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Motor	HP	125 ~ 20,000						
Discharge Pressure	BarA	4.5 ~ 25						
Dimension(W x L x H)	M	1.5x2.6x1.9	2.1x4.4x2.1	2.1x4.7x2.2	2.2x5.2x2.1	2.3x5.8x2.6	4.4x8.0x4.3	6.5x13x7.0
Weight	Ton	3.4	7	9	12	18	40	140

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DNV issues EEDI certification according to IMO guideline on emissions reduction

The Energy Efficiency Design Index (EEDI) is a new technical measure intended to ensure a certain level of efficiency and decreased carbon emissions of newbuildings.

DNV was earlier this year asked by Oshima Shipyard to verify the EEDI for two of their vessels. The process, which was the first undertaking of DNV related to the EEDI, was concluded with the handing over of the EEDI Verification Statements at the yard on September 10.

The process included a survey on board the two vessels intended to verify and confirm the adopted design values for calculating the CO₂ index. The final results were based on the vessels' main characteristics and engine performance as well as the design speed-power curves adjusted with the sea trial data provided by the builder.

The EEDI is one of the technical measures that have resulted from IMO's approach to limit CO₂ emissions in shipping. More specifically the EEDI is intended to provide a measure of the energy efficiency of a vessel design, thus pushing the industry towards designing and building ships that will emit less CO₂ when in operation. The index indicates the ratio between environmental impact and economic benefit and provides a benchmark against which ship efficiency may be evaluated.

The EEDI is currently not mandatory. However due to the stricter and more comprehensive rules and regulations currently being enforced for shipping, the measure is expected to become mandatory in the near future.

HHI's record production milestone of 100 Million BHP in marine engines

Recently, Hyundai Heavy Industries (HHI) has achieved an unprecedented aggregate production of 100 million brake horsepower in two-stroke engines.

HHI set the record in just 31 years after its first marine diesel engine in 1979.

The aggregate production of 100 million horsepower is far higher, compared to large engine companies of Europe and Japan which have 100-year history of engine production, and 30 million horse power higher compared to the engine maker which has produced second highest number of engines worldwide.

HHI celebrated the landmark by holding a ceremony for the production milestone with the completion of the 3,369th engine with 39,800 bhp and the 3,370th engine with 43,000 bhp for very large crude oil carriers for Hanjin Shipping and DK Maritime, respectively, on September 29 in Ulsan, Korea.

HHI produced its first marine engine in June 1979. After reaching the 10 million bhp mark in 1992, it subsequently reached the milestone of 20 million bhp in 1997, 30 million bhp in 2001, 40 million bhp in 2003, and 50 million in 2005. Since 2001, the company had produced 10 million bhp every

two years.

HHI has expanded its production capacity to 10 million bhp a year with continuous improvement of technology and facility expansion. The company reached 60 million bhp in 2006, 70 million bhp in 2007, 80 million bhp in 2008, and 90 million bhp in 2009.

Since 1987 HHI has maintained its position as the most prolific manufacturer of two-stroke engines, holding 35% of the global marine engine market.

Yoo Seung-nam, head of Engine & Machinery Division of HHI, said, "HHI localized ship engines which had a heavy reliance on import in late 1970s, serving as the pillar for Korea's shipbuilding industry to capture the crown as the world's largest shipbuilding country". He went on saying, "Reaching the production milestone of 100 million horse power is of great significance which reflects the growth of Korea's shipbuilding industry, not merely a new record that has been set."



HHI and related officials from the nation and abroad are participating in the ceremony for starting an engine which sets the milestone of producing an aggregate 100 million horse power.



DSME announced a new start, taking a giant step forward to become a comprehensive heavy industry group

With the 10th anniversary of independent operation approaching, Daewoo Shipbuilding & Marine Engineering (DSME) announced an ambitious new start toward becoming the world's best comprehensive heavy industrial group.

Nam Sang-tae, President & CEO of DSME, unveiled his deep impression and resolution on the occasion of the 10th anniversary in his CEO letter to all employees on October 11 which is the foundation day of the company.

In this letter, he congratulated on the rise of DSME to the top position in the shipbuilding industry, which he attributed to the tremendous efforts of all employees over the last decade since the spin-off of DSME from Daewoo Heavy Industries at the beginning of new millenium, and announced 2010 as the starting year for

making another leap forward to become the world's best comprehensive heavy industry group.

Nam Sang-tae, President & CEO of DSME, said, "With hard work and effort of all employees, DSME has achieved splendid achievements, capturing the crown with its global sales rising to the top in the shipbuilding and offshore sector and winning \$10 Billion Export Tower Award in 10 years after the start of independent operation". He added, "We will not remain complacent with current achievements, but will push ahead with the effort to take another step forward to become the world's best heavy industry group."

For that, he put forth three major goals. Firstly, it is to heighten the status of the company as the world's best comprehensive heavy industry group. Secondly, it is to

accomplish the global optimization of projects, production, and manpower. Thirdly, it is to transform the company into a vibrant and proactive organization with members actively taking initiatives for innovation.

The primary objective is to attain the innovation of fundamental business structure and follow through upon the diversification of business into varied fields such as wind power generation, onshore plant, renewable energy, etc, in addition to the shipbuilding and offshore field.

At the same time, the company is stepping up a gear to further strengthen its global capability through the country business, such as the local recruitment and outsourcing, in a bid to attain global maximization, paving the way for achieving KRW 40 trillion in sales and KRW 10 trillion in operating profit by 2020.

STX Dalian Shipyard launches vessels in a row

Recently, STX Dalian Shipyard held launching ceremonies in a row, securing a stable production capacity two year after its establishment.

STX Dalian Shipyard announced that it had successfully launched a 58,000-ton bulk carrier ordered by STELLAR, a ship owner from the United Arab Emirate, on September 30.

This is the second vessel out of 2 bulk carriers ordered on March 2007 and was delivered to the ship owner last month.

On September 18, STX Dalian Shipyard had held a launching ceremony for the 4th vessel out of the six 58,000-ton bulk carriers

ordered by Parakou of Hong Kong.

STX Dalian Shipyard had launched a total of 18 ships such as 16 bulk carriers and 2 Pure Car Truck Carriers (PCTC) since its first launch of vessel in December 2008.

An official from STX Dalian Shipyard said, "Our productivity growth has constantly picked up since our first launch of vessel in 2009. We set a production goal to launch a

total of 15 ships in the second half of this year, including 13 commercial vessels and 2 offshore plants."



STX Dalian Shipyard is launching a 58,000-ton bulk carrier ordered by Parakou of Hong Kong on September 18.



STX Dalian Shipyard has mapped out a plan to launch a total of 23 vessels in the commercial vessel and offshore plant sector, and deliver 20 of them to ship owners this year. Furthermore, it plans to build more than 30 vessels annually after 2011.

STX Offshore & Shipbuilding delivered 13,000-TEU eco-friendly container ship

STX Offshore & Shipbuilding successfully delivered 13,000-TEU MSC BERYL, an ultra large container ship with superb eco-friendly features, to Niki Shipping of Greece on September 30, drawing attention from the industry. 13,000-TEU is the world's largest, equivalent to the daily container volume (13,884TEU) handled by the Port of Long Beach in the United States, the 18th largest sea port around the globe.

Winning the recognition for its superb performance, this vessel was granted the Energy Efficiency Design Index (EEDI) certification from Germanischer Lloyd (GL) of Germany, which is first-ever for an ultra large container ship with the capacity to carry more than 10,000TEU. Specifically, the results of inspection and trial operation of this vessel showed that it reduced the carbon monoxide emissions by nearly 20% compared to standard vessels.

With the New Panama Canal slated for completion in 2013, an issue has come to the fore among shipping companies in regards to the ships exceeding the width to pass the Canal. This ultra large container vessel constructed by STX Offshore & Shipbuilding will help sharpen the competitiveness of shipping companies as it was designed to be capable of passing

through New Panama Canal, a rare feature for the vessels of same kind, and carrying containers through the best maritime shortcut from the Atlantic Ocean to the Pacific Ocean.

This vessel produces considerably less exhaust emissions while maintaining the high speed of 25.2 knots based on the rated output. It comes with a dimension measuring 365m in length, 30m in height, and 48m in width, and its deck is roughly 3.5 times larger than the size of a soccer field. This vessel has a maximum speed of 27.5 knots.

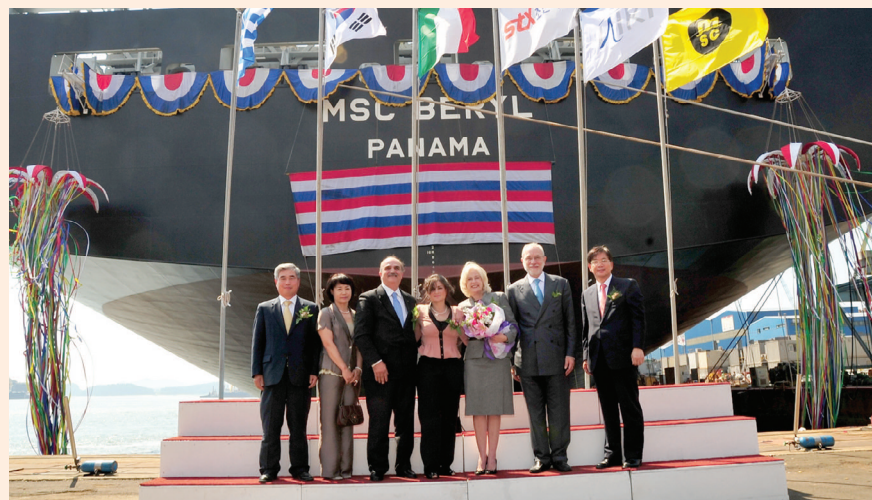
This ultra large container ship is outfitted with several remarkable systems. Alternative Maritime Power (AMP) can be powered by onshore electricity supply while the ship is lying at anchor in the harbor, and as a result, it reduces the exhaust gas emissions from the activation of ship engine for power generation.

In addition, this vessel slashes sulphur emissions because it can use low sulfur crude oil containing less than 0.1% of sulphur as fuel even for the boiler and power

generator, as well as major engine, a rare feature for the vessel of same class.

Besides, this ultra large container ship was granted the Environmental Passport (EP) by GL, which represents an objective substantiation of the excellent ability of the vessel to control the discharge of contaminants from the ship in an overall way.

The process which led to the acquisition of EEDI certification has also come into limelight in the industry. Usually, this kind of certification is acquired at the request of ship owner when a contract is entered into or the ship is under construction. However, STX Offshore & Shipbuilding obtained this certification voluntarily and presented it to the ship owner, not only elevating the economic value of ship but also helping the ship owner become better-positioned even for ship chartering in the upcoming period. Meanwhile, this ultra large container ship is the 1st one out of the 9 vessels ordered from NIKI Shipping in 2007, and STX Offshore & Shipbuilding plans to deliver the remaining 8 vessels to the ship owner consecutively by 2015.



Hand-over ceremony of MSC BERYL, a 13,000-TEU ultra large container ship, held on September 30



Rolls-Royce signs agreement with STX Engine to further strengthen position in Asia

Rolls-Royce, the global power systems company, has signed an agreement with STX Engine. STX Engine, based in Korea, will become a packager of Rolls-Royce industrial gas turbine generating sets in the Asia Pacific region.

The agreement provides an enhanced route to market for the latest Rolls-Royce industrial gas turbine, the RB211-H63, which the Group announced in June, as well as the most powerful engine in its range, the Trent 60 gas turbine.

Commenting on the new agreement, Charles Athanasia, Rolls-Royce Executive Vice-President of Power Generation - Energy said, "This agreement will enable Rolls-Royce to better serve the growing demand for electrical power generation technology and will further strengthen our position in important Asian markets."

"With this agreement STX will have the capability to market, package and install two of the world's most efficient industrial gas turbines in

a power range from 27MW to 64MW in countries such as Bangladesh, Philippines, Taiwan, Vietnam and also Korea".

Dong-Hak Chung, President and Chief Executive Officer of STX Engine added, "This is a further strengthening of an already strong relationship between our two companies. We have had a customer/supplier relationship with Rolls-Royce for over ten years and in that time the resulting sales of Marine equipment have been in excess of £1 billion."

"Our experience in selling diesel and gas engine-powered electrical power plants to the Asian power generation market will pro-

vide a significant sales channel for Rolls-Royce gas turbines."

In addition to providing increased exposure in Asia, under the agreement, STX will also join with Rolls-Royce in the development of the package design.

Rolls-Royce will supply the RB211-H63 gas generator, its RT63 power turbine and the Trent gas generator from its facilities in the USA and Canada, and will also be responsible for supporting the engines in the field.

Both types of packages will be assembled by STX at their Changwon engine facility in South Korea.

SSME named three large commercial ships at the same time

Sungdong Shipbuilding & Marine Engineering (SSME) held a naming ceremony at the same time for three 180,000-ton bulk carriers ordered by Navios Maritime Holdings, a subsidiary of Navios Group, a Greek ship owner, on October 20. The naming ceremony was a magnificent event, attended by Chung Hong-joon, Chairman of SSME, Angeliki Frangou of Navios Maritime Holdings, and Kim Yeong-min, President of Hanjin Shipping, and his wife, and many other eminent people.

These vessels are 292m in length, 45m in width, and 24.8m in height, and can sail at a speed of 15.2 knots. Each vessel is named Navios Luz, Navios Etoile, and Bonheur, respectively. Luz is a Spanish word meaning the light, while Etoile and Bonheur are French words meaning the star and happiness.

Earlier on, SSME also held a naming ceremony simultaneously for three 180,000-ton bulk carriers ordered by Navios Maritime Holdings on August 23. With the naming ceremony this time, SSME has named 6 series vessels for the same ship owner just in two months.

Meanwhile, Navios Maritime Holdings, a subsidiary of Navios Group, a Greek client, possesses specialized fleets of bulk carriers, and has placed orders for capesize bulk carriers with SSME since mid 2007.



Charles Athanasia, Rolls-Royce Executive Vice-President of Power Generation - Energy and Dong-Hak Chung, President and Chief Executive Officer of STX Engine at the signing ceremony in Mount Vernon, USA.



Naming ceremony for three 180,000-ton bulk carriers ordered by Navios Maritime Holdings, held on October 20



DSME acquired 30% equity into Paenal shipyard of Angola

Daewoo Shipbuilding & Marine Engineering (DSME) has made an advancement into the shipbuilding market of Africa by acquiring share for shipyard in Angola.

On October 21, Nam Sang-tae, President & CEO of DSME, signed a contract to acquire 30% equity in the Paenal Shipyard with Baptista Muhongo Sumbe, President of Sonangol Holdings, and Francis Blanchelande of SBM Offshore, in Luanda, the capital city of Angola.

Paenal Shipyard is situated in the area adjacent to Porto Amboim, 300km south to Luanda. It was established in August 2008 as a joint enterprise between Sonangol, the state-run oil company of Angola, and SBM Offshore, an offshore facility company from the Netherlands.

With this investment, the shipyard will be composed of 30% share each for DSME and SBM Offshore and 40% share by Sonangol, and matters related to the management will be determined by the negotiation among respective companies.



Nam Sang-tae (right), President & CEO of DSME, is shaking hands with Baptista Muhongo Sumbe (middle), President of Sonangol Holdings, and Francis Blanchelande (left) of SBM Offshore, after signing a contract.

DSME will be engaged directly in the management of Paenal shipyard by providing its expertise on the management of shipyards and technical consulting on the production of offshore structures.

The Paenal shipyard, built on the land of 175,000m², is equipped with small crane, quay wall, etc. With \$100 million injection of investment for additional facilities in the period ahead, the shipyard will have the quay wall expanded by 2012 and be equipped with 2,000-ton crane and offshore terminal, transforming into a shipyard specializing in offshore structures.

This investment enables DSME to be involved in the management of shipyard, thus reaping the operation commission and outsourcing revenue, etc, directly. In addition, it serves as a springboard for the company to secure the production basis in the Western Africa and be better-positioned to win orders for offshore products from the local market.

In particular, orders for a variety of offshore structures are expected to be placed by clients in a row to exploit the natural gas resources as Angola's offshore area has an immense crude oil reserves estimated at over 9 billion barrels and natural gas reserves estimated at more than 270 billion m³. Meanwhile, Nam Sang-tae, CEO & President of DSME said, "With this investment, we have built a global production network linking Africa, Asia, and Far Eastern Russia. We will move ahead vigorously with the global business to explore opportunities for business based on the country marketing and win orders."

Nexans launched the production at the new factory of QICC, a joint venture

Recently, Nexans embarked upon the operation of new factory of Qatar International Cable Company (QICC), a joint venture located in Messaieed industrial complex, approximately 40km from Doha, the capital city of Qatar. This factory equipped with the newest facilities, employs more than 100 people and is expected to achieve over \$100 million in sales by 2011.



QICC factory of Nexans began the production of low, high, ultra high power cables, etc, for key industries and buildings recently.

This new QICC factory focuses on special power cables for OGP industry, as well as the low, high, ultra high voltage power cables for key industries and buildings. It is built on a total of 70,000m² land with the building occupying 19,000m², and is in proximity to the place currently being developed into the largest port of the Mid East from the strategic standpoint.

Frédéric Vincent, Chairman of Nexans Group, said, "With our QICC factory put into operation, we have already reached a phase of major policy for satisfying the



special demand of countries which have been put on a path towards growth. As a result, we have achieved high quality and large-capacity local production capability, in addition to the efficient engineering, sales, customer support services which are established well in this region.”

The Ministry of Land, Transport and Maritime Affairs authorized two private-sector ship funds

The Ministry of Land, Transport and Maritime Affairs authorized ‘Asia Pacific No. 16’ and ‘Badaro No. 17’, the private-sector new-build ship fund, on October 21. The two funds authorized this time are the performance-based funds with the return for investors varying based on the ratio of long-term ship price to the ship price at the point of order, and the investment will be received from a small number of institutional investors. Previously, the bond fund was dominant, which receives only the charterage (principal and interest), confirmed for a certain period, from shipping companies. It is specifically based on the purchase of ships at low price - prior to the full-fledged recovery of market - for distributing the capital returns (gains on sales) in the period ahead to investors. Considering the practice of selling ships at a giveaway price although they were purchased at high price when the market was flourishing, this ship fund is deemed to be close to the advanced ship investment built on the virtuous circle.

Meanwhile, a source from the Ministry of Land, Transport and Maritime Affairs, said, “Recently, institutional investors are

attempting not to miss the opportunity to purchase ships at low price as shipping companies both at home and abroad are showing excellent sales performance. I anticipate that the additional authorization of the two performance-based funds will help expand such a trend.”

However, the revitalization of ship finance requires the engagement of large-scale investment such as pension fund, etc, and

the recovery of ship finance in the primary financial circles which have shown lukewarm attitude towards loans related to the shipping sector. He added that the Ministry is pondering upon the measures to induce positive engagement of institutional investors by easing the strict investor protection safeguards of Ship Investment Company Act which may be regarded a restriction among institutional investors.

KR accomplished huge success from technical seminar targeting European clients

Korean Register (KR) held a special technical seminar and ceremony for a about week in Turkey and Greece in early October on the occasion of the 50th anniversary of its foundation, and launched aggressive marketing campaign targeting individual shipping companies. As a result, significant outcomes were reaped, including the successful obtainment of first class orders to build more than 10 ships, despite the sluggish shipping and shipbuilding industry which still reel from recession. It was a great chance to grasp the expectations that Turkish shipping and shipbuilding market had toward KR, although Binali Yildirim, the Minister of Information and

Transportation of Turkey who was scheduled to deliver congratulatory address, could not attend the event for reason of urgent matter and the Vice-Minister attended the event instead.

This event in Greece was a great success, drawing more than 400 Greek ship owners, which directly led to success in sales. Specifically, Greek ship owners who attended the event extended congratulatory comments, saying “It is quite unprecedented that more than 300 ship owners gather at one place in Athens, which mirrors the recognition of Korean Register of Shipping and the expectation of Greek ship owners toward Korean Register of Shipping at the same time.”

As though this situation were reflected, a business news and financial information broadcasting company of Greece offered to produce a 30-minute program free of charge to introduce Korean Register of Shipping and convey information about this event.



Technical seminar of Korea Register of Shipping, held in Athens, Greece, on October 4



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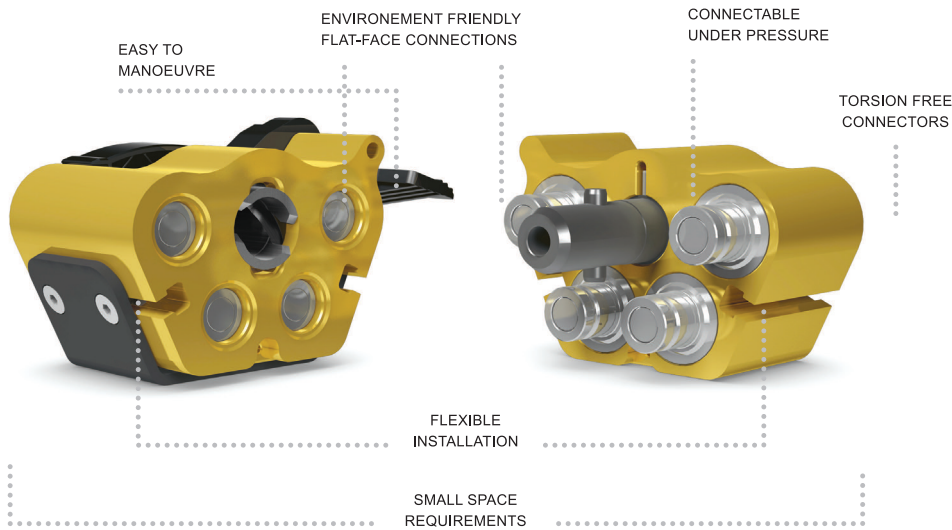
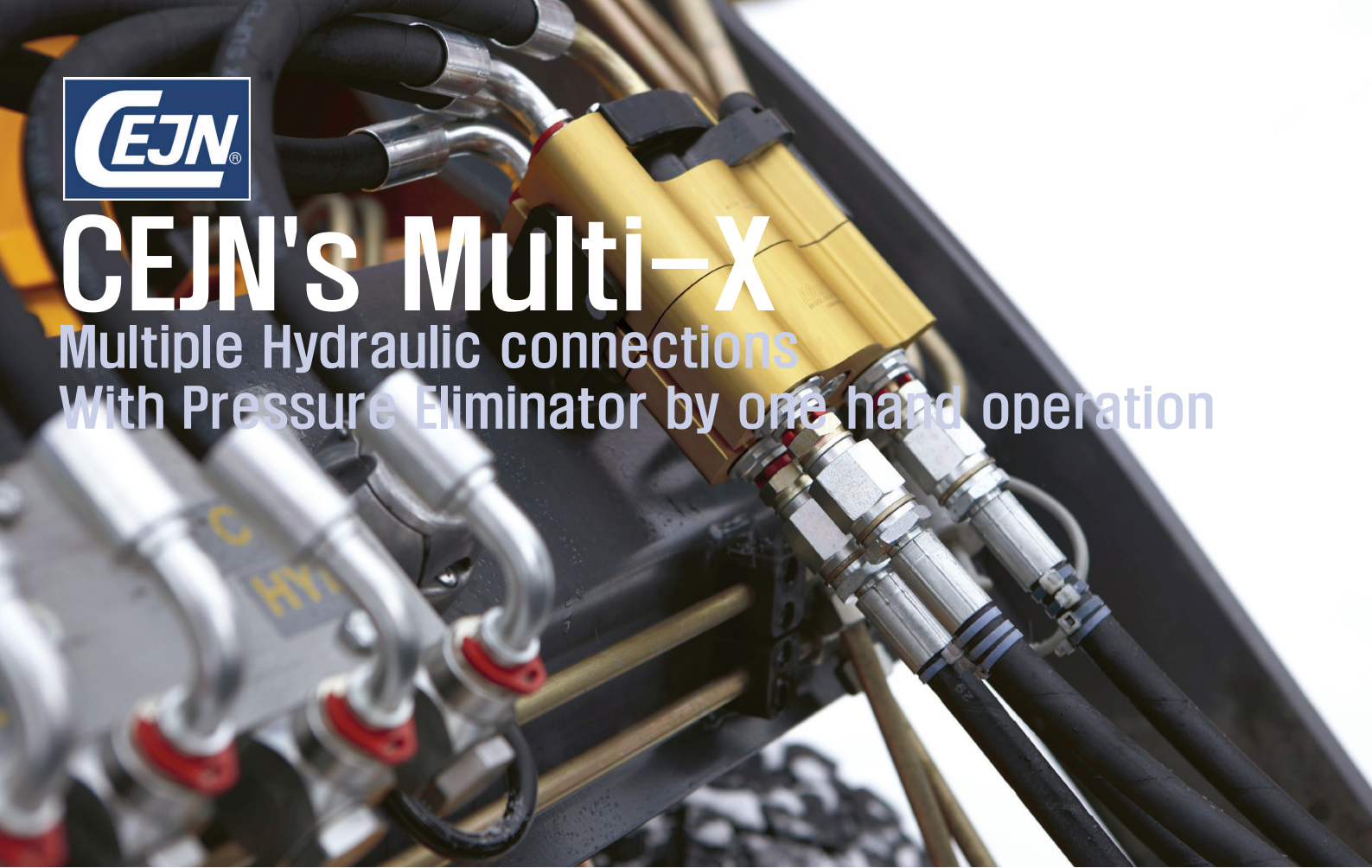
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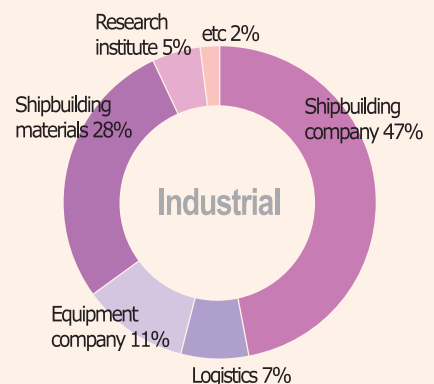
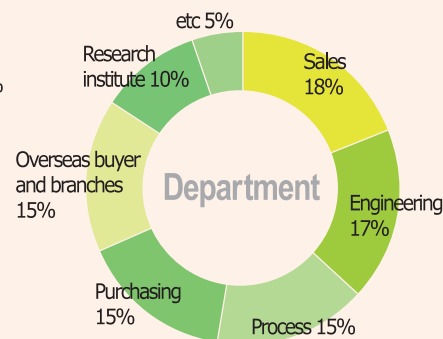
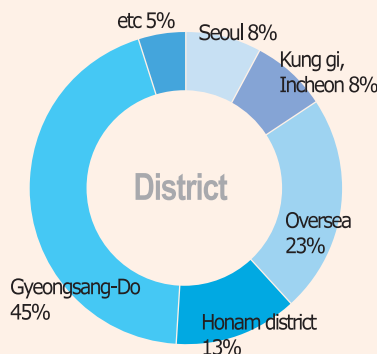
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New shipbuilding industry products overview

Business News

Issues and news articles from global shipbuilding companies and organizations

Detailed area breakdown





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Organizer : Jiangsu United Asia International Exhibition Co., Ltd (UAEC)

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“Create the Way”



Technological advancement allows Korea’s first icebreaker to help explore oceans around the world

HHIC, manufacturer of Korea’s first icebreaker—the Araon—and more than 500 container vessels, is a step closer to global leadership in the shipbuilding industry.



UK
영국

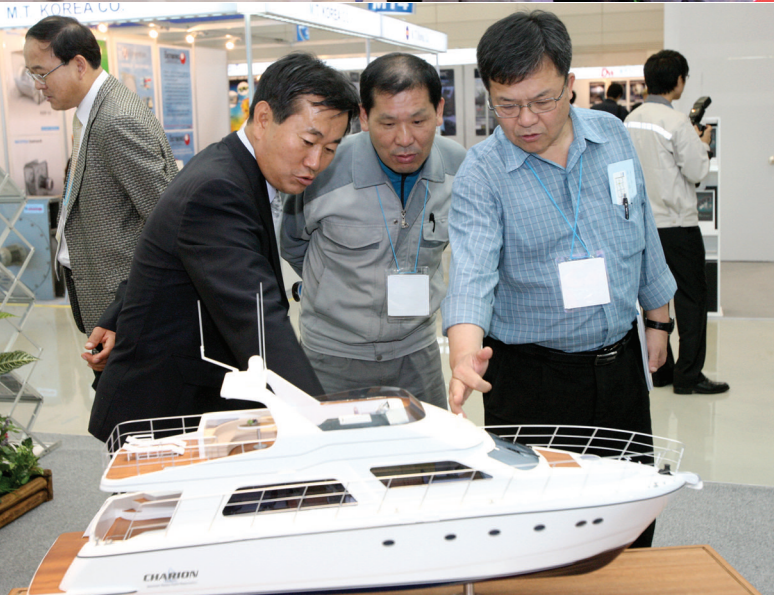


Shipbuilding and marine equipments showcased at one place

Marine Tech Korea 2010 successfully ended with \$52.8 million deals discussed and \$6.64 million deals signed

Marine Tech Korea 2010 which marks the third anniversary this year successfully ended. This global maritime event drew 295 exhibitors from about 30 countries worldwide and showcased 2,016 shipbuilding and marine equipments. During the show, 519 deals worth a total of \$52.8 million were discussed, and 182 deals worth a total of \$6.64 million were signed.

Specifically, this trade show featured eco-friendly ship equipments such as low sulphur fuel system heat exchanger, ballast water treatment equipment, etc, - designed to cope with more stringent standards of International Maritime Organization (IMO) - which drew highly favorable reaction.



Marine Tech Korea 2010, the premier international maritime event specializing in the shipbuilding/marine equipments and plants, marks third anniversary this year and has successfully ended.

Marine Tech Korea (including all exhibitions in history) is a major trade event in the field of shipbuilding and marine industry which has been held by Gyeongsangnam-do since 2006 ▲to strengthen the competitiveness of shipbuilding and marine industry, the main industry of the region, ▲support the overseas marketing of the shipbuilding and marine equipment manufacturers, promote the advancement of shipbuilding and marine equipment industry, stimulate the localization, and ▲contribute to the revitalization of regional economy.

This year, Marine Tech Korea 2010 ran for 4 days from October 20 to 23 at Changwon Exhibition Convention Center (CECO)

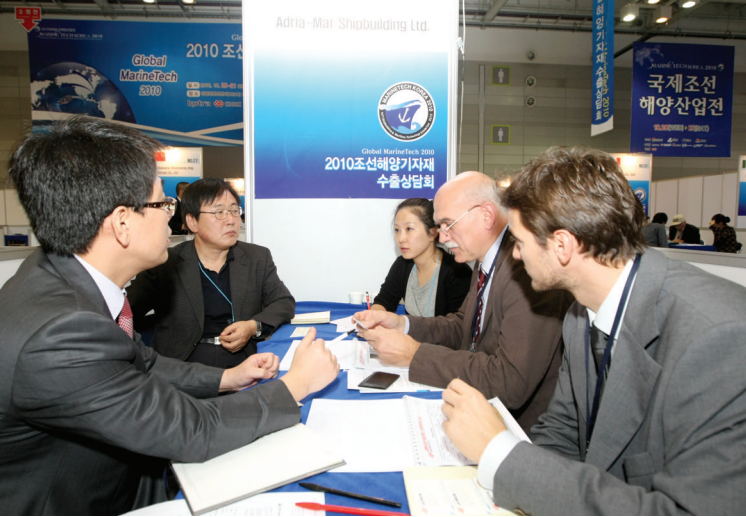
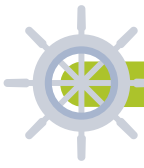
Gyeongsangnam-do has become the hub of world's shipbuilding industry

An official from the Future Industry Department of Gyeongsangnam-do said before the show opened, "Marine Tech Korea 2010 will provide opportunity for elevating the status of Gyeongsangnam-do as the world's largest mecca of shipbuilding and marine industry, and furthermore, have a tremendous spill-over effect on the regional economy, adding vitality to the related industries such as tourism, accommodation industry, exhibition industry, and others."

Gyeongsangnam-do, a province in the southeast of South Korea, has huge advantage, considering that it is the mecca of Korea's shipbuilding and marine industry which is the world's largest. World's top 10 major shipyards are located in Gyeongsangnam-do, such as Samsung Heavy Industries (SHI), Daewoo Shipbuilding & Marine Engineering (DSME), STX Offshore & Shipbuilding, Sungdong Shipbuilding & Marine Engineering (SSME), and others. In addition, Gyeongsangnam-do is home to 847 shipbuilding companies, such as Doosan Engine (world's second largest in the field of large engine) and STX Engine (world's second largest in the field of small engine), the globally prominent engine makers, which account for 50.2% of the whole shipbuilding business nationwide in terms of the number of 847 companies. Specifically, their export (\$25.2 billion) in 2009 accounted for 59.3% of the total shipbuilding export of Gyeongsangnam-do which stood at \$42.5 billion.



The opening ceremony held in the afternoon on the first day of the show. Eminent guests, including the mayor of Geosje, Changwon, and Tongyeong, as well as Seo Min-geun, the Vice Governor for Administrative Affairs of Gyeongsangnam-do, are cutting the tape.



Export counselling seminar held for 2 days from October 20 to 21

For those reasons, Gyeongsangnam-do has injected funds to support the exhibition environment and promotion for 5 years in cooperation with 4 cities (Changwon, Jinhae, Tongyeong, Geoje) related to the shipbuilding industry within the region whenever the trade show opens. The trade show was organized in cooperation with the central government and local government as the Ministry of Knowledge Economy designated Marine Tech Korea 2010 as the local specialization exhibition this year and pledged support for the event.

Besides, Gyeongsangnam-do had Marine Tech Korea 2010 co-organized by K. Fairs, the organizer of KOMARINE which is the world's largest shipbuilding trade show, Korea Marine Equipment Association, and Reed Exhibition of UK, the world's largest trade show organizer with annual sales of £89.5 billion in an endeavor to help transform Marine Tech Korea into a real global event.

An official of K. Fairs, one of the organizers, emphasized that the ultimate goal of Marine Tech Korea was to set the equation "Gyeongsangnam-do is the hub of global shipbuilding industry".

2,106 shipbuilding and marine equipments were showcased

Marine Tech Korea 2010 attracted 29 exhibitors from 31 countries around the globe, including UK, Germany, Norway, China, Singapore, etc, who showcased their products and latest technologies at their respective booths. They featured a total of 2,016 equipments and materials related to the ship-

building/marine and offshore plants, including a vast array of engines, motors, ship navigation systems, marine communication systems, safety equipments, pumps and valves, compressors, logistics equipments, transportation equipments and many others.

ABB, one of the exhibitors and a leader in the electric power and automation sector, attracted huge attention of visitors. The company has supplied electric power products and propulsion systems for shipbuilding and marine industry since it made inroads into the Korean market in 1970s. Specifically, ABB put the primary focus on promoting electric power products such as drive, motor, PLC, instruments, low voltage products, etc, during the show this time.

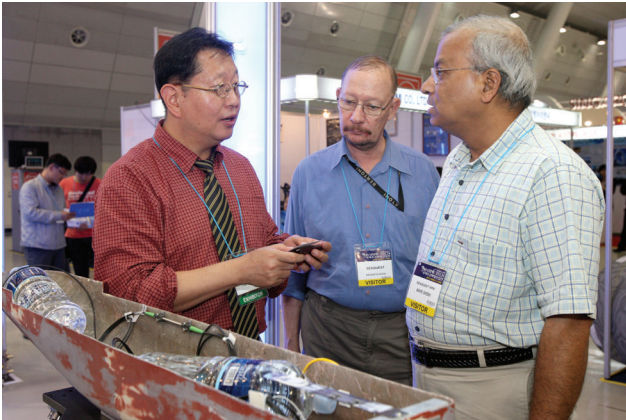
Electric power products have been applied to the propulsion, thruster, HVAC, compressor, pump, fan, winch, etc, replacing the mechanical control of the past, and as a result, the demand for electric power products has increased sharply at shipyards recently.

An official of ABB explains that the future market prospect for electric power products will be favorable, considering that they can increase not only the work efficiency but also the energy efficiency which has come into the limelight recently. All products of ABB received the type approval from various classification societies.

Meanwhile, NK presented the ballast water treatment system (NK-O₃ blue ballast system), N₂ fire fighting system, Hi-EX foam system, CO₂ fire fighting system, Steel gas cylinder, Tube trailer, etc, during the show. Among them, NK-O₃ blue ballast system drew tremendous attention from visitors as if



Major guests who participated in the opening ceremony are listening to the explanation about the exhibited products at the booths of exhibitors.



29 companies from 31 countries worldwide launched promotional and marketing campaigns enthusiastically during the Marine Tech Korea 2010.

reflecting the growing interest of industry in the system.

This product received the final approval through the 59th meeting of the Marine Environment Protection Committee, an affiliate of the International Maritime Organization (IMO), in July last year, and was granted the type approval by the Ministry of Land, Transport and Maritime Affairs according to the IMO G8 Guidelines in the same year.

And this product is characterized by strong ozone disinfectant, lower power consumption, no modification on the existing BW main-pipe, no pre-filtration, etc, and effective for cost-saving and improvement of environment.

LHE is a company specializing in heat exchangers. The company has focused on resolving the weakness of existing heat exchangers which were difficult to be used at high temperature and high pressure and has poured energy into the development and supply of high energy-efficient heat exchangers. LHE has fully showcased its advanced technologies by presenting high energy-efficient flat plate type heat exchanger,

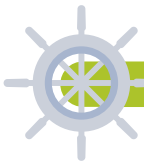
oblong heat exchanger, and LHE block during the event. The flat plate type heat exchanger of LHE has the corrugated pattern to ensure that the heat transfer plate provides maximum heat transfer and has the oil gallery arranged in gradients to create the turbulence of fluid, which increases the heat efficiency by as much as 5 times compared to the shell & tube. The broad contact surface increased the strength, and the anti-vibration design increases the life and ensures the prevention of leakage.

Kangrim Heavy Industries which has gained reputation in the ship boiler sector, presented marine boiler, air reservoir, calorifier, high pressure steam drum, inert gas system & generator, heat exchanger, recuperator (W.H.R.S), thermal regenerator (H.R.S.G), cold chamber, and others, during the show.

Daedong Marine Tech, a ship engine company, unveiled a new model of ship diesel engine. This new model provides the largest engine power compared to the engines of the same class and was built on an advanced specification to



ABB is showcasing its electronic power products at its booth.



NK-O₃ blue ballast system of LK drew the attention of visitors continually as if reflecting the recent interest of the industry

withstand harsh climate. It realized high performance and lowest fuel cost, and its self-diagnosis function makes the maintenance easy.

An official of Daedong Marine Tech emphasized, "This product is highly effective in this era of high oil price, and its eco-friendly features fit well into the trend towards low carbon emission and green growth."

Besides, Bethel Engineering introduced nonslip Magic Grating that considered the safety of workers in the process of shipbuilding, and Dong-I Industrial displayed marine gearbox, marine steering system, and power take-off system. And DMC presented offshore crane, deck cranes, etc, drawing attention from visitors.

Meanwhile, national pavilions were set up during the show by the shipbuilding and marine equipment companies well-known for advanced technologies from UK, Germany, Norway, etc, and China and Singapore which have emerged new global shipbuilding countries.

In addition, the one-on-one business meeting and export counselling session were held in the Export Plaza for 2 days from October 21 to 22 to facilitate exhibitors, foreign ship owners and foreign buyers to seek business opportunities and assist exhibitors to make inroads into foreign markets. The export counselling session drew 238 people, including 9 ship owners from 40 countries such as Europe and China, as well as the buyers who sought trade counselling or ordinary buyers. During the export counselling, 519 deals worth a total of \$52.8 million were discussed, and 182 deals worth a total of \$6.64 million were signed.

Specifically, eco-friendly shipbuilding equipment such as low sulphur fuel system heat exchanger and ballast water treatment - designed to conform to the standards of IMO which have become even more stringent - drew favorable reaction from not only visitors but also buyers in Marine Tech Korea 2010.

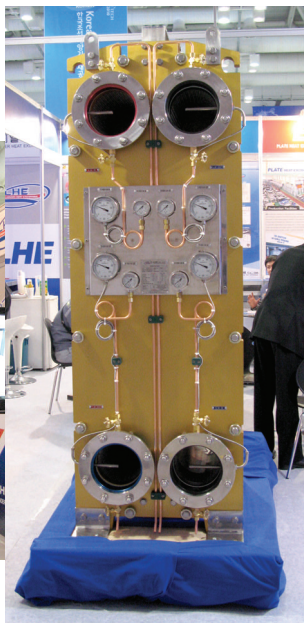
A variety of ancillary events took place

Various ancillary events were held in parallel. Among them are included the promotional events for exhibitors and new product presentation (Gyeongsangnam-do, Changwon City, Tongyeong City, Geoje City), seminar on the strategies for shipbuilding and marine equipment industry making entry into foreign markets (KOTRA), KOMERI technology policy seminar (Korea Marine Equipment Research Institute), public hearing on the advancement of Gyeongnam shipbuilding and marine industry (Korea Shipbuilders' Association), autumn academic conference held by the Society of Naval Architects of Korea, and others.

An official of Gyeongsangnam-do said, "The exhibition was held with a focus on raising the brand awareness of Marine Tech Korea differentiated from other shipbuilding/marine



LHE showcased the high energy-efficient flat plate type heat exchanger.





Ship engine of Daedong Marine Tech



KOMERI seminar on policies related to technology, held in the afternoon on October 20

trade shows both at home and abroad and holding various seminars and academic conferences that introduce new technologies and put forth new visions of the high value-added shipbuilding/offshore plant equipment sector and global shipbuilding/marine industry as part of efforts to ensure that the requirements of businesses are met.”

During the promotion of exhibitors and new product introduction, presentations and sessions were held, including those titled ‘Laser alignment & bolting solution for marine industry (Daeah MT)’ and ‘Electric power tools technical seminar’ (Jeong San Machinery & Tools) as well as ‘GFEZ, the Gate of Asia (Gwangyang Bay Area Free Economic Zone Authority)’. KOTRA held an international conference on seeking the measures for cooperation in the shipbuilding and marine equipment industry between Korea and EU in the wake of the execution of Korea-EU FTA, in which Paola Lancellotti, Secretary General of European Marine Equipment Council (EMEC) made a presentation. This conference provided an opportunity to seek ways of making entry into the European market, including the measures to improve the mutual understanding and cooperation between Korea and EU.

Korea Marine Equipment Research Institute also set the direction for the advancement of the high value-added shipbuilding and marine industry by holding a seminar on policies related to the offshore plant.

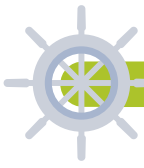
Also, Korea Shipbuilders’ Association held the forum on the development of offshore plant industry and presided over the presentations and discussions with regard to the achievements and expected effect of the projects that aim to nurture

technical manpower and challenges of Korea’s offshore plant industry, along with the role of offshore plant industry and credit organizations operating on the basis of national policy. In the 2010 general meeting and autumn academic conference organized by the Society of Naval Architects of Korea, presentations were made before about 600 people, including professionals and other participants from companies related to the shipbuilding industry, with respect to the trend of green ship technology and development of mobile harbor technology designed to reduce the greenhouse gas emissions and effect of recent climate change.

Furthermore, Gyeongsangnam-do visited DSME with foreign ship owners, foreign buyers, and exhibitors on October 22 during the exhibition, elevating the status of shipbuilding and marine industry of Gyeongsangnam-do and increasing the brand value of Gyeongsangnam-do.

In addition, daily news (produced and published by MONTHLY KORSHIP) were produced and distributed to keep the visitors updated with the latest news related to the exhibition. The show was a great success, drawing approximately 17,400 visitors.

An official of Gyeongsangnam-do said, “We will develop Marine Tech Korea into a brand trade show of Gyeongsangnam-do differentiated from others both at home and abroad and playing a leading role in the advancement of shipbuilding and marine industry based on the southern coastal Sun Belt development project of government, and help transform Marine Tech Korea into practical and effective trade show.”



Major Exhibitors in Marine Tech Korea

Ra In Ho / Transporter

Ra In Ho, which made inroads into the Korean market in 1992, possesses Germany's source technology necessary to manufacture transporters, as well as excellent technologies amassed through research & development, and specifically, set a new record of transporting 28,000-ton vessel.

Ra In Ho showcased transporter SSC, MTP, and RTP, the embodiment of excellent technologies, during the exhibition this time.

SSC (Ship Section Carrier) is usually powered by the built-in motor individually through 1 engine (up to 600 tons of load) or 2 engines (load weighing more than 500 tons).

MTP (Module Transporter) is not fitted with the built-in engine, but is operated by the power system installed separately. It is used to carry the block weighing from 100 tons to over 5,000 tons or half-ship or whole ship weighing more than 20,000 tons, depending on the connection of equipment.

RTP (Rail Transporter) can be operated in the automation facilities inside block factory, and furthermore, can transport the blocks built on the land or whole ship safely along the track to the floating dock.



SSC



MTP

Konics /

Vibration resistant gas actuated thermometer

Konics drew the attention of customers to its vibration resistant gas actuated thermometer used for medium-to-large engines which usually emit severe vibration such as ship engine and power generation engine.

The nation had a total reliance on the import for vibration resistant gas actuated thermometers so far. Konics was



SS-4090 series

commissioned in 2007 by Hyundai Heavy Industries (HHI) to localize these types of thermometers that provide high vibration resistance, and successfully developed this vibration resistant gas actuated thermometer after a total of 3 years including 2 years of development and about 1 year of strict quality test.

The vibration resistant gas actuated thermometer of Konics with stainless steel design is even stronger than existing products and provides high vibration resistance (0-2,000Hz, 10g), capable of withstanding up to 10G.

In addition, it provides high durability and can be used at the temperature of up to 650°C. The uniform dial scale makes the measurement easy, and the high actuation power ensures high accuracy.

Besides, Konics presented a variety of products such as the recorder, data-logger, indicator, controller, converter, pressure transmitter, temperature transmitter, thyristor unit, temp sensor, and others.

National Instrument /

Measuring and testing solutions related to ship-building

National Instrument presented and demonstrated the wind power state monitoring system composed of hardwares such as the ethernet data collection and motion, etc, and graphic-based programming environment LabVIEW, wireless data collection system based on ethernet, multi-channel I/O integration platform built on EtherCAT industrial protocol, multiple-axis motion robot arm system, etc.

The multiple-axis motion robot arm system is often operated for the production and construction of ships, and also used by shipbuilding and marine equipment companies. The FPGA based multiple-axis enables very sophisticated motion of arm that can grab objects.



LabVIEW 2010

Connected conveniently to the cable using the motion module which supports the servo, stepper motion, and even dual encoder along

with the intelligence embedded control system, a powerful multiple motion system can be realized easily and shortly which can be interlocked perfectly with commercial 3D CAD tools.

Korean NI also held a technical seminar which revolved around the theme of wind power energy solution for building green ships while showcasing products at its booth.

Octa International / Adhesives and adhesive Mold

Octa International is the Korean office of Laticrete International headquartered in the United States, which specializes in the production of ancillary materials necessary for the installation of stones and residential, commercial, and industrial tiles.

Using this exhibition as the springboard, Octa International presented adhesives, waterproof films, adhesive molds, and others, based on the strategy to supply the products of Laticrete International - which are used not only for construction but also in famous cruise ships worldwide - to the shipbuilding and marine sector.

Among them, the Laticrete P800 lightweight mortar and plastering materials are 50% lighter than existing mortars, and

thus optimized for the floor works, and provide high strength required for the construction of ships and yachts.

Laticrete 8510



8510 adhesion promoter



P800 lightweight mortar

adhesive promoter can be used as the slurry coat for steel plate, adhesive, joint filler, if mixed with the portland cement, Laticrete 211 powder, 1500 joint filler, etc, and applied to the area that requires counterbalance to the compression, movement, and impact.

Both P800 and 8510 received the certification from RINA, the major ship classification society based in Genoa, Italy.

Heartman / Diesel engine parts

Heartman has specialized in the supply of the nozzle, the maritime diesel engine fuel spray system, flanger assembly, fuel spray valve, fuel spray pump, etc, since its establishment in 1965. It presented ship diesel engine nozzle and ship diesel engine flanger assembly during the exhibition this time, showcasing its superb technology and know-how amassed for more than 4 decades.

The ship diesel engine nozzle sprays the high pressure jet of fine particles into the engine cylinder, which is discharged at high speed



Parts of ship diesel engine

from the ship diesel engine fuel spray pump.

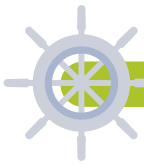
It is the most essential and precise product in the ship engine, which enables the high pressure spray for a long time at a tremendously high temperature during the explosion of fuel inside the ship diesel engine cylinder.

The ship diesel engine flange assembly is part of internal combustion engine of ship. The fuel stored in the fuel tank is discharged at high pressure and transported at a constant pressure to the fuel spray valve via the high pressure pipe.

Izumi Corporation / Rechargeable Tools

Izumi Corporation, the Korean distributor of IZUMI, a Japanese manufacturer of tools for electricity works, presented LIC-series along with EP-series and ECO-50 series, its flagship products, grabbing the attention of visitors.

REC-5 series are the latest rechargeable battery tools. They are easy to carry and activate at the place where electricity works are performed. Designed to be lightweight, they also improve the efficiency in work. Also, they have the built-in storage device to check the type, number, and condition of



each product and the detection system to figure out how the tools have been used and how old they are.

EP series, the headpiece compression tools, the key product of Izumi, are preferred the most among workers for its lightweightedness and easy-to-use features. They have the advantage of compressing the sleeve perfectly not only to maintain the electric conductivity but also to keep the surface of the compressed sleeve in neat and clean state.

LIC-series captivated the visitors during the exhibition this time. The battery shifted from Ni-cd to LI-ion which shortens the time for recharging and enables the recharging anytime regardless of battery residue, and furthermore, is eco-friendly without any harmful contents.



REC-5 series

ECO-50 series

ITMA /

ERP System for small-to-medium shipyards

ITMA focused on the ship construction and repair EPM system for small-to-medium shipyards and RFID-based asset management system during the exhibition this time.

POSEIDON 2.0 sets the procedures of ship construction/repair of small-to-medium shipyards according to the project process based on the goal and implementation, and introduces the EPM and TOC under the ship construction and repair which can be applied depending on the division and act.

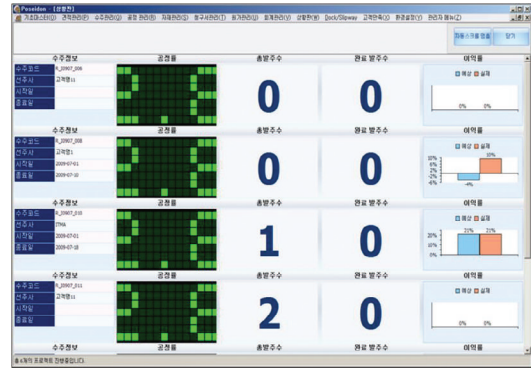
It is mainly characterized by ▲the ability to interlock with PDA, smartphone, bar code, and SMS, and ▲the performance-based design of strategy, management, operation, situation-centric design, standard work allocation design, block-oriented design, and others.

This system helps expand asset management and figure out the status of management easily and enables overall understanding and interlocking with outsourced companies.

CMA_RFI is a system interlocking with the enterprise information system (ERP, facility management, etc) and product information services by automatically recognizing the electric

tag attached to products through wireless frequency.

It is characterized by the ability to ▲secure the connectivity with corporate system, ▲establish WCDMA, internal wireless networks, etc, in various ways, ▲do reception/transmission of middleware data, etc.



POSEIDON 2.0

Nord-Lock Korea / Bolt securing system

Nord-Lock Korea, which is headquartered in Sweden, presented a bolt securing system called NORD-LOCK which applies the tension, instead of the friction force, to secure the bolt joint area based on the proven wedge type lock mechanism conforming to the German Industrial Standard (DIN 25201) and

provides far more excellent performance compared to the existing product.



NORD-LOCK

It consists of a pair of washer that has the cam face on one side with the cam angle ' α ' greater than the thread pitch ' β ', and has a radial teeth on the opposite side.

The standard product comes in pairs, cam face to came face. If the bolt and nut are tightened, the teeth of NORD-LOCK washer grips and locks the mating surfaces, which in turn allows the movement only across the cam face. The rotation of bolt and nut is blocked by wedge effect of the cams.

NORD-LOCK washers are available in a variety of materials, which all comply with European directives on ELV & RoHS. Our standard steel washers are coated with the zinc flake coating Delta Protekt. The process includes a base and top coat.

Other alloy steel, Inconel 718, and Inconel/Hastelloy C-276 are available, in addition to the steel and stainless steel.

Automa / Automatic ball valve

Automa is a leading provider of various air pressure products and related solutions. Automa specializes in pneumatic actuator, automatic on-off valve and various kinds of valve accessories like limit switch box, solenoid valve and air filter regulator which have been being exported to many countries such as Southeast Asia, Europe, South Africa, North and South America.

Automa serves a wide range of industries including petrochemical, refining, water treatment, wastewater disposal and power generation. The company is accelerating the quality control in order to offer superior goods and services to customers.



Automatic ball valve Control globe valve Electric ball valve

Automa pushed ahead vigorously with the promotional activities in parallel with the presentation of automatic ball valve, control globe valve, and rotary type electric ball valve, etc, during the show.

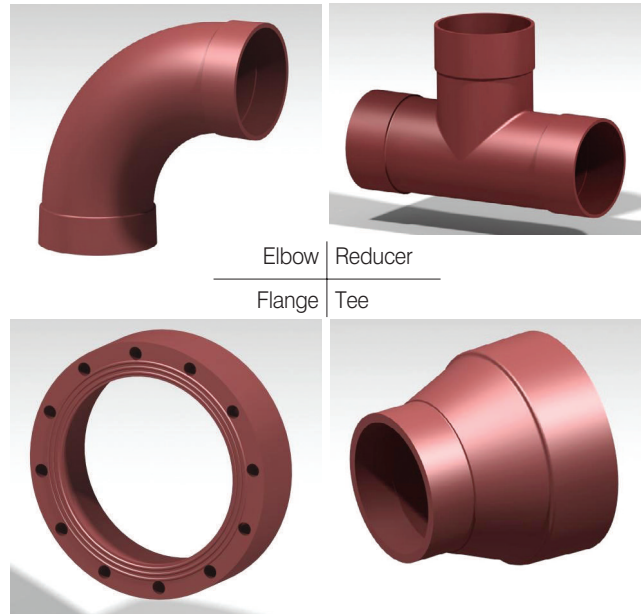
These products have the following features:

- Automatic ball valve: Limit switch box + Double acting actuator (Scotch yoke type) + Air filter regulator + Solenoid valve + Flanged ball valve
- Control globe valve: Positioner + Globe valve
- Rotary type electric ball valve: Rotary electric on-off/Control type + Linear electric on-off/Control type

CSP / Glass-fiber Reinforced Epoxy pipe


CSP presented the entire range of Glass-fiber Reinforced Epoxy pipe products, which it has recently developed, during the exhibition.

CSPL16L pipe for oil, water and gas products - the flagship products of CSP - are manufactured in sizes ranging from 150mm through 1,200mm diameters and will handle pres-



ures to 1,6 MPa depending on size and temperatures up to 93.3°C.

These products are used to transport highly corrosive materials from an oil field's central gathering station to injection wells. Additionally, CSPL16L pipe is also used in ash and saltwater flow lines where corrosive fluids are encountered. And the epoxy resin and ceramic tile system contributes to the chemical, physical and temperature resistance, the fiberglass reinforcement provides the greater load carrying characteristics.

All conventional methods of calculating stresses in the pipe wall, resulting from internal and external loads, are applicable to the CSPL16L pipe system. The occurring stresses in the structural laminate have to be combined to an equivalent stress and compared with the allowable value of this stress. Specially, the design of a pipeline system using CSPL16L products means a construction with pipes as well as fittings. All elements of CSPL16L pipe system are designed such that the performance requirements of the pipeline is valid for each element of the CSPL16L system. The choice for one of the possible joining systems will be considered in design stage. Together with our engineers we can advise an optimal solution. Meanwhile, CSP displayed 50A, GRE, straight pipe, elbow, reducer, tee and flange during this exhibition and moved ahead actively with the promotions. 

see at WE'VE CHANGED THE WAY YOU night



Voyager

Forever.

Voyager is a see-clearly-in-total-darkness, stabilized-imagery-in-th-roughest-seas, get-you-out-and-back-anytime, because-you-have-places-to-be-thermal-imager. Why trust your yacht, and your loved ones, to anything else?

The best maritime thermal imagers come from the world leader in thermal imaging - FLIR.



Your Vision

FLIR Vision



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Together, we can build better hydraulic and propulsion systems to keep profits afloat.

When you're out on the high (and sometimes very rough) seas, repairing important ship machinery usually isn't an option. Which is why it's nice to have a partner like Parker, to help efficiently and cost-effectively build machinery that can handle heavy loads and harsh environments. From cranes, winches, and capstans, to engines, gearboxes, and hydraulics, we've helped engineer durable and reliable **systems and components** for bulk carriers, oil tankers, supply boats, and everything in between. For more information, go to parker.com/profitsafloat. And see how Parker can help keep your business sailing forward.

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Together we set the standard!

Alfa Laval is a leading global provider of specialized products and engineering solutions.

Alfa Laval proceeded seriously with the business in the marine sector in 1973 after its first entry into the Korean market in 1962. The company established its formal local representative office in 1979 which celebrated its 30th anniversary of foundation last year.

Currently, Alfa Laval is assisting Korean customers to optimize the performance of their processes through its equipments, systems and services.

Alfa Laval Korea Co., Ltd.

Alfa Laval is a leading global provider of specialized products and engineering solutions. Alfa Laval's equipment, systems and services are dedicated to helping customers to optimize the performance of their processes. Time and time again. Alfa Laval helps its customers to heat, cool, separate and transport products such as oil, water, chemicals, beverages, foodstuffs, starch and pharmaceuticals.

Alfa Laval's worldwide organization works closely with customers in almost 100 countries to help them stay ahead.



View of Alfa Laval's factory inside and outside, located within the Poseung Industrial Complex in Gyeonggi Province



First advancement into the Korean market in 1962

Alfa Laval made an entry to the Korean market in 1962. At that time, Alfa Laval's business started through a trading house Ewkor Trading, followed by starting Marine business in 1973. Alfa Laval Korea was established in 1979 and celebrated the 30th Anniversary last year.

Alfa Laval Korea is headquartered in Seoul and has a local branch office in Busan to ensure effective sales and technical support to its customers. The company has a factory and workshop in Poseung for producing, assembling and servicing plate heat exchangers in Korea.

Since 2009, Alfa Laval further strengthened its presence in South Korea, by acquiring local system builder Onnuri Industrial Machinery. It remains a separate company as it continues to offer its own systems under the Onnuri brand. However, one of its divisions, the Local Adaptation Center will deliver services to the Marine & Diesel Division of Alfa Laval Korea.

Dennis van der Toolen, Director of Alfa Laval Korea Marine & Diesel Division, explained, "This is the final result of a project initiated in 2008, aiming to make Alfa Laval Korea the preferred supplier to the demanding South Korean shipyards." He added, "The main objective is to improve our local presence and provide premier support to our customers. Local quality values will be applied to our core Alfa Laval equipment before dispatch to our customers."

The local adaptation centre will focus on customizing Alfa Laval's standard products, improving communication and speed of response. In-house training and witness testing facilities will further ensure that Alfa Laval's products meet Korea's high quality values.

Alfa Laval on board

Alfa Laval offers a complete portfolio of leading technology. Alfa Laval's efficient and reliable solutions, which handle a wide variety of operations, are an essential part of life on most ships at sea. Alfa Laval's systems, equipment and services cover everything from critical operations to lighter duties, providing both lifecycle economy and long-term peace of mind.

•Environmental protection

By addressing key threats, Alfa Laval's environmental systems safeguard both fragile marine ecosystems and human health. As well as reducing customers' impact, they help to



Dennis van der Toolen, Director of Alfa Laval Korea Marine & Diesel Division

reduce customers' operating costs.

Alfa Laval's applications include Ballast water treatment, Bilge water treatment, Crankcase gas cleaning and Sludge and waste treatment.

•Oil treatment

Alfa Laval offers treatment solutions for a wide range of oil types, characterized by high efficiency and modular thinking. Alfa Laval's equipment safeguards both customers' performance and customers' investment.

Alfa Laval's applications include Separation, Fuel conditioning, Filtration, Mobile hydraulic oil cleaning and Cleaning-in-Place.

•Cooling and heating

Alfa Laval's plate heat exchangers let customers take full control - and full advantage - of the thermal energy on board. A



complete selection ensures the best possible match of product and function.

Alfa Laval's applications include Central cooling, Steam heating and condensing, Gas condensation, Refrigeration, Mineral oil preheating, Filtration and Cleaning-in-Place.

•Tank cleaning

Alfa Laval's Gunclean Toftejorg tank cleaning solutions, available in single-, dual- and multi-nozzle configurations, provide thorough results while consuming just a fraction of the time and cleaning fluid.

Alfa Laval's applications include tank cleaning technologies, deck mounted cleaning machines, retraceable cleaning machines, portable cleaning machines and optimization software.

•Distillation

Proven distillation processes merge with state-of-the-art advances in Alfa Laval's freshwater generators. Alfa Laval's newest, AQUA, combines a full supply of quality freshwater with reduced environmental impact.

Alfa Laval's applications include Seawater desalination and Water heating and circulation.

The experts of Alfa Laval's global Parts and Service team specialize in peace of mind. In port and at sea, they provide the equipment, training and support to help customers achieve Nonstop Performance.

Marine Essentials

For nearly a century, Alfa Laval has had a remarkable focus when it comes to the marine industry. While the company has developed numerous technologies to meet the needs of

shipbuilders and ship owners, each has reflected a single aim.

Time and again, Alfa Laval has targeted the very nature of substances and processes.

Alfa Laval has sought the essence in fuel oil, process fluids and even seawater itself. Dennis van der Toolen, Director of Alfa Laval Korea Marine & Diesel Division, "Whether that essence is as complex as concentrated energy or as simple as pure water, our technologies have made it accessible, allowing it to be utilized or protected."

Meanwhile, Alfa Laval has worked to refine the technologies themselves. By keeping its minds on the process essentials, the company has continuously streamlined and adapted its equipment, creating solutions that are better suited to life in the marine environment. He stressed, "In doing so, we've earned an essential place aboard most ships at sea. And more importantly, we've earned the trust of those who operate them. Technology evolves. But the essentials remain unchanged."

Major products of Alfa Laval have the following features:

•Separation

Separation by means of a centrifuge or filter may be the clearest expression of Alfa Laval's quest for essence. Simply put, separation is the removal of particles and impurities until only what's valuable remains.

When separating oils, this means energy-rich fuel or clean and protective lubricant. And in the case of bilge water, it means purified water that can safely be released into the environment. Today Alfa Laval can separate gas from the engine crankcase as well, producing clean air and usable fuel alike.

Compared to the disc-stack separators Alfa Laval pioneered



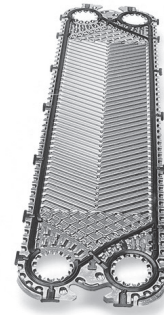
for the marine industry in the early 1900s, Alfa Laval's centrifuges of today are modern marvels of efficiency. While they still employ discs, the separators recover more and waste far less, thanks to innovations like ALCAP self-adjustment and Alfa Laval's one-of-a-kind 'CentriShoot' discharge system. In addition, Alfa Laval's separators have grown efficient in their very construction. With streamlined features like the lift-out 'CentriLock' lock ring and an economical system of modular components, they do more but ask less of their owners.



Separator bowl

innovations over time, each leading to a smaller, more effective and more robust plate heat exchanger. Thinner plates pressed in a single step, a flow optimizing distribution pattern and a high-precision alignment system for gasketed models are just some of the hallmarks now taken for granted by Alfa Laval customers.

And the innovation continues. With methods like laser welding and brazing in 100% stainless steel, Alfa Laval is still pushing boundaries in what many consider an already mature technology.



Heat transfer

•Heat transfer

Working with heat transfer is managing fundamental opposites: the heat and cold contained within fluids or gases. At sea, it usually means removing the excess heat on board to allow the cooling of machines and processes.

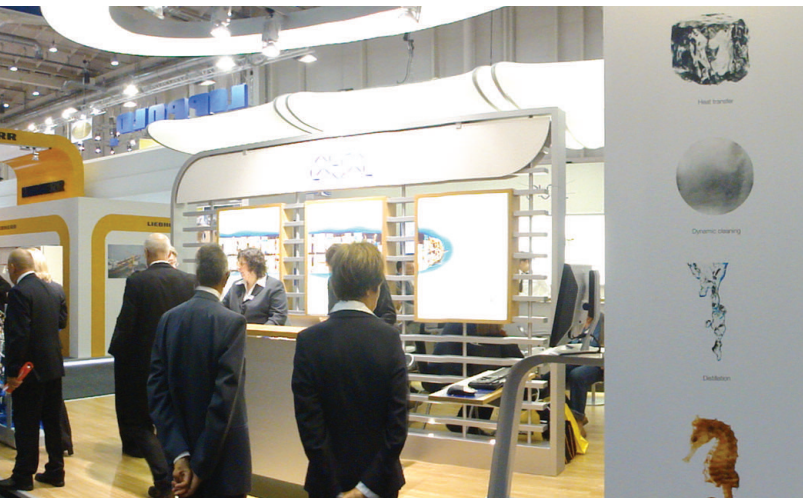
In Alfa Laval's heat transfer solutions, Alfa Laval handles this exchange as efficiently as possible - and not only by reducing space requirements compared to shell-and-tubes. Alfa Laval plate heat exchangers minimize losses, which results in optimized cooling and a maximum return of cheap and concentrated heat energy. This has been achieved through many

•Desalination

Water is the very nature of the ocean. Yet despite its abundance, the salt and impurities seawater contains make it unsuitable for most purposes in its existing state.

Alfa Laval has led the way in unlocking seawater's potential, having provided simple and reliable desalination solutions for over half a century. Not only did we introduce vacuum distillation on board, Alfa Laval developed the original plate-pack technology that removed much of the bulk of shell-and-tube solutions.

Today Alfa Laval has reduced bulk further by abandoning the



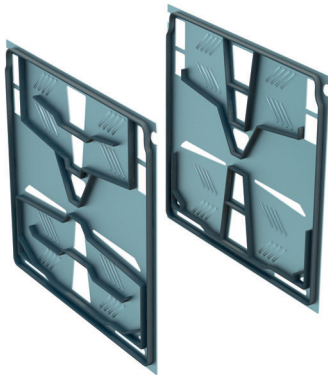
Alfa Laval presented its products and solutions in SMM 2010 held in Germany for 4 days from September 7.





shell of the freshwater generator and incorporating the vacuum into the plate pack. In Alfa Laval's revolutionary AQUA, evaporation, separation and condensation occur in a single pack of three-in-one plates, thus cutting seawater and pumping requirements in half.

This leads to much more than a smaller, more flexible freshwater generator. By making economical use of the plate surface, Alfa Laval has managed to reduce energy consumption and emissions elsewhere in the chain.



Desalination

•Dynamic cleaning

At times, the true essence of something is nothing at all. In cleaning, the ultimate goal is a bare surface, free from any residues or impurities.

This can be hard to achieve inside a fully assembled machine or a cargo tank with complicated obstructions. Yet Alfa Laval has developed ingenious ways of obtaining a perfect clean. Besides engineering our separators, plate heat exchangers and other major equipment for effective Cleaning-In-Place, Alfa Laval has made groundbreaking advances in the area of tank cleaning.



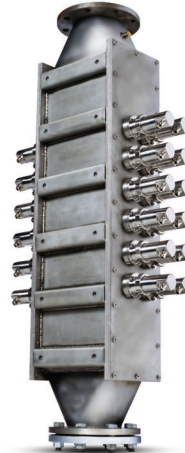
Dual nozzle

Alfa Laval's dynamic Gunclean Toftejorg tank cleaning nozzles employ an optimized spray pattern to clean faster and better than static solutions. Reaching the whole tank in a fraction of the time, they remove not only residue, but also hassle, expense and the risks associated with manual cleaning.

Alfa Laval's latest nozzles also feature a patented hysteresis clutch, which prevents false starts and does away with a second shaft penetration. By eliminating this potential source of leakage, they prove once again that

nothing can really be something.

•Advanced Oxidation Technology



AOT unit

Life itself is an essence, and the ocean's many forms of life are in desperate need of protection - even from each other. Keeping species within natural boundaries is not only for their own good, but also for ours, since invasions of foreign organisms can devastate maritime businesses and human health.

As the latest tool in the Alfa Laval portfolio, advanced oxidation technology (AOT) is playing an instrumental role in enforcing these natural frontiers.

The key component of our groundbreaking PureBallast system, AOT provides an effective means of removing unwanted organisms from ballast water.

Just as importantly, AOT works without adding chemicals or complexity to life on board. For this reason, it may soon be applied in other applications, for example as a means of purifying desalinated water for drinking.

Like other Alfa Laval technologies before it, AOT is well on its way to becoming an essential presence on ships at sea.

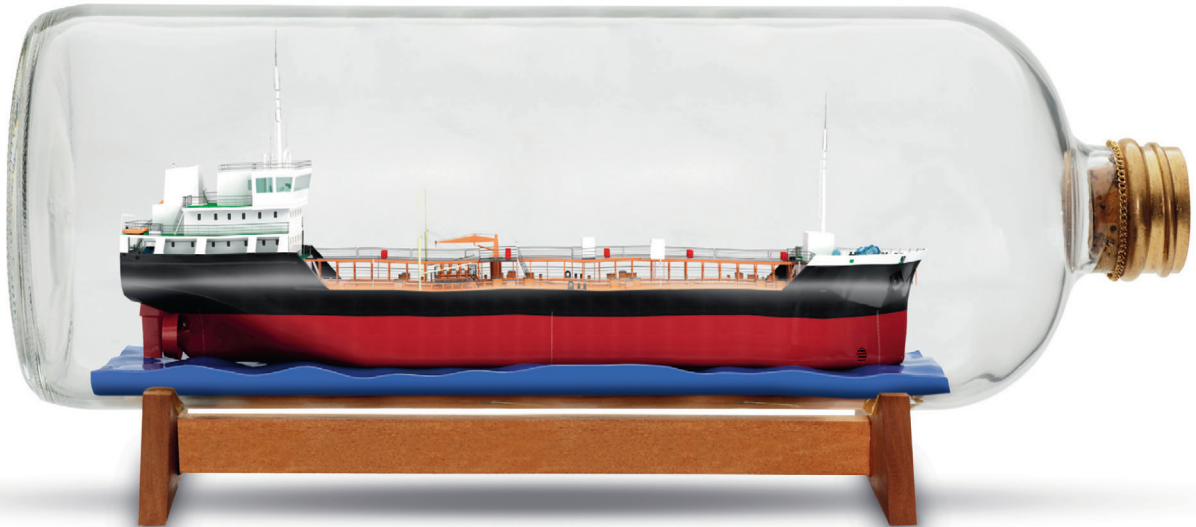
Essential preparations for the success of customer

Dennis van der Toolen, Director of Alfa Laval Korea Marine & Diesel Division, said, "Whether customers build ships or sail them, the equipment they choose to have on board plays a vital role in their success. And no choice is more secure than Alfa Laval. Through many decades of working with shipyards, ship owners and ship operators, Alfa Laval has come to understand the essentials of life on board."

And he stressed, "Our solutions reflect the full range of installation and operational needs, and we design our equipment to meet them in the simplest, most reliable and most cost-efficient way. This means lower lifecycle costs and reduced environmental impact for our customers, who, like us, are working to build a more sustainable maritime industry. Together we set the standard!"



Ships are not still



So why are bilge water treatment systems static?

Traditional bilge water treatment systems rely on gravity, filters or flocculation chemicals to achieve 15 ppm. But while they may pass type approval tests in stable conditions on shore, these static technologies seldom perform at sea.

Because in real life, the ocean is anything but stable.

In a pitching and rolling environment, only a dynamic system like Alfa Laval's PureBilge offers continuous bilge water treatment. PureBilge uses centrifugal

separation – the same technology trusted to protect your engine – to handle varying bilge water feed and the toughest emulsions.

The result is less filter waste and reject. Not to mention less time in the engine room.



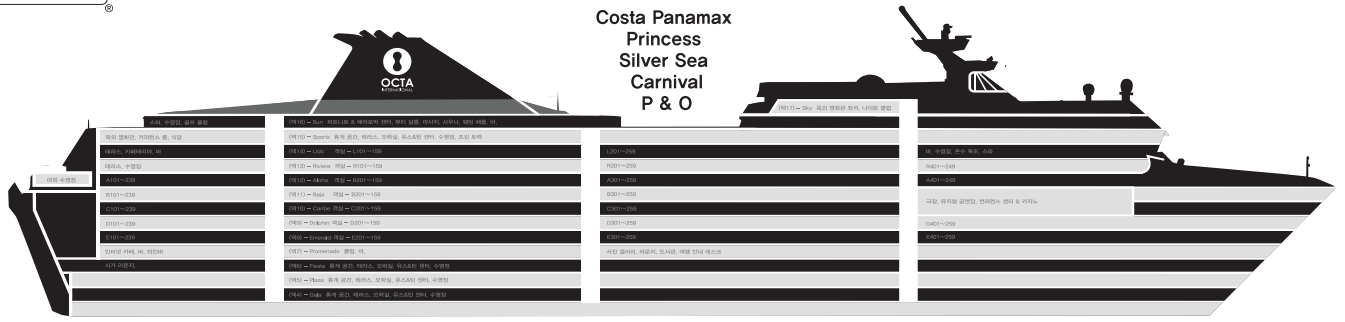
PureBilge – a dynamic force
in bilge water treatment



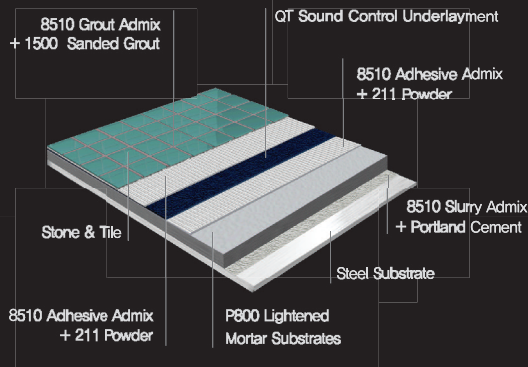
www.alfalaval.com



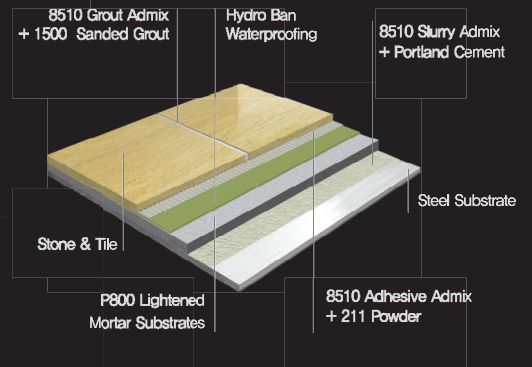
STONE & TILE INSTALLATION SYSTEM FOR SHIP (CRUISE)



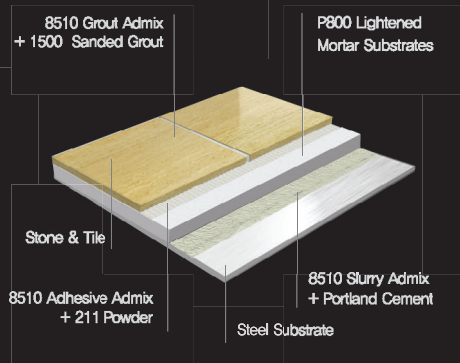
SOUND CONTROL SYSTEM



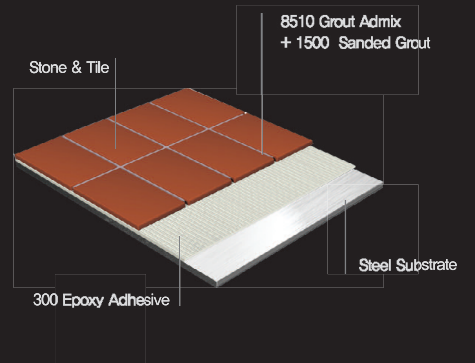
WATER PROOFING SYSTEM



COMMERCIAL SYSTEM



STEEL BONDING SYSTEM



RINA Certified Product

Admix
Steel Slurry Coat, Adhesive, Grout



8510 Bonding Admix

Lightened Bed Mortar



P800 Lightened Mortar

Grout



1500 Sanded Grout
(40 Colors)

Adhesive



211 Powder

Wall, Ceiling, Adhesive



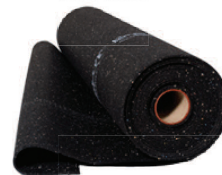
310 Epoxy Adhesive

Waterproofing



Hydro Ban

Sound Control Mat



QT Sound Control Underlayment

Steel Adhesive



300 Epoxy Adhesive

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The 4th Seoul International Maritime Forum (SIMF) was held at Seoul Imperial Palace Hotel during October 14 - 15 in Seoul.

An arena of discussion on the measures to cope with climate change

The 4th Seoul International Maritime Forum was held

The 4th Seoul International Maritime Forum (SIMF), an arena to discuss the essential issues related to the international maritime sector, was held for 2 days from October 14 to 15 in Seoul.

This forum was attended by about 200 domestic and overseas experts, including Efthimios E. Mitropoulos, Secretary General of IMO, and ambassadors to Korea, in which presentations and discussions were carried out in relation to the greenhouse gas emissions in the shipping and shipbuilding sector, development of green ships, etc.

The 4th Seoul International Maritime Forum (SIMF) was held during 14 - 15 October in Seoul, Republic of Korea, on the theme of "The Strategy for Climate Change in Maritime sector".

The Forum was attended by leading figures from international

maritime community including Efthimios E. Mitropoulos, the Secretary-General of International Maritime Organization (IMO), Jeffrey Lantz, the Chairman of IMO Council, and other distinguished maritime experts around the world, as well as government officials, including Minister for Land, Transport

and Maritime Affairs of the Republic of Korea. It is widely said that the Forum was held timely and outcome of which was fruitful. It includes thematic presentations and stimulate discussions among participants from countries with different interests how to implement Green House Gas (GHG) reductions on shipping industries.

Jeong Jong-hwan, the Minister of Land, Transport and Maritime Affairs, said, "The international shipping sector will have to continue more solid growth to overcome the financial crisis which began in 2008 and actively move forward with business in the global market. Now, it is time that all industries should work together closely to

cope with the climate change, as well as the government, and seek countermeasures jointly."

He added, "To cope with the climate change, the task for all human beings, both advanced countries and developing countries must reach a common agreement within the soonest period which can be applied worldwide."

Efthimios E. Mitropoulos, the Secretary-General of IMO, said in his key-note speech that "This is a quest on which we are jointly embarked and in which success will produce a "win-win" situation. After all, improvements in vessel efficiency will result in lower fuel consumption, from which everybody benefits. I, therefore, feel encouraged that, working together, we will be able to make a genuine, substantial and lasting difference".



Jeong Jong-hwan, the Minister of Land, Transport and Maritime Affairs, is delivering the opening address.

Efthimios E. Mitropoulos, Secretary General of IMO, is giving the key-note speech.



Attendants of this forum are taking commemorative photos.

Issue to cope with climate change discussed

The Forum also featured in presentations and expert discussion on other GHG emission reduction measures like Technical & Operational Measures such as EEDI (Energy Efficiency Design Index) and SEEMP (Ship Energy Efficiency Management Plan), which are currently under discussion in IMO, and market-based mechanisms such as the emission trading scheme and GHG funds.

This Forum served as an occasion to promote mutual understanding and explore reasonable countermeasures through presentations on how to cope with the UN Framework Convention on Climate Change (UNFCCC) in the maritime sector from the perspectives of both developed and less developed countries and lively discussions among leading



experts.

In the special session of the Forum on the 2nd day, there was consideration on how to improve the current international compensation schemes for marine pollution damage as well as discussions on the current operational status of national funds in some countries and problems of the current compensation scheme for large oil pollution incidents such as the "M/T Hebei Spirit" incident off the west coast of Korea in 2007.

Meanwhile, since the 1st Forum in 2007, the SIMF has been held annually to mark the fourth anniversary this year. So far, the Forum has brought together maritime experts on the theme of major issues in the international maritime sector such as the Wreck Removal Convention, an effective compensation scheme for oil pollution damage, prevention of piracy.

Terrestrial Broadcasting of the SIMF

This an overview of the presentations made in the Seoul International Maritime Forum (SIMF) held this time by session and theme.

1st Session: International discussion on The United Nations Framework Convention on Climate Change (UNFCCC) and its spill-over effect

• 1st theme: Trend of international discussions on the UNFCCC / Dr. Florin Vladu, manager of analytical technology at UNFCCC Secretariat

Dr. Florin Vladu, manager of analytical technology at UNFCCC Secretariat, remarked, "The innovative idea and strong political leadership of IMO, member countries, and industry are necessary if the contradictory principles of UNFCCC and IMO are to be coordinated."

That respective countries would announce the goal of greenhouse gas emission after 2012 in their own countries is crucial to cope with the climate change in the



periods ahead. The international shipping sector is responsible for only 2.7% (2007) CO₂ emitted around the globe, but the emissions are expected to increase as the shipping volume rises.

Dr. Florin Vladu, manager of analytical technology at UNFCCC Secretariat, argued, "IMO traditionally applies No More Favorable Treatment (NMFT) although Common But Differentiated Responsibilities (CBDR) is applicable. So, both UNFCCC and IMO should emphasize their principles and make effort to keep them in harmony."

• 2nd theme: How to implement UNFCCC in the maritime sector / Jeffrey Lantz, Director of USCG and Chairman of IMO Council (representing the advanced countries)

Jeffrey Lantz, Director of USCG and Chairman of IMO Council maintained, "The most effective way is to adopt the common application to all ships if the greenhouse gas emissions is to be slashed in the international shipping sector."

IMO is an independent organization, not subject to the control of UNFCCC, the United Nations Framework Convention on Climate Change. The collaboration between advanced countries and developing countries is essential, considering that the ratio of the advanced countries and developing countries based on the nationality of flag country and ship owner country and the conditions for adopting the treaty of IMO have to be examined to ensure the common application to all ships.

According to Jeffrey Lantz, 3 scenarios

can be expected in connection with the reduction of greenhouse gases emitted from ships.

First, it is the case in which the treaty of IMO is adopted and made applicable commonly to all ships and MBM revenue can be supported for the developing countries.

Second, it is the case where the treaty of IMO is not adopted, and as a consequence, independent and different regulations are applied in respective countries. In this case, however, it would be insufficient and industry has to bear a tremendous burden.

Third, it is the case where the national or regional convention



on regulation is adopted, which would make the equal application to all ships within the region complicated.

•3rd theme: How to implement UNFCCC in the maritime sector / William Azuh, Nigeria, Chairman of IMO diplomatic group (representing the developing countries)

William Azuh, Nigeria, Chairman of IMO diplomatic group, stated, "The principles of CBDR must be applied in consideration of equality among countries, and considerations must be given to the developing countries."



William Azuh proposed the rebate mechanism to give consideration to developing countries amid the contradictory ideas between the advanced countries and developing countries with regard to the measures to facilitate the enforcement despite the agreement upon the necessity to cope with the climate change.

The rebate mechanism is applicable to all market-based systems, and is to compute the rebate amount based on the value weight of imports of each developing countries. William Azuh stressed the need to establish a new and independent fund operation organization in order to ensure efficient and transparent operation of rebate mechanism.

2nd Session: Discussion in relation to UNFCCC in IMO

•4th theme: Development of GHG reduction policy through technical & operational Measures / Kim Tae-woo, Advisor of Korean Register of Shipping

Kim Tae-woo, Advisor of Korean Register of Shipping, remarked that the long-term goal of the greenhouse gas emission reduction policy was the shared responsibility and proposed the tripartite talk involving the ship owner,



shipyard, and register of shipping.

The greenhouse gas emission from new-build ships can be reduced by 30% through a series of measures such as the modification to the ship type, selection of propulsion shaft, etc. Also, maintenance and repair of ship hull and selection of fuel oil can help curtail the greenhouse gas emissions by 20% below the current level.

In addition, constant speed rpm maintenance and optimal propeller pitch control, etc, can help slash the greenhouse gas emissions by 40%.

Kim Tae-woo, Advisor of Korean Register of Shipping, said, "We are currently developing the index (IMO Res.A.963(23)) based on the base line setting of greenhouse emissions and ship type, and will gain competitive advantage over other businesses if the conditions for new regulations and the market expectations are met."

•5th theme: Market-based measures to reduce GHG emissions (1) / Andreas Nordseth, Director General, Danish Maritime Authority

Andreas Nordseth, Director General, Danish Maritime Authority, gave an overview of International GHG Fund built on the concept of simple carbon tax which was proposed by Denmark.

The starting point of the discussion on the reduction of greenhouse gas in the shipping sector is for all industrial sectors, including the shipping sector, to meet the obligation to effectively respond to the climate change.

The international shipping is characterized by the establishment of international standards through IMO, easiness of change in the nationality of ship, fierce competition, and the mobile production facilities, unlike the fixed onshore production facilities which are the source of emissions. Thus, Andreas Nordseth said, "Market-based system is required, considering the long life of ship (35 years), the expected surge in the emissions from the international shipping, and the need to make compensation for the increased efficiency."

Besides, he reiterated the need to introduce market-based foundation system at the global level





through the agreement within IMO in order to preclude any third parties from imposing independent regulations.

•6th theme: Market-based measures to reduce GHG emissions (2) / Shinichiro Otsubo, manager of international standards at the Ministry of Land Infrastructure and Transport

Shinichiro Otsubo, manager of international standards at the Ministry of Land Infrastructure and Transport, introduced the Leveraged Incentive Scheme which applies the rebate commensurate with grade, built on the concept of EEDI/EEOI+MBM.

Shinichiro Otsubo argued, "The reduction of greenhouse gas emissions from ships can be accomplished only through the improvement of energy efficiency. The term "measure" will be more appropriate in the technical navigation system which cuts greenhouse gas emissions only through the improvement of energy efficiency, while the term "mechanism" or "instrument" will be more appropriate in the market-based system than the term "measure" because the reduction of transportation volume and elevation of energy efficiency are induced."

LIS pays the tax levied at a certain rate on the purchased fuel for all ships like the International GHG Fund of Denmark, but is different that a certain portion of tax is refunded depending on the accomplishment of efficiency improvement based on EEDI or EEOI.

Shinichiro Otsubo emphasized that the International GHG Fund and emission trading scheme was the "In-Sector (real reduction) System" applying only the reduced emissions in the shipping sector unlike the "Out-Sector" (virtual reduction) which utilizes the reduced emissions in other industrial sectors.



3rd Session: Eco-friendly ships of future (Green Ship)

•7th theme: Concept of greens ship and status on the development / Hiroshi Iwamoto, Chairman of CESS

Green ships are being built to more concrete specifications as they are designed to ensure the improvement in the technical aspects and navigation, such as high-efficiency engine, new types of fuel source, and others.

Currently, the environmental issues which are highlighted around the globe include the ozone depletion, global warming, acid rain, marine contamination and desertification, hazardous materials crossing borders, destruction of biodiversity, and so forth. A variety of measures have been implemented, such as the restriction on the release of NOx and SOx, wastewater treatment, restriction on the emission of noise, installation of incinerator, etc, to limit the discharge of pollutants from ships.

Hiroshi Iwamoto, Chairman of CESS, said, "Perfect ship hull and output, perfect machine efficiency, recyclable energy, etc, have been highlighted recently, and one of the examples involving new concept ships of future is to reduce the emission of CO₂ from 8,000TEU ships by 69%."

Following that, he said, "The concept of green ship is not a fixed definition, but the technology remains the most crucial element. We should take collective responsibility and cooperate, rather than just adhering to the self-interest."



•8th theme: Types of Green Ship in the Future / Park Chung-heum, Vice-President of technical sector at Samsung Heavy Industry (SHI)

Park Chung-heum, Vice-President of technical sector at Samsung Heavy Industry (SHI), voiced his opinion, saying that he expected a series of ships to be unveiled, such as ships incorporating the fluid dynamics and aerodynamics technologies or ships powered by LNG, and the LNG-powered ships would be able to be operational by 2015 if the infrastructures are built in parallel. In addition, he stressed



the need to have the desirable perspective and enlightened perception towards the green growth.

Currently, SHI has completed the conceptualization of road map to enable the operation of 100,000W fuel-cell powered Ro-Ro carrier and passenger ship by 2030. NYK Line (Japan company) is already operating the solar-powered car carriers, and is currently exploring ways to construct ships powered by wind and waves.

Ships powered by nuclear energy requires huge initial cost for construction, but ship owners may save a huge amount of cost if the aspects of future operation is considered.

Park Chung-heum, Vice-President of technical sector at SHI, said, "It is essential to make efforts to stimulate the construction of green ships. Ships which are not eco-friendly must be adjusted based on the regulations and institutional system, and LNG bunkering facilities for ships using LNG need to be expanded. In addition, the cost of bunker must be estimated on an equal basis among countries."

•9th theme: Green Ships & evolution of maritime transportation / Lee Young-man, Vice-President of Daewoo Shipbuilding & Marine Engineering (DSME)

Lee Young-man, Vice-President of Daewoo Shipbuilding & Marine Engineering (DSME), stressed, "Green ships are essential, not optional, and the green house technology is eco-friendly and economically efficient."

The CO₂ emissions in the shipping sector accounts for 3.3% of all CO₂ emissions around the globe, and the greenhouse gas emissions from ships are expected to increase by more than two-fold by 2050.

Ship is the most efficient means of transportation as long as CO₂ emissions are concerned, and regulations to control the emissions of NO_x and SO_x have already been enforced. For green ships, EEDI related to the technology requirement and EEOI associated with the navigation requirement can be used.

Ships suitable for the term "econology". a combination of ecology, economy, and technology, include LNG-powered vessels, nuclear-powered vessels, fuel-cell-powered ves-



sels, and solar-powered vessels, wind-powered vessels, etc. Specifically, LNG vessels can reduce CO₂ emissions by 23% and SO_x emissions by as much as 92%, and is expected to cut CO₂ emissions by more than about 50% if various technologies which are currently available are applied.

Special Session: Oil-source pollution damage compensation system

•10th theme: Ideal scheme of international compensation for marine pollution damage / Mans Jacobsson, former Secretary General of IOPC

**Alfred Popp (the presenter of the 11th theme, a manager of Canadian domestic fund) made the presentation instead because the original presenter was absent for reason of health problem.*

Alfred Popp, the person in overall charge of Canadian Ship-source Oil Pollution Fund (SOPF), put for the precondition, saying "The discussion related to this presentation includes the review on the ideal compensatory restitution system for overall damages arising from marine contamination, as well as the contamination caused by oil discharged from oil tankers at sea."

Major conditions for ideal compensatory restitution system is as follows:

- The scope of application must be defined sufficiently broad
- The identification of the person held responsible must be easy
- The decision on the responsibility must be easy
- Sufficient fund must be established to provide full compensation to all victims of accidents
- The type of damages covered by the compensatory restitution system must be specified clearly
- The compensatory restitution system must ensure swift compensation
- Those who pays dues to the compensatory restitution system must be those who can take measures to prevent the marine pollution, and financial compensation must be provided to those who take such measures
- The financial management system of marine pollution must be easy to manage and fair enough to be recognized by the contributors

All countries and international societies are aiming to establish ideal compensatory restitution system for damages caused by marine pollution, but in reality, it is impossible to



establish a system which meets the aforesaid conditions. The best way to establish ideal compensatory restitution system is to improve the system within the boundaries of the present oil pollution damage compensatory system or incorporate the experiences acquired from the similar systems such as HNS, although the International Oil Damage Compensation System (international fund and liability treaty established in 1992) is not perfect or ideal. For that, all countries need to be actively engaged, considering that the shipping is international and the pollution occurs anywhere on the planet.

• 11th theme: Introduction of Canadian national fund / Alfred Popp, the manager in overall charge of Canadian Ship-source Oil Pollution Fund (SOPF)

Canadian Ship-source Oil Pollution Fund (SOPF) has come a long way from its confrontation with the crisis in the marine environment when a series of accidents occurred, including the marine accident which involved Torrey Canyon in 1967. At the outset, Maritime Pollution Claims Fund (MPCF) was established in 1971 as stipulated in the Merchant Marine Act of Canada, and raised money from 1973 to 1976.

The Merchant Marine Act of Canada was revised in 1989 and renamed to Ship-source Oil Pollution Fund, and joined the international funds based on the perception of the limit to the domestic fund, and the scope of fund was made to be confined to the oil pollution damages.

The Ship-source Oil Pollution Fund serves as the initial and last means. In 2001, Marine Liability Act was enacted in connection with the liability and compensation for the oil pollution damages caused by ship. In 2010, the revision to the Marine Liability Act came into force to reflect the additional fund which was established in January 2003 and the provisions of International Convention on Liability for Fuel Oil Pollution Damage which was entered into in 2001.

Alfred Popp, the manager in overall charge of Canadian SOPF, said, "The international fund and Ship-source Oil Pollution Fund are interrelated closely, and the money has been contributed from the Canadian domestic fund to the



international fund, in place of the Canadian contributors. Presently, an average of about 45 accidents are handled annually."

• 12th theme: Introduction of Chinese national fund / E Hai Liang, official of China Maritime Safety Administration

E Hai Liang, official of China Maritime Safety Administration, said, "Although the process has made progress towards the adoption of the fund, it has not been completed, and therefore, specific details will be introduced at the international seminar later, maybe next year."

The Marine Environment Protection Act of China (1999) includes the provisions pursuant to the collective compensation fund of shipowner, shipper, and insurance to cover the oil pollution damage caused by ship. To be more specific on that, the Rule on the Prevention and Containment of Marine Pollution Caused by Ships was enacted (effective from March 1, 2010), which includes the provisions pertaining to the establishment of domestic fund for the restitution for oil pollution damages.



• 13th theme: Efficient compensation scheme for marine pollution damage / Lee Chang-hee, professor at Mokpo National Maritime University

Lee Chang-hee, professor at Mokpo National Maritime University said, "With the decreased risk of spill in the wake of the joining of supplementary fund and elimination of the single structure, there is no significant problem with the complete restitution for oil pollution damages. However, it is necessary to introduce domestic fund in order to address the problem with the livelihood of residents in the affected area by providing swift compensation." Specifically, disaster



prevention works need to be on the pre-paid basis, and domestic fund must be adopted and operated independently by the national fund operator (for example, a single department set up and operated within the Ministry of Land, Transport and Maritime Affairs).

He insisted that REVISE manual and Claim Manual should be generated and the National Fund should be introduced to facilitate the close cooperation between Maritime Police, local governments, and IOPC funds.

The following is the summary of the questions and answers which were exchanged between the presenters and attendants.

Q: What expectation do you have for UNFCCC Conference of the Parties (COP) 16?

Jeffrey G. Lantz: It needs to be pushed forward constantly without regard to the outcomes of COP 16.

William Azuh: The discussion and orientation regarding the regulations pursuant to the reduction of greenhouse gas emissions in the shipping sector must be within the boundaries of IMO.

Dr. Iulian Florin Vladu: The discussion in IMO on the greenhouse gas emissions in the shipping sector need to reflect the results of the discussion of UNFCCC.

Q: If the desired result is not accomplished in UNFCCC, what shall we do?

Hiroshi Iwamoto: The successful process associated with the reduction of greenhouse gas emissions in IMO will speed up the discussion of UNFCCC.

Park Chung-heum: It is a difficult task to coordinate the positions of respective countries, but eco-friendly ships have already been constructed voluntarily at the request of shippers and market, etc, separately from the enforcement of IMO treaty.

Q: What is the measure for the coordination between UNFCCC and IMO principles? Is there any possibility that the regulations will be enforced at the regional level?

William Azuh: The regional regulation is an inefficient scenario, and therefore, will not be likely to be enforced very much. The market-based system can meet the demand of the developing

countries for financial support, rather than the regulations related to the technology and navigation, among the measures of IMO to slash the greenhouse gas emissions.

Jeffrey G. Lantz: The measures related to technology and navigation are difficult to reflect the CBDR principles. Therefore, I think that the demand the developing countries must be reflected, and a measure is required to prevent the possibility that regional regulation is enforced.

Q: What is the potential of the market-based system to reduce the greenhouse gas emissions?

Shinichiro Otsubo: The market-based system is not the independent best way to slash the greenhouse gas emission, but its efficiency can be maximized if implemented along with regulations pursuant to technology. The discussion can be accelerated in relation to the market-based system after an agreement is reached on EEDI and SEEMP.

I agree that the market-based system is not an independent way to slash the greenhouse gas emissions. Tangible results such as the agreement and ratification of each country will be seen by about 2015 with regard to the market-based system.

Q: What is the worst scenario about the greenhouse gas emission, and what is the likelihood that the market-based system will continue to be implemented after the goal of reducing the greenhouse gas emissions is accomplished?

Andreas Nordseth: The worst scenario is when the gap between UNFCCC and IMO is not narrowed.

Lee Young-man: The efforts to improve energy efficiency will continue even if there is no market-based system. That is because of the requirement of shipper, etc, not because of IMO regulation.





Q: When must measures for the long-term aspects be established, considering that the ship's navigation life is about 35 years from the construction?

Andreas Nordseth: IMO has already discussed on it based on the road map.

Shinichiro Otsubo: Many works have been carried out in IMO until the EEDI was developed to the current level.

Kim Tae-woo: The revision to the MARPOL Annex VI is expected to be adopted through the implicit approval procedure, which may be a dramatic turning point.

Q: What is the prospect for green ship in the upcoming period?

Hiroshi Iwamoto: There is no established definition of green ship for the future, and it is important to keep the concept of green ship maintained and updated.

Kirsten Ullbaek Selvigs : It is necessary for many related parties to work together closely if a new infrastructure is built for eco-friendly ship.

Q: What is the expected price of green ship?

Hiroshi Iwamoto: It is difficult to define specific price, but the price of green ship will began to be evaluated properly within a few years ahead, ad ship owners will prefer green ships.

Q: The human factor is also important for green ship. How has this aspect been considered?

Park Chung-heum: The shipbuilding industry has designed ships in consideration of human factor engineering from the moment that the ship construction starts, taking the residing and working conditions of crews into account from environmental viewpoint.

Lee Young-man: The shipbuilding industry has made efforts to improve the quality related to the overall human factors, such as the system enabling the swift response to accident and automatic navigation system, considering the human factors from the perspective of navigation.

Q: What are the required qualification and process to appoint the manager in charge of ship-source oil pollution fund? What risk is posed to countries without a fund? Is there any possibility that the domestic regulations are contradictory to the international regulations?

Alfred Popp : There is no specific standard for the appointment of the person in charge of fund. However, it should be an organization with extensive knowledge and expertise in the related field and independent from the government.


There is no great risk even if there is no fund. However, Canada and France are operating the fund to achieve specific purpose. There is no contradiction with domestic regulations. In the case of Canada, domestic fund (SOPF) and international fund are complementary.

Q: Is there any difficulty arising from the difference in the position in connection with the application and verification of Canadian fund?

Alfred Popp: So far, no difficulties have been posed in relation to the verification and application. Standards must be implemented consistently, and problems related to the verification and application may have to be addressed by looking into how the international fund, not each country, are resolving them.

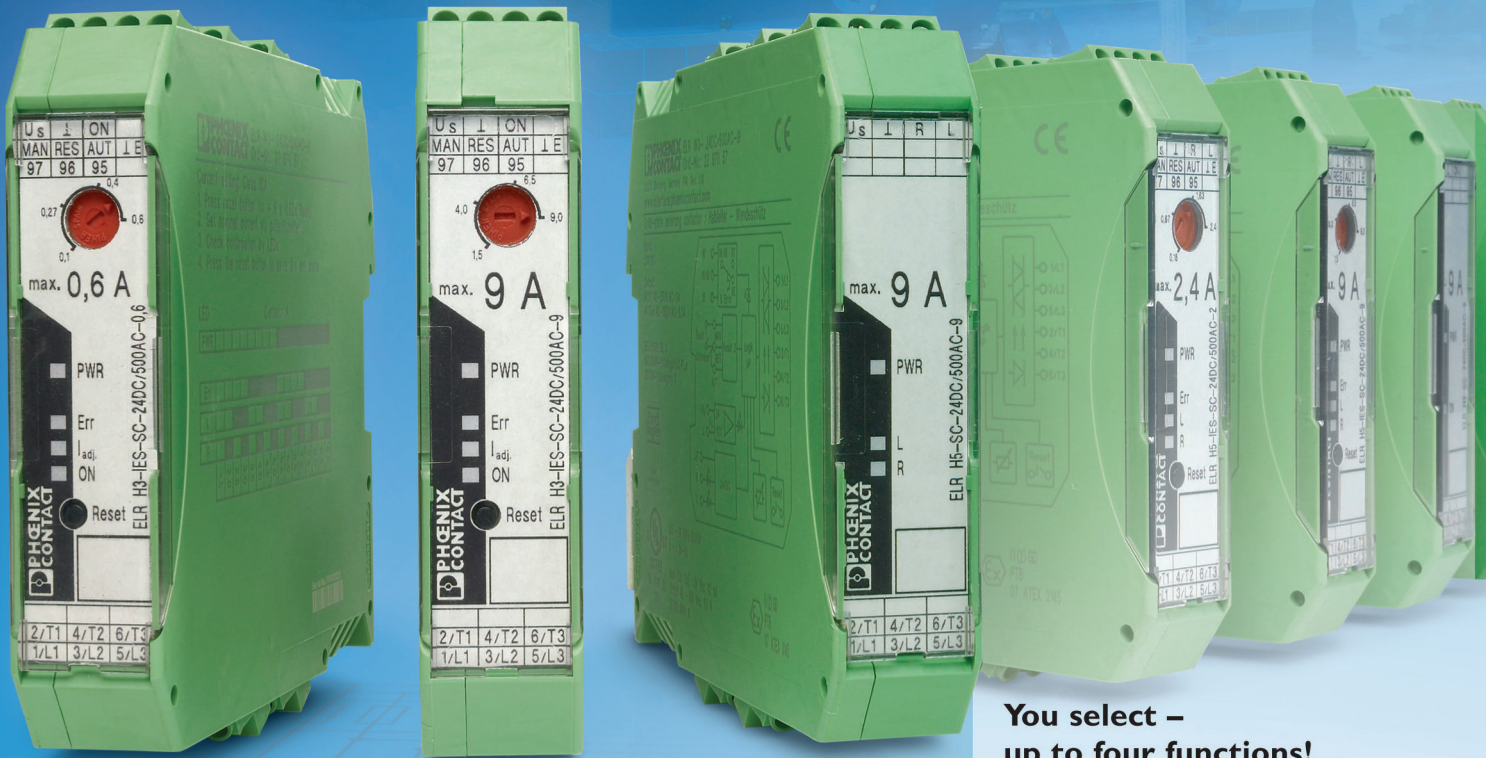


Q: Is it likely that China would join the international fund and what is the verification process of domestic fund?

E Hai Liang: Currently, the draft is being prepared and the Claims Manual is being produced. Therefore, we cannot know about the verification process (standards for claim, damage assessment organization, and the required qualification, etc) if it is completed. It may not be possible in reality, although China may consider to join the international fund after the domestic system is completed. 

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Convergence of shipbuilding and IT technology



Main screen of CMMS, developed by DSME

Integrated management system, developed first-ever in the shipbuilding industry

DSME became the shipbuilding industry's first-ever successful developer of Computerized Maintenance Management System for ships and offshore facilities. It is a significant development which represents the first fusion between the independent technology of shipbuilding industry - which does not specialize in IT - and IT technology.

Daewoo Shipbuilding and Marine Engineering (DSME) successfully developed the Computerized Maintenance Management System (CMMS), an on-board facility maintenance system for ships and offshore facilities, for the first time in the industry.

This system developed by DSME is the on-board IT system outfitted to ensure systematic management of ship and offshore plant, etc, and enables ship managers such as ship's crew to easily manage all works including the maintenance of facilities necessary for navigation, management of design drawings, purchase of materials for maintenance/repair, and others.

Specifically, the CMMS developed this time is of great significance, considering that this new system is built on the independent design and production technologies of the shipbuilding industry and represents the first successful convergence

between the specialized shipbuilding technology and IT technology.


This system has thoroughly customer-oriented design, allowing users to access the data used for

ship construction without need for the separate contact with shipyards. In addition, it is capable of real-time transmission of navigation-related materials to headquarters, which maximizes the efficiency of facility maintenance and material management.

Having gained recognition for the technology built into this system, DSME plans to install this CMMS in the drill rig which the company will build under the contract awarded by Mexico's Grupo R. Under the contract, this system will be outfitted in December this year on the semi-submersible drilling rig currently under construction in Okpo Shipyard of DSME, following the data-related works, etc.

CMMS has already been installed in large offshore platforms, and the recent trend towards large ships has expanded the range of its application to a variety of vessels including the drillship and ordinary merchant ships. However, existing CMMS, mostly developed by large IT companies, have been found to be incompatible with the unique situation of user and fall short of required efficiency standard consequently.

DSME plans to push ahead with the strategy for combining the shipbuilding/offshore construction technology and IT technology in a bid to bring best satisfaction to ship owners.

Han Seong-hwan, Senior Managing Director at the Administration Team of DSME, said, "We are better positioned to ensure best satisfaction of ship owners by providing them with the products tailored to their requirements, and by doing so, we will sharpen our competitiveness in winning the orders and creating constant stream of revenue even after the delivery of ships in the years ahead." 



The 180,000-ton Rose Mary of Korea Line Corporation (KLC) outfitted with CMMS, developed by DSME, is going into trial operation.

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Korea Sales Force Meeting of Endress+Hauser Korea ran for 3 days from October 14.



The event this year prompted enthusiastic reaction from about 120 participants from the shipbuilding industry.

Marine Industry in Focus

Korea Sales Force Meeting 2010 opened to acclaim

Endress+Hauser Korea staged Korea Sales Force Meeting 2010 for 3 days from October 14 at Hotel C Palace in Geoje. Specifically, October 15 was named Marine Day showcasing various solutions for the shipbuilding and marine engineering which drew much favorable attentions and made the event of this year more unique than previous years.

Endress+Hauser Korea has held Korea Sales Force Meeting (KSFM) in second half of every year. This year, it was staged to wide acclaim for three days from October 14 at Hotel C Palace in Geoje, city located in South Gyeongsang province, just off the coast of the port city of Busan, South Korea.

KSFM provides a platform for all employees of Endress+Hauser Korea and agencies to gather together and set the desirable course for growth and advancement through the internal assessment and discussion on business, and creates significant opportunity to promote mutual understanding and harmony at the same time.

Kim le-seob, CEO of Endress+Hauser Korea, said, "So far, we have strived not only to select products optimized to meet the requirements of customers but also to provide a whole range of solutions designed to maximize the efficiency of

production process and shore up the competitiveness of customers." He added, "I hope that this event will facilitate the participants to share useful information and be successful in the market where the competition has become fiercer than ever."

Introduction of solution for shipbuilding and marine industry

This year, KSFM was held in Geoje to focus specifically on the marine industry, and October 15, one of the event days, was designated as Marine Day in which customers related to the shipbuilding industry were invited and presented with a variety of solutions tailored to the needs of shipbuilding and marine industry.

The Marine Day event which attracted the customers related to the shipbuilding industry was segmented into 2 parts, draw-




The event this time showcased new models such as level, analyzer, etc, in parallel with the demonstration of products, providing plenty of opportunities to have hands-on experience with the function and performance of products.

ing the greatest reaction from participants.

The first part of the event was designed to promote the knowledge about products (overview of products, applications, and hands-on experience) and showcased the presentations and demonstrations of 4 product ranges in 4 seminar rooms.

The participants, divided into 4 groups, rotated the area every hour and partook in the entire program. In addition, they had ample opportunities for the hands-on experience in demonstrating the products (level, analyzer, flow, temperature) directly as part of efforts to build up knowledge.

The second part placed primary focus on unveiling flow metering system, bunkering system, etc, which were applicable to the marine industry as effective solutions for both shipbuilding and marine industry, as well as the information associated with applications. Also, an opportunity was provided to share this information, grabbing the attention of the industry.

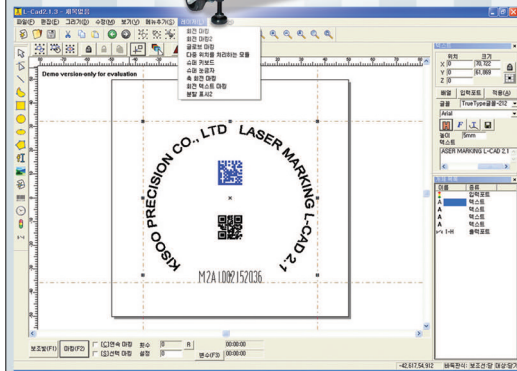
Meanwhile, Kim le-seob, CEO of Endress+Hauser Korea, expressed his impression saying, "This year, Korea Sales Force Meeting ended in great success, drawing tremendous attention and support from more than 120 customers in the industrial sites related to the shipbuilding field, besides Daewoo Shipbuilding & Marine Engineering (DSME) and Samsung Heavy Industries (SHI). I hope that we meet one another again next year with even better products and technologies." 

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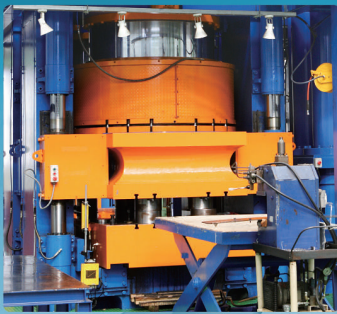
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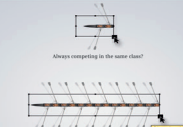
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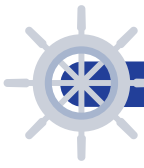


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Marine dehumidification for cargo care and vessel protection (1)

Materials are damaged when exposed to high relative humidity. Most materials will be preserved and unaffected when humidity is maintained below 50% RH. The only reliable protection, irrespective of weather conditions, is dry air produced by a desiccant dehumidifier.

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Ever increasing international markets dictate that more and more goods are transported around the world. Marine cargo is by far the most common means of transportation. The marine environment is susceptible to many changes in climate. Over short distances, large changes in weather, air and sea temperature, and humidity can be experienced. Whilst most materials are safe from temperature fluctuations, are they safe from humidity?

Understanding dehumidification

Humidity - a constant threat

Humidity is part of everyday life. Because it cannot be seen, it goes unnoticed by most of us. For others, humidity poses serious problems. At sea, humidity is a constant threat to ships and their cargo.

Levels of humidity are controlled by weather systems. Because weather conditions change locally and globally, so does humidity. Water will always try to evaporate into the atmosphere. The amount of moisture in the air is generally referred to as absolute humidity. However, as temperature is a determining factor, the amount of moisture air holds at a given temperature for a fixed mass is called "percentage saturation". This is often referred to as Relative Humidity or "RH".

Damage through moisture

When the levels of humidity rise, relative humidity increases and condensation may occur. This causes the following problems.

•Corrosion

Metal corrodes if the humidity exceeds 60% at the surface of the metal (see Fig.1), i.e. long before condensation appears. This corrosion may not even be visible.

The combination of a salt laden environment and humid air accelerates the corrosion process still further. A corrosion process cannot start unless oxy-

gen and water are present. So if the moisture content in the air is reduced, the moisture film on the surface of the metal is reduced and the corrosion process halts.

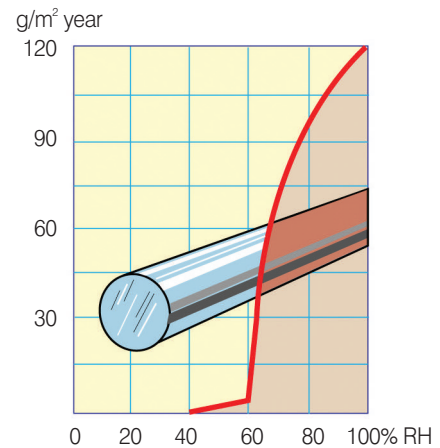
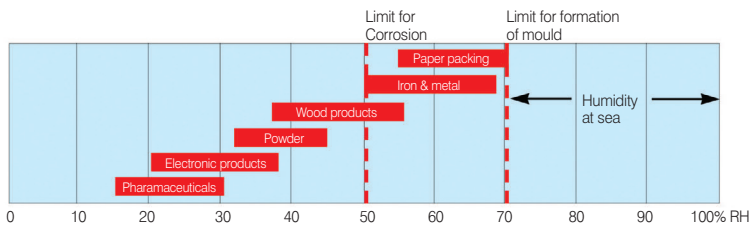


Fig.1 Corrosion speed for steel

•Absorption of moisture in hygroscopic materials

Hygroscopic materials, such as paper, wood, textiles, granulates and different types of powder, absorb moisture when humidity is high. These products strive to maintain a balance with the relative humidity of the surrounding air. Powders may stick together making them difficult to convey. Hygroscopic materials will be damaged by drops of condensation.



•Mould and bacteria

Mould and bacteria form if humidity is too high. Mould forms when humidity exceeds 70%. Bacteria thrive when humidity exceeds 80%.

Understanding moisture

There are five main sources of moisture load acting upon cargo holds:

- Moisture in the air inside the cargo hold
- Moisture in the air outside leaking into the cargo hold. This is often referred to as infiltration
- Moisture in the air outside, mechanically ventilated into the hold
- Moisture emitted from the cargo itself
- Rain water in the hold

As the vessel travels through changes in climate, the air properties within the hold change. The sea water temperature will affect the temperature of the hull. The temperature and relative humidity in the hold will change. Condensation will then occur when the dewpoint is reached. This can cause untold damage to the ship's fabric, to ferrous goods such as steel coils, and to paper.

•Example: Sailing from a cold to a warmer climate

The air temperature within the cargo hold will change with ambient air and sea temperature. The hull section that is submerged is often cooler than the

section above the waterline. As the sea is keeping the submerged hull cool, the cargo and hold fabric remain cool.

The air within the hold will cool rapidly on a cold surface such as the cargo or the hull. When the temperature is reduced to a level where the air cannot physically retain its moisture in the form of vapour it releases it as liquid. The result is that condensation will occur on the cargo, the hull and the hatches.

This temperature is often referred to as the "dewpoint temperature". When cargo emits moisture, the same process will occur.

•Example: Sailing from a warm to a colder climate

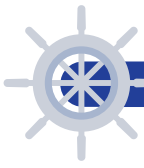
The cargo may be loaded on a warm day when there is a lot of moisture in the ambient air.

This ambient air will become sealed inside the hold. As the ship sails, it may encounter cool weather conditions that will affect the temperature of the ship and hence the air temperature within the hold. As this air becomes cooler, its relative humidity increases. This is because the air still contains the same amount of moisture as when the cargo hatches were sealed. The relative humidity can easily rise above 80% RH, which accelerates corrosion, and condensation occurs on the hull.

When it comes to preventing damage caused by moisture, there is a simple solution. Remove it.

Dehumidification - the natural solution

Materials are damaged when exposed to high relative humidity. Most materials will be pre-



served and unaffected when humidity is maintained below 50% RH.

The only reliable protection, irrespective of weather conditions, is dry air produced by a desiccant dehumidifier.

The traditional way of solving moisture problems has been to ventilate holds and other spaces that need to be kept dry.

However, this is conditional on the outside air having a low moisture content, i.e. moisture problems can only be solved when the outside air is dry. At sea, this condition is rare.

Dry cargo quality protection

Cargo damaged by moisture result in claims and costs money

Every year, cargo worth millions of dollars is damaged by high humidity. Condensation can occur directly on cargo or on the underside of hatch covers. The droplets of water can fall on the cargo and cause untold damage. Products made of metal can corrode. Hygroscopic cargoes absorb moisture and sometimes even mould forms during the voyage. Cartons become soft and give an unattractive impression when they reach the end user. Damage caused by moisture results in dissatisfied customers and claims that take time and cost money.

A reliable insurance against damage caused by moisture is to install quality desiccant dehumidification systems on board ships.

ers increases transport quality

Desiccant dehumidifiers have been used for 30 years to protect hygroscopic cargoes (e.g. paper and pulp) from damage caused by moisture, and to protect steel from corrosion. Other industries are beginning to be aware of problems caused by moisture

and are increasingly demanding dry, safe transportation. Since business depends on satisfied customers, the ability to guarantee cargo owners a moisture controlled environment on board should be a matter of course. Many shipowners have realised the advantages of this and are now installing desiccant dehumidification systems on board. Small, compact dehumidifiers are used to deal with moisture in containers.

Dehumidified holds and containers give the following advantages:

- Condensation drops from decks and hatch covers are eliminated
- Moisture-controlled climate
- The cargo is protected from damage caused by moisture during transportation
- Reduced drying times after cargo hold washdown
- Reduced rain delay time when loading
- Fewer insurance claims
- More satisfied customers
- Marketing argument for shipowners

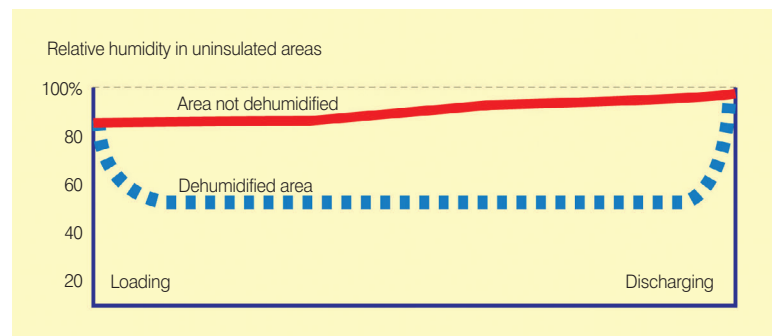


Fig.2 Variation of relative humidity during a voyage

Dehumidification of holds and contain-

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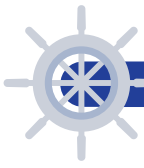
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Working principle

The vessel with evaporator and condenser is evacuated to -0.93 bar by the seawater-driven ejector. At this pressure, the seawater to be distilled enters the evaporator where it evaporates at approx. 44-49°C when passing the plates heated by the heating medium - typically hot water (engine jacket water) at 75-90°C.

The steam leaves the evaporator through the open side of the plate pack and passes through a demister, where any

carry-over drops are separated for recirculation, and then enters the condenser positioned above. The clean vacuum steam is condensed into freshwater by circulating cold water on the other side.

The freshwater is pumped to the freshwater tank, passing a sensor connected to the salinometer.

If the salinity is higher than the pre-set reference value the solenoid valve is activated and the flow is directed back for reproduction.

Features

Water desalination unit has the following features:

- Heat exchangers with specially designed titanium plates for effective steam passage and high efficiency
- Condenser cooling combined with ejector water and feed water system and complete piping compact and space saving design

Benefits

Water desalination unit has the following benefits:

- High fresh water quality: Automatic feed-water dosing valve secures optimized freshwater production and low salinity
- Low operation costs: Reduced heat consumption due to preheating of feed-water and full access for cleaning and inspection reduce operation and maintenance costs
- Reduced service intervals: Use of corro-



Water desalination unit



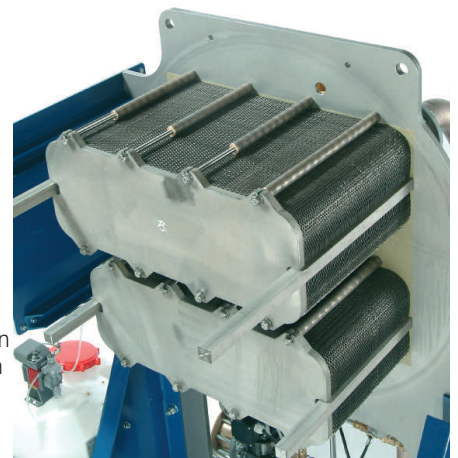
All sea water pipe in Cu-Ni-Fer corrosion free materials



Adjustable pump for chemtank is standard equipment



Full temperature and pressure monitoring package for complete overview and easy adjustment



Specially designed titanium desalination plates for maximum efficiency with solid stainless steel end plates.

sive resistant titanium plates. Pre-installed adjustable chemical dosing unit reduces fouling
-Reduced installation costs. Fully equipped control box for easy installation and operation and complete piping. Compact and space saving design will fit into most engine rooms

Application

The APV Water desalination Unit type H-CE is a fresh water generator or desalination of seawater for production of potable and fresh utility water used for installation on board ships and rigs.

The water desalination unit is a single stage, plate type evaporator and condenser, separated by stainless steel demister.

The H-CE unit is available in four sizes with capacities ranging from 20m³/24h to 33m³/24h.

Standard equipment

The APV H-CE Water desalination unit includes titanium plate heat exchangers for evaporator and condenser, vessel, sea-water ejector, freshwater pump, freshwater meter, frame, control panel with motor starters and salinometer, and dosing unit for anti-scaling. And additional equipment required is seawater pump.

Optional equipments are ejector for alternative heating by steam, UV sterilizing equipment and re-hardening filter for pH adjustment. ⚓



Controlling crane on Chinese off-shore pipe-laying vessel

An innovative 3,000-tonne derrick pipe-laying barge built by Shanghai Zhenhua Heavy Industry will use the world's most advanced pipe-laying technology. The vessel's 3000-tonne, 360° slew crane is driven by Vacon AC drives.

Vacon Korea

An innovative 3,000-tonne derrick pipe-laying barge built by Shanghai Zhenhua Heavy Industry will use the world's most advanced pipe-laying technology. The vessel's 3,000-tonne, 360° slew crane is driven by Vacon AC drives.

Shanghai Zhenhua Heavy Industry formerly known as Shanghai Zhenhua Port Machinery (ZPMC), is market leader in the global port machinery industry with a 70% share of the container crane market. The company changed its name in June 2009 to reflect its expansion, begun in 2006, into the offshore engineering equipment industry to find new business and a new profit engine. The company is still referred to by its old initials ZPMC. In April 2009, ZPMC announced a 3,000-tonne derrick pipe-laying vessel - a large barge to be used in offshore engineering and equipped with the world's most advanced pipe-laying technology. The vessel has a high utilization efficiency due to its hoisting and pipe-laying functions and is capable of laying two pipelines simultaneously.

The barge is equipped with a heavy-duty 360° slew crane, which can hoist a fixed weight of 3,000 tonnes while stationary and 2,000 tonnes while slewing full circle. The crane system is driven by high performance Vacon AC drives. This vessel has a promising future in offshore oil exploitation and subsea pipe-laying projects.

Reliable suppliers and partners essential for success

This innovative project can help fill the technology gaps in China's industry, so ZPMC placed high priority on the design of the vessel and on choosing reliable suppliers and partners for the project. ZPMC had not used Vacon products before, and for Vacon this 3,000-tonne derrick pipe-laying barge represented a new field in the Chinese market. After several discussions and technical inspections, ZPMC was impressed with the excellent performance and high reliability of Vacon's products, the open application soft-



Vacon AC drives

ware platform and the extensive experience in applying these in the shipbuilding and maritime industry. ZPMC also appreciated the professional approach and cooperative spirit of Vacon's personnel.

The total power of the motors running the 3,000-tonne crane is 7.1MW. The crane has two main hooks, two auxiliary



This large derrick pipe-laying barge uses the world's most advanced pipe-laying technology and can lay two pipes simultaneously. The vessel is under construction on Changxing island near Shanghai and will be completed in 2010. Vacon AC drives will also control similar cranes on two other 3,000-tonne derrick pipe-laying barges to be built. (LOA: 170m, Beam: 46m, Breadth: 13.6)

hooks, two beams, six slewing gears, two rigging hooks, two cargo control winches and one hook control winch. The entire AC drive system consists of two 12-pulse common DC bus systems. The two systems are supplied through a quasi 24-pulse Vacon AC drive system. THD_u for the entire system is less than 5%, which meets the requirements of marine classification societies.

The system has 4 Vacon NX rectifiers and 17 Vacon NXP inverters to control all the actuators. A further two Vacon NX braking units are set to dissipate extra braking energy.

The Vacon NX products for common DC bus systems have a modular design and are very compact. They use a closed-loop vector control mode and have very accurate speed and torque control with a speed differential of less than 0.01% and torque precision of less than 2%. The system can also be controlled at full torque under any speed, including zero speed. Vacon and ZPMC together developed a special application based on the Vacon Marine application for the full-circle swinging crane.

Bright prospects for Chinese heavy-duty offshore industry

The Chinese heavy-duty offshore industry currently faces unprecedented development opportunities. The target set by the Chinese government is that high-tech vessels built in China will have a 20% share of the global market and Chinese offshore equipment will cover 10% of the global market in 2009-2011.

The success of this pipe-laying vessel project has given Vacon and ZPMC confidence to explore future cooperation opportunities that will also extend to ZPMC's other products. ⚓

Shanghai Zhenhua Heavy Industry Co., Ltd.

Founded in 1992 and based in Shanghai, China, Shanghai Zhenhua Heavy Industry, ZPMC, is today described as the largest heavy-duty equipment manufacturer in the world with three main product segments: large-size port container cranes, large-size steel structures and steel bridges, and offshore products, such as huge floating cranes, pipe laying vessels and other engineering vessels, all types of platforms and DP systems.

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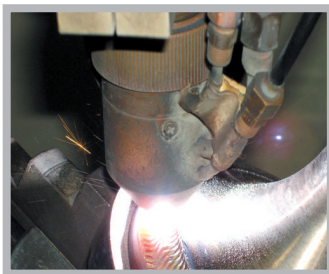
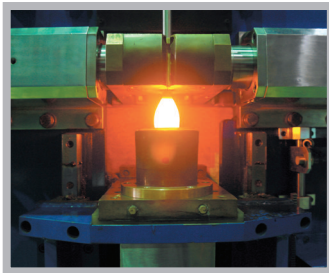
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Monthly Korship provides succinct overview on special features and strength of both current and new products put on the market, and keeps you updated on the shipbuilding orders and construction of ships at major domestic shipyards.

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.



SHI wins order from Evergreen for an additional 10 container ships

Samsung Heavy Industries (SHI) announced on the 29th that it had won an additional order for ten 8,000 TEU-class container ships worth USD 1.03 billion from Evergreen, a Taiwanese shipper, following its order for ten units of 8000 TEU-class container ships received in early July 2010.

CEO Roh In-Sik of SHI and CEO Yung-Fa Chang of Evergreen signed the contract at the headquarters of Evergreen, Taiwan. SHI announced that this order for 20 units of ships, from a single shipper in a year, is the largest order since the company was founded 36 years ago.

Evergreen, which has placed many orders for Japanese ships in the past 16 years, turned its eyes to SHI, as its container ships are highly efficient green ships that can save 30,000 ton of fuels and reduce CO₂ emissions by 80,000t over the ship's lifecycle.

Evergreen plans to introduce green ships in anticipation of stricter pollutant control standards in the future, which is part of its strategy to fortify its position as a leading shipper in the EU and the US markets, and become an unbeatable global shipper.

Although there were no orders for large container ships in 2009, the large container ship market is recovering, thanks to the increase of the global transportation volume and the recovery of the transportation rates.

SHI has secured the No. 1 global market share in the 10,000 TEU or above class container ship market, in which a total of 202 units of ships were ordered in the 2000s, by winning orders for 56 units. It has secured a more favorable position to win the bid for ultra-large container shipbuilding in the future, by completing the development of a 160,000 TEU-class container ship that is 400m long and 57m wide in 2007.

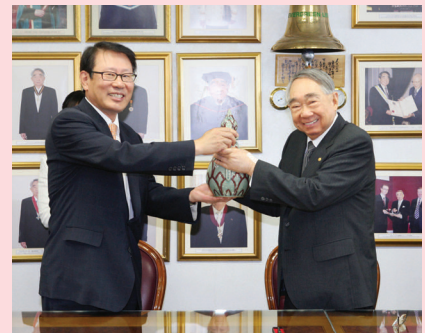
The container ship has the steering house at the center of the ship, and the engine room at the rear. By separating the two rooms, the strength of the ship is improved, and the operation efficiency is increased by more than 10%.

SHI has also built Floating Dock No. 4, which is 420m long and 70m wide, and will be used exclusively for ultra-large container shipbuilding, adding the

annual capacity of seven units of 10,000 TEU-class container shipbuilding.

CEO Roh In-Sik commented, "As major global shippers such as AP Moller-Maersk, MSC and CMA CGM are enjoying a recovery from the global financial crisis, the large container ship market is recovering. We will grow our share of the market with green ships that can minimize the emission of pollutants and provide higher operation efficiency."

SHI won orders for a total of 70 units of ships worth USD 7.1 billion in 2010, which represents 89% of its annual target of USD 8 billion.



CEO Roh In-Sik (left) of SHI and CEO Yung-Fa Chang (right) of Evergreen, a Taiwanese company, are exchanging gifts following the signing ceremony.

SPP is close to achieving its annual target pretty easily

Having secured an order to construct four 50,000-ton product carriers in early September, SPP shipbuilding and SPP Plant & Shipbuilding won additional orders to build a total of 15 vessels (including 4 optional vessels), including seven 82,000-ton Kamsarmax bulk carriers, etc, from domestic, Turkish, and European ship owners early last month. The vessels are valued at approxi-

mately \$660 million in all, and will be delivered from 2012 to 2014.

This bring the total order placed with SPP so far this year to 38 vessels (including 6 optional vessels), or approximately \$1.5 billion.

As a result, SPP will achieve its annual target of \$1.7 billion of orders without problem. Based on ship type, the company received orders for 26 bulk carriers (19 Kamsarmax bulk carriers, six 35,000-ton bulk carriers, and one 59,000-ton bulk carriers), four 50,000-ton product carriers, and eight other vessels.

SPP has an order backlog for a total of 144 vessels and approximately 2.38 million CGT (equivalent to \$6.1 billion) which the shipbuilder is to work on for another 3 years or more, and has been ranked at 10th to 12th among the shipyards worldwide in terms of the order backlog over the recent 2 to 3 years based on the Clarkson Report.

SPP which embarked on the shipbuilding business for the first time in 2004 has successfully delivered a total of 95 vessels, including 74 product carriers, 21 bulk carriers, since its delivery of first vessel in 2006.

In addition, the company is preparing events such as the new vision announcement ceremony to present its envisioned goal of business management, along with the delivery of its 100th vessel early November this year.

HSHI received an order worth \$190 million to supply facilities to the Panama Canal

Hyundai Samho Heavy Industries (HSHI) entered into a \$190 million construction contract to supply facilities to Panama Canal, successfully winning the first large-scale order in the non-shipbuilding sector.

This construction contract awarded by Grupo Unidos Por El Canal (GUPC), the multinational consortium of Panama in Central and Latin America, is to supply facilities such as small watertight and actuation systems, etc, to the Canal No. 3 which is built as part of the project to expand the Panama Canal. HSHI won this contract on the turnkey basis, beating the competition from prominent companies of the United States, Europe, and Latin America, and will undertake the entire processes ranging from the design, through the transportation and installation, to the trial operation, and complete the construction by October, 2014.

Specifically, this contract is significant, given that it is the first successful large-scale order that the company clinched in the non-shipbuilding sector on the basis of its ability to construct ships and install transportation facilities at the site.

An official of HSHI said, "Winning this order, we will redouble our efforts to evolve into a highly competitive heavy industry company encompassing transportation facilities, industrial facilities and others, as well as shipbuilding, our major field."

Panamanian government is currently moving ahead with the project to expand the Panama Canal in an endeavor to facilitate the handling of container volumes and shore up competitiveness of the Canal. In September, 2007, the Panamanian government held the ground-breaking ceremony for the construction of the third Canal measuring 427m in length and 55m in width and the dredging of existing watercourse, and plans to finish the canal expansion by October, 2014, the 100th anniversary of the opening of the Canal.

Currently, up to 4,500-TEU container ships can pass through the Canal, but even 12,000-TEU container ships will be able to pass through the Canal once the construction is completed.

HSHI constructed and delivered a total of 33 vessels last year, achieving KRW 4 trillion and 185.2 billion in sales and KRW 190.1 billion in operating profit.

This year, the company has won a total of \$1.23 billion so far this year, achieving 73% of its annual target which is \$1.7 billion.



A ceremony to celebrate the execution of contract, held in GUPC headquarters in Panama on September 30



SHI has achieved its annual target of \$8 billion in shipbuilding orders

Samsung Heavy Industry (SHI) announced that it received an \$800 million order to build 1 unit of Floating Production Unit (FPU), a crude oil production facility, from a North American ship owner and 1 unit of Wind Turbine Installation Vessel (WTIV) from a Southeast Asian ship owner on October 7. SHI said that it achieved its annual goal of winning \$8 billion of orders first time nationwide.

SHI attained its annual target earlier than any other shipbuilders because it was awarded 20 energy-saving container ships priced 20% higher than average ships and made full-fledged inroads into the market for high energy efficiency eco-friendly ships equipped with harmful vapor collection system.

The FPU ordered to SHI this time will be built on the turnkey basis for the entire processes ranging from the design, through the purchase of materials and installation. to trial operation. It is scheduled for delivery to the offshore oil field in the Gulf of Mexico in 2013.

This contract was entered into amid the sluggish market conditions arising from the U.S. government's ban on drilling in the aftermath of recent massive oil spill in the Gulf of Mexico, and represents an injection of fresh momentum into the push for the vitalization of offshore energy exploitation market.

Meanwhile, the Wind Turbine Installation Vessel ordered from a Southeast Asian ship owner on the same day will be the world's largest with the dimension of 161m in length and 49m in width and the capacity to carry and install 12 units of 3.6MW wind turbines. This Wind Turbine Installation Vessel was ordered, aiming to expand the wind power generation market in the years ahead.

This vessel will be enable the wind turbine to be installed in waters as deep as up to 75m, and designed specially to enable the installation of ultra large wind turbine beyond 10MW grade currently being developed in accordance with the trend towards large wind turbines.

Wind turbine is installed in the middle of ocean by fixing the Wind Turbine Installation Vessel to the offshore power generation complex, and then, assembling the power generation tower, power generation room, wings, etc, consecutively using the 1,200-ton crane outfitted on the vessel.

Noticeably, 6 columns fitted to the hull are lowered to the sea bed, which in turn makes the vessel fixed while being lifted up about 10m above the sea water during the installation work, so that the impact of waves and wind can be minimized and the accuracy and swiftness of installation

can be increased.

As a result, the Wind Turbine Installation Vessel of SHI will be able to install 1 unit of wind turbine every 36 hours at the maximum even in the waters of sea characterized by unfavorable weather conditions such as the North Sea with the wind velocity of 20m/sec and waves as high as 2.5m.

Roh In-sik, SHI Chief Executive said, "SHI has jumped into the Wind Turbine Installation Vessel sector this time, which comes on the heels of our launch of the wind power generation project last year for making inroads into the wind power generation market growing by 13% annually. We expect the green technology of shipbuilding and wind power generation sector to create synergic effect."



Bird's eye view of Wind Turbine Installation Vessel assembling the wind turbines

STX was awarded an order to build ten 13,000-TEU ultra large container ships

STX was awarded an order to build ten 13,000-TEU ultra large container ships

Recently, STX Offshore & Shipbuilding signed a contract to build ten 13,000-TEU ultra large container ship (including optional vessels) for an European shipping company. The contract is valued at \$1.4 billion in all.

These vessels will measure 365m in length, 30m in height, and 48m in width, and the decks is 3.5 times larger than the size of soccer field. They will be built at Jinhae Shipyard of STX Offshore & Shipbuilding and delivered consecutively from the second quarter of 2013.

An official of STX Offshore & Shipbuilding said, "With the global shipbuilding market showing signs of recovery and ship owners placing more orders in the second half of this year, we successfully entered into the contract this time because we focused on winning the orders selectively which could fulfill the needs of both ship owners and shipbuilders."

Recently, STX Offshore & Shipbuilding successfully delivered the 1st out of nine 13,000-TEU ultra large container ships ordered by NIKI Shipping of Greece in 2007, and has secured the expertise in the development and construction of related ship type and reached the stable production phase to strengthen its competitiveness of ultra large container ships. These ultra large container ships ordered to STX Offshore & Shipbuilding this time will incorporate a variety of new technologies necessary to build eco-friendly ship.

They will be outfitted with Alternative Maritime Power (AMP) system which can be powered by onshore electricity supply and reduce the emission of exhaust gas while the ship is lying at anchor in the harbor, and apply high energy efficient rudder, etc, which can improve the ship control performance and reduce fuel consumption. Furthermore, these vessels will be designed to

use low sulfur crude oil containing less than 0.1% of sulphur as fuel for the major engine, boiler and power generator, so that sulphur emissions can be slashed.

An official of STX Offshore & Shipbuilding said, "This mega shipbuilding order brings total orders this year placed with the shipbuilding units of STX Group, including STX Europe and STX Dalian Shipyard, to 96 vessels or \$7.6 billion so far." He added, "With the global shipbuilding market rebounding, we will shift in high gears to win additional orders for the remaining three months before this year draws to an end."



Ultra large container ships of STX Offshore & Shipbuilding

DSME signs a contract to construct a total of 12 ships for a Russian local shipyard, a joint venture

Daewoo Shipbuilding & Marine Engineering (DSME) is starting to make big strides into the Russian market.

DSME signed a contract to build a total 12 crude oil and refined oil carriers (including the ships to be built in Russian and optional vessels) worth \$800 million for Sovcomflot, a state-owned shipping company of Russia, on October 20 (local time) jointly with Zvezda-DSME, a joint enterprise between

DSME and a Russian company.

The signing ceremony was held at Hall of Ekaterina in Kremlin palace, attended by Sergey Naryshkin, chief of the Russian presidential administration. and Igor Levitin, Russian Transport Minister. This place, where



the national ceremony presided by the head of state is often staged, is a historic site with 350 years of history, and it is the first time, according to Trechenko, President of the state-owned shipping company of Russia, that any commercial signing ceremony was held here.

The vessels ordered this time is Aframax grade vessels capable of carrying approximately 120,000 tons of crude or refined oil and operating even in shallow sea, and thus, are optimized for transport of crude oil in the Russian



Sergei Frank (third from right), President of Sovcomflot, Sergey Naryshkin, chief of the Russian presidential administration, Nam Sang-tae, CEO & President of DSME, Igor Levitin, Russian Transport Minister are taking commemorative photo in a signing ceremony held at the Presidential Palace in Kremlin, Moscow, on October 20 (local time).

geography. They are scheduled to be delivered to the ship owner consecutively by 2014. This contract is the first outcome of the localization strategy of DSME for Russia. DSME has been pushing ahead cooperation with Russia's shipbuilding companies since early last year and established Zvezda-DSME in July this year jointly with United Shipbuilding Corporation (USC), the Russia's state-owned shipbuilding group. The shipyard of Zvezda-DSME, located at Vladivostok, the Far East region of Russia, has been proceeding with the modernization process to turn it into an advanced shipyard by the end of 2012 which can construct LNG vessels, oil carriers, and offshore plants, and others.

Nam Sang-tae, CEO & President of DSME, remarked, "This contract is significant as it is the first fruit of our joint venture with Russia. As energy development projects, etc, are actively going on in the Far East and northern region of Russia and Arctic Region, this contract will be the starting point to expand the cooperation in a differentiated fashion into various sectors such as LNG carrier, offshore project and plant, and others."

HHI received an order for 4 VLCCs from SK Shipping

Hyundai Heavy Industries (HHI) was awarded an order for 4 very large crude carriers (VLCCs) from a domestic shipping company.

HHI and SK Shipping held a signing ceremony to conclude a deal for building 4 VLCCs in the skyscraper 63 Building on Yeoido island, overlooking the Han River in Seoul, South Korea, on September 30.

With this newbuild contract, SK Shipping will be delivered four 320,000-ton VLCCs by 2012. The contract is valued at KRW 105 million per vessel, is worth a total of KRW 500 billion.

Meanwhile, a source from SK Shipping said, "This contract will lay the groundwork for stronger presence in VLCC market, and help strengthen our



Oh Byeong-woo, President of HHI, and Hwang Gyu-ho, President of SK Shipping, are shaking hands after signing a contract for building 4 very large crude carriers on September 30.

relationship with HHI as a strategic partner."



Korean shipbuilders which were hit hard by the steepest fall in shipbuilding orders last year have received orders worth a total of 4.62 million CGT and \$9.1 billion in the first half of 2010, up 450% and 116%, respectively, from the same period of previous year as the global economy is rebounding slowly.

The outlook of shipbuilding market for the second half of this year has become even brighter with domestic shipbuilders clinching shipbuilding orders consecutively as the shipbuilding market is expected to be in better shape buoyed by the vibrant shipping market conditions while major shipbuilders are placing more orders recently.

According to the statistics of Clarkson, shipyards in Korea 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.

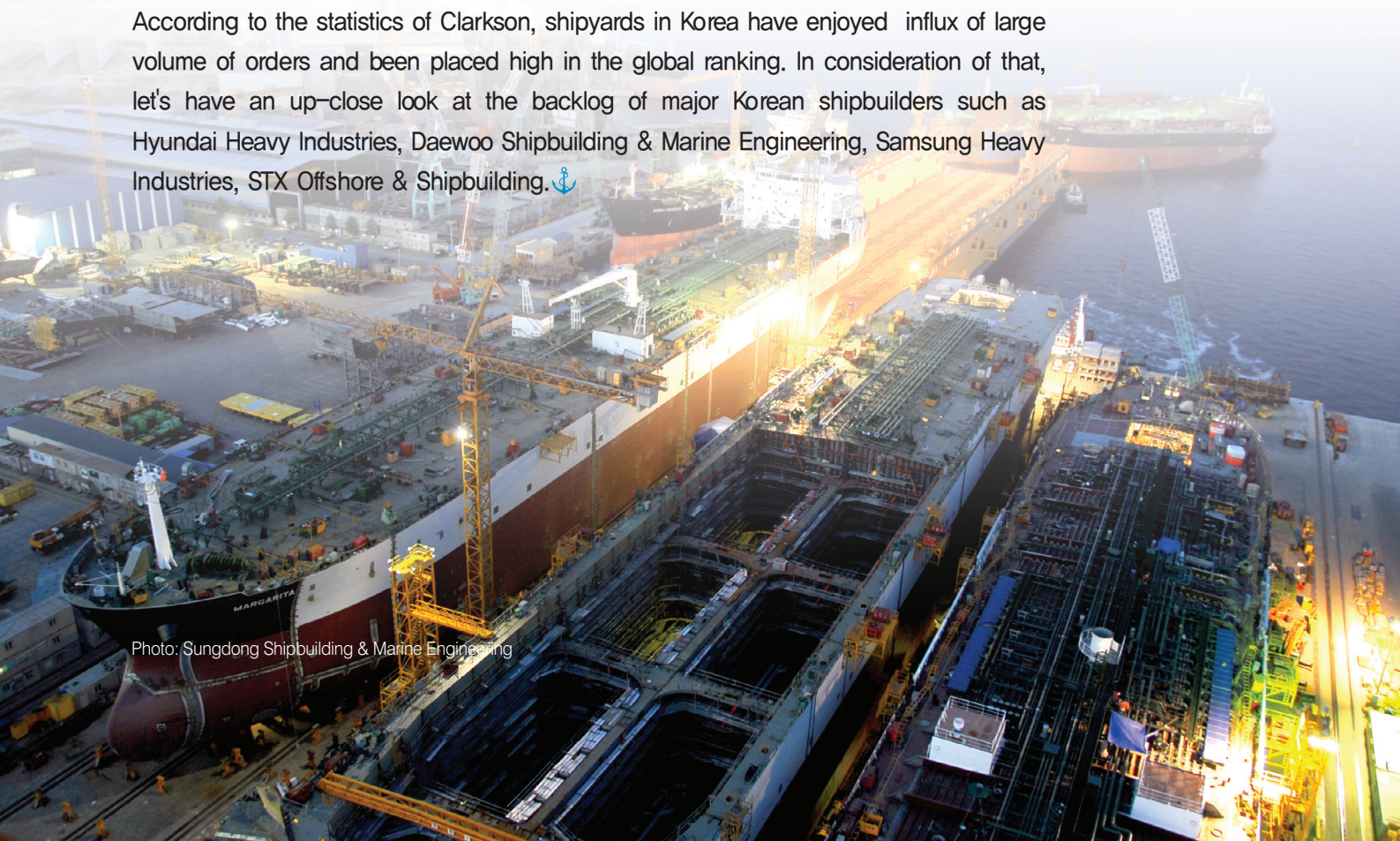
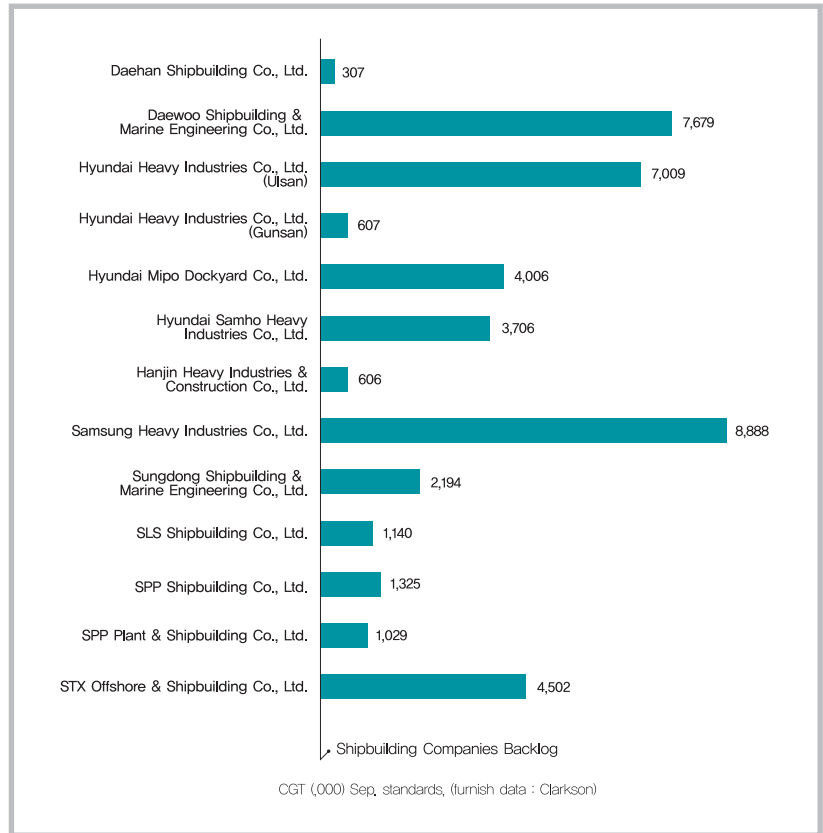


Photo: Sungdong Shipbuilding & Marine Engineering

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HEMPEL



Samjin Shipbuilding Industries Co., Ltd.

Samjin Shipbuilding Industries (SSI), ranked as one of the world's most competitive shipyards, sets the goal to be a new frontier in the shipbuilding industry of the 21st century since it started business under the name Samgeon Corporation on 1983. Samgeon Corporation has been producing the highest quality ship-materials over 27 years.

SSI's major products are ship components, flanges, and ship blocks of advanced technology.

Also SSI has completed ocean plant business successfully under SSI's technology and know-how accumulated for about three decades. Finally, the company could get firm stand for shipbuilding business having specific skills to design and manufacture package unit, tank top unit to be installed in the engine room.

Furthermore, SAMJIN was converted into a corporation in 1999 and established DSME Weihai (now, SSI in Weihai, Shandong, China) which is capable to produce more than 200,000 steel ton a year manufacturing block, deck house, hatch cover, car deck, etc.

As in 2007 SAMJIN was reborn as a shipbuilding company. SSI strives to be a strenuous and creative shipbuilding company with the highest quality standard.

Meanwhile, SSI's R&D effort addresses such challenging high technology issues as environmental protection, safety and reliability, and application of advanced information technology as well as cost-saving through productivity improvement. SSI's R&D activity is utilized in all areas and stages of projects from design to after-sales service. ⚓

No. 1 Factory

- Area: 202,000m²
- Main product: Shipbuilding, Manufacturing block
- Capacity: 20 ships/year, Block 40,000 tons/year
- Production facilities
 - Graving dry dock: 320m (L) X 41.5m (B) X 11.9m (D)

- Skid building berths: 2 lanes (385m X 30m), 2 lanes (445m X 34m)
- Floating dock: 15,000 ton lifting capacity
- Outfitting quay: 1,210m, Max. 8 ships
- International harbor: 2 sites, each 110m, 250m



Outside view of the No. 1 factory



- ◀ Ship way and skid-out in the No. 1 factory
- ▶ Crane
- ▼ International harbor

No. 2 Factory

- Area: 61,000m²
- Main product: Manufacturing hatch cover, Car deck
- Capacity: 22,000 tons/year
- Production facilities
 - Unit shop: 4 sites
 - Pre-outfitting shop: 1 sites



Outside view of the No. 2 factory



No. 3 Factory

- Area: 165,000m²
- Main product: Sup assembly, Painting, Manufacturing car deck
- Capacity: 100,000 tons/year
- Production facilities
 - Painting facilities : Blasting shop 3 sites
 - Painting shop: 4 sites



Outside view of the No. 3 factory

No. 4 Factory

- Area: 62,000m²
- Main product: N/C steel cutting, Sub assembly
- Capacity: 10,000 tons/year
- Production facilities
 - Sub assembly shop: 1 site

- Steel cutting shop: 12 lanes
- Steel bay: 19,000m²
- Welding training center: 100 welders per batch



The steel cutting site and steel cutting work in the No. 4 factory



No. 5 Factory

- Area: 17,000m²
- Main product: Manufacturing unit
- Capacity: 26 units
- Production facilities
 - Shop: 4 sites



No. 6 Factory

- Area: 116,000m²
- Main product: Manufacturing hatch cover, Car deck
- Capacity: 100,000 tons/year
- Production facilities
 - Cutting shop: Plasma cutting machine 4 sets, Gas cutting 2 sets

- Assembly shop: 9,000m² 2 bay, 6,000m² 1 bay
- Blasting shop: 34m X 36m
- Painting shop: 216m X 34m
- Block stock area: 320m X 76m

6,700 units Pure Car Truck Carriers



DWT 34K bulk carrier



Combined fire & gas detection system

B-I Industrial Co., Ltd.

B-I Industrial's BDS-4000 is a new fire detection system designed to meet different industrial characteristics and International Maritime Regulations.

A source from B-I Industrial, said, "We are sure that most of clients will be satisfied with our new fire detection BDS-4000, an updated model of BDS-2000 and BDS-3000."

The BDS-4000 can sequentially monitor both addressable and conventional detectors on one main control panel, which is capable of hosting up to 127 detectors per loop and can be extended up to 12 loops as an addressable system and 32 loops as a conventional system.

All data in the Main Control Panel of BDS-4000, which are transmitted from Interface Unit connected with all detectors by loop circuit, are indicated on 7.0" Touch Screen of its Main Control Panel. It can be interfaced with our existing model BDS-2000 by RS-485 communication and all signals of it can be outputted to a personal computer via built-in TCP-IP LAN port as well as back up data & upgrade software using built-in USB port.

The free arrangement of different types of detectors analyzing a variety of gases is one of the most important features and another feature is that unlimited quantities of detectors can be easily installed by adding the small size of control panels. The system can be accessed and customized for various applications, offshore plant, building management system, petrochemical industries and other industries.

BDS-4000 has the following features:

- Fully addressable and conventional system
- Combined fire & gas detection system
- High integrity, comprehensive self check fault monitoring
- Cost-effective Interface Network extend to various units for any applications
- Unique program for system configuration
- 7.0 touch & color active matrix TFT LCD
- 8 LED Indications showing system status and 6 input key



BDS-4000



TEL : 82-51-441-5670
<http://www.b-i.co.kr>

New
Product

Solid Edge software ST3

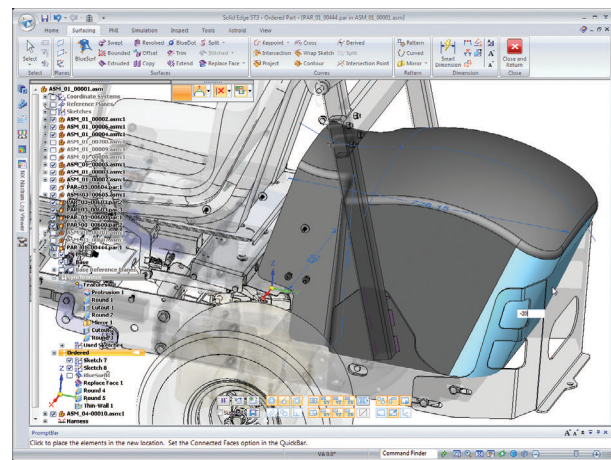
Siemens PLM Software

Siemens PLM Software, a leading global provider of product lifecycle management (PLM) software and services, recently launched Solid Edge software ST3. With this latest release, Solid Edge delivers new functionality - enabled by synchronous technology - that significantly accelerates product design, streamlines revisions, and makes importing and reusing third-party CAD data easier. The new release also includes a variety of enhancements related to simulation, design data management, and more than a thousand customer-driven improvements.

Fulfilling the vision of synchronous technology

Siemens PLM Software has extended the availability of synchronous technology by making it pervasive throughout the product. In addition to support for part modeling and sheet metal design delivered in earlier versions, synchronous-based models can now be used directly with all assembly applications - such as piping, frames, wiring, and assembly features. Also delivered is a first-ever synchronous-based part-to-part associativity that lets users establish and alter design intent before, during or after the assembly design process.

Solid Edge ST3 also provides a ground-breaking capability to work with both synchronous and non-synchronous (ordered) features in the same integrated design environment. Users can leverage synchronous features for accelerated design and flexible edits while adding ordered features for designing process-type parts, such as cast or machined parts. Ordered features in existing models can be selectively moved to the synchronous environment, providing designers with maximum flexibility and ease of use. As more companies move from other 3D systems to Solid Edge to take advantage of synchronous technology, the new capability to merge 2D drawings with existing 3D models further expands opportunities for productivity. Manufacturing dimensions on 2D drawings can now be



Solid Edge ST3

automatically transferred to the corresponding imported 3D model. The resulting "as-manufactured" 3D dimensions can be immediately edited, modifying the imported 3D model using synchronous technology.

Embedded Simulation

Building on its integrated simulation application, Solid Edge ST3 includes new torque and bearing loads, user defined constraints and new ways to connect assemblies such as bolt and sheet metal edge connectors. Faster results can be achieved with model simplification tools and better visualization capabilities that allow you to see inside the model. Refinements can be made using synchronous technology or ordered methods. Solid Edge allows design validation of parts and assemblies earlier in the product development process for quicker time to market and reduced physical prototyping costs.

Scalable data management

Continuing our long history of working with Microsoft SharePoint products, Solid Edge ST3 with Insight data management solution now takes advantage of Microsoft SharePoint 2010 to further expand its scalable data management strategy. Leveraging the latest SharePoint platform extends collaboration to a wider range of CAD and non-CAD users by expanding project management, business analytics and social media capabilities. In addition, a standalone bill-of-materials (BOM) editor delivered with the embedded client in Solid Edge lets CAD and non-CAD users create product structures that can be opened in Solid Edge, Teamcenter software or Teamcenter Express software. The result is an accelerated design process as initial BOMs can be established and refined before the product design begins.

TEL : 82-2-3016-2079
<http://www.siemens.com/plm>

Ergonomic and innovative angle grinder

Jeong San Machinery & Tools Co., Ltd.

FEIN, established in 1867, is the first inventor of electric hand drill and a manufacturer of premium electric power tools. Currently, it is manufacturing and supplying ergonomic and innovative grinding power tools for industry and manual trades.

At FEIN, uncompromisingly high quality in all areas of manufacturing angle grinders comes as standard, ranging from concept design and development to manufacturing, final assembly and subsequent quality checking.

FEIN offers a wide range of angle grinders for tough continuous use - in metal and machine construction, for example - from handy compact angle grinders to large powerful angle grinders in various performance classes between 800 and 2,500W.

FEIN's angle grinders has the following benefits:

-Years of expertise in the development of motors using state-of-the-art methods e.g. vibration simulation

-High level of manufacturing expertise in motor construction: a bandaged field magnet protects against aggressive dust without any loss of power

-Permanent process monitoring and regular test steps between the processes ensure maximum precision in manufacturing

-Test runs performed on each tool before delivery and regular endurance tests ensure a high standard of quality in volume assembly

FEIN has decades of experience in developing and manufacturing high-quality angle grinders. All components are suitably coordinated, resulting in first-class quality and outstanding service lives. The powerful "Made in Germany"



Angle grinder

New
Product

motors play an important role, as they embody all the experience and knowledge of the FEIN motor construction specialists.

This guarantees faster work progress in all applications. In addition, all FEIN angle grinders are developed in line with ergonomic factors and guarantee fatigue-free working.

Another feature of the FEIN angle grinder is the extensive safety equipment, which ensures maximum safety in the workplace.

FEIN compact angle grinders - with a disc diameter of between 115 and 150 mm.

Extreme versatility, performance, manageability and safety - that sums up the FEIN compact angle grinders for industry and manual trades. Available in different equipment variants, they are perfectly tailored to your needs. Angle grinders come in two models: either with the classic on/off switch or as a safety angle grinder with FEIN TipStart operation, AutoStop and EBS.

FEIN compact angle grinders has the following benefits:

- Powerful high-performance motor
- Unique ergonomic shape
- Extremely robust and self-supporting motor design
- Tool-free FEIN QuickIN quick clamping system (WSB/WSS)
- Best vibration values even without the anti-vibration handle

FEIN angle grinders - with a disc diameter of between 180 and 230 mm

The large FEIN angle grinders come in a number of versions and in two performance classes up to 2,500 watts. There are virtually no other power tools that combine more application technology than the especially powerful and robust FEIN angle grinders: patented QuickIN quick clamping system, patented electronic brake and ergonomic device shape for working conditions that are spot on. We are extremely proud of one of these patents in particular: the electronic brake system, which provides you

with automatic safety.

FEIN angle grinders has the following benefits:

- Powerful high-performance motor
- Soft start
- Flat transmission head for insertion into workpiece
- Rear handle can be rotated into 4 positions
- Tool-free FEIN QuickIN quick clamping system (WSB)

An official of Jeong San Machinery & Tools explained, "Recently, there has been a gradual increase in the demand for angle grinder which has a variety of applications to industrial fields, including shipyards, and provides benefits such as the increased productivity, cost-saving, and protection of user."

Meanwhile, Jeong San Machinery & Tools supplies the angle grinder of Germany's FEIN throughout Korea. Jeong San Machinery & Tools is a supplier of industrial machine tools with extensive experience and expertise built up for about 3 decades, and supplies global standard products to Europe, the United States, Japan, and others.

TEL : 82-52-287-8209
<http://www.jstool.co.kr>

•QuickIN

QuickIN quick clamping system for convenient disc changes without tools or M 14 holder with spindle lock.

•TipStart



The switch-free FEIN TipStart operating concept with AutoStop function ensures maximum operational safety. When used in conjunction with the EBS electronic brake system, the disc stops just 3 seconds after the buttons are released.

BMEA (Busan Marine Equipment Association)

Member List

ANSWER CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.answerclear.com
 Main Products : CO2 Extinguishing Sys. External Fire Fighting Sys.
 TEL : +82-51-831-3691

BANDO MARINE.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.bando.info
 Main Products : Life Boat
 TEL : +82-51-831-1950

BERM YOUNG VALVE.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.byvalve.com
 Main Products : Quick Closing Valve, Ball Valve, Bellows, Beal Valve
 TEL : +82-51-311-2511

BMT CO., LTD.

Head Office : Yangsan Gyeongsangnam-do
 Homepage Add. : www.superlok.com/
 Main Products : Fitting & Valve, Vacuum Clamp
 TEL : +82-55-783-1000

BO KYOUNG IND., CO.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : O-ring, Sealing, Gasket
 TEL : +82-51-831-4615

BOKYUNGTL CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : Rudder Body, Winch, Crane
 TEL : +82-51-832-0801

BO MYUNG METAL CO., LTD.

Head Office : Saha-gu Busan
 Homepage Add. :
 Main Products : Copper Tube & Pipe, Cupro-Nikel Pipe, Copper Fitting
 TEL : +82-51-266-4101

BOYANG HARDWARE CO., LTD.

Head Office : Kimhae Gyeongsangnam-do
 Homepage Add. : www.byhd.co.kr
 Main Products : Stairway Body, Ladder, Hardware
 TEL : +82-55-345-1951

BUSAN INDUSTRY CO.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : Powder Coating
 TEL : +82-51-831-4810

BUSUNG PLANT CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : Cargo Reducer Piece
 TEL : +82-51-831-1784

CEPHAS PIPELINES CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : Butterfly Valve
 TEL : +82-51-263-3661

CHK CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.chkj.co.kr
 Main Products : Telephone Booth, Work Shop, Cable Box, Spare Box
 TEL : +82-51-831-9500

CHWANG HYEOP INSTRUMENTS.

Head Office : Gangseo-gu Busan

Homepage Add. : www.chkj.co.kr
 Main Products : Telephone Booth, Work Shop, Cable Box, Spare Box
 TEL : +82-51-831-3607

CHANG WON ENVIRONMENT IND CO., LTD.

Head Office : Kimhae Gyeongsangnam-do
 Homepage Add. : www.seaclean.kr
 Main Products : Sewage Treatment Plant
 TEL : +82-55-342-5545

CMR KOREA CO., LTD.

Head Office : Kujung-gu Busan
 Homepage Add. : www.cmkkorea.com
 Main Products : Temperature & Press Sensor, Alarm Monitoring Sys.
 TEL : +82-51-521-2883

DAECHANG METAL CO., LTD.

Head Office : Saha-gu Busan
 Homepage Add. :
 Main Products : Main Bearing support, Chain Wheel, Gear Wheel
 TEL : +82-51-264-0831

DAE-DONG ENTEC CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.ddentec.com/
 Main Products : Air Cooler, Oil Cooler, Oil Tank, Air Tank, Oil Heater
 TEL : +82-51-832-1123

DAE HAN HEAT ELECTRIC MACHINERY IND., CO.

Head Office : Kijang-kun Busan
 Homepage Add. :
 Main Products : CO2 Welder, DC Tig, Welder, AC ARC Welder
 TEL : +82-51-724-6777

DAEHEUNG IND. CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.daeheungind.kr/kr/
 Main Products : Forged Flanges, Nozzel & Forged Neck, Forged Items for ship
 TEL : +82-51-831-6635

AQ TECK CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : Flower Meter, Viscometer, Control Valve
 TEL : +82-51-831-3720

DAEHWA TECHNICAL CO., LTD.

Head Office : Kimhae Gyeongsangnam-do
 Homepage Add. :
 Main Products : Shot & Blast, Painting, Painting's Manufacture
 TEL : +82-55-329-5705

DAEJUNG SPECIAL STEEL CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : Winch, Shaft, Gear Clutch
 TEL : +82-51-831-1133

DAEKYUNG CO., LTD.

Head Office : Saha-gu Busan
 Homepage Add. : www.dkhoist.com
 Main Products : Chain Block, Lever Block Trolley
 TEL : +82-51-264-6611

DAERIM MACHINERY CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.dae-rim.kr
 Main Products : Head, Air Receiver Tank, Pressure Vessel, Reactor
 TEL : +82-51-831-1456

DAESAN ENGINEERING CO., LTD.

Head Office : Gangseo-gu Busan

Homepage Add. : www.daesan-eng.com
 Main Products : E/R Package unit, Pipe Group Unit
 TEL : +82-51-831-0090

DAE SEONG MARINE TEC CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.ds-frp.com/
 Main Products : Pipe Insulation System, FRP Weather Door
 TEL : +82-51-832-2071

DAESUNG IND CO.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : VENT SYS, OIL TANK, Out Fitting
 TEL : +82-51-831-7427

DAE WON HEAVY INDUSTRIES CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.daewonindustry.co.kr/
 Main Products : Deck Machinery, Deck Equipments, OffShore
 TEL : +82-51-831-5215

DAEWON METAL IND. CO., LTD.

Head Office : Gangseo-gu Busan
 Homepage Add. : www.galvanizing.co.kr/
 Main Products : Hot Dip Galvanizing, Pipe for Shipbuilding
 TEL : +82-51-831-2541

DAEYANG ELECTRIC CO., LTD.

Head Office : Saha-gu Busan
 Homepage Add. : www.daeayang.co.kr
 Main Products : Precision Instrument
 TEL : +82-51-200-5331

DAEYANG INSTRUMENT CO., LTD.

Head Office : Saha-gu Busan
 Homepage Add. : www.daeayang.co.kr
 Main Products : Precision Instrument
 TEL : +82-51-200-5331

DAEYANG SP CO., LTD.

Head Office : Yangsan Gyeongsangnam-do
 Homepage Add. :
 Main Products : Welding machine
 TEL : +82-55-388-3800

DA HEUNG ENG. CO., LTD.

Head Office : Sasang-gu Busan
 Homepage Add. :
 Main Products : Marine valves
 TEL : +82-51-311-1882

DAOM METAL.

Head Office : Sasang-gu Busan
 Homepage Add. :
 Main Products : Sus plate, Flange, Pipe sleeve
 TEL : +82-51-315-1347

DEAIL MACHINERY.

Head Office : Gangseo-gu Busan
 Homepage Add. :
 Main Products : Piston Rod, Cross headpin, Propeller Shaft
 TEL : +82-51-832-1119

DECKWIN CO., LTD.

Head Office : Youngdo-gu Busan
 Homepage Add. : www.deckwin.com
 Main Products : Winch
 TEL : +82-51-413-1193

DH-M CO., LTD.

Head Office : Seo-gu Incheon
 Homepage Add. : www.dhm.co.kr
 Main Products : High Pressure Blower, High Pressure Washer
 TEL : +82-32-527-5782

DHP ENGINEERING CO., LTD.

Head Office : Dongnae-gu Busan

Homepage Add. : www.dhpeng.com
Main Products : Plate Type heat Exchanger, Disk & Shell type heat Exchanger
TEL : +82-51-556-4200

DINES CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Provision Crane, Tilting Radar Post
TEL : +82-51-971-0972

DK INDUSTRIAL CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. : www.dk-ind.com/
Main Products : Silencer, Fire Damper, Lashing Bridge, Rudder
TEL : +82-51-832-1436

DK TECH CORPORATION CO., LTD.

Head Office : Kimhae Gyeongsangnam-do
Homepage Add. : www.dklok.com
Main Products : Instrument TuBe Fitting, Instrument Valve
TEL : +82-55-338-0114

DNP CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.dnpco.kr
Main Products : Fire & Gas Damper, Galley Equipment, AL, Steel Furniture
TEL : +82-51-831-4551

DOLIM PRECISION.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Cross Head Pin, Main Journal, Crank Shaft
TEL : +82-51-831-8861

DONG-A VALVE IND.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Marine Offshore valve, Strainer
TEL : +82-51-831-1500

DONGBANG SHIP MACHINERY CO., LTD.

Head Office : Jinhae Gyeongsangnam-do
Homepage Add. : www.dongbangsm.co.kr
Main Products : General Steel Piping, Framo & Hydro Piping, Module Unit
TEL : +82-55-545-0882

DONGHAE INTEC CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.dhntec.co.kr
Main Products : Sleeve, Scupper, Suction Bell Mouth
TEL : +82-51-831-2565

DONG HUN ENTERPRISE CO.

Head Office : Sasang-gu Busan
Homepage Add. :
Main Products : Ball Valve
TEL : +82-51-314-2610

DONGHWA ENTEC CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.dh.co.kr
Main Products : E/R Heater & Cooler, Copt, Condenser, Plate Heat Exchanger
TEL : +82-51-970-1000

DONGHWA M&E CO., LTD.

Head Office : Kimhae Gyeongsangnam-do
Homepage Add. : www.donghwame.com
Main Products : Heat Exchanger
TEL : +82-55-340-6700

DONGHWA PNEUTEC CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Air Compressor, Cylinder, Head, Piston
TEL : +82-51-974-4800

DONGIL SHIPYARD CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. : www.dongilshipyard.co.kr
Main Products : Rescue Boat Davit & Winch, Assembly, Line Hauler

TEL : +82-51-200-1211

DONGKYUNG INDUSTRY CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.dki21.co.kr
Main Products : Reducer, Gear
TEL : +82-51-832-1602

DONG NAM ENGINEERING CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. : www.dongnam-eng.com
Main Products : Electric Control Panel
TEL : +82-51-204-3984

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-mgps.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.kdle.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

SEIL SERES CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.seilseres.com
Main Products : VRC system, ODM
TEL : +82-51-831-1858

SEJIN BOLT CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Bolt, Nut & Be, Double Nut, Chard Nut, Hinge Bog
TEL : +82-51-831-9832

SEUNG JIN E.N.G.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Pipe Spool (Steel)
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
Homepage Add. :
Main Products :
TEL : +82-51-831-0595

SEYANG HIGH-TECH

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Water & Oil Strainer, Condensate Chlorination Tank
TEL : +82-51-831-9125

SHILLA E&T CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Spot Cooler, Heat Exchanger, Pressure Yeses
TEL : +82-51-831-7705

SHINDONG DIGITECH CO., LTD.

Head Office : Dong-gu Busan
Homepage Add. : www.shindong.com
Main Products : Navigation Communication, Satellite Communication
TEL : +82-51-461-5000

SHINHWA INTERIOR & TECHNOLOGY CO., LTD.

Head Office : Saha-gu Busan
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

SHINMYUNG INDUSTRIAL CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Cable Tray Joint, Hanger
TEL : +82-51-831-5061

SHIN SHIN HEAVY INDUSTRIES CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Deck Machinery, Hydraulic system, Surface Treatment
TEL : +82-51-832-0734

SHIN SHIN MACHINERY CO., LTD.

Head Office : Kijang-kun Busan
Homepage Add. : www.sspump.com
Main Products : Centrifugal Pumps, Gear Pumps, Screw Pumps
TEL : +82-51-727-5300

SHINWOO METAL CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.shinwoometal.net
Main Products : Flange, Forging
TEL : +82-51-831-1810

SHIN YOUNG AIR CLUTCH.

Head Office : Gangseo-gu Busan
Homepage Add. : www.airclutch.co.kr
Main Products : SY-CB Type, SY-VC Type, SY-E Type
TEL : +82-51-831-7072

SILLA METAL CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.sillametal.com
Main Products : PROPELLER(F.P.P), C.PPROPELLER Blade & Hub
TEL : +82-51-831-5991

SIN HUENG FLANGE CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Flange for ship
TEL : +82-51-831-6167

SINWEOL GRATING CO., LTD.

Head Office : Sasang-gu Busan
Homepage Add. : www.steelgrating.net
Main Products : Steel Grating for Ship
TEL : +82-51-323-7000

SM POWER TEC CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.smpo.co.kr
Main Products : Vacuum Pump for Shipping Bldc, AC,DC Motor & Generator
TEL : +82-51-973-0267

SNP CO., LTD.

Head Office : Saha-gu Busan
Homepage Add. :
Main Products : Galley Equipment, Cold Chamber, Catering Furniture
TEL : +82-51-261-7711

STACO CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.staco.co.kr
Main Products : Wall Panel, Ceiling Panel, Unit Toilet, Marin Door
TEL : +82-51-831-7000

STA-JH CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. :
Main Products : Welding Fittings (Butt Welding)
TEL : +82-51-831-1274

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Homepage Add. :
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TEL : +82-51-266-6666

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Homepage Add. : www.stbend.co.kr
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STEEL KOREA CO., LTD.

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Homepage Add. :
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Head Office : Gangseo-gu Busan
Homepage Add. : www.shge.co.kr
Main Products : Steel Grating
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SUNBO IND CO., LTD.

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Homepage Add. : www.sunboind.co.kr
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SUNGWON ELECTRIC CO.

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

SUNG WON ENTERPRISE. CO., LTD.

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Main Products : V-Flow Swing Check, Valves, Manifold Unit
TEL : +82-51-831-2140

SUNIL INSTRUMENT CO., LTD.

Head Office : Gangseo-gu Busan
Homepage Add. : www.suniltech.co.kr
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Homepage Add. :
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Head Office : Saha-gu Busan
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 Main Products : Welding Fittings (Butt Welding)
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