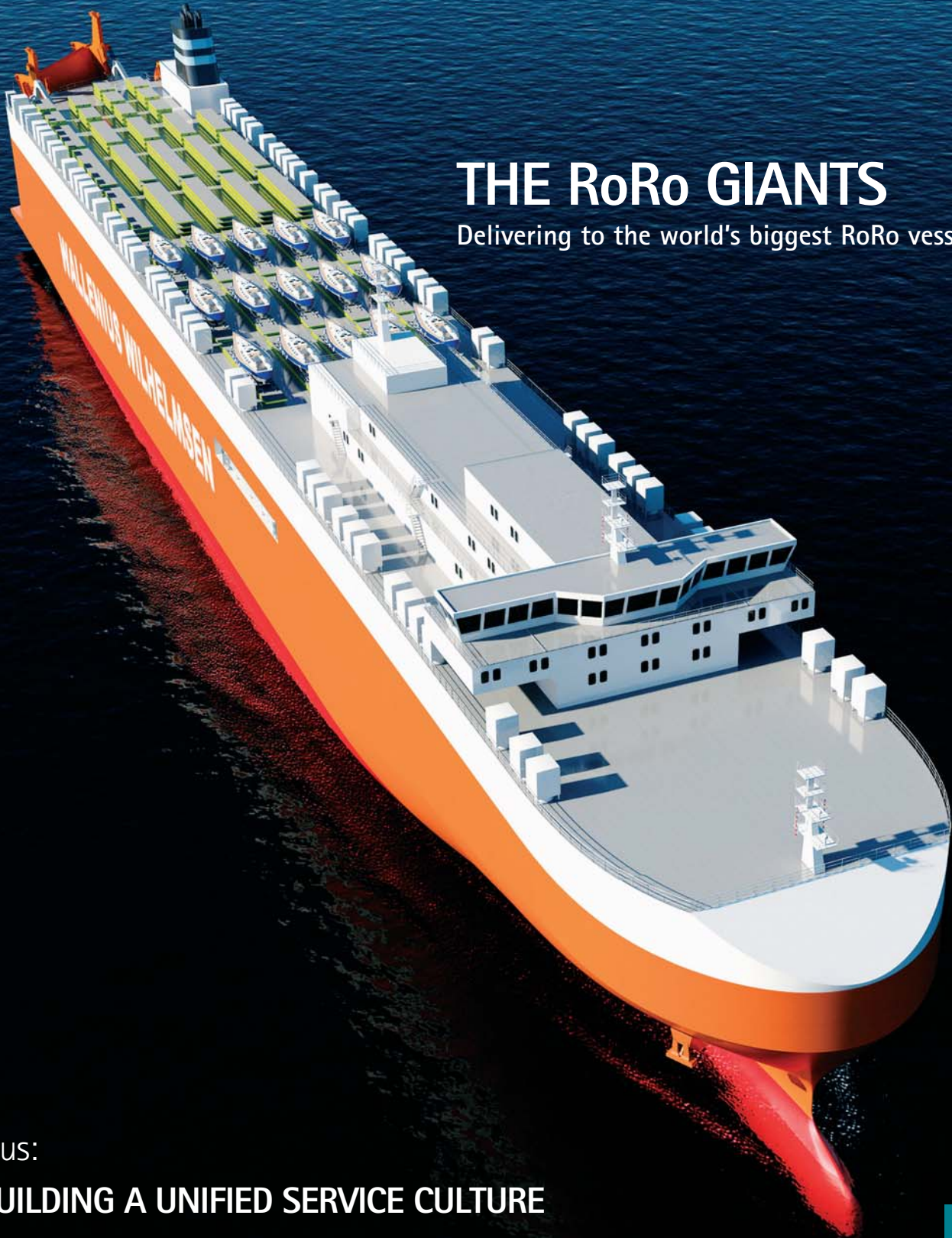


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SEPTEMBER 2008

TTS Review



THE RoRo GIANTS

Delivering to the world's biggest RoRo vessels

Plus:

BUILDING A UNIFIED SERVICE CULTURE

Breaking into new offshore markets

...and much more

TTS

7



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Welcome

JOHANNES D NETELAND

President and Chief Executive Officer, TTS Marine ASA



The global economy may be slowing, but TTS and its many subsidiaries continue to post great results. Order intake remains high, and the group is focused on designing great products and delivering the best possible service to its clients. With some of the largest projects TTS has ever undertaken now on the books and revenue continuing to increase rapidly, the future remains positive

“Half way through the year, we are well on target to beat our growth forecast of 45 per cent. We anticipate group turnover increasing to more than NOK 4 billion – more than 60 per cent ahead of last year”

Doom and gloom may be the predominant feeling about the world economy at the moment, but I can tell you that the offices of TTS and its subsidiary companies are not places where this emotion is felt. Activity in the marine industry remains strong, and our companies are continuing to bring in orders at a record rate.

Half way through the year, we are well on target to beat our growth forecast of 45 per cent. We anticipate group turnover increasing to more than NOK 4 billion – more than 60 per cent ahead of last year. Even if the marine industry does succumb to the global slowdown, we are confident that TTS will be able to weather it better than most – for instance, any reduction in prices for components and materials is a benefit that will go straight to our bottom line.

Take our Dry Cargo Handling division as an example. A contract has recently been signed to supply equipment for the world's largest RoRo vessels. The four giant ships – which have a cargo capacity of 138,000 cubic metres – will be delivered by 2012. Our other divisions are delivering similarly impressive performances.

Our return to the offshore industry, exemplified by the purchase of drilling equipment manufacturer Sense EDM – now rebranded as TTS Sense – has been a great success, and we anticipate good results in this sector.

As the marine industry continues to expand in the new markets of the Far East, our joint ventures in China are coming to make up an increasingly important part of our overall business. I am certain that the Far East will continue to increase in importance, and TTS expects to play a vital role in the development of these markets.

We have orders that will ensure our capacity is fully utilised at least up to the end of 2009, and we are continuing to add new projects to our order books. Since the start of the year the total value of orders on our books has increased by NOK 1.28 billion to NOK 8.23 billion.

I hope you enjoy reading this issue of *TTS Review* and I look forward to working closely with all our customers, suppliers and partners in the months to come.

Working with the new RoRo giants

TTS to supply cargo access equipment to the world's largest RoRo vessels for Mitsubishi Heavy Industries, Japan

Göteborg-based TTS Ships Equipment is currently designing cargo access equipment for four new Mark V vessels, to be built by Mitsubishi Heavy Industries in Nagasaki for Wallenius Lines and Wilh. Wilhelmsen. The equipment, a total of 3,000 tonnes per ship, will be installed in time for the vessels' delivery in 2011–2012.

The ships are believed to be the world's largest RoRo vessels and will be deployed by Wallenius Wilhelmsen Logistics (WWL), a joint venture between Wallenius Lines and Wilh. Wilhelmsen. The Mark V RoRo vessels will be 265 metres in length, with a cargo volume of 138,000 cubic metres divided between ten decks, three of which are hoistable.

"This is several times larger than our typical order," says Nils Ericsson, sales director at TTS Ships Equipment. "But this contract is not just about massive size and weight, as many aspects of the equipment are innovative in design. For instance, we're supplying lightweight hoistable car decks, with electric

“ We're supplying lightweight hoistable car decks, with electric winches instead of hydraulic ones, as well as radio remote controlled car deck operation ”

Below: views of the Mark V vessels showing the scope of TTS deliverables including car decks and stern access



winch instead of hydraulic ones, as well as radio remote controlled car deck operation."

The lightweight hoistable car decks will be of steel frame construction with a plywood 'top plate', which will be covered with a phenol film for slip and wear resistance. Electrical winches, rather than hydraulic systems, have been chosen for operating the decks, eliminating the risk of oil leakage and damage to the cargo or the environment. A hand-held radio remote control will be used to hoist and lower each section of the decks, giving the operator the freedom to stand at the optimum position, from both logistic and safety perspectives.

The stern access will consist of a 25-metre wide stern door and a wire-operated quarter ramp in three sections. The ramp has been designed to minimise quay pressure when loading and offloading heavy cargo. The delivery will also include a number of internal ramps and ramp covers designed to ensure smooth internal cargo flow.

TTS is already working on another order with the same shipyard, for a series of ten car carriers for Wilh. Wilhelmsen. "This new contract confirms that our strong brand and vast knowledge puts us in pole position in the quest for the most challenging orders in the future," said managing director Stellan Bernsro.



Ships equipment for offshore



Above: Island Constructor, built for Island Offshore by Ulstein Verft, Norway, to which TTS has supplied SB & PS ROV doors, the provision door/platform and observation door/platform

TTS Ships Equipment has seen a huge rise in its offshore sales in recent years, receiving sizeable orders from shipyards across the globe.

"The daily charter rates for offshore vessels have been consistently high," says Jan-Magnar Grøtte, managing director, TTS Ships Equipment AS. "Vessels are becoming more complex than ever before, and there's been a strong demand for multipurpose ships with a wide range of specialist equipment."

The company's recent contract wins include an order from Sinopacific Zhejiang shipyard in China for delivery of materials to two ships. TTS will be supplying the ROV hangar side doors and roller gate doors, working alongside the owner Neptune Offshore.

"We will be supplying a hydraulically operated side-hinged foldable steel door to the lower part, and an electrically-driven roller gate door to the upper part of the ROV hangar side opening," says Grøtte. "These are controlled by a locally mounted panel with pushbuttons. We will also be supplying a roller gate door to the aft of the ROV hangar. The roller gate doors are weathertight steel lamella profile doors, driven by an electric motor."

The company has also recently won a contract for top-hinged side doors for a seismic vessel being built at Ulstein Shipyard, Norway. "These are significant contracts, highlighting our success across the industry," says Grøtte. "Our success is a result of our proven quality products developed in close cooperation with the shipyards, designers, owners and the operators, teamed with our fast turnaround and competitive pricing."

A decade of success for TTS Hua Hai

Shanghai-based TTS Hua Hai has reached a significant milestone, recently celebrating its ten year anniversary. The company was formed in 1998 as a joint venture by TTS and the Chinese state-owned company China State Shipbuilding Corporation (CSSC).

"Equality of ownership has resulted in a successful collaboration and an extremely positive growth in results," says Björn Andersson, chairman of the board of TTS Hua Hai. "TTS has contributed technological expertise, while CSSC has a strong marketing force and good relationships with shipyards all over China. This combination has proven extremely useful."

TTS Hua Hai now has over 80 employees, compared to just 28 when first established. Its activities focus on engineering and the sale of hatch covers and RoRo equipment to shipyards in China. "We've completed a lot of work recently converting oil tankers at the main shipyards across China, and we're also experiencing growth in the number of car carrier projects that we're undertaking," says Andersson. "The order backlog has increased by 17 per cent over the first six months of 2008."

"The Chinese market has grown beyond all of our expectations," says Andersson. "I would estimate that TTS now has a 70 per cent market share in the region – we have more than 1,400 ships on order, which will take us well into 2012."

Securing steel deliveries

TTS Hua Hai Ships Equipment has now become a 40 per cent shareholder in a new company in Nantong, China, that will produce steel structures. The company, known as Jiangnan TTS Marine Equipment, has a production capacity of 30,000 tonnes

– a figure expected to double by 2010.

The opening ceremony for the company was held in RuGao, NanTong, JiangaSu on 24 July. Guests included Huang Cheng, deputy mayor of RuGao city; Li Guo Yuan, vice general manager of Jiangnan; Hu Jin Tao, president of the Shanghai Merchant Ship Design and Research Institute; and special guests from the design company, construction company and supervision committee of the new factory.

He Pu, managing director of TTS Hua Hai and chairman of the board for Jiangnan TTS Marine Equipment, delivered a speech at the ceremony expressing her confidence in the cooperation and gave her thanks to the local government for its support. Deputy Mayor Huang further praised Jiangnan TTS as a good example of a strong collaboration, and promised support and help to the construction and development of this new company.



From left to right: Hu Jin Tao, president, Shanghai Merchant Ship Design and Research Institute; Björn Andersson, chairman, TTS Hua Hai; Li Guo Yuan, vice general manager, Jiangnan; He Pu, managing director, TTS Hua Hai

Vietnam venture consolidated

Just over a year ago TTS opened its office in Vietnam. Today, working as a link between customers and the group's companies globally, TTS Vietnam successfully manages all orders in the region, including those for RoRo equipment, hatch covers, cargo cranes, deck machinery and multi-wheelers.

"Currently, the majority of our orders are coming from three shipyards in the Hai Phong area," says Dan Magnusson, general manager at TTS Vietnam. "These are Nam Trieu (NASICO), Halong and Pha Rung. We are also involved in conversion projects at Hyundai-Vinashin in Nha Trang and in development of the new Aker Shipyard in Vung Tau."

The offshore business is also expected to develop quickly over the coming months, with the company becoming involved in upgrading the Vietnamese ports.



Staff at TTS Vietnam with Dan Magnusson, general manager (second left) and Sverker Moeller, representative (second right)

"The projects in Vietnam will be interesting for the whole TTS group," says Magnusson. "The country is developing rapidly, and we expect it will soon become the fourth largest shipbuilding nation in the world, provided fluctuations in the global economy remain as we predict."

Lift-on/lift-off contract for eight 13,100 TEUs

A significant order for hatch covers has been taken by TTS Ships Equipment GmbH, for delivery to eight 13,100 TEU container vessels in 2010 and 2011. The company will supply 83 lift-on/lift-off panels to each ship, covering 21 hatches per ship.

Since the development of the first containership, TTS Ships Equipment has been involved in the creation of lift-on/lift-off hatch cover systems. The use of advanced stress calculation systems and computer aided design technology for the steel structure enables the hatch cover panels to accommodate

higher container loadings, while keeping panel weights within the permitted maximum for handling by shore cranes. The portfolio of TTS hatch cover types includes single flap, folding, multi-folding, lift-on/lift-off, piggy back and side rolling.

"TTS has wide experience in design, fabrication, project management and aftersales activities for all types of merchant ships and mega yachts," says Karsten Kroschel, sales and project manager at TTS Ships Equipment. "We're now putting renewed focus on our aftersales service, operating around the clock to support the entire TTS range of products."

Original by design



The buoyant mega yacht market is maintaining a high workload for the team at TTS Ships Equipment GmbH. Fuel prices may be soaring and credit markets tight, but the demand for mega yachts shows no signs of slowing. And as a result, the company has had to rise to the challenge of creating more and more individual solutions in order to cope with the ever-increasing requirements of yacht designers.

"Yacht owners want bespoke solutions to suit their lifestyles," says Stephen Cole, yacht group manager at TTS Ships Equipment in Bremen. "We're currently seeing a lot of demand for small submarines that are carried onboard for pleasure purposes. These submarines are either stowed behind a horizontal door integrated into the deck and then deployed via crane; or stored in a marina with a shell door that extends below the waterline and deployed by flooding the marina, allowing the submarine to be floated out."

"We are also receiving quite a few enquiries concerning the onboard storage of helicopters," continues Cole. "While landing

pads have always been a common feature on yachts, they were usually for land-based helicopters that were called upon when needed. More and more owners are having their own helicopter stationed onboard and at their permanent disposal. The typical solution is to stow the aircraft in a hangar located on one of the underlying decks."

In the past two years TTS has made some strategic changes to improve its position in a market that demands high quality with short deadlines. "We have increased our competence in all areas so that we can offer the complete range of services needed to facilitate turnkey delivery of our equipment," says Cole. "In previous years, we have only looked after the design and commissioning of our equipment. However, we are now taking over parts of manufacturing and installation too."

Cole expects to see the market booming for the next few years: "We have a number of major contracts that are currently underway, and we expect our order book to be well-filled for the foreseeable future."

Steel/plywood car deck conversion for Stena

At the start of 2008 TTS Ships Equipment took an order from Stena RoRo for a complex car deck conversion project – the addition of one layer of extra deck, including a hoistable ramp, in the tanktop cargo hold area. Delivery and installation was to be completed within six months.

In order to meet deadlines, a team of internal and external engineers and installation technicians was created. A prototype car deck was produced, with the team undertaking an intensive testing period. After two months the design was completed and the production of equipment began in both Finland and China.

"This was a tough project for us, given the tight schedule," says project manager Mats Olsson. "However, we completed the venture as planned, working on the ship, *Stena Forteller*, during its voyage between Finland and Sweden in July."

"To minimise installation time and transportation cost the decks are of modular design, each with a steel frame and plywood surface," says Olsson. "The fitting of the decks in such a short time was a challenge, but the installation team from Sweden and Poland did an impressive job and succeeded within the stipulated time."

There are several implementations of new technology in this project, including the use of an electric drive, using frequency converters to control the electric winches. The design also features hoistable car decks hung from the deck above to minimise steelwork in the existing side structure and tanks, leaving the cargo space free from obstructions when the decks are hoisted.

"The project is very important to TTS," says Olsson. "We have delivered electric car decks before, including an installation onboard a Wallenius car carrier built in Korea, but this delivery for Stena is a significantly updated design and of a much larger scale."

“ The fitting of the decks in such a short time was a challenge, but the installation team from Sweden and Poland did an impressive job and succeeded within the stipulated time ”

Work in progress on the Stena Forteller car deck conversion project, showing the new steel/plywood decks with the hang stays in the centre line



Realising service potential through expanded global presence

New TTS group aftersales boss Margrethe Hauge says customer service and support has the potential to become a major business for the group in its own right – as well as being key to customer acquisition and retention

The TTS group is to establish its own service division, according to recently-appointed director of services Margrethe Hauge. Service, incorporating spare part sales, repair and overhaul and conversion work will be an increasingly important part of TTS' overall business, and the expansion of the global sales and service network is key to the group's further success.

“Our service business has the potential to be three times its current size. We intend to increase our market share by increasing our service presence globally”

“TTS' installed base is rapidly increasing due to the growth in orders and the potential for a bigger service business follows on from that. In fact, I believe our service business has the potential to be three times its current size,” says Hauge, who joined TTS from agricultural machinery supplier Kverneland at the beginning of 2008. “At the moment, in the marine business, we retain less than 20 per cent of potential service work on TTS equipment. We intend to increase our market share by increasing our service presence globally and develop customer-friendly service concepts.

Hauge says that training resources are vitally important: customers' number one priority is to use competent service personnel. She is excited by the possibilities. “We need to attract and retain the best people in our industry. We need to support the whole of TTS. And we need to develop and sell the TTS service concept to take a larger share of the service market.”

“We are introducing a strong centre of excellence which means to our customers that we will not only expand our existing engineering competence but will be easier to work with due to a new consistency in customer relations. Our partnership with agents will also necessary become stronger which will, in turn, improve our touch base with customers.”

“In some parts of our business, such as drilling and offshore equipment, customers are relying much more on the OEM for service. It's my job to ensure that TTS is set to reach its service growth ambitions and establish a global sales and service network that supports this.”

“We can provide a better standard of work than third-party companies,” she says. “But our locations have not always been ideally situated for a service operation. The nature of ships is, of course, that they are constantly moving, so we must ensure that we can offer service in key locations.”

Hauge concludes: “Presenting TTS with 'one face to the market' is our aim. We will act more professionally, setting a standard for service expectations that will drive our response to a customer's needs, giving greater responsibility to our own sales and service companies and a proactive role to our agents.”

One face to the marketplace

Margrethe Hauge says that the key to establishing TTS' global service network is to be in the most important strategic service locations. “Our survey shows that customers want competent service personnel above everything else,” she says. “We can offer the best, but we are currently not located where it is required.

We should utilise the advantage of scale that means we can provide better service than third parties, as our engineers know our equipment better than anyone else. But we need to give the same level of service and response time around the world, and to handle marketing, documentation and the like in the same manner, making us easy to work with. Plus we have traditionally organised our operations according to particular product lines – but shipowners are looking for single suppliers to take on as much of the service work on their vessels as possible. So our service engineers need to be representing TTS to a larger degree and we need to ease communication lines so our front end can more easily assist customers.”

Singapore projects herald new office for TTS Sense

Drilling equipment provider TTS Sense, which became part of the TTS group last year (see *TTS Review*, issue 6, for more information) has opened a new office in Singapore to service a range of major contracts.

"We need to build up capacity in Singapore to better serve our clients in the region," says VP sales Arnt Lauen. "We have contracts covering the installation and commissioning of more than NOK 1 billion of drilling equipment, and it's vital we deliver

driven drawworks and drillers' cabins. Deliveries will commence in the fourth quarter of 2009, and continue on a staggered basis until the second quarter of 2010.

This deal for equipment for three new rigs is the most recent of a series of orders won by TTS Sense in the Singaporean market. The company is supplying equipment to rigs being built for a variety of clients around the world, such as Egyptian Drilling Company, Frontier Drilling, PetroProd, Skeie Drilling and



Above: illustration of the high-performance 3,000 HP, multi-speed, AC gear-driven drawworks to be installed on seven newbuild jack-up rigs at PPL Shipyard, Singapore

the best possible service to those clients. Singapore is a key market for rig building and a permanent presence there will be a great help to our growing business. We may also be able to use this office to service customers in Korea and China, which promise to be important markets for us in the future."

Lauen continues: "We've developed a lot of new products to meet the needs of our customers in that region, primarily involving jack-up rigs, and we have recently secured three new deals for drilling equipment packages for rigs being built at PPL Shipyard in Singapore." The three contracts, announced during the summer, are worth a total of almost US\$100 million and cover a range of TTS Sense's drilling equipment, including gear-

“ The trend towards turnkey deliveries means that we have to work more closely with the shipyards, because they have a bigger role in the selection process ”

Production and the recently formed American firm Vantage Drilling Company. However, says Lauen, much of the activity in the sector in the last few years has been fuelled by speculative investors deciding to construct rigs at reputable shipyards. "Now, the market has started to tighten a little and the number of speculative builds is dropping off. However the trend towards turnkey deliveries from the shipyards has also become the norm."

This shift towards turnkey deliveries, Lauen says, has had a significant impact on the way TTS Sense goes about its business – and is also part of the reason why the company has set up its Singapore office. "Previously, the key decision-making was done by the end user companies, which would specify to the shipyards exactly what they wanted," he says. "So most of the decisions were made by drilling contractors in Europe and the US. But the trend towards turnkey deliveries means that we have to work more closely with the shipyards, because they have a bigger role in the selection process. And obviously, in the case of speculative builds, that role is total."

Lauen says that the market is extremely fast moving. "Six months ago there was a significant tightening," he explains. "But recently the Brazilian company Petrobras announced plans to construct a substantial number of new rigs and that gave the business a big boost. And naturally the high price of oil has a major effect on activity."



Above: BMC Pacific 375 deep drilling offshore jack-up rig designed and delivered by PPL shipyard, Singapore

Land rigs business is taking off

TTS Sense's development of high technology equipment for land rigs is paying dividends. The company has secured a number of significant contracts, with the most important being a recently-announced deal to supply seven Ultrasingle 150-ton rack and pinion mobile land rigs to leading drilling contractor Weatherford Drilling.

The contract, worth approximately NOK 380 million, will see delivery of the rigs starting in early 2009. Weatherford is one of the world's largest diversified upstream oilfield service companies, with approximately 40,000 employees in over 100 countries. The company provides a broad portfolio of services and products such as drilling, evaluation, completion, production and intervention. "Winning deals like this one with Weatherford shows our increasing strength in the land rig business," says TTS Sense's VP sales Arnt Lauen. "Our patented rack and pinion technology, which is permanently installed as a part of the mast, helps make these rigs more flexible and easy to move around. They help drilling companies become more productive and efficient, and that's a key benefit in the current market."

TTS Sense's land rigs are available in three sizes: 125 and 150 tons, delivered by the company's Canadian operation, and 250 tons, made in Norway. They are bringing offshore standards of control, automation environment and security to land-based



drilling operations, previously mostly operated by much lower spec equipment. "Companies like Schlumberger and Halliburton – to whom we have also supplied rigs – are among the leading players in the oil service industry," says Lauen. "They have high standards and look for better technology that will help them stay ahead of the pack."

Lauen explains that the changing role of the large oil industry service providers has driven this shift. "These big service providers have changed. They are not just involved in well services," he says. "These companies are setting themselves up to become a one-stop supplier, including drilling, to the oil companies. Because they have taken on a wider role in the business, they need to reduce the number of people involved in the drilling operations to keep costs to a minimum while increasing productivity. On top of this there is a major shortage of qualified people in the oil industry at the moment. So any technological innovations that allow them to reduce their manpower requirements and increase safety standards are very welcome."

Among other orders won by TTS Sense in the land rig market is a major deal with Ability Drilling ASA. Ability is buying five onshore drilling rigs from TTS Sense in a contract worth around NOK 500 million. Deliveries will start in August 2009 and continue until the last rig is finished in April 2010.

“ There is a major shortage of qualified people in the oil industry at the moment. So any technological innovations that allow them to reduce their manpower requirements, and increase safety standards are very welcome ”

Below: previously delivered 125-ton trailorised land rig in Canada



New block handling multiwheelers

The TTS Handling Systems product portfolio has been extended to include a new range of multiwheeler block handling transporters, which is already proving popular among customers.

The multiwheeler system consists of a series of three main models, with payloads ranging from 75 to 530 tonnes, and is used to transport blocks within the yard, for instance from panel lines to assembly location. "We have a long history of designing and supplying equipment to shipyards worldwide," says Hallvard Engøy of TTS Handling Systems. "We supply panel production lines and transfer systems for whole ships, but our product range had not previously included a block transporter system for the production phase between panel line and ship transport.

"The addition of the block transporters means that we now offer equipment for the entire ship production cycle. In many ways, it brings us closer to the customers' way of thinking, as we are now involved in the complete fabrication process, from simple plates to a fully erected ship ready for launch."

Combining TTS quality, service and competitive pricing, the transporters can also be modified on request to suit the specific

needs of the customer. In fact, demand is already growing, and the company has received orders from customers including Aker Yards, Zaliv Shipyard and Pipavav in India. "We have high expectations for the transporters," says Engøy. "We're receiving good orders, and we've already fulfilled some of those contracts."

“ We are now involved in the complete fabrication process, from simple plates to a fully erected ship ”

Below: two 200-tonne multiwheelers, in tandem operation, ready for shipment to Pipavav. Bottom: commissioning of a 150-tonne multiwheeler at Aker Yards Vietnam



TTS to build world's largest shiplift...

TTS Handling Systems' Norwegian operation, based in Drøbak near Oslo, has won a contract from Indian firm ABG Shipyard to develop the world's largest shiplifting and transfer system.

The ship transfer system, which will be used to move finished ships to and from the launching point, is part of an equipment contract worth NOK 130 million. Also included in the deal is a panel line for welding and assembly of steel sections, which will increase the yard's shipbuilding capacity. Rolls Royce will deliver the Synchronlift shiplift, and the complete system will be in operation at the end of 2009. TTS has previously delivered similar equipment to other shipyards, both for newbuild and repair work, but the ABG ship handling system will dwarf any previously built.

Apart from being the biggest ship handling equipment ever, its innovations include the ability to handle and launch jack-up rigs. The transfer system will also be used for 'high speed ship assembly' of complete 2000-tonne ship ring units.

"In China and India, shipyards are getting bigger and bigger, so equipment for the yards has to be bigger too in order to increase capacity," says TTS Handling Systems' managing director Rolf-Atle Tomassen.

ABG, based at the port of Magdala in the north Indian state of Gujarat, is the country's largest shipyard. The new transfer and launch system will be designed to handle ships of up to 120,000 dwt with length and widths of up to 250m and 45m respectively.

"The shipyard is built on the Ghandar river, where tidal conditions are extreme, reaching up to 11m," says Tomassen.

"Launching by using a shiplift has major advantages over other launching systems, notably because the launch is independent of tidal conditions. But, up until now, it's been impossible to use a shiplift to launch such big vessels. This shiplift will set new standards, and we're very excited to have a project on such a big scale."

“ Apart from being the biggest ship handling equipment ever, its innovations include the ability to handle and launch jack-up rigs ”

Below: the ABG shiplift and transfer system which will be the biggest ever built. Below, right: a TTS panel line delivery installed earlier this year at Bohai



...and panel line systems

An impressive contract to deliver the world's largest panel line system is nearing completion. TTS Handling Systems is supplying the system to Qingdao Beihai Shipbuilding Heavy Industry Co. Ltd. in China, an order worth US\$20 million.

The system has three lines, each 300 metres long and 25 metres wide. "An average shipyard will have just one line producing plates around 12x12 metres, whereas Beihai will have three lines producing plates 22x22 metres in size," says Rolf-Atle Tomassen, managing director at TTS Handling Systems AS. "The system at Beihai will be capable of manufacturing 2,000 tonnes of shipblocks a day. This is very exciting when you consider that a small shipyard will only produce around 5,000 tonnes in an entire year."

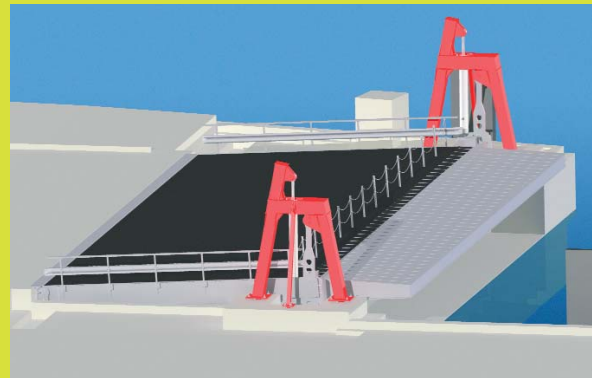
TTS is currently in the final phase of delivery for this project, with completion expected at the beginning of September. The panel line will supply Beihai Shipyard with components for the production of VLCC, Aframax and other large vessels.

"It is inevitable that China will become the largest shipbuilding industry in the world," says Tomassen. "The Chinese invest in the best technology and they have a readily available low cost workforce, so it's tough competition to beat."

The TTS group is playing a notable part in the Chinese shipbuilding market, providing production systems, heavy load handling systems, ship equipment and deck machinery to name but a few. "As a group we have an annual turnover in China of US\$150 million," concludes Tomassen. "And the market shows no signs of slowing down."



New linkspan for Swedish port



TTS Port Equipment is about to start building a new linkspan for the port of Ystad in the south of Sweden, due for delivery in February 2009.

"Ystad is a significant port in Sweden because of its ferry links to Poland and to the Danish island of Bornholm, which can't easily be reached directly from Denmark, especially by passenger traffic," says sales manager Håkan Jönsson. "The port is being developed and extended, and the installation of the new linkspan is one of several developments within the first phase of that process."

The linkspan will be 25 metres wide and 14 metres long. Hydraulically operated, it will be able to be locked at levels ranging from seven degrees below horizontal to seven degrees above. Jönsson says that this is crucial for flexibility in relatively small ports. "It's important to be able to accommodate as many different vessels as easily as possible, and this design fulfils that brief," he says. "Similar designs can be very useful in other ports. Ten years ago, most small ferry ports in Sweden used concrete slopes, but linkspans like this are much more flexible and create more potential for traffic growth."

Design is under way, and manufacturing is expected to start in early autumn. Jönsson adds that the company has a number of other linkspan projects which it hopes to conclude in the near future.

Success after success for deck equipment sales



Maintaining its position as one of the leading innovators in the deck machinery market, TTS Kocks has been making a series of developments in recent months and receiving several new orders.

"One of the latest innovations we have pioneered is a frequency controlled drive system," says sales and project manager Dennis Lupp. "This makes mooring operations much smoother because of the stepless drive. It also reduces the amount of training needed, as this system is really easy to operate."

"We've also enhanced the power transmission of our electric type winches," says Lupp. "This has significantly improved efficiency. These evolutionary products have been successfully tested at our factory in Ostrava and will now lead to serial production in Korea and China."

These are just some of the advancements made since TTS acquired the former Kocks GmbH back in October 2005. "One of our most notable innovations is our self-contained

Above: TTS anchor/mooring winch on a 205,000 dwt bulk carrier built at CSBC, Taiwan. Below: TTS cable lifter in production



hydraulic winch," explains Lupp. "Each winch has its own integrated power pack, facilitating independent operation, as well as various redundancy functions to ensure reliable performance. Also, there's no need for feeding pipelines on deck and, as the hydraulic components are fully enclosed, there's no impact from bad weather conditions."

As a result of the company's reputation for pioneering technology, TTS Kocks has received its first contract for offshore winches, a project to be completed as a joint venture with TTS Offshore Handling Equipment. "We will supply the deck machinery for this contract, and the offshore division will be supplying 350-tonne capacity anchor handling winches," says Lupp.

The company will also be delivering the deck machinery for 13 Jumbo Container Vessels with a capacity of more than 13,000 TEU, including equipment for several liquefied natural gas carriers and two very large crude carriers.

"We have more than 150 employees and freelancers working for the deck machinery division covering all skills from design, production, quality control and service," says Lupp. "In 2008 we will deliver to 95 shipsets globally, 60 per cent of which will be for the Korean market. In the coming years we expect to see a decrease in the amount of newbuild orders, but an increase in the number of projects for offshore vessels and smaller cargo ships."

Offshore triumph for marine cranes

TTS is now delivering the first shipment of cranes to Trico Marine—supplying eight vessels designed by Vik & Sandvik and built at Tebma shipyard in Malpe, India

The vessels will each be supplied with a 60-tonne SWL active heave compensated (AHC) crane, enabling the vessels to perform light subsea construction work.

The cranes, designed specifically for this contract, have become the basis for TTS Marine's new generation AHC models. "The cranes are unique, using technology in a new way to create a superior product," says Kjetil Roksvåg, sales director at TTS Marine Cranes. "We are using a secondary regulated hydraulic system in combination with our own developed control software to make the cranes more flexible and reliable as a tool."

This contract is TTS Marine's first order from the offshore and subsea markets in five years. "This was a very important contract for us to secure," says Roksvåg. "The fact that it's an eight-crane order is fantastic, and it comes from Trico Marine – a very prestigious maritime company."

With the order under its belt, TTS intends to build a strong presence in the offshore market, as well as maintaining its current position as a key player in the marine industry. "We're already ahead of the market in many matters relating to the offshore industry, especially in terms of environmental issues which are becoming an increasing concern to shipbuilders," says Roksvåg. "Our AHC cranes consume less power and our control systems are prepared for remote service access, facilitating preventive maintenance programmes as well as online de-bugging."

Since the Trico Marine order, TTS now has more than 20 AHC cranes in its portfolio, ranging from 50–150 tonne SWL. "We're building up our capacity in Norway and other parts of the world," says Roksvåg. "Our success is a result of our global presence, meeting competition and customers on local terms."



Above and below: the 60-tonne AHC crane under test conditions at TTS workshops, Norway

“We're already ahead of the market in many matters relating to the offshore industry, especially in terms of environmental issues which are becoming an increasing concern to shipbuilders”



Breaking into new offshore markets...

Launching the group into a new market sector, TTS Offshore Handling Equipment has received its first order for the design and supply of anchor handling/towing (AHT) winches

The order, from Korean shipowner Viko Offshore & Marine, is for 350-tonne winches for its two new anchor handling tug supply (AHTS) vessels. The winches each consist of two drums arranged in waterfall configuration, driven by high pressure hydraulic motors. Initially the deal was for the delivery of two shipsets with an option for an additional three, but the options have now been declared, resulting in a five-shipset deal.

"The market for large winches to AHTS vessels has for many years been dominated by suppliers of low pressure, hydraulically driven winches, so this contract is a major breakthrough for TTS," says Sverre Mowinckel-Nilsen, sales manager at TTS Offshore Handling Equipment.

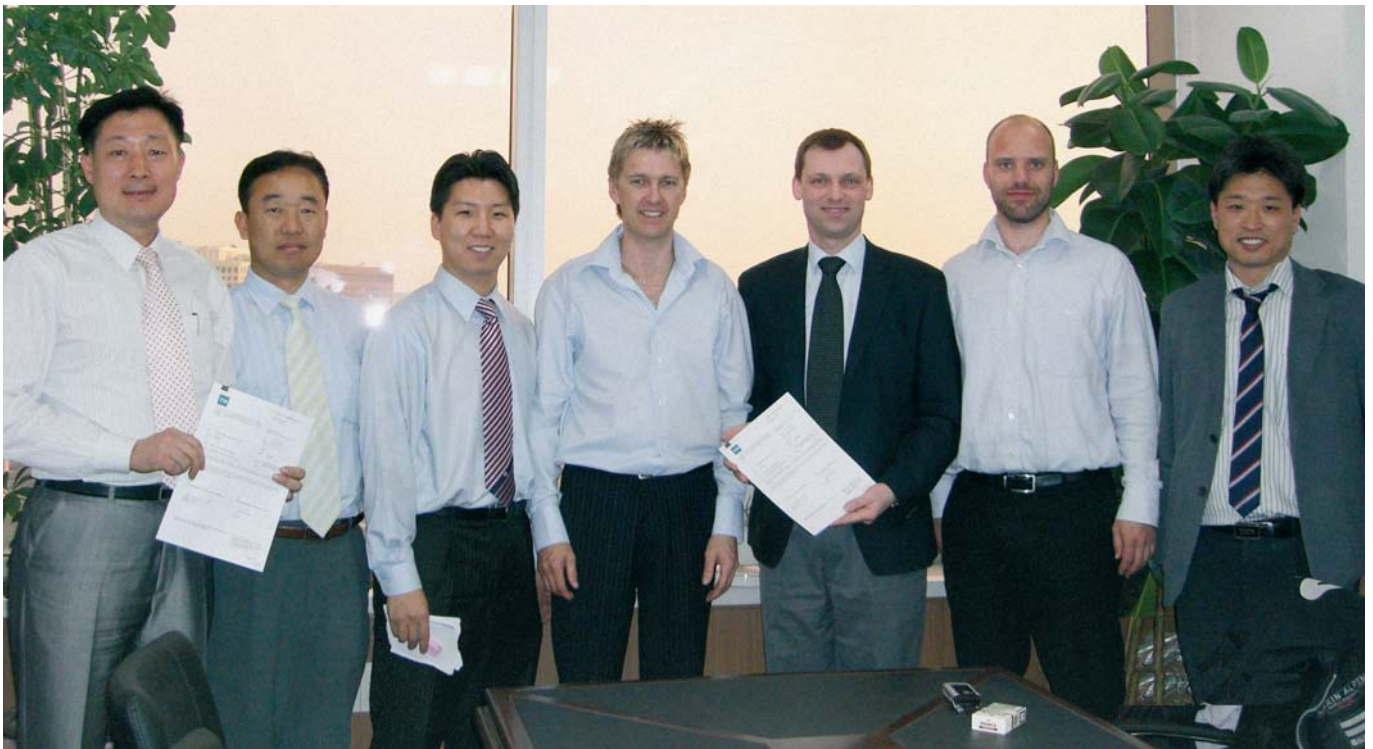
The AHT winches are compact in design while being rugged enough to handle the enormous forces encountered during anchor handling work. TTS can now offer winches ranging from 200 to 550 tonnes in various models. "Our AHT winches come with a high pressure hydraulic drive," says Mowinckel-Nilsen. "They are fully adapted to the AHTS market and can match any requirement from our customers. We have been working very closely with major ship designers and are very confident in our products due to our proven experience of winch design and our utilisation of high pressure hydraulic technology."

TTS has also gone to great lengths to ensure it offers an effective aftersales service. "We can, for example, deliver remote

assistance by Internet," says Mowinckel-Nilsen. "This means that our service engineers can remotely assist all customers from the office here in Norway. We can search through an entire system and make repairs if possible, or we can localise faults then send our service engineers to repair much more effectively."

The company is working alongside TTS Kocks in Germany to deliver complete winch packages. "TTS Kocks has over 50 years of experience in deck machinery and together we can increase market opportunities in offering packages tailored to almost any kind of AHTS vessel," says Mowinckel-Nilsen. "We are responsible for manufacturing the main AHT winch, as well as the control system, and TTS Kocks will deliver all other winches to these vessels."

Contract signing with Viko Offshore & Marine. Pictured, from left: Tiger Gong (president, Viko Offshore & Marine); William Woo (general manager, Viko Offshore & Marine); Seung-Hun, Han (superintendent, Viko Offshore & Marine); Jarle Sørstrønen (technical manager, TTS Offshore Handling Equipment); Stig Espeseth (general manager, TTS Offshore Handling Equipment); Sverre Mowinckel-Nilsen (sales manager, TTS Offshore Handling Equipment); Yonghoon Kim (sales manager, TTS Korea)



...and expanding in Shanghai to meet demand

In order to facilitate increased production, TTS Marine Shanghai has quadrupled its factory space. This is the third time the company has had to expand since its establishment in 2001.

The new factory has 8,500 square metres of workshop space and 1,900 square metres of office space and will be used to support the existing facility in supplying cranes to the Far East markets.

"The number of orders that we received in 2007 is ten times that of 2006, so there was no doubt that we had to expand our factory space," says Arne Knudsen, general manager at the company. "We're producing nearly 100 per cent of all standard cranes and davits worldwide, and we're also developing a lot of new products, such as offshore cranes, winches, anchor handling units and hydraulic power units for Norway and Germany."

The company now has 142 employees – double that of December last year – and is expected to continue to grow at the same speed next year. "We will have multiplied our workforce by five in the space of one year, which is quite a challenge to manage," says Knudsen. "We are bringing in specialists from Norway to give extensive hydraulics training, and we will also be providing employees with practical and classroom-based education on mechanical engineering and health and safety."

The expansion is already paying off, with TTS Marine Cranes receiving its first ever order for the production of anchor handling winches – a contract worth approximately NOK 83 million (see opposite page). TTS Marine Shanghai will manufacture the 350-tonne capacity winches.

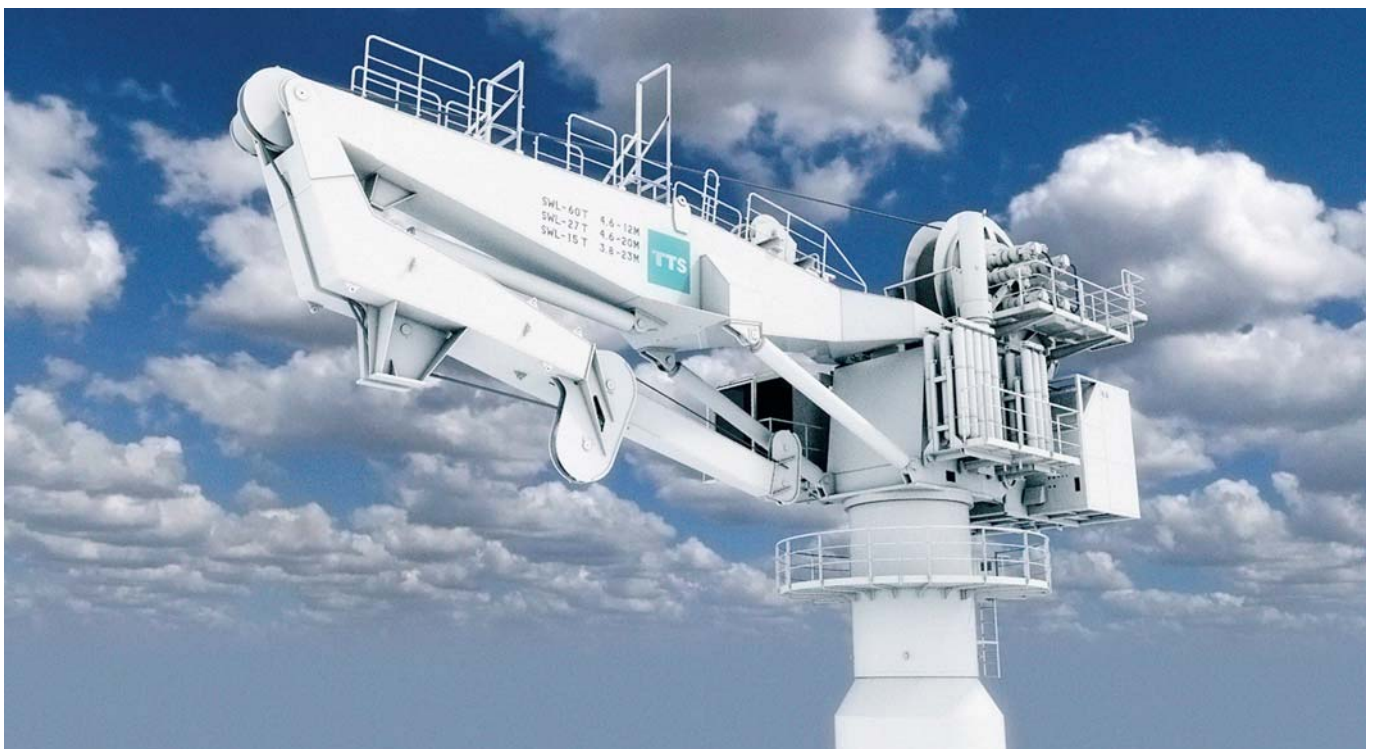
"We think that activity for TTS Marine Shanghai will continue to be high in the coming years, with a focus on bigger products," concludes Knudsen. "There is likely to be a reduction in smaller

cranes and standard equipment because of higher competition and reduced shipbuilding. We will also see a reduction in the cargo crane market, but that will be replaced with much higher offshore activity."

“The number of orders that we received in 2007 is ten times that of 2006, so there was no doubt that we had to expand our factory space”



Above: the new facilities in Shanghai. Below: a TTS offshore crane typical of those in production at the Shanghai factory



Worldwide network

www.tts-marine.com



CANADA

TTS Sense (Canada) Ltd
6708 – 75th Street
Edmonton, Alberta T6E 6T9
Tel: +1 780 430 1833
Fax: +1 780 430 1834
michael.symchuk@tts-sense.com

CHINA

TTS Hua Hai Ships Equipment Co Ltd
18th floor, 3255 Zhou Jia Zui Road
CN-200093 Shanghai
Tel: +86 21 6539 8257
Fax: +86 21 6539 7400
info@tts-huahai.com

TTS-Keyon Marine Equipment Co Ltd
Lan Gan Qiao, Fenghuang Town
CN-216514 Zhang Jia Gang City
Tel: +86 5125 8425 988
Fax: +86 5125 8425 908
info@tts-keyon.com

TTS Marine Shanghai Co Ltd
No. 433 Gao Dong No.2 Road
GaoDong Industrial Park, PuDong
CN-Shanghai 200137
Tel: +86 21 5848 5300
Fax: +86 21 5848 5311
sales@tts-marine.cn

TTS Bohai Machinery Co Ltd
Sujia, Dalian Wan Street
CN-Dalian
Tel: +86 411 8711 2670
Fax: +86 411 8711 2702
info@tts-bohai.com

TTS Marine Equipment (Dalian) Co Ltd
Tuchengzi Cun, Dalianwan Street
Ganjingzi District
CN-Dalian 116034
Tel: +86 411 8711 9663
Fax: +86 411 8711 9678
goran.bertilson@tts-me.cn

CZECH REPUBLIC

TTS Kocks Ostrava s.r.o.
U Řeky 808
CZ-720 00 Ostrava-Hrabová
Tel: +420 596 782 708
Fax: +420 596 782 707
info@tts-kocks.cz

FINLAND

TTS Liftec Oy
Tuotekatu 8
FI-33840 Tampere
Tel: +358 3 31401400
Fax: +358 3 31401444
liftec@tts-liftec.fi

GERMANY

TTS Kocks GmbH
Wachtstrasse 17–24, DE-28195 Bremen
P.O. Box 104080, DE-28040 Bremen
Tel: +49 421 52008-0
Fax: +49 421 52008-20
info@tts-kocks.de

TTS Ships Equipment GmbH
Wachtstrasse 17–24, DE-28195 Bremen
P.O. Box 100811, DE-28008 Bremen
Tel: +49 421 3 35 84 0
Fax: +49 421 3 35 84 98
info@tts-se.de

TTS-LMG Marine Cranes GmbH
Einsiedelstrasse 6
DE-23554 Lübeck
Tel: +49 451 4501 730
Fax: +49 451 4501 392
info@tts-lmg.de

ITALY

TTS Marine s.r.l
Ponte Colombo
IT-16126 Genova
Tel: +39 010 24 81 205
Fax: +39 010 25 43 191
info@tts-marine.it

KOREA

TTS Kocks GmbH Korea Co Ltd
#1664–10, Songjeong-Dong
Gangseo-Gu
Busan 618-819 Korea
Tel: +82 51 831 8401
Fax: +82 51 979 5610
mail@tts-kocks.co.kr

TTS Korea
RM 625, Ocean Tower
760-3 Woo 1-Dong, Haeundae-Gu
Busan 612-726 Korea
Tel: +82 51 740 6081-3
Fax: +82 51 740 6084
info@ttskorea.co.kr

NORWAY

TTS Marine ASA
Folke Bernadottesvei 38
P.O. Box 3577
NO-5845 Bergen
Tel: +47 55 94 74 00
Fax: +47 55 94 74 01
info@tts-marine.no

TTS Sense AS
Andøyfaret 3
NO-4623 Kristiansand
Tel: +47 38 00 05 70
Fax: +47 38 00 05 71
mail@tts-sense.com

TTS Sense AS
Jättåflaten 10
NO-4020 Stavanger
Tel: +47 51 81 16 00
Fax: +47 51 81 16 01
mail@tts-sense.com

TTS Sense Drill Fab AS
Spjøtneset
NO-4645 Nodeland
Tel: +47 480 30 500
Fax: +47 3818 9001
jan.ove.aase@tts-sensedrillfab.com

TTS Sense MUD AS
Andøyfaret 7
NO-4623 Kristiansand
Tel: +47 3800 0570
Fax: +47 3800 0571
mud@sense-mud.no

Wellquip AS
Sømsveien 216, NO-4638 Kristiansand
P.O. Box 6033, NO-4691 Kristiansand
Tel: +47 917 94 000
Fax: +47 38 10 89 88
post@wellquip.com

TTS Marine Cranes AS
Folke Bernadottesvei 38
P.O. Box 3566
NO-5845 Bergen
Tel: +47 55 34 84 00
Fax: +47 55 34 84 01
info@tts-mc.no

TTS Marine Cranes AS
Regional office
Barstølveien 26
Servicebox 602
NO-4606 Kristiansand
Tel: +47 38 04 95 00
Fax: +47 38 04 95 01
info@tts-mc.no

TTS Offshore Handling Equipment AS
Corporate office
Hundsvergata 8
NO-6008 Ålesund
Tel: +47 7032 9260
Fax: +47 7032 9261
info@tts-oh-e.no

TTS Handling Systems AS
Holterkollvn 6
P.O. Box 49
NO-1441 Drøbak
Tel: +47 64 90 79 10
Fax: +47 64 93 16 63
info@tts-hs.no

TTS Ships Equipment AS
Folke Bernadottesvei 38
P.O. Box 3517
NO-5845 Bergen
Tel: +47 55 11 30 50
Fax: +47 55 11 30 60
info@tts-se.no

SINGAPORE

TTS Sense Singapore Pte Ltd
International Business Park
Unit #03-23 Nordic
European Center
Singapore 609927
Tel: +65 68906521/23
Fax: +65 68906522
mailsg@tts-sense.com

SWEDEN

TTS Port Equipment AB
Kämpegatan 3
SE-411 04 Göteborg
Tel: +46 31 725 79 00
Fax: +46 31 725 78 04
info@tts-port.se

TTS Ships Equipment AB
Kämpegatan 3
SE-411 04 Göteborg
Tel: +46 31 725 79 00
Fax: +46 31 725 78 00
info@tts-se.se

USA

TTS Sense US
1400 Broadfield
Suite 200
Houston, TX 77084
Tel: +1 281 405 2691
Fax: +1 281 405 2692
rolf.gullaksen@tts-sense.com

TTS Marine Inc.
6555 Powerline Road, Suite 410
Fort Lauderdale, FL 33309
Tel: +1 954 493 6405
Fax: +1 954 493 6409
info@tts-se.us

VIETNAM

TTS Vietnam
4th Floor, Harbour View Building
No 4, Tran Phu Street
Haiphong City
Tel: +84 31 3686518
Fax: +84 31 3686516
info@tts-se.vn