Kalmar is part of Cargotec Corporation

Kalmar around the World

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Kalmar introduces its new generation terminal tractor

An *i*con of 21st century container handling

An icon is coming

Kalmar has ushered in a new era in terminal tractor design with the introduction of its icon series, which builds on the success of its innovative i-model range introduced to the market in 2006. Featuring a CAN-BUS control system, the icon generation is characterised by superior operator comfort, outstanding performance and easy maintenance and service.

Developed in cooperation with drivers and ergonomics specialists, the operator cabin of the *i*con TT618i, TR618*i* and TRL618*i* models offer a significantly enhanced working environment. Improvements include asymmetrical rotating seat – a flexible and adaptable seat and a fully adjustable steering column, making it easier for the different size drivers to access and work in the cabin. A number of dimensional and layout upgrades provide more working space and better visibility.

The CAN-BUS control system, which integrates all functions in a single system and shows full operational and service data on one display panel, makes tractor operations faster, safer and simpler. Its diagnostic capabilities also assist in service and maintenance planning, saving time, effort and cost.

Says Timo Matikainen, General Manager of Kalmar's Trailer Logistics:

"Productivity is vital to port operations and *i*con is Kalmar's key to achieving that via enhanced performance, cost efficiency and superior design. In operational terms, *i*con out performs other terminal tractors with more productive and easier maintenance afforded by its CAN-BUS system and combined with its excellent manoeuvrability and pulling power. Backed up by Kalmar's global parts and service network, this range is truly a cut above the rest."

The *i*con range offers a small turning radius, which makes the tractor easy to operate in cramped spaces. It also features the latest EU-stage engines – Volvo TAD750VE and Sisu Diesel 74CTA – which provide much greater torque, as well as the high pulling capacity required for heavy ramp driving. Automatic gear control ensures soft and smooth gear changes, while continuous traction is enabled by the new, stronger Dana RTE15822 transmission.

More information:
Timo Matikainen
Tel. +358 40 555 1659
timo.matikainen@kalmarind.com

Kalmar
Make things easy

Vietnam thinks green

Saigon Newport Company (SNP) in Vietnam has awarded Kalmar a landmark contract for ten E-One RTGs, destined for its Tan Cang-Cat Lai container terminal. The agreement is the latest in a succession of orders from environmentally conscious terminal operators across Asia for this all-electric RTG.

Reachstacker to VICT

Reflecting Asia's growing utilisation of inland waterways for container transportation, Kalmar has delivered a DRF450-75S5XS reachstacker specially engineered for barge handling to Vietnam International Container Terminal (VICT). The reachstacker is the first of its kind working in Vietnam.

Tractors for Jebel Ali

DP World has placed an order for 84 Kalmar PT122 terminal tractors, due for delivery this summer to the new Terminal 2 expansion phase in Jebel Ali Port. The partnership between DP World and Kalmar stretches back to the early 1980s when the first terminal tractor was delivered to the port operator. DP World now has hundreds of units in use.
www.kalmarind.com/news room

Asian debut for Fleetview

The latest addition to Kalmar's suite of automation products, the Fleetview fleet management system, has received its first major order in Asia. Malaysia's fastest growing container terminal, the Port of Tanjung Pelepas, has contracted Kalmar to outfit its sizeable RTG fleet with Fleetview to increase productivity and optimise machine deployment. The RTGs are already equipped with Kalmar's Smartrail®, an automatic steering and container position verification system.

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An icon is coming

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Hey newcomer, you look great. Who are you?

To find out, see page 10.

Shuttle Carriers® to Virginia

The first units of an order for 20 Kalmar SHC250H Shuttle Carriers® are up and running at APM Terminals' new state-of-the-art container terminal on the Elizabeth River in Portsmouth, Virginia. The remaining units are due for commissioning between now and November 2007. Kalmar PES will provide local machine support for the 50-ton machines equipped with extendable twin-lift spreaders. APM Terminals Virginia—expected to be fully operational by 2008—is the largest private terminal in US history.

Kalmar delivers its 1,000th EC handler

The one-thousandth empty container handler was recently delivered. Kalmar's first empty container handler was developed in the early 1990s, and since then, there has been a steady increase in sales. Today, approximately 250 machines are produced annually.

Kalmar
Make things easy

Moving forward together

Kalmar has continued over the last few months to pursue its strategy of getting closer to you, our customers. Our goal is to build ever stronger partnerships that equip us to better meet the mutual challenges that lie ahead.

Growth in global container volumes continues unabated. While this is good news for our business, it also poses some interesting challenges. To meet the demands such growth imposes on the global port industry, terminals big and small, on all continents, need to invest more than ever in smart handling solutions that are not only productive and cost-effective, but also safe, secure and green.

This is where Kalmar can help you – and indeed, we've been busy investing in the ability to do just that by expanding our global and local presence, and ploughing resources into ongoing research and development. All this results not only in innovative solutions for your cargo handling, but also gives you access to a dedicated partner who is at your disposal 24 hours a day, across all time zones, in every corner of the globe.

Kalmar continues to develop its network through both organic growth and acquisitions, although the first half of this year has been particularly marked by the latter. In the last six months or so we have acquired no fewer than four companies, giving us a greater presence in key geographical areas such as the Balkans, the Mediterranean, India and even our traditional strondhold of Scandinavia. This expanded network means that we are in a better position to work together in longterm partnership with our customers, whether they be large global terminal operators or small local ports.

An expanded geographical presence is not all we gain from our acquisitions. They also give us access to different concepts and expertise. Kalmar is always open to new ideas and we welcome fresh talent. At the same time, however, new products and services that come under the Kalmar brand must meet our global quality standards. We are well aware of the fact that quality is a continuous challenge and needs continuous attention, so our pledge to you is that, however big we become, we will not compromise on this core value.

Christer Granskog
President and CEO
Kalmar Industries

Kalmar around the world

Editor: Aija Kalander
Kalmar Industries, P.O.Box 387, FIN-33101 Tampere
Tel +358 3 2658 111
aija.kalander@kalmarind.com

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On the move to Hamburg

Last year, German container terminal operator HHLA awarded Kalmar a revolutionary contract for the commissioning of automated equipment and related technology. Kalmar has since been diligently working to help the customer convert its Container Terminal Burchardkai from a straddle carrier to an automatic stacking crane (ASC) operation.

The team on-site in Hamburg is growing rapidly. From left to right: Tuomas Kamunen (JTA), Jani Immonen (TAS), Norman Wittorf (ASH), Gerard Tollenaar, Jan Grinwis, Harri Kiikeri, Kari Ronni, Jarmo Seppa (TAS), Marian Grinwis, Juha Koivisto (JTA) , Terjo Kallionimie, Ari Paronen, Tomi Tuulkari, Jukka Matilainen.

In phase one of the conversion, Kalmar will equip the first five yard stacking blocks with 15 ASCs, along with their automation and control systems, during 2007 and 2008. Recently, the first three cranes arrived in Hamburg, marking an important milestone in the project. Kalmar Project Manager Bert van der Velden reports.

In the beginning of 2007, the first three Kalmar ASCs sailed into the Port of Hamburg destined for Container Terminal Burchardkai. This development means that the testing of the cranes and automation systems will gradually be transferred from Kalmar offices and factories directly to the terminal. The process of integrating the equipment with the automated control systems means that the on-site Kalmar team in Hamburg is steadily growing to ensure that the project proceeds smoothly.

After a four-day sea transport by barge and tugs, the three cranes arrived safely in Hamburg. The journey started in Gdynia, Poland where the cranes' parts were fully assembled and erected before being shipped. Kalmar chose to erect the first cranes at a different location rather than the final location at CTB to minimize time at the customer's premises and limit the downtime for commissioning the new yard block. The next series of cranes will be assembled on-site at CTB because the commissioning and testing time of the next blocks will be shorter due to the knowledge gained from the experience of the first three cranes.

On-site Hamburg

The next three cranes have already arrived in Hamburg and are being erected, bringing the total number of ASCs at CTB to six units. Towards the end of this year, there will be 12 cranes erected and under testing sequentially.

Now that the cranes are on-site, one really gets a good impression of the size of the units. The bigger outer crane—with a rail span of 41 metres (135 feet) and total height of 33 metres (108 feet)—is capable of passing the two inner cranes which are at a rail span of 31 metres (102 feet) and a height of 27 metres (89 feet).

With the arrival of the cranes, other activities on-site are under way as well. Kalmar has started setting up the IT infrastructure and power cabling between the substations and the crane blocks. Installation has also begun on the cabling within the interchange areas itself where the containers will be handled to and from straddle carriers and road trucks.

The construction site looks like a 'little' Kalmar factory, and it is growing every day. The daily operation is under the responsibility of Mr. Jan Grinwis, Kalmar's CTB Site Manager. Jan—with his team on-site—makes sure that the terminal stays well-organized and that the different stages like the erection and commissioning of the cranes, the buildings and infrastructure system installations, testing of the subsystems, and integration of the project's entire system are implemented. In addition, he also keeps notice of the on-site safety procedures, is the daily customer contact person and organizes weekly progress meetings with CTB.

Safety precautions and regular communication with the customer is very important because the location of the project is literary in the middle of a container terminal operating at full swing. Therefore, operational procedures have to be discussed in close cooperation with CTB to minimize disturbances of the container handling process as well as to work safely.

Project Organization

The project organization itself is currently at its full size. Engineering stages are being finished while testing and commissioning phases are being introduced at all areas. The team of Kalmar people, excluding subcontractors, who are currently working on the project is close to 40 people. Project teams are located in Germany, Finland, The Netherlands and Poland. This requires close cooperation and communication between teams, usually carried out by meeting face-to-face or via video conferences.

The project management team is travelling from one location to another coordinating the work of each team and with the customer. There is one general project manager and several subproject managers each responsible for a particular discipline e.g. mechanical systems, electrical systems, automation systems, order to payment, quality control, site management and documentation. The project management team reports to the steering group board, represented by the involved Kalmar Division Managers.

The focus of the project is to transfer more and more resources this year to the customer's premises in Hamburg, but a close link to Kalmar's offices and factories will be maintained.

New test facility

This spring, Kalmar launched a state-of-the-art automation test facility to better aid the integration of its intelligent applications with its customers' container handling equipment and terminal operating systems. The facility was especially designed and built to test the software and automation systems developed for the CTB project. These systems include the communication to customer's terminal operating system, block control servers, remote control operation, crane control system, and failure notification and data collection systems.

A computer simulation of a block stacking area with three ASC cranes was also engineered to represent the terminal layout as it has been designed in Hamburg. Using the ASC simulator, Kalmar can test the operation of the machine controls and the supervisory control system, which is responsible for commanding the cranes. For example, the simulator will test the routing of the three cranes in the block, anti-collision between cranes and obstacles, remote control operations, and operations in the transfer areas between straddle carrier and road trucks. Faults can also be simulated to verify that the system is reacting accordingly.

Mr. Pekka Ranta, Test Manager for the automation systems in Tampere, Finland, explains:

"With this setup, we are able to test many cases that will occur in the real system in Hamburg beforehand, and also we use this environment to further develop our software. It is a very valuable platform to test our system when there are no moving cranes yet. Also, new software releases are tested first in the simulation environment before being tested on real cranes."

In the second half of this year, Ranta will move to Hamburg to manage the on-site integration of the automation systems.

Together with CTB, Kalmar is working towards and anticipating the upcoming Factory Acceptance Test, which requires that the automation systems be successfully tested prior to handover of the installed system in Germany.

More information:
Bert van der Velden
Tel. +31 10 2946718
bert.van.der.velden@kalmarind.com

Pictured are the first Kalmar automatic stacking cranes for HHLA's CTB which have been unloaded and placed on the rail tracks in Hamburg. Kalmar's new automation test facility in Finland will play a key role in streamlining the integration of the cranes' control systems.

Leading the way in terminal automation with launch of new test facility

Kalmar has designed and built a state-of-the-art automation test facility to better aid the integration of its intelligent applications with its customers' container handling equipment and terminal operating system.

Testing the control systems prior to delivery will enable Kalmar to troubleshoot possible technical problems before conducting field tests, thus helping to streamline the process of automating a customer's operations.

The new facility—located in Kalmar's Tampere, Finland factory—will first test the automation and control systems developed for the 15 automatic stacking cranes (ASC) it is scheduled to supply HHLA's Container Terminal Burchardkai (CTB) during 2007 and 2008. The Port of Hamburg's biggest container terminal operator plans to increase its handling capacity from 2.7 million TEU in 2005 to 5.2 million TEU by 2015.

Crane block simulator

To test the automation applications developed for the CTB project, a computer simulation of a block stacking area with three ASC cranes was created to represent the terminal layout as it has been designed in Hamburg. Using this simulator, Kalmar can test the operation of the machine controls and the supervisory control system, which is responsible for commanding the cranes.

The crane block simulator can also be used to train operators on the remote control systems for loading and unloading trucks at the landside operation. At CTB, the crane operators will be located at the terminal's central control tower where they will utilize the spreader and overhead camera systems to monitor tasks.

Supervisory control system makes its debut in crane stacking automation

For the first time in the container handling industry, Kalmar will use a supervisory control system – a typical solution for the process industries – to manage CTB's crane blocks. The control system will distribute and implement the job orders from the terminal operating system safely, effectively and economically. It will also send back real-time information about the cranes, container stacks and ongoing events. Sophisticated measurement systems will feed information to the supervisory control system, which with high computing power makes decisions for job selection, routing and collision avoidance.

Automation for tomorrow

Although in its early phase, automation has already proven its worth when resolving a number of terminal operating dilemmas – from increasing productivity needs and addressing labour shortages to controlling costs and fulfilling environmental responsibilities.

In the future, Kalmar will continue to embrace automation in its ongoing research and development efforts, and maintain its position as an innovative, global equipment provider.

Spring 2007 has seen Kalmar enthusiastically pursuing its longterm strategy to get closer to its customers through a series of well-chosen acquisitions in key geographical areas. The idea behind this expansive business plan, says Kalmar CEO and President Christer Granskog, is to ensure that both existing and potential customers view Kalmar as a reliable, dedicated and accessible business partner.

Up close and personal

Recent Acquisitions
In January, Kalmar acquired Slovenia-based service contractor Tagros d.o.o., which provides general maintenance for rubber-wheeled container handling equipment and industrial forklifts at the Port of Koper. The acquisition has provided Kalmar with a valuable opportunity to build up its service and sales activities in Slovenia and the Northern Balkan Peninsula.

Just one month later, in February, Kalmar announced the strengthening of its North American presence with the acquisition of Port Equipment Service, Inc (PES) in Portsmouth, Virginia, where it has also recently been awarded a major Shuttle Carrier® contract. This acquisition has expanded Kalmar's service business, strengthened its position in US ports, and created new relationships and opportunities with intermodal terminals.

Other developments this year have also seen reachstacker, heavy forklift and mobile crane producer Indital Construction Machinery Ltd (Indital) of Bangalore added to the company's portfolio, bringing manufacturing capabilities to the increasingly important Indian market. Kalmar Industries first established its own subsidiary company in India in 2005, through the acquisition of 51 percent of Indlift, which had been the agent for Kalmar products in India since 2000.

The perfect partner
Kalmar's expansion strategy is nothing new. These latest acquisitions form part of a longterm business plan that has already proven a great success for both the company and its customers. Last year, too, saw a flurry of acquisitions – the CVS Ferrari Group of Italy, Belgian distributor Catracom and US crane services specialist East Coast Cranes and Electrical Contracting Incorporated, to name just a few (see related box story). In fact, says Mr Granskog, there have been many such acquisitions over the past few years and there are likely to be more in the years to come, as Kalmar bids to be the partner of choice for ports, terminals and industrial customers around the globe.

"It has long been our stated intention to strengthen our business by getting closer to our customers and the most expedient way to achieve this is through strategic acquisitions," he explains. "By establishing a wider geographical presence we can reassure our customers that we are on call whenever and wherever they need us. This not only serves the requirements of global container terminal operators, which prefer to work with suppliers that can handle their demands on a worldwide scale, but also for smaller operators who can benefit from Kalmar's advice and expertise, as well as fast maintenance and repair capabilities.

Multiple benefits
There are also other positives to be reaped from this approach, according to Mr Granskog: "The acquisition of companies with local expertise often gives us unique insight into a particular market or a different perspective on potential business opportunities. It can also provide access to new skills and expertise that facilitate the further development of our products."

For customers, Kalmar's increasing global presence is especially manifest in its enhanced after-sales service offering. "In some cases our expansion has allowed us to work on an unprecedented level with customers," says Mr Granskog. "Take Gateway Terminals India (GTI), for example, which awarded Kalmar a major contract calling for not only the maintenance but also the operations of the 29 Kalmar E-One RTGs ordered for its Nhava Sheva container terminal in Mumbai. This far-reaching five-year deal requires Kalmar to provide more than 100 trained maintenance specialists and operators to cover three shifts a day. Without a sizeable, well-established presence in India and access to local expertise, we could never have anticipated undertaking such a demanding role."

Future trends
According to Mr Granskog, while the GTI deal is the most extensive to date, terminal operators' desire to increasingly focus on developing their core business is likely to result in more of the same.

Moreover, as terminal operators become bigger and stronger, there is likely to be further consolidation amongst suppliers. Says Mr Granskog: "Current pressure on the cost of production could well see more consolidation sooner than some might suspect. Steel costs and energy prices are important, but so also is the relationship between the euro and the dollar. All this has meant that Kalmar – a relative giant in our field – has had to look at changing its supply base. For smaller companies who source and produce in Europe, this is a far greater challenge."

Kalmar expansion in 2006

East Coast Cranes and Electrical Contracting Incorporated (ECC). US-based ECC specialises in crane construction services and maintenance in ports. The acquisition boosts Kalmar's service capabilities in the US as well as creates a stronger platform for the development of its port equipment business. ECC has more than100 employees working predominantly in US East Coast and Gulf ports. Is it also carrying out large-scale projects in various ports on the US West Coast, in the Caribbean and in South America. ECC's net sales in 2005 were close to $25 million.

Majority share of its Spanish distributor Kalmar Espana, SA. An agent for Kalmar products since 1991, Kalmar Espana, SA is the leading distributor and service provider for material handling customers in Spain. The sales company also has a strong customer base within the heavy industrial handling and port industries as well as good potential to grow its rental business.

Belgian distributor Catracom. Catracom has been distributing Kalmar equipment since 1985 and has a strong service set-up in the Port of Antwerp, as well as equipment rental business with ports and heavy industry customers in Belgium. Catracom employs approximately 100 people and had net sales of approximately EUR 70 million in 2005.

Italian CVS Ferrari Group. The agreement signed is subject to competition authority approval. The acquisition of CVS Ferrari strengthens Kalmar's market position and service capabilities in Southern European and the Mediterranean. It also complements Kalmar's product offering with new, innovative container handling equipment. CVS net sales for 2006 are estimated to amount to EUR 85 million.

Agreement with African National Engineering (ANE): Kalmar agreed with South African service partner ANE to merge the latter's Kalmar service business into Kalmar Industries South Africa (Pty) Ltd, its local subsidiary company established 2006 in Durban.

In February, Kalmar announced that it had acquired the business of Portsmouth, Virginia-based Port Equipment Service, Inc. (PES). The move expands Kalmar's service business, strengthen its position is US ports, and create new relationships and opportunities with intermodal terminals.

Kalmar strengthens its American service offering

Kalmar recently acquired the company Port Equipment Service, Inc. (PES), a port and intermodal equipment service business founded by (left to right) Dan Stevens and Tom McDonough. Both former owners will continue to develop the service and sales opportunities of now Kalmar PES.

"This acquisition complements Kalmar's strategy to grow its service business. PES' familiarity with Kalmar products, its solid relationship with railroad and port customers, and its service expertise makes the transaction an excellent strategic fit," says Kalmar CEO and President Christer Granskog.

Established in 2001, PES founders Dan Stevens and Tom McDonough have worked hard to build a business with a reputation for providing reliable and expert service. PES currently employs more than 50 people—most of whom are service technicians – working to erect, maintain and repair Kalmar and all other brands of container and heavy materials handling equipment. The company's expertise includes servicing the equipment of railway terminals in five states and of port operators in Portsmouth and Norfolk, Virginia.

"I think that having a strong service company associated with a strong manufacturer is a win-win for both sides," says Tom McDonough, now the current Director of Port Services for Kalmar PES.

Extensive know-how and adaptability are keys to success

With their 25-plus years of combined experience working with straddle carriers at Virginia International Terminals (VIT), Stevens and McDonough offer customers an unmatched knowledge of the machine as well as an extensive technical expertise.

"If it moves a container, we know how to work on it; we know how to fix it," says McDonough. "We can fix it better than anybody else because we've seen the environment that it works in, so we know how to make sure that it survives that environment."

Railroad and intermodal customers have mostly been the responsibility of Stevens, who will work for Kalmar PES as Director of Intermodal Sales and Service. He believes that there are many opportunities to grow Kalmar's business in this area.

"To be a successful partner to the railroad industry, there are three necessary components: One is the equipment, which we have to get there," says Stevens. "Two, we must thoroughly understand maintenance, which we already do. And three, we have to thoroughly understand operations. We know maintenance, and we have the best equipment out there. What we have to capture now is our operational development, and that's what we're working on."

McDonough adds that PES was able to improve its service offering working with railroad companies.

"We are good at servicing customers according to their availability needs, and we also excel at adapting to their requirements. PES has evolved into a creative maintenance supplier that is fluent in service but also adaptable to whatever the customers demand. That's a lesson we perfected with the railroads; they have unique operational standards and expectations. Our reputation to repair quickly and have the parts needed was established with our experience with the railroads."

Both Stevens and McDonough are excited to be working for Kalmar, and they look forward to pursuing new sales and service opportunities.

APM Terminals finds a reliable service partner in Kalmar PES

Robert Dziegielewski, APM Terminals Power Equipment Manager, is responsible for coordinating the maintenance of the container handling equipment of the stevedore's Portsmouth, Virginia operation. To keep his fleet running smoothly, Dziegielewski uses the service expertise of Kalmar PES.

Robert Dziegielewski (second from left) and his equipment maintenance team at APM Terminals Virginia.

Dissatisfied with a couple of previous vendors, Dziegielewski gave Kalmar PES its first shot at winning his confidence with a request to service the air conditioning systems in APM's 57 Kalmar terminal tractors. Performing the job as desired, Kalmar PES' next task from Dziegielewski was to conduct inspections on the stevedore's top loaders, reachstackers and empty container handlers. Dziegielewski was impressed with their work, not to mention Kalmar PES' detailed presentation and documentation on the status of the equipment.

Dziegielewski believes that the dedication and expertise of former Kalmar PES owners Tom McDonough and Dan Stevens is the reason why the company has earned its reputation for reliable service. Since Kalmar acquired their company in February 2007, McDonough has taken the position of Kalmar PES Director of Port Services and Stevens has assumed post as Kalmar PES Director of Intermodal Sales & Service.

"I feel as if Dan and Tom are standing around with their hand on the phone doing nothing but waiting for me to call them," says Dziegielewski. "They are on top of it all. They can definitely fulfill a need within the industry.

"They have done a lot for me, especially with these inspections. They were open and honest about the state of APM's equipment, and they were on-time. I now have more faith in the equipment."

Having it done right

APM's Portsmouth terminal covers 71 acres (29 hectares) to realise a 1,000-foot berth and a variety of equipment working between the quay and the yard. APM uses service contractors to ensure that machine maintenance is done correctly and maximum uptime is achieved.

"We don't handle changing out large components for large assets in-house," says Dziegielewski. "We would rather not do that because if you damage that item you have to buy a new one. Or you may damage another part because you haven't done it correctly. If something were to happen while the service provider performs the job, then the responsibility is on that vendor to either replace it or fix the issue. Once it is there and in place and everything's fine, then we will continue to maintenance it and go from there."

Dziegielewski has one foreman and eight technicians working to maintain APM's port equipment and vehicles—which, besides the terminal tractors, consists of two Kalmar reachstackers, two Kalmar empty container handlers, seven top picks (six of which are Kalmar units), eight rubber-tyred gantry cranes and two ship-to-shore cranes.

"We have such a wide variety of equipment that we can't be well-versed in servicing everything. Working on anything from a pick-up truck to trying to diagnosis a problem on an a RTG—there is a huge difference."

APM's service operation requires the coordination of many small projects, continues Dziegielewski.

"My foreman and I have our finger on the pulse of every vendor that's in here. We're always working on a triage level of maintenance. If a pick-up truck is down verses a container handler we have to prioritize our service tasks to keep terminal productivity on target."

Recently, Kalmar PES fulfilled a service bulletin on a warranty item for the Kalmar DCF loaded container handler. APM has one DCF top pick in its operation. Dziegielewski says he prefers the convenience of having a service contractor fulfill warranty tasks rather than assigning the job to his technicians. Sometimes the bulletins require a lot of paperwork and hassle.

"PES has not been around forever and not relatively long," says Dziegielewski. "But they seem to have a good niche in the market with a good reputation to lean back on. If they continue to do what they've done for me so far, I will continue to use them."

The Kalmar DCF top pick never quits

The Kalmar DCF450 loaded container handler operating at APM's Portsmouth terminal is a prized possession among operators.

"The tires never stop on that one—only for fuel," says Dziegielewski. "That thing is running all the time. That is the most precious gem in the fleet."

Dziegielewski says the operators prefer the latest top pick from Kalmar for its excellent steering, improved visibility and overall greater response. The machine is faster and bigger, thus giving the operator a better feeling of stability, he continues.

"The guys have always preferred Kalmar top picks, so we kept providing them," says Dziegielewski. "As long as the price is right, the service is good, and the parts availability is there, then there's no reason to switch if the guys prefer it."

Mikko Vuojolainen
+ 1 609 409 2806
mikko.vuojolainen@kalmarind.com

Leaving it to the experts

A relationship based on trust

Ensuring maximum equipment productivity at all times is a priority for Cargo Service A/S, the Danish Port of Aarhus terminal operator previously known as Århus Stevedore Kompagni. As such, the company has a five-year maintenance and service contract with Kalmar covering its 19 new ESC EDRIVE® 350 straddle carriers, delivered this spring.

Cargo Service's all-inclusive contract requires Kalmar to supply preventative and breakdown maintenance, engineering support, daily inspections and spare parts supply. Kalmar is aided in this work by its Remote Machine Interface (RMI), one of its suite of intelligence solutions that allows it to predict the pending maintenance and service requirements of each machine.

Cargo Service has awarded a comprehensive five-year service and maintenance contract to Kalmar for its 19 new ESC straddle carriers, delivered this spring.

According to Rob van Hove, Kalmar's Rotterdam-based VP of Maintenance, the agreement basically amounts to an insurance contract for Cargo Service. "They simply operate the machines while we retain overall responsibility for making sure they are available and operating at peak performance at all times," he explains.

As of the beginning of May, Kalmar engineers have been located on-site in Aarhus working from a temporary workshop constructed from containers. In September, they will move into permanent premises currently under construction at the terminal, from where they will be responsible for the entire gamut of maintenance services for the strads – from tyre upkeep and oil changes to damage repair and predictive maintenance.

Longterm partners

According to Mr van Hove, the comprehensive service contract is a natural progression in the longstanding relationship between Cargo Service and Kalmar. "Cargo Service has been a loyal Kalmar customer ever since its decision more than three decades ago to purchase the first Kalmar reachstacker," he says. "Over the years, the relationship between the two companies has gone from strength to strength. We have a longterm interest in Cargo Service's success and Cargo Service knows that it can trust Kalmar to answer all its equipment needs.

"Trust is an indispensable ingredient in any outsourcing exercise, as you are ultimately allowing an outside party to come into your terminal and influence your operations. That Cargo Service has this level of trust in Kalmar is valuable testimony to the standard of products and services we have provided to them over the years."

State-of-the-art strads

Cargo Service's 19 new three-high straddle carriers were acquired for operation at a new container terminal facility – part of the Port of Aarhus' 25-year expansion plan. The 7th generation straddle carriers are equipped with the latest in handling technology, including Kalmar's Smartpath® container position verification system, as well as RMI. The machines are also ready for automation, with inbuilt provisions for sensors, should Cargo Service decide to upgrade to an automated system in the future.

Cost control made easy

Kalmar Industries has signed long-term contracts with Wallhamn AB, Sweden's largest private port, for the financing, insurance, leasing and maintenance of a range of equipment. The comprehensive deal has provided the customer with full cost control as well as the freedom to focus on its core activities.

Wallhamn AB is leasing a number of trucks of various sizes from Kalmar under a comprehensive agreement that also includes service, maintenance, financing and insurance.

Wallhamn AB's agreement with Kalmar, which represents an expansion of the collaboration between Wallhamn and Kalmar that first started in 1999, covers two reachstackers, one 33-tonne forklift truck, one 25-tonne forklift truck, four terminal tractors and four 8-tonne forklift trucks, as well as a number of smaller Linde trucks.

Ideal for the auto industry

Car imports from Hyundai/Kia in South Korea represent the bulk of Wallhamn AB's handling activities. According to Henrik Sundin, CEO of Wallhamn AB, operational leasing is very common in the automobile industry and makes good business sense for his company:

"This extended leasing contract provides us with budgetable expenses and consequently full control of our costs throughout the entire contract period. It represents the best possible value for our operations and allows us to concentrate on our core handling business.

"Every week we act as the gateway for Hyundai and Kia automobiles destined for the Swedish, Norwegian and Danish markets, so it is imperative that we have a fleet of equipment that is not only cost-effective but also highly reliable."

Strong partnership

According to Svante Alverönn, Sales Manager at Kalmar Sverige, trust is a key component in the success of such contracts.

"It all comes down to a question of trust between the customer and supplier and it is my view that the collaboration with Wallhamn has functioned impeccably during the past 15 years.

"Scandinavia is one of the most advanced regions in Europe in the field of complete leasing packages. There are examples where Kalmar is even responsible for employing the personnel who maintain the machines on the customer's premises."

Since August 2005, Wallhamn AB has been the only Swedish port to be 100 percent privately owned. A joint holding between Grimaldi Compagnia di Navigazione SpA, Grimaldi Maritime Agencies Sweden AB, Eukor Car Carriers Inc and Sweden Transport & Logistics Holding AB, it is also the only Swedish port to be owned by shipping lines.

Peace of mind for Setra

Setra Group, Sweden's largest timber products company, has standardised its handling activities through a multi-year rental contract with Kalmar for 31 specially developed forklift trucks, each with a lifting capacity of 15 tonnes. The announcement is the culmination of an exhaustive search for the perfect forklift truck initiated by Setra almost two years ago.

Setra Group's 31 new forklift trucks are serviced, maintained and financed by Kalmar for an agreed upfront cost for the entire agreed contractual period.

"Our rental concept represents a cost-effective total solution for customers, whereby we integrate development, maintenance and financing," says Jan Ohlsson, Kalmar Sweden's Managing Director.

In 2005 the Setra Group commenced its search for the perfect forklift for operation in all 12 of its sawmills located across Sweden, from Seskarö near Haparanda in the north to Vimmerby in the south. The company's site managers were joined by more than 90 truck drivers to look for a machine that combined efficient and accurate handling with good ergonomic and environmental credentials.

"We came up with very clear specifications for our new sawmill trucks," says Jerker Nyström, Production Manager with the Setra Group. "From an early stage, it was decided that Kalmar could adequately meet our requirements. This was the start of our joint development work which has now evolved into a multi-year rental contract."

Beyond the basics

In line with the Setra drivers' wishes, the Kalmar-developed forklifts feature a range of additional equipment compared to standard trucks. Piling holders, an anti-skid device on the wings, splash protection on the drive and steering wheels are all crucial to the design and positioning of the equipment.

Also of key importance is the driver environment, explains Kent Torwald, Managing Director and Group Manager of the Setra Group: "At Setra, the working environment is a priority. A good working environment contributes to our ability to attract good employees to the timber industry."

The driver cabin in the new Setra forklifts features adjustable arm-rests, mini-wheel steering and a hydraulic joystick – all of which reduce the strain on the driver. Sun-protection curtains and a raised roof reduce the risk of the driver being dazzled while steps have also been taken to reduce noise levels. All trucks are equipped with an automatic stop function and a short-term parking heater that starts automatically. Together with excellent visibility, these features also contribute to a high level of safety.

To reduce energy consumption and subsequently alleviate the burden on the environment, the contract between Setra and Kalmar includes training in 'eco driving' for all drivers. The aim is to encourage gentle driving, thus minimising energy use. The trucks display hourly fuel consumption rates.

Kalmar has built a forklift truck tailored specifically for operation in 12 Setra Group sawmills located across Sweden, from Seskarö in the north to Vimmerby in the south.

Redesigned Kalmar E-One+

As a market leader and provider of an industry favourite, Kalmar is re-launching its all-electric rubber-tyred gantry (RTG) crane as E-One+. This widely-popular solution received various serviceability and performance improvements.

With new features that improve its overall quality, make maintenance even easier and more accessible, and help to expedite the final assembly process, the improved crane from Kalmar is sure to be the preferred solution among operators worldwide.

Since the E-One's launch in 2005, global sales of this green, productive and uncompromising RTG have taken off, prompting Kalmar to update and redesign the machine—in accordance with customer feedback—to further improve its serviceability and performance.

The E-One+ RTG received the following design improvements:

Better maintenance access: To make the job of the service technicians easier and less stressful, some of the E-One+'s key components have been relocated to a position where they can be more easily serviced. For example, the emergency hoist stop sensor and spreader cable connection box have been moved to the level of the trolley platform to enhance convenience.

New cabin and trolley access: Kalmar is the first RTG manufacturer to give operators and technicians complete access to the cabin and trolley via a system of stairs, making the trip less demanding and dangerous. The stairs have been designed at a less than 45 degree angle, also improving safety.

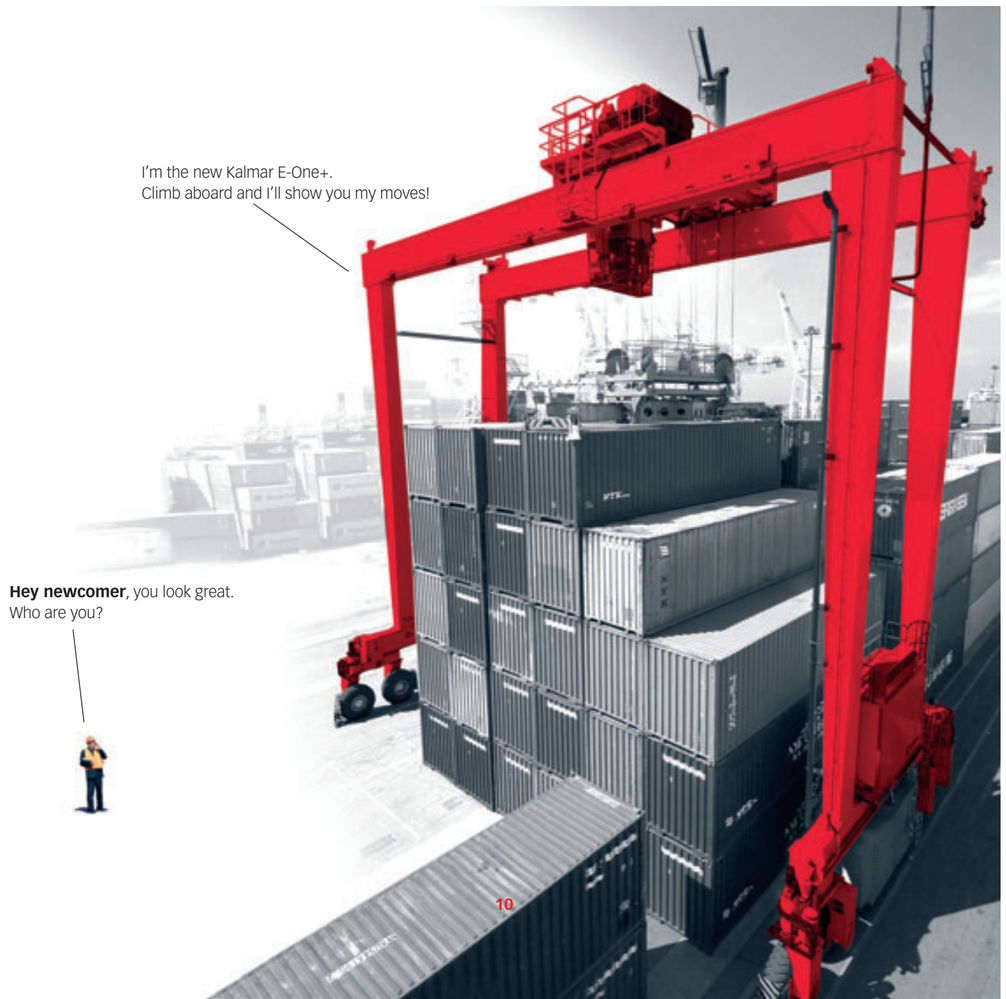
The E-One+'s new cabin has been incorporated with more ergonomic considerations such as better all-around visibility, more space and an optional elevator. Cabin maintainability has also improved as its windows can be washed from within the cab or from cabin platforms.

Less maintenance points: The new E-One+ RTG has been engineered with maintenance-free propeller shafts and a trolley drive chain. These components do not require greasing, therefore relieving the service technicians—not to mention the environment—of this burden.

State-of-the-art cable chain: The previous E-One RTG employed a festoon system to feed the trolley electricity. The design of the new E-One+ now incorporates a more reliable and efficient cable chain system which is maintenance free and quicker to install.

Faster on-site assembly: Many of the new E-One+ RTG's components have been adjusted and redesigned to facilitate easier, quicker connections during the erection process. Kalmar's erection team will spend less time on the terminal affording the customer greater flexibility in managing his operations.

Hoist ropes easier to change: Faster maintenance of the hoist ropes, which means better crane availability, is now possible. The new E-One+ RTG can be equipped with a small winch located on the trolley designed to help lift the ropes from ground to trolley level when they need to be serviced or replaced.



Max Stable makes its move

Kalmar launches an anti-sway system able to perform quicker, more accurate spreader movements.

The new design called Max Stable—featuring an eight-rope reeving system without auxiliary ropes for faster, no-sway micromovements, thus making cycle times quicker and more efficient. Customers who choose the Max Stable anti-sway system for their rubber-tyred gantry (RTG) operation will experience better load stability control due to the fact that all eight ropes are hoisting the spreader's cargo.

Max Stable's design is comprised of a spreader attached to a more rigid rope reeving system by means of two hoist drums. A new angular sheave scheme has been developed that—in combination with the eight-rope design—naturally stabilizes the load allowing faster, more accurate positioning of the spreader.

Many factors were considered when developing Max Stable as Rene Kleiss, VP of Kalmar Cranes, explains:

"Our customers have unique expectations of crane productivity, but many of them are seeking more efficient stacking movements and better lifting speeds with higher capacities for their operations. The new Max Stable meets these needs as its rigid rope reeving system ensures stability because the main components—hoist ropes, drums and sheaves—are completely integrated.

This design is unique to the market but is the result of good feedback from our customers. They have been promoting an even more productive, stable spreader and hoist system, and we are happy to deliver. Max Stable is derived from a system employed on Kalmar's automatic stacking cranes. As a full-service equipment provider, Kalmar is constantly improving its product lines using common knowledge and experience."

The new design of Max Stable allows operators to perform all micromovements, including skewing, trimming and sideshifting in both directions. The joystick-controlled spreader micromovements offer ± 5° skewing and optional trim with automatic centring also contributing to reliability and operating efficiency.

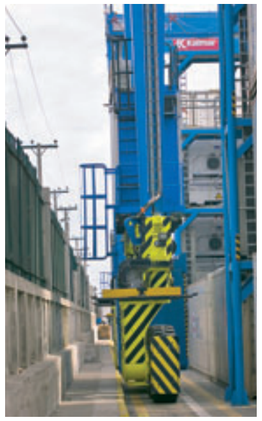
More information:
Rene Kleiss
Tel:+31 102 946 702
rene.kleiss@kalmarind.com

A Chilean port's vision for the future

The Port of Valparaiso is investing in capacity, equipment and infrastructure to realize its goal of being a world-class port.

Terminal Pacifico Sur Valparaiso (TPS) SA—responsible for terminal operations at the port—has been a longstanding Kalmar customer with multiple orders for rubber-tyred gantry (RTG) cranes. The terminal operator recently opted for six Kalmar E-One RTGs to help handle the growing number of the country's exports to Asia and the Far East.

The 7+1 wide and 1-over-5 high units equipped with Smartrail®, Remote Machine Interface (RMI) and Bromma spreaders are due for delivery in the latter half of 2007 and will join the other six Kalmar RTGs currently operating at Valparaiso. The Smartrail®



Robert Zilleruelo, General Manager, TPS.

autosteering system is critical to TPS's Valparaiso facility as the RTGs work in a tightly fenced area, meaning that there is no room for error in driver operations.

In 2005, TPS acquired its first RTGs from Kalmar in an effort to convert the terminal's operating system from reachstackers to a denser stacking method. With a growth in volume of approximately 65 percent in 2006, Robert Zilleruelo, General Manager, TPS, says that RTGs have offered TPS greater operational flexibility, more productivity and the opportunity to better utilize terminal space. He comments on using two Kalmar RTGs used for handling specialized cargo like fruit and reefers:

"During fruit season, both RTGs work in the reefer yard. But in the autumn, because there are not as many reefers as in March when fruit is in season, one RTG works in the reefer yard, and the other is working in the area for container storage. So that means less movements when dispatching containers. That's one of the great advantages compared with reach stackers."

Last year, TPS handled more than 64 percent of the country's food exports. Produce and other perishable items are an important part of the Chilean economy, requiring TPS to demand high and consistent productivity from its handling machinery.

"With RTGs we can move more containers exactly in the same area or space, which was the main objective of investing in a new operating system," comments Zilleruelo.

Flexibility improves capacity and competitive edge

TPS is also creating capacity in its plan to knock out one of its warehouses and change the layout of the yard. This will afford it space to implement container blocks six or seven boxes wide. TPS also has the ability with its latest RTG orders to stack five high instead of four. All of these improvements will increase capacity almost 20 percent, or more than 100,000 TEU.

"We are also increasing our reefer yard capacity in terms of plugs," says Zilleruelo. "At the end of the journey, we will have almost 500 plugs in the electrical network, which is a big increase for us in reefer plugs."

Zilleruelo explains some of TPS's advantages compared to its competitors:

"We are a three container terminal with current capacity. We are also able to quickly follow the growth in demand without an investment in infrastructure—only in equipment. TPS offers berth and arrival seven days a week, 24 hours a day. The gate also operates at the same time."

Valparaiso's plan

Although the port was established in 1810, Valparaiso is one of Chile's oldest cities with origins dating back to 1536. It is located only 113 kilometers (70 miles) from Santiago, Chile's main center of production and consumption. Valparaiso Port Authority was formed from the government's initiative to modernize the state ports and is responsible for the Port of Valparaiso's administration, development and conservation.

The Port of Valparasio is making investments to develop its terminals to make the port a more attractive logistic center.

"The port's master plan will make Valparaiso a leader in the port sector, responding to the world's market demands for cargo and logistics throughput," says Zilleruelo.

Modernising the logistic chain

Besides its plan to increase stacking capacity, the port will improve its current set-up by purchasing three new post-panamax gantry cranes, bringing the total number to five. TPS will build a new, bigger pier close to the public sector capable of handling two multi-purpose vessels. It will also expand the public pier to allow the simultaneous attendance of three ships with special equipment for containers, fruits and other general cargo operations.

The Port of Valparaiso has made plans for a second berth 780 metres long reaching a total surface area of 45 hectacres (110 acres). All of these development projects will allow the port to reach a total cargo throughput of 40 million tons per year, making it possible to satisfy growth requirements until 2045, according to Chile's most optimistic growth predictions.

Landside developments are also in order. A new logistics center—opening in 2007 and located 15 kilometres from the port—will be an important 60 hectare logistics back-up area for the port. Various depots and warehouses providing services to the logistics chain are also located there.

An efficient and modern highway will be built bypassing the center of the city and helping to connect the terminal with the surrounding area. Rail access is also being updated and Zilleruelo remarks that it will be an important alternative with great potential.

High-tech features help Port of Cartagena cope with growing volumes

With numerous investments in state-of-the-art terminal technology, Sociedad Portuaria Regional de Cartagena (SPRC) hopes to be the preferred South American port of entry for international shipping lines. The Colombian terminal operator and manager has partnered with Kalmar in the total purchase of 16 E-One rubber-tyred gantry (RTG) cranes and related automation software.

SPRC's latest order for eight 6+1 wide and 6-over-1 high Kalmar E-One RTGs will be delivered at the beginning of 2008. These units will join those eight similar RTGs already in operation, not including the four conventional hydraulic Kalmar RTGs ordered in 1998. All 16 E-One units feature Kalmar's autosteering and container positioning software, Smartrail®, and remote machine interface (RMI). SPRC is a long time user and believer in Kalmar's Smartrail® technology. It was the first customer worldwide to employ the system at its terminal in 1998.

SPRC chose to work with Kalmar because of the company's dedication to innovative design and technology, a philosophy the terminal operator shares as it is also investing in states-of-the-art services such as a non-intrusive inspection system, new maintenance resources and a web-based import and export transaction system.

"Kalmar is a company that is always pushing towards the frontier of knowledge," says Juan Carlos Acosta, Engineer and Projects Director, SPRC. "That's something that we also recognize and value. All of our Kalmar RTGs are equipped with RMI. It is a powerful tool that we can use to monitor the performance of the equipment minute-by-minute, second-by-second from our main control offices and control tower.

"RMI also allows us to support the technician or technical team that is on top of the machine trying to solve any technical problem. While that person is physically checking the components, the system—depending on the seriousness of the fault—can assist another technical team that is watching in the office the symptoms or the indicators that could lead the technical team on top of the machine to solve the problem more easily or more promptly."

Innovative equipment meets high-tech service

When SPRC converted its operation from reachstackers to RTGs beginning in 1998, the operator boosted its service resources by means of new, modern maintenance sheds. These large service areas are equipped with automatic tools, pneumatic and electric power, automatic oil, grease and fuel provision systems, and overhead cranes for easier assembly or disassembly of components.

"SPRC is the port manager and terminal operator so we are responsible for all operation and administration," says Acosta. "We use all types advanced technical tools in order to develop our projects in terms of equipment, efficiency, gates, piers, information systems, etc. We rely on the best partners worldwide."

Recognized as the best

With its excellent location, premier services and dedication to port improvement, it's no surprise that SPRC was recognized in 2006 for the second consecutive year as the best container terminal by the Caribbean Shipping Association.

Employing four ship-to-shore cranes, two mobile harbour cranes, 24 RTGs (with an additional six units to come), 14 reachstackers, five empty handlers and 69 terminal tractors, SPRC can handle up to 5,000 TEU vessels with a 1,700 metre long quay and a depth of 44 feet. SPRC will dredge further to reach 50 feet—the same depth as the access channel to Cartagena Bay—as well as extend its pier an extra 700 metres. This very well-sheltered and naturally deep bay is recognized by some as the best bay in South America. The Port of Cartagena is connected to the the Magdelena River by the Dique Canal.

"It is a modern pathway of 115 kilometers that allows us to be the first and most important maritime port of Colombia. Ninety percent of the cargo that is handled on the Magdelena River originates or ends up in Cartagena Bay. So we are developing this in such a way that we can pick up in Helsinki and bring the cargo to the client – to his house – always tracked by our information system and provided by our logistic train."

Containerization is growing in South America and SPRC is ready and prepared to handle the influx of containers—not to mention other cargo and passenger vessels as well as additional logistic services—in the coming years. Last year SPRC handled 720,000 TEUs, but given the volume projections, it is planning to handle 800,000 TEUs this year.

Lack of space convinced BACTSSA, a Hutchison Port Holdings company operating at Argentina's Port of Buenos Aires, to reinforce their rubber-tyred gantry (RTG) operation. In December 2006, four 6+1 wide and 1-over-5 high E-One RTGs went operational, joining the two Kalmar RTGs already working in the terminal.

Pushing speed and space to the max

Located near the city of Buenos Aires and limited to expansion, BACTSSA saw no other way to cope with the country's growing container volumes other than by investing upwards. The terminal operator took delivery of its first 6+1 wide and 1-over-5 high Kalmar RTGs in 1998. With its latest order for four E-One RTG cranes, BACTSSA is on pace to manage the rapid rise of container trade in Argentina. In 2006, BACTSSA handled 347,000 TEUs by utilising a total land mass of 25 hectares to realize 885 metres of berth and 180,000 square metres of container yard.

BACTSSA's commitment to serving customers well and staying on pace with its growing number of imports has been the catalyst for a successful partnership with Kalmar. The terminal operator has been pleased with Kalmar's quality service not to mention its driver-preferred and more productive E-One RTGs.

In its latest order of four RTGs, BACTSSA praises the E-One's design. Gustavo Cercos, Technical Manager, BACTSSA, says:

"There is a big difference between the earlier Kalmar RTGs and the new Kalmar E-One RTGs. Bascially, the gantry transmission has changed to a direct drive system. This means that our mechanics are no longer required to oil the drive chain as it was on the previous model.

"The other thing that is very important for us is the anti-sway electronic system which is missing a steel cable. This is also good for our maintenance people because before, that steel cable needed a lot of greasing and service attention."

Negotiating the stack quicker

But productivity remains the key area of focus for Cercos. He remarks that the E-One is more efficient, allowing BACTSSA to serve its clients faster. This is an important improvement for the Argentinean terminal.

"I think that the E-One's speed is a huge advantage. The operators tell me that the machine is easier to drive and faster, and that means the productivity will be increased.

"For example, when you need to deliver a container to a client, three or four other containers must be moved within the stack. With the speed of the new RTGs, we save a lot of time in this operation.

"This also means that the dwell time of the truck on the terminal will be less because the new machine has a faster cycle time potential. We can move five containers out of the way quicker to get to the bottom one, so the advantage is that the customer is being serviced faster."

Cercos also comments that the E-One's travel time between stack in a particular area is crucial to maintaining productivity.

"Another advantage is gantry speed because in the area where the newer RTGs are located, they need to move maybe 250 metres from one side to the other. So when travelling long distances from one stack to the other, the E-Ones can move faster. This is very important for us."

Driver approved, service supported

BACTSSA's drivers also give accolades to the Kalmar RTGs. Quieter operation, good visibility, user friendly controls and comfortable cabins are just a few features the operators appreciate.

According to Cercos, the most important factor for choosing to work with Kalmar is the good level of service the company can offer, especially with a network of local dealer support in Argentina and also the rest of South America.

"The support is very important to us, especially in this part of the country," says Cercos. "A very important difference is that here in Argentina, Kalmar has good, quality service. And we're lucky to have also a very good dealer—very well qualified. They have a very good educational and technical level. It is good to work with them."

More information:
Mikko Vuojolainen
+ 1 609 409 2806
mikko.vuojolainen@kalmarind.com

Kalmar's E-One RTG and service support lead the way in South America

In recent years, Kalmar has made good progress in South America with its reliable products, quality support and new parts organisation. The company's reputation as a premium supplier of rubber-tyred gantry cranes has made it the preferred partner among South American terminal operators, many opting for the green, productive and uncompromising E-One RTG.

As the market leader in RTG cranes in South America, Kalmar is well-prepared to assist customers as terminals are trending towards replacing reachstackers in their operation with a higher density stacking option. Strong technical support is also a popular request from customers, and Kalmar is positioned to meet this demand with a new parts program and skilled service technicians.

By reorganizing its parts set-up, Kalmar has dramatically reduced the delivery time of many commonly used parts from 30 days to three days with the establishment of a "free zone" parts warehouse in São Paulo, Brazil. Since late 2006, Kalmar has been storing those parts frequently requested by customers in a local customs-free area, whereas before, the orders were processed in Europe. This move to improve parts availability in South America will benefit many customers by helping to reduce machine downtime and preserve terminal productivity.

E-One is number one in South America

Orders for Kalmar's increasingly popular, all-electric E-One RTG accounted for more than 50 percent of all RTG contracts awarded in South America last year. The E-One's competitive maintenance features, significant fuel savings and reduced downtime—combined with operational management technology such as Kalmar's Remote Machine Interface (RMI) and the autosteering and container position verification system, Smartrail®—make it the perfect solution for those operators who wish to achieve high productivity with the minimum environmental impact.

Mikko Vuojolainen, VP Kalmar Americas port division, comments on the company's recent success in RTG sales:

"Continuing growth at South America's ports means that terminals are upgrading from reachstacker handling systems to RTG operations. Because Kalmar is the market leader in reachstackers, many of these ports are familiar with our levels of quality and service, which is proving to be fundamental to our continued success in the region."

"Kalmar's ability to provide a premium product and in a timely manner is also important to Latin American port operators. Our reliability has assured customers in the region that their growing cargo volumes can be handled efficiently with minimum downtime."

Recent orders for E-One RTGs from South America:

- **An order for 12 E-One RTG cranes was received from Santos Brasil S/A** in January 2007. The 7+1 wide and 1-over-6 high units featuring Smartrail® and Bromma spreaders will be delivered between September 2007 and January 2008. Santos Brasil decided to award Kalmar the contract after experiencing great success with their current fleet of five Kalmar conventional hydraulic RTGs delivered early-2006.

- **Chile's TPS** opted for six 7+1 wide and 1-over-5 high E-One RTGs equipped with Smartrail®, RMI and Bromma spreaders due for delivery in the latter half of 2007 and will join the six RTG cranes currently in operation. The Smartrail® autosteering system is critical to TPS's Valparaiso facility as the RTGs work in a tightly fenced area, meaning that there is no room for driver errors.

- **BACTSSA**, a Hutchison Port Holdings company operating at Argentina's Port of Buenos Aires, ordered four 6+1 wide and 1-over-5 high E-One RTG units—which went operational at the beginning of 2007.

- **Sociedad Portuaria Regional de Cartagena (SPRC), Colombia**, recently ordered eight E-One units, which will be delivered in the beginning of 2008. SPRC's latest order will join the eight E-Ones already in operation at the terminal. All 16 units will feature Smartrail® and RMI.

- **The Port of Trinidad and Tobago** has ordered five E-One units to join the six RTGs already in operation at its Port of Port of Spain facility. The new 5+1 wide and 1-over-5 high RTGs—scheduled for delivery at the end of 2007—will be equipped with Smartrail®, RMI, and fitted with Bromma spreaders.

- **Neptunia, Peru** has ordered two E-One RTGs equipped with Smartrail® and Bromma spreaders. The 7+1 wide and 1-over-6 high units will be delivered late 2007, and are noteworthy in being the first Kalmar 16-wheel design on the American continent.

U.S. West Coast ports are taking matters into their own hands. Environmental concerns are quickly changing the attitudes and actions of the maritime industry prompting one terminal in Tacoma, Washington to begin fueling its container handling equipment and vehicles with biodiesel fuel to minimize emissions and keep its engines running clean.

Biodiesel meets its match in terminal equipment

Steven Basset stands near one of Husky Terminal's two Kalmar DCF410CSG top picks delivered last spring. These machines, engineered to be more productive than the American competition, also operate with biodiesel fuel.

Steven Bassett is a brave man.

He started fueling the port container handling equipment and vehicles of Husky Terminals in Tacoma, Washington with—not the industry norm of 2 percent, 3 percent or 5 percent, but—a 20 percent biodiesel blend in April 2006, which then escalated into an astounding 50 percent blend that following summer. He is the first to use such a high percentage blend for port machinery.

Living and working on the West Coast where being "green" is "cool", the climate for environmental watchdog agencies is hot, and emission regulations are aggressively outpacing the rest of the US and much of the world could perhaps influence a bold and daring emissions-fighting move. But Bassett, who performed countless hours of biodiesel (not to mention OEM warranty) research and attended a conference on the topic, was certain that a 50 percent biodiesel blend would perform just as well as ultra-low sulfur diesel—the port's previous fuel of choice.

"Other than a few filter hiccups, there have been no complaints of loss of power. The machines are working normally," Bassett, Husky Terminals Vice President, assures.

Husky Terminals, a newly expanded 93 acre facility handling 180,000 TEUs in 2006, operates with several Kalmar machines. The terminal's fleet is comprised of 31 terminal tractors (25 Kalmar units), six rubber-tyred gantry (RTG) cranes, nine top picks (4 Kalmar units) and three forklifts (2 Kalmar units), all of which made the switch to biodiesel fuel.

The benefits of being green

Bassett says that his interest in biodiesel is twofold. Firstly, he wants to stay in front of the ever-lowering emission requirements. Bassett says that ports are being warned about tougher emission standards so Husky Terminals is taking proactive steps to reduce its emissions before it is required.

"Husky switched to biodiesel to be a participant in the reductions on emissions in the Port of Tacoma." He continues, "While the cargo activity at our terminal brings great economic benefits to this region, we also want to reduce the negative impacts of our activity as much as possible."

Other West Coast ports, terminal operators and shipping companies have followed suit. Third party logistics provider APL's Global Gateway North terminal in the Port of Seattle, Port of Tacoma, Port of Vancouver USA, and Port of Seattle—in cooperation with SSA Marine, the Port's largest maritime customer—have all implemented biodiesel into their operations.

The other factor that convinced Bassett to power his operations with a biofuel blend was that cleaner, cooler engines are the result. Biodiesel—made from ultra-low sulfur diesel and vegetable oil, sometimes made from soy—flushes out engines, helping to reduce the wear and tear on machines and keeping the equipment running longer. Lubricity is improved when biofuel is added to conventional diesel fuel. Even biodiesel levels as low as one percent can provide up to a 65 percent increase in lubricity in distillate fuels.

"We want to extend the life of our equipment," says Bassett. "We have to try to make our machines run as long as they can. Some machinery at Husky has logged 20,000 to 30,000 hours. If this product extends the life of your machine and reduces emissions—it's a great thing!"

Reducing emissions and improving health

The Puget Sound Clean Air Agency reports that vehicles using biodiesel and biodiesel fuel blends emit less air pollution than regular diesel. Both pure biodiesel and blends reduce emissions of diesel particulate matter by 10 percent to 50 percent, as well as hydrocarbons and carbon dioxide, a pollutant that causes global warming, according to the agency.

Cindy Lin, manager of Environmental Compliance at the Port of Tacoma says that Husky's switch to cleaner-burning biodiesel reduces the emissions of sulfure dioxide, carbon dioxide and polycyclic aromatic hydrocarbons. By blending biofuel and ultra-low sulfur diesel terminal operators can reduce sulfur oxides by as much as 99 percent compared to standard diesel fuel.

The health implications of biodiesel are also convincing. The exhaust from diesel engines is a likely human carcinogen, according to the U.S. Environmental Protection Agency (EPA). Particulate matter from diesel exhaust is associated with many different types of respiratory and cardiovascular effects.

A work in progress

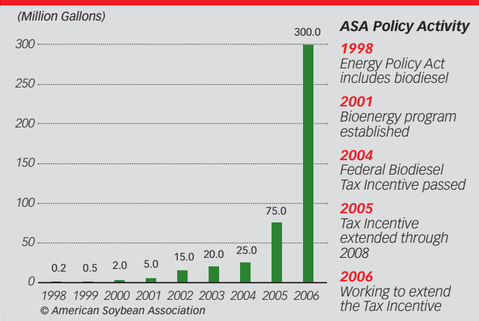
Husky Terminals continues to experiment with biodiesel blends. This past winter, Bassett quit using biodiesel in all of Husky's port equipment because it gelled as the temperatures started to drop late fall. Typically, biodiesel will freeze around temperatures in the low 30s. A fuel additive which can curb the gelling point is available. Bassett says that he plans to use this additive with lower biodiesel blends next winter. However, he will again implement a 20 percent blend into the terminal's equipment and even raise that figure to 50 percent during the summer months.

The costs of operating with biodiesel do not deter Bassett either. He says that depending on the ratio of the blend, the costs for using biodiesel can range from six or seven cents more a gallon to no additional cost. Distributors of biofuel receive governmental cost incentives which can trickle down to the end user depending on the degree of the blend.

"The added cost of using biodiesel is easy to justify if it extends the lifetime of our machines. The climate for emission reduction is building and we want to actively play our part."

More information:
Jason Gasparik
+1 253 922 3474
jason.gasparik@kalmarind.com

U.S. Biodiesel Production 1998–2006



30 Kalmar straddle carriers equipped with diesel oxidation catalysts operate at the Port of Tacoma's dockside intermodal rail yard. The catalysts help produce cleaner exhaust emissions.

Husky's decision to use biodiesel is the latest in a number of initiatives by the Port of Tacoma and its customers to make immediate, tangible reductions in diesel fuel emissions. These initiatives include:

- In 2005, the port purchased and installed EPA-verified diesel oxidation catalysts on 30 Kalmar Industries straddle carriers. The port also began using ultra-low sulfur diesel (ULSD) in port-operated equipment. In combination with the catalysts, total PM emissions were reduced up to 50 percent per vehicle.
- The port initiated an automobile purchase policy to replace retiring port-owned vehicles with new gasoline-electric hybrid vehicles.
- The port Maintenance Department staff is conducting a biodiesel pilot test project to determine operating efficiency on straddle carriers and other port operated equipment.
- Four of the Port of Tacoma's six container terminals use ULSD.
- Of the Port of Tacoma's 54 forklifts, 22 are powered by propane, a clean fuel.
- Low sulfur diesel is used in locomotives for switching operations at the port.
- The first of Evergreen's "green" ships is now calling in Tacoma. In addition to numerous other environmentally friendly design features, the vessels produce less diesel emissions.

Facts about Biofuel and blends:

- In 2005, world biofuel production surpassed 670,000 barrels per day, the equivalent of about one percent of the global transport fuel market. Oil still accounts for more than 96 percent of transport fuel use, but biofuel production has doubled since 2001.
- Brazil is the world's biofuel leader, with half of its sugar cane crop providing more than 40 percent of its non-diesel transport fuel. In the United States, where 15 percent of the corn crop provides about 2 percent of the non-diesel transport fuel, ethanol production is growing even more rapidly.
- Biodiesel boasts a positive energy balance—for every unit of energy needed to produce a gallon of biodiesel in the US, 3.24 units of energy are gained.
- Biodiesel is registered as a fuel and fuel additive with the EPA and meets clean diesel standards established by the California Air Resources Board (CARB).
- In 2005, about 75 million gallons of biodiesel were produced, tripling the 25 million gallons produced in 2004.
- Biofuels could provide 37 percent of US transport fuel within the next 25 years, and up to 74 percent if automobile fuel economy doubles.

At the forefront of change

Muuga CT boosts its efficiency with a new software maintenance agreement and a repeat order that complements its revolutionary RTG and Shuttle Carrier® handling system.

Muuga Container Terminal (Muuga CT) in the Port of Tallinn, Estonia has placed an order for one Kalmar E-One rubber-tyred gantry (RTG) crane and two Kalmar Shuttle Carriers®. The new order, set for delivery this summer, will complement the two E-One RTGs and two Shuttle Carriers® it has employed since September 2006.

All of Muuga CT's RTGs and Shuttle Carriers® will feature Kalmar's autosteering and container verification system, Smartrail®, and Remote Machine Interface (RMI) as the technology has been critical to the terminal's efficiency. Muuga CT is also engaged in an equipment software agreement with Kalmar, eliminating the stress of maintaining the technology on its own and ensuring that the terminal operates with the latest software.

The new RTG will be similar in size to the two existing 6+1 and 1-over-4 high units but 1.5 metres wider to accommodate the Shuttle Carriers® which are loading and unloading containers underneath the crane. The new Shuttle Carriers® will also be modified to better handle trucks with side loaders by making each machine a metre taller.

Sergei Artjomov

'Smart,' convenient solutions

Lack of space and the need for high productivity were the main reasons behind the decision to combine RTGs and Shuttle Carriers®. Utilizing the proper equipment with time-saving software has been the key to Muuga CT's success. Sergei Artjomov, Chairman of the Board, Muuga CT, explains:

"Without assistance from Smartrail and RMI, productivity would be zero in the area of the terminal where RTGs are working. Our drivers are totally reliant on the Smartrail system to help them guide the RTG to the correct area in which a container is located. The RMI technology makes it easier to recognize a problem and fix it in an efficient manner."

Muuga CT enjoys the convenience of having a software agreement with Kalmar. According to the contract, Kalmar is totally responsible for maintaining the terminal's equipment software which promises Muuga CT that it will always operate with the latest, most up-to-date systems. This sort of assurance is appreciated due to the rapidly changing environment of the software world.

Full speed ahead

As the first container terminal operator in the Baltic region to introduce a handling system that combines RTGs and Shuttle Carriers®, Muuga CT sees no reason to stop moving forward. The new handling system has tremendously impacted the terminal's operation, increasing seaside productivity by 18 percent and landside productivity by more than 50 percent.

"The new system works well for our terminal, helping to increase efficiency in all areas of exchange. But we are also still 'in training.' Our drivers and mechanics continue to learn more everyday about the equipment," says Artjomov. "When they have reached a good level of confidence in working with this new operating system, our potential for record productivity will be great!"

Setting an example, and the pace

In 2006, Muuga CT handled 152,000 TEU and expects its container volume to grow by 17 percent in 2007. Operating in a free customs zone, the terminal hopes the Port of Tallinn will initiate its expansion plans this year which means more facilities, capacity and growth potential for Muuga CT.

"We are the only terminal in the Baltic with new equipment. Containerization in the region is growing and the other terminals in the area are waiting to see what we will implement next. Because we are a smaller terminal, this allows us to be more flexible in our decisions and more adaptable to growth," says Artjomov.

Muuga CT was also the first terminal operator in the region to introduce the reachstacker concept in 1993 and a harbour mobile crane in 1999.

Automation: making it easy to upgrade

More and more customers are opting for software maintenance agreements when purchasing Kalmar equipment equipped with smart products. Kalmar's intelligent applications like Smartrail®—an autosteering and container position verification system for RTGs, Smartpath®—a container position verification system for straddle carriers and RTGs, and Remote Machine Interface (RMI)—a tool for remote machine monitoring, maintenance tasking and reporting can be continuously serviced by Kalmar's Intelligence & Automation unit.

Besides receiving prompt and systematic support, customers who choose Kalmar software maintenance agreements enjoy free upgrades of their automation systems. These updates can be done remotely with Smartpath® and RMI, and soon also Smartrail®.

Raimo Raita, Kalmar Intelligence & Automation Product Manager, notes the benefits of having this type of support:

"This service assures customers that they are informed about future software and hardware updates and generation changes which might affect the lifecycle, usability and availability of the equipment."

Software technology is constantly changing and evolving, and Kalmar possesses the skills and resources to handle updates and generation changes on behalf of the customer's operation—helping to attain continuous maximum efficiency.

Germany gets the EDRIVE® vibe

Early 2007 has seen a string of orders from Germany's leading terminal operators for Kalmar's 7th generation ESC straddle carriers, confirming its position as the straddle carrier of choice in that country.

MSC Gate Bremerhaven GmbH & Co KG and North Sea Terminal Bremerhaven (NTB) GmbH & Co have taken delivery of ten and seven ESC440 W units respectively, while HHLA's Container Terminal Burchardkai GmbH (CTB) at the Port of Hamburg has ordered ten ESC350 W units, due to be delivered imminently. All three customers have also opted for a service contract during the warranty period.

Kalmar's EDRIVE® straddle carriers are electrically driven with AC drives to meet the strictest environmental standards. The units on order to Bremerhaven and Hamburg are all fitted with winch rope hoist systems and feature APP™ (Auto Pick and Place), which contributes to more precise operations. Special attention has been paid to reduced noise emissions in consideration of the nearby residential areas.

According to Ilkka Annala, Vice President, Kalmar Straddle Carriers, Kalmar's position in Germany is stronger than ever. "We have played an important role in the growth of the Port of Hamburg over the years and we are now pleased to be expanding that role further into Germany's other key gateway of Bremerhaven.

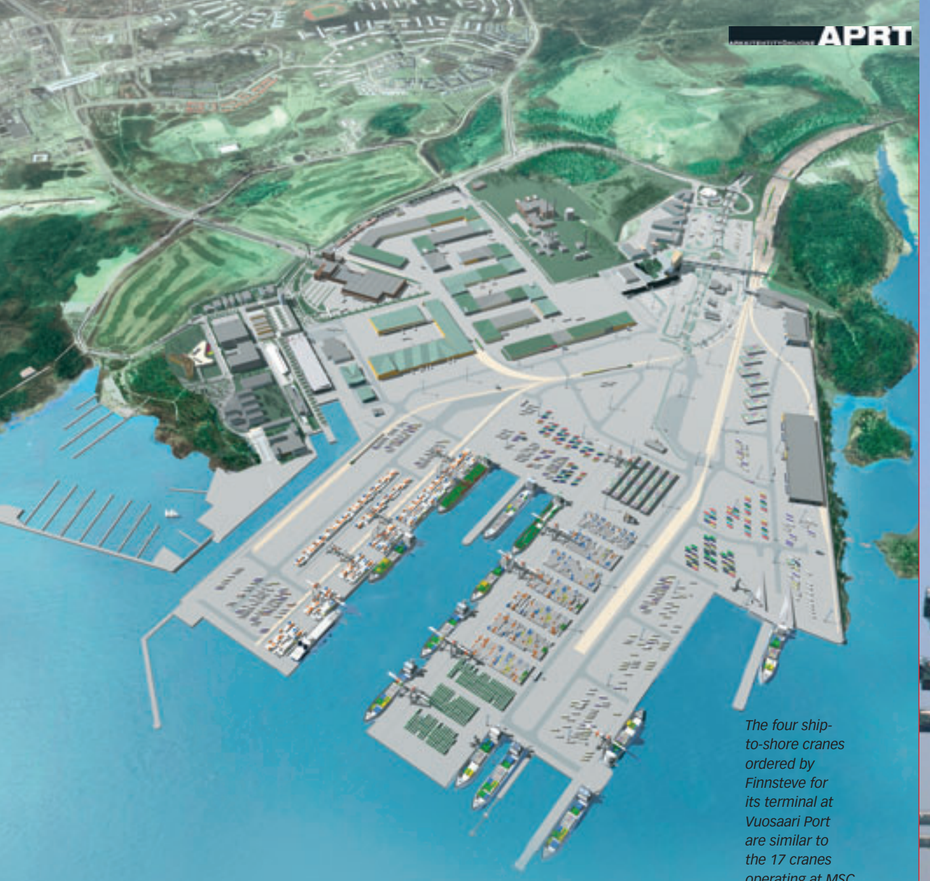
"Our 7th generation ESCs are ideally suited to busy terminals looking to increase productivity thanks to their heavier load handling possibilities, minimised operational costs and environmental credentials."

Six of MSC Gate Bremerhaven's four-high ESCs will be supplied with twin lift spreaders while all ten are employed at Bremerhaven's CT1 terminal, which opened in 2004. This was Kalmar's first straddle carrier order from MSC Gate, a joint venture between leading European terminal operator, Eurogate, and one of the world's largest container carriers, Mediterranean Shipping Company. The excellent performance of the ten ESC units in operation at Eurogate's Hamburg facility since early 2006 no doubt contributed to this latest order.

NTB's seven four-high EDRIVE® straddle carriers have been supplied with single lift spreaders for operation at the new CT4 terminal, to be opened later this year. While the straddle carrier delivery is Kalmar's first to this particular terminal, APM Terminals, which owns half of NTB, is a longstanding Kalmar customer and employs its handling equipment at terminals around the world.

HHLA Container Terminal Burchardkai's three-high ESC units, all equipped with twin lift spreaders, feature the option for modification into four-high container stacking. HHLA is Kalmar's biggest customer in Germany and the new equipment will join the fleet of almost 70 straddle carriers already employed at the CTB facility. Total container handling capacity at the Burchardkai terminal is around 2.9 million TEU across an area of 160 hectares.

At present, Kalmar is working in partnership with CTB to put in place an automatic stacking crane (ASC) system (see page 3).



The four ship-to-shore cranes ordered by Finnsteve for its terminal at Vuosaari Port are similar to the 17 cranes operating at MSC Home Terminal in Antwerp.

Finnsteve thinks big with super post-Panamax cranes

Finland's newest container facility – Vuosaari Port in Helsinki – will be home to four giant Kalmar ship-to-shore (STS) cranes by the end of 2008, reinforcing Kalmar's position as the leading supplier of STS cranes in Western Europe.

Finnsteve Oy Ab, which specialises in port services for container, truck and trailer traffic, is to considerably increase its container handling capacity at Vuosaari Port with four new super post-Panamax STS cranes from Kalmar. The cranes, due for delivery in autumn 2008, will incorporate the latest handling technology in terms of both capacity and performance.

World-class performers

With 55 metre-long beams, the cranes will be capable of loading and unloading vessels up to 18 containers wide. Lifting capacity will be 82 tonnes, in either twin lift mode or the increasingly popular Bromma-developed tandem lift mode, whereby two 40ft containers are lifted at the same time. In terms of lifting capacity and productivity, they will be comparable to cranes previously supplied by Kalmar to some of the world's largest port operators, including DP World and PSA – which has recorded 50 container moves per hour from the Kalmar STS cranes operating at its MSC Home Terminal facility in Antwerp.

Cabin comfort

Special attention will also be paid to the crane operator's working environment in the Finnsteve cranes. The spacious cabins will offer good visibility and well thought out control systems for safe and comfortable operations. Energy-saving solutions and ease of maintenance will also be inbuilt. A Crane Monitoring System will provide information on the condition of each crane, the number and weight of lifts, maintenance intervals, and fault diagnosis.

The opening of Vuosaari Port in December 2008 will give Helsinki's container throughput capabilities a major boost. The facility, which will be one of the most modern ports in the Baltic Sea, is expect to attract much larger container vessels to Helsinki thanks to its 750 metre-long quay.

Kalmar is the number one STS crane manufacturer in Europe, having delivered almost 40 STS cranes to large European ports such as Antwerp, Oslo and Helsingborg, over the last few years.

MSC Home Terminal and Kalmar go the distance

In 2006, MSC Home Terminal carried out 2.4 million moves and handled 3.6 million TEUs with 21 cranes and more than 100 straddle carriers. This year, the terminal will welcome the seventeenth Kalmar Post-Panama Ship-to-Shore (STS) crane to its quay, proving that the partnership between MSC Home Terminal and Kalmar has been successful all the way.

As the largest container terminal in Antwerp, the MSC Home Terminal is a 50/50 joint venture between Mediterranean Shipping Company—the second largest container shipping company in the world—and HNN/PSA. Crane Services Manager Michel van Ginneken boasts, "We have the longest straight quay in the world—2,100 metres with 17 identical cranes in a row. This is unique. There is nothing like that anywhere else!"

In short, everything is big and imposing at MSC. Those 17 Kalmar STS cranes are now almost a reality. During the interview, number 16 was ready to lift and the last Kalmar crane was in construction.

van Ginneken has been so enthusiastic throughout the delivery of the entire Kalmar STS crane order that MSC Project Manager Huub van Ingen Schenau jokes, "Let Michel get started and you will not stop him!" And indeed, van Ginneken shows an infectious interest in presenting one impressive operational fact after another.

Priorities key to service success

The availability of the container handling equipment operating at MSC is the responsibility of van Ginneken who manages MSC Home Crane Services. The service organization, which employs 34 people, ensures that the 120-people operations workforce can carry out its three shifts per day / 365-days a year work schedule. To help him fulfill this requirement properly and effectively, van Ginneken formulated three objectives: "The safety of the people and the equipment is top priority. We work responsibly and we have no time for clowns. Second is our availability to Operations. They are our 'customer' and the aim is to achieve at least 90 percent usability for the cranes. Third: failure or standstill for technical reasons may amount to a maximum of 0.8 percent of the production time."

Failure, according to van Ginneken, means loss of work for 13 port workers on deck and on land. "Remember that there are 3.2 straddle carriers active per STS crane. For now, though, we are achieving the targets."

Manager of MSC Home Terminal's Crane Department, Michel van Ginneken (right) and colleague Guy de Weerdt smile for the camera as the 16th Kalmar STS crane is erected behind them on quay 702.

Acheiving targets with good service and equipment

A summary for 2006 shows all sorts of performance figures for the cranes and the service. van Ginneken comments: "Here you can see, for example, that the Kalmar cranes were available for 94.2 percent of the time. That is very good and we are proud of that. You can only achieve something like that with good equipment and careful preventive and planned maintenance—not too early and not too late. We also managed to limit the 'downtime during operations' to 0.52 percent last year with the target being 0.8 percent. I am also pleased to say that the average failure time was only 15 minutes. You can only achieve this if you play a tight game and always have people and replacements ready."

MSC Home is a so-called dedicated terminal. This means that in principle only MSC vessels are handled. "The advantage of that is that your own vessels always have 'priority' at the terminal," according to van Ginneken. He adds, "On the other hand, it is also more fickle. Because they are all your 'own' vessels, it is easier to disregard the planning because waiting container ships cost a lot. That is why a dedicated terminal must also be very flexible, and all the more in our case because MSC is growing rapidly worldwide!"

A professional, honest partnership

Speaking about the relationship between the MSC Home Crane Service and Kalmar, van Ginneken says: "We have a very close and good relationship. Kalmar has many very experienced, well-motivated and professional people. They do not take any chances with safety and they behave professionally. Once again, the planning for the construction of the crane was met. And, if on occasion they did not meet the planning, then they made sure there was feedback in good time. To be quite honest, if there are problems then Kalmar does not avoid them, and that is very much appreciated. The cranes are active here for 5,400 hours per year, 105 hours per week—that is very intensive. The quality level must therefore be achieved. We are proud to be working with good, sound equipment, and we are proud to be professionally supported by Kalmar."

More information:
Rene Kleiss
Tel:+31 102 946 702
rene.kleiss@kalmarind.com

The Sidor steel plant in Puerto Ordaz, Venezuela produces wire ropes, steel coils, plates and slabs, which are exported onboard vessels, mainly via the Orinoco River. Tayukay, the company contracted to manage the loading, handles some 1,900 tonnes worth of these steel products every month.

Maintaining the Orinoco flow

In order to increase its efficiency, Tayukay last year took into operation 10 Kalmar forklift trucks of 16, 25 and 30 tonnes. To boost productivity, it also opted for a service and maintenance contract, including spare parts.

"Our performance is measured by the rate at which we load the vessel. Failure to meet our targets results in penalties, so it is important that we maintain fast and reliable services in order to maximise our income," says

Ruben D Ramirez Tizzani, Operations Director of Tayukay. "The design and service contract provided by Kalmar has enabled us to expedite our operations by around 50 percent."

Sidor employs 6,000 people, making it one of the world's biggest steel plants. Its products are exported via the Orinoco River's port of Puerto Ordaz, a couple of kilometres from its factory, on to destinations such as Mexico, Columbia, Ecuador, Peru and the USA. Venezuelan internal consumption has also shown a recent increase, resulting in river transportation to domestic destinations such as Puerto Cabello and La Guaira.

Initially, Sidor undertook its own steel handling operations at the river port. However, a year and a half ago it decided to outsource the task to Tayukay, a joint venture between Venezuela's Fapco and Chile's Agunsa.

"We began operations using Sidor's old forklift trucks," explains Mr Tizzani. "But it soon became apparent that we would need better equipment to meet our productivity targets and so we asked Sidor if we could introduce the Kalmar forklifts."

The Kalmar machines were an obvious choice for Mr Tizzani, who was familiar with Kalmar equipment through his previous job with Agunsa in Chile. "In Chile, we used Kalmar forklifts for wood, pulp, and lumber and reachstackers and empty container handling machines for container handling," he says.

Sidor agreed to the proposal and Tayukay consequently ordered ten Kalmar forklifts, which have been in operation at Puerto Ordaz since February 2006. "Their superior handing performance has astonished everyone —so much so in fact that operators are early for their shifts, just so they can get to the new machines first!" says Mr Tizzani.

But it is not only the latest in forklift truck know-how that Tayukay has introduced into its Sidor operations; it has also adopted the terminal tractor concept with terminal tractors transporting the steel between the production plant to the pier. "The speed and pulling power of the tractors, as well as the ease with which they can be connected and disconnected to the loads, has really taken the locals by surprise. Their productivity is excellent compared with the conventional road trucks we used previously," says Mr Tizzani.

Special requirements

When defining the specifications for the new forklifts there was one important requirement. Explains Mr Tizzani:

"We need to be able to operate the trucks, sometimes simultaneously, onboard the vessel. However, our cranes can only handle 20 tons so the machines cannot be lifted onto the vessel in one piece. The counterweights need to remove before lifting the equipment onto the vessel and then re-attached onboard.

"This had traditionally been quite a critical element in our operations because the procedure was time consuming with the older units. It also required an employee to climb onto the machine, which obviously had safety implications. With the new units, we hoped that Kalmar could introduce a solution which would enable us to shorten the procedure by 30 minutes."

Mr Tizzani's expectations were surpassed when Kalmar came up with a design that allowed for the removal and re-attachment of counterweights in less than 10 minutes.

"In fact," he says, "we are able to do it in an even shorter timeframe than that promised by the Kalmar design team! The solution is quite simple but works very well. Basically, there are two bolts to keep the counterweight in place, which can be easily and quickly removed.

"When loading a vessel, it is vital that everything proceeds smoothly and without delay, which is why the counterweight issue is so important to us. We are given a desired loading rate for each vessel from the customer. This varies from product to product, but for coils, for example, it would be 5,000 tons per day. If we do not meet this target, we pay a penalty."

Demanding workloads

Kalmar and its local dealer, Tecnaval, have a service organisation on site at Puerto Ordaz to make sure the machines operate 24/7. The units delivered February 2006 have already achieved 1,000 running hours.

Handling steel products in an extremely demanding environment is a real test of machine durability. In an industry as tough as steel, machine availability is a critical factor.

Tayukay works in close co-operation with Sidor, planning its operations according to production details received from the customer. The majority (55 percent) of cargo is coils, varying in weight and in length, from 0.8 to 1.9 metres. Steel slabs account for 20 percent of cargo, wire rope a further 16 percent and the remainder is steel plate. All cargo is delivered to the port from the nearby factory by train. Ayukay employs forklifts of varying sizes and capacities to handle the different loads, which can weigh anything up to 22 tons.

The river port operates six cranes and serves a minimum of 10–12 vessels every month. It is capable of loading a maximum of six vessels at any one time with the help of 750 employees working across three shifts.

Orinoco power

The Orinoco River has the third largest flow of the world's rivers and is the site of numerous ambitious industrial developments. The harvesting of hydroelectric power from some of its main tributaries generates enough energy for the industrial development of the majority of Venezuela's iron and aluminium mines, as well as light for most of Venezuela and some areas of Brazil and Colombia.

Puerto Ordaz is located at the confluence of the Caroní and Orinoco Rivers. It is one of Venezuela's largest cities and is the base for large iron, aluminium and steelworks, in addition to goldmining and other industries. The city has a large hydroelectric power plant, Guri.

Sidor is the most important steel producer in Venezuela and a subsidiary of Ternium, a manufacturer of flat and long steel products. Ternium consolidates the operations of the steel companies Hylsa (Mexico), Siderar (Argentina) and Sidor (Venezuela) and is one of the leading steel companies in Latin America with an annual crude steel production capacity of 10.8 million tons.