

# E-One RTG will aid logistics in Linz

**Faced with steadily increasing container volumes and a limited amount of space at its transshipment hub on the Rhine-Main-Danube waterway, Austrian LINZ AG urgently needed a solution to improve productivity. Kalmar's E-One RTG, with its faster, more efficient loading, higher flexibility, improved uptime and lower overheads, was the ideal piece of kit for the job. The machine will be delivered September 2006.**



*Pictured from left Tibor Legrády, Area Sales Manager KHF and Franz Frisch, Terminal Manager Linz AG.*

its location on the Rhine-Main-Danube waterway has made the Port of Linz a major goods traffic centre. LINZ AG, operator of the

trimodal logistics facility where goods are transhipped via rail, road and water, is currently reporting annual volumes of 175,000 TEU. On peak days, the port handles anything between 300 and 400 trucks – traffic which requires high equipment performance levels.

To stay competitive, LINZ AG needed to increase its existing 10,500m² warehousing facility as well as its transshipment capacity. This was only possible by reducing the traffic area. Further requirements included a more flexible terminal lay-out and a more efficient system for managing box positioning.

Explains Franz Frisch, head of LINZ AG's container terminal: "In the last few years we have conducted an extensive market analysis, looked at the existing equipment in operation, and spoken with other companies about our options. Discussions with persons in charge of container terminals in Istanbul and Athus (Belgium) strengthened our view that Kalmar's RTG E-One® would be the best solution."

Crucial deal-breakers in selecting the E-One included

Kalmar's Smartrail® autosteering and container position verification system, which eliminates costly ground installations and rails, thus increasing flexibility and leaving more space for warehousing. Another important factor was the machine's speedy and precise grip on individual containers. The E-One can stack nine rows of containers next to each other and lift any container in the row. Thanks to its global position system, the E-One is also capable of digital positioning management, which allows a box to be located at the push of

a button, thus eliminating time-consuming searches.

"Last but not least," says Frisch, "we expect the E-One to reduce operating and maintenance costs because of longer service intervals and lower fuel consumption."

Kalmar's E-One sets new standards in RTG performance. It incorporates all-electric operations, aside from its hydraulically operated spreader. It also offers high-performance lifting with spreader capacity of up to 40 tonnes.

E-One's intelligent power system, which adjusts the maximum driving speed according to the load on the spreader, cuts fuel consumption and hazardous emissions by up to 30%. The fact that E-One is almost entirely free of hydraulic functions, also makes maintenance more environmentally friendly.

More about E-One:  
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# Kalmar around the World

A GLOBAL BUSINESS MAGAZINE FROM KALMAR INDUSTRIES, NO.2/2006

## Higher stacking increases capacity at Kingston

To cope with new business secured in October 2005 that will boost its container throughput by some 500,000 TEUs per year, the Port Authority of Jamaica (PAJ) has ordered 24 4-high 7th generation Kalmar CSC 450 straddle carriers and six 7-high Kalmar empty container handlers for its facility at Kingston Container Terminal.



[www.kalmarind.com/newsroom](http://www.kalmarind.com/newsroom)

## E-One RTG makes its Australian debut



*E-One RTG pictured at the Global Terminal & Container Services, Port of Bayonne (NY/NJ).*

Kalmar Industries has received an order from P&O Ports Australia for six all-electric E-One rubber-tyred-gantry (RTG) cranes – three 8+1 wide and 1-over-5 high units for its Port Botany Container Terminal in Sydney and three 6+1 wide and 1-over-5 high for its Fremantle Terminal.

The RTGs are scheduled for delivery in late autumn 2006.

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## On the right track



**HHLA has chosen Kalmar to supply an automatic stacking crane (ASC) system and related technology in phase one of the Container Terminal Burchardkai (CTB) conversion project. CTB Managing Director, Christian Blauert reviews this challenging project on pages 4 and 5.**

## Quiet reachstackers



*Anders Kjellberg, Production Manager at Trelleborgs Hamn and one of the first quiet DRF reachstackers.*

**To cope with an increase in cargo handling at its new combi terminal while at the same time ensuring noise in the facility remains within acceptable limits and does not disturb those living in the adjacent residential area, Trelleborgs Hamn in Sweden turned to Kalmar for a solution.**

This was provided in the shape of a new, quiet reachstacker, two of which will be in operation at Trelleborgs by late summer. The quiet machines – DRF450 75C5XS – achieve efficient handling on two parallel rail tracks, the first with a 45-tonne and the second with a 36-tonne lifting capacity.

Anders Kjellberg, Production Manager at Trelleborgs Hamn, commented:

"We tested machines from other suppliers, but all senior drivers in the four teams responsible for container handling realised the advantages of Kalmar's reachstackers.

The reachstackers' special anti-noise features include effective and well-adapted sound absorbers and a new type of silencer. Moreover, Kalmar technicians developed new ways of drawing off heat from the machine, since the absorbers that also act as insulation could otherwise cause the engine to overheat.

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**South African Port Operations (SAPO) continues its mutually beneficial relationship with Kalmar. The companies celebrated hand over of the straddle carrier nr 4000 of all times in April. Pictured from the left Tau Morwe, SAPO CEO, Solly Letsoalo, General Manager Container Section and Hamilton Nxumalo, General Manager Equipment Engineering and Asset Management.**

Continues on page 12

## Expanding service business in the US

**Kalmar has acquired the business of East Coast Cranes and Electrical Contracting Incorporated (ECC), a US company specialising in crane construction services and maintenance in ports.**



ECC's founder, Jim Anastasio: "Kalmar gives us the resources and experience needed to continue our staggering growth. In turn, we hope to offer Kalmar our highly qualified service staff to support their products. The combination of Kalmar and ECC is a perfect fit."

Continues on page 20

# The container that changed the world

Modern life as we know it is the result of a revolution that began 50 years ago. April 26th, 2006 marked the fiftieth anniversary of containerisation, one of the 20th Century’s most influential advances. In just 50 years, the container, or “box”, has developed at a phenomenal pace, altering global trade, our ports, our cities and ultimately our day-to-day lives.

As early as 1937, Malcolm McLean had an idea: “Wouldn’t it be great if this trailer could simply be lifted up and placed on the ship, without its contents being touched?” The seed was planted, but it would take almost another twenty years before his idea would become reality.

On April 26, 1956, the Ideal X, a converted tanker from Pan-Atlantic Steamship, left Port Newark in New York harbour for Houston, Texas with 58 containers on specially installed decks. The result: Container shipping was born. The industry has come a long way since then. In 2005, the world’s ports handled an estimated 390 million TEU with an estimated worth of USD 250 billion.

The container revolution has been compared to the invention of the wheel or the transition from sail to steam. One thing is certain; containerisation did much more than change transportation. It alone is responsible for the incredible growth in world trade, changing forever the world’s economic and geopolitical map.

McLean’s vision has had an impact on everyone’s life. Without the container, a lot of the commodities we take for granted would not be available because container shipping offers us a cheap way to transport goods over long distances.

# The industry celebrates 50 years of containerisation

*The 50th anniversary of containerisation has been celebrated across the globe this year with parties, awards ceremonies and numerous articles in the industry’s media.*



Dominic Obrigkeit, Senior VP, Evergreen America Corporation (second from left) accepts his Award from Juhani Lukumaa, President, Kalmar Container Handling (third from left). They are flanked by John Fossey, Editorial Director of Containerisation International (left) and the Awards’ compere, Jim Angle, Chief Washington Correspondent for Fox News Channel.

The beginning of container shipping is widely held to be the sailing of the Sea-Land vessel Ideal X out of New York in spring 1956. In recognition of this and to commemorate 50 years of excellence in container shipping, Containerisation International, with the support of sponsors such as Kalmar Industries, hosted an awards dinner in New York in April.

In reflection of its own business philosophy, Kalmar chose to sponsor the Corporate Social Responsibility (CSR) Award, designed to recognise an organisation’s awareness of its social and environmental obligations.

The judging panel – consisting of Christine Cross, an independent business advisor, Neil Everett, a 10-year veteran in the container shipping industry, and Magnus Swahn, Principal, Conlogic – shortlisted three organisations they felt had made an outstanding contribution in terms of CSR, namely Evergreen Marine Corporation (Taiwan) Ltd, Crowley Maritime Corporation and the Port of Tacoma.

All three companies were praised for their efforts in the realms of CSR: Crowley Maritime for the development of its operational excellence management system and the Port of Tacoma for its emissions reduction programme.

However, it was Evergreen that picked up the award on the night, in reflection of a number of environmental, educational and humanitarian reasons that the judges said were inspired by the Group’s Chairman Chang Yung-Fa and his senior management team. The judges singled out the carrier’s new S-class container vessels, which they said showed a proactive attitude to the environment, particularly given the additional costs in their design and operation. The company’s response to the December 2004 Asian tsunami disaster and its allocation of resources to get supplies into the stricken areas were also highly commended by the judges, as was the strong emphasis given to CSR initiatives in the company’s training programmes.

The award was presented by Juhani Lukumaa, President, Kalmar Container Handling to deserving recipient Dominic Obrigkeit, Senior VP, Evergreen America Corporation.

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# Kalmar around the world

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# Half a century of expertise culminates in The ultimate heavy FLT

*Kalmar has launched a new generation of “intelligent” heavy lift trucks, combining 50 years of expert knowledge and the latest technology for an altogether cleaner, greener and more reliable machine.*

Kalmar will target the global market with its new generation heavy lift trucks, capable of handling loads of 30 tonnes and above. The range is designed for ports, transshipment centres and any company whose logistic flows include heavy materials such as steel, stone, concrete etc.

## Putting the driver first

“It is important to focus on the comfort of the driver, not only for reasons of safety but also for productivity,” explains Product Line Manager [Dan Pettersson](#). “These latest trucks are true drivers’ machines. Ergonomics have been achieved by the incorporation of intuitive operator controls, improved noise reduction and the same state-of-the-art cabin fitted to the DRF reachstacker.”

Low vibration and noise levels of just 70 dB(A), improved 360 degree visibility from the cabin and “fingertip” handling all make for a more comfortable driver experience and, ultimately, greater productivity. The system is also more responsive than traditional control systems, with better interplay between functions. Machine data, such as information or warnings, are displayed when necessary.

## Peak performer

Performance is also improved thanks to a more powerful and responsive engine. Fully automatic electronic transmission optimises engine output, revs and gears according to driving conditions.

One of the most important factors in maximising productivity has been Kalmar’s ability to find the right combination of components, according to Mr Pettersson.

“Because Kalmar has more than 50 years’ experience of different applications worldwide, we know what works. For example, in many cases machine versatility, such as the ability to exchange lifting equipment quickly on site to suit different tasks, is the most important factor in achieving overall productivity.

“Over the past 50 years we have gained sound experience in solving logistics problems for our customers, whether they are engaged in industrial, stevedoring or roro activities.”

## Ready and reliable

The new generation heavy lift trucks also stand out from their predecessors in terms of reliability.

“The key is combining field-proven components with new technology, such as diagnostics,” explains Mr Pettersson.

The result is a range of so-called “intelligent” machines. “By intelligence we mean improved technology such as new types of control and steering systems, and fault diagnostics. Thanks to these intelligent features, while the driver is handling the machine, the customer’s workshop receives data information when, for example, it is time for an overhaul.”

The control system in the new

trucks tells the operator what to do when a fault is identified, thus avoiding unplanned downtime. It also features fewer wires, contributing to ease of maintenance and to safety.

An enhanced hydraulic system keeps the oil cool and clean, even at maximum machine utilisation in warm conditions. Meantime, a simpler layout and leakproof ORFS couplings in all connections facilitate machine maintenance.

Significantly, Kalmar’s improvements to the machine have meant that service intervals have now doubled from 250 hours to 500 hour.

“The improvements that have been made are very much a result of our ongoing dialogue with customers,” says Mr Pettersson.

## Green and clean

It is Kalmar’s design policy wherever possible to go beyond current environmental legislation and regulations and the new heavy FLT range is no exception. The trucks are equipped with the latest generation low-emission en-

gines which, because they also run as silently as possible, contribute not only to driver safety but also reduce noise pollution in built-up areas.

Longer service intervals and efficient cleaning processes for hydraulic oil and lubricants also contribute to a reduced environmental impact.

## Service-driven

With the new truck family, the customer also has the opportunity to cooperate more closely with Kalmar, as each machine comes with optional access to a range of services, from assistance with financial issues to training and maintenance.

“Kalmar offers the best services in the market and the package for the new generation of lift trucks was designed to meet our customers’ different requirements. They have the freedom to pick and choose from a range of services – such as maintenance, financing, and training – whatever meets their particular needs. Our aim is to find the optimum total solution for each particular customer,” Mr Pettersson says.

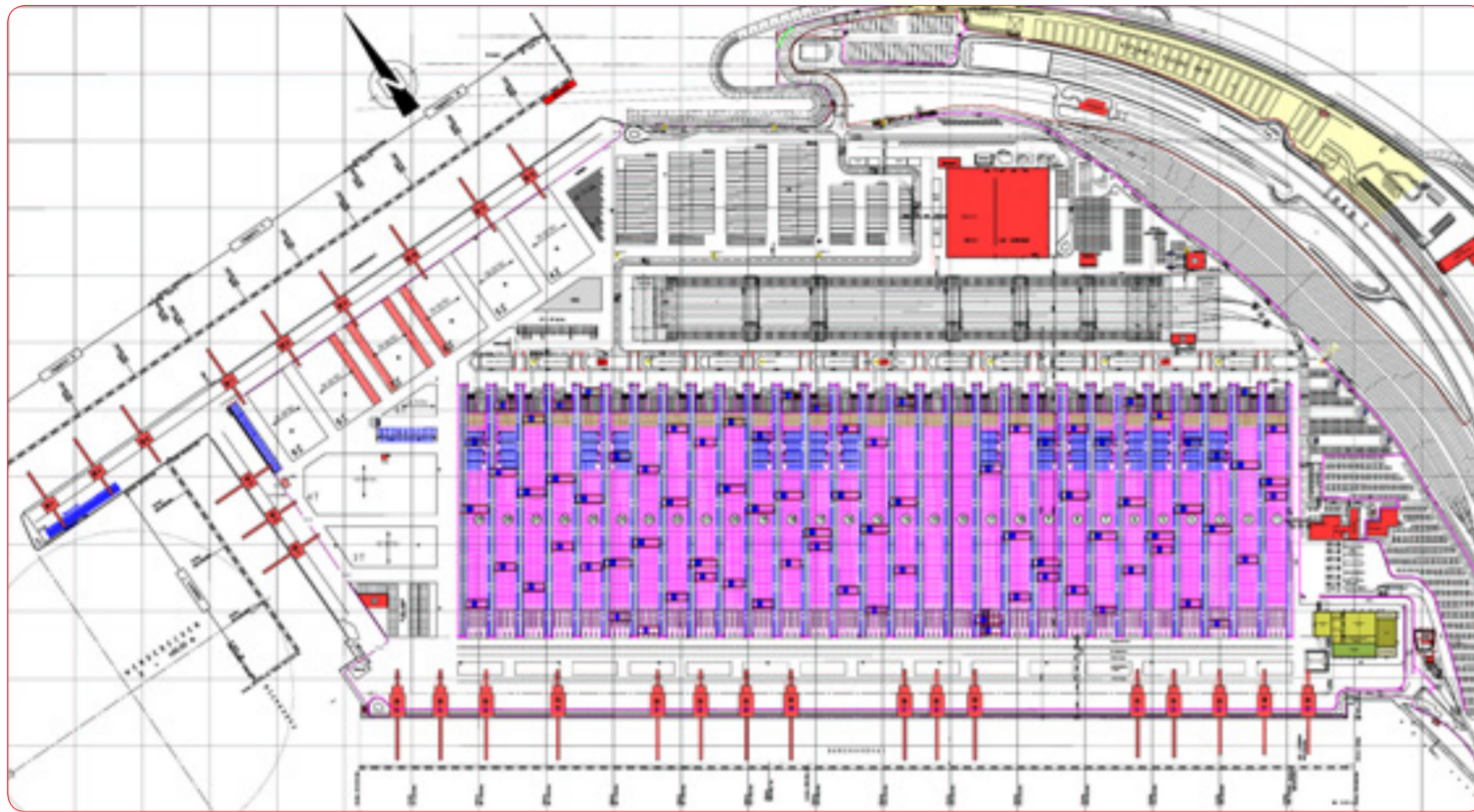
## Technical factsheet

- |                   |                                                                   |
|-------------------|-------------------------------------------------------------------|
| Lifting capacity: | 30–50 tonnes                                                      |
| Wheel base:       | 4,5–6 metres                                                      |
| Engines:          | Volvo and Cummins, low emission, turbo diesel, (Tier 3)           |
| Transmissions:    | Dana – Spicer, electronic transmission with integrated converter. |
| Drive axle:       | Axletech                                                          |
| Control system:   | redundant CAN – BUS                                               |
- Wide range of liftmasts, carriages and attachments to fit different applications and requirements.



When developing the new heavy lift trucks, Kalmar took into account the handling requirements of its customers across climate zones, applications and cultures. The new machines will be an optimum choice for ports, transshipping centres and in heavy industries – for any site where logistic flows include heavy materials.

HHLA has chosen Kalmar to supply an automatic stacking crane (ASC) system and related technology in phase one of the Container Terminal Burchardkai (CTB) conversion project. Kalmar will equip the first five yard stacking blocks with 15 ASCs, along with their automation and control systems, during 2007 and 2008. Upon the project's completion by 2015, the terminal will be equipped with 30 blocks operated by a total of 90 ASCs.



The automated container storage area will lie at a 90 degree angle to the main deepsea berths and the 1.4 km long main quay wall of Waltersshofen Hafen. Athabaskakai and Packhafen will continue to operate with a straddle carrier system.

# On the right track

Before his current post as CTB Managing Director, Christian Blauert worked as Project Manager for the automation of HHLA Container Terminal Altenwerder (CTA) during years 1998 to 2003. Although the facility has proved a success, the experience was so demanding that he remembers thinking back then: "Once was enough."

But here he is again, only now the task at hand – converting CTB's storage yard into an automated facility while ensuring the site remains fully operational – is probably even more challenging. The main objective of the project is to double the volume of container volume passing through the site from the current 2.6 million TEU to 5.2 million by 2014.

## Ground-breaking projects

"The automation of CTA was one of the most innovative greenfield projects in the shipping industry at the time. We reclaimed the land, planned the terminal and set up a new organisation from scratch.

"With CTB everything is different. It is the oldest of HHLA's terminals with almost 40 years of history in container handling. We will now have to implement the new technology in the existing environment, working with the

existing equipment and the existing organisation. What complicates the project further is that we need to expand capacity dramatically without any extra land or quay space, while maintaining existing customer service levels," Mr Blauert says.

## Staff key to success

One of the challenges of the CTB project deals with winning the staff to change procedures.

"We'll have to convince an experienced team that their motivation to understand the new technology, define the new procedures and learn a complete new way of working, is paramount for the success of the project. Sometimes human beings are reluctant to change their ways of doing things if there isn't anything wrong in the old way per se. So one of our tasks is to ensure that everyone at CTB will see that changing the way we operate will bring us more of much-needed capacity, from which we will all benefit," Mr Blauert explains.

To ensure that the changeover goes as smoothly as possible, CTB proceeds one step at a time. For example, next year will see the implementation of a new IT system and the opening of a new control tower. The container

## Yard at HHLA Container Terminal Burchardkai (CTB):

up to 29 blocks, 10 wide, 5 high

Length 45 TEU, appr. 2,100 TEU/block (incl. IMO, reefer)

appr. 62,000 TEU  
appr. 700 TEU/crane  
3 cranes per block

handling staff will be able to get used to the new system gradually, as operations in the yard will not be affected by the change.

## New 'block' system

At present there are 30,000 slots for 20ft containers in the yard at CTB, and to reach the goal of 5.2 million TEU annual throughput, nearly 70,000 slots are needed. According to Mr Blauert, it was clear that a considerable increase in volume and density such as this would be impossible to achieve with a straddle carrier system and instead would require the use of stacking cranes.

Once completed, the terminal will be operated as a 'block' system, with 29 yard blocks stacking ten containers wide, five containers high and 44 TEU (375 m) long. Mr Blauert says

that according to their estimations there will be on average one crane per 700 containers. He explains:

"There will be 2,100 containers in one yard block, and in each block we'll have two small ASCs capable of straddling the ten-wide, five-high blocks and one wider and higher ASC that will be able to pass over the smaller machines with a loaded container. Operating on a separate set of rail tracks, the cranes will be moving freely within each block."

## Maximised operational flexibility

"In the block system the focus is on operational flexibility. Having one crane that can pass over the others, enables the allocation of two cranes on the quay side or on the landward side during peak times," Mr Blauert says.

The concept also allows the shuffling of containers. To illustrate, in the third shift there is no hinterland traffic, so the crane in the landward end of the block can be used to move containers towards the quay. If the data of some containers is unclear, they are usually stacked in the middle where a second smaller crane can shuffle them to be cleared to be moved to a vessel. This way the distance that the two smaller

cranes have to travel can be kept to a minimum. Mr Blauert comments:

"One crane can do about 20 moves per hour. Nearer to the quay side, due to the shorter distance, a crane can speed up and move up to 30 containers per hour but only if all containers in the area have been shuffled. In total the RMG yard is designed to handle 1,200 boxes per hour to be stacked in or out."

The concept of cranes that pass each other was first implemented at CTA and has proved a success.

From the quayside containers

will be transported by straddle carriers to a buffer area, where they will be collected by the automatic stacking cranes. On the landward side of the block, the ASCs – operated with a remote control system by the terminal control room staff – will either load and unload road trucks or handle containers automatically in a straddle carrier buffer lane.

## Effective use of existing resources

About 90% of containers handled at CTB will pass through the new automated storage area. Since there is no land available for

physical expansion, all measures are aimed to maximise the use of the area. For example, the railhead will be moved towards the north of the terminal which will free some space. Moreover, the majority of storage warehouses will be demolished. Mr Blauert notes:

"Our biggest challenge is ensuring that the terminal remains fully operational during the entire project. To maximise operational efficiency throughout the conversion project, we have developed a special phasing concept in which the old rail terminal will play a big part.

"The idea is to start the construction of the blocks in the dismantled railhead so not to disturb operations in the container yard. In phase one, we will construct short blocks to be able to test the system with three cranes. Once the testing is finished, we will roll out the blocks to the full length, which will take only a month or two per block."

A new pavement will be laid out in the second half of 2006, and the new railhead will be in operation in June 2007. The first cranes are scheduled to be put up in January 2007.

## Future lies in automation

Kalmar has been CTB's supplier for many years, and the company has extensive experience in automation, from ECT in Rotterdam and Patrick's automated straddle carrier facility in Brisbane. Mr Blauert says:

"We have a good relationship with Kalmar and the company has experience from automated terminals of which we can benefit. It also appealed to us that Kalmar offered its services as a system integrator, which means that they take full responsibility of both the cranes and the related automated technology. This is surely an argument even though it was not our main concern."

CTB Managing Director, Christian Blauert.



# Innovative measuring technology

Kalmar has developed brand new combined camera and laser applications for the automation of HHLA's Container Terminal Buchardkai (CTB).

According to Jorma Tirkkonen, President of Kalmar Intelligence and Automation, the doubling of handling capacity at CTB while the terminal is in full operation is an exciting challenge. The project is based on Kalmar's automatic stacking crane technology, upon which control and monitoring systems will be built.

To achieve the targeted goals



Commercially available hard-

ware and software platforms have been used as a basis from which Kalmar has developed the new application technology. Focus in the first stages of work at CTB has been on fine-tuning the measuring algorithms needed to secure reliability of the camera and laser systems, which is fundamental to the project's success. "Everything is based on innovative meas-

uring technology," explains Mr Tirkkonen.

## Container positioning system

Accurate container positioning is essential. The automated stacking cranes must keep the container stacks within certain limits, which can be problematic in heavy winds, at high transfer speeds and on uneven ground.

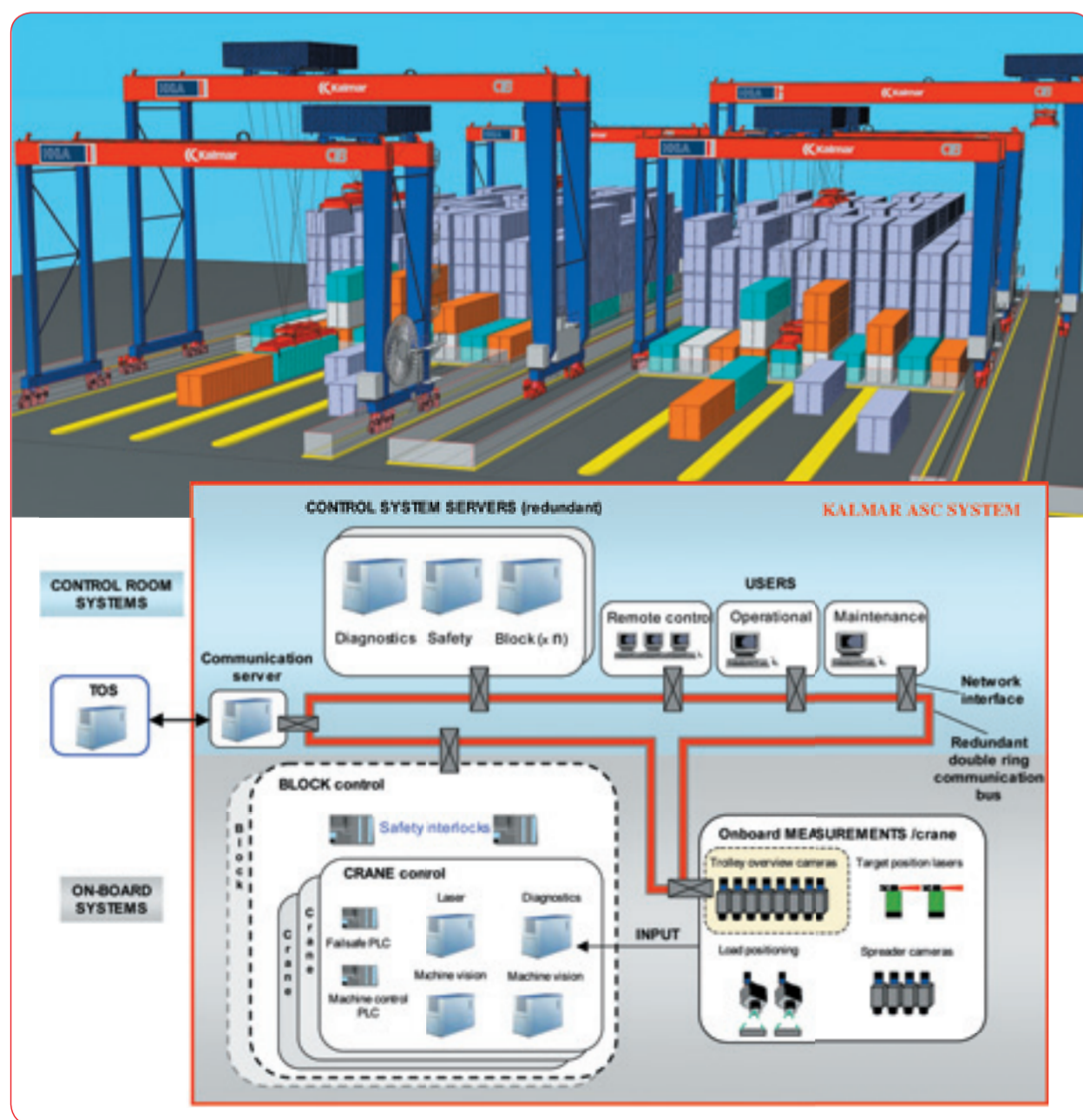
"At CTB, container positioning will be implemented by a camera and laser system, which utilises reference points on the ground," explains Mr Tirkkonen. "The ASC spreader is equipped with four cameras showing the corners of the container, which assist it in automatically placing the container in the right position."

All critical components at CTB will be duplicated to secure maximum uptime. On the land side of the terminal, loading and unloading of road trucks will be remotely controlled with the assistance of cameras. Thus the camera will serve as the operator's eyes.

The camera system is also used to speed up stacking in the automated mode, which is critical to achieving the required performance levels.

## Communication is vital

The most advanced communications technology is vital for this project. Information is passed through



different channels of an optical fibre, conveying both control system and video image information.

"Information transfer must also be very reliable," explains Mr Tirkkonen. "Therefore, communication channels have been secured so that if something happens, say, the cable is broken, the system will not be vulnerable.

"Block system reliability is also critical. As such, the blocks are equipped with three cranes each so that if one is out of order, the two other machines can undertake its work."

Kalmar will implement the automation as a distributed solution, with a dedicated computer, or server, for each block. Each server is run by the same software and neigh-

boring servers back each other up. The system is thus easily and flexibly expandable whenever necessary. Multiple computers will ensure high reliability.

## Cooperation with IT system suppliers

Kalmar will also supply a traffic signal system for the ship-side transportation where manual straddle carriers are employed. The terminal operating system will be provided by another supplier, while Kalmar focuses on machine technology and related automation. However, the two suppliers will co-operate closely.

"Communication with the upper level system is important. The automation system must be able to communicate with a number of other systems," says Mr Tirkkonen.

According to Mr Tirkkonen, Kalmar's trump card is the synergy between its competence in machine technology and in automation. "Kalmar is thoroughly acquainted with port conditions. In order to automate, processes must be well defined and functional and the automation supplier must understand the full process, otherwise the solution can't be successful for all users. This kind of embedded activity is a growing trend in the market."

At CTB, Kalmar has to fulfil certain performance requirements and operational guarantees. The commissioning of the renewed terminal can be efficiently supported by Kalmar's remote interface service, so progress can be monitored from the engineering and support centre at the factory.

The CTB project has been running for four months now. Preliminary work is far advanced and the specifications for the different systems will be completed by the end of June. The main software blocks will be completed in July / August and integration testing will start in September / October. The first test phase will be a simulation, thus minimising the time needed for field testing. The first ASC block will be in place in early 2007.

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## Synergy at CTB

Bert van der Velden is appointed Kalmar Project Manager of the Container Terminal Buchardkai (CTB) project.



Bert van der Velden, Kalmar Project Manager, says that close cooperation between CTB and Kalmar will yield the best results.

Mr van der Velden was Sales Manager for HHLA's CTB project before being recently appointed to Overall Project Manager for the automated terminal project. "Other members of the sales team are also involved in the realisation phase of the project. We believe that the extensive sales phase equipped us with useful knowledge and experience. Moreover, we have established a good relationship with the CTB team, most of whom are already familiar with our faces," he explains.

Mr van der Velden says that although the schedule is tight, everything is going as planned.

"We are currently engaged in the specification and engineering phase, with the first components being ordered as this issue of KAW goes to press. The fabrication of crane structures will start within the June. There are weekly customer meetings with CTB to make sure progress is in line with the project's schedule.

To considerably reduce the assembly and testing period at CTB and thus minimise disturbance to terminal operations, the first series of cranes will be tested at Kalmar's facilities before being delivered fully erect via the waterside to the CTB terminal.

Awarding the complete ASC contract to Kalmar means that CTB has to deal with only one system integrator, making the project organisation more transparent and communication between the two parties more straightforward and efficient. Mr van der Velden says:

"The co-operation between CTB and Kalmar in this project is truly synergetic. We are a team that makes use of our combined strengths to achieve the best possible results.

The CTB and Kalmar project team meet through frequent multiple-day work sessions in Hamburg or Tampere. CTB is making every effort to ensure that we fully understand their requirements. Frequent review meetings covering all project specifications are important and helpful to both CTB and Kalmar."

## Speaking the same language

Ms Outi Mielikäinen has a challenging job in defining the optimum software functions for HHLA's Container Terminal Buchardkai project.



"A prerequisite of a successful project is that we speak the same language, in the figurative sense," Outi Mielikäinen points out.

"The challenge is to gain full understanding of the customer's needs. We started few months ago by working together with HHLA specialists and software suppliers to ensure that we share the same understanding of what the objectives of the project are so that we can determine what kind of software we should implement," she explains.

According to Ms Mielikäinen, a qualified automation engineer, the success of the task at hand depends on the correct definition of software functions. A further challenge is the new camera and laser technology for container positioning, which will be especially developed for the Burchardkai terminal. She comments:

"We must be able to produce the software and control its complexity to be able to not only use but also support the modules in the future. Function definition plays an important role; we can't start writing the program before we know what we need it to do and before we have succeeded in dividing the modules in a way that allows them to be tailored for the customer's all requirements as well."

## Benefitting from past experiences

"What has made the start quite straightforward for us is that HHLA has previous experience of a similar project and therefore they already know what they want and how to

avoid possible stumbling blocks, as many of the problems have been solved before", Ms Mielikäinen continues.

She considers the HHLA specialists a great help in identifying issues as well, and all things considered, Ms Mielikäinen does not see major difficulties ahead. She is confident that the project will be a success

– it is a matter of putting all the pieces together and ensuring everything works seamlessly.

## Close cooperation

It is not unusual for a customer to be closely involved in and assist Kalmar with a large scale project such as this that aims at increasing efficiency; HHLA is very committed to making sure all objectives are fulfilled, because the stakes are so high.

According to Ms Mielikäinen the definition of functions is expected to be complete in May/June after which programming can begin. Before that she will continue to visit the Burchardkai terminal for some meetings and to tour the project site. She says: "These visits will help me see the bigger picture and to ensure that the project goes forward as scheduled."



# Playing the transshipment game

**Just seven years on from its inception in 1999 the Port of Tanjung Pelepas (PTP)'s exponential growth has put it the enviable position of being one of Asia's premier transshipment hubs. Martijn van de Linde, Senior General Manager for PTP, spoke to KAW about the secrets behind the Malaysian success story and even bigger plans for the future.**

"In a transshipment hub like ours you can win or lose any day," Mr van de Linde explains. "Margins are smaller because for the shipping line, transshipment is a cost-only business. In most European ports, you can count on your hinterland to keep cargo flowing through your port. But when it comes to transshipment, the lines can make very drastic changes overnight, even though moving the entire logistics network of ships and feeders might not seem all that simple."

Nonetheless, since PTP's establishment, the port's performance has improved year on year thanks to operational developments such as the decision to retrofit Kalmar's patented Smartrail® autosteering and

container position verification system to all RTGs.

"We have been continually developing our processes and gross crane productivity has risen to 35 moves per hour. It is hard to say exactly how much of the rise relates to Smartrail alone, but definitely a big part of the productivity improvement, container storage data integrity and operation safety relates to Smartrail," says Mr van de Linde.

PTP's yard operations are handled by 27 cranes, three of which are currently being erected, and 72 RTGs – all of which are now fitted with Smartrail.

"Smartrail has definitely been an asset in our pursuit of continual service level improvements. Our customers include some of the biggest players in the market, such as Maersk and Evergreen, and their requirements are of the highest standard.

"What we know for sure is that RTG related damages have decreased by 50%, which has a direct positive impact on maintenance costs. We also estimate that RTG productivity has increased by 10–15% due to Smartrail."

**Solid foundations**

During the first few years of PTP's development, the focus was on putting in place solid op-



According to Martijn van de Linde, PTP's Senior General Manager, an important contributor to the port's operational success has been the effective use of Kalmar developed Smartrail, auto steering and container position verification system, which was retrofitted to all of the facility's 72 RTGs.

erational processes. "When that was done it was time to start looking at different elements of the process and determining how we could squeeze more efficiency out of them," explains Mr Van De Linde. "After three years of manual RTG operations that had no interface with our terminal operating systems it became clear that improvements needed to be made in this area."

According to Mr van de Linde, manual input was hampering the process. "Human errors, such as inaccurate container positions due to information being typed incorrectly into our systems were common. And with our volumes, this was a problem."

Thus came the decision

to approach Kalmar, whose Smartrail system was by then a proven product in the market. "For us, a very important element of Smartrail was that it allowed integration with our terminal operating system. Autosteering can be an independent element, but container positioning had to be integrated with our terminal operating system," says Mr van de Linde.

Before acquiring Smartrail, PTP tested the system for a few months to be sure it was the right system for its operations. And it was. "There have been no hiccups since," confirms Mr van de Linde.

Retrofitting of PTP's RTGs was done in batches of 5 machines over a period of six

months. As the utilisation rate of the RTGs is high, it was vital that they were back in operation as soon as possible.

Because Smartrail® does not require civil works, buried wires or transponders, Kalmar was able to retrofit PTP's cranes with the new system without interference to day-to-day terminal operations.

"We worked out that the retrofitting of each batch would take three days, with the installation being handled by a Kalmar team located on site for the full six months."

**100% data integrity**

According to Mr van de Linde, the biggest advantage of Smartrail has been the ability to see

every element of the handling process in real time. "Because human error in container positioning is no longer possible with Smartrail we achieve 100 percent data integrity in our yard inventory. This was one of our main goals."

Smartrail can locate containers automatically and confirm when twistlocks are opened and closed. Both this and the autosteering capabilities allow PTP's drivers to concentrate on their core activity: handling containers. "We have also seen increasing safety with Smartrail, because the driver can look around him while working and develop a better awareness of what is going on in the terminal."



## Kalmar Smartrail®

Kalmar-developed Smartrail® uses a Global Positioning System (GPS) technology that enables the RTG to autosteer along an invisible rail. This frees up the driver to focus on travelling as quickly as possible between lifts and on lifting and setting down containers.



An Integrated Position Detection System (PDS) automatically logs the position of each container and is connected to the container yard management system. This provides yard operators with the real-time location of each box, including when it is placed in a stack or moved from one location to another.

This is complemented by the Smartrail® container position verification system, which is activated each time the spreader twistlocks open or close. The yard management system is automatically updated and the new position of the handled container is recorded. Smartrail® reduces the down-time spent looking for misplaced or lost containers and improves efficiency and productivity.

Nearly all Kalmar RTGs today feature Smartrail® and the system has been retrofitted to more than 100 RTGs, including other brands.

**Working together**

Customer feedback from PTP has resulted in some modifications being made to Smartrail. One such modification has been to enable the RTGs to drive full speed until coming to the next location for handling, and aligning the machine parallel to the container automatically. Discussions are now underway to see how the RTG could stop automatically at the end of the container block before crossing the driving lanes.

"We see many opportunities to develop Smartrail further," says Mr van de Linde. "For example, integrating the actual position of the RTGs with our terminal operating system would make it possible to plan RTG routing. We feel it is very important to work with a supplier who listens to user feedback."

**Thinking big**

PTP's was purpose-built to be a major regional transshipment hub in the region. Operations started with 2m TEU of cargo per year and now stands at 4.5m

TEU, some 95% of which is transshipment.

The port's master plan for the future anticipates it reaching a staggering 40m TEU in terms of capacity. "We will never be short of land, which is a major advantage compared to many other established hubs," explains Mr van de Linde.

In 2004, work began on a phased expansion which will add 6m TEU to current capacity. Each phase is designed to add 1.5m TEU of capacity. New berths 7 and 8 are already in operation following completion of the first phase. Work is currently underway on phase two which will see berths 9 and 10 open for business before the year end. Explains Mr van de Linde: "Adding 1.5m TEUs of capacity in one year is possible because land reclamation has already been completed, so it's just a question of constructing the physical berth."

"The entire expansion is scheduled for completion in 2012 but depending on volumes and business growth, we can proceed much faster if necessary."

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# AutoStrad operation looks for further efficiency gains

**Only a few months after Patrick Corporation's new Brisbane container terminal opened, the Australian stevedore is already looking forward to further efficiency gains.**

At present, 18 fully automated Kalmar Edrive® straddle carriers operate at the Fisherman Islands terminal.

The terminal at Berths 7, 8 and 9 Fisherman Islands was officially opened on 1 December last year, and the final (fourth) quay crane was installed on 17 January. At present, the terminal offers an annual capacity of up to 500,000 TEU, but this will increase to 800,000 TEU in early 2008, when Patrick exchanges Berth 7 for the new Berth 10.

According to Patrick's operations manager at Brisbane, Isnan Rahman, achieving this capacity increase will not necessarily require more straddles, as refinements to the stevedore's computerised Traffic Management System (TMS) should improve the terminal's utilisation. The TMS controls the navigation and tasking of the automated straddles.

"We are now reviewing the traffic path pattern to see if we can get from A to B in a more direct way. We're trying to fully exploit the improved performance of the straddle machine so we can more efficiently utilise our terminal asset."

Patrick's engineering manager, Tony Hocking, agrees that optimising the TMS has been the main challenge

over the past few months. On the maintenance side, he says some early indications are that the Kalmar AutoStrads may show less tyre wear and general machine wear than manned straddles.

"The machine reliability also adds to the throughput," Mr Hocking points out.

However, conclusive findings on overall wear rates and fatigue impact on the equipment are still a few months away.

## Fine tuning

Mr Rahman says that during the first quarter of this year the overall automation system has been refined and gradually improved. This "fine tuning" is an ongoing process involving both Kalmar and Patrick, who are partners in Patrick Technology & Systems. For example, Kalmar has just updated the software in the AutoStrads to refine handling performance and box location capability, including path tracking.

Free-ranging automated straddles represent such an innovative way of handling containers that the experience of Patrick and Kalmar in Brisbane will prove invaluable for other stevedores wishing to introduce the system.

"As a team we've all learned, which means that people who purchase the system down the track won't have to start from zero, or go through their own growing pains," Mr Rahman indicates.

Patrick has plans to introduce twin-lifting of containers, probably towards the end of this year, and the stevedore also hopes to investigate three-high stacking in Brisbane.

## More truck grids

Four of Patrick's Edrive® straddles are 7th generation, which allow better line-of-sight visibility when placing a box onto a truck. Patrick expects to increase the number of truck grids at Fisherman Islands to 32 from the current 12. Although auto-pick-and-

place (APP) is currently available, for safety reasons an employee known as a "tele-operator" oversees the process whereby the container is lowered onto and lifted off the trucks on the grids.

The stevedore has recently improved its procedure for connecting remotely to the machine and confirming container numbers at the truck grids.

Brisbane is Australia's largest export port for refrigerated meat, which means that an especially large part of Patrick's terminal is dedicated to reefer containers. In fact, there are 1,024 reefer plugs arranged in five cells which are in effect self-contained compounds within the main automated yard.

To prevent the AutoStrads entering the reefer storage area at the same time that people are present, the cells can be "locked out" to allow refrigerated containers to be plugged and unplugged manually.

Brisbane terminals manager for Patrick, Matt Hollamby, predicts that the Fisherman Islands facility will achieve about 250,000 lifts in 2006, equivalent to 320,000–340,000 TEU. Later this year, two new post-panamax size quay cranes are due to be delivered to Patrick in Brisbane. However, one of the stevedore's smaller existing cranes may be decommissioned or used for training purposes.

## Focus on maintenance

Ismo Lehtonen, the new managing director of Kalmar Equipment (Australia), says Patrick's automated straddle carrier operation in Brisbane has proved a very reliable and effective way of handling containers.

"There has been a lot of good co-operation between Kalmar and Patrick to develop the technology and equipment over the years. Now the companies are seeing the fruit of this long R&D process."

Kalmar currently employs a maintenance team of seven at Patrick Corporation's Fisherman Islands container terminal in Brisbane to look after 18 Kalmar Edrive® automated straddle carriers. The team includes a site supervisor, two supervisors and four mechanics.

Marcus Weber, who is Kalmar's technical support manager for Australia and New Zealand, says the unmanned machines have so far performed well in terms of general maintenance.

"The machine has a 1,000-hour service interval. Most of the maintenance work is identical to that carried out on Kalmar's manned straddles. The only real difference is the additional sensors on the AutoStrads, although most of these are reliable solid-state electronic devices."

"The actual maintenance savings for an AutoStrad relate more to the lack of damage caused by the drivers. At some terminals,

the machine damage can be 30%–50% of their maintenance costs."

The hardware for Kalmar's Remote Machine Interface (RMI) has already been installed on the AutoStrads and the system is due to come on stream by mid-year.

## Strong growth

Australia is proving an encouraging market for Kalmar's container handling products, as the country's economy continues to benefit from growing commodity demand from Asia.

Ismo Lehtonen says the Australian market is "quite healthy" at the moment, as shown by the strong growth in container throughput at major ports. Fast-expanding Brisbane, for instance, saw container

throughput grow by 13.5% to 726,154 TEU in the 2004–05 financial year. Melbourne's throughput grew by 11% to 1.9 million TEU and Sydney's increased 8.4% to 1.37 million TEU.

For example, six new Kalmar E-One rubber-tyred gantry cranes (RTGs) will be delivered to stevedore P&O in the second half of this year, with three heading to Sydney's Port Botany terminal and the rest to Fremantle. P&O's three Sydney RTG machines will be wider 8+1 wide and 1-over-5 high units, while the Fremantle units will be the more usual 6+1 width.

Other Kalmar equipment on order for Australian ports, container depots and stevedoring companies includes restackers and various sized lift-trucks and yard tractors.

Maintenance remains an important consideration for

Kalmar's customers Down Under. Recent design imperatives have produced more environmentally-friendly machines which are easier to maintain.

The fully electric E-One RTGs will almost certainly require less maintenance than their predecessors since they feature no hydraulics. As the electric power is only engaged when required, the machines consume 30% less power overall, Kalmar's Australian branch reports. The risk of pollution from leaking hydraulic oil has also been eliminated.

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## New Managing Director in Kalmar Equipment (Australia)

Mr. Ismo Lehtonen has been appointed Managing Director of Kalmar Equipment (Australia) Pty Ltd as of 1 April, 2006. He has a long experience in international sales. In Kalmar Group Mr. Lehtonen has worked since 1984, latest as General Manager of Kalmar Asia Pacific, located in Korea and responsible for selling Kalmar products and services in certain Asian countries and also to two global container ports operating groups.

The Kalmar Straddle Carrier Users' Forum took place in February in Brisbane, where participants were also given the chance to visit the large-scale autostrad operation at Fisherman Islands. Developments in automation technology were discussed at length throughout the two day forum, which attracted participants from all around the world. As usual, the programme incorporated a feedback session during which users were encouraged to evaluate their machines and discuss their experiences.

# SAPO and Kalmar toast straddle carrier number 4,000



From left: Mr. Solly Letsoalo, SAPO, General Manager Container Sector, Mr. Edwin Briggeman, Head of Kalmar Industries South Africa (Pty) Ltd, Ms. Nosipho Damasane, SAPO, Supply Chain Executive, Mr. Robert Teale, SAPO, Project Manager, Mr. Vusi Khumalo, SAPO, Senior Manager Corporate and Mr. Hamilton Nxumalo, SAPO, General Manager Equipment Engineering and Asset Management.



**Cape Town's container terminal was home to joint celebrations on 11 April, for the 4,000th straddle carrier manufactured by Kalmar.**

The event was hosted by SAPO executives, Cape Town Mayor Helen Zille and Kalmar management.

The event attracted plenty of attention in South Africa, with the county's Morning Live two-hour news programme that day being broadcast beside straddle carrier number 4,000 at the terminal.

Traditionally, Kalmar celebrates every 1,000th straddle carrier delivery by hosting a party in the recipient country. In 2000, the company celebrated the handover of the 3,000th straddle carrier in Gothenburg, Sweden. This time, Kalmar was delighted to be celebrating in beautiful Cape Town with SAPO, whose demand for straddle carriers over the past five years has made it one of Kalmar's single biggest customers.

By the end of 2006 a total of 146 straddle carriers will be installed at SAPO terminals in Durban, Cape Town and Port Elizabeth.



From left: Mr. Robert Teale, SAPO, Project Manager; Mr. Hamilton Nxumalo, SAPO, General Manager Equipment Engineering and Asset Management, Mr. Kris Naidoo, SAPO, Quality Manager and Mr. Sabelo Mzimela, SAPO, National Asset Manager.



From left: Mr. Jussi Lukumaa, Kalmar, President Container Handling, Mrs. Helen Zille, Mayor of Cape Town, Ms. Nosipho Damasane, SAPO, Supply Chain Executive, Mr. Edwin Briggeman, Head of Kalmar Industries South Africa (Pty) Ltd, Mr. Tau Morwe, SAPO, CEO, Mrs. Leanne Manas, SABC2, host "Morning Live" and Mr. Solly Letsoalo, SAPO, General Manager Container Sector.

# South Africa's renaissance

## Kalmar marks its commitment to South Africa with a new subsidiary company

*Kalmar Industries has established its own subsidiary company in South Africa for the sales and servicing of straddle carriers and RTG cranes. Kalmar Industries South Africa (Pty) Ltd is located in Durban.*

Edwin Briggeman has been appointed head of the new company and is in charge of overseeing the ongoing deliveries of the straddle carriers ordered by South African Port Operations (SAPO). Located in the new Durban office, he will also be responsible for the start-up of the new company and the further development of customer relations with SAPO. Aman Kumkaran has been appointed Technical Manager in Durban.

African National Engineering (ANE) continues as Kalmar's service partner for straddle carriers and RTG cranes in major ports such as Durban, Richards Bay, and Cape Town. Other Kalmar products, for example reachstackers and lift trucks, will continue to be sold through existing partner Saficon.

Kalmar has a strong presence in South Africa with more than 300 machines delivered and under order.

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**Since 1990, South African Port Operations (SAPO), a subsidiary of government-owned Transnet, has worked tirelessly to fulfil its mandate of supporting the new government's export-led growth strategy. One key element in SAPO's efforts to bring the country's port network into the 21st century has been its strategic partnership with Kalmar, which is presently increasing the operator's straddle carrier fleet by 146 units at various ports across the country.**

Prior to 1990, investment in South Africa's port infrastructure under the apartheid regime was almost non-existent - equipment was old and people were bereft of motivation. Aware of this, SAPO began a process of investing not only in equipment but also in people, changing the mindset of port workers in a bid to increase productivity. The company's capital investment plan represents Rand 6.3 billion of Transnet's total approved Rand 40 billion capital investment programme over the next five years.

"Moves presently underway will see a sharp improvement in productivity, which is critical to our ability to handle an anticipated 40% growth in today's 3.2 million TEU throughput by 2011," says SAPO CEO Tau Morwe.

The main approved expenditure will include:

- Construction of Pier One, a new container terminal in Durban with a projected 590,000 TEU capacity;
- Expansion and upgrades at Durban's existing container terminal, including three new gantry cranes, the refurbishment of existing gantry cranes and additional Kalmar straddle carriers on top of the 60 units ordered in 2001;
- Expansion and upgrades at Cape Town Container Terminal,

including six new gantry cranes and 26 Kalmar straddle carriers; and

- 11 Kalmar straddle carriers for Port Elizabeth.

Mark Gregg-MacDonald, CFO of SAPO, explains that the aim of building a strategic alliance with Kalmar was to ensure that SAPO would always be at the top of the list when it came to equipment or service requirements.

"The results of the partnership are very good so far. Productivity is improving and the machine operators are happy. We also wanted to standardise to as great an extent as possible our spares, stocks and skills across all terminals. Dealing with one supplier facilitates this."

### Widening the gateway

As South Africa's largest port, Durban handles approximately 65% of all container volumes. Transshipment accounts for 17% of volumes, while the remainder is divided equally between import and export cargo. The biggest growth area is the Far East trades, accounting for some 31 percent of all box movements. Other key contributors are Europe (20%), East and West Africa (11%), USA (6%), Australia (6%), South America

6%, Mediterranean 9% and Middle East 11%.

Solly Letsoalo, General Manager SAPO Port Operations, explains that Durban has traditionally been the country's chief gateway. "This is because the corridor between Johannesburg, the main industrial area, and Durban is the best developed in terms of rail and road infrastructure."

SAPO placed its first order for 60 Kalmar straddle carriers 2001. "We recognised the fact that the flexibility afforded by straddle carrier operations would best suit our z-shaped quay," explains Mr Letsoalo.

"Since we ordered the first batch of straddles carriers, space has become more and more of an issue for the terminal and we are getting very full. We have been trying to increase the land available to us but that has been turned down for environmental reasons.

"Therefore, to add capacity construction has started on a new terminal. Pier 1 will be a separate container terminal with a capacity of 590,000 TEU. It is already partially operating today without infrastructure, taking the overflow from Durban Container Terminal."

Another solution for Durban's current space constraints would be to move more cargo by rail. Today, only 20% of boxes move this way. Spoornet, the rail-

handling division of Transnet, has been tasked with a pivotal role in achieving this, although cooperation from truckers and more development in the inland terminal sector are also essential to progress.

"Outside the terminal trucks, we have trucks queuing continually during the day time," explains Mr Letsoalo. "Some 1,500 trucks turn up during the 8 hr day shift and only 500 at night, the main reason being that inland depots do not work through the night. However, this system wastes capacity and therefore money for us and we are presently working with all concerned parties to find a mutually agreeable solution."

### Eliminating inefficiencies

Durban Container Terminal has been plagued for years for inefficiency, congestion, and ship delays. "Our volumes have grown faster than our productivity improvements. We are currently utilising consultancy services to improve our processes and have already identified ways of improving our output," says Mr Letsoalo.

"For example, we see opportunities for improving our crane



Mr Solly Letsoalo.

productivity. At present our gross crane moves per ship hour stand at 35, but if we take into account lost time in crane operations, this is realistically less."

Lost time can occur for a number of reasons. For example, if the vessel alongside is so big that a second vessel will not fit on the quayside, some of the cranes sit idle. In other cases, vessels might be poorly stowed, which also impacts crane productivity. "There are vessels that we could theoretically work with four cranes, but if they are stowed badly, then only one or two cranes can work them, meaning that the berth is occupied but not all the cranes are

ment Zone and will cater for bulk and breakbulk cargoes as well as local and transshipment container traffic.

"The development of this port will boost industrial activity and new business opportunities in what is one of the poorest areas in South Africa," says Mr Letsoalo. "We hope Ngqura will generate new cargo volumes, especially from transshipment traffic as it would be ideal as a hub servicing traffic from West Africa, South America and Asia."

Expansion is also on the cards at Cape Town, where the existing 600,000 TEU annual capacity will increase to in excess of one million TEU by 2008. Investment in Cape Town includes the purchase of 26 new Kalmar straddle carriers to replace obsolete machines, three new cranes and refurbishment of existing cranes.

"With land reclamation currently awaiting the environmental green light, our 4-high Kalmar straddle carriers will boost capacity for the time being," says Mr Letsoalo. "Luckily, in Cape Town, we are not under the same time pressures as we are in Durban."

## Developing Terminals

*Kalmar's Terminal Development service has been busy in assisting Sapo in designing new terminals. This service has included layout proposals, estimates of required numbers of equipment, overall cost comparisons and handling system recommendations. Also the Port Optimizer simulation tool will be used in finding the optimum solutions.*

## \* South African Port Operations has ordered 12 Kalmar all-electric E-One, 6+1 wide and 1-over-5 high rubber-tyred-gantry (RTG) cranes.

The units to SAPO will be equipped with Kalmar's Smartrail® autosteering and container position verification technology. Six machines will be delivered to the Port of Durban's Pier One development in spring 2007 and the remaining six in autumn 2007. Since its launch at the beginning of 2005, the E-One has won more than 100 orders from terminal operators around the globe.

[www.kalmarind.com/newsroom](http://www.kalmarind.com/newsroom)

**The 1,320km Rhine is the longest, most important waterway in Germany, home to some 30 container terminals which handle several million TEU worth of cargo every year. With trimodality being today's buzzword, these terminal operators are investing heavily in systems that will allow them to tranship containers up to 45 foot and pallets up to 12m between water, rail and road.**

In the last three years, Kalmar has sold around 30 machines for the transshipment of full and empty containers along the Rhine. Flexible reachstackers are employed for handling pallets and stacking full and empty containers up to five high. They can also undertake rail and barge handling. Kalmar's specialised front-lift trucks are also employed for handling empty containers, while its terminal tractors provide horizontal moves. The company's extensive product range is an advantage to operators with a preference for a one-stop shopping source.

#### Reliable partner

A typical Rhine terminal is Rheinwaal in Emmerich. "We transship around 50,000 TEU annually in our 35,000m<sup>2</sup> area," says Manager Michael Mies. "Volumes are on the increase but, for reasons of space and heavy competition upstream on the Rhine and in the Netherlands, we will stop at

around 60,000 or 70,000 TEU."

Two modern container bridges will be completed at Rheinwaal with new Kalmar technology. A ContChamp reachstacker with a lifting capacity of 45 tonnes and an empty container handler are currently in operation around 1,500 hours a year.

"We opted for Kalmar because of quality," says Mr Mies. "Our experience was good with Kalmar's older terminal tractors and front-lift trucks and we knew that the reachstacker and container handlers could be purchased from the same source."

The empty container handler comes from the current DCE medium class and differs from the familiar industrial machines



in that the front axle has a wider track and it comes with special lift gear, installed at Emmerich for four-high stacking. The Spirit Delta cabin (conventionally in front, behind the lift gear) reduces the load on the container chassis. For stacking seven or eight containers on top of each other Kalmar also offers machines with a cabin mounted on the counterweight.

#### Second rail handling

The giant DRF 450-70C5XS intermodal reachstacker at Häfen und Güterverkehr Köln AG (HGK) in Cologne has totally different duties to perform. With 600 employees, HGK operates widely diversified port facilities, railway lines, and container depots and

will open a new super terminal in 2008 to attract even more traffic. To serve the three 700-metre long rails at the western terminal of Cologne-Niehl port, HGK purchased a heavy Kalmar reachstacker last year, capable of lifting pallets of up to 27 tonnes and undertaking second rail handling. An extra wide wheelbase of seven metres and two hydraulically lowered support plates make the 75-tonne machine stand "as straight as a ramrod". The machine's Spirit Delta cabin can be raised hydraulically 2.3m to allow the driver a clear view over container wagons to be unloaded on rail one.

Annually, the terminals operating at the port of Cologne-Niehl move around 430,000 TEU.

Powerful machines are necessary to facilitate just-in-time transport for the automotive industries. Björn Steffen, Senior Sales Consultant at Kalmar, is currently working with the customer in the design of two further machines, which will be put into operation in four to six months' time.

The DeCeTe Group handles 345,000TEU per year at its terminal at Germany's biggest inland port, Duisburg. The unloading of ships and coastal freighters takes place on four container bridges. Containers are removed from stacks by two ContMasters, one ContChamp and the 20-year old "Big Bertha", a Kalmar full container top loader with a lifting capacity of 40 tonnes.

#### Happy customers

Other terminals that rely almost exclusively on Kalmar products include: Infraserv in Cologne, which operates a 45-tonne reachstacker for second rail handling; Frankenbach in Mainz, which has three reachstackers and two empty-container handlers; GUT in Gernsheim, which has a new reachstacker and two 16-tonne lift-trucks; Neuss Trimodal, which has seven reachstackers; Firma Greiwing in Duisburg, operating one reachstacker; Unikai in Würth, which has six ContChamps in use; and Weil am Rhein, which has one ContChamp. Rhenania operates one reachstacker at each of its facilities in Mannheim, Mainz and Frankfurt/Main. Düsseldorfer Container GmbH and CTS Group in Cologne will both take delivery of two reachstackers this summer.

Success in the discriminating and highly competitive terminal industry is only possible with the latest machine technology, good engineering guidance and smooth service. Kalmar provides comprehensive customer services across Germany through its engineers, dealers and service partners who work around the clock and can supply parts either from the part warehouse in Hamburg or Kalmar's European central warehouse in Metz.

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## Trimodality on the Rhine

**It's all go at the heart of the Rhine-Ruhr District in Neuss, where the 78 employees at the intermodal terminal Neuss-Trimodal GmbH handled an impressive 483,000 TEU in 2005. In reflection of these volumes and the exemplary fashion in which the facility is managed, employees at the 111,000m<sup>2</sup> terminal, led by Ulrich Altmann and Karsten Scheidhauer, have been nicknamed by customers as "the Pearls of the Rhine".**

Neuss-Trimodal's customers include practically every major shipping company in the world, which, along with major rail operators, employ it to handle cargo within a 100km radius of Neuss. Barge operator Rhenania provides 13 weekly services between Neuss and the ports of Antwerp, Rotterdam and Zeebrugge and there are more than 35 weekly rail services to and from various European stations.

Goods not handled by Neuss-Trimodal's two bridge cranes on the waterside will now be moved by seven new-generation Kalmar reach-

stackers – three 40-tonne ContChamps with combi spreaders for the transshipment of both pallets and containers and four 45-tonne ContMasters dedicated purely to container handling. All machines will be deployed up to 3,000 hours annually.

#### Staying power

"Availability is the number one criterion," says Mr Scheidhauer. "We, like all other terminals, work without stand-by machinery, so we must be able to rely on the reachstackers". Having tried out a number of machines, the Kalmar reachstackers'

performance and low fuel consumption, combined with strong after-sales service, clinched the deal.

The reachstackers are employed daily in three shifts from 5am Monday to noon on Saturday. To avoid interrupting operations, maintenance periods are agreed in advance.

According to Mr Altmann,

another important criterion in selecting the machines was their ability to stack high-cube containers five high. "This is because floor area is always in short supply. Lifting capacity is also important with the average weight of a loaded 40 foot container standing at well over 32 tonnes and



The DRF 450-70C5XS reachstacker employed by HGK at the port of Niehl weighs over 70 tonnes and can lift loads of up to 30 tonnes from the second rail.



Kalmar's ContChamp can stack high-cube containers five high, thus making the most efficient use of floor space at Neuss-Trimodal.

30 foot container loaded with bulk goods weighing around 33 tonnes."

Mr Altmann also stresses the importance of well-trained driver teams, each assigned to their particular machines, in achieving high productivity levels.

#### The nuts and bolts

According to Björn Steffen of Kalmar Flurförderzeuge Vertriebs GmbH, the reachstackers meet the highest requirements, using only quality components, such as Volvo and Cummins engines, Meritor axles, Spicer gears and Kalmar's own CAN Bus-enabled machine management system.

With a capacity of 45 tonnes, the spreaders have a ± 800-mm sideshift for removal of containers with eccentric loads, a +195°/-105° rotation, and floating twistlocks for easy lowering and positioning of the spreader on the container. The three ContChamp

stackers have a combi attachment, which takes all standard pallets. The front and rear arms can be moved independently with sensors at the feet controlling the lift process. All spreader functions are under constant pressure. If a function is not required, no oil will flow, which helps reduce the already low fuel consumption.

Each machine is equipped with a Spirit Delta cab, providing the driver with plenty of space, good visibility, and protection from noise and vibration. The cab can be moved hydraulically two metres over the longitudinal axis, which ensures that long pallets and containers lifted from wagons as well as boxes being lowered onto the chassis are fully visible to the driver.

The reachstackers will work intensively at Neuss-Trimodal for seven years, when a new invitation to tender will follow.



# Shuttle carriers® boost productivity in Sabah

**Introduced at the turn of the 21st century, the Kalmar Shuttle Carrier® has already proven itself suitable for a variety of terminal applications thanks to its winning combination of versatility, speed and lightweight construction. One interesting and successful implementation can be witnessed in operation at the Kota Kinabalu facility operated by Malaysia's Sabah Ports.**



Mr Sebran Bin Ahmat.

Shuttle Carrier® operation at the Kota Kinabalu facility represents a breakthrough for this new design in Asia. Sabah Ports Sdn Bhd uses seven units to support the two mobile harbour cranes that have been operating on extended piers at its Kota Kinabalu facility since October 2005. The so-called one-over-one unit has

a lifting capacity of 40 tons.

Sebran Bin Ahmat, Senior Manager, Operations can barely disguise his delight at the effect the shuttle carriers have had on port performance:

"Our main goals were to reduce vessel stay in port and to increase crane productivity. The impact has been dramatic, and

has certainly not gone unnoted by our customers. We have more than doubled the number of containers handled per crane hour to 16 and reduced waiting time for ships from several days to just a few hours!

"What's more, even though operational efficiency and service levels have increased significantly, we have simultaneously

cut our labour requirements."

## The waiting game

Before the arrival of the shuttle carriers, containers at Kota Kinabalu were loaded and unloaded directly to and from terminal tractor chassis by a single ship-to-shore crane.

"Not only did we have to contend with the crane's work-

ing hours and downtime periods, we also suffered unnecessary waiting times, either when the crane was waiting for the terminal tractor or visa versa. On top of that, it took four men up to ten minutes to position each container on to a chassis," explains Mr Sebran.

"All this resulted in queueing time for vessels that could be days. Now we are talking about hours."

## Buffer zone

Today, the Kota Kinabalu facility can service two vessels at the same time. Its new mobile harbour cranes and shuttle carriers can work at full speed lifting containers straight onto and off the pier, the key to the efficiency being the ability of the shuttle carriers and cranes to work independently of each other.

"We also make full use of buffers when we are using two cranes and servicing two vessels at the same time," explains Mr Sebran. "We have two shuttle carriers working side by side: one carrying containers between the quayside and the buffer area and the other servicing terminal tractors to and from the container storage area.

"We were always talking about needing a buffer on the quay but we never found the right way to organise it. Now we can have up to 50 containers in the buffer area if necessary."

The shuttle carriers are only used for short distance travelling as Kota Kinabalu has enough terminal tractors for transporting containers along the 500-metre bridge between the quay and storage area.

However, the shuttle carriers are also used in the container storage area for stacking. While this was not the original idea, new regulations by the shipping companies mean that delays in picking up containers are now subject to a penalty. As such, containers are leaving the termi-

nal faster than before.

"The shuttle carriers' speed and their ability to lift one over one high make them the ideal machine for our storage area stacking activities," explains Mr Sebran. "Previously, conventional straddle carriers were used in the stacks but they were too high and heavy for our needs."

## Positive developments

Last year, Kota Kinabalu handled 142,000 TEU. "We have recently secured a new direct call from Hong Kong that will bring an additional 1,000 TEU vessel into the port every week," says Mr Sebran. "I am confident that the improved service levels afforded by our new set-up will bring us even more customers."

Sabah Ports' cooperation with Kalmar goes back almost 15 years to 1992 when the company bought its first straddle carriers. "Since then we have seen handling equipment develop continuously and, with the introduction of the new shuttle carrier, we were able to take our operations to a new level," Mr Sebran says.

## Big plans

In 2004 Sabah State Government privatized all Sabah seaports under a 30-year concession to Malaysia's Suria Group, with the option to extend for another 30 years. Under the Group's plans to streamline port operations in Sabah, a new container hub, due for completion in the first quarter of 2007, will be built at Sapangar Bay, some 20kms from Kota Kinabalu. Once Sapangar Bay is completed, the Suria Group will move all operations and equipment from Kota Kinabalu to the new facility, leaving the company with land suitable for future commercial development.

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## Port services consultancy

The maintenance of the equipment in the port is handled by SP Satria which is a subsidiary company of Suria Group, owner of Sabah Ports. Suria Group has engaged Kalmar Asia to provide consultancy to SP Satria, to improve support services to the port through a training and consultancy agreement.

According to Suria Group's Managing Director, Datuk Haji Abu Bakar Haji Abas, the Group is positioning itself to provide world-class port services. As part of its efforts towards achieving this, the Group has hired Kalmar Asia to train SP Satria personnel to provide quality services, particularly in the handling of port equipment. It highlights the company's readiness to march ahead with a clear and definite course of actions in making SP Satria a highly efficient service provider supporting port activities in Sabah.

As part of the agreement, two staff from Kalmar Asia in Hong Kong will be stationed at Kota Kinabalu Port for one year to ensure the smooth implementation of the programme. Kalmar Asia will assist SP Satria with its management control systems, key performance indicators, training plans and workshop and warehouse management systems, as well as instilling a quality preventative maintenance culture based on its work experience in Hong Kong.



Ng Wai Ming and Stanley Lee are stationed at Kota Kinabalu to ensure the smooth implementation of the programme to improve support services to the port through a training and consultancy agreement.



## The ultimate flexibility

**Kalmar invented and developed the Shuttle Carrier in the end 90's to be the optimum way to move containers between ship-to-shore (STS) and stacking cranes in so-called mega container terminals.**

Today, such terminals are still on the drawing board but innovative terminal operators have found that shuttle carriers are suitable work-horses for a variety of operations where speed, light construction and ease of operations are essential.

The shuttle carrier is a self-loading piece of equipment which improves STS crane productivity by eliminating unnecessary waiting times on the quayside. This is because neither the crane nor the shuttle carrier needs to wait for the other, but can instead operate independently and at full speed at all times. Moreover, less yard equipment is needed as the shuttle carrier can lift, transport and stack containers.

Due to the elimination of waiting times under the STS crane, and using natural buffering, two shuttle carriers can do the work of around four to five automated guided vehicles (AGV) and at the same time improving the STS crane productivity by 20%. Compared with AGV operation shuttle carriers offer for example following advantages:

**Limiting traffic in the terminal.** Because shuttle carriers are only needed less than half of the amount of AGVs the horizontal transportation traffic with shuttles is much more fluent. Instead of waiting for each others in traffic jam shuttle carriers make productive moves continuously resulting excellent STS productivity and easy traffic control both in manual and automated terminals. Naturally automatic stacking cranes (ASC) enjoy the same productivity boost than STS, practically all horizontal transportation related waiting time is eliminated in shuttle operation.

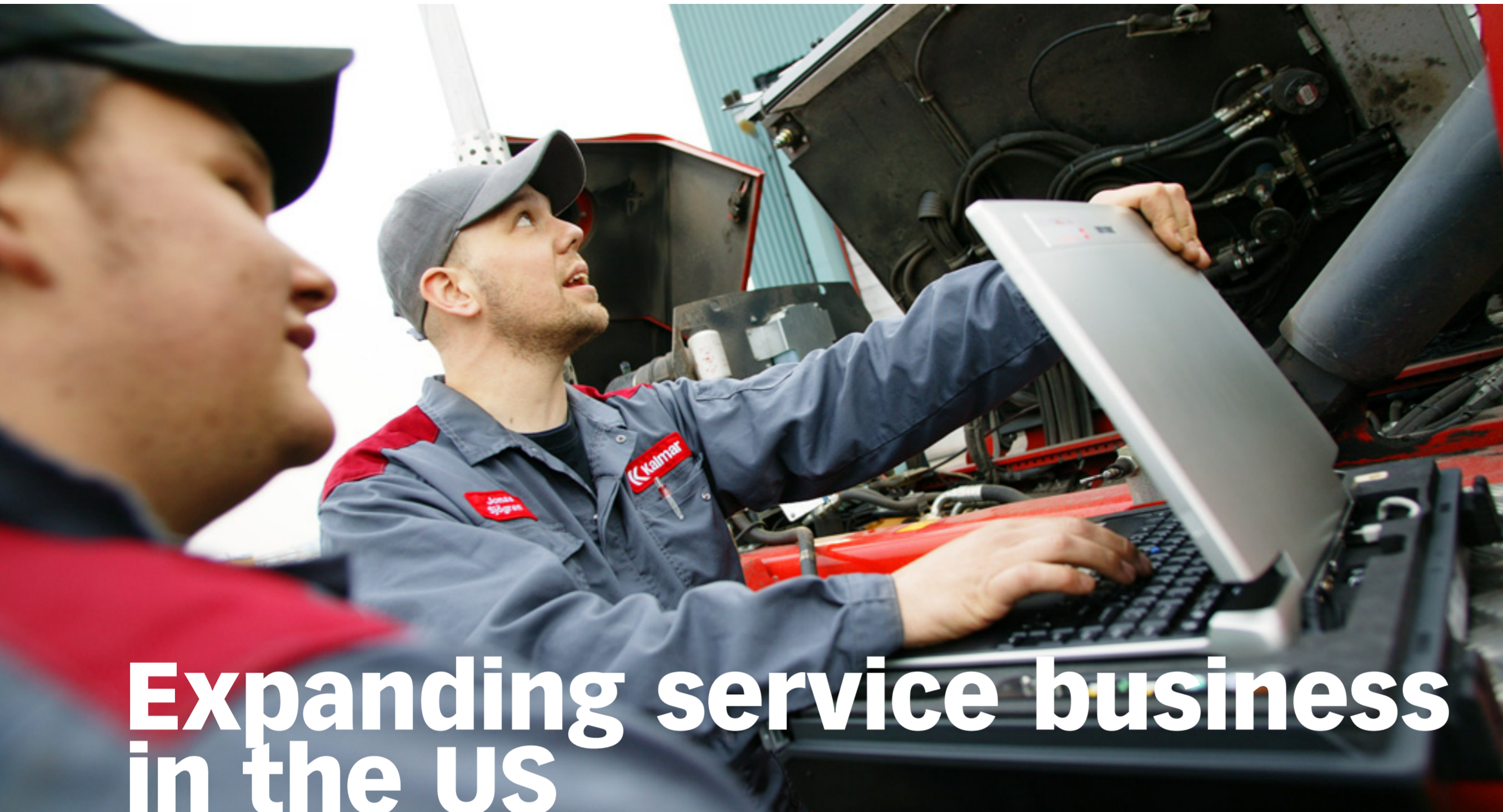
**Natural buffering.** The most obvious advantage of a shuttle carrier operation over an AGV system is the opportunity it affords for the creation of a buffer zone both under the crane and in the stack-

ing area. Since shuttle carriers are self-loading, they allow independent operations for the crane and the stacking equipment, thus eliminates waiting times.

In an automatic stacking crane (ASC) operation, a one-over-one shuttle carrier can offer a buffer zone of four to eight TEU deep under ASC, thus providing better crane optimisation. When using shuttle carriers, ASCs can collect a container from the buffer zone at any time while the shuttle carrier continues its operations independently. An AGV, however, needs to wait for the crane if it is busy at the other end of the stack.

Moreover, since shuttle carriers are self-loading and natural ground buffering is used, there is little need for expensive and complicated double trolley cranes often used in an AGV system to provide an intermediate buffer while waiting for free AGV to arrive under STS.

**Efficiency in twin and tandem handling.** These days, more and more STS cranes are equipped for twin handling or even tandem twin handling (two twin spreaders side by side). In twin handling shuttle carriers can quickly and easily pick either both containers in twin mode at the same time or alternatively one by one if the terminal logistics and storage optimisation require that. In the emerging tandem handling the biggest bottleneck under STS are the two terminal tractors/trailers that must be positioned very exactly under tandem spreader when lowering the containers. In shuttle carrier operation STS can unload the four tandem handled boxes straight to the quay and shuttle carrier equipped with twin spreaders can easily pick them two at the time. No need for all equipment to align, to be at the same time at the same place or to wait for each others.



# Expanding service business in the US

**Kalmar has acquired the business of East Coast Cranes and Electrical Contracting Incorporated (ECC), a US company specialising in crane construction services and maintenance in ports.**

The acquisition boosts Kalmar's service growth in the US and also creates a stronger platform for the company to develop its port crane business. Furthermore, it is a step forward for Kalmar to strengthen its presence and capacity to service other types of port equipment in the country.

ECC has grown to include 135 employees and recorded 2005 net sales of nearly \$25 million, carrying out large-scale projects at numerous U.S. and Caribbean ports. Its customers include major port authorities, original equipment manufacturers

(several of which ECC will continue to serve in addition to Kalmar), private terminal operators and large general contractors.

Following the acquisition, the President and founder of the company James (Jim) Anastasio will maintain his post and the company will be operated as an independent subsidiary of Kalmar.

#### Perfect fit

ECC's founder, Jim Anastasio, who remains as ECC's president, said he believes his firm's corporate



Three cranes on the way to Tampa.

culture meshes well with that of Kalmar.

"Our culture is to offer our clients quality work at a fair price," Anastasio said. "We conduct ourselves with integrity, professionalism and honesty. Our No. 1 goal is to do a good job and exceed our clients' expectations."

ECC should help Kalmar advance its corporate strategy of being a provider of solutions in addition to supplying machines, according to Anastasio, who said Freehold, N.J.-based ECC is "a piece of that puzzle."

**"The acquisition of ECC strengthens Kalmar's U.S. port presence and sets the stage for future growth, thus forming 'a perfect fit.'"**

"With Kalmar behind us, the future of ECC looks even brighter," he said. "Kalmar gives us the resources and experience needed to continue our staggering growth. In turn, we hope to offer Kalmar our highly quali-

fied service staff to support their products. The combination of Kalmar and ECC is a perfect fit."

Although ECC was not incorporated until 1999, Anastasio, a licensed master electrician, has been specializing in construction, modification and maintenance of ship-to-shore container cranes and related equipment for two decades.

Major recent projects of ECC include: Refurbishment and re-location of three ship-to-shore cranes to Tampa, Fla., from New Jersey; moves of three cranes to Wilmington, N.C., one from

Kingston, Jamaica, and the other two from Charleston, S.C.; refurbishment of three container cranes at the Port of Miami; and installations of radiation portal monitors at multiple sites.

"I see ECC expanding across the United States plus growing into an international port equipment service company," Anastasio said. "I see Kalmar continuing its growth, especially in the United States, with ECC supporting its equipment assembly and service."

"Our market has grown tremendously in the past 10 years due to world trade growth and the need to handle more containers faster and more efficiently," he said. "Also, the technology of port equipment has become much more sophisticated, which benefits a company like mine."

Asked what is ECC's most significant asset, Anastasio responded, "Without a doubt, our people! I have hired some of the most competent people in the crane industry."



## Major straddle refurbishment at Tilbury

**UK terminal operator, Tilbury Container Services (TCS) recently awarded Kalmar a major contract for the refurbishment of 13 straddle carriers. This project comes on top of an existing contract whereby Kalmar is carrying out routine servicing of the entire TCS straddle carrier fleet. TCS currently operates 39 straddles at its Tilbury terminal, these being a mix of Kalmar and other brands.**

Under the refurbishment programme, each of the 13 straddles was assessed individually and major repairs identified, prioritised and actioned according to need. This process, Kalmar states, provides better value for money than simply renovating each machine according to set guidelines.

Jason Smith, Contract Maintenance Manager, Kalmar Industries, described the work as 'predictive maintenance':

"The object of such an exercise is to carry out repairs to these machines before they break down. That way, you avoid disruption to operations caused through having to retrieve a machine from the stack or the quayside but hopefully too, you will avoid the consequential damage to other components that often occurs when a machine fails in service."

Michael Quinn, Terminal Engineer at TCS, explained the background to this deal:

"Our Kalmar machines are now approximately ten years old and we want them to last 15 years. It had become pretty obvious that without major refurbishment, reliability would become a real problem."

"Initially, we planned to do the work ourselves and costed the project on this basis. However, in talks with Kalmar, it became obvious that their people could do the work within our budget, leaving our team to focus on cranes and breakdowns."

Each of the straddle carriers had done about 20,000 hours and so overhaul of each machine's Volvo engine was the first priority, ensuring that they would be able to deliver another 10,000 hours with reliability.

TCS had also identified increasing reliability problems with the steering and braking systems and so these were renovated too as were the drive systems, the ac invertors, for example, receiving a 'wash and brush up' according to Mr Quinn.

[www.kalmarind.com/newsroom](http://www.kalmarind.com/newsroom)

# First global, on-call roro service deal with Wallenius Wilhelmsen Logistics



Robert Larsson, Equipment Coordinator, Wallenius Wilhelmsen and Peter Gabriels, Parts Manager, Kalmar Netherlands, shake hands to mark the service deal.

**The total maintenance contract agreement calls for multi-location, on-call service for 30 Kalmar RoRo Forklift machines and their attachments onboard 13 vessels.**

The contract not only includes services such as parts and labour, but also value-added solutions like inspections, audits, and preventive, predictive and corrective maintenance.

A representative from Kalmar will be Wallenius Wilhelmsen Logistics' go-to person for maintenance scheduling and will take responsibility for the service technicians who will perform scheduled main-

tenance of the roro equipment at ports in Australia, Germany, Belgium and the U.S.

Kalmar will assure Wallenius Wilhelmsen Logistics the continuous availability of its equipment while optimising the total cost of ownership of this rolling fleet.

Robert Larsson, Equipment Coordinator at Wallenius Wilhelmsen Logistics, says:

"Kalmar is already operating in several ports that are of interest to us. They will be our single point of contact for servicing our machines worldwide. This will not only simplify the process, but allow us to focus on our core business."

Larsson adds, "The machines are becoming more advanced and therefore we see a need to

have them maintained by certified and approved mechanics. If the equipment is kept in good shape then our business can operate on time, ultimately allowing our customers to reap the rewards."

To begin the process of outsourcing its maintenance, Wallenius Wilhelmsen Logistics insisted Kalmar assess its entire roro fleet and conclude which machines could operate at the highest level of availability. After thorough inspections and the establishment of a single point of contact within Kalmar Netherlands, the forklifts were transported to Holland for complete refurbishment.

[www.kalmarind.com/news-room](http://www.kalmarind.com/news-room)



## Wallenius Wilhelmsen goes green

**Wallenius Wilhelmsen Logistics, a global ocean and transportation services and provider, has ordered 11 RoRo trucks and seven terminal tractors for 13 of its RoRo vessels from Kalmar. The company decided to opt for these machines because of their prominent environmental qualities, which is in accordance with Wallenius Wilhelmsen's corporate philosophy of ensuring that its operations do not put a strain on the environment.**

All the machines have environmentally friendly diesel engines with catalytic exhaust purification, significantly reducing emis-

sion levels. In addition, the trucks are equipped with electronically controlled diesel engines that meet the requirements of EU



(Left) Robert Larsson, Equipment Coordinator, Wallenius Wilhelmsen and (right) Ove Moring, Global Equipment Manager, Wallenius Wilhelmsen.

The RORO trucks have a 33-tonne lifting capacity and a rotating driver's seat, and the tractors (TRX182) are equipped with a telescopic lifting boom. As the machines are easy to maintain and do not require a lot of space on board, they contribute to the efficient operation of the vessels. An important safety feature is the fact that none of the machines can be run overloaded; if loaded beyond their maximum capacity they will be automatically switched off.

TIER2 and US CARB2.

Ove Moring, Global Equipment Manager at Wallenius Wilhelmsen, says:

"We have been using Kalmar machines for over 25 years, and when the time came for us to upgrade, Kalmar was the natural choice. What differentiates their machines from other trucks and tractors is that although the performance of the machines is crucial, environmental issues haven't been forgotten in the design process."

Wallenius Wilhelmsen has been collaborating with Kalmar since the 1970s, constantly improving the efficiency of its machines, and the new trucks and tractors have been developed especially to meet the demands of green on-board cargo handling on transglobal routes.

Robert Larsson, Equipment Coordinator at Wallenius Wilhelmsen, says:

"Avoiding expensive delays is a challenge carriers are faced with in ports all over the world. With these new, robust, reliable, environmentally and driver friendly machines Kalmar helps us meet that challenge."

## 'Safeguarding' future ocean transport

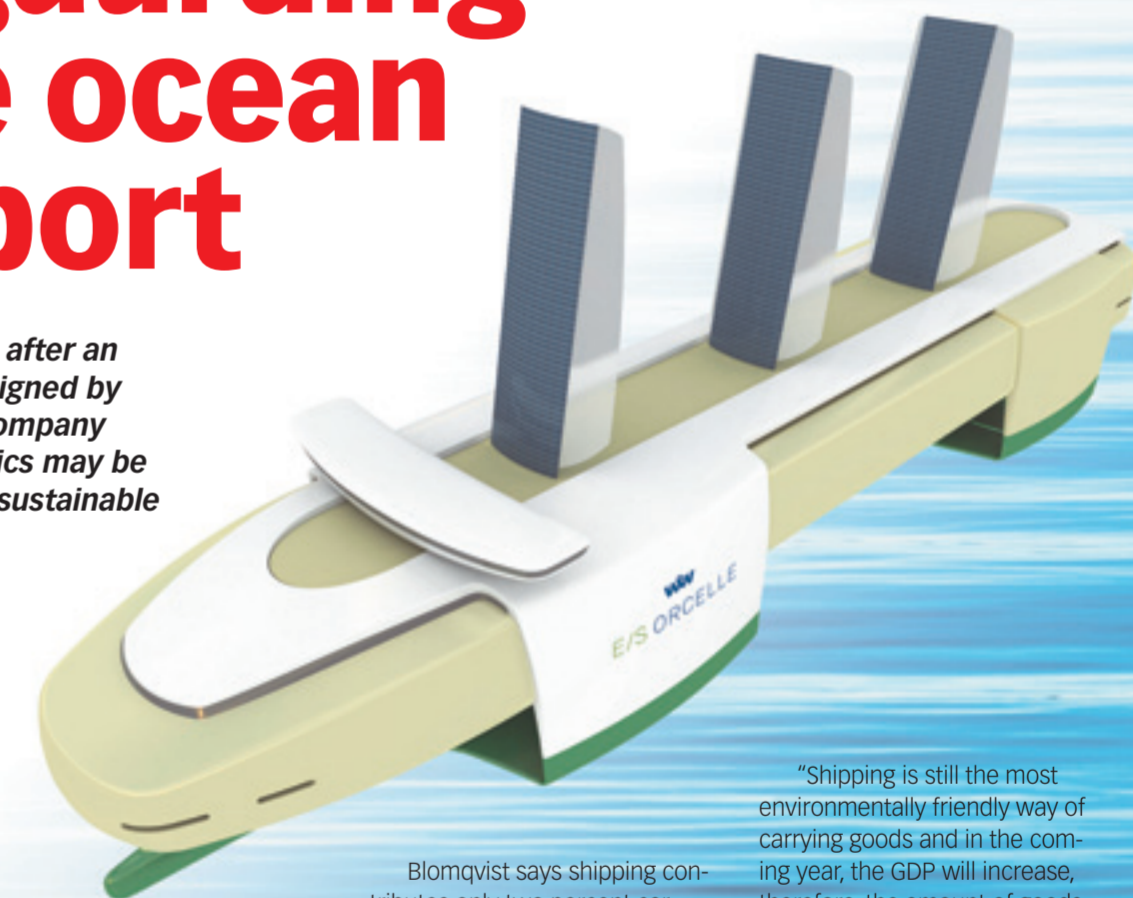
**A concept cargo ship named after an endangered dolphin and designed by the Scandinavian shipping company Wallenius Wilhelmsen Logistics may be the industry's next hope for sustainable ocean transport.**

The E/S Orcelle is being hailed as the world's first truly environmentally friendly freight ship by harnessing the power of the sun, wind and water and releasing zero emissions into the environment.

"Oceans and ocean transport is essential to all life on the planet," says Lena Blomqvist, VP Environment for Wallenius Wilhelmsen. "Ninety percent of global transport is ocean transport so it is essential that we keep this method sustainable."

Optimum cargo capacity, alternative energy sources, and an environmentally sound design were the predominant construction considerations of the E/S Orcelle.

The ship's design incorporates a cargo deck area equivalent to 14 football fields and can carry up to 10,000 cars in emission free conditions across the world's oceans.



Three giant, rigid sails covered in solar panels and 12 dolphin-like fins on the ship's pentamarian hull will help drive it along at a cruising speed of 15 knots.

Stressing the importance of sustainable ocean transport, Blomqvist believes that emissions from shipping already have and will become a priority. Inland transport has been successful in reducing carbon dioxide and other harmful emissions while ship engine techniques are still behind.

Blomqvist says shipping contributes only two percent carbon dioxide on a global basis while the more harmful emissions such as sulfur dioxide and nitrogen oxide, which contribute to human respiratory diseases, remain high and need to be reduced.

People living near ports are not the only ones at risk. Blomqvist explains that port emissions can travel as far as 1,000 kilometres inland. Wallenius Wilhelmsen is today using low-sulfur fuel oil and state of the art engine techniques to reduce as much as possible their part of harmful emissions.

"Shipping is still the most environmentally friendly way of carrying goods and in the coming year, the GDP will increase, therefore, the amount of goods being shipped will also increase," Blomqvist says. "If we ignore this, and not work to safeguard 'green shipping', we put all of our well-being at risk."

To date, the Orcelle is purely a concept carrier, similar to a concept car where those cars are seldom manufactured on the line, but their techniques are applied to mass-produced vehicles. "In 2025, there may be little or no fossil fuel left. The Orcelle is Wallenius Wilhelmsen's vision for the future," says Blomqvist.

# 2020 vision: Europe's intermodal blueprint

**The European Intermodal Research Advisory Council (EIRAC) has been established to assist in the development of an intermodal blueprint for Europe through a new and common vision of integrated transport in 2020. And as Chairman Wando Boevé is keen to point out, the revolutionary mindset of its members means that this is not just another EU quango, but a group of industry thinkers keen to stimulate positive and lasting development. In short, EIRAC means business.**

"It's good to know that Brussels is busy thinking about Europe's future transport challenges," says Mr Boevé, also Marketing Director of Rotterdam terminal operator Europe Combined Terminals. "Our council's very existence is a tangible result of the EU's forward-looking commitment."

EIRAC is made-up of nearly 60 representatives from Europe's transport industry brought together to establish the research required to ensure Europe's intermodal system can comfortably support cargo flows in the year 2020. More specifically, EIRAC is to support the European Commission (EC) in creating the co-ordinated intermodal research strategy to be included in the 7th Research Programme. With a proposed budget of €7 billion, this EU programme will be presented by mid 2007.

EIRAC has presented its *Strategic Intermodal Research Agenda (SIRA) 2020* to the EC Research and Transport Directorate, the purpose of which is to establish what research is necessary for the further development of "intermodal transport as an important part of the sustainable transport system". Such a system should be "seamless, reliable, available, accessible, secure, sustainable, accountable and affordable".

Noble goals, but are they also rather ambitious? "Sure", Mr Boevé acknowledges, "but absolutely crucial. Otherwise, with

volumes growing as expected, the European transport system will be in a semi-permanent state of standstill. Goods won't reach people and if air pollution doesn't jeopardise our children, then traffic accidents might," he adds, alluding to the preponderance of freight transport by road.

## Industry driven

Mr Boevé was elected as EIRAC Chairman at its launch in Brussels in May 2005. The pan-EU membership has been selected for its decision-making capability and includes Kalmar's VP Marketing and Communication, Benoît Passard, as Vice-Chairman. Importantly, the advisory group is industry driven.

"Brussels explicitly doesn't want yet another bulky report for the bottom drawer. It wants realistic and feasible plans," says Mr Boevé. "So we must also deliver business scenarios for the actual implementation, possibly by EIRAC members. This means we'll stick with it all the way."

The council's members are convinced that the industry should take the lead and so is Brussels, which determined the selection criteria. "The EC established EIRAC after it had concluded that the monomodal advisory councils it had set up previously – for

rail, road, air, inland shipping and shortsea – aren't likely to deliver the desired solutions. Their focus is, after all, monomodal," Mr Boevé argues.

"Brussels realised it was missing the important modality that notably isn't a modality, namely intermodal, the correct assumption being that an adequate year 2020 Europe-wide transport system would only work with a door-to-door design."

Mr Boevé points out that the only existing monomodal solution that can perform door-to-door is the truck. "And that's exactly what's fuelling the need for an intermodal approach," he says.

Although EIRAC is the youngest council, it is the only council to be founded on the basis of transport integration.

"Intermodalism must be the cement to create an effective single European transport system. We've invited the chairmen of the different monomodal advisory boards to meet with us. Their industries have brilliant ideas and initiatives and the optimal solution lies in combining them all. EIRAC aims to be the integrator."

EIRAC is convinced that the industry's general mindset needs to be revolutionised to create the necessary European intermodal system for 2020. It also believes this change must start today.

"If all of us – member states and industry – are not prepared to look at the problems in a different way, then we're not going to solve them. When something isn't working, somebody has to have the guts to stand up and

say so. I think Europe has a lot to learn from China," says Mr Boevé.

## Creative approach

"I would like to see peoples' creativity stimulated," he continues. "For example, most of Europe's intra-continental traffic is moving in 12m taut liner trailers. To make this intermodal, the market will have to offer 45-foot palletwide curtain-sided containers, which means that by 2020 continental and intercontinental traffic will have to be well integrated. To achieve this, the new 45-foot curtain-sider would need to become the standard piece of kit for deepsea shipping as well. However, if you suggest this in today's market, people think you're crazy. Of course, all ships are 20/40 foot focussed today, but we're talking 2020; we're looking ahead."

Another example of EIRAC's forward thinking involves rail-freight. Says Mr Boevé: "There's a widespread and legitimate call for more rail capacity. However, Europe's vast rail network is predominantly used for passenger trains, with probably only 10% of total capacity occupied by freight. This is because a cargo train has different characteristics from a passenger train and at present the two don't mix. But imagine the cargo train behaving like the passenger train, departing at 10.01 hours and travelling between passenger trains at the same 140kph speed. Then, suddenly, much more track capacity

would become available in the existing network.

"Again, it makes sense, but at the moment people won't consider the concept seriously. EIRAC's new way of thinking dares to advocate concepts that today are not considered feasible."

## Annexes ahead

So where does EIRAC stand now? In December, half a year on from its inauguration, it has present SIRA 2020 to representatives of the EC's Research and Transport Directorate. The initial 35-page SIRA outlines the course for further detailed thematic research. It forms the foundation – or constitution – for subsequent research programmes.

Its quintessence is the recommendation of five themes of research, namely:

- logistics;
- interoperability between modes;
- security;
- education and training; and
- social economics.

"You will rarely see social economics as a key theme in processes like these," Mr Boevé says. "But if your studies don't address the interests of the Spanish truck driver, then he is bound to be against you when you try to instigate a modal shift of Spanish fruit towards

shortsea shipping. The same holds true for environmental organisations and trade unions. Our motto is to create platforms that include all interests from day one. You'd only be postponing friction otherwise.

Currently, EIRAC is busy writing the Technical Annex, which will detail the five themes of research and determine their expected contribution to enhancing the characteristics of intermodal transport through 2020. The recommendations will be incorporated in the selection process for the 7th Research Programme.

"Once the EC's research budgets are assigned in 2007 and the projects are awarded, the recommendations will be rolled-out through business scenarios over the medium- to long-term. EIRAC will stay on board all the way."

The EIRAC Chairman is dismissive of Euro and EIRAC sceptic: "I witness first-hand how Brussels addresses the EU's future logistics system with both vision and creativity and what huge budgets it is prepared to dedicate. It is far from conservative," he says. "Ours is not a dry run and sceptics who initially perceived it as 'yet another Brussels plan', whether academics or industry peers, may soon find themselves joining EIRAC."

Wando Boevé,  
Marketing  
Director of  
ECT and EIRAC  
Chairman.

(Photo: Erik Bakker)

## In the habit of excellence

**To remain on the cutting edge of industry technology, best practices, and delivery methodology, JWD Group, one of the industry's most innovative port planning consultancies, believes that no firm can be an island. And the company maintains close relationships with industry entities that share that belief. Kalmar Terminal Development is a perfect example.**

Kalmar provides critical expertise in terminal design developments and handling solutions, as well as expert advice on the latest advances in equipment design and technology use.

According to Robert Johansen, a senior project manager with JWD Group, "shared expertise provides meaningful benefits for both sides of the table".

"The suppliers of port technology continue to introduce new-generation machines and systems at breakneck speed; it is an ever-changing landscape. Discussing the current trends and future directions of terminal development with firms such as Kalmar helps us make more informed recommendations to our clients. Through our relationship with Kalmar, for example, we gained access to the expert knowledge they developed in the design of terminal shuttle carriers and in the automation of Brisbane's straddle carrier facility. We were able to incorporate that information into our knowledge base and provide our clients with comprehensive, cutting-edge guidance. That can make a consultant invaluable."

With more than 40 years' experience in container-handling equipment and port-facilities design, Johansen knows what he's talking about. And these days he's talking about the value of partnering in terms of terminal automation, which requires the installation of advanced IT systems. Johansen points out that many of the standard container storage approaches must now be reassessed in light of the new terminal automation concepts.

"Most terminal operators do not have the in-house IT resources to develop systems that will properly interface automated equipment controls and container inventory systems into an integrated yard management system. Specialty firms with the necessary expertise in automated terminal design are few and far between; Kalmar Terminal Development is one of those select few.

"In fact, Kalmar Terminal Development possesses some of the latest knowledge of both terminal operations and IT systems regarding termi-



Robert Johansen, a Senior Project Manager with JWD Group and Jari Pirhonen, Kalmar Terminal Development.

nal automation, so it's a great benefit for our planning and analysis staff to be able to discuss alternative design approaches with Kalmar experts. We benefit greatly from the information that Kalmar shares. But container-handling equipment is only one aspect of port planning".

"At JWD Group we are responsible for conceptualizing and analyzing container terminal facilities as an integrated system, a complete package that includes not only the civil works and infrastructure, but also the container-handling equipment, gate systems, IT systems, security requirements, and client-specific operational requirements. Only through the proper integration of all these elements can we truly meet our client's operational needs. So even though container-handling equipment is only one element of the overall consultancy package, it is still a critical element. As these technologies expand and continue to be refined, we plan to continue sharing knowledge with firms like the Kalmar Terminal Development team."

Citing current areas of mutual interest-particularly the impact that integrating automated container handling equipment will have on terminal operating systems-Johansen believes that JWD Group's relationship with Kalmar will continue to yield dividends for both firms, enhancing overall terminal efficiency for industry clients. And that is the bottom line for every firm in the maritime industry.

## Planning tomorrow's terminals

Over the past five years, JWD Group has successfully completed more than 50 major maritime projects around the globe. In fact, for more than 40 years JWD Group has been earning its reputation as one of the industry's most innovative port planning consultancies. Reflecting a range of demanding, complex projects, JWD Group's experience encompasses everything from designing maritime facility buildings and gates to providing master planning, simulation modeling, and conceptual designs for entire container-handling terminals and intermodal rail facilities.

Whether it's planning the new highly automated Euromax Container Terminal in Rotterdam or working on the revolutionary Ceres Paragon Terminal at the Port of Amsterdam (with its ship-in-a-slip design for double-sided mega-vessel servicing), JWD Group provides exemplary maritime facility planning and analysis-from Jamaica to South Korea to New Zealand and China. But it takes considerably more than points on a map to be a truly global firm.



Congested roads in the Rotterdam port area show the urgent need for a modal shift. Although railways have the capacity to move more freight, Europe's roads are still gridlocked on a daily basis, as shown here in Rotterdam.



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# "Customers love it and it's a more efficient operation"

**Faced with ever-larger ships and a steady increase in cargo volumes, Virginia Port Authority (VPA) has taken steps to ensure its continued growth over the coming decades with the conversion of Norfolk International Terminals (NIT) South from an RTG crane to a straddle carrier facility. Further plans to increase capacity are also afoot.**

According to Jeffrey Florin, Chief Engineer and Director of Port Development, VPA's straddle carrier operation at NIT South is part of a larger renovation project that began at the terminal in September 2002.

"The development of the 147-acre site is being undertaken in several phases. So far we have converted 48 acres and work on the next 25 acres will take two years. The project is scheduled for completion in 2012, bringing the site's total capacity to 2.1 million TEUs."

At NIT North, straddle carriers have been in use since 1998, whereas the South terminal has been an RTG facility since the 1970s. Efficient operations at the North terminal inspired VPA to

investigate whether straddle carriers could be extended further.

After weighing up the various pros and cons of RTGs and straddle carriers and the operational needs of the site, VPA finally ordered 31 straddle carriers from Kalmar in March 2005. Last autumn a new fleet of straddles went to work at NIT South, supporting a cargo operation that is driven by eight new super post Panamax cranes.

"For us, Strads are more efficient and made the difference because there is no need for additional transport equipment and stacking equipment," explains Mr Florin.

## No-fuss implementation

To accommodate the new machines, a few changes had to be made at NIT South. For example, RTGs travel on certain runways, whereas straddles need to be able to move across the yard, so the soft clay soil typical US ports had to be consolidated by using wick drains and a surcharge and paved with a Roller Compacted Concrete/asphalt pavement.

"A big concern for us when placing the order for the straddles was that everything would be ready by the port's autumn peak time in 2005. However, Kalmar delivered the machines on schedule, even though the company's factory was running at record volume levels," says Mr Florin.

"We have had a great relationship with Kalmar for the past 20 years, and we were confident that the company would continue to provide us with the same timely and high-quality service in the future as well."

## Truck friendly

As 66% of outgoing cargo leaves the Port of Virginia by trucks, improving the service that it provides for truckers was a major factor in the conversion project. The layout of NIT South did not allow the truckers to reverse safely under the RTGs so the straddles have helped make the site safer for them. Efficiency of the facility has improved dramatically as well, says Mr Florin.

"We find that straddle carriers are very efficient for loading and unloading trucks. The conversion to straddle carriers significantly improved service to the truckers by reducing truck turns by more than 50%. That is why our customers love this new setup." Productivity under the cranes has also dramatically improved from 24 moves per hour to 36 moves per hour.

In addition to the high volumes of cargo leaving the terminal by trucks, the VPA's terminals handle more rail cargo than any other facility on the US East Coast. RTGs are still being used for the rail cargo handling operation at NIT South, but VPA is looking into replacing the machines

with top picks. Furthermore, rail cargo at the port's inland terminal is handled by Kalmar straddles.

## Greener operations

The Kalmar straddles in operation at NIT South are CSC340 3 high machines but the Kalmar Edrive® straddle carrier model is definitely an alternative for the future as environmental concerns are becoming increasingly important in the transportation industry.

The location of NIT South, close to an affluent neighbourhood whose concerns for noise and other environmental issues were addressed when planning the new operation, means that environmental factors are always a priority.

"For example, people living close to the terminal were concerned about the alarms, so in the new straddles the alarms have been designed so that they are loud enough to maintain site safety but quiet enough not to bother the people living nearby," explains Mr Florin.

"In addition, the traditional Kalmar-red paint was replaced by a shade of blue that allows the straddles to mix better with the colour of the sky and prevents the machines from standing out. A sound wall and landscape barriers were also built to make the terminal blend in better with the surrounding environment."

## Ready for future growth

According to Mr Florin, after the US West Coast labour lockout in 2002, many shippers started to look for alternative gateways for their cargo, which meant that a lot of traffic that was shipped to the east coast via the west coast landbridge moved to the East Coast via all water service and has stayed there ever since.

In 2005 the Port of Virginia handled a record 1.98m TEU, which constituted a 9.6% increase in throughput since 2004. This growth is forecast to continue in 2006, and the conversion project of NIT South will help the terminal to cope with the increasing demand. What is more, over the next 20 years the volume of containerised cargo is expected to triple, far exceeding the current capacity of the US port network. Because of this growth there are several other projects underway to ensure that Virginia will continue to be a major US transportation hub.

"APM Terminals, a sister company of Maersk-Sealand Shipping Line is investing \$450M in Virginia for the construction of a new 300-acre container terminal in Portsmouth," says Mr Florin. "This is the largest investment in a company-owned container terminal ever to be made in Virginia and also the first time that a shipping line has invested its own money to build a

marine terminal from scratch."

In addition, the development of an efficient rail network from the Port of Virginia is underway. When completed, the Heartland Corridor will open up a significant part of the Appalachia area currently excluded from international intermodal markets and improve the connection between Virginia to the domestic and international distribution centres in the Midwest. This double stack corridor will be finished within the next four years.

"We expect great things from the Heartland Corridor. It will bring a lot more cargo to Virginia and shift a considerable proportion of goods away from roads, reducing the transit time between Virginia and Chicago by one and a half days and alleviating congestion at the port," Mr Florin says.

In the long term, VPA is planning to expand its operations by building a new terminal nearby on Craney Island. The expansion project, which will involve building the new facility on land dredged from the channels is expected to be approved soon. Mr Florin concludes that the new terminal will open for business by 2017, further increasing the importance of Virginia for the US transportation network.

