The IPSI® AGV (Automatic Guided Vehicle) enter the kerbs onboard the RoRo vessel Slingeborg with a fully loaded cassette (approx. 70T) during the RoRo 2004 demonstration in Port of Gothenburg.

Read more on “The development of the IPSI system” on page 14.
# Table of Contents

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Interview with Johannes D. Neteland, President and Chief Executive Officer</td>
</tr>
<tr>
<td>4</td>
<td>New hatch cover contract for “Super Panamax” class container ships</td>
</tr>
<tr>
<td>5</td>
<td>TTS Ships Equipment AB wins orders from the world-wide shipbuilding market</td>
</tr>
<tr>
<td>8</td>
<td>TTS introduces a new way of mooring</td>
</tr>
<tr>
<td>8</td>
<td>TTS Marine ASA expands chinese operations and becomes sole owner of joint venture</td>
</tr>
<tr>
<td>10</td>
<td>The development of the IPSI® system</td>
</tr>
<tr>
<td>13</td>
<td>Increasing shipyard productivity at Brodosplit Shipyard</td>
</tr>
<tr>
<td>14</td>
<td>TTS to supply world’s largest passenger ship</td>
</tr>
<tr>
<td>14</td>
<td>TTS Ships Equipment busy with European contracts</td>
</tr>
<tr>
<td>15</td>
<td>New Airbus vessel equipped with unique TTS cargo access gear</td>
</tr>
<tr>
<td>16</td>
<td>TTS Marine ASA expands brazilian operations and gears up for shipbuilding boom</td>
</tr>
<tr>
<td>18</td>
<td>Sophisticated buoy-handling crane from TTS Marine ASA completes successful trials and commissioning aboard new multipurpose lights tender for Arabian Gulf</td>
</tr>
<tr>
<td>19</td>
<td>TTS Marine ASA wins conversion contract for cargo cranes aboard “Frio Hellenic”</td>
</tr>
</tbody>
</table>
We expect the shipbuilding market to remain fairly strong

AN INTERVIEW WITH JOHANNES D. NETELAND

Following education at the Norwegian School of Economics and Business Administration (NHH), Johannes D. Neteland (46) has been President and Chief Executive Officer of TTS Group since 1998. During that time TTS has expanded and with the acquisition of the former Hamworthy KSE, has become one of the largest suppliers of ships’ equipment throughout the world.

What are your views on the current state of the world’s shipbuilding market and how will this develop in the future? The shipbuilding market exploded in the second half of last year and has also continued very strongly this year. Some of the segments, where TTS has a strong position, have developed particularly well – I am then thinking particularly of car carriers and tankers. Due to high level of scrapping and continued strong demand, we expect the shipbuilding market to remain fairly strong in the coming years, even if we do not expect it to be as strong as it has been the last 6-8 months.

How is the TTS Group set up to handle the future demands of newbuilding requirements world-wide? The global trend has been that traditional shipbuilding has moved east to Japan, South Korea and China, with special emphasis on China during the last few years. TTS has accordingly established offices and companies in South Korea (Pusan) and China (Shanghai).

In South Korea we have a representative office with focus on sales and service of ships’ equipment. In China TTS has two companies - the Dry Cargo Handling Division has a joint venture company together with CSSC, named TTS Hua Hai Co. Ltd., which focuses on new sales of hatch covers and RoRo equipment. TTS also has a wholly-owned company TTS Marine Shanghai which sells and assembles marine cranes. Due to the two companies in China and representative office in South Korea, TTS has been able to increase market share in both countries during the past few years.

Many shipbuilders are now offering standard designs as a way of producing ships at cost-effective price levels. Is the TTS Group involved in this and can TTS also be flexible enough for owners of specialised vessels? Yes, this has been going on for quite some years. TTS has therefore developed standardised designs that can accommodate the yards that need cost effective models. But TTS has got a big and competent staff of engineers that can design any tailor-made piece of equipment that might be required.

How is the TTS Group looking to improve in-service back up to owners/managers who have TTS equipment onboard their ships? As TTS has become bigger, we have partly improved our presence around the world by establishing our own service stations as in Norway, Sweden, China, South Korea, and USA. But more important, we have established partners that can accommodate ship owner’s needs for service and spares in many more countries. We will continue to develop this service network in the years to come.

How has the TTS Group changed over the past year, especially with regard to the management team? TTS had a vision five years ago to develop a group of companies that was one of the three largest suppliers in the world in all market segments in which we were involved. Basically, we are there now. The management team has gradually developed as more companies have been merged into the group. The management group, as it is today, consists of very experienced people from the ship equipment industry. The last recruitment in the corporate management group was Mr. Ivar Hanson who started as Director for the Marine Cranes Division last June. He has, however, eight years of experience from TTS from before.
New hatch cover contract for “Super Panamax” class container ships

The Bremen-based office of TTS Ships Equipment GmbH is to supply lift-on/lift-off hatch covers for five new 8,200 TEU “Super Panamax” class container vessels contracted by Germany shipowner Peter Doehle Schifffahrts-KG at South Korea’s Hyundai Heavy Industries (HHI) in Pusan.

The hatch cover contract was clinched with the assistance of new hatch cover technology developed by TTS. The order is a breakthrough for the company as it enters the large container sector for the first time. The hatch covers will be manufactured with close co-operation between TTS Bremen and the Far Eastern joint venture TTS Hua Hai, Shanghai, whilst financing support will be provided by TTS Ships Equipment AB in Gothenburg.

Loads on the hatch covers will be dispersed through TTS’ new low-friction resting pads – TTS EverEst™ Optipads – which are fitted adjacent to stainless steel mating plates and enable more effective dispersal of the weight of both deck containers and the hatch covers themselves. The pads are easily replaceable and are located on the hatch covers, outside of the side plates on rest stools. The hatch covers, to incorporate as much high tensile steel as possible, will be lifted on and off the vessels during cargo operations by shore-based container handling gear. They can be stacked on adjacent hatch covers or on a specified hatch cover ashore.

The hatch covers will consist of some 56 panels of varying dimensions aboard each vessel. They will be sufficiently strong to enable between five and seven tiers of high-cube containers to be carried on deck, depending on their loads, size and location. The hatches are likely to weigh almost 2,000 tonnes in total.

The five giant container vessels, which are due for delivery in June, July, August, October and December 2006 are the largest ever contracted by Peter Doehle and are to be named Ambika, Anaisa, Bremen, Hamburg and Jork. The 25-knot vessels will have a length of 319 metres and a beam of almost 43 metres. They are to be built to Germanischer Lloyd class and will be registered under the flag of Antigua and Barbuda.

Peter Doehle, established in 1956, has a long relationship with TTS Ships Equipment GmbH in Bremen. One of Germany’s leading ship-owning groups, the company today operates a fleet of some 200 vessels comprising container ships, coastal mini-bulkers and bulk carriers up to Panamax size. Group companies today have almost 100 ships on order.
SOUTH KOREA IS NOW one of the world’s largest shipbuilding nations, with the respect of shipowners and managers throughout the world. One market sector particularly looking to South Korean yards for newbuildings has been pure car and truck carriers (PCTC), both Norway’s Leif Hoegh and Denmark’s AP Moller ordering such ships at Daewoo Shipbuilding & Marine Engineering (DSME) on Koje Island.

The Hoegh vessels, capable of transporting some 6,000 units have hull numbers 4439 and 4440 due to be delivered in February 2006 and January 2007 respectively. They are sister-ships to a series of five vessels, to be built at the same shipyard.

The Moller vessels, capable of transporting some 5,000 units, have hull numbers 4437, 4438 and 4441 due to be delivered in November 2005, March 2006 and January 2007 respectively.

From it’s headquarters in Gothenburg, TTS Ships Equipment AB plays an increasing important role in the world’s shipbuilding market, covering standard designs of various cargo access equipment as well as specialised requirements. This has been reflected this year with many newbuilding orders from some of the world’s largest shipyards.

Car carrier cargo access equipment for Hoegh and Moller

Under design, key components and installation supervision contracts, the TTS equipment comprises stern quarter and side ramps, internal ramps and covers, liftable car decks, doors, hatch covers and associated hydraulic machinery. The equipment, to be built of both high tensile and mild steel components, will be constructed in accordance with Det norske Veritas rules and regulations and will comply with all of the relevant safety conventions for such vessels. In addition, the stern and side ramps, movable decks and adjacent areas will be treated with special anti-skid polyurethane coating incorporating 1-3 mm “Dynagrip” stones.

The stern ramps for the Hoegh vessels will each weigh about 196 tonnes and are being designed to facilitate the carriage of heavy vehicles up to a total weight of 150 tonnes, with axle loads of 55 tonnes per four wheels. The ramps will be capable
NORWAY’S WILH WILHELMSEN has ordered a further two PCTCs to be built at Japan’s Mitsubishi Heavy Industries’ (MHI) Nagasaki Shipyard. The vessels are sisterships to two others for which Gothenburg-based TTS has already supplied cargo access equipment to the Nagasaki yard. The four vessels, designed by Barber Marine Consultants, part of the Wilh Wilhelmsen group, will have capacity for 6,400 units.

The vessels, built to comply with Det norske Veritas’ latest car carrier class rules, are 200 m in length, longer than previous PCTCs ordered by Wilh Wilhelmsen. The 6,400 unit figure is calculated using the “RT43” dimensional standard, which allows for an overall storage area of 8.5 m²/car and is based on vehicle dimensions of 4.125 m x 1.550 m.

Vehicles will be loaded and discharged via a stern quarter ramp or a side ramp, with entry on to Deck 5. Moveable ramps allow internal access for vehicles to all twelve decks.

The equipment comprises the stern quarter and side ramps, and the internal ramps together with the accompanying hydraulic and electrical systems. The specification requires capacity of 170 tonnes (heavy load wagon type Samson) on the quarter ramp, and a maximum of 22 tonnes on the side ramp. Each set of cargo access equipment will weigh approximately 635 tonnes. TTS Ships Equipment will also supervise installation aboard the vessels which are due for delivery in June 2005 and June 2006 respectively.
Car carrier success in Poland

THE POLISH SHIPBUILDING industry is also a regular supplier of PCTC to the world’s market – Poland’s Gdynia Shipyard recently winning an order to build a series of four PCTCs, each capable of transporting some 2,100 units, for Ray Car Carriers, Israel. This new contract for TTS Ships Equipment follows other contracts from the same owner to be built also in Gdynia, the previous ships being of a larger design, carrying some 6,000 units. The TTS equipment comprises quarter and stern ramps, internal ramps and covers, liftable car decks and doors. The cargo access equipment, having a gross weight of some 620 tonnes, is to be delivered and installed by February, May, and November 2005. In addition, TTS will supply all the necessary electrical and hydraulic control systems. All the equipment is designed to adhere to the rules of Det Norske Veritas, and will also comply with all of the relevant safety conventions for such vessels.

Cars will enter/leave the vessels on Deck No. 4 via either a stern ramp, located on the vessel’s port side or a quarter ramp, lowering onto the vessel’s starboard side, having a load capacity of up to 70 tonnes.

The wire-operated quarter ramp (and combined weather-tight door) is constructed in three sections, in total weighing some 107 tonnes. Flaps will be provided at the forward and aft ends and between section 1 and 2 (if necessary) to provide smooth transition between the ramp and ship, and quay and to distribute the load forces between the ramp and the quay. The 20.3 m long two-sectional stern ramp is also hydraulically operated and will provide weather-tightness to the stern opening.

Hydraulically-operated movable ramps are located on Deck Nos. 2 and 6, the ramps to be hinged to the upper deck they serve and supported by the lower deck. There is also a hydraulically-operated hoistable ramp to Deck No. 3 allowing passage to Deck No. 2, and a similar ramp and cover in Deck No. 4, this ramp and cover to be hinged to Deck No. 4. There is a pontoon-type liftable car deck on Deck Nos. 3 and 5. TTS is also supplying two hydraulically-operated bunker doors, on the vessel’s port and starboard sides.

Egyptian navy order

SHOWING THE FLEXIBILITY of being able to deliver cargo access equipment for specialised ships, TTS Ships Equipment recently won another contract for cargo access equipment from German trading house Munchmeyer Petersen Marine (MPM), which is providing technical assistance in an Egyptian navy support craft expansion programme. A full set of cargo access equipment is to be installed on board a 6,000 dwt RoRo vessel (Hull no N28) under construction at Egypt’s Alexandria Shipyard. She is a sister ship to a similar RoRo (Hull No. N27) which was delivered in 2003. The second ship is due for delivery by the end of 2006.

The equipment, which will be delivered during the second half of this year, will comprise a slewing stern ramp, a stern door, two cargo lifts, a lift cover and hoistable car decks, all weighing some 450 tonnes. The contract also provides for the delivery of design, fittings, hydraulic and electrical parts and supervision of the fabrication and installation of all items with the exception of the stern door and car decks.
TTS Marine ASA expands Chinese operations and becomes sole owner of joint venture

Leading Oslo-listed marine equipment and cargo handling specialist TTS Marine ASA has raised its Chinese profile by buying National Oilwell’s 50% shareholding in TTS Hydralift Co Ltd for US $100,000. Shanghai-based TTS Hydralift, jointly owned 50:50 until now by the two companies, is engaged in the sale, service and installation of cranes in China’s rapidly expanding shipbuilding sector.

The company’s sales are forging ahead as existing Chinese shipbuilders expand their facilities and new shipyards come on stream in China’s drive to become the world’s largest shipbuilder by 2015. TTS Hydralift achieved sales worth NOK 35 million (US $5.13 million) during 2003 but recorded sharply higher figures of NOK 70 million (US $10.26 million) during the first five months of this year. The company expects to achieve total sales during 2004 of between NOK 120-150 million (US $17.5 - $22 million), a figure that could equal total sales since TTS Hydralift operations began in 2001.

TTS Marine ASA President and Chief Executive Officer Johannes D Neteland is clearly confident about the future. “We are the second largest supplier of cranes for tankers that are built in China, with a market share of around 35%. Our ambition is to increase this share to 45-50%. We also supply cranes for container and bulk ships”, Neteland explains, “and this year our sales in China could well represent almost a fifth of our total turnover”.

However, there is plenty of other scope for TTS to expand its Chinese business. Also a leading designer and manufacturer of hatch covers and RoRo cargo access equipment, the company directs these activities in China through the 50:50 joint venture TTS Hua Hai Ships Equipment Co Ltd, also based in Shanghai. TTS owns half of this joint venture company equally with CSSC

TTS introduces a new way of mooring

TTS has developed a new winch bollard (TTS WB) mooring system, which will make mooring operations easier and safer than the more conventional systems currently available. The conventional system utilises a fixed bollard and wrapping drum or capstan, all of which can be replaced by the TTS Winch Bollard.

The TTS Winch Bollard can hold mooring rope as a normal bollard, but can also tighten and release the mooring line in a controlled and safe way. The TTS system does not slip mooring ropes as commonly happens with a wrapping drum. Normally two people are utilised to handle the mooring operation, but with the new TTS WB, this is reduced to single operation, with enhanced safety. This is due to the TTS WB system reducing the speed when the mooring operation becomes tight, and operators do not stand in direct line of the mooring line.

The TTS WB system also takes less space than a normal mooring system. TTS WB can replace the different steel bollards and is available in hydro-electric and electric versions.
During June this year Mr Wu Banggou, Chairman of the Standing Committee National People’s Congress Peoples Republic of China, visited Norway, when TTS Group’s Kjetil Roksvåg had the opportunity to discuss the development of the Chinese shipbuilding industry, as well as TTS Group’s participation in the Chinese market.

PHOTO: ODDMUND LUNDE

as a result of a 2001 transaction in which it acquired Hamworthy’s division for dry cargo handling equipment.

Last year, TTS Hua Hai posted sales of NOK 93 million (US $13.64 million) and claims a market share in Chinese new sales of about 75%. This robust performance seems likely to continue with encouraging signs through the first half of 2004.

“In our strategy for the businesses in China, we are focusing on reinforcing the TTS name through controlled growth, good profitability and high quality deliveries”, the company’s CEO, Mr. Neteland declared.

PHOTO: ODDMUND LUNDE
The IPSI® (Improved Port Ship Interface) was a result of an EU green paper to relieve the future predicted pressure of road transportation. The IPSI® project was started in 1996 to look at ways of transferring transport of goods from land to sea. TTS Ships Equipment played an integral role in looking at this problem since inception. At the same time the BASE PORT project was underway, integrating the theory of IPSI® into the development of port facilities and operation.
His led to the next stage – the INTEGRATION project, which took onboard all the lessons learnt from IPSI® and integrates them into a ‘demonstration’ project to develop an economic door-to-door short sea shipping service using the RoRo concept. TTS has now developed the four main components – Cassettes, Automatic Guided Vehicles (AGV’s), trailer trestles and automatic lashing curbs.

The AGV is designed to transport cassettes by a “cassette-tunnel”, with a total weight up to approx 100 tonnes, from port to and from a ship. A cassette, loaded with four teu’s of 20 tonnes each (totally 80 tonnes), is used to determine the lifting capacity. Another alternative is to use steel-slabs – the weight is usually the same – about 80 tonnes.

As the cassettes are placed in rows, the AGV’s will form a ‘train’. This is accomplished by a “virtual connection”. One AGV can, at any time during the train-formation transport, leave the formation and go to another location.

The AGV has two height levels. The lower level is used when positioning under a cassette. When the AGV is positioned in the center under the cassette, the AGV is raised to it’s upper position and the cassette is loaded on top of the AGV. When the first AGV arrives at the cassette row, it is lowered down and starts moving through all the cassettes, until reaching the specific cassette, which is to be lifted. The next AGV follows the same procedure. When all AGV’s are in position, they are raised and the whole cassette row is loaded on top of the AGV’s.

The AGV is move around within the harbour area by means of dead reckoning and navigation-scanners, verifying the position by cross-bearings.

There are two rotating lasers on each side of the AGV, which are only used as navigation-scanners, locating reflections in the harbour area. The AGV’s are also equipped with two SICK-scanners located in the front and rear end. These are used as security-scanners, but can also be used as navigation-scanners onboard the ship.

A fully loaded ship arrives and the AGV’s are working separately. The system sends a signal to the AGV’s to start unloading the ship. The first AGV arriving at the ship will be the locomotive in the train formation. When the locomotive arrives to the stern ramp, the cassettes and kerbs are scanned by the SICK-scanner. The AGV’s drive up to a pre-destined cassette row, lowers down and drives into the tunnel.

The locomotive drives through the cassette row until the last one is reached. When all AGV’s have reached their positions, they are raised and the cassette row is loaded on the AGV’s. The automatic lashing is opened at the same time as the cassettes are lifted by the AGV’s.

The IPSI® AGV leaves a SECU (StoraEnso Cargo Unit) overviewed by the TTS supervisor Kent Ulrikz.

The IPSI® Kerb is key component for the automatic lashing of both IPSI® Trailers Trestles and IPSI® Cassettes.
They leave the ship and when approaching their various destinations, the train formation splits up, either in new smaller formations or as single vehicles. After reaching their final destinations in the import-area, the AGVs are lowered to be able to unload the cassettes and leave the area.

At the same time as the AGV’s departure, the automatic lashing is activated and the cargo is secured onboard. The AGV’s drive off to pick up the next cassette row.

New RoRo and RoPAX vessels have been designed by FINCANTIERI, IZAR and CETENA to satisfy a wide range of speeds (10-55 knots) and of cargo volumes (80-1,300 teu), keeping in mind all possible terminal types, from the smallest and less equipped ones, to the biggest and fully automated.

One example of the above described concepts is the biggest RoRo ship, carrying 1,500 teu with a speed of 20 knots, designed to compete with the traditional container ships used for feeding. The loading/unloading cycle for this vessel in a fully AGV automated RoRo terminal equipped with an external fixed ramp has been evaluated as approximately six hours, enabling a single terminal to host up to four ships every 24 hours with a yearly handling flow of more than 2m teu’s.

It has been estimated that the increased efficiency could allow to perform the above mentioned 2m teu flow, which currently needs 25 traditional container vessels operating in LoLo terminals, with a fleet of 14 RoRo ships operating in the above described ship-terminal system.

Even if the automated RoRo terminal is the solution which allows the biggest cargo flows, semi-automated RoRo ship-terminal systems based on human operated cargo handling, still using cassettes, can be competitive when the terminal is equipped with a fixed ramp allowing the simultaneous loading/unloading operation of two decks. This kind of terminal, when serving smaller RoRo ships with a 350 teu capacity, could host up to three ships a day, with a total yearly flow of 750,000 teu’s.
Increasing shipyard productivity at Brodosplit Shipyard

Shipyards continuously strive for profitability – through higher productivity and quality. Robot production systems from TTS will in the near future cut profiles and weld micro panels – contributing to a higher productivity and quality at Brodosplit Shipyard. The US$4million contract – is awarded based on performance by TTS production systems previously supplied.

TTS HANDLING SYSTEMS is currently in the progress of designing and setting up several robot cutting and welding systems at the Croatian shipyard Brodosplit. Won in the face of stiff international competition, the US$ 4 million deal comes as part of the second stage of the shipyard’s modernisation programme. TTS, having previously supplied equipment to the yard during its initial modernisation phase, will supply three separate lines to the shipyard by the end of this year (2004) – for robotised cutting, welding and assembly of steel sections.

The contract specifies one profile cutting line, two robotised micro panel lines and one mechanical micro panel line. The first of these, the profile cutting line, is similar to one previously installed at the yard by TTS.

The TTS robotic micro panel line or web welding line is designed for welding small ship components such as webs and girders. It consists of a gantry-mounted robot, together with welding power source and robot control system.

The geometrical information about the webs may be used integrated with the shipyard’s computer-aided design (CAD) system and is in that case imported to the robot software to facilitate the welding process. However, the operator can define his own webs and girders, independent of a CAD system, a useful feature for one-off or rushed jobs. Each web is recorded in the production database and reports can be generated at any time, specifying for instance the elapsed time for producing each web.

The mechanical micro panel line is designed for the production of various types of webs and components. The line actually consists of two parallel lines, giving maximum flexibility for different sizes and types of components.

TTS has also delivered similar lines for prefabrication of webs to other yards including Aker Warnow Werft in Germany and Port Weller shipyard in Canada. The production line system is the result of over three decades of technical know-how involving more than 200 production lines and heavy load handling systems – supplied to over 100 shipyards on a worldwide basis.
TTS Ships Equipment busy with European contracts

DURING LAST YEAR Dutch shipowner Wagenborg Shipping BV placed an order with Volharding Shipyards, Harlingen, for two new 8,600 dwt RoRo vessels for delivery during this year (2004). The first in the series, the Balticborg, was delivered during June this year and the second vessel, the Bothniaborg, will be delivered during November. The vessels are designed for Kappa Packaging’s StoRo carriage into the Baltic, from northern Europe (Germany, Belgium and UK).

TTS Ships Equipment won the order to supply the RoRo equipment, including stern door/ramp, ramp cover, side-hinged door and all the necessary hydraulic equipment.

The stern ramp/door and ramp cover are designed for loads of:
- Fork lift truck: Axle load 15.8 tonnes, four wheels
- Mafi-trailer: Axle load 27.5 tonnes, four wheels
- Bogie load 55 tonnes, two axles
- Road trailer: Three axles (20t-20t-10t) Axle load 20 tonnes on pneumatic tyres
- Tugmaster: Axle load 35 tonnes

The hydraulically-operated stern/ramp door has a length of 16 metres (including outer flap) and a total width of 18.6 metres. The width of the driveway when entering the ship is 17.3 metres with the width of the driveway to the main deck being 12.7 metres. The 47 metres long, hydraulically-operated ramp cover is positioned in the main deck, above the ramp between the main deck and the tank top.

Also supplied by TTS are the two hydraulically-operated weather-tight side shell doors of side-hinged type position on both sides of the ship at main deck level. Both doors will be utilised for bunker supply and pilot entrance.
The Airbus A380 is the world’s first twin-deck, four-aisle aircraft and will ultimately be marketed in both passenger and freight versions. As of the end of March, Airbus had received a total of 129 orders for the new aeroplane, the first deliveries due in 2006.

New Airbus vessel equipped with unique TTS cargo access gear

THE SHIPMENT OF AIRCRAFT COMPONENTS from European manufacturing sites to the assembly plant in Toulouse is a major logistical challenge. The fore and aft fuselage sections are to be shipped from Hamburg, the tail section from Spain, the cockpit and central fuselage from St Nazaire, and the wings from Wales.

On arrival at Bordeaux, the “Ville de Bordeaux” will berth with her stern aligned to a 150-metre pontoon. The components will be rolled over the pontoon and on to two semi-submersible barges. From there, they will be shipped up river. There, the barges will enter a dock in which the water depth can be adjusted to enable the barges to discharge their cargoes on to road transporters for the journey to Toulouse.

The 5,200 dwt RoRo vessel “Ville de Bordeaux”, built in Jinling Shipyards, China, has been designed for the carriage of large aeroplane components. The 154-metre vessel has extra large holds for the components and a system of internal ramps, doors and hoistable decks for the shipment of outsized parts.

TTS Ships Equipment has been heavily involved in the design of this vessel with specialised cargo access equipment. The extraordinary configuration and size of the aircraft parts constituted a particular challenge to TTS. However, according to Deputy Managing Director Stellan Bernsro, “TTS has developed a unique cargo handling system for this highly specialised vessel. We are extremely pleased with our design and its installation on board. We believe that the highly advanced automated cargo handling system will enable the “Ville de Bordeaux” to fulfill her challenging role, delivering Airbus components from European manufacturers to the Toulouse assembly plant, for many years into the future”.

The TTS cargo equipment comprises a range of key components, including a stern ramp and door, a ramp cover on the main deck, a hoistable car deck and ramp, a hoistable trailer deck and ramp, pilot and bunker doors and hatch covers. Mooring cylinders and hydraulic equipment have also been supplied by TTS.
TTS Marine ASA expands brazilian operations and gears up for shipbuilding boom

TTS Marine ASA, leading supplier of cargo access, crane and materials handling to the shipping industry, has clinched several new crane orders as a result of Brazil’s recently revitalised shipbuilding and offshore construction market. The new contracts are particularly significant for TTS because they represent the company’s first step into this exciting market place with opportunities for the supply of cranes, materials handling and cargo access equipment.
The new contracts include crane installations aboard three newbuildings for Farstad Shipping, two new vessels for Aker Promar and a further two ships for Danish company Maersk. The cranes themselves range from large units capable of lifting 10 tonnes at 16 metres outreach to smaller units with capacity to hoist 10 tonnes at 12 metres, 10 tonnes at 10 metres, four tonnes at 16 metres and two tonnes at 16 metres. TTS Marine ASA will also supply davits for the Maersk vessels, which will operate in Brazil’s offshore sector. These cranes will be capable of lifting work boats, rescue boats and routine stores and supplies.

The orders come at a significant time, just as the Brazilian authorities have announced a package of measures to breathe new life into Brazil’s shipbuilding and offshore construction industry which has suffered various setbacks in recent years. Brazilian builders were second only to the Japanese in output terms thirty years ago but in the intervening period, the country’s shipbuilders have struggled to remain competitive.

Now, though, the country’s new shipbuilding strategy, which has been formalised in new legislations, should provide a huge boost for the country’s shipbuilders and comes at a critical time for both the shipping and offshore industries. In shipping, most of the world’s main ship builders are fully booked until 2007 and beyond whilst the quest for new supplies of offshore oil provide further stimulus in the offshore sector.

Moves to reinvigorate the sector have been under discussion at government level for some time and leading ship owners have been waiting for the outcome before signing new ship contracts at the country’s shipyards. Now, however, it is envisaged that longer credit terms, favourable concessions on interest rates and an influx of foreign investment, notably from Singaporean shipbuilding companies, will stimulate a flurry of new orders that could create as many as 25,000 jobs in the shipbuilding and offshore construction sector.
Sophisticated buoy-handling crane from TTS Marine ASA completes successful trials and commissioning aboard new multipurpose lights tender for Arabian Gulf

Trials of a new sophisticated buoy-handling crane from leading marine equipment supplier TTS Marine ASA, part of Norway’s TTS Group, have recently been successfully completed, first in Bergen, Norway and then at Damen Shipyards’ Scheldepoort facility in Vlissingen. The crane is now installed aboard the new multipurpose light tender vessel “Relume”, specially designed and built for the Middle East Navigation Aids Service (MENAS) which is responsible for navigational safety in Arabian Gulf waters.

The electro-hydraulic crane, with a safe working load of 25 tonnes at an outreach of 20 metres, has been designed and built to allow maximum flexibility and will enhance the new tender’s multipurpose field support role. Located on the starboard side of the 82-metre 3,529 grt Relume, the type GPC0 1250-2520 crane will be capable of handling navigation buoys of all shapes and sizes. Equipped with two hooks and winches which can be operated independently or in tandem, the crane is extremely flexible and also features level-luffing, which assists in buoy positioning work on the ship’s after deck.

The 82-metre “Relume”, the third MENAS lights tender to bear that name, was christened by Mrs Chantal Mitropoulos, wife of IMO Secretary General Efthimios Mitropoulos at a special ceremony in Scheldepoort on July 6th. She will be operated by MENAS in the western waters of the Gulf in an area ranging from in western Gulf waters – from Kuwait in the north to Oman in the south. She is the third tender that has borne the name Relume and replaces a 25-year-old UK-built lights tender which has being phased out.
TTS Marine ASA wins conversion contract for cargo cranes aboard “Frio Hellenic”

TTS’ Bergen-based crane division has won a contract from Greek reefer vessel owner Laskaridis to convert two cargo cranes aboard the owner’s “Frio Hellenic”, a geared refrigerated vessel with pallet and container capacity built at Ukraine’s 61 Kommunar Shipyard in 1999.

The main structure of the original cranes will be maintained, as will some of the principal components. However, TTS Marine ASA will rebuild the cranes’ hydraulic and electrical systems as well as installing a range of additional safety features. Conversion is expected to take 3-4 months and the TTS components and work will be guaranteed for a period of up to 18 months from delivery.

Various new components will be specially built for the modification process including a pump stack incorporating three pumps and fittings, a cardan shaft, a main valve block, hoses and fittings inside the crane house and new load control blocks for all movers governing hoist, slew and luff. TTS Marine ASA will decide whether some other new components are required, such as a winch motor and an increase in tank capacity, as the work progresses.

The conversion work will result in some changes to the cranes’ performance. Slewing speed will alter, for example, and when the cranes are operating in tandem, both hoist and luffing speed will be reduced by some 15%. TTS believes this will facilitate synchronisation and will result in more reliable twin operation.

New safety measures will include emergency stop buttons inside each crane cabin, thermistors for the hydraulic pump motor to monitor winding temperature and stop the pump motor if it overheats, a range of limit switches and low oil level sensors and oil temperature gauges. The cranes will be tested, both onshore and on board ship when the work is completed.

The 20-knot “Frio Hellenic” is a 499,546 ft³ reefer vessel which currently operates within the Seatrade reefer pool. Only five years old, she is a modern vessel with capacity for refrigerated pallets and 90 twenty-foot containers (TEU) or 45 forty-footers (FEU) in her holds. On deck, she has capacity for 158 TEU or 72 FEU and six TEU.