 42 shipyards in Russia.

This joint venture will facilitate the transfer of shipbuilding know-how from Helsinki Shipyard to USC, and as a result, USC will be able to build up unique technologies in the special ship sector.

Meanwhile, STX Finland will be able to best utilize the Helsinki Shipyard, like developing it into a hub of technology development necessary to build special vessels for the polar regions, as well as construction of ships.

Specifically, STX Finland, by securing a foothold in the Russian market, will be better positioned to win orders from Russia for special ships operating in polar waters.

Russian government plans to place a large-scale order worth about \$3.6 billion by 2020 for the resource exploitation/transportation in the polar regions.

An official from STX said, "The partnership with the Russia's state-run shipbuilder will help create ample business opportunities as Russia is making active investment in the natural resource exploitation projects. Many business opportunities are expected to be created for the natural resource exploitation/transportation in the polar regions which not only have the potential as an energy reservoir for the future but also provide opportunities for winning the shipbuilding orders."



View of Icebreaker



Helsinki Shipyard of STX Europe entered into a contract with USC to establish Arctech Helsinki Shipyard, a joint venture, on December 10 (local time) at St. Petersburg, Russia. (clockwise from the left in the back row) Finnish Prime Minister Mari Kiviniemi, Russian Prime Minister Vladimir Putin, USC's President Roman Trotsenko, STX Europe President & CEO Kim Su-jou, and President of STX Finland Oy. Juha Heikinheimo.



DSME signed a contract to construct 5 units of navy warships, accomplishing its annual new order target for 2010

Daewoo Shipbuilding & Marine Engineering (DSME) announced that it reached its annual new order target of \$10 billion in shipbuilding order as it signed warship contract with a Southeast Asian country.

On that day, DSME CEO & President Nam Sang-tae entered into a large-scale contract with a local shipbuilder of a Southeast Asian country in relation to the construction of navy warships and transfer of technology at the signing ceremony attended by the former prime minister and hundreds of officials from related industry. The contract is thought to be worth up to \$1 billion.

DSME will design these warships and produce the hulls in the block form, and supply various weapon system packages. The warships will be outfitted finally at the local shipyard through the transfer of technology and delivered to the local navy from 2013.

DSME CEO & President Nam Sang-tae, said "This contract is significant as a first step towards full-fledged export of warships based on the complex project model based on the collaboration with local shipyards."

Specifically, DSME has proceeded with the large-scale export of warships based on such a project model in other countries of Southeast Asia, Brazil, Russia and others, and anticipates dramatic results from 2011.

DSME has clinched orders worth a total of \$300 million in foreign markets, such as an order for 1 frigate from the Bangladesh Navy and a contract for the repair of 2 submarines from the Indonesian Navy, and thus has exported the largest number of warships among domestic shipbuilders.

DSME plans to push ahead with the development of technology and expand the specialized designing capability in a bid to make active inroads into foreign warship markets through the collaboration with local companies.



DSME CEO & President Nam Sang-tae (right) and the President of a local company are signing the contract to build navy warship in the afternoon on December 14.

SHI received a \$550 million order to build a drillship

On December 14, Samsung Heavy Industries (SHI) received a \$550 million order for 1 unit of drill ship from Pride International of the United States, one of the world's largest offshore drilling companies.

SHI won an order for 1 drillship this time which follows a contract which the company announced in November for 2 drillships. Thus, SHI has secured 3 drillship orders out of the total 6 drillship orders awarded worldwide in 2010, and has won 32 drillship orders out of the total 53 such orders placed around the globe since 2000, capturing a whopping 60% share of the market.

This 96,000-ton displacement vessel will measure 228m in length, 42m in width, and can drill to the maximum depth of 12km under water, and is

scheduled for delivery by mid 2013.


This new order brings this year's total number of orders to 75, valued at \$9.65 billion in all, and currently, SHI has the order backlog worth \$39.3 billion which amounts to 31 months of work.



Domestic shipbuilding industry which experienced the sharpest decline in order inflow in 2009 has seen strong rebound in new vessel order in 2010 as the year draws to a close.

The strong growth in the shipbuilding industry is attributed to the fact that the order volume for merchant ships rose by about 70% to 27mCGT from 16mCGT over the beginning of the year and shipbuilders have continued to win orders for offshore facilities such as drillships or Floating Production, Storage and Offloading (FPSO) units, the sector in which the domestic shipbuilders have strength.

In 2011, shipbuilder are expected to win more new orders for offshore facilities amid the rising oil prices and the increase in new orders for high value-added vessels such as container ships or LNG carriers in the wake of the resumption of projects which have been postponed. It is a very good news for the domestic shipbuilding industry which have strength in both sectors. However, domestic shipbuilding industry need to map out new strategies and spur efforts to recapture world's no. 1 title after being overtaken by China in May, 2010, which is slightly ahead of Korea in terms of order volume, shipbuilding volume, and order backlog.

According to the statistics of Clarkson, shipyards in Korea still have enjoyed influx of large volume of orders and been placed high in the global ranking. In consideration of that, let's have an up-close look at the backlog of major Korean shipbuilders such as Hyundai Heavy Industries, Daewoo Shipbuilding & Marine Engineering, Samsung Heavy Industries, STX Offshore & Shipbuilding. 

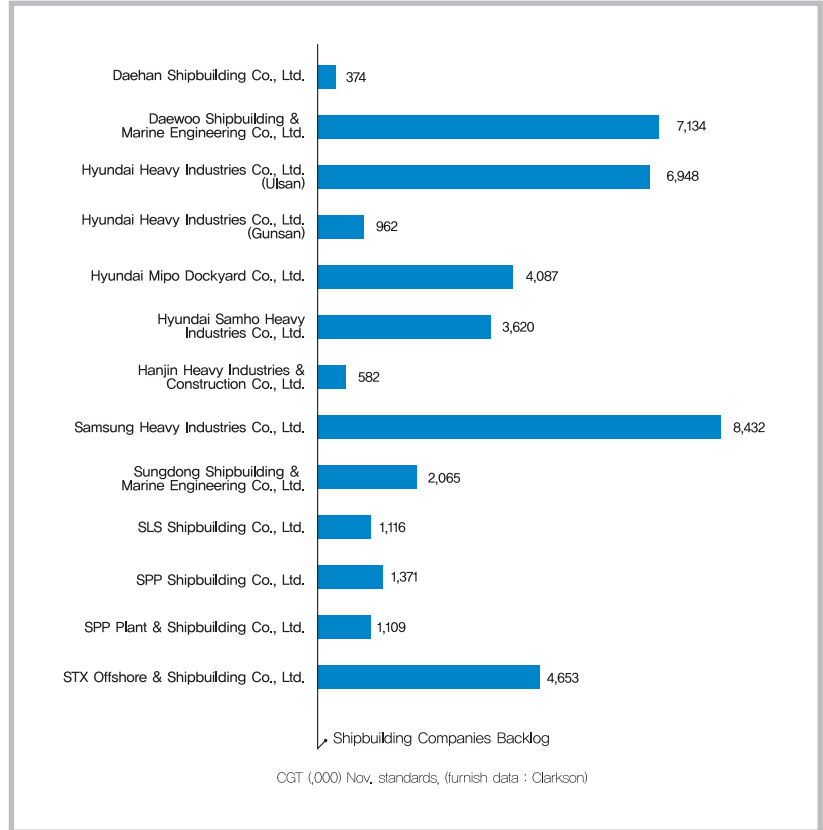


Photo: Hanjin Heavy Industries & Construction Co., Ltd.

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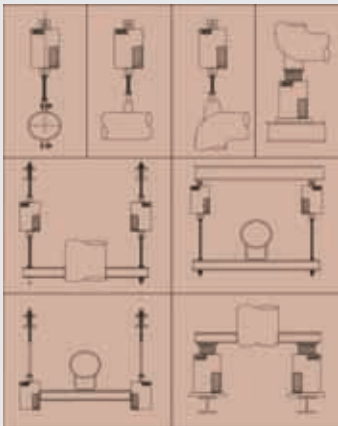
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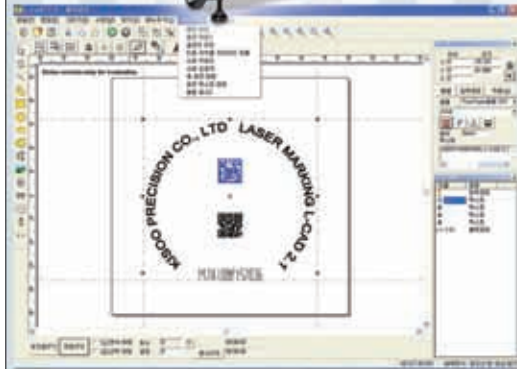
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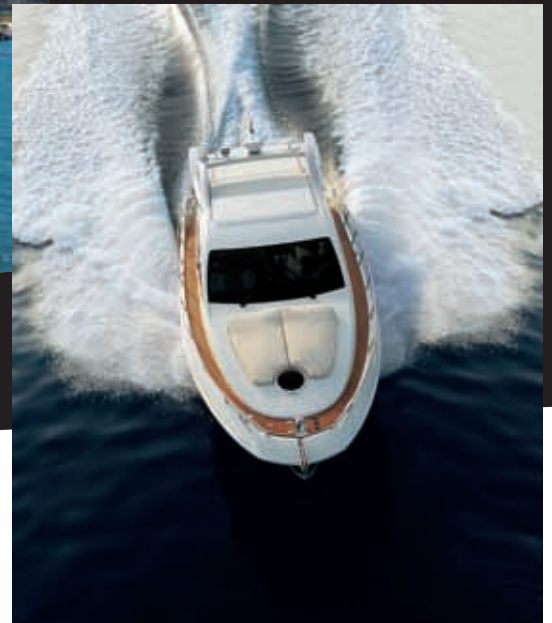


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Yachts

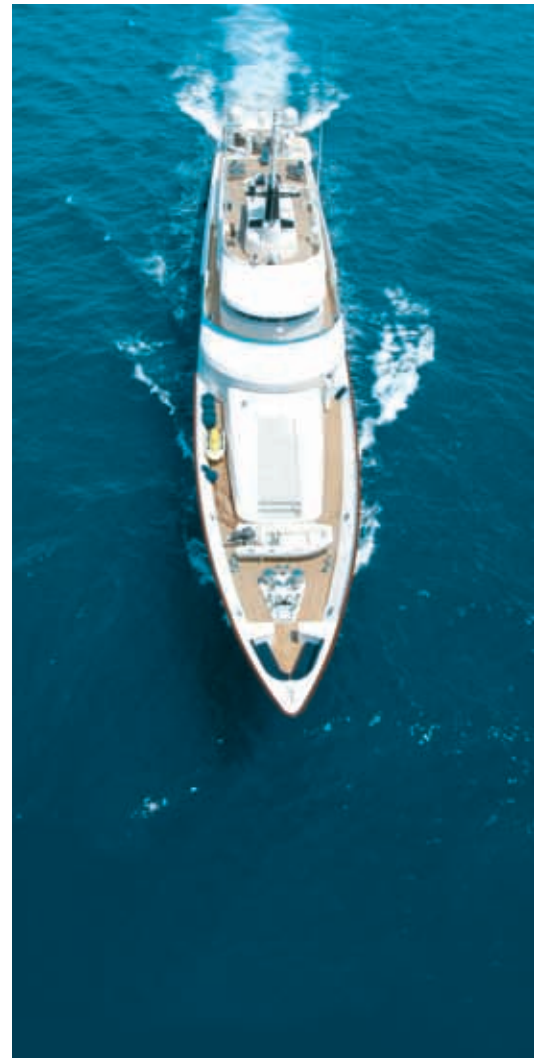
The number of leisure boats worldwide amounts to 23 million. Approximately one million units worth \$45 billion are in demand annually. Notably, the demand of mega yachts is rising in the recent three years in terms of the ordered number of units between 2006 and 2008 with average annual growth of 8.2-15.1% for yachts under 120 ft and 17.9-38.4% for yachts over 120ft. A mega yacht refers to a recreational boat above 24m in length. Mega yachts are typically equipped with spaces for cooking and residence. Prices vary from \$1 million to 200 million.

All three of the largest super yachts manufacturers in the world are Italian, Azimut-Benetti, Ferretti Group, and Rodriguez Group. Among the top ten largest manufacturers are Lussen of Germany, Sunseeker International of the United Kingdom, Trinity Yachts of the United States, and so on. As of now, European regions lead the world market for highly profitable mega yachts. European corporations accounted for 548 out of 916 yachts ordered in 2008 worldwide.

Currently, most South Korean yacht manufacturers lack the fund and personnel for a sufficient level of product development capacity as they are of small size. Most of the South Korean domestic market is filled with imported products from the US and Europe.

However, South Korean yacht industry expects a high-speed growth in the coming years partly thanks to yacht industry growth policy, increased interest in marine recreation among South Koreans, increased prospect in entering overseas markets, and so on. Notably, the prospect is now even better after a local yacht manufacturer received an order for four recreational aluminum and steel mega yachts of 75 ft size worth about Won 12 billion in November 2010 from the US and Russia. It was the first record of such orders for South Korean yacht industry. 

Photo Courtesy: RINA





Major Performance Gallery







Major Performance Gallery





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SWAM-Blaster

SWAM-Blaster

Sunny Tech Trading Co. Ltd.

Sunny Tech has recently begun the supply of Micro abrasive blaster (model: SWAM-Blaster) which can remove the conformal coating safely and selectively from various parts without causing any damage to machine or ESD.

SWAM-Blaster was developed and is being produced by Crystal Mark of the United States which has the professional technology and know-how amassed for more than 3 years in the field of micro sandblasting, and specifically, Crystal Mark offers a complete line of nozzles, abrasives and additional components to complete the micro sandblasting system.

SWAM-Blaster was designed to bring accurate amount of carefully graded abrasive powders into the controlled flow of air compressed through the abrasive pathway and air connection and take the powders out of the nozzle tip positioned manually or automatically.

It ensures high accuracy of work in various fields, like deburring the metal parts with 0.020" in diameter and texturing the metal with 0.001" in thickness for measuring 7 x 13 feet.

An official from Sunny Tech said, "The product has a wide variety of applications within

many industries including semiconductor, electronics, machine shops, museums, medical, dental labs, as well as arts and crafts."

Specially, the unique design of all the SWAM-Blaster MV Series offers "Maximum Versatility" with carbide lined fittings throughout the abrasive pathway, the tilting powder tank is mounted to a hinged plate to allow it to tilt to the side and with the push of a button the vibrator activates to simply walk the powder out for rapid powder changes.

The line up and features of each model can be summarized as below:

- MV-2: Max versatility, small nozzle 0.007 to 0.032
- MV-2L: Max versatility, large nozzle 0.011 to 0.060
- MV-241: Large & small nozzle capability with a push of a button, quick powder change

SWAM-Blaster is are accurate and precise. Independently adjustable powder flow control and air pressure regulation make an exceptionally large window of capability. Wide range of abrasives and sizes can be used.

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<http://www.suntt.co.kr>

The USB transducer that can multi-task

Daeryuk Corporation

Ellison Sensors introduced the GS4200 USB Digital pressure transducer 3 years ago after identifying a need for a more flexible approach to pressure measurement. The latest development allows the user to measure up to 16 pressure inputs at the same time from just one PC, saving precious time and effort. The latest development allows the user to measure up to 16 pressure inputs at the same time from just one PC, saving precious time and effort.

The GS4200 USB transducer is a unique product in its ability to measure, analyse and record pressure directly onto your PC or laptop. Power is provided from the USB port eliminating the need for further connections. Data is presented via the ESI-USB configurable software supplied with the transducer, and its instant connection with auto-detection will automatically configure with your computer. The fast sample rate enables dynamic pressures to be measured with up to 21 bit resolution, and it is available in pressure ranges from 0-500 bar and 0-3,000 bar. The transducer is equipped with superior Silicon-on-Sapphire technology so the user is assured high accuracy and stability.

In identifying the needs of the customer, the natural course of the products development was to enable the user to measure multiple inputs all at once, instantaneously. Having to use multiple computers and endless connections is time consuming and inefficient. For customers like the British Geological Survey for example, the ESI USB transducer with 16 inputs will be an invaluable tool. The main difficulty at the moment arises when trying to monitor several transducers at the same time.

"The problem is that we currently have to have several transducer windows open at the same time. With a small computer screen this means we can only see the topmost transducer information" said Dr. Chris Rochelle of the British Geological Survey. And "A single transducer window on the screen that could display the pressure status of a number off experiments at the same time would allow us to

see all their pressures at a glance, and hence better monitor their progress," he concludes.

ESI Technology (ESI) manufactures one of the most comprehensive ranges of pressure transducers and transmitters available from a single source anywhere on the globe, its products finding their way into a massive spectrum of end uses.

Albert Ellison, owner of ESI retired after 40 years in the industry, and according to his plan to hand over the company to SUCO by the end of 2010. "As part of my retirement plan and succession of the business I am pleased to inform you that SUCO has acquired ESI and it's brands Ellison Sensors International, TSM and Sigtel," Mr. Ellison said.

SUCO is a company with the same philosophy for customer support and business growth as ESI. Founded in 1938, SUCO has become a well established trade name and with their worldwide presence in over 40 countries, can only enhance ESI's performance in the pressure measurement market. Excellent products, a high standard of customer service and competitive prices will ensure a superb market position for both ESI and SUCO.

Daeryuk Corporation has specialized in the supply of pressure switch and clutch of SUCO to the Korean market since its establishment in 1979. As SUCO and ESI come together to form a single company, Daeryuk Corporation has begun to supply the entire products of ESI, including the transducer, since the beginning of this year.



USB transducer

TEL : 82-2-422-1615
<http://www.suco.co.kr>

NI Fiber Optic Sensor Interrogator for PXI Express

National Instruments Co.

National Instruments (NI) announced the NI PXIe-4844 optical sensor interrogator, a two-slot 3U PXI Express module for fiber Bragg grating (FBG) sensors. FBG sensors operate by reflecting a wavelength of light that corresponds to changes in physical phenomena such as strain and temperature. Unlike conventional electrical sensors, FBG sensors are nonconductive, electrically passive and immune to electromagnetic interference, making them a safe and reliable alternative in environments subject to noise, corrosion or extreme weather. The transmission medium is standard optical fiber instead of copper wire, making it possible to take measurements over long distances of up to 10 km. Engineers and scientists can use FBG sensors for the most common measurement types, including strain, temperature and pressure, and several sensors can be daisy chained along a single optical fiber to greatly reduce the size, weight and complexity of the measurement system.

The NI PXIe-4844 optical sensor interrogator is the latest addition to the NI SC Express family of sensor measurement modules for PXI Express. It features four optical channels that are simultaneously scanned at 10Hz. Each channel has an 80nm wavelength range (1,510 to 1,590nm), which can scan 20 or more FBG sensors per channel (more than 80 FBG sensors per module, depending on the sensor range). For high-channel-count applications, engineers and scientists

can further extend the maximum number of FBG sensors per module by connecting one or more optical channels to an external optical multiplexer or by adding more NI PXIe-4844 modules in the same PXI chassis.

In addition to multiple channels, the NI PXIe-4844 features an optical core that combines a high-power, low-noise swept wavelength laser with fiber Fabry-Perot tunable filter technology from Micron Optics. The module delivers a wavelength accuracy, repeatability and stability of 1 pm, which is equivalent to sensor accuracies of approximately 1.2 microstrain and 0.1 degrees Celsius for FBG strain and temperature sensors, respectively. Unlike most instruments, the interrogator does not require periodic external calibration as every scan made by the NI PXIe-4844 is calibrated to an onboard NIST-traceable wavelength reference.

Engineers and scientists can program the NI PXIe-4844 with easy-to-use configuration and driver software to shorten setup and configuration time. The module includes the NI-OSI Explorer utility for automatic sensor detection and simplified sensor configuration as well as the NI-OSI driver software with easy-to-use LabVIEW API for acquiring measurements in scaled physical units. Using NI LabVIEW software, engineers and scientists can view, log and analyze the sensor data. Applications in LabVIEW easily can be extended to also include synchronization with other sensor types, instruments or con-

New
Product

control systems using intuitive graphical icons and wires that resemble a flowchart. LabVIEW also offers integration with thousands of hardware devices and provides hundreds of built-in libraries for advanced analysis and data visualization.

The industry-standard PXI platform for measurement and automation provides the industry's highest-performance timing and synchronization capabilities and the high-throughput PCI Express bus. The NI PXIe-4844 can be integrated into the same chassis as other PXI modules including SC Express for complementary electrical data acquisition and control. With the PXI platform, engineers and scientists can simplify complex measurement systems located in remote, challenging environments by combining both optical and electrical measurements into the same PXI chassis.

Applications that can benefit from the NI PXIe-4844 include civionics, for distributed measurements over long distances including bridges, dams, tunnels and other civil structures; energy, for monitoring wind turbine blades, pipelines, nuclear reactors, offshore platforms and power



NI PXIe-4844 optical sensor interrogator

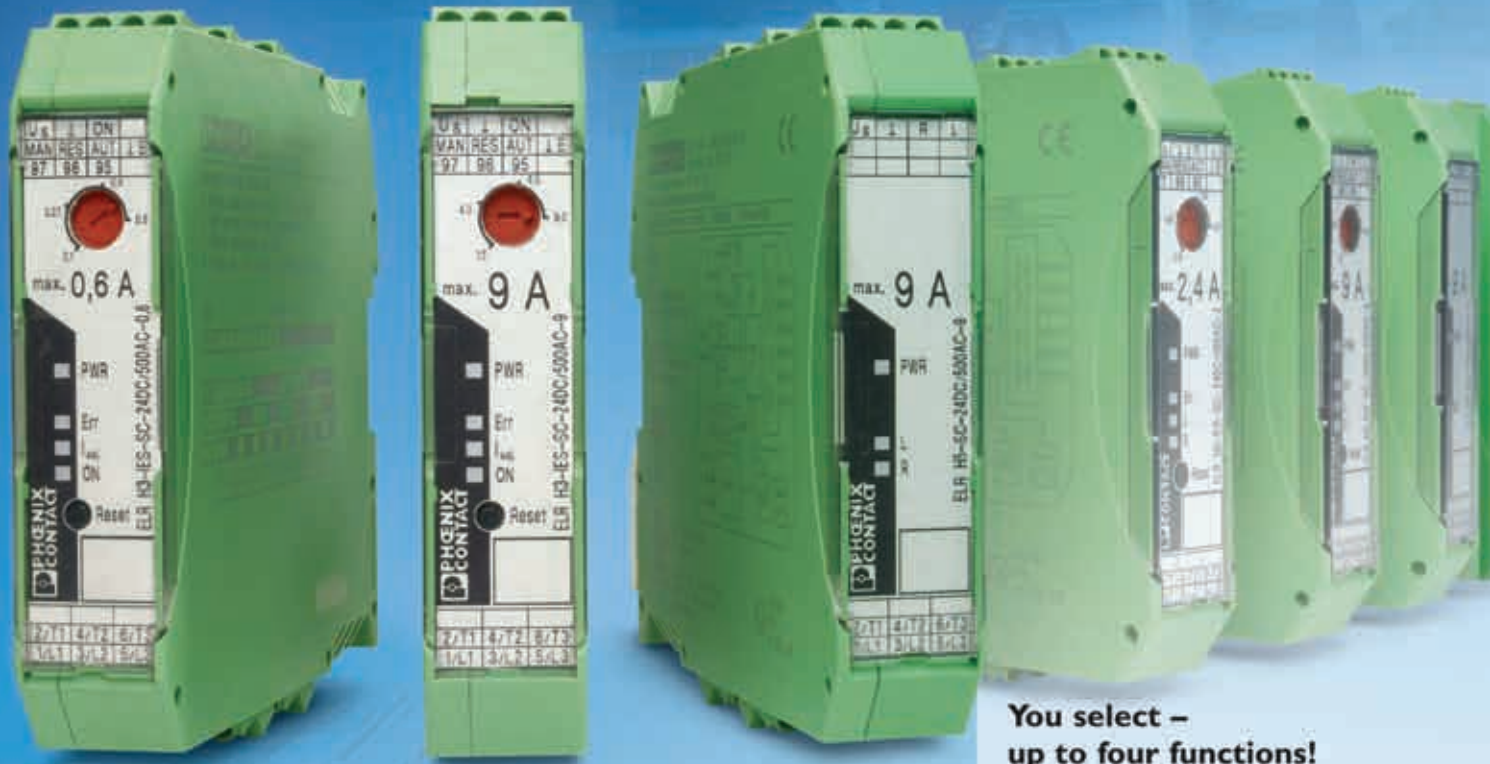
generators; and transportation, for testing and monitoring marine vessels, rail vehicles and aircraft components.

TEL : 82-2-3451-3400
<http://ni.com/korea>

An advertisement for Kongsberg offshore operations. The background is a large offshore oil rig at sea. In the foreground, a control room is visible with a person in an orange safety vest operating a console. A red circular inset highlights the operator. Text on the left reads "THE FULL PICTURE". On the right, the headline "KNOW EXACTLY WHERE YOU STAND" is displayed above the Kongsberg logo. Below the logo, the text "OFFSHORE OPERATIONS" is followed by "STAY CALM AND IN CONTROL, WHATEVER THE WEATHER". A paragraph of text describes the company's solutions for offshore operations, and the website "www.km.kongsberg.com" is listed at the bottom.

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DONGNAM PRECISION IND. CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Multi Core Tube, Sus Cable Tray & Cover, LNG Line Out Fitting
TEL : +82-51-831-3500

DONG SUNG HIGHTECH.

Head Office : Gangseo-gu Busan
Homepage Add. : www.dshitech.com
Main Products : Shutter Grill, P-Chamber, Diffuser, Frie Damper, Volume Damper
TEL : +82-51-831-9561

DONGYANG G.T.S.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Compressed Centellen Board, Metal Inserting Gasket
TEL : +82-51-831-6505

DONGYANG HYDTEC CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.dongyang-hyd.com
Main Products : Rudder & propeller Truck, Block lifter, Gripper Jack System
TEL : +82-51-831-6185

DONGYANG METAL CO., LTD.

Head Office : Sasang-gu Busan
Homepage Add. : www.dy-metal.co.kr
Main Products : Swing bolt a' ssy, Fittings
TEL : +82-51-814-5157

DONGYOUNG ELECTRIC CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.dyelectric.com
Main Products : Main Switchboard, Emergency Switchboard
TEL : +82-51-261-9800

DSB ENGINEERING CO., LTD.

Head Office : Youngdo-gu Busan
Homepage Add. : www.dseng.com
Main Products : Totally Enclosed, Lifeboat, Herged Qrarity Davit
TEL : +82-51-412-5937

DSE BEARING CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.dsebearing.com
Main Products : Metal Bearing
TEL : +82-51-831-2046

DSK CO., LTD.

Head Office : Youngdo-gu Busan
Homepage Add. : www.dskworld.com
Main Products : Piston Crown
TEL : +82-51-417-7800

DUYOUNG INDUSTRIAL MACHINES CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Plate-Baffle
TEL : +82-51-831-2477

EM SYSTEC CO., LTD.

Head Office : Sasang-gu Busan
Homepage Add. : www.emsystec.com
Main Products : Marine Switch Board, Control Console
TEL : +82-51-302-8761

FRIEND CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.thefriend.co.kr
Main Products : Marine Cable Tray, Mud Box, Strainer
TEL : +82-51-831-9456

GEO MAEK SHOT&PAINT CO.,LTD.

Head Office : Saha-gu Busan
Homepage Add. :
Main Products : Deck Machinery Part, Hose Handling Crane
TEL : +82-51-264-3315

GEORIM ENGINEERING CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.kangrim.com
Main Products : Marine Industrial Boiler, Exhaust Gas Boiler
TEL : +82-51-831-2929

GISUNG ENGINEERING CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Air Reserovir, Heat Exchanger
TEL : +82-51-831-4475

G. M. TEC CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.igmtec.com
Main Products : Duct Equip' t Seat Support
TEL : +82-51-831-5851

G.S HIGH-TECHER CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.gshightecher.koreasme.com
Main Products : Air Vent Head, Pipe Coupling
TEL : +82-51-832-0456

G&S PRECISION IND CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Cable Tray, Vent, Hull Outfittings
TEL : +82-51-831-0849

HAE DONG METAL CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.hdanode.com
Main Products : Zinc Anode, Al Anode
TEL : +82-51-831-3751

HAE DUK RUDDER & R-STOCK CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.rudders.co.kr
Main Products : Rudder & R.Stock, Rudder Horn, Rudder Carrier
TEL : +82-51-831-0101

HAE SUNG INDUSTRIAL.

Head Office : Saha-gu Busan
Homepage Add. : www.hsjs.co.kr/
Main Products : Cable Tray, Cable Way Fitting, Cable Coaming
TEL : +82-51-264-8103

HAEWON INDUSTRIES CO.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : P/Crown, P/Skirt
TEL : +82-51-831-4600

HAEWON IND. CO., LTD.

Head Office : Sasang-gu Busan
Homepage Add. : www.heawon.net
Main Products : Copper, Copper-Nickel, Monel Fitting & Flanges
TEL : +82-51-312-2161

HAEYANG FAMILY CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : F.P Propeller, C.P Propeller, Propeller Shaft
TEL : +82-51-831-3550

HAEYANG METAL CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : F.P Propeller, C.P Propeller, Propeller Shaft
TEL : +82-51-831-4591

HAEYANG PROPELLER CO., LTD.

Head Office : Gangseo-gu Busan

Homepage Add. :
Main Products : Marine Propeller
TEL : +82-51-831-4599

HANCHANG TRANS CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.hctr.co.kr
Main Products : Pole Mounted Transformer, Pad Mounted Transformer
TEL : +82-51-831-3470

HANJULEVEL.

Head Office : Sasang-gu Busan
Homepage Add. : www.hanjulevel.co.kr
Main Products : Level instrument Etc, Vapour Emission Control Sys.
TEL : +82-51-303-0537

HANLA IMS CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.hanlalevel.co.kr
Main Products : Cargo Tank Monitoring Sys. Tank Remote Sounding Sys.
TEL : +82-51-601-3019

HANLA IND CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. :
Main Products : Oil Filter unit, Gas Blower
TEL : +82-51-264-2201

HANMAUM KI-GONG CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.hankg.co.kr
Main Products : Air Cooler Housing, Oil Cooler Housing
TEL : +82-51-831-5211

HEARTMAN CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. : www.heartman.co.kr
Main Products : Nozzle Tip, Plunger Ass'y, Fuel Injection V/V
TEL : +82-51-262-8869

H.M.E.

Head Office : Kijang-kun Busan
Homepage Add. : www.hyomyungeng.com
Main Products : Battery Charger, Light Signal Column
TEL : +82-51-709-9000

HOSEUNG ENTERPRISE CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.hoseung.koreasme.com
Main Products : Tand Package Unit, Pump Package Unit, Cooler Package Unit
TEL : +82-51-831-2233

HWAJIN ENTERPRISE CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.hwa-jin.com
Main Products : Control Box, Gauge Board System
TEL : +82-512-831-9447

HWAJIN PF CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. : www.hwajinpf.com
Main Products : Butt-Welding Pipe, Fittings Carbon Steel
TEL : +82-51-204-3001

HWA SHIN PRECISION CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Life Boat Winch
TEL : +82-51-831-9839

HYOSUNG STEEL TECHNOLOGIES CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Steel plate cutting, Hy Auto or Manual
TEL : +82-51-831-5093

HYUNDAI HYCRAULIC CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.hhmc.co.kr
Main Products : TURNING ROLLER, BLOCK LIFT
TEL : +82-51-831-8611

HYUNDAI ZINC METAL CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. : www.hdz.co.kr
Main Products : Sacrificial Anode, Hot Dip Galvanizing, Ship Manufacture
TEL : +82-51-266-4788

HYUNJIN MATERIALS CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.hjmco.co.kr
Main Products : Cross Head, Connecting Rod, Piston Rod
TEL : +82-51-602-7700

ILDO MACHINE ELECT CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. :
Main Products : Heavy Electric Parts
TEL : +82-51-266-6066

IL - SUNG INDUSTRY CO.

Head Office : Sasang-gu Busan
Homepage Add. :
Main Products : Silencer, Water Air Filter, Air Intet Trunk
TEL : +82-51-312-4056

IN SUNG INDUSTRY CO.

Head Office : Saha-gu Busan
Homepage Add. :
Main Products : Profile, Steel Coalming Insulation
TEL : +82-51-293-7550

JAESEUNG ENGINEERING CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Steel Pipe Spool, Sus Pipe Spool, CuNi Pipe Spool
TEL : +82-51-831-8838

JEILSANKI CO.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products :
TEL : +82-51-831-5398

JEONG-AM SAFETY GLASS CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.jeong-am.co.kr
Main Products : Tempered Glass, Laminated Glass
TEL : +82-51-831-6161

JEONG HWA ACCOMMODATION SYSTEM CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.jeonghwa21.com
Main Products : Wooden Furniture
TEL : +82-51-974-8000

JEONG WOO COUPLING CO., LTD.

Head Office : Kimhae Gyeongsangnam-do
Homepage Add. : www.jwjoint.co.kr
Main Products : Pipe Coupling, Pipe Repair Clamp
TEL : +82-55-339-7666

JIN GU ENGINEERING.

Head Office : Kimhae Gyeongsangnam-do
Homepage Add. :
Main Products : Rudder Stock, Stern Tube, Stern Roller, Winch
TEL : +82-55-343-3414

JIN IL BEND CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products :
TEL : +82-51-832-1919

JINKWANG ELECTRIC CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Pull Card Switch, Belt Sway Switch, Belt Speed Switch
TEL : +82-51-831-2571

JINYOUNG METAL CO., LTD.

Head Office : Sasang-gu Busan

Homepage Add. : www.jymct.co.kr
Main Products : Multi Core Tube, Welded Stainless, Steel Tube
TEL : +82-51-313-4001

JMC HYDRAULICS.

Head Office : Saha-gu Busan
Homepage Add. :
Main Products : Hydraulic Motor For Marine, Hydraulic Control Valve
TEL : +82-51-204-4046

JNC HI-TECHNOLOGIES.

Head Office : Gangseo-gu Busan
Homepage Add. : www.jnchitec.com
Main Products : Junction Box, Elect panel bard, Tel Booth
TEL : +82-51-974-9500

JOKWANG I.L.I CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products :
TEL : +82-51-602-0200

JONGHAP POLESTAR ENGINEERING CO., LTD.

Head Office : Yeungdo-gu Busan
Homepage Add. :
Main Products : Diesel Engine Piston, Cylinder, Valve
TEL : +82-51-403-5514

JUNG GONG IND. CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. : www.jung-gong.com
Main Products : Ordinary Window Side, Scuttle, Heated Window
TEL : +82-51-261-2911

JUNG - WOO MACHINERY CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Carrier Housing, Split Bearing, Stock, Up.Lower Sleeve
TEL : +82-51-831-5394

KANG BACK INDUSTRY CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Electric Control Box, Valve & Similar , Equipment
TEL : +82-51-831-9025

KANGIL CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Pressure Vessel, Deaerator, Heat Exchanger
TEL : +82-51-972-5672

KANGRIM HEAVY INDUSTRIES CO., LTD.

Head Office : Changwon Gyeongsangnam-do
Homepage Add. : www.kangrim.com/
Main Products : Marine Indutrial Boiler, Exhaust Gas Boiler
TEL : +82-55-269-7701

K.C. CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.iccp-mgpps.com
Main Products : M.G.P.S, I,C,C,P, System Fe Ion, Generator
TEL : +82-51-831-7720

KEO HUNG MACHINERY.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Deck Crane, Provision Crane, Hose Handling Crane
TEL : +82-51-831-6296

KEYSUNG METAL CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.keysungmetal.com
Main Products : Valve(Cryogenic, Ball), Strainer
TEL : +82-51-831-3391

KOC ELECTRIC CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Cast Resin Transformer, Dry Resin Transformer
TEL : +82-51-832-0550

KOREA HYDRAULIC CO.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.enpos21.com
 Main Products : Electric Motor Pump, Hand Pump, Single/Double Acting Ram
 TEL : +82-51-832-1100

KOREA PHE CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.kphe.co.kr
 Main Products : Plate Heat Exchanger, Tank Cleaning Heater
 TEL : +82-51-261-2664

KOREA STEEL SHAPES CO., LTD.

Head Office : Sasang-gu Busan
 Homepage Add. : www.ekosco.com
 Main Products : Flat Bars, Equal Angles, Unequal Angles
 TEL : +82-51-323-2611

KOREA TRADING & INDUSTRIES CO., LTD.

Head Office : Saha-gu Busan
 Homepage Add. : www.kticopper.co.kr
 Main Products : Copper alloy coil, Plate
 TEL : +82-51-293-4423

KORINOX CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.korinox21.com
 Main Products : Cold Mill Stainless, Steel Coil
 TEL : +82-51-832-0031

KORVAL CO., LTD.

Head Office : Saha-gu Busan
 Homepage Add. : www.korval.co.kr
 Main Products : Crank Case Relief Valve, Main Starting Valve, Rotary Valve
 TEL : +82-51-790-9700

KSP CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : Ship Engine Valve Spindle, Flange, Ring Gear
 TEL : +82-51-831-6274

KSV

Head Office : Youngdo-gu Busan
 Homepage Add. : www.ksv-valve.co.kr
 Main Products : Valve Spindle, Seat-Ring for marine Engine
 TEL : +82-51-415-4466

KTE CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.kte.co.kr
 Main Products : Electrical Equipment (Switchboard & Console)
 TEL : +82-51-265-0255

KUKDONG ELECOM CO., LTD.

Head Office : Saha-gu Busan
 Homepage Add. : www.kukdongelecom.com
 Main Products : Navigation/Signal LT, EX-Plision Proof LT, Fluorescent LT
 TEL : +82-51-266-0050

KUKDONG INDUSTRIAL ENGINEERING.

Head Office : Sasang-gu Busan
 Homepage Add. : www.kdie.co.kr
 Main Products : Exhaust Gas Pipe With Insulation, Fuel Injection Pipe and Bloc
 TEL : +82-51-303-6900

KUKJE METAL CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.kjmetal.co.kr
 Main Products : Manhole Cover, Portable Tank, EXH. Gas Pipe
 TEL : +82-51-831-1541

KUM HAW PRECISION CO.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : Coupling Flange, Bellows Flange
 TEL : +82-51-831-5685

KUMKANG ENGINEERING.

Head Office : Gangseo-gu Busan
 Homepage Add. :

Main Products : Hand Rail, Storm Rail, Platform, Inc. Ladder
 TEL : +82-51-831-0091

KUMKANG PRECISION.

Head Office : Saha-gu Busan
 Homepage Add. : www.kkmarine.co.kr
 Main Products : Engine Parts, (Air Reservoir) & Valve
 TEL : +82-51-262-4893

KWANGIL CORP.,

Head Office : Sasang-gu Busan
 Homepage Add. : www.k-i.co.kr
 Main Products : Stainless Steel, HR Coil
 TEL : +82-51-324-0006

KWANG JIN E.N.G CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : Pipe Piece, Pipe Spool
 TEL : +82-51-831-1435

KWANG JIN IND. CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : Part of Heat Exchanger
 TEL : +82-51-831-4131

KWANG JIN TECH.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : Non Asbestos, Teflon, Rubber
 TEL : +82-51-973-5566

KWANG LIM MARINE TECH. CO.,LTD.

Head Office : Sasang-gu Busan
 Homepage Add. :
 Main Products : Window Box, (STEEL, AL, SUS) Vent Hole
 TEL : +82-51-313-0055

KWANG SAN CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.kwangsan.com
 Main Products : Heating Coil unit, Expansion joint
 TEL : +82-51-974-6301

KWANGWOON CO.,LTD.

Head Office : Youngdo-gu Busan
 Homepage Add. : www.kwang-woon.com
 Main Products : Square Window, Side Scuttle, Door, Hatch, Window Wiper
 TEL : +82-51-414-9494

KYEONG SIN FIBER CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.ksfiber.co.kr
 Main Products : Rudder Bearing Bush, Insulation
 TEL : +82-51-831-0268

KYOUNGWON BENDING CO.

Head Office : Kimhae Gyeongsangnam-do
 Homepage Add. : www.bending4u.com
 Main Products : Hwase Pipe, Chain, Locker
 TEL : +82-55-313-1277

KYUNGIL METAL CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : Marine Equipment Plating, Head Rest Pipe Plating
 TEL : +82-51-831-1677

KYUNGSUNG INDUSTRY CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.e-clamp.com
 Main Products : Svs Corner & Anchor, Strip, Clamp
 TEL : +82-51-831-4960

LHE CO., LTD.

Head Office : Kimhae Gyeongsangnam-do
 Homepage Add. : www.lhe.co.kr
 Main Products : Heat Exchanger
 TEL : +82-55-340-0624

MANZU INDUSTRY. CO., LTD.

Head Office : Gangseo-gu Busan

Homepage Add. :
 Main Products : Phosphate Coat, Pipe & Structure Painting, Special Painting
 TEL : +82-51-832-0944

MARINE RADIO CO., LTD.

Head Office : Youngdo-gu Busan
 Homepage Add. : www.mrckorea.co.kr
 Main Products : Public Addresser Sys, Common Aerial Sys.
 TEL : +82-51-414-7891

MARINE TECHNICAL ENGINEERING CO., LTD.

Head Office : Sasang-gu Busan
 Homepage Add. :
 Main Products : Oily Water Separator, Bilge Alarm, Air Dryer
 TEL : +82-51-831-1118

MARSEN CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.marsen.com/
 Main Products : Cargo Tank Monitoring System, Tank High/Overflow Alarm System
 TEL : +82-51-831-2108

MAX TECH.

Head Office : Kimhae Gyeongsangnam-do
 Homepage Add. : www.maxtech21c.com
 Main Products : Engine, Shock Absorper, Gasket
 TEL : +82-55-327-9652

MCM CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.mcm21.co.kr
 Main Products : Valve, Junction Box, Switch Cover
 TEL : +82-51-832-0505

MI JIN PRECISION.

Head Office : Sasang-gu Busan
 Homepage Add. :
 Main Products : Valve, Tube, Vend, Pipe for ship
 TEL : +82-51-315-3143

MIJOO INDUSTRY CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products :
 TEL : +82-51-831-1588

MIRAE ENGINEERING CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.miraeship.co.kr
 Main Products : Hull Block, Steel Outfitting, Pipe Spool/Unit
 TEL : +82-51-790-5800

MJ TSR CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.mjtsr.com
 Main Products : Rubber Sheets & Hats, All Types of Parts for Shipbuilding & Industries
 TEL : +82-51-832-0002

MODERN INTECH CO., LTD.

Head Office : Sasang-gu Busan
 Homepage Add. :
 Main Products : Curtain, Carpet, Upholstery, Mattress for Marine
 TEL : +82-51-325-0260

MT.H CONTROL VALVES CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products :
 TEL : 82-51-974-8831

MYTEC CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.imytec.com
 Main Products : Heat Exchanger, Pressure Vessel
 TEL : +82-51-831-7474

NAMSUNG SHIPBUILDING CO., LTD.

Head Office : Saha-gu Busan
 Homepage Add. :
 Main Products : Rescue Boat Davit & Winch, Assembly, Line Hauler
 TEL : +82-51-200-1277

NAMYANG METAL.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Stair Way Body, Bulk Head Hnlon, Galley Hood
TEL : +82-51-832-1721

NARA CORPORATION CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. :
Main Products :
TEL : +82-51-790-7505

NAVUTEC.

Head Office : Kijang-kun Busan
Homepage Add. : www.navutec.com
Main Products : Fire fighting & Safety, equipment for marine & Offshore
TEL : +82-51-728-5055

NEW-OHSEUNG CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. :
Main Products : Manifold, Spool piece, Chain compressor
TEL : +82-51-266-5724

NK CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. :
Main Products : Ballast Water Treatment System, Co2 System
TEL : +82-51-204-2211

NOKSAN FLANGE CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Flange for ship
TEL : +82-51-831-7956

OBOK ELECTRIC CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Transformer
TEL : +82-51-832-1751

OK KWANG ENG CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.okv.co.kr
Main Products : Marine valves, Strainers
TEL : +82-51-326-7741

OK KWANG METAL CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.okkwang.com
Main Products : Std Flange, Tube Sheet, Forging Material
TEL : +82-51-831-9885

ORIENTAL PRECISION & ENGINEERING CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.opco.co.kr
Main Products : Deck house, Engine room Casing, Life Boat
TEL : +82-51-202-0101

ORIENTAL PRECISION MACHINERY CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.opco.co.kr
Main Products : Crane Component
TEL : +82-51-831-0202

O.S.C.G CO., LTD.

Head Office : Sasang-gu Busan
Homepage Add. : www.oscg.net
Main Products : Cable grand, Junction box
TEL : +82-51-305-3910

PACO HITEC CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. : www.pacohitec.com
Main Products : Hydraulic hose, Fitting
TEL : +82-51-266-6994

PAL MI METAL IND CO., LTD.

Head Office : Jinhae Gyeongsangnam-do
Homepage Add. :
Main Products : Valve, Yoke, Fork, Knuckle, Carrier

TEL : +82-55-552-3840

PANASIA CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.worldpanasia.com
Main Products : Hi-level Alarm Sys. Tank level Gauge
TEL : +82-51-831-1010

PI PLUS CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.pharmaidsolutions.com
Main Products : Rudder stock, Pintle, Intermediate Shaft
TEL : +82-51-831-9338

POONG JIN METAL CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Emergency Shut-Off Valve, Veneral Bronze Casting Valve
TEL : +82-51-831-8510

PSM CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.psminc.co.kr
Main Products : Ring Flange, Shaft, Nozzle
TEL : +82-51-970-3000

SAEJIN INTECH CO., LTD.

Head Office : Kimhae Gyeongsangnam-do
Homepage Add. : www.saejinintech.com
Main Products : Emergency Towing, Arrangement, Universal Swivel Fairlead
TEL : +82-55-328-1458

SAMBOO METAL CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.samboometal.com
Main Products : Wheel, Shaft, Hyd-Net, Hyd Coupling Bolt, Flange
TEL : +82-51-831-1478

SAMGONG CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.sam-gong.co.kr
Main Products : Oil Purifiers, Ship ` Accommodation, Ladders
TEL : +82-51-200-3040

SAMJOO ENG. CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. : www.sam-joo.co.kr
Main Products : Catering Furniture, Galley Hood, Laundry Equipment
TEL : +82-51-264-6677

SAMJUNG MACHINERY.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Piston Rod, Cross Head, Inter Shaft
TEL : +82-51-832-0190

SAM KWANG HI-TEC CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Rectangle Windows
TEL : +82-51-832-0177

SAMSUNG NONFERROUS METAL CO., LTD.

Head Office : Kimhae Gyeongsangnam-do
Homepage Add. : www.metalsamsung.co.kr
Main Products : Bushing, Liner, Sleeve, Pintle Bush
TEL : +82-55-329-1067

SAMYANG METAL IND. CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. : www.cuniship.com
Main Products : W-NT 90/10 Flange, Elbow, Tee
TEL : +82-51-266-6655

SAMYOUNG FITTING.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Elbow, Tee, Coupling
TEL : +82-51-832-0211

SDK CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Winch, Hatch
TEL : +82-51-832-1882

SEAPLUS CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.sea-plus.co.kr
Main Products : Low Pressure CO2, Fire Extinguishing Sys
TEL : +82-51-831-0119

SEBO METAL CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.sebometal.co.kr
Main Products : Pump Tower for LNG, Vent Mast
TEL : +82-51-970-0200

SEBO TECH CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Windwall, Heat Shield, Manual Hatch
TEL : +82-51-831-4171

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Head Office : Gangseo-gu Busan
Homepage Add. : www.seilseres.com
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TEL : +82-51-831-1858

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Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Bolt, Nut & Be, Double Nut, Chard Nut, Hinge Bog
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Head Office : Gangseo-gu Busan
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TEL : +82-51-831-9050

SEUN STEEL CO., LTD.

Head Office : Jin-gu Busan
Homepage Add. : www.seunsteel.co.kr
Main Products : CR, HGL, CGL, EGL
TEL : +82-51-639-3200

SEWOONG PRECISION MACHINERY CO., LTD.

Head Office : Gangseo-gu Busan
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Main Products :
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Head Office : Gangseo-gu Busan
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Main Products : Water & Oil Strainer, Condensate Chlorination Tank
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Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Spot Cooler, Heat Exchanger, Pressure Yeses
TEL : +82-51-831-7705

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Head Office : Dong-gu Busan
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TEL : +82-51-461-5000

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Homepage Add. :
Main Products : Marine Furniture
TEL : +82-51-441-1294

SHINKWANG ACE ELECTRIC CO., LTD.

Head Office : Kimhae Gyeongsangnam-do
Homepage Add. : www.skace.com
Main Products : Cable Tray, Accessories

TEL : +82-55-332-3315

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Main Products : Centrifugal Pumps, Gear Pumps, Screw Pumps
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Head Office : Gangseo-gu Busan
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Main Products :
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Homepage Add. : www.sunboind.co.kr
Main Products : Tank Top Unit, Engine Room unit, Sater Strainer Silenser
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SUNG CHANG CO., LTD.

Head Office : Gangseo-gu Busan
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Main Products : Non-Asbestos Gasket, Spiral Wound Gasket, P.T.F.E Gasket
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SEOUNG HYUP MACHINERY.

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Homepage Add. : www.sungilsim.com
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TEL : 82-51-831-8800

SUNG KWANG M/C.

Head Office : Gangseo-gu Busan
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Main Products : Oil Press, Pipe Vending, Pipe Fitting Unit
TEL : +82-51-831-0620

SUNGWON ELECTRIC CO.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Cable Tray, Starter, Panel, Cable Way
TEL : +82-51-831-9230

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Main Products : TH3000, TH3000W
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TAE KWANG INDUSTRIES.

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Main Products : Manufacture of Structures, for Shipbuilding(LNG,LPG) and plant
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 Homepage Add. :
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Service
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Daily News of KORMARINE 2011

(Korea International Shipbuilding and Marine Exhibition)



Monthly KORSHIP, the Korea shipbuilding monthly magazine, will launch daily news service to keep your finger on the pulse of the KORMARINE 2011.

KORMARINE 2011 will be open with great eclat at Busan Exhibition & Convention Center (BEXCO) , and Monthly KORSHIP will keep you updated with the latest news swiftly during the show as the official media of KORMARIE 2011 and we appreciate you cooperation in advance.

KORMARINE 2011 will run from October 26 to October 29 Busan Exhibition Convention Center (BEXCO) .

Our daily news will have a circulation of 10,000 every day during the show.

Contact Monthly KORSHIP or K. Fairs for inquiries or suggestions for the daily news article related to KORMARINE 2011 or advertisement in the print Edition. (Deadline Date: September 20th 2011)

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