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SEPTEMBER 2009

TTS Review

New RoPax vessels for China Shipping

TTS companies pull together to fulfil prestigious contract



Plus:

NEW FACTORY IN JIANGSU

Opening of TTS Kocks, Dalian and TTS Singapore
...and much more



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Welcome

JOHANNES D NETELAND

President and Chief Executive Officer, TTS Marine ASA



Welcome to the 9th issue of *TTS Review*. It's been a tough six months, with several major shipyards experiencing bankruptcy but, despite this, TTS companies across the globe are pulling together to maintain a strong position in the industry. Our order backlog is still high, in spite of low order intake and a considerable number of cancellations, and we expect our activity level to remain high for the remainder of 2009 and throughout 2010.

“The economy is showing signs of improvement and within some of TTS's market segments the number of enquiries has increased considerably. Increased oil prices may also have a positive impact to TTS business in the oil and gas markets”

Turnover in the second quarter of 2009 was NOK 963m and earnings before interest, taxes, depreciation and amortisation were NOK 21m. Although these results are weaker than expected the economy is showing signs of improvement and, within some of TTS's market segments, the number of enquiries have increased considerably. Increased oil prices may also have a positive impact to TTS business in the oil and gas markets.

Our activity in the Chinese markets has been particularly strong, and the deliveries out of major Chinese shipyards are surprisingly stable, with TTS Hua Hai signed for a record number of contracts. 2009 will see the company deliver equipment to 290 bulk carriers, 45 containerships, a number of VLCC conversions, three car carriers, and around 20 shipsets of equipment to geared cargo or multi-purpose vessels. Of these 366 deliveries, 60 sets of fabrication will be delivered using around 38,000 tonnes of steel. Around one third of this production will be completed by the new Jiangnan-TTS factory in Rugao.

There are also several new contracts that highlight the way TTS companies around the globe are able to work together to succeed in the Asian markets. A collaboration between TTS Ships Equipment AB, TTS Ships Equipment AS and TTS Hua Hai will see the supply of RoRo access equipment to four new RoPax Vessels for China Shipping, built at Guangzhou shipyard. Another collaboration between TTS Bohai, TTS Offshore Handling Equipment, TTS Marine Cranes and TTS Korea will see the delivery of cranes to Gulmar Offshore in Dubai. It is hoped that this pooling of resources will pave the way for future projects.

Other notable developments in China include the opening of a new production facility, TTS Marine Equipment in Dalian, China, as well as the creation of TTS Singapore Pte – a company that will strengthen the Group's aftersales capabilities in both marine and offshore installations.

You can find out more about all of these developments, and read about many other new contracts and achievements in this issue of *TTS Review*. I hope you find it an enjoyable read and look forward to working with you in the months to come.

Strong market lead established by TTS Hua Hai

Experiencing remarkable success in the RoRo market, TTS Hua Hai Ships Equipment Co Ltd is working closely alongside Gothenburg's TTS Ships Equipment AB to fulfil contracts from high profile shipowners across the globe.

The first two of a series of four PCTCs for German owner Reederei F. Laeisz are being built at Yang Fan Shipyard – China's eighth largest ship builder. The 183 metre-long, 32 metre-wide vessels each boast a capacity of 5000 cars and are equipped with a TTS quarter ramp, side ramp, and movable ramp, as well as three removable car decks and doors for vehicle access.

In addition, the first four in a series of six PCCs, built for CSC

Shenzhen in China, have already been delivered by Jinling shipyard. The 140 metre-long, 25 metre-wide vessels each have a capacity of 2000 cars and feature two TTS stern ramps as well as doors for vehicle access. The stern ramps are operated by cylinders for easy installation and maintenance.

"All of the equipment for these projects has been designed in close cooperation between TTS Hua Hai and TTS Ships Equipment AB," says Björn Andersson, chairman of the board at TTS Hua Hai. "The success of these contracts is undoubtedly the result of sound working relationships between TTS companies – and that gives us a great foundation for on-going success in the Chinese car carrier market."



*Below: two PCTCs built for Reederei F. Laeisz at Yang Fan Shipyard.
Left: one of four PCCs built for CSC Shenzhen at Jinling shipyard*



New factory in JiangSu

Preparations are in place for the official opening of the new Jiangnan TTS (NanTong) Marine Equipment Manufacture complex in JiangSu, China.

The factory has been set up so that TTS Hua Hai can concentrate production of hatch covers in one place, develop production technology and maintain high manufacture quality. Construction work began back in July 2008 on the factory, which occupies 220,000 sq metres including workshops, paint shops, a stockyard for storing ready-made equipment and its own 150 metre-long wharf. The TTS Hua Hai and Jiangnan Heavy Industry companies are to transfer some of their staff to the factory to integrate design and production processes.

Although the official opening ceremony isn't scheduled until September 2009, the factory has already been taking orders and commenced manufacture of hatch covers for 57K bulkers at the beginning of August. A further 10,000 tonnes of products are expected to be completed by the

end of this year. Running at full capacity, the factory will serve both TTS Hua Hai and the Jiangnan Group with up to 60,000 tonnes of steel products per year.



One of the lifting gantries shown prior to the opening of the Jiangnan manufacturing complex

Completion of prestigious Japanese RoRo order

The last vessel in a series of PCTCs built at Mitsubishi's Nagasaki yard in Japan was delivered to Norwegian shipowner Wilh. Wilhelmsen on 12 June, 2009. The vessel is 200 metres in length, with a capacity of 6,400 units and will be deployed in the WWL service network.

"The contract with Mitsubishi was signed back in 2003," explains Nils O Ericsson, vice president at TTS Ships Equipment AB. "The original contract was for the delivery of cargo access equipment for two car carriers ordered by Wilhelmsen. This series was over the time extended to ten vessels and the last vessel has now been successfully delivered."

The TTS contract included the design, complete equipment delivery, and supervision during installation of quarter ramps, side ramps, plus internal ramps and covers with associated hydraulic and electric systems, all allowing access for vehicles to all twelve decks of the vessel.

The history between TTS and Wilh. Wilhelmsen is significant – the companies have worked together on various projects for many years, and the successful collaboration on this ten series PCTC contract highlights a very strong working relationship. Continuing the success, the companies are now working on the designs for four Mark V vessels which will also be built by Mitsubishi Heavy Industries in Nagasaki. The TTS contribution to this project includes delivery and supervision during installation of quarter ramp, internal ramps and covers and hoistable car decks with associated hydraulic and electric systems, all allowing access for vehicles to all ten decks of the vessel. The specification requires a capacity of more than 500 tonnes on the quarter ramp.

The vessels will be used primarily for shipment of heavy cargo for the construction, mining and agriculture industries but also for lighter rolling units such as private cars.

The cooperation with Mitsubishi and Wilhelmsen will continue with the delivery of cargo access equipment to these new deep sea RoRos, of which the first vessel will be delivered in early 2011.

The tenth vessel in the Mitsubishi series, M/V Toscana, was delivered on June 12, 2009



Giant investment in Jiangsu Rongsheng new builds



“With a 400,000 dwt capacity, the dimensions of each ship are colossal, as are the hatch covers themselves”

TTS Hua Hai Ships Equipment Ltd in Shanghai has been awarded a contract to supply purpose-built hatch covers for four VLOCs, which are being built for Brazilian mining company Vale, by Jiangsu Rongsheng Heavy Industries, one of China's biggest shipbuilders. As further orders from the shipyard are confirmed, this contract is expected to increase to include hatch covers for 16 vessels.

The ships, which will trade iron ore from Vale's Brazilian mines to Chinese ports, are set to be the biggest iron ore carriers in the world. With a 400,000 dwt capacity, the dimensions of each ship are colossal, as are the hatch covers themselves.

Hatch cover one measures 25.7 by 17.6 metres while covers two to seven measure 30.8 by 21.1 metres a piece. Each hold has one panel which is opened by a hydraulic motor-driven rack and pinion configuration. The weight of the biggest panel will be almost 200 tonnes, the total weight of all hatch covers and hydraulic equipment exceeding 1250 tonnes."

In close vicinity to Jiangsu Rongsheng is the new Jiangnan-TTS dedicated factory for hatch cover fabrication, which is soon to commence production. With its 60,000 tonne annual capacity, the factory is located ideally for the fabrication of such huge panels which can be made in two pieces and transported on multi-wheel loaders into the shipyard just 2 km away for the final joining together.

"Despite the current economic conditions, Vale's decision to proceed with this order proves that long term investment in dedicated ship services will always achieve financial credibility," says Björn Andersson, TTS Hua Hai's chairman of the board. "This is the most significant contract that TTS Hua Hai has received in its 11-year history, and a mark of its achievement in the industry."

The return of the piggy-back hatch cover



After an absence from the Chinese market of more than fifteen years, TTS piggy-back hatch covers are making a comeback, featuring in the delivery of a 50,000 dwt multi-purpose vessel from Zhejiang Shipping Group Zhoushan Wuzhou Ship Building and Repairing Co Ltd to German shipowner NSC Schifffahrtsgesellschaft.

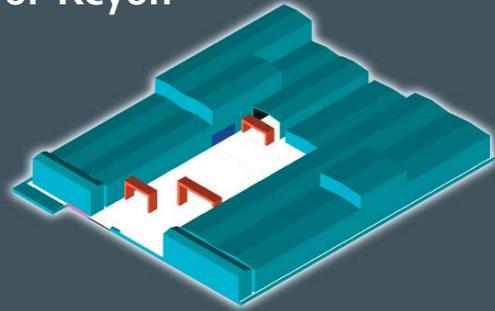
"Piggy-back hatch covers are used on open bulk carriers where the available deck space is insufficient to accommodate folding, side-rolling or end-rolling covers," explains Björn Andersson, chairman of the board at TTS Hua Hai Ships Equipment Co Ltd.

Hatches two to seven are operated as pairs by the piggy-back system. Each pair is made up of two panels, comprising one high lifting and one wheel panel. The high lifting panel is raised while the wheel panel rolls underneath and supports the other on its back. Both are lifted by double acting cylinders.

An endless chain drive moves the wheel panel to a marked position, after which the high lifting panel is lowered to sit on a resting bar. Both panels can then be rolled back and forth between two spring end stoppers by electrical motors to achieve half opening.

"A further three vessels featuring piggy-back hatch covers are slated to be delivered to NSC Schifffahrtsgesellschaft later in the year," says Andersson. "The use of this product is common when open bulk carriers need maximum hold openings. It's great that such ships are now returning to the Chinese shipbuilding market from being commonly built in Japan and Korea, providing great business opportunities for TTS Hua Hai."

First class accreditation for Keyon



Now celebrating two years in operation, TTS Keyon Marine Equipment in Zhangjiagang, China continues to strengthen its hold on cargo access markets. In the last year, the 50/50 joint venture between TTS and private Chinese investors has taken major orders from a number of large companies and passed its first ISO 9001/2000 quality audit.

Operating out of three factories with four dedicated production lines, TTS Keyon specialises in the production and assembly of hatch covers, RoRo equipment and other marine related products for the TTS dry cargo handling division. It has been making use of its production capacity of 24,000 tonnes, as well as its 440-strong team, completing RoRo equipment orders for Odense and Flensburg shipyards, a 5,000 tonne shiplift for the Malaysian Navy by Rolls Royce, and fabrication of TTS RoRo equipment for Cosco Car Carriers at Cosco Shoushan, as well as numerous sets of folding type hatch covers for Cosco 57,000 dwt bulk carriers.

As well as taking measures to satisfy the strictest of customer requirements by embarking on a successful Total Quality Management programme, TTS Keyon is constantly investing in its facilities and tools to ensure it remains the first class factory it was built to be.

TTS Keyon Marine Equipment offices and, above, plan view of the company's fabrication facilities



Four new RoPax vessels for China Shipping

Gothenburg-based TTS Ships Equipment AB is working alongside TTS Ships Equipment AS and TTS Hua Hai to supply RoRo access equipment to four new RoPax Vessels for China Shipping, built at Guangzhou shipyard. Guangzhou shipyard and TTS have previously cooperated in RoPax projects such as the two vessels already delivered to Gotland Bolaget in Sweden.

China Shipping is an important customer for TTS with ships delivered from Jiangnan featuring TTS RoRo equipment. The new 167 metre-long, 25 metre-wide vessels will allow China Shipping to increase its capacity around the Dalian/Yantai/Xingang area.

TTS equipment onboard the four RoPax vessels will include hydraulically-operated watertight stern ramp and bow ramp doors, tiltable ramps arranged between decks three and five, and cargo lifts with watertight covers as well as access doors for crew and passengers.

TTS Hua Hai was involved in the sales process and will act as local support throughout the project. TTS Ships Equipment AS is



supplying the equipment and TTS Ships Equipment AB is responsible for project management and designing the folding frame bow door system.

"For RoPax vessels, safety and quick access to cargo areas are important factors, and this is where TTS excels," explains Mats Olsson, sales manager at TTS Ships Equipment AB. "This new delivery for China Shipping highlights our success in the RoPax market, and illustrates the significant part we have to play in Asian markets."

Hatch cover innovation boosts efficiency

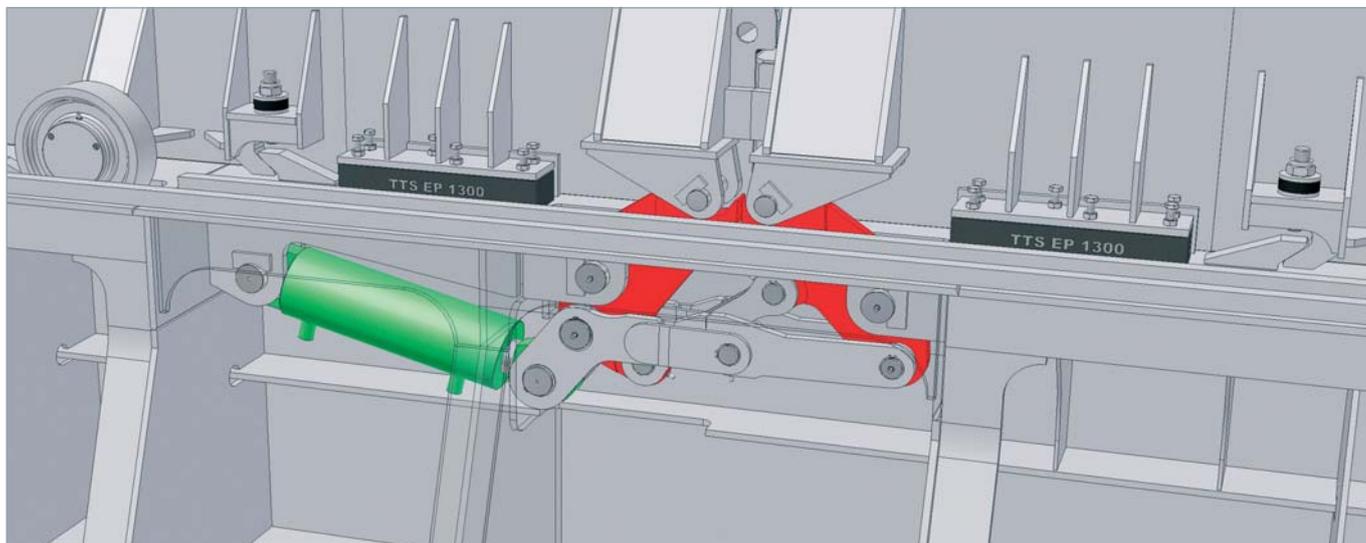
Experts at TTS Ships Equipment have developed an innovative, patented system for side rolling hatch cover operation that is expected to offer significant benefits to shipowners and operators alike.

"The Auto Roll* mechanism actuates hatch cover panels from either their closed or released position," explains Karsten Kroschel, sales manager at the company. "The device features a pair of pushing and securing units on either side of the coaming. These units release and lift the covers to open them, and lower and secure them to close. On closing, the panels are

simultaneously cleated by self-engaging auto cleats."

This simple but intelligent and fully automatically set-up reduces the manoeuvring time for hatch cover operation, and also saves a significant amount of manpower. Further benefits come from the capability to define the device's end position. This allows operators to adjust the sealing pressure in the joint between both panels, reducing the need for maintenance and spare parts.

*Patented in all major shipbuilding countries



Hyundai signs third contract in 14 months

Korean shipbuilder Hyundai Heavy Industries Co Ltd has just signed its third contract with TTS Ships Equipment GmbH in the last fourteen months.

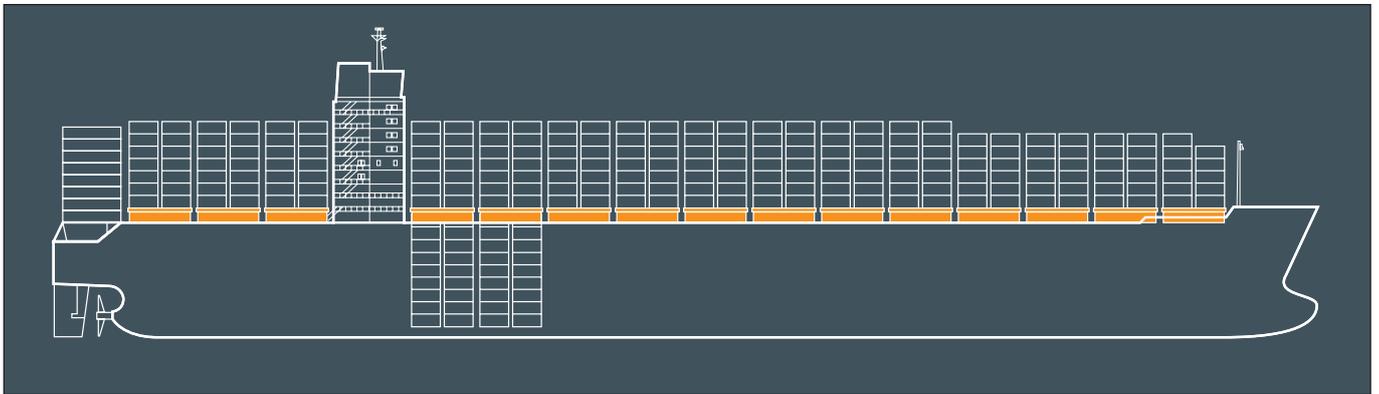
"Hyundai Heavy Industries is the biggest shipbuilder in the world, so to receive three significant contracts within the space of almost a single year is a big achievement," says Karsten Kroschel, sales manager at TTS Ships Equipment GmbH. "This success is a result of our improved partnership with the major shipbuilders as well as our proven technical competence, but it also demonstrates the acceptance of our products in the Asian markets."

The latest contract is for the delivery of ten sets of lift-on/lift-off hatch covers for a series of 5,600 TEU container vessels, to be delivered in 2010 and 2011. Each vessel will be equipped with 42

panels, covering 15 hatches and benefitting from TTS's very reliable bearing pad system, the EverEst OptiPad.

With the shipowners requiring a high load capacity, TTS had to carry out in-depth calculations to prove the strength of the hatch covers, as Kroschel explains: "The client had stipulated mixed stowage requirements in the third tier, which meant that 40 ft containers needed to be loaded on top of 20 ft ones. Our strength calculations have a reputation for reliability and this was one of the contributing reasons for our appointment."

Container arrangement of the ten 5,600 TEU container carriers to be built at Hyundai's SAMHO Shipyard in Mokpo



RoRo success continues in Korea

Following many years of success in Korea, TTS has recently signed a contract with Daewoo Shipbuilding and Marine Engineering for the delivery of RoRo equipment for two RoPax vessels ordered at DSME by Blue Star Ferries of Greece.

The TTS-supplied equipment consists of stern ramps for vehicles and passengers, ramp cover, tiltable ramp, hoistable car decks and ramp and pilot and bunker doors. The equipment has a total weight of about 225 tonnes per shipset and TTS delivery to the yard is slated for the second and fourth quarter of 2010. The vessels are scheduled to be delivered to the owner in May 2011 and January 2012.

TTS has a long history in developing the RoRo concept in the Far East. Contracts in Korea go back to 1984 when KSEC ordered two shipsets of RoRo equipment for RoRo vessels which were being built for Gorthon Lines. Since then there have been successes in many significant RoRo projects, most notably a contract in 1993 for the delivery of equipment to three car carriers for Wallenius Line, a series which evolved into 11 ships.

Also in the early 1990s, TTS received a contract from Hyundai Heavy Industries for delivery of equipment to two car

carriers for the Norwegian owner Leif Höegh. This series has successfully increased to more than 50 car carriers at Daewoo, Hyundai Heavy Industries and Samho for owners Höegh Autoliners, Wallenius, Wilhelmsen and EUKOR. A further contract has been signed with Hyundai's Mipo Shipyard for delivery of equipment for ten car carriers for Ray Shipping. In addition to the new contract, TTS is still to deliver equipment for more than 25 RoRo vessels under construction at Korean yards.

One of the TTS-supplied car carriers built at Hyundai for EUKOR



Opening of Kocks, Dalian

On July 29 2009, TTS Kocks held the official opening ceremony for its new production facility TTS Marine Equipment in Dalian, China. Friends and business partners of TTS were invited to attend and look around the new facility, which includes an administration building and production hall.

As a daughter company of TTS Kocks in Bremen, Germany, TTS Marine Equipment (Dalian) Co Ltd will produce anchor and mooring winches for both the Chinese and export markets. Already in full operation, it can currently deliver five to six complete winch sets per month. With room to further increase its production capacity, TTS Kocks is ready to serve its target markets with the highest quality electric and hydraulic winch systems.

Top: cutting the ribbon at the opening ceremony, from left to right: Edgar Bethmann, Managing Director, TTS Kocks GmbH and head of TTS Deck Machinery division; Kjell Tormod Pettersen, Minister of the Royal Norwegian Embassy in Beijing; Johannes Neteland, CEO, TTS Marine ASA; Jin Guowei, Deputy Director of Ganjingzi District in Dalian; Du Shuping, Secretary of Tuchengzi Cun in Dalianwan Street, Ganjingzi District; Göran Bertilsson, General Manager, TTS Marine Equipment (Dalian) Co Ltd.

Bottom: the location boasts a total area of 10,000 square metres and is fully equipped for assembly and testing



World-class testing facility

TTS Sense Drillfab operates the group's main assembly and testing facilities for drilling equipment. Owned 50/50 by TTS Sense and by Tratec Gruppen, the company was established in early 2008, moving to its new facility in Nodeland, Norway, at the beginning of January 2009.

The industrial complex at Nodeland is recognised as one of the world's most advanced sites for the assembly and testing of offshore drilling equipment. Drillfab's 1,300 sq metre facility includes a large assembly hall equipped with two 32 tonne cranes and a state-of-the-art, 40 metre-high test tower.

Recent activities include the assembly and testing of a modular rig for Halliburton, two multi-functional roughneck joint integrated machines (JIMs) for Wellquip AS (now merged with TTS Sense); and a pipehandler crane for TTS Marine Cranes. Other work in progress includes assembly and testing of top drives and two smart rackers. It is this type of project that takes most advantage of the calibre of Drillfab's on-site equipment. For example, the steel test tower, complete with crane, operator cabin and ground rails allows for full-scale smart racker testing.

"Competence, drive and experience make us a strong partner in providing unique services and facilities to our clients," says Jan Ove Aasen at Sense Drillfab. "We have some of the most advanced facilities in the world to carry out assembly and testing in order to produce TTS equipment of the highest quality."

Drillfab is soon to start work on two 1,000 tonne offshore top drives for TTS Sense, the first of which is scheduled to be completed in November this year. Further activities include the assembly and testing of two JIMs and other pipehandling and blowout preventer handling equipment for two jackups under construction in Singapore.

"We're looking forward to a busy year and, in establishing a world-class assembly site, we will bolster TTS's reputation as a supplier of premium drilling equipment," says Aasen.



'Shanghai model' paves way for future projects

The close working relationship between TTS companies has proven to be a remarkable success, paving the way for future projects. One such example is the delivery of the first shipment of offshore cranes from TTS Marine Shanghai to Gulmar Offshore in Dubai, a project that has utilised resources from across the TTS organisation.

The contract will supply four offshore cranes, two to each of two dive support vessels being built at Hanjin Heavy Industries and Construction in Korea. The cranes will allow the vessels to carry out dive support operations and subsea construction work.

Each shipset will benefit from one of TTS's new generation active heave compensated (AHC) cranes, which will allow Gulmar Offshore to continue to work in rough sea conditions that would normally cause closure of operations.

This project, dubbed the 'Shanghai model', is one of the most complex that TTS has seen to date, requiring timely cooperation from many TTS companies across the globe. "In order to realise this contract we had a very ambitious strategy in place," says Svane. "All of the steel production was carried out at TTS Bohai in China, the winch system was designed by TTS Offshore Handling Equipment in Norway, the engineering, classification, project management, and logistics work was overseen by TTS Marine Cranes in Bergen and TTS Korea played a valuable role assisting in the project management and conducting on-site surveys. We purchased all of the components from Bergen, from where 15 40-foot containers were sent to TTS Shanghai, where all of the assembly and outfitting took place."

TTS has invested heavily in this project, as Svane explains: "We have spent large sums of money on new test beds in Shanghai, and new state-of-the-art tooling. We've also made significant investments in training, sharing knowledge as much as possible between companies. As well as all this we've had to become acquainted with China's strict import and export rules, to make sure that we are working to the correct legislation."

"I have every confidence that we can use the Shanghai model as a basis for future work. Asia holds a huge amount of potential for us; this is just the beginning."



Linkspan successes from fabrication in China



In recent years, TTS has invested heavily in Chinese joint ventures. Making use of the country's booming marine industry, the group has been able to increase its capacity to supply customers, while still benefiting from low cost production.

Drawing on this relationship with Chinese industry, TTS Port Equipment in Gothenburg, Sweden, opted to outsource the manufacture of two linkspans. The project is now nearing its final stages with the successful delivery of the linkspans from China to Europe having taken place at the end of July and the end of August of this year. Installation at the ports in Hoek van Holland in the Netherlands and Harwich in the UK is due to be completed by November.

Commissioned by Stena Line and Harwich International Port, each of the two upper deck linkspans measures 100 metres long and will be installed as part of a double-tier loading system at each of the ports. Tailor-made to accommodate a new fleet of Stena Line vessels, both systems will feature a fixed access ramp, an elevating ramp and an outer flap.

Throughout the project, TTS ran a quality control team on site, consisting of members from their global QC organisation. The project was managed from the office in Gothenburg with a team periodically carrying out on-site checks and following up on the production. "We are extremely pleased with the quality of the Chinese shipyard's manufacture and expect to complete the installation without problems," says Mikael Jogvall, vice president, QA/project, TTS Port Equipment. "Not only have we realised significant cost savings for our clients, but our team in China ensured the whole project ran very smoothly. We look forward to working with the shipyard again in the near future."

Proven technologies for the Chinese container market

Since 2007, TTS Port Equipment has been actively pursuing business opportunities in China and the rest of the world, to meet significant growth in the container market, which now sees over 155 million TEU handled by Chinese ports. This equates to nearly 36 per cent of the global container handling market, and looks set to grow as a number of global operators continue to invest heavily in the country's container terminal operations, and firms such as APMT, CGM-CMA, COSCO, China Merchants, Evergreen, HPH, and PSA continue to cooperate and compete with each other in this expanding market.

In response to the increasing interest in new technologies for improving performance in container terminals, TTS has been attending several conferences including PortTech and TOC-ASIA to raise awareness of the latest in container terminal solutions. Dr. Lawrence Henesey, business development manager at TTS Port Equipment has played an instrumental role in explaining the advantages of proven TTS technologies such as the cassette

system, cassette-automated guided vehicles (C-AGVs) and the revolutionary zero-emission technology.

"Many of the participants in the conferences are not only representing clients in China but worldwide. China is a global centre for the container industry," says Henesey. "There's a great deal of interest in C-AGVs and now we are responding to many enquiries about the zero-emission technology that TTS and Numexia have developed for container terminals. The Chinese market is maturing and becoming more advanced as decision-makers look at TTS automation and technology to reduce carbon emissions at their container terminals."

Aided by the presence of TTS Ships Equipment in China and a growing number of joint ventures between TTS and Chinese shipyards, TTS Port Equipment will continue to enlighten the market with the possibilities created by its technologies and assert its role as a major player in the Chinese container terminal equipment market.



Above: Lennart Svensson, executive vice president Port and Material Handling division, and Dr. Lawrence Henesey, business development manager at TTS Port Equipment at a visit to container terminals in Shanghai. Left: the C-AGV system shown helping to improve the productivity of stacking cranes

Strengthened aftersales services for south east Asia

In a move to develop business and provide expert aftersales and services to meet the needs of the booming marine industry in south east Asia, TTS has recently opened a new company in Singapore. Headed up by general manager Jan Ove Hovdenak, who has moved from the group's Marine Cranes division, TTS Singapore Pte is looking to lead a strong sales operation across the full range of TTS marine products, as well as deliver aftersales services in support of the group's cargo handling equipment in both marine and offshore installations.

The team has a number of projects in the pipeline,

including the commissioning of new cranes due to be delivered in Singapore shortly, as well as work for PRM Shipbuilding, Otto Marine and WesternGeco.

"Singapore is a key centre for the marine industry," says Jan Ove Hovdenak. "It's a natural place for us to be located and it will help strengthen our global network. The objective is to be able to deliver the best possible standard of service – both for sales and aftersales – in all of the marine industry's most important centres. We expect to develop a strong business from this base, in all of our market segments."

Worldwide network

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