

Officials in Alaska have introduced new regulations to keep the air clean and crisp for its residents and the growing number of tourists the state hosts each year. Some of these 'green' initiatives are focused towards controlling emissions at Alaskan ports, requiring vessels to use techniques like "cold ironing", cleaner-burning fuels and wastewater treatment systems.

Lessons from Alaska

Alaska's nickname, "The Last Frontier," might conjure up images of the gold rush era when prospectors stampeded to the gold fields of the Klondike by way of the Chilkoot Pass, but things have come a long way since then. Nowadays, the state welcomes thousands of visitors each year to enjoy its breathtaking landscapes and fresh, mountain air, making it evermore necessary for the state to preserve its environment.

With a population of only 663,661 (US Census Bureau 2005) and the near square miles equivalent of pristine wilderness to preserve, Alaska—since 2001—took the bold step to introduce some of the strictest regulations for the cruise industry in an effort to protect its territorial waters from pollution.

Smoke emissions for vessels calling at its ports have to be kept under 20 percent when alongside, but during manoeuvring, this threshold increases to 40 percent for an hour to allow a ship to tie up safely. To ensure cruise ships comply fully with its regulations on smoke, visible emissions readers (a.k.a. smoke readers) are utilised. These individuals are trained and certified using a standardized national method known as the Ringleman's chart. The method requires readers to visually differentiate the opacity of the emissions using a set of examples. While some dispute this is not an exact science because a critical part of the reading requires the sun to be behind the reader in order to reduce light scattering which makes the plume appear darker, the objective remains a noble one with heavy penalties for non-compliance.

"Plugging in" and cutting emissions

The Port of Juneau has undertaken another approach. Since 2001, the facility allows some of the cruise lines to plug into its hydroelectric grid. Shore power, also known as "cold ironing," enables ships to turn off their diesel engines and connect to electric power that travels to

the ship from a specially designed transformer. The whole operation of "plugging in" takes about 20 minutes, allowing the vessel to utilise shore power instead of burning fuel. To create this unusual power system, ships are outfitted with a custom-built electrical connection cabinet that automatically connects the ship's power to the local grid ashore.

A clear — and clean — alternative

Smaller ports in Alaska that do not have "cold ironing" capabilities but must comply with regulations, have adopted the practice of burning MGO (Marine Gas Oil) in the gas turbines of cruise ships. Whilst some sceptics argue burning this very expensive fuel, which is nearly twice the price of MDO (Marine Diesel Oil), causes more harm to the environment in terms of other bi-products emitted, the underlying fact remains; emissions are significantly reduced by as much as 80 percent nitrogen oxide and 98 percent sulphur oxide.

Waste not

Wastewater discharge from ships is another activity Alaska has tackled in an effort to preserve the spawning grounds of its marine life that includes whales, otters, seals and salmon.

Due to the overlap of the state and federal law, large cruise ships

usually opt to either hold their wastewater and discharge it once they are outside Alaskan waters or operate advanced wastewater treatment systems that meet the stringent requirements of the State and are certified by the US Coast Guard (USCG) for continuous discharge.

Advanced wastewater treatment systems treat raw sewage by breaking down the solid matter through a screen press which is then sent to a treatment tank where friendly bacteria feast. A system of fine filtration follows before the liquid is passed through reverse osmosis this effluent is turned into clean water. On a regular basis, this water is separately analyzed by both the ship and an external laboratory to define the common parameters used to determine the effectiveness of the treatment. The most important being Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Suspended Solids (TSS) Faecal coliform, Total ammonia, pH, and Free and Total chlorine.

CODs and BODs are indicators of how much oxygen a pollutant is going to rob from water. If pollutants consume too much oxygen, there is not enough left to support aquatic life. TSS is a measure of the amount of solid material that is suspended in water. Solid materials can keep light from penetrating into the water which is

necessary for aquatic plant life. It can also settle on the bottom smothering fish eggs. The regulation for both BODs and TSS is <30 mg/L.

Faecal coliform is a class of bacteria that is found in the intestines of warm-blooded animals. While some forms are not harmful, their presence indicates that bacteria or viruses may also be present. If ingested by humans, they can create symptoms from mild nausea and diarrhea to death. The Alaska Department of Environmental Conservation (ADEC/USCG regulatory level is 20 faecal coliform/100ml.

pH denotes the degree of acidity or alkalinity of the discharge. And finally, Free and Total chlorine measures chlorine which is an oxidizing element that is used effectively in sterilizing wastewater effluents and purifying potable water supplies. High chlorine levels can be toxic to aquatic life.

Setting a good example

Large ships that discharge blackwater, graywater or other wastewater in Alaska are also subject to two random unannounced sampling events each season to demonstrate compliance with state and federal standards.

At first sight, these stringent regulations may seem excessive, but the lack of this prudence can clearly be seen around the globe. Global warming, climate change, algae blooms, coral bleaching, red tides, not to mention the eradication of indigenous marine life by aquatic invasive species found in ballast water, are just some of the problems that are coming home to roost.

With ships extending in size, and passenger and cargo numbers increasing by proportion, Alaska has adopted environmental policies that could serve as a good model for the rest of the world.

By: Bobby Khan



Kalmar around the World

A GLOBAL BUSINESS MAGAZINE FROM KALMAR INDUSTRIES, NO.3/2007

New sales and service company in Denmark

Kalmar has established Kalmar Danmark A/S, a sales and service company to further strengthen its ability to support the distributors, Cargo Service A/S and other port and terminal customers locally. Toyota Material Handling Denmark A/S is responsible for fork lift trucks and Arne Holst & Co A/S is handling terminal tractors and straddle carriers.

Acquisition of automation software provider

Kalmar recently acquired hi-tech software company ACT B.V. The Netherlands-based company will enhance Kalmar's ability to deliver automated horizontal transportation solutions. ACT is experienced in developing and marketing navigation control systems for automated vehicles and equipment.



ACT crew.

Pekka Vauramo takes over at the helm of Kalmar

On 1 October 2007, Pekka Vauramo assumed the role of President of Kalmar Industries following the retirement of incumbent Christer Granskog.

Mr Vauramo has worked in various positions at Sandvik Mining and Construction where he built an impressive track record of growing a global business profitably. Read Mr Vauramo's initial thoughts about Kalmar's business in his editorial on page two.



Debut of new F generation empty handler

Kalmar introduces its new DCF-series empty container handler featuring optimum performance and reduced total cost of ownership. The machine offers faster lifting speeds, a cleaner engine and longer service intervals.

Continues on page 3

Hybrid project works to keep the environment clean

Kalmar is partnering with the US Environmental Protection Agency in its quest to lower emissions at the nation's ports by developing terminal tractors with hybrid technology. Kalmar will participate in the East Coast-based two year project by supplying two units as well as contributing to the research and development required to implement the machines with the new technology.

Continues on page 12

Vietnam orders more eco-friendly cranes

Saigon Newport Company continues to think green with an order for a further 10 E-One rubber-tired gantry (RTG) cranes. Kalmar's all-electric RTG – admired for its innovative design and low-maintenance features – is just one of many environmentally conscious solutions in the company's portfolio.

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Kalmar is part of Cargotec Corporation



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Kalmar's leadership gets a fresh look

Just before the summer holiday season, Pekka Vauramo accepted the position of Kalmar President. Involved in the company's business activities already in September, Pekka offers his initial thoughts.

First off, I would like to thank Christer Granskog, Kalmar CEO and President for the last nine years, for his input in the development of a company which has grown rapidly and profitably in recent years, presenting me with a good starting point for the future.

Kalmar's parent company – Cargotec – reported this year that the value of orders received from July to September exceeded a record level of 1 billion euros. Kalmar alone increased its order intake in the same period by more than 25 percent from the previous year. This is a signal on one hand of healthy market activity and on another hand of our success in product development and in expansion of our global market presence – strategies which have been in place for some time.

The people behind Kalmar's products and services – from the front line sales to factory floors – reflect this market reputation. Each week, I meet more energetic people who are successfully transforming Kalmar from a manufacturing company into a global customer and services-oriented company with strong assembly set-up. Through acquisitions, this idea of a unified global business will expand, lending more opportunity to Kalmar employees and increasing our customer offering of market-driven solutions.

I am confident that Kalmar's innovative products will continue to meet the demand for more efficient, greener and safer solutions. Take for instance Kalmar's new 'F' generation empty container handler. Based on the same industry-leading modular platform and proven technology of the Kalmar DRF reachstacker, the DCF empty container handler features more power, increased reliability of components, and a new engine that meets Tier 3 requirements.

Eco-friendly equipment is particularly relevant as more ports and cities pass laws promoting cleaner air. Kalmar recently agreed to contribute to a second project with the US Environment Protection Agency on the East Coast aiming to reduce emissions with the development of hybrid engine terminal tractors.

Kalmar is also a step ahead of the rest when it comes to fully- and semi-automated equipment. As the only supplier that can provide turnkey automated terminal solutions such as automated stacking cranes and Shuttle Carriers, mega container terminals such as APMT Virginia terminal in the US and HHLA's Container Terminal Buchardkai in Germany have already opted to equip their facilities with these solutions.

Just as our skilled workforce is a reflection of our ability to produce superior equipment and perform expert service, our solutions are a reflection of our customers' needs. As a company with a diverse background and roots planted more than a century ago, this principle will never waiver – not even with a new leader at the helm.

Pekka Vauramo
President
Kalmar Industries

- Born in 1957.
- Graduated with a M.Sc. in Engineering.
- Served as President of the Underground Hard Rock Mining division of Sandvik Mining and Construction. Employed by Sandvik since 1985.

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Kalmar around the world

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Packing some punch

Kalmar's new F-generation empty container handler is packed with features designed to make light work of a fast-paced job.

Kalmar Industries has ushered in a new dimension in empty box handling with the launch of its DCF 80-100 empty container handler (ECH). The F-generation unit, based on the same modular platform as the DRF reachstacker, is designed for unbeatable reliability and productivity, while at the same time offering improved energy efficiency and environmental credentials – all at a reduced total cost of ownership.

The DCF 80-100 was introduced in response to ever-more challenging customer demands. "Empty container handling is a fast-paced job, with customers demanding ever higher levels of productivity and availability, as well as safe and environmentally sound operations," explains Dan Pettersson, Kalmar's Product Line Manager, Heavy Lift Trucks & Empty Container Handlers. "With our new DCF empty container handler we have focused on these demands and developed a machine with a more powerful powertrain, increased reliability of components, fast and efficient diagnostics and troubleshooting, and enhanced safety and green credentials."



Green and productive
Available with either a hook or twistlock attachment, the DCF 80-100 offers 10 percent faster average lifting speeds, thanks to the rapid response provided by improved hydraulics with variable pumps. A new electronic and hydraulic system makes it easier for the driver to make fine adjustments, resulting in a more responsive machine. A more powerful engine and a fully automatic electronic TE17 transmission also provide 25 percent better torque and acceleration over existing models on the market. The DCF 80-100 has also been designed to help customers' respond to their increasing environmental responsibilities.

Explains Mr Pettersson: "The Tier 3 engines comply with the strictest noise and vibration standards, while the specially designed combustion chambers and precise fuel injection control contribute to lower emissions. The variable pumps also contribute to energy efficiency as the hydraulic oil pump for load handling is disconnected during forward drive, thus using engine power to the best effect."

Longer service intervals, easy diagnostics
Improved reliability and availa-

bility are also key features of the DCF 80-100, which has been designed for fast daily inspection and incorporates only tried-and-tested components. Importantly, service intervals have been extended to 500 hours, meaning that the machine needs to be taken out of operation no more than six times a year, resulting in minimum downtime and enhanced productivity.

A CAN-bus control system provides fast and accurate troubleshooting, alerting the driver to any problems on a need-to-know basis and providing the relevant guidance via the control panel display screen.

Maintenance is also facilitated with a new simplified solution for electronic and hydraulic routing over the mast roller, which decreases the stress on cables and hoses. Fewer cables are required for the twistlocks due to the electronic CAN-bus system, while the machines also feature ORFS leak-proof hydraulic couplings. The new design facilitates inspection and servicing access for both operator and service personnel.

Comfort matters
"A happy driver is a productive driver and so, with this in mind, we have also built the DCF 80-100 for an all-round safer and more comfortable driver experi-

ence," explains Mr Pettersson. "A separately suspended and isolated cabin, along with a sympathetically designed control panel layout and fully adjustable seat provide a comfortable driver environment, while the provision of 360° visibility from the Spirit Delta cabin and the open design of the mast are both in line with the free visibility principle. The unit also features improved working lights, which are located on the mast and directed towards the twistlock. All these features contribute to safe operations and increased productivity."

Seeing is believing
The DCF 80-100 has undergone successful trial operations with a number of Kalmar customers, including Rotterdam-based empty container terminal operator Kramer Group. The company has already ordered five units, three of which will be delivered this year and two for delivery in early 2008. A further DCF 80-100 unit has also been delivered to Dutch customer, Barge Terminal Tilburg (BTT).

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Shuttle applications offer mega results

Kalmar invented and developed the Shuttle Carrier at the end of the 1990s as the optimum way to move containers between ship-to-shore (STS) and stacking cranes in so-called mega container terminals.

Today, the first mega terminals are a reality – for example, the new APMT Virginia terminal in the USA, which employs automatic stacking cranes (ASCs) and Shuttle Carriers, and HHLA's Container Terminal Burchardkai in Hamburg, Germany, which will use straddle carriers for horizontal transportation. Other innovative terminal operators have found that shuttle carriers are also suitable workhorses for a variety of smaller terminal operations where speed, light construction and ease of operations are essential.

Shuttle Carriers operating at mega terminals can be manually operated, as at APMT Virginia, or automated. Kalmar is the only



supplier that can provide turnkey automated terminal solutions, such as ASCs and automated Shuttle Carriers.

The bigger the mega terminal, the more advantages Shuttle Carriers can offer compared to automated guided vehicles (AGV). The amount of traffic can be kept to a reasonable level in a Shuttle application whereas an AGV operation typically creates traffic problems, queues and waiting times. Also, in bigger

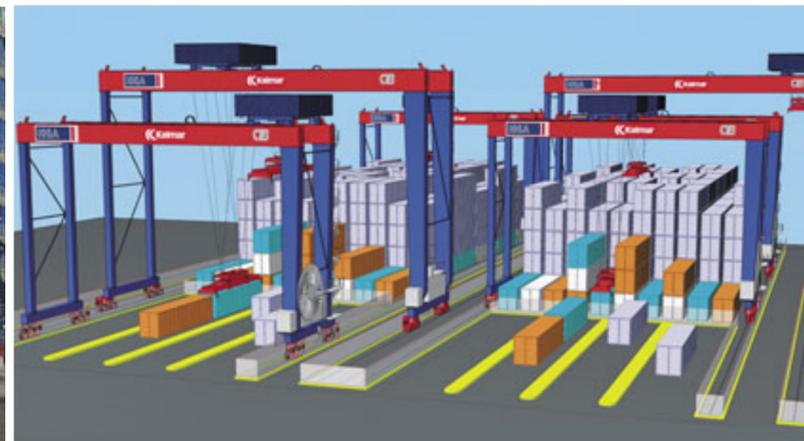
terminals, twice as many AGVs are needed compared to Shuttle Carriers for handle containers, as witnessed at ECT Delta in Rotterdam.

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 undertake optimum

independent operations 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 the creation of a natural buffer zone, two Shuttle Carriers can do the work of around four to five AGVs while at the same time improving STS crane productivity by 20 percent. Shuttle Carriers offer the follow-

Container Terminal Burchardkai
Hamburg, Germany



Turku Container Terminal
Finland



Muuga Container Terminal
Tallin, Estonia



Kota Kinabalu Terminal
Malaysia



ing advantages over AGV operations:

Limiting traffic in the terminal

Because less than half the number of Shuttle Carriers as AGVs is needed, horizontal transportation traffic is much more fluent. Instead of waiting for other units stuck in traffic jams, Shuttle Carriers can continuously undertake productive moves, resulting in excellent STS crane productivity and easy traffic control both in manual and automated terminals. Naturally, ASCs enjoy the same productivity boost as the STS cranes, meaning that practically all horizontal transportation waiting times are eliminated.

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 STS crane and in the stacking area. Since Shuttle Carriers are self-loading, they allow independent operations for the crane and the stacking equipment, thus eliminating waiting times.

In an ASC operation, a one-over-one Shuttle Carrier can offer a buffer zone of four to eight TEU deep under the cranes, thus providing dramatically better crane optimisation – as demonstrated at CTB in Hamburg. 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, the self-loading and natural buffering capabilities

of Shuttle Carriers mean there is little need for the expensive and complicated double-trolley STS cranes / road trucks and generally stacked one-high in the yard – for example, Finnsteve in Turku. Shuttle Carriers operating in this environment allow for good efficiency to be achieved with minimum labour costs.

Efficiency in twin and tandem handling

These days, more and more STS cranes are equipped for twin or even tandem twin handling (two twin spreaders side by side). In twin handling, Shuttle Carriers can simultaneously pick both containers in twin mode or collect them one by one if the terminal's logistics and storage optimisation requires that. In the emerging tandem handling system, the biggest bottleneck is typically created under the STS crane by the two terminal tractors / trailers that must be positioned accurately beneath the spreader lowering the containers. In a Shuttle Carrier operation, the STS crane can unload the four tandem-handled boxes directly onto the quayside, from where a Shuttle Carrier equipped with twin spreaders can easily pick them up two at a time. There is no need to align equipment or to wait for both pieces of equipment to be in the same place at the same time.

RTG, MHC performance boosted

In terms of smaller terminals, it is

typically those that employ mobile harbour cranes (MHC) at the quayside that reap the greatest benefits from a Shuttle Carrier system. An MHC has a turning, swing motion when it moves a container from ship to quay. This makes it difficult to position the container on the tractor trailers usually employed to undertake horizontal transportation. With a Shuttle Carrier there is no need to force the container in a special direction – it can be placed freely behind the MHC, where it can be easily accessed by the Shuttle Carrier. This kind of operation has provided excellent results in East Malaysia (see attached pictures) where Sabah Ports doubled MHC productivity at its Kota Kinabalu terminal by moving to a Shuttle Carrier operation.

Shuttle Carriers can also be used like "mini straddles", as the first and only machine at a low-density terminal where containers are transported from STS cranes / road trucks and generally stacked one-high in the yard – for example, Finnsteve in Turku. Shuttle Carriers operating in this environment allow for good efficiency to be achieved with minimum labour costs.

Other types of facilities where Shuttle Carriers can increase productivity include rubber-tyred gantry (RTG) terminals such as Muuga Container Terminal in Estonia, where the machines can replace terminal tractors and trailers as the horizontal transportation method between the RTG and the STS cranes and road interchange. Shuttle Carrier applications allow RTGs to place containers on the ground instead of waiting for a tractor / trailer on which to place them. Advantages include a reduction in the number of RTGs and horizontal transportation equipment needed, as well as improved STS crane productivity.

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Onwards and upwards in the Mediterranean

Straddle carriers for Italy

In anticipation of further cargo growth, Medcenter Container Terminal SpA (MCT), one of the Mediterranean's largest transshipment hubs, is to introduce a fleet of 1-over-3 high straddle carriers to its considerable equipment fleet.

MCT this year ordered a further 30 Kalmar 7th generation CSC straddle carriers to supplement the sizeable fleet already in operation at its Gioia Tauro facility in Italy. Due for delivery between late 2007 and early 2008, the order includes 20 CSC440 units and ten CSC340 units.

More room at the top

MCT has traditionally used 1-over-2 high straddle carriers to cater to the roughly three million TEUs of cargo it now handles every year. However, in anticipation of future cargo growth, the terminal needed to think in terms of vertical expansion, hence the decision to introduce a fleet of 1-over-3 high CSC440 units. These provide a 50 percent stacking capacity increase over MCT's existing three-high straddle carriers.



MCT, part of the Contship Italia Group, is a veritable giant in the container transshipment league. Some 95 percent of the three million TEUs handled each

year along its 3,300 metre-long quay is transshipment cargo, meaning that most of its box movements tend to be between the feeder and mothership berths. With boxes from one ves-

sel likely to be transhipped onto several smaller vessels and vice versa, the flexibility of a straddle carrier to operate within a randomly distributed box environment is ideal.

Moreover, high berth occupation and busy quayside activity means that MCT needs peak performance from its ship-to-shore (STS) cranes. Straddle carriers are the key to supplying this



by allowing the STS cranes to discharge and pick up containers directly onto and from the quay, which is more time effective than placing them on a chassis.

Straddle carriers meet growing demands

The latest MCT order reflects the suitability of straddle carriers for major-league transshipment operations, as well reflecting the company's satisfaction with Kalmar's highly productive CSC unit, which has proven its worth as a reliable workhorse in terminals around the globe.

"MCT is a high-performance straddle carrier terminal, recording approximately 30,000 TEUs per straddle carrier per year. This is a 50 percent increase over the 20,000 global average," explains Ilkka Annala, Vice President Kalmar Straddle Carriers.

"Being one of the biggest straddle carrier terminals in the world, MCT already handles over three million TEU a year with its straddle carrier system and is aiming to do much more. As volumes grow, MCT is now acquiring more four-high units, which will give it a significant increase in capacity through higher stacking capabilities, while allowing it to retain the element of flexibility and high STS productivity that characterises straddle carrier operations."



Patrick's Brisbane AutoStrad operation hits new productivity levels

August was a record month for Patrick Stevedore's AutoStrad operation at Fisherman Inlands' berths 7 and 9. In August, the Australian stevedore averaged 21 moves per hour and made an impressive 32,000 lifts.

Reaching an average of 21 moves per hour was a significant improvement on operations six months ago, says Terminal Manager Matt Hollamby. The extra boost came with the recent delivery and commissioning of five new automation ready Kalmar EDRIVE® straddle carriers as well as six quay cranes, including two new post-Panamax cranes.

The new record is not far from Patrick Stevedore's target of 25 moves per hour. Hollamby expects this mark will be achieved in early 2008.

"We can do it. We do do it," Hollamby says. "I've no doubt this machine can do it. However, we need to ensure it's achieved in a consistent manner."

Productivity gains this year have been common for the Fisherman Inlands terminal. Andrew Zerk, Chief Executive of Patrick Technology & Systems (PTS) – the division which oversees development of the automated straddle carriers – revealed that the AutoStrads' productivity improved by 30 percent in the second quarter of 2007. The increase in efficiency was mainly achieved by altering straddle parameters such as pathways and tracking as well as reassessing navigation, transport planning and logistics.

Patrick is part of Asciano Limited – a publicly listed company on the Australian Stock Exchange – and a long-time user of Kalmar straddle carriers, with 24 already in operation at Port Botany and 28 at East Swanson Dock. The Fisherman Islands automated straddle carrier terminal in Brisbane is the first terminal of its kind in the world.

RTGs to Tangier

Elsewhere in the Mediterranean, Kalmar is also to equip the brand new Tangier Medgate Terminal with yard handling equipment, in the shape of 11 E-One RTGs. The 7+1 wide and 1-over-5 high RTGs, due for delivery May 2008, will be fitted with Bromma twin-lift spreaders and Kalmar's auto-steering and container position verification system, Smartrail®.

Morocco's new center of trade

Tangier Medgate Terminal will be operated by Tangier Medgate SA, a joint venture formed by Eurogate, Contship Italia, MSC, CMA CGM and COMANAV. The facility will form part of the larger Tangier Mediterranean Port complex, Morocco's new greenfield port and intermodal facility. The

port – construction of which was initiated in 2002 at an expected cost of more than USD 2 billion – will feature an oil storage facility, a cereals terminal, a pas-



E-One RTG.

senger port and a container terminal with an annual capacity of three million containers. Located at the crossroads of the major East-West and North-South container shipping routes, Tangier Medgate Terminal will offer world-class services and state-of-the-art facilities when it opens in July 2008.

Innovation reigns

According to Domenico Bagalà, Tangier Medgate SA Managing Director, the decision to buy from Kalmar was influenced by Kalmar's ability to provide proven, intelligent software that will help aid efficiency and minimise driver error – key contributors to the successful operations of a modern, hi-tech container facility.



Pictured in the foreground is the greenfield site of Tangier Medgate Terminal. The area is quickly developing to serve major shipping routes.

Kalmar's roro tractor gains popularity in the US

Regarded as a premium product and preferred by operators, Kalmar's TRX-182 gains popularity among American ports with roro handling. Users praise the improved handling and wide range of visibility.

Kalmar's TRX-182 could be considered the Rolls Royce of roro terminal tractors.

"I operate this tractor every chance I get and it can do everything," says Dennis Bullock, a terminal tractor operator at Ports America Baltimore. "It has power and maneuverability and the turnaround seat gives me direct visibility in the reverse direction. That makes loading heavy trailers onto roro vessels much easier."

The TRX-182 is a terminal tractor that has only recently become a popular model among American stevedores and terminal operators in North America. The continued growth of this method of handling can only mean an increase in the TRX-182 population from those ports serving the roll-on/roll-off market.

First to order a Kalmar TRX-182 was Ports America Baltimore. Mid-Atlantic Terminals added one more to its fleet, and most recently, three more were ordered by Marine Terminals Corporation.

Robust, flexible equipment

Based upon its geography, work force, cargo handling expertise and inland connections, the Helen Delich Bentley Port of



- 1 Greg Dickinson, Shop Superintendent, inspecting one of three TRX-182's owned by MTC Baltimore.
- 2 Backing a roll trailer onto the ramp of a Wallenius Wilhelmsen RoRo vessel at Baltimore's Dundalk Marine Terminal. Machine operator Dennis Bullock operates his TRX-182 in the reverse mode.
- 3 Making the lift.
- 4 In the reverse mode, the TRX-182 displays its versatility, assisting a Ports America rigging crew prior to making a heavy lift.



Photographer: Commercial Photographics



Baltimore's Dundalk Marine Terminal is the most active roro terminal in North America.

As a result of the terminal's layout and cargo mix, the Kalmar TRX-182 RoRo Terminal Tractor is ideally suited to support roro operations there. These roro tractors work well covering the distances from storage areas to rail loading areas. The



berths also call for robust, flexible terminal tractors.

"The TRX-182 is an asset, critical to MTC's operation and one of the many reasons for MTC's success in solidifying its roro business at Dundalk," says Gary Walters, Vice President Mid-Atlantic for MTC. He adds that his operations managers and operators are impressed with the tractor's performance.

Tom Drumgold, Operations Manager for MTC Baltimore confirms. He indicates that the turnaround seat is important, although he suggests that the vehicle is more than just a seat. "The machine is definitely worth the investment for our style of operation," Drumgold says, "and the pulling and lifting power allows us to easily handle



not only heavy cargo but dimensionally challenging pieces."

The TRX-182 not only enhances operations, it provides both an improved safety factor and ergonomic benefits. The machine removes much of the trepidation associated with backing a 40 foot trailer up a steep roro ramp and into a low overhead hatch. The ability to turn the seat around also places less strain on an operator's back and neck and provides forward vision rather

than turn around vision. "When working a roro vessel, drivers will fight to get into the TRX-182," Drumgold added.

Easy handling and good visibility

Dennis Bullock, member of Baltimore's International Longshoremen's Association Local 333, appreciates the easy handling and good visibility the TRX-182 allows him when operating the machine. Recently, he and his trac-

tor were working with a Ports America rigging crew to lift an imported crane onto an over-the-road trailer. Operating with the seat position facing forward, Bullock easily maneuvered the trailer into position under one of Dundalk's dockside container gantry cranes. As a crew began working with the cargo, Bullock turned his seat 180 degrees to position himself to provide direct visibility and to allow himself to quickly react to requests to shift

the cargo. Bullock indicates that this feature is important to the roro operations at Dundalk.

MTC is handling rail car bodies worth \$2.5 to \$3.5 million and the ability of the TRX-182 to assist in controlling the load gives them more comfort factor. MTC has three TRX-182s and Drumgold says that they could justify ordering one or two more considering today's volume of roro business.

Entering a new era of icon-series terminal tractors

More than 40 years' experience in designing and manufacturing terminal tractors this year culminated in the introduction of the new icon series, which builds on the success of Kalmar's innovative *i*-model range introduced to the market in 2006. Featuring a CAN-BUS control system, the icon generation is characterised by superior operator comfort, outstanding performance and easy maintenance and service.

Developed in cooperation with drivers and ergonomics specialists, the operator cabin of the icon TT618i, TR618i and TRL618i models offers a significantly enhanced working environment. Improvements include an asymmetrical rotating seat that is flexible and adaptable, as well as a fully adjustable steering column, making it easier for drivers of different heights to

access and work in the cabin. A number of dimensional and layout upgrades provide more working space and better visibility.

The CAN-BUS control system, which in-



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

Customers are convinced

Since its introduction to the market in mid 2007, the new icon series has already surpassed sales targets. Hans Vejs-Petersen, Managing Director for DFDS Tor Line at its Scandic Terminal in Esbjerg, Denmark says his company's decision to purchase six TRL618i units was influenced by the new machine's spacious cabin and good visibility. "The working environment of our driv-



ers plays a significant role in the procurement of equipment for our operations. After test driving the new icon series from Kalmar, our drivers were impressed with the new cabin design, citing improved maneuverability and comfort. These factors, combined with the operational and service ease of the CAN-BUS control system, make the icon series a perfect fit for our operation."

A history of success

To date, in excess of 4,000 terminal tractors have been produced at the company's factory in Tampere, while more than 40,000 have rolled out of its US manufacturing facility. Over the years, Kalmar has pioneered features like the 180 degree rotating driver's seat, the tilting fifth wheel and Variable Displacement Hydraulics.

A princely partnership

Kalmar's longterm strategic partnership with Maher Terminals continues to go from strength to strength, this time with the delivery of 17 reachstackers and 34 terminal tractors to the operator's new container handling operations at Fairview Container Terminal in Prince Rupert, British Columbia, Canada, which opened for business in October 2007.

The Port of Prince Rupert offers the shortest shipping route between the Far East and North America. It is home to the deepest harbour in North America and features on-dock access to Canadian National (CN)'s high

capacity double-stack rail network. The Cdn\$170 million Fairview Terminal project has been funded by five partners – namely Maher Terminals, the Government of Canada, the Province of British Columbia, CN Rail and



© Prince Rupert Port Authority
Fairview Container Terminal

the Prince Rupert Port Authority. Phase 1 of development provides an annual container handling capacity of 500,000 TEUs, which will be increased during Phase 2 to two million TEUs.

CN is filling part of the 20,000 feet of intermodal trackage on the terminal with many of the 2,200 rail cars that the rail com-

pany has acquired, along with 50 new locomotives, specifically to move containers between Prince Rupert and the North American mid west.

Gearing up for success

While the workforce at the terminal is new, many of the workers are experienced longshore-

men and a core group has been training for months to ensure a smooth start-up. These include the crane operators, who have been gaining experience on similar cranes at Maher's terminals in New York and New Jersey.

The new Kalmar reachstackers will support container yard and intermodal on-dock double stack rail operations at Fairview Container Terminal. The units will feature increased load capacities of 45 tonnes in the first row, 35 tonnes in the second row and 18 tonnes in the third row.

Speaking at the grand opening of the new terminal, which was completed on budget and on time, Prince Rupert Port Authority President & CEO Don Krusel said: "Our timing couldn't have been better to bring on stream this high-performing container terminal to anchor a new express trade corridor. We will be able to offer both Asian and North American shippers unparalleled reliability, efficiency and speed in moving their products through our port."

Maher maximises its productivity

Maher Terminals, Kalmar's largest global straddle carrier customer, recently turned to Kalmar for intelligent solutions that would ensure optimum performance from its vast straddle carrier fleet.

Maher Terminals this year outfitted its entire straddle carrier fleet in the Port of New York/New Jersey with Fleetview, a system for monitoring and coordinating container handling equipment, and Smartpath®, a container position verification system. The installation, which was finalised in May 2007, involved

183 machines and will ensure that terminal operations at Maher's New York/New Jersey facility achieve peak performance around the clock.

Real-time control

Fleetview, Kalmar's newest automation software, offers control room operators improved management and coordination of large equipment fleet handling. It optimises the usage of the fleet and minimises travel distances without a container, providing significant improvements in productivity. As well as straddle carriers, the system can be used to monitor reachstackers, fork-lift trucks, terminal tractors and RTGs. It is also manufacturer independent, meaning that it can be used to monitor both Kalmar and non-Kalmar equipment.

The main benefit of Fleetview is that it allows control room



staff to monitor the real-time positioning and efficient control of each machine. Container handling tasks can be assigned to the unit best suitable for the job, thus minimising unladen travelling distances and resulting in better productivity. For a major multi-million TEU terminal operator like Maher, this offers substantial operating benefits.

Fleetview can also be connected to a yard management system to monitor the actual container moves. Furthermore,

if a machine has failed to perform the task that the terminal operating system has assigned to it, or if the task has been delayed or performed incorrectly, Fleetview notifies the control room operators of the discrepancy.

Safety benefits

Other advantages of the system include a comprehensive route log, which is useful in determining the cause of an accident and in preventing similar events from occurring again. Fleetview can also

be used for training purposes, whereby instructors can teach correct working methods to new drivers with the help of the built-in map system.

Maher Terminal's decision to also equip its fleet with Smartpath® – further reflects the operator's desire to maximise productivity. Designed for straddle carriers and rubber-tired gantry (RTG) cranes, Smartpath® can be incorporated into all leading yard planning and equipment control systems. As a completely integrated technology, the straddle carrier driver receives instructions for his next task from a digital monitor installed in his cabin, which exchanges information with the yard management system. There is no manual input and thus no opportunity for mistakes and misplaced containers, which all leads to smoother and more productive operations.

10 ways to IMPROVE yard efficiency

Globalization has pressured terminal operators to focus on faster and more efficient container handling at ports. Kalmar offers innovative solutions to solve the unique challenges that terminals face, helping them to stay competitive. The ten points below outline the ways in which terminal operators of all sizes can improve their yard efficiency, thus maximizing their productivity and container handling capacity.

1 Intelligent terminal and equipment solutions: Onboard smart features, automation tools and integrated systems for container handling equipment maximise machine performance, for example, by allowing more accurate operations and minimizing unnecessary equipment moves. They also present a number of safety and environmental advantages. Kalmar offers several intelligent solutions for operations, including the Smartrail® autosteering and container position verification system for RTGs, Smartpath® container position verification system for straddle carriers and reachstackers and the Fleetview equipment monitoring system.

2 Intelligent diagnostics: Maximum availability of handling equipment is key to productivity. Tools such as Remote Machine Interface, along with inbuilt advanced diagnostics system CAN-BUS can facilitate machine maintenance and ensure that downtime is reduced.

3 Planned maintenance program: Allied to this is the importance of putting in place a sensible equipment maintenance program. This should be designed to provide regular maintenance and servicing, and can be tailored according to quiet / peak periods, so as to minimise machine downtime. Kalmar's Remote Maintenance Interface (RMI) software generates real-time estimates on upcoming maintenance work offering the ultimate in flexible service scheduling.

4 Fuel-efficient engines: Implementation of the latest engine technology can offer much greater torque, as well as the high pulling capacity required for some container movements. Kalmar's machines come equipped with the latest EU-stage Tier 3 engines, which also give fewer emissions and more productive daily operations. Such engines are electronically controlled to optimize output for each task the operator performs.

5 Terminal simulation planning: When planning a new terminal or upgrading an existing facility, it is wise to bring in the services of an experienced port development consultant, such as Kalmar Terminal Development, which can offer dedicated tools such as Port Optimizer®. Such companies can provide equipment recommendations, estimates of numbers of equipment needed, overall cost analysis, terminal layouts and operational simulation, thus ensuring a tailored solution ideally suited to each terminal's needs.

6 Ergonomics: The importance of ergonomic considerations in the operator / driver environment of container handling equipment cannot be over-stated. Cabins such as the Spirit Delta design offer well thought out instrument and display layouts, adjustable seats and steering columns, climate control, and reduced noise levels, meaning that drivers are less fatigued and more alert. This improves both efficiency and safety.

7 Superior, tailored equipment: Always purchase the best machine for the job in hand. These days, terminal operators can choose from a range of equipment, some of which is designed specifically for certain tasks. For example, the DCF top-lift handler has been developed exclusively for the US market, delivering productive and high quality operations, as well as the fastest lifting capacity in the industry.

8 Choose a reputable equipment supplier: It might sound obvious, but the best equipment is manufactured by suppliers with significant industry experience, who invest heavily in R&D and who are committed to the market. Such suppliers will also have in place a global network of sales and service companies, dealers and agents – giving you easy access to spare parts, trouble-shooting expertise and technical advice.

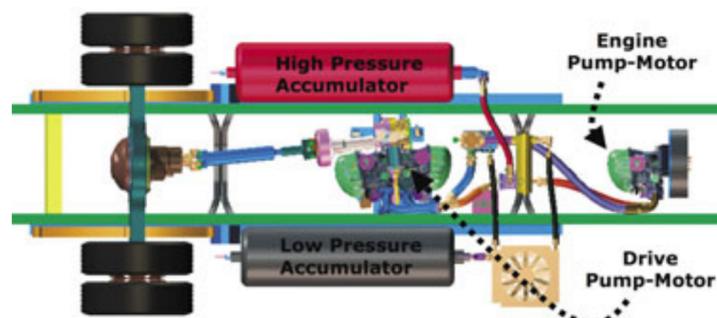
9 Manufacturer / original parts: When choosing spare parts, invest in original manufacturer equipment, rather than opting for cheaper options from non-brand suppliers. This will help curtail service and maintenance activities, thus minimizing costs and ensuring maximum equipment availability.

10 Well-trained operators: The human element is critical to productive terminal operations. Large, reputable equipment manufacturers such as Kalmar can assist you with this with the provision of driver training courses and equipment simulators.

Hybrid technology has the interest of US East Coast

Kalmar will contribute to a second project with the EPA aiming to make the air at the nation's ports cleaner with the development of hybrid terminal tractors.

Hydraulic Hybrid Concept for Terminal Tractors



The Environmental Protection Agency (EPA), the main benefactor of the project, together with the Port Authority of New York and New Jersey, APM Terminals, Parker Hannifin Corporation and the Port of Rotterdam, is striving to lower emissions at the nation's ports and demolish technical barriers for hybrid terminal tractors to become commercially viable. Kalmar will contribute to the two-year project by not only supplying the units but also providing the research and development required to implement the machines with the new technology.

Securing the essentials
The EPA's determination to move the nation's supply chain closer to a cleaner, fuel-efficient and cost-effective future will begin by equipping the hybrid vehicles with a unique hydraulic hybrid power train that can generate, recover, store and reuse braking power with very little air pollution.

"EPA and our partners are working together to ensure

that America's ports become harbors of clean air," says EPA Administrator Stephen L. Johnson. "Together, we are moving breakthroughs in hybrid technology from the labs to the docks – improving air quality while saving fuel. This technology is good for our environment, good for our economy, and good for our nation's energy security."

Excellent savings
The terminal tractors will use a diesel-hydraulic system that will combine the cleanest available diesel engine technology with components that use hydraulic fluid compression to store energy. The hybrid technology is expected to improve the vehicles' fuel efficiency by 50 to 60 percent, reduce or eliminate emissions during idling, and decrease brake wear.



Says Kalmar's Stefan Johansson, Vice President R&D, Trailer Handling: "The decision to develop hybrid terminal tractor technology on the US East Coast reflects US ports' commitment to cleaner operations. Kalmar is at the forefront of R&D when it comes to environment-conscious products, which makes us the ideal partner to provide terminal tractor product expertise to this initiative."

Hybrid project on West Coast
Kalmar is currently contributing to a two-year hybrid terminal tractor project launched at the end of 2006 with the West Coast Collaborative, an EPA-sponsored organisation, and the ports of Los Angeles and Long Beach. Three Kalmar terminal tractors will be equipped with either a hybrid-electric system or a hybrid-hydraulic system expected to reduce emissions by 93 percent, which equates to 19 tons of nitrogen oxide and 200 pounds of particulate matter.

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Genuine vs. Imitation

Don't take the risk. Use original Kalmar Parts.



GENUINE CHAINS

With genuine chains, the linking pins are well supported. They are reinforced and strong.



IMITATION CHAINS

Imitation chains have a shorter lifespan and are prone to wear. The surrounding cables and hydraulic hoses are also prone to wear.

Looks can be deceiving, but there is no confusing the performance of a genuine Kalmar part versus an imitation. By using inferior parts you risk reducing your machine's performance, depreciating its value and causing serious, expensive damage to other main components. Kalmar parts are engineered to the highest quality, purpose-made for Kalmar equipment meaning they fit the first time, and designed to achieve optimum performance. Kalmar Parts are therefore the obvious choice.

"Whether it is preventative or reactive maintenance, we strongly recommend that only genuine Kalmar parts are used on Kalmar machines," says Hans Jansson, VP of Kalmar Parts. "As the Original Equipment Manufacturer we know our machine specifications best.

"When maintenance operations use imitation parts, the result can even cause serious expensive damage to other main components," Jansson continues. "When you've invested in valuable machinery, that risk is not worth taking. For example, there have been cases where complete engines were changed simply because an imitation filter was used and it did not offer the same quality protection as an original Kalmar filter. The customer might think he is saving some money, but the actual consequences turn out to be far more costly. Kalmar parts ensure long term protection and optimum performance, thus contributing to the machines reliability and giving our customers peace of mind".



GENUINE DIESEL FILTERS

Genuine diesel filters have two layers of filter paper to minimise clogging. The high pressure spring prevents backflow of the oil.



IMITATION DIESEL FILTERS

Imitation filters have often only one layer of filter paper and the paper and springs are of a poorer quality. Poor filtration allows impurities to enter the engine fuel system, causing wear and shortening the engine lifespan.

Innovation key to success for Turkey's new multi purpose port

Kalmar agreed to outfit the Izmit Bay facility with 21 of its terminal tractors, six of which will come equipped with CAN-BUS technology.

The country's new container handling facility, Yilport Container Terminal (YCT), located 40 kilometres east of Istanbul, ordered six TTX182i units – the first Kalmar i-model series terminal tractors equipped with CAN-BUS technology to enter the Turkish market – and 15 PT122 units. Delivery of the machines is underway and expected to be complete by 2008.

Speedy and powerful

Recognising a need for congestion-free and cost-effective container transport, YCT is investing in state-of-the-art port and intermodal technology to better serve the Turkish market, which is gradually becoming

more containerised. The TTX182i units were ordered for their ability to quickly manoeuvre laden loads between YCT's portside container transfer station and its rail depot located 1.2 kilometres inland.

These heavy-duty terminal

tractors, outfitted with EU Stage 3A / Tier 3 engines and automatic gear control, offer customers more power and torque, especially when highway speeds are required. The PT122 units will support the operation of three quayside gantry cranes, each

with a 50-metre outreach.

A trusted partner
YCT has turned to Kalmar time after time for its container handling needs. Robert Yuksele Yildirim, President of YCT, commented that his compa-

ny's strong relationship with the local Kalmar dealer and its familiarity with Kalmar equipment, prompted the purchase for new terminal tractors.

"Kalmar has a reputation for supplying innovative equipment," said Yildirim. "The i-model terminal tractors feature easier handling, longer service intervals and faster troubleshooting ability thanks to CAN-BUS technology. These benefits will allow us to cut costs in our current operation and increase the efficiency in our services to the liner operators."

The main areas of the new facility will handle containers, general cargo and liquid bulk as well as offer warehousing, logistics and ancillary services. In 2013, when all phases of the port project are complete, the terminal's capacity will be 2 million TEU. YCT has signed a letter of intent with Kalmar to purchase 30 additional Kalmar terminal tractors over the course of the next three years.



YCT's decision to purchase 21 Kalmar terminal tractors for its new container handling facility was supported by its longstanding cooperation with the Kalmar. Yildirim, President of YCT (pictured right with Peter Schnorr, Kalmar Trailer Handling Sales Manager), says that Kalmar's reliability and superior technical know-how has enriched the relationship.



Continuous development is a key characteristic of today's business, especially for ports around the world. New terminals are being built and existing terminals are being modified to meet the future challenges of growth and efficiency. New terminal projects often involve large investments that need to be considered as thoroughly as possible. Kalmar Terminal Development® offers consultancy and simulation services to evaluate these needs. "The aim is to help customers find the best solution and to test their plans in advance," says Jari Pirhonen, Kalmar Terminal Development® General Manager.

Planning the future

"We are trying to imitate the real operations as much as possible. Of course, simulation is never 100 percent reality, but it can be fairly close," comments Pirhonen. "We can find at least the big problems – such as bottlenecks. It's important that operators recognize the possible problem areas before the final implementation, because it makes the elimination of the problems easier.

Simulation is often used for testing a new handling system, either for new or existing terminals, but it could as well be used for testing a new feature, such as tandem lift concept for ship-to-shore cranes. Compared to the testing with the actual equipment it offers a cost-attractive option."

Know what you want

Terminals use Kalmar's simulation service mainly to measure vessel and crane productivity, yard equipment productivity and utilization and landside service levels, which are also commonly used for evaluating a terminal's performance. "It makes it easier if the customer knows



"At the beginning of the simulation we had three main goals for the project," says Giulio Bessone, VTE's Project Manager for the

what they are looking for and what they need to verify with the help of simulation. Otherwise, they might end up with lots of data which is not essential for them," says Pirhonen.

Kalmar assists VTE with its terminal conversion

Voltri Terminals (VTE), located in Genoa, Italy and also a division of PSA, operates with ten ship-to-shore cranes to realise a volume expected to reach 1 million TEUs by the end of this year. The terminal operates with a mix of RTGs and reach stackers. VTE is planning to convert to a full RTG operation and increase its nominal capacity up to 2 million TEUs.

To help facilitate the conversion, the company opted for Kalmar's Port Optimizer®, a software program used for simulations. This tool provides a platform that can be utilised for building simulation scenes according to each customer's unique requirements.

simulation project. "We needed to define the maximum capacity of the terminal before the shipment. Terminal operations are divided between Port of Rauma, which owns and operates the ship-to-shore crane and mobile harbour cranes, and Rauma Stevedoring, which is in charge of all the yard and landside operations including the packing of containers.

"The terminal yard currently operates with reachstackers and terminal tractors, but with the expected growth rate of containers and the yard's space limitations, we now have to carefully analyse how to increase our capacity," says Janne Virta, Rauma Stevedoring Terminal Manager. Kalmar Terminal Development's

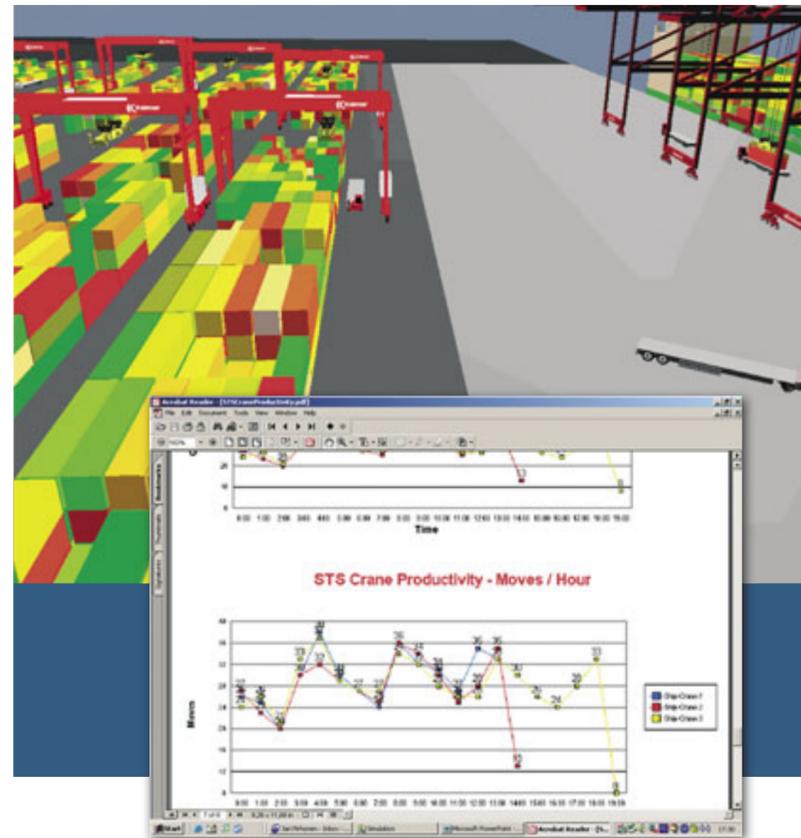
Port of Rauma and Rauma Stevedoring finds the best option for their growth

Port of Rauma handled approximately 170,000 TEUs in 2006 with one ship-to-shore crane and three mobile harbour cranes. Port of Rauma is the largest paper export terminal in Finland, and currently, containers form 25 percent of its annual traffic – an increase of 40 percent from the previous year and a growth that is estimated to continue steadily.

Rauma Stevedoring's operation is special in the fact that



Development's Miikka Kangas, Project Engineer, assisted in the project in a study comparing the different handling systems and layout options before the detailed simulation. "With the help of different layout options and detailed analyses, we determined how to reach the



on the landside. If the main characteristics – for example the layout change dramatically it is possible for them to come back and ask us to do the changes. The additional costs will be minor since the original simulation already exists.

"Our customers can also use the Port Optimizer to market their services to their customers," Jari Pirhonen continues. "They can show the simulation to a shipping line demonstrating how their planned terminal will look and what the estimated productivity would be for the customer's vessel. High level 3-D graphics not only make it easier to demonstrate the planned operation but also make it possible to verify that the simulation is realistic. Simulation can be indeed used both for planning and marketing purposes."



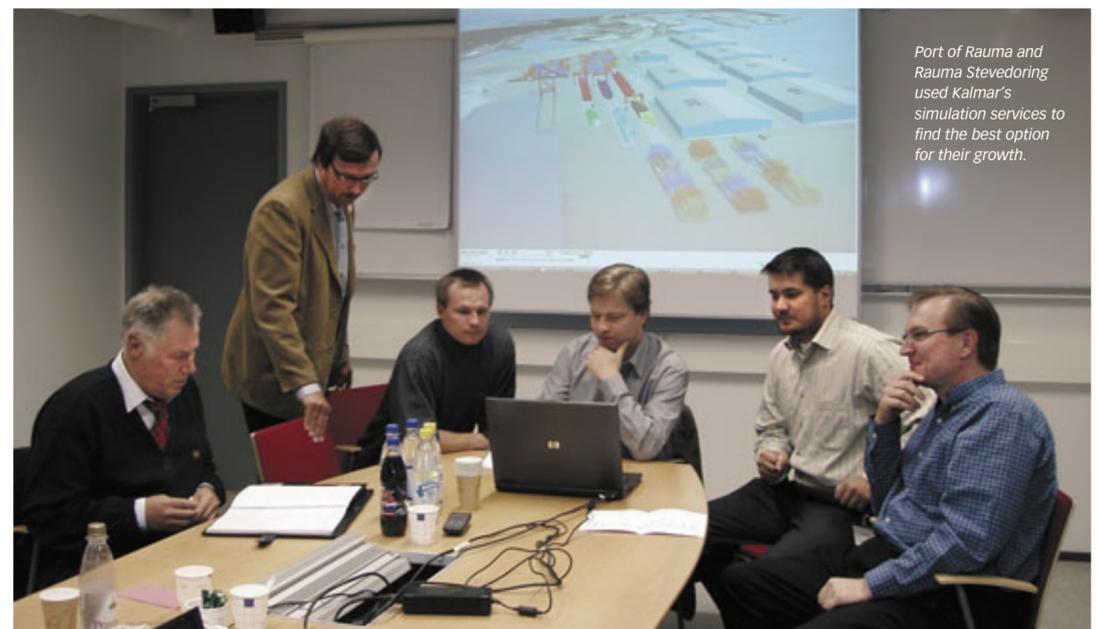
desired capacity," says Kangas. The main target of the simulation was to demonstrate how much capacity could be increased with a new handling system using the optimum number of equipment.

Continuous development with Port Optimizer®

Kalmar's Port Optimizer® is a flexible tool that allows customers to plug in different variables according to the continuous developmental needs of their oper-

ations. "Our approach is that our customers get a license to run this software so that they can test different scenarios also in the future. They can test, for example, what happens if they get bigger vessels or bigger peaks

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Port of Rauma and Rauma Stevedoring used Kalmar's simulation services to find the best option for their growth.

Transportes Grant in Costa Rica:

Offering the full scope of yard and trucking services

Transportes Grant began operations 30 years ago in Costa Rica. In the beginning, the country did not have containerized shipping. Bananas and pineapple were exported by palette to large ports in the US and Europe. With the introduction of containerized shipping some 10 years ago, the company began developing its specialization in full-service yard and trucking service.

Today, the company focuses on moving empty containers from the port on to the farms along the eastern agricultural belt of Costa Rica. Bananas and pineapple, primarily, along with other crops such as melons and mangos, are loaded into the containers and

brought to the yards where they are kept in refrigerated containers approximately 5 kilometers away from the two ports in Limón before being shipped out of the country.

Costa Rica is the world's leading provider of pineapples

and the second largest supplier of bananas after Ecuador. Limón is the only Costa Rican port located on the eastern side of the country with direct access to the Atlantic Ocean. The country's only other port is located on the Pacific Ocean from which smaller volumes are shipped.

Serving long-term clients: Chiquita, Dole and Fyffes

The two largest clients for Transportes Grant are Chiquita and Dole with whom the company has worked for 15 and 12 years respectively. Transportes Grant handles approximately 2,000 containers weekly: Chiquita

moves about 350 containers, Dole moves 250 containers and others companies like Fyffes account for the rest. All containers handled are refrigerated, which places a great deal of emphasis on the service levels at the yard.

Transportes Grant first brings empty containers to the yard where they are prepared and cleaned and then taken by truck directly to the farms. At the farms, crops are loaded into the containers and the truck brings the containers back to the yard where they are immediately plugged in for refrigeration.

Pineapple season peaks in April and May, and then continues to be heavy until October or November. Banana volumes are constant throughout the entire year. Approximately 60 to 65 percent of the total volumes of containers make their way to Europe, while the remaining 40 percent is shipped to the US.

Living off what we plant and sell

Transportes Grant's first experience with Kalmar came from their purchase of a used Sisu – a former Kalmar brand – in 1998.

"A lot of people were saying really good things about Sisu," recalls Enrique Grant, owner and founder of Transportes Grant. "We started with a Sisu reachstacker some years ago when it was recommended to us. It was operating in Puerto Rico at the time and later moved to the US, where it was completely rebuilt. Thanks to the rebuild, our operators know the machine inside and out."

Today, Transportes Grant has two Kalmar reachstackers and one unit of another make. An additional Kalmar reachstacker has been ordered and will be delivered later during this year. The objective is to have a total of four machines. Three will always be in constant 24/7 operation, and the fourth reach stacker will give them the buffer they need in case

From left to right: Francis Grant, General Manager of Transportes Grant; Carlos Madrigal, local Costa Rica representative for Kalmar; Enrique Grant, owner and founder of Transportes Grant; along with Alonso Grant, Dennis Hernandez and Federico Fuentes.



The Irazú Volcano can be seen from the Transportes Grant office in Cartago, just south of San José, Costa Rica.

© Luis Cesar Tello | 123RF



Yard in upper right: Court Yard Grant Limón. To the left: A new yard was built in November 2006 to serve Maersk with the highest level of service and availability.

pleased with the service from Kalmar. It does not take long at all to order spare parts from Kalmar in Miami – a maximum of three to five days," Grant says. "One of the other transportation companies working here waited up to three months to receive a spare part from another European-based reachstacker manufacturer."

"With the most recent Kalmar reachstacker, our six full-time operators feel they have less stress due to the increased emphasis on comfort. The new cab design helps to enhance driver comfort in many ways," he explains.

"I greatly appreciate

the good service from Kalmar, as it in turn helps us fulfill the high expectations on us from Maersk. With our local representative, Carlos Madrigal of Tractomotriz from San José, and Emilio Martinez of Kalmar in Miami, we have always had very close collaboration. That's why we are confident and have high expectations for our future development," he concludes.

Carlos Madrigal of Tractomotriz, the local sales agent in Costa Rica, agrees by describing his connection with Transportes Grant as being a very good, long-term relationship.

Maintaining edge with high availability

In November 2006, Transportes Grant built its second yard with double capacity next to its original yard. The design capacity of this second yard is 2,000 containers, giving Transportes Grant a total capacity of 3,000 containers at one time with a total of 670 outlets for electricity.

The aim of this second yard is to make it purely a yard to serve Maersk with the highest level of service and availability. Additionally, the company has sold its reachstacker service to the other companies operating yards in the same area. Therefore, high machine availability is crucial for the company to maintain its edge in its chosen area.

In the same area close to the Limón port, there are five transport companies. The others handle dry containers while Transportes Grant's specialization is to offer its customers the full-scope of yard and trucking services required for refrigerated containers.



Transportes Grant in brief

Transportes Grant employs 430 people in total. Twenty persons work the 24/7 shifts in the yards. At the Limón ports, there are another 50 persons helping with the loading and unloading as well as working in the company's port offices. The company's trucking service employs around 250 persons. And in Cartago, just south of San José, Transportes Grant has an additional 50 persons in the company's central office and mechanical services.

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Transportes Grant has a total capacity of 3,000 containers at one time in two yards with a total of 670 outlets for electricity.



"Our first experience with Kalmar came from a purchase of a used Sisu in 1998," Enrique Grant, owner and founder of Transportes Grant says about the descendent of today's Kalmar reachstacker. "We've managed very well with our Sisu."



The timber industry goes electric



"For us, electric power is the perfect choice," says Franz Merkle, director of Merkle Holz GmbH. The company employs 12 Kalmar electric forklifts to handle 100,000 cubic meters of construction wood annually."

The loading of wood also relies on sensitive control of driving and lifting movements, good overview of the equipment, low maintenance cost, and happy drivers. The company is content with the 500-hour maintenance interval; the brushes of the DC equipment are replaced every 2,000 hours.

The front-lift trucks of Kalmar's ECD and ECE series, equipped with Duplex lift gear for 4,000 mm lifting height, are operated by permanent drivers and will not submit to unforeseen failures. "For us", says Merkle, "electric drive is the best choice and all of our future equipment will be electrically powered."

Meeting the demands of just-in-time manufacturing

Maximilian Bernhard is the head of Bernhard Holzindustrie in Wangen/Allgäu, a company employing 25 people and making valuable just-in-time products for the door, farm machine and commercial vehicle manufacturing industries.

"We have switched over to electric lift trucks in our internal transports, in the compilation of customer orders and in all loading work," says Bernhard. "Our two Kalmar's diesel DCD 55-6 lift trucks with soot particle filters will also be replaced by new Kalmar electric lift trucks in the near future."

One Kalmar electric forklift truck was employed already in the late 1980s; today a 5-tonne,

a 5.5-tonne and a 7-tonne – all of the ECE series – are in daily use for up to 12 hours a day. Modern batteries with electrolyte circulation permit recharge and increase the daily availability of the machines. However, fresh batteries are always available and permanently charged to enable extended period of use, for example at peak times.

Bernhard deploys the electric forklift trucks for 15,000 to 20,000 hours. Above all, the excellent manufacturing quality, quiet operation without exhaust fumes and operator ergonomics have convinced him. His forklift trucks move an extensive range of goods from 8-metre long special parts to compact small orders. The machines handle around 1,000 products of various sizes, forms and weights; that is why a carriage with side shift and fork positioning are a must in all machines.

The 1,400-mm standard forks of the 7-tonne ECE 75-6 using a 1,240-Ah battery (80 V) can be exchanged for 2,000-mm long special forks for loading and unloading bigger packages on one side of the lorry. The forklift trucks, equipped with comfortable Spirit Delta cabins, sliding windows, roller blinds, protective guards and door holders, are operated in turns by 15 employees. The 7-tonne machine is mainly piloted by 71-year-old Fritz Bernhard – the director's uncle and a shareholder of the company – with a precision brought by 50 years of experience at the controls.

A range of superior class
Recognized for its innovative approach, Kalmar identified the trend towards high-performance electric front-lift trucks early on. The requirements for front-lift trucks have traditionally been high in the Nordic forest industry. Kalmar is the only manufacturer to offer a range of eight electric high-performance machines with operating loads from 5 to 9 tonnes. The weights of 80-V machines with battery capacities from 930 to 1,440 Ah vary from 8,400 to 11,300 kg, complete with battery. In terms of power, performance and energy efficiency they are among the best of the category.

The Spirit Delta cabin is incorporated in all machines as standard. It ensures good visibility and plenty of room for the driver, has large window panes, and an air conditioner on request. Additional equipment, such as a data terminal, can be incorporated without a problem. The batteries at the rear of all Kalmar electric forklift trucks can be replaced easily and quickly – another benefit in the increasing multi-shift workload of the woodworking industry. Even in the automotive industry, in stevedoring firms and in other environmentally sensitive industries these machines find a growing demand.

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A German sawmill operator and a manufacturing company chose electric forklift trucks over diesels due to their quieter operation, decreased risk of ignition, lack of exhaust fumes and good ergonomics.

Uncompromising forklifts meet industrial standards

Modern sawmills and facilities processing wood for building, construction and veneer industries are highly developed and specialized businesses where every piece of equipment represents the highest standard of industrial safety. Besides protecting their employees and valuable machinery they, of course, are meticulous about the quality of the end product. That is why ambitious operators choose electric forklift trucks with high operating loads, long ranges and great lift-

ing heights without adverse effects on the end product.

Franz Merkle, Jr. heads Merkle Holz GmbH, a woodworking firm in Nersingen at Ulm that was founded in 1912 and employs 50 people. The company deploys 12 forklift trucks to move an annual 100,000 cubic metres of construction wood. Currently, Merkle operates with five Kalmar forklift trucks with 5.5-, 7- and 8-tonne lifting capacities from the ECD and ECE series. These 80-V-DC machines are equipped with batteries of 960 to 1,440 Ah according to their size.

Electric forklifts keep going and going

"For us, electric power is the perfect choice", says Merkle. "We have to think of the housing areas in our neighbourhood. The maximum noise level that we can produce is 55 dB(A). For eight years we have had no problems at all, even in loading late at night. We also use our electric forklift trucks in our workshops and open spaces. Gas-operated trucks were never an option; the smell of burning fuel and the risk of ignition prevent their use when you are dealing with wood," says Merkle.

With one battery load the Kalmar forklift trucks manage almost the whole shift. They are all equipped with an exchange battery that can be loaded during the operation. In all 80-V batteries, Aquamatik ensures perfect fluid economy in all cells.

The forklift trucks are equipped with comfortable Spirit Delta cabins, air tyres and side shift carriages. They are used in the production as well as in charging the drying plants and in loading road trucks. Each machine completes 10,000 to 15,000 hours in six to eight years.





Minute by minute the DCE100 empty container handlers load 20- and 40-foot boxes in two daily shifts.

Headquartered in Petershausen near Munich, Kloiber is a family business that has specialised in container transport and terminal operation since 1995. In the 50,000 square metre terminal on Hofbräuallee in Munich, terminal manager Oliver Pfefferle and his 20-strong crew complete 65,000 transshipments a year—mostly empty containers. In addition, they handle up to 60 container repairs a day. To be able to transship, stack and repair the standardized super chests, they rely on a purebred Kalmar fleet consisting of three empty container handling trucks, an empty reachstacker and a loaded reachstacker.

"For us, Kalmar is a premium partner," says Pfefferle, who works in close contact with Kalmar's sales manager Ralf Gowin. "We prefer to get all transshipment equipment from one single source, and Kalmar was the only one with a complete line."

permanently crowded repair area.

With the constantly increasing share of loaded-container lifts, a high-performance DRS4527 S5 reachstacker was a necessary addition to the fleet. The ContMaster lifts 45 tonnes in the first row and 27 tonnes in the second row, and it is also used to move valuable containers such as tank containers filled with de-icing products for the Munich airport.

"We are growing very fast, and we have a very strong first quarter in 2007 behind us. We manage the pre- and end-haulage of almost all containers with our 100 road trucks; 98 percent of long-distance haulage to seaports go by rail," says Pfefferle.

The company enjoys an optimum location adjacent to the Munich Riem transshipment railway station. Thanks to its own transport fleet, including special

equipment such as side loaders and tip chassis, Kloiber is able to provide total container service from one source.

Service is essential

In addition to the equipment technology—tried and tested a thousand times—service is essential. Trained mechanics, who are thoroughly familiar with the machines and their application, will be promptly available. Says Pfefferle: "Short reaction times and 100 percent availability of spare parts have convinced us that we do not need to stock any parts, not even small filters."

Maintenance and service take place according to fixed schedules. Every 500 hours the lift trucks and reachstackers will be checked and the motor oil changed. Air filters will be blown out almost daily during the sum-

mer – a task undertaken by permanent drivers. They are responsible for their machine in teams of two in shift work; they care for their machine, perform minor maintenance tasks and report any irregularities to the terminal management immediately to promptly correct the issues.

When it comes to tyres, Pfefferle is dependent on special solutions because of the rolling gravel on the river Isar. He prefers untreaded slick tyres. By converting steel belted tyres into tubeless technology, the company reaches tyre lives of 900 hours; an excellent achievement given the rigorous operating conditions.

A 'green' philosophy

An ecological approach is an important element of the company's corporate philosophy. All of the company's own road trucks run

on biodiesel or plant oil. They are deployed in challenging conditions such as on a gravel or asphalt-coated terminal area. This has an effect on tyre wear as well as vehicle cleaning and maintenance – but with Kalmar technology, developed for universal use, this is not a problem.

Water treatment is handled by solar technology. Anything that can be done for the environment and is economically feasible will be implemented at Kloiber. Certified with ISO 9001, the company sets the standard for the industry. Multiple Bavarian and European awards are proof of the success of its corporate philosophy.

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A range that suits all moves

German stevedore and freight forwarder Kloiber employs five Kalmar counterbalance trucks that perform approximately 70,000 container lifts a year. The machines are busy handling empty containers for almost all of the worldwide shipping operators, but they also serve the needs of the local motor and mechanical engineering industries and the world-famous breweries which generate enormous traffic flows. Kloiber's ability to efficiently manage its high volume of empty containers gives its operation a competitive edge and keeps customers satisfied.

Equipment with results

The company's depot on Hofbräuallee consists of up to 6,000 containers. To manage these empties, Kloiber operates with three DCE100-45 E5 empty container handlers, each with the capacity to stack five-high. These lift trucks are equipped with a hook spreader that can lift two containers on top of each other, including 40 feet high cubes.

The hook spreader—equipped with a display—can lift two containers standing on top of each other, which ensures an extremely efficient transport and transshipment procedure. The container will not lift until the hooks are 100 percent locked in the corner castings and the feelers pressed down. After a brief training period, the drivers welcomed this option. Electronic monitoring and other optics displaying the state of the bolt mechanism make this empty container handler one of the most efficient machines of its category.

For stacking tasks and repair jobs, the company purchased a DRF100-54 S6 empty container reachstacker. This is a machine that can transport containers lengthwise of the vehicle, which makes it possible to line up the boxes with millimeter precision in the

The high-performance DRS4527 S5 reachstacker lifts three 40 foot flats for transport to the customer.



The Kloiber fleet lines up for a group photo. Only Kalmar supplies counterbalance equipment designed with numerous capacities to suit a variety of handling applications.



International Container Terminal Services, Inc (ICTSI)'s new terminal gate at its flagship Manila International Container Terminal (MICT) has earned widespread approval from its customers in its first year of operation.

Featuring state-of-the-art computer imaging and tracking systems, electronic boom barriers and weigh bridges, the new MICT Central Gate has increased operational efficiency, reduced truck dwell time and allowed for the weighing of 100 percent of all inbound and outbound trucks.

"Port users say that our weighing service is very favourable to their customers as the cargo weight is their customers' basis for clarification by the consignee at destination. Any missing cargo or cargo claims are thus easier to address," says Francis M Andrews, ICTSI Senior Vice President and MICT General Manager.

MICT's weighing of full container load (FCL) export containers was launched in April 2006 as a value-added service to port users to provide fast, safe and efficient handling of containers. "Shippers prefer MICT weighing because the weight reading is accurate," explains Mr Andrews. "Weight data can easily be verified with that in their own warehouse data, to detect any cargo pilferage. Also, MICT's weighing fee of PhP100 per box has been assessed as very competitive compared to the PhP300 cost outside," he concludes.

Clear-cut, legal, and hassle-free documentation, especially in the bill of lading (BL), is also



Weighty developments in Manila



yard operations as containers are placed in the right slots. The sequence of moving containers thus becomes faster and efficient with accurate container weights, which are beneficial for shipping lines.

Enhanced security

The new gate has also enhanced the terminal's security, especially in terms of compliance with the United Nation's International Ship and Port Facility Security (ISPS) Code and maritime trade security regulations of the United States Department of Homeland Security.

The new gates capture digital photographs of containers and trucks

entering the terminal. These images are then stored in a database, which is the basis for terminal checkers to execute container handling. Drivers' identities entering the terminal are validated and checked, and their photographs taken.

Aside from the new auto-

mated gates, cameras and radiation portal monitors (RPMs) have also been installed at the terminal's quayside to scan offloaded import containers. The new gate complex has been pre-wired for the installation of unobtrusive inspection devices.

Knock-on benefits for the wider community

Mr Andrews reveals that the added port security brought about by the installation of cameras and RPMs also benefits MICT's surrounding environment: "Manila is assured that as a transit point, MICT's vulnerability to terror attacks



is lessened as we now have the capability to detect radioactive materials and weapons of mass destruction."

The new gate system features the following components:

- Four truck lanes each with an imaging system (seven cameras in all) and support lighting;
- Sixteen driver kiosks. Each kiosk has a biometric fingerprint scanner, industrial printer for the printing of equipment interchange receipts and truck instruction documents, voice over IP speaker and call button system, proximity card reader, bar code reader, driver camera, and LCD screen;
- Four RPMs;
- Four 100-ton weigh bridges;
- Eight remote checkers' stations;
- Driver identification registration station; and
- Interface with existing terminal applications, gates system developed by ICTSI IT unit Container Terminal Systems Solutions, Inc., and existing security monitoring software.



ICTSI currently operates a range of other Kalmar products at its Manila facility, including more than 50 terminal tractors, eight reachstackers, one top loader and an empty container handling truck.

Elsewhere, ICTSI has Kalmar RTGs at its Baltic Container Terminal in Gdynia, Poland. Faced with a requirement for dramatic capacity increases but with relatively new equipment on site, BCT approached Kalmar to undertake a crane heightening project. The RTG heightening boosted BCT Gdynia's handling capacity by 50 percent.

ICTSI is a leading developer in international container terminal operations and has an experience record that spans container terminal operations in six continents.

NYK Boosts Container Depot Productivity in Thailand with Purchase of Kalmar Reachstacker

Japanese carrier and logistics provider NYK has confirmed its investment in a new DRF450-60S5K Kalmar reachstacker to be deployed at their NYK Inland Container Depot (NICD) in Lat Krabang as part of their ongoing efforts to boost yard productivity at this key container loading and discharging depot.



Mr Kriengsit Vongsariyavanich (pictured middle) and his trusted staff at NYK Distribution Services (Thailand) stand proudly in front of the newly purchased Kalmar unit.

As confirmed by Mr Kriengsit Vongsariyavanich, General Manager of NYK Distribution Services (Thailand), the new equipment was purchased in line with NYK's increasing annual container throughput which is also indicative of rising container volumes at ports throughout Asia. He explains:

"We chose to purchase Kalmar's reachstacker because the current number of containers passing through NICD has now reached 200,000 per year – and this number is expected to only increase as we serve more cargo bound for and coming from Laem Chabang port. Furthermore, we are also handling more and more empty containers coming from consignees in the Lat Krabang area and then releasing them to shippers, so it is essential that we have the most modern and reliable equipment available to support this growth. Without this we cannot continue providing our customers with the fast and efficient service they have come to expect from us."

The DRF450-60S5K Kalmar reachstacker has been designed

to handle fully-loaded containers with ease and is capable of lifting 40 tons per lift. Able to stack containers four high, it also gives users the opportunity to maximize their overall efficiency by offering a lifting capacity of approximately fifteen to eighteen lifts per hour.

NYK's purchase is also evidence of their well-established partnership with Kalmar, and the 91,000 square meter NICD facility is now home to five Kalmar reachstackers in addition to two Kalmar empty container handlers. Indeed, as Mr

Vongsariyavanich explains, the decision to purchase again from Kalmar was not a difficult one to make.

"We have used Kalmar's equipment since we first launched the NICD facility in 1996, so firstly, all of our staff are very familiar with operating them. However, the decision was primarily founded on our good relations with Kalmar and the consistently good after-sales service they offer is a major factor why NYK has trusted and chosen Kalmar's equipment for all this time."

