CARGOTEC

Kalmar around the world

CUSTOMER MAGAZINE ISSUE 3 | 2010

The future is bright: more sustainable solutions on the horizon

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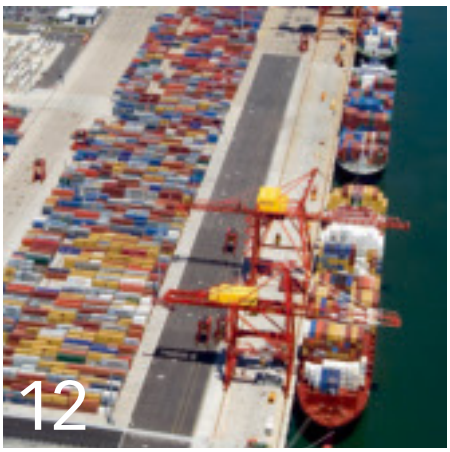

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Kalmar around the world

Kalmar around the world is Cargotec's customer magazine with distribution of approx. 15.000 issues. **Publisher:** Cargotec Corporation, Sörnäisten rantatie 23, FI-00501 Helsinki, Finland **Editor:** Elizabeth Gibson (elizabeth.gibson@cargotec.com). **Contributors for this issue:** Ross Barnett, Ben Brookes, Kirsten Früchting, Karri Keskinen, Bettina Kuppert, David Malmstrom, Ulli Masztalerz, Jaana Pakkala, Letty Wong and Priscilla Wan. **Layout** Viestintätoimisto Tulus Oy. **Printed** by Lönnberg, Finland. The opinions expressed by the authors or individuals interviewed do not necessarily represent the views of Cargotec.

Customer commitment

There are positive signs in some cargo handling segments which indicate a modest recovery in the global economy. We will continue to lead the container and material handling sectors by improving our customers' operational capacity and efficiency as cargo volumes improve worldwide.

In North America we have improved our position in ports by securing a major order with one of the major terminal operators in the region. In addition, Cargotec recently won contracts for 50 terminal tractors (pg. 6), two rubber-tyred gantry cranes, and the upgrading of two quay cranes (pg. 30) from port customers in Mexico. These achievements are subsequently the result of the integration of Cargotec's Kalmar and Hiab sales and service networks globally.

In South America we have strengthened our activities in Colombia, Venezuela and Brazil. Cargotec's commitment to supporting our existing customer base is exemplified by Wilson, Sons Logistica (pg. 20) in Brazil where together we have worked with the customer to further improve its productivity.

As a driver of technology development for the benefit of our customers globally, it is absolutely crucial that we listen to the market's needs and respond with innovative and sustainable solutions. In Hamburg, Germany, we made large strides for automated operations together with HHLA at its Container Terminal Burchardkai (pg. 8).

Despite the big changes in today's business en„vironment, these fundamentals remain true to Cargotec's way of working: a commitment to being customer focused is a prerequisite for delivering leading edge solutions to the industry.

Lennart Brelin
Executive Vice President, Americas

About Cargotec

Cargotec improves the efficiency of cargo flows on land and at sea – wherever cargo is on the move. Cargotec's daughter brands, Hiab, Kalmar and MacGregor are recognised leaders in cargo and load handling solutions around the world. Cargotec's global network is positioned close to customers and offers extensive services that ensure the continuous, reliable and sustainable performance of equipment. The company employs approximately 9,800 people.

www.cargotec.com

Key figures in January-September 2010	1-9/2010	1-9/2009	Change %	2009
Orders received, MEUR	**2,013**	1,364	48	1,828
Sales, MEUR	**1,828**	1,912	-4	2,581
Operating profit excl. restructuring costs, MEUR	**97.4**	29.6		61.3
Operating profit excl. restructuring costs, %	**5.3**	1.5		2.4
Operating profit, MEUR	**92.9**	-7.1		0.3
Net income, MEUR	**54.2**	-5.9		7.1
Earnings per share, EUR	**0.82**	-0.13		0.05

Sales received by reporting segment 1-9/2010

%

Marine 42% (37%)
- Equipment 81% (79%)
- Services 19% (21%)

Industrial & terminal 58% (63%)
- Equipment 65% (71%)
- Services 35% (29%)

Sales by geographical area 1–9/2010

%

APAC 41% (35%)

EMEA 41% (48%)

Americas 18% (17%)

KALMAR

Cargotec's expertise in container and heavy load handling is represented in the global marketplace by the wide range of Kalmar solutions. This includes ship-to-shore cranes, yard cranes, shuttle and straddle carriers, reachstackers, empty container handlers, terminal tractors, log stackers and automation. One in four container movements around the globe is handled by a Kalmar machine. www.kalmarind.com

Future defined
by sustainability focus

Cargotec drives technology and service developments for the benefit of its customers, including improved cost-efficiency, and the environment

We are committed to developing our operations in a responsible manner and taking environmental considerations into account when we make decisions about our business operations.

Nowadays, sustainability ideology must be integrated into general business activities. To be able to compete and operate in the future, businesses have to consider all perspectives of sustainable development in a deeper way and see the possibilities that these issues bring.

Cargotec is a market leader in energy efficient products within its field. Many of the solutions Cargotec now offers were unimaginable even a few years ago, but today they represent industry benchmarks. Cargotec is present in all stages of global cargo handling.

Our solutions help make cargo flow more sustainable and in the future, it will be served by sustainable solutions from the production of raw materials and to the recycling and reuse of end products.

Setting sustainable targets

We are committed to developing our operations in a responsible manner and taking environmental considerations into account when we make decisions about our business operations. As a result of this, we develop environmentally advanced cargo handling solutions that meet customer needs – such as our electric drive technology and dust-free bulk handling. We also consult in planning new terminals and help make our customers' infrastructure more automated, efficient and sustainable.

In 2009, Cargotec set environmental targets for its supply units and in September, we celebrated the opening of our most modern and energy-efficient assembly unit in Stargard Szczecinski, northern Poland.

The main environmental effects of Cargotec's operations arise from the use of the company's products. Compared with these, the environmental effects of Cargotec's own factories are fairly insignificant, relating mainly to energy and material use, recycling, oil spill prevention and waste.

Tackling waste management

One example of developing, planning and implementing a cost-efficient and sustainable cargo handling structure is our waste management solutions. We believe that the efficient packing of waste reduces inefficient transportation, and collecting waste in reliable containers ensures minimal health and environmental impacts. Our solutions always respect local waste management routines and maintaining employment in the sector; as a result our waste management improves the local infrastructure, and therefore the quality of life for people who live in the area. This a good demonstration of Cargotec's waste management solution representing sustainable business practices.

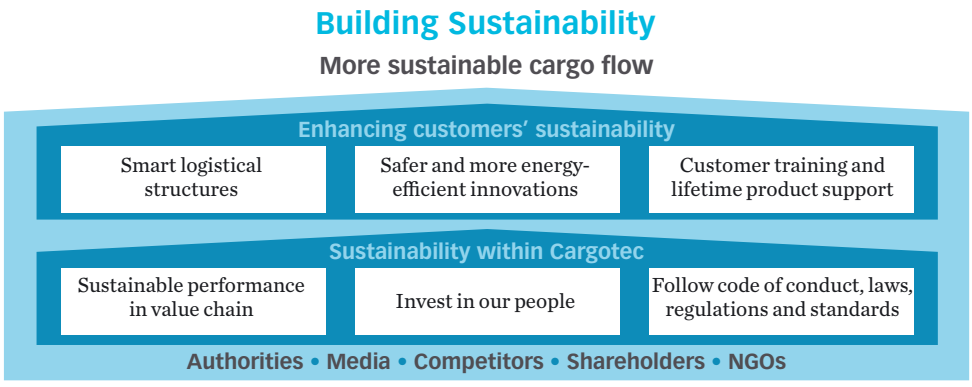
In China, Cargotec has had a pioneering role in developing modern solid waste collection and transportation systems. This has been achieved in co-operation with municipal authorities and waste management organisations. As a result, this system for municipal, industrial and recyclable waste is being used in all major cities in China.

Investors and customers also depend more and more on information about the impact of product supply, and suppliers' environmental and quality management systems. As a result, we are also developing our monitoring process.

Developing better "eco" solutions

Opportunities for sustainable development lie in sustainable practices with equipment use. We see this in activities such as training. One example – for Kalmar products – is EcoDriving, which is a new, developing training programme designed to bring about the most efficient use of our products. After EcoDriving training, the driver can reduce fuel consumption, extend a component's life cycle, reduce wear and tear on tyres and help minimise maintenance costs. Also with the use of simulators, operators quickly learn the correct techniques for lowering fuel consumption, between 5 and 10 per cent, reducing machine wear and increasing efficiency.

In the future, there will be a greater need for products with low environmental impact high energy-efficiency and recyclability ratings; this is in response to market needs as well as legislative developments in the field of emissions reduction. At the same time, a growing service function is supported by the increasing demand for long-life solutions, which are supported through proper maintenance procedures. We support these principles, and believe that the development of Cargotec's products and services will follow them closely.



Terminal tractor orders won in North America

4x2 Kalmar terminal tractor

Cargotec has received large orders for its market leading Kalmar terminal tractors from customers in North America. Truck leasing company Idealease ordered 50 machines for its customers operating at ports on Mexico's Pacific coast. Cargotec won the deal thanks in a large part to its network of local support in the region. The units will be delivered starting in quarter three of 2010.

Long-time customer Parsec, Inc – the intermodal division of Ohio-based O/B Leasing in the U.S. – ordered 200 Kalmar terminal tractors. The units will be equipped with a special reinforced cab and frame to handle the tough demands of an intermodal operation. Many of Parsec's new machines will feature Cummins ISB6.7 clean idle certified engines. They will be delivered into quarter one of 2011.

Cargotec multi-assembly unit opens in Poland

Cargotec's new MAU

In September, Cargotec celebrated the opening of its new multi-assembly unit (MAU) in Stargard Szczecinski in Poland. The new facility is part of the company's global supply network, and it will support the production of a wide range of Cargotec equipment.

"The location of the facility helps reduce transportation costs and makes our operations more flexible. We can now respond even more efficiently to the rising customer demand in Central Europe," says Axel Leijonhufvud, Executive Vice President, Cargotec Supply.

The state-of-the-art plant boasts the latest advances in sustainable production technology, processes and quality. For example, the site will use a carbon dioxide-neutral wood pellet heating solution.

Asia-Pacific region comes together

Cargotec employees and dealers received a boost of energy when the Partner's Meeting was held in Malaysia this year. The July event was a forum for sharing sales strategies, discussing product and sales support issues, and briefing Cargotec's APAC dealers on recent company news.

With more than 140 participants from countries all over the APAC region, the two and a half day event scored a record attendance. The meeting certainly enhanced the enthusiasm of Cargotec employees and dealers to serve cargo handling customers in the APAC region.

Participants of the APAC Partner's Meeting

14 Edrive® straddle carriers for Le Havre

All-electric Kalmar straddle carrier

In the first quarter of 2011, Generale de Manutention Portuaire (GMP) – a joint venture between terminal operator DP World and shipping company CMA-CGM – will take delivery of 14 Kalmar ESC450W straddle carriers at the Port of Le Havre in France. GMP's 4-high machines featuring 50-tonne twin-lift spreaders will come equipped with electrically controlled engines, variable speed generator systems and winch hoist systems with full AC drives. The 7+ generation Kalmar Edrive® straddle carriers are some of the most cost-effective and eco-friendly machines on the market.

Working together to rebuild Haiti

Cargotec equipment, together with some of the company's own employees, worked side-by-side with the many thousands of volunteers helping to restore the areas in Haiti devastated by an earthquake earlier this year. A Hiab Moffett truck-mounted forklift (TMFL) was donated to help build houses, and 17 Kalmar rough terrain container handlers (RTCH) were used to move relief goods at five operation centres.

With the help of the TMFL and six hundred volunteers, Haven – an Irish charity organization – was able to build about 120 new homes in Haiti in October. The RTCHs worked around the clock playing a crucial role at the port in Port-au-Prince where the quay cranes suffered severe damage. The machines supported organisations like American Aid, United Nations, World Food Programme and the U.S. Army.

A Kalmar RTCH working at the Port International de Port-au-Prince

A Kalmar heavy forklift

South Africa prefers Kalmar lift trucks

The relationship between Cargotec and a large port operator in South Africa continues to grow stronger. Transnet Port Terminals (TPT) will lease a significant number of new Kalmar counterbalance machines from a rental agent in South Africa. The long-time Kalmar equipment user requested nine forklifts with capacities ranging from 20 to 42 tonnes and four DRF reachstackers. The machines will be deployed at TPT's container and RoRo terminals at the Port of Durban.

From vision to reality

HHLA and Cargotec work together to automate Container Terminal Bu

rchardkai

A rainy day in Hamburg doesn't deter CTB's automated operations

Earlier this year, Cargotec handed over the first three of eight automatic stacking crane (ASC) blocks to Hamburger Hafen und Logistik AG's (HHLA) Container Terminal Burchardkai (CTB) in Hamburg, Germany. The crane blocks are each equipped with three Kalmar ASCs and related technology

The view from Christian Blauert's desk shows the hustle and bustle of a busy container terminal. Straddle carriers zoom across the terminal while the ship-to-shore cranes unload ships. Nothing out of the ordinary for a modern-day container terminal, you might think, but Container Terminal Burchardkai (CTB) is pioneering an innovative modernisation scheme that is unique on a global scale. "Directly over there you can see the first three Kalmar ASC-equipped cargo blocks in operation," says Blauert, Managing Director of CTB, while pointing out of his window. These three blocks are the first step in the realisation of an innovative and challenging plan, as well as the close relationship between Cargotec and HHLA.

Doubling the capacity on unchanged terrain

Blauert, who was Project Manager for the automation of HHLA Container Terminal Altenwerder (CTA) from 1998 to 2003, faces an even greater challenge today: converting CTB's storage yard into an automated facility. With almost 40 years of history in container handling, CTB is the oldest of HHLA's terminals. The main objective of the project is to double the volume of containers passing through the site from the current 2.6 million TEU to 5.2 million TEU. "All of this," according to Blauert, "is happening as the terminal remains fully operational, while maintaining existing customer service levels."

Another unique characteristic of this project is that the doubling of the terminal's capacity has to happen without an expansion of terrain: HHLA's CTB is actually located on an island in the Port of Hamburg's harbour and expansion is not possible. After an extensive research phase lasting from 2000 until 2002, CTB started the project in 2005 with the challenge of expanding capacity without any extra land or quay space – maintaining existing customer service levels at the same time.

Blauert knew that the solution for a considerable increase in volume and density at CTB couldn't possibly lie in a straddle carrier system. In order to get the most out of existing space capacities, a new container storage system was needed. Instead of expanding outwards, CTB needed to expand upwards.

"Sometimes you need to be creative," Blauert says, and so the vision for modernising CTB was drawn up in true German manner – on the back of a beer coaster. One key element was stacking blocks. Thanks to a long and fruitful relationship with Cargotec, HHLA decided to equip CTB with Kalmar ASCs. The order was placed in 2006, and a complex project began that is globally the first of its kind. Since then, HHLA and Cargotec experts have tailor-made technological designs to meet the specialised needs of CTB.

The ASC block design consist of two inner cranes operating on the same rails and one outer crane working on its own rails which makes it possible to pass the two inner cranes. The three-crane concept affords greater flexibility and allows the ASCs to work more independently, ensuring good performance at peak times. Should one crane become inoperable, access to the containers is still guaranteed. The stacking blocks allow containers to be stacked higher and closer than a straddle carrier operation. A stacking height of tier 5 within dedicated tier 6 stacking rows maximises the full use of available space and fulfils one of the most vital criteria for doubling the terminal's capacity.

Planning, equipment and related software from one provider

Cargotec is the first crane supplier to provide the automation and control systems in a project of this scope and technical complexity. "The great advantage of working with Cargotec is that Cargotec not only supplies technology and equipment, but also software tailored to suit our specific system's needs. The responsibility for both the cranes and the related automated technology lies with a single supplier," explains Blauert.

One of the major challenges was the worldwide economic crisis, and like many other companies, HHLA wasn't left unaffected. "The crisis has set our planning back by about a year and a half," according to Blauert. The project's timetable was therefore designed to be flexible, using a step-by-step approach.


Christian Blauert


Bernd Volkmer

After the completion of the project, the terminal will be operated as a 'block' system, with 87 ASCs operating in 29 yard blocks stacking ten containers wide, five containers high and 44 TEU (365 m) long.

Cargotec Project Manager Bernd Volkmer explains the system: All elements of the blocks function much like an integrated circuit. Control and monitoring systems provide an optimised and safe operation. Advanced load measuring technology ensures the precise and efficient placement of containers while anti-collision software shares reliable position information between all cranes in the block to further guarantee safety.

The technology employed enables the intelligent selection of cranes when scheduling and routing crane assignments making it possible to optimise container moves so that the maximum throughput is achieved. Cargotec's mircomotion control software also allows for adjustments of container

One of the two smaller cranes passes under the stack's larger crane

placement preventing the need to move the entire crane.

"The targeted outcome is to deliver the most productive ASC block operations combining extremely sustainable technology in a highly secured environment," explains Volkmer. "To make this possible, we developed a crane block simulator designed to better aid the integration of our intelligent applications with CTB's container handling equipment and terminal operating systems.

CTB's waterside operation is handled by manned straddle carriers. The interchange area between the manned and automated operations consists of four straddle carrier lanes that are controlled by an intelligent lane access management system and sophisticated lane sensor technology. This set-up offers further benefits by decoupling the operations of yard storage and horizontal transport. The same system exists at the landside interchange area, which is equipped with one straddle carrier lane and up to four independent truck lanes. Trucks are handled remotely by operators sitting in the terminal's control room using video-aided

> The targeted outcome is to deliver the most productive ASC block operations combining extremely sustainable technology in a highly secured environment.
> – Bernd Volkmer, Cargotec

technology and semi-automated controls which help streamline tasks.

A common layout for future challenges

HHLA optimized all processes and implemented all necessary tools to ensure that Burchardkai, Germany's largest container terminal, remains highly efficient and competitive for the future. The goals are an increase in capacity, more economic operation, and maintain job security. Cargotec is an important partner; to achieve these goals and effectively maximise the use of space at Burchardkai, the block system proved to be an important factor. Not only does the block system revolutionize container logistics, but it meets all modern requirements for job safety, noise reduction, and environmentally friendly technology.

Where cutting-edge technology is used, a tailored, scalable software solution is needed to control the complex day-to-day operations at the terminal. The storage areas and cranes have already been equipped with a highly productive, custom software solution, and HHLA is working on introducing a terminal-wide data processing system. This Terminal Operating System (TOS) is based on the software package Terminalstar (developed by a joint venture between Port of Hamburg Consulting GmbH and Inform GmbH Aachen) and will be capable of controlling container flows in the terminal, and make loading and unloading operations more streamlined and transparent. The control of the automated yard needs a very close and efficient link between Terminalstar and Cargotec's automation software.

Three blocks operational, more to come

Three blocks are currently operational; two are being used in daily operation and the third is used to test the interface of the new TOS system with Cargotec's automation technology . The coming months will see two further blocks go online.

What started as an ambitious vision is well on its way to becoming reality: at completion, CTB will be capable of handling more than five million TEUs per year, 35 container ships and 140 feeder ships per week, 20,000 m cargo trains, and 4,000 trucks per day.

The rail-mounted ASCs are powered by mains supply

HHLA Terminal Burchardkai is not only the largest and oldest facility for container handling in the Port of Hamburg but also the largest container terminal throughout Germany. The first steel boxes were unloaded here in 1968 and today, the terminal handles one in three of all containers in the Port. Its 26 container gantry cranes move the boxes of the 5,000 ships that berth here every year. Up to 1,100 railcars are loaded and unloaded here daily. With the programme of expansion and modernisation now in progress, the terminal's capacity will be extended step-by-step in the coming years.

Terminal automation is here

With decades of port automation experience, Michael Richter believes the number of robotic terminals will only grow. His expertise on the topic comes from being involved in revolutionary automation projects at Hong Kong International Terminals, HHLA's Container Terminal Altenwerder (CTA) and Burchardkai (CTB), and APM Terminals' Portsmouth, Virginia facility in the U.S. *Kalmar around the world KAW* recently discussed with Richter the future of automated cargo handling

KAW: How has the development of automated container handling evolved over the years?

Michael Richter: Moving containers by a robotic system rather than by manned machines has matured, and the technology is state-of-the-art and in place. However I trust that the industry will keep on improving the design of particular components and interfaces, and automated systems may eventually become a plug-and-play device.

KAW: What role will terminal automation play in the future of trade and logistics?

MR: As the need for terminal operators to increase their competitiveness rises, automation will play a big role in the future of planned port productivity. The number of terminals operating automated container handling technology will increase and many ports will go fully electric to save not only costs but also reduce the environmental impact.

Labour and energy costs are two of the biggest concerns for a terminal operator. Automation can offer enormous savings. If a vessel also spends less time at the quay because of high terminal productivity, then the ship can sail slower to its next destination saving fuel, emissions and money. This is ultimately the type of service a terminal operator aims to offer shipping lines.

KAW: What about those that believe automation is not as productive as a manned operation?

MR: A terminal's productivity has nothing to do with if it's manned or automated. Productivity depends on the right balance of all the elements at the wharf, in the stacking yard and the transport. It is determined by the design of a terminal. If you don't have enough equipment or your terminal layout is inefficient or the operating process has not been designed correctly, then productivity will suffer.

KAW: Terminal automation requires a larger initial investment compared to manned operation. Under what circumstances does this type of investment make sense?

MR: Terminal planning is now a matter of 'The Triple E' – Economics, Efficiency and the Environment. The possibility of implementing automatic stacking cranes can no longer be neglected. All current plans for new terminals or expansions, in which I am involved with right now, seriously consider the use of automated equipment.

The business case for a terminal development is driven by throughput predictions, availability of land, productivity goals, environmental regulations and costs. Consultants say don't look at the initial investment cost, but look at the total lifetime costs – finally, the costs per container moved.

KAW: What are the benefits and risks associated with terminal automation?

MR: Automated terminals are safer and more environmentally friendly. Accidents usually happen because of driver error. In an automated system all of the processes are designed and planned for with safety in mind, which includes fences and sensors as a precaution. The electrification of automated cranes obviously reduces emissions at the terminal, and the lack of diesel engines also results in a quieter operation.

Michael Richter

However one must realize that with an automated, or robotized, terminal, the infrastructure

to stay

will be fixed and it is almost impossible to change the mode of operation after its implementation. An automated stacking yard, for example, will be most profitable if it is highly utilised. If the throughput falls behind the expected terminal capacity, it will extend the return of the investment. But this is certainly true for any industrial facility.

KAW: You were a part of the project team tasked with planning the automation of HHLA's straddle carrier-operated Container Terminal Burchardkai (CTB). Subsequently, Cargotec was contracted to supply CTB with 24 Kalmar automatic stacking cranes and their related technology. Why did HHLA choose to automate CTB?

MR: It became obvious that CTB needed to expand in the early 2000s. The terminal is near the city of Hamburg, Germany so environmental and noise concerns were highly considered during the development phase. The challenge was to double the terminal's capacity, increase vessel loading/unloading productivity, and provide competitive service to the shipping lines while minimising emissions, noise and light. Higher and automated stacking combined with electrification was a natural choice because this type of handling solution offers lower emissions and a quieter operation. I should mention that the project incorporates significant redevelopments in the infrastructure of the terminal and the whole terminal logistics and operation.

KAW: What was needed to make the project a success?

MR: Many people have challenged the three-crane approach of CTB but actually the highest possible operational efficiency and reliability can be achieved with this configuration. If one crane is down, the other two units in the stack can pick up the slack.

Fully automated Kalmar straddle carriers operating at Brisbane Fisherman's Island terminal

Kalmar automatic stacking cranes in Hamburg

Until today, the container stacks with a capacity of about 2,100 TEU per block are the largest end-loaded stacks worldwide.

The success of the project will be known when the clients are happy, and the clients are the shipping lines. A container terminal is a service provider trying to offer its customers' reliable service and productivity. If the project can deliver that, then I would consider it successful.

KAW: What kind of role can an equipment and service provider like Cargotec play in the development of an automated terminal?

MR: There are many factors to consider when designing an automated terminal, including the spacing of containers, the length of the runway and where to do crane maintenance. An equipment supplier needs to be involved early on so that the project team understands how their equipment solution will work given the allowed space and capacity requirements. I must highlight that the development of advanced and robotic container handling and transport equipment is the result of a permanent cooperation between operators, the equipment industry and consultants.

It is beneficial for an equipment supplier to have a knowledgeable team within its organization, like for instance, Cargotec's Terminal Development group led by Jari Pirhonen. They should have a good understanding of the terminal's operations, needs and planning issues.

Michael Richter works for Moffat & Nichol in Long Beach, California in the U.S. He joined their container terminal development group in April 2010 as a senior port consultant and automation expert.

Enhanced productivity with Terminal Development

Founded on the experience Cargotec has gained at more than 200 terminals globally, Terminal Development is its advisory service designed to assist customers and consultants in planning new terminals or improving the efficiency of existing ones

The service provides equipment recommendations, estimates the quantity of equipment needed, generates overall cost analysis, proposes terminal layouts and offers operational simulation. Demonstrating Cargotec's aim to better understand its customers' business and operations, it helps the company play a leading support role in the entire terminal development process.

By harnessing the customer's knowledge and expertise, Cargotec aims to develop a greater insight into typical applications and assess the annual volume and productivity targets of each terminal. From this, Terminal Development can help to find the optimal handling system, equipment and quantities needed to achieve these objectives. It can also predict the costs involved, including those for capitalisation, operation, maintenance and labour.

Customers can test new proposals and concepts without incurring restrictive costs as a standard study of customer operations is offered free of charge. More detailed studies and simulations do have a cost attached.

Operation simulation

It can be valuable to carry out operational simulation services for ports, rail terminals and distribution centres. The Terminal Development service incorporates Cargotec's Port Optimizer® and Yard Optimizer™ – direct event-based simulation tools. Introduced in 2004 and 2008 respectively, these are especially designed for modelling logistics in different container terminals and distribution centres.

With easy visualisation and 3D graphics, customers can model the entire container handling process to find the optimum fleet size and layouts, identify potential bottlenecks, and minimise problems before putting the operation into practice.

Working in conjunction with consultancies

Cargotec is committed to supporting terminal planning consulting companies and provides a complimentary, rather than competitive, service. Terminal Development makes its unrivalled pool of up-to-date information on terminal business and equipment accessible to consulting customers.

Jari Pirhonen

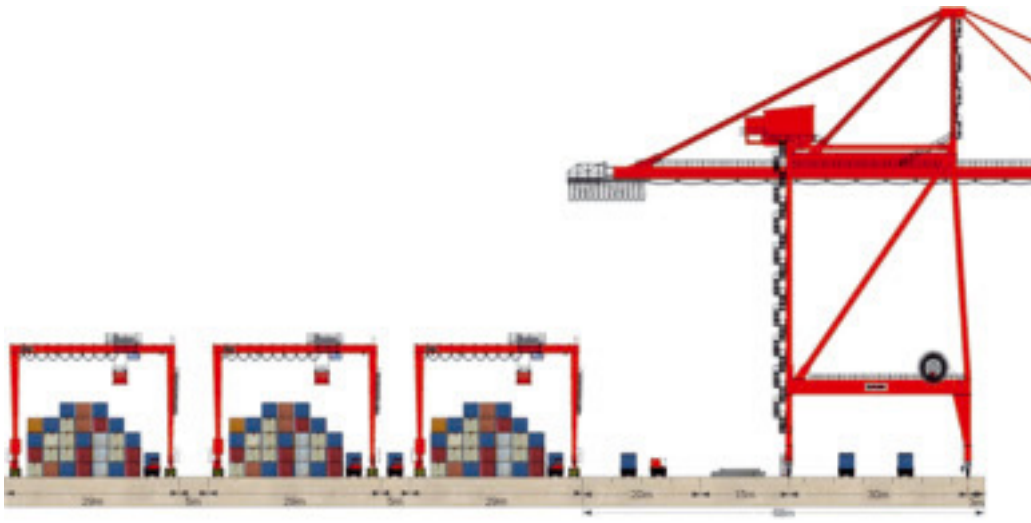
Jari Pirhonen, General Manager, Terminal Development says:

"Since its inception in 2001, Terminal Development services have been utilised and further

Who can benefit?

Over the last 18 months Cargotec has studied 65 customer projects with 22 of those in Europe. There has also been significant interest from developing countries looking to enhance their efficiency with several Terminal Development studies implemented in Africa, the Far East and Central America.

Of these projects, 70 per cent have been for port applications and the rest for rail terminals, container depots and CFS operations. This universal service can model all types and brands of container handling equipment, and Cargotec has seen a wide range of equipment deployed.

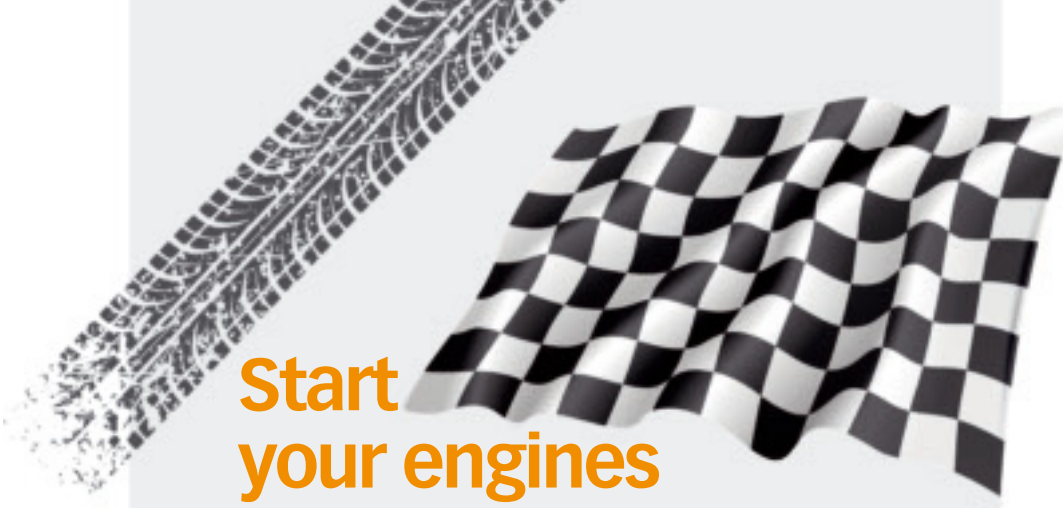


developed as customers continue to demand a greater service from suppliers – not just the sale of a machine or fleet. They now expect a better understanding of their business, advice on the most appropriate products and guidance on how to best implement the equipment purchased. This added interaction also gives Cargotec the opportunity to learn more about the operational challenges our customers face on a daily basis – helping us to enhance our offering in the future.

"We can offer our service both to consulting companies and to terminal operators directly. We are able to assist them with the application-specific aspects of handling systems and equipment. With our global standing and experience we think we are well-placed to provide expertise on the ongoing move towards automation, optimal layout designs, improved equipment utilisation and productivity."

Getting it right

For new or expanding terminals, yard layout plays an important role in determining the right type and number of container handling machines. The "same way" block alignment (pictured) is just one of the possible logistics options using RTGs and terminal tractors or road trucks.



Start your engines

Effective 1 January 2011, Kalmar products will be fitted with the latest engines which use Selective Catalytic Reduction (SCR) or Exhaust Gas Recirculation (EGR) technology to deliver near-zero NO_x and harmful particulate emissions. This achieves compliance with the EU stage IIIB and US EPA Tier 4i emission regulations which govern all off-road equipment powered by engines of 129kW and above.

Cargotec has carefully planned ahead to ensure a smooth transition across the entire range of products that will be affected by the new legislation. With the changes significantly reducing emissions but not affecting capacity, the result is a series of engines which meet the legal obligations without sacrificing the level of productivity, safety and quality that Cargotec customers have come to expect.

Karri Keskinen, Marketing Manager, Port Cranes and Terminal Tractors at Cargotec says: "These engines combine high power output with efficient fuel consumption. Furthermore, there is no increase in service intervals or costly downtime as the system is designed to last the lifetime of the engines. Their introduction shows our ongoing commitment to environmental protection and a desire to reduce running costs for our customers wherever possible."

Fuel efficiency & low emissions

The engine type are optimised for efficient combustion, which provides the fuel efficiency and low particulate emission benefits. To combat the resultant NO_x emissions, AdBlue is injected into the exhaust gas. The exhaust gas and AdBlue then enter a catalytic converter, which turns the NO_x into harmless Nitrogen gas and water vapour.

The EGR engine works at a lower combustion temperature which generates a low level of NO_x. This type of engine generates a high level of particles, but eliminates these particles with an added particulate filter.

Introducing the new hydraulic hybrid drive terminal tractor

Cargotec introduces a hydraulic hybrid drive terminal tractor – offering customers improved performance, significant savings in fuel costs and even greater reductions in nitrous oxide and particulate matter emissions. Paired with the Kalmar Ottawa 4x2 off-highway terminal tractor, the hydraulic hybrid system will initially be available to customers operating in North America

Extensive research and development

The decision to develop hybrid terminal tractor technology reflects Cargotec's ongoing commitment to cleaner operations. It has long-strived to lower the emissions of customers' operations and break down the technical barriers for hybrid terminal tractors to become commercially viable.

Working together with Singapore Technologies Kinetics Ltd (ST Kinetics) and its subsidiary Kinetics Drive Solutions Inc. (KDS), a leader in the research and development of hybrid technology, Cargotec has now been able to finalise the development and launch this hydraulic hybrid feature as an option for Kalmar terminal tractors.

Sew Chee Jhuen, President ST Kinetics: "ST Kinetics is today among the leaders in hybrid hydraulics technologies. We are thrilled that the project to incorporate ST Kinetics' Hy-POWER Hybrid Hydraulic Drive into Cargotec's Kalmar terminal tractor has been such a success. It has demonstrated efficiency savings that benefit both the operator and the environment."

Indeed, extensive testing has demonstrated that Kalmar terminal tractors equipped with the system show an improved fuel economy, enhanced performance and significantly reduced emissions.

Mikko Vuojolainen, Vice President, Terminal Tractors at Cargotec says: "In addition to financial constraints, companies operating large fleets of equipment in confined spaces, often near urban developments, can come under significant pressure to reduce their environmental footprint. Tested in typical port applications, we have seen 20 per cent fuel savings and an even greater reduction of NO_x and particle matter emissions.

Mikko Vuojolainen

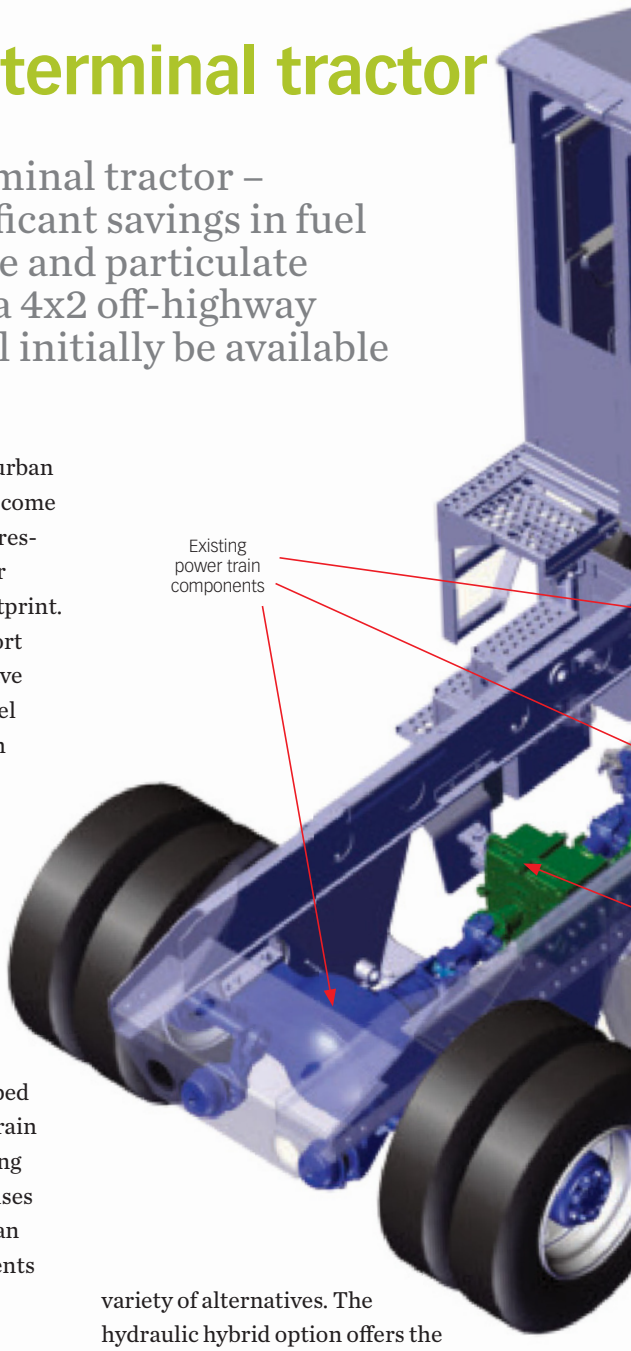
"With the number of machines involved in normal port operations, any fuel savings per machine can translate into significant savings when applied to a whole fleet."

Optimal system

The new terminal tractor will be equipped with a unique hydraulic hybrid power train that can recover, store and re-use braking energy with very little air pollution. It uses a hydraulic system which combines clean diesel engine technology with components that use hydraulic fluid compression to store energy.

This parallel hybrid hydraulic technology allows power to be transmitted simultaneously from two distinct sources – the primary diesel engine and the secondary hydraulic motor. This coordination of the primary and secondary power source is controlled to maximize fuel economy and support application contraints.

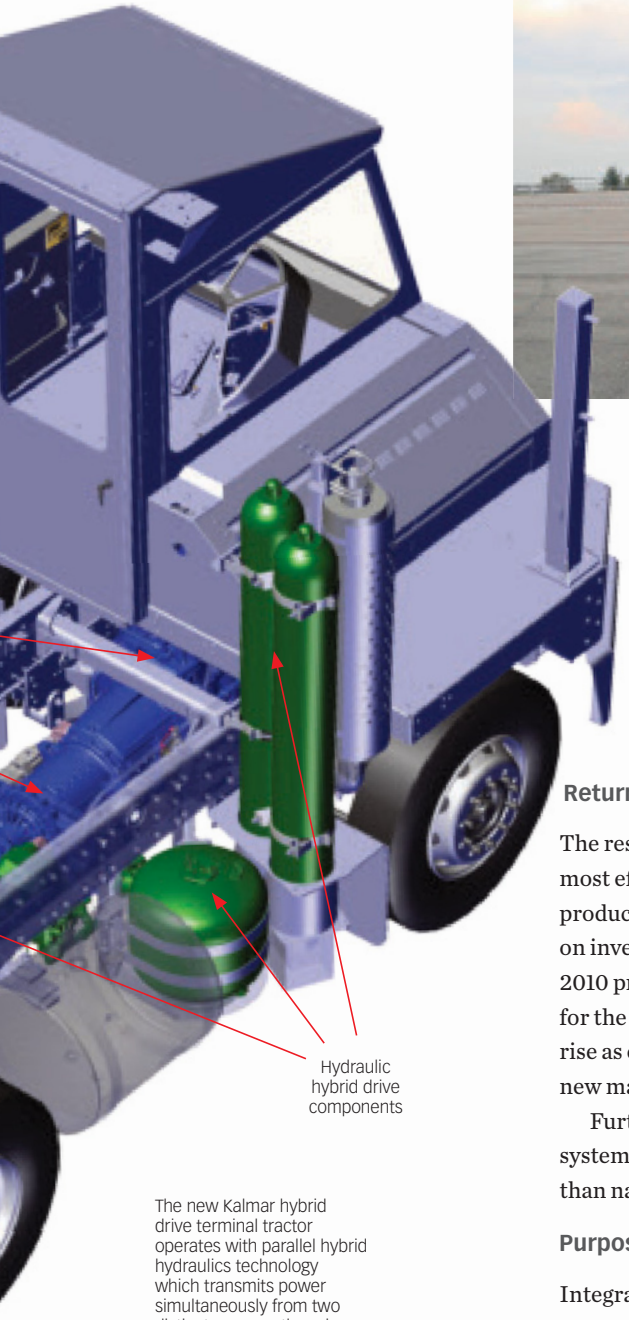
This was chosen as the optimal system after carrying out extensive testing on a variety of alternatives. The hydraulic hybrid option offers the best efficiency with energy only transferred twice, as opposed to four times with an electric hybrid.



Other benefits over electric hybrid systems include greater uptime, as no re-charging is necessary; no additional investment in refuelling equipment; and no requirement for battery pack replacement or the disposal of pollutants.

The Kalmar Ottawa 4x2 off-highway

The Kalmar terminal tractor featuring hydraulic hybrid technology developed with ST Kinetics for PSA Terminals and introduced late last year



The new Kalmar hybrid drive terminal tractor operates with parallel hybrid hydraulics technology which transmits power simultaneously from two distinct sources: the primary diesel engine and the secondary hydraulic motor

terminal tractor itself is a 14,500lb (6.5 t) machine delivering a gross combination weight pulling power in excess of 150,000 lbs (68 t). With exceptional manoeuvrability in tight spaces, easy access for maintenance and a maximum speed of 25mph (40km), it is designed for faster cycles and minimal downtime.

Return on investment

The result of this technology is the industry's most effective hybrid to-date with the lowest product life cycle costs and the greatest return on investment. Even if fuel costs remain at 2010 prices, the savings achieved would pay for the product over its lifetime. If fuel costs rise as expected, then the payback from each new machine will be even greater.

Furthermore, equipment fitted with the system will maintain higher residual values than natural gas or electric alternatives.

Purpose-built hybrid technology

Integrating hybrid technology with the terminal tractor application required overcoming many obstacles. These types of machines often operate in a stop-and-go fashion where frequent idling and reverse motion is common. Terminal tractors need a lot of torque to accelerate with their typically heavy loads. They also decelerate rapidly resulting in just a limited time to capture braking energy.

Cargotec and KDS took all of these factors into account when designing its hydraulic hybrid drive terminal tractor. The system performs optimally and achieves the greatest fuel savings when the machine is constantly being tasked. Essentially, the harder it works the better the results.

Mikko Vuojolainen adds: "Kalmar is at the forefront of R&D when it comes to producing sustainable products. The operation of a terminal tractor during the container handling process made the application of hybrid technology far more challenging than to other vehicles, so we are delighted to launch a product that will not only bring these clear benefits but will also remain reliable and high performing."

For fast-paced distribution centre, intermodal and port applications, the hybrid Kalmar terminal tractor is the ideal workhorse offering efficiency and savings.

PRO FUTURE™

The new hydraulic hybrid Kalmar terminal tractor has been awarded Cargotec's Pro Future™ marking. Launched in 2008, this concept is designed to highlight the company's drive towards greener equipment and rates machines against five key ecological decision-making drivers: source of power, energy efficiency, emissions, noise pollution and recyclability. Those products receiving the Pro Future™ marking have scored highly against each of these criteria.

New straddle carrier takes flight at Boeing factory

From iPods, denim jeans and football jerseys to bananas, computers and kitchen tables, straddle carriers can handle containers filled with just about anything. For Boeing, the world's largest aerospace company, it has deployed a Kalmar machine since the early '90s to move its precious Boeing 777 airplane components

In 1994, Boeing unveiled the first 777 airplane – the company's most advanced jetliner at that time. It was assembled at the Boeing Everett facility 20 miles from Seattle, Washington in the U.S. Not only was the 777's design revolutionary, but the way it was sourced and assembled was a great feat in logistics and modern day manufacturing technology.

The Boeing "Working Together" approach on the 777 programme expanded the partnership with suppliers, including many who manufactured major assemblies outside of the U.S. The main exterior shell of the 777 is produced in Japan and shipped to the Port of Everett, conveniently located five miles from

Mount Baker Rail Terminal

the Everett factory. These fuselage panels are shipped in extra tall containers which are essentially the size of two 40-foot boxes stacked one on top of the other.

"The use of a straddle carrier in the course of transporting large 777 components was planned for in the beginning," says Charles Burton a Supply Chain Analyst at Boeing. "The company was familiar with the straddle carrier application because there was a nearby fleet of Kalmar machines operating at the Port of Tacoma."

The 30-year veteran explains that the handling system for 777 components is totally bespoke. "Only Boeing 777 parts are handled this way," Burton confirms.

Multimodal moving

To describe how a Kalmar straddle carrier

comes into play within a factory setting, it is necessary to understand the whole logistics set-up. The 777's fuselage panels at 18 feet (5.5 m) tall weighting 28,000 lbs (12.7 t) leave Japan in a twice-as-tall container and are loaded on a vessel bound for the U.S. West Coast. Boeing has agreed with its carriers to place the containers at the top of the ship's hold as a means to avoid possible damage.

The contents then spend weeks at sea until they arrive at the Port of Everett's container terminal. From here, the boxes are loaded on a barge and transferred to the Mount Baker Rail Terminal which is directly connected to the Boeing Everett facility. The containers are then loaded on rail cars according to priority and destination at the factory site.


Boeing's new CSC340 straddle carrier poses next to its older machine.


Boeing's Everett facility is home to the world's largest building by volume


Pictured left to right: Dan Ecker, Gary Tamura, Charles Burton, Yrjo Levan

From the this rail facility, the journey is three miles to the factory's receiving area. This track, operated by Burlington Northern Santa Fe, has the steepest grade in the whole western hemisphere. This, of course, does little to deter the operation.

Once on site, the rail cars with extra tall containers are placed on dedicated tracks within the factory yard. Each 777 aircraft requires 13 containers of fuselage panel parts. Boeing's Kalmar straddle carrier transports these containers from their rail cars to a location which is closer to the production area. As the straddle carrier delivers one box to production, it takes another empty container back to the rail head so it can be sent to Japan for additional laden shipments.

In with the new

At full production, Boeing builds a 777 airplane every three manufacturing days, which is about seven in a 20-working day month. This translates to 26 container moves per an airplane every third manufacturing day for Boeing's Kalmar straddle carrier. Cargotec supplied the company's first container handler in 1993. The machine, built under the old Valmet brand, has been operating with no major breakdowns and has logged 3,000 operating hours.

For a company at the forefront of aerospace technology, it's important that Boeing's facilities and machinery stay as innovative as the products it produces. Late last year, the company decided to replace its aged Kalmar straddle carrier for a new 7th generation CSC340 machine capable of handling loads of up to 40 tonnes.

The new unit was commissioned this summer giving Boeing's three straddle carrier operators a run for their money. Gary Tamura, who is one of the original straddle carrier drivers, says there is a big different between the old machine and the latest unit. He says: "The new one drives better, it is more comfortable to ride in and it has better visibility. The controls are a little different and took some getting used to, but overall it is much easier to operate. I love it!"

Safety first and service back up

Burton also wants to make sure that the towering straddle carrier doesn't go unnoticed in and around the factory yard. With more than 20,000 employees working at the Everett facility, safety is a primary concern. "There are many obstacles a straddle carrier operator must look out for, like people on foot, transport vehicles and other handling equipment," says Burton. He recently commissioned a safety video meant to inform employees about the operation of the straddle carrier. "We want to be as safe as possible, and we've had a few close calls. So we hope that the video will educate people better about the machine and its capabilities. Basically, everyone should yield to the straddle carrier opposed to the other way around."

While Boeing focuses on the safe and efficient operation of the new machine, Cargotec is prepared to back it up. Yrjo Levan, Cargotec Service Manager, is located just one hour away in Tacoma, Washington. Levan was there in the early days when Boeing ordered its first straddle carrier.

Having close support is important to Boeing. "We could rely on good service from Cargotec because George is so close," says Dan Ecker, Equipment Engineer for Facilities Services at Boeing. "Cargotec understands our needs for responsive service."

Besides having trained the drivers of Boeing's straddle carriers, Levan also trained the company's automotive department on how to perform basic scheduled maintenance tasks. But for more complex repairs, Boeing continues to rely on Levan's expertise.

True teamwork in industrial logistics

Strategic partnership with Cargotec ensures the efficiency of Wilson, Sons Logistica in Brazil

Wilson, Sons Logistica's operations in Santo Andre

The challenge Wilson, Sons Logística faces is this: offer clients innovative logistical solutions in a timely and cost-efficient manner. The company found in Cargotec an ideal partner to meet this challenge. Cargotec has taken part in many of the company's projects, specifying the most adequate Kalmar handling equipment for each operation when moving, for example, steel plates and coils in terminals or industrial facilities.

"We usually work with long-term projects and develop these projects in very close cooperation with Cargotec," says Antônio Paiva, Wilson, Sons Logística's Technical and Operations Director. "This is what makes partnerships such as this one so important."

Wilson, Sons Logística uses large Kalmar equipment such as 15- and 30-tonne forklifts at some of its 24 operations within Brazil for handling its clients' industrial cargo and containers. A Kalmar reachstacker is used in the company's bonded container terminal in Santo André near São Paulo in Southeast Brazil.

Wilson, Sons Logística currently has 1,500 employees and its clients are from the steel and mining, agribusiness and foodstuffs, pulp and paper, oil and gas, chemical and petrochemical, and pharmaceutical and cosmetics sectors. In 2009, Wilson, Sons Logística performed a combined total of more than 50,000 container transport moves for several of its clients.

A Kalmar reachstacker works at Wilson, Sons Logistica's bonded facility

Better reliability, efficiency

Paiva points out that adequate equipment specifications, delivery time and commercial conditions are essential for being awarded new contracts. As an example, he notes the productivity gained by replacing five older forklift trucks with two new Kalmar DCF300-12 heavy forklifts and three new Kalmar DCE160-12 medium forklifts last year at Companhia Siderúrgica Nacional's facilities in Volta Redonda – 180 km from Rio de Janeiro.

"Before, when moving steel plates, we used only four forklifts and left one as a reserve unit for replacing any of the others that stopped. Now all five Kalmar units operate full-time, resulting in a 20 per cent increase in productivity," says Paiva, adding that the extra efficiency generates better operational profit.

Furthermore, the Kalmar forklifts are expected to keep operating at this same level for the next five years. "We are in constant contact with Cargotec's after-sales team and they make calls whenever needed," he adds, explaining that this relationship is important for ensuring correct equipment maintenance.

Customer-focused teamwork

Cargotec's higher efficiency machines also ensure better sustainability results. In this regard, Wilson, Sons Logistica is associated with Fundação Brasileira para o Desenvolvimento Sustentável (FBDS), the Brazilian foundation for sustainable development. "In September, we made a presentation on this matter at the XVI International Logistics Forum in Rio de Janeiro," informs Paiva.

The main focus of a logistics operation, according to Paiva, should be on the continuous improvement of a client's operation by constantly searching for more efficient handling methods. The Wilson, Sons Logística executive also stresses that the Brazilian logistics market is becoming ever more competitive with greater and more complex client requirements.

"We can achieve a mutually beneficial and constructive business model when we continuously improve the relationship with our clients and focus on understanding their needs and expectations better," says Paiva. "We have seen that Cargotec shares the same attitude of customer-focused operations, therefore we make a good team."

Antônio Paiva

We usually work with long-term projects and develop these projects in very close cooperation with Cargotec. This is what makes partnerships such as this one so important.

– Antônio Paiva, Wilson, Sons Logística

Getting more out of less

Brazilian container terminal operator at the Port of Salvador gets more efficiency out of limited space

Demir Lourenco Junior

The 74,000 sq m area of the TECON container terminal at the Port of Salvador in Northeast Brazil – managed by TECON Salvador S/A, a Wilson, Sons' Group Company – currently handles 150,000 containers per year. This volume, which will likely increase, is considered large for the terminal's limited available space. According to TECON executive director Demir Lourenço Júnior, the operation is only possible due to the adoption of two Kalmar E-One rubber-tyred gantry (RTG) cranes a few years ago.

The utilisation of the all-electric RTGs increased the terminal's productivity because the terminal could operate with a higher handling capacity in the same storage area. Yard space was optimised by 40 per cent after the terminal's container stackers were replaced with Kalmar RTGs, allowing the space between stacks to shrink from 15 to 3 m. The stacks are also higher and separate interchange areas are no longer required. "I can now handle more loads, and faster, in the same available area," said Lourenço Júnior.

A worthwhile investment

To the TECON Salvador executive this is an important case study as the E-One cranes – the markets most environmentally friendly RTGs – offer unmatched fuel savings, lower emissions and improved yard capacity. "They are electrically operated and for this reason they have no leakages like the hydraulically operated stackers," explains Lourenço Júnior.

It is not just a matter of purchasing specialised equipment. It is purchasing specialised equipment that is more productive and has longer service intervals. The Kalmar cranes, in Lourenço Júnior's opinion, have four features that justify the investment: "Quality, good price, personalised service and excellent after-sales." In addition, rapid maintenance response was decisive in the choice. "The Kalmar technical staff is very

I can now handle more loads, and faster, in the same available area.
– Demir Lourenço Júnior, TECON

TECON's E-One RTGs

agile. The machines are important and they have an advanced spares depot in Brazil. This decreases delivery time. They have a very helpful team."

Since TECON Salvador got its start 10 years ago, the operator has multiplied its handling volume by five compared to its first year of operation. The number of employees increased from 80 to 520 during the same period. TECON Salvador currently deploys additional yard equipment including nine reachstackers and six empty container handlers. Most of the equipment is from Cargotec.

Poised for further growth

The terminal is continuously expanding and its new challenge is to serve larger vessels. In these 10 years, ships' capacities went from 3,000 to 9,000 TEU and grew from 180 to 300 m in length. "We are making an effort to adapt to these larger ships. All Brazilian ports are currently deepening their berths," says Lourenço Júnior.

The port's draft will increase from 12 to 15 m by the end of the year. The project has received investments of R$100 million from the federal government. An additional R$340 million is being invested in the construction of an expressway connecting the BR-324 highway to the Todos-os-Santos Bay, where the Port of Salvador is located. "When the cargo arrives in the metropolitan Salvador area it is transported over narrow, heavy traffic roads. The new route will be 4.3 km long and will connect the port to the BR-324 highway, the main connection between Salvador and the southern part of Brazil," explains Lourenço Júnior.

Salvador is the capital of the State of Bahia. It is the third largest Brazilian city and is home to the largest population in the country's Northeast. Bahia plays a key role in the Brazilian economy accounting for 50 per cent of the region's gross domestic product. One of the main products is fruit which is shipped from Salvador and from three other ports in the region. "The port is a result of the surrounding economy and it attracts investment," says Lourenço Júnior.

Other products currently shipped through the terminal are petrochemicals, rubber, and auto parts. Most of the cargo goes to Europe, the U.S. and China.

The importance of local service

Cargotec offers fast and reliable service to all of its customers in Brazil and nearby countries. Local service began in 1995, when the first Kalmar reachstacker was delivered within the country.

"We know all of our equipment comprehensively, which consequently allows us to quickly respond to the requests we receive from customers not only in Brazil but also in Chile, Ecuador and Peru – countries under our scope of support," says Fernando Cruz, Managing Director of Cargotec Brazil.

"We are constantly investing in our local inventory, especially when it comes to those parts which we know will need to be replaced during a machine's lifetime. In addition, our service staff periodically receives technical training at our factories, in the field, or at our own facility in Guarujá, located in Santos Port. Here we utilise specialised training tools such as two state-of-the-art simulators – one for reachstackers and one for rubber-tyred gantry cranes."

Cargotec in Brazil also performs service in Salvador, where TECON Salvador S/A is located. Cruz adds: "They are a long-standing customer which values quality and technology when purchasing new machinery."

Although it was installed in the Port of Santos after TECON Salvador had purchased its Kalmar equipment, the fact that the manufacturer now has an RTG simulator in the country for training operators brings an added advantage.

Kalmar electric forklifts:

Green and mean

These zero emission workhorses keep their working environment clean without sacrificing on power

It's not often that a heavy-duty forklift comes along which not only meets the needs for a better environment, but also sets new standards for improved load capacities. Cargotec dealer AB Equipment's recent deliveries of 'new generation' battery electric Kalmar forklifts is proof that at least two New Zealand companies see this investment as a way towards achieving long-term cost benefits and consolidating their competitive advantage.

A switch that made cents

The delivery of a Kalmar ECF70 7-tonne forklift to Southland-based MDF board manufacturer Dongwha Patinna NZ Limited was the first in the southern hemisphere.

The company had previously been a strong supporter of internal combustion forklifts, but after extensive research, found that the overall cost of the battery electric forklift operating high hours was less than an internal combustion engine unit when considering initial purchase cost against lower maintenance and fuel or recharge costs.

Since commissioning the unit, Dongwha have seen a 40 per cent reduction in usage hours due to not having a diesel machine sitting idle. Pleased with the machine's performance, Dongwha recently ordered an additional Kalmar ECF70-7 forklift.

The environmental considerations of no fumes or noise and the fitting of non-marking tyres, have enhanced both the working environment and the presentation of its products.

"A feature of this model is the standard side shift fork positioning carriage which allows the operator to move the forks to the width required without the need to leave the cab," says AB Equipment Branch Manager Evan Sanderson. "And why would you, the specially fitted Spirit Delta cab is quiet and big by comparison with huge forward visibility and is at the height of operator comfort with a heater and radio as standard."

The initial settling in/acceptance period

Zespri's Kalmar 9-tonne electric forklift with a flex guard cabin has two sets of long forks so it can handle four pallets of kiwi fruit containers instead of just two

has been very short, with operators getting used to the machine quite quickly.

More recently, International Stevedoring Operations Ltd with a contract to kiwi fruit marketing company Zespri has purchased a Kalmar ECF90-6 9-tonne forklift for its Bay of Plenty operation. The interesting aspect with this machine is that it is fitted with 4-off 2.4m forks on a side shift fork positioning carriage and can lift four pallets of kiwi fruit containers at once and transport from truck to cool store placement or cool store to ship, leading to greater cost and time efficiencies.

Top of its class

Overall the new Kalmar ECF50-90 tonne battery electric forklift range combines outstanding ergonomics and high performance for superior productivity. It's designed for heavy-duty applications, so you can depend on this forklift for exceptional durability and reliability. An investment in a battery electric forklift also means less worry over tomorrow's rising fuel costs.

The Kalmar ECF50-90 range features a highly efficient dual drive and hydraulic system that saves on energy use and helps to ensure a longer battery run. This advanced system means that you only run the pumps when required – from zero to maximum speed depending on what is required. AC technology means that the motors have no carbon brushes. Fewer hydraulic connectors reduce the chance of hydraulic oil leakage. This larger size battery electric range all adds up to being able to run more loads at once, resulting in long term cost savings and efficiencies.

The outstanding ergonomics and high performance of the Kalmar ECF50-90 battery electric forklift range provides exceptional gains in productivity. Quality components and intelligent electronic systems contribute to improved driveability and response that in turn increases efficiency. Alternative cab solutions meet the requirements for the ultimate in driver comfort. Low noise levels and minimal vibrations on all cabs ensure user friendliness and safe handling.

The environmentally friendly Kalmar 5-9 tonne electric forklift

Combi-"monster" from Hamburg

The Kalmar 52-tonne extra heavy-duty container handler is one tough machine

The Kalmar DCF52-1200 handling container crane components at CTA. The spreader's maximum load is 45,000 kg

Of all the waterfront container terminals operated by the HHLA (Hamburger Hafen und Logistik AG), none is more cargo intensive than Container Terminal Altenwerder (CTA). Commissioned in 2002, it is one of the world's most modern terminals.

Hendrik Peterburs, head of the cargo handling department, had long been planning to complement the site's fully automated handling systems. After going through the options for heavy-duty combi-machines with his team and laying down careful plans, he's now proud to present one of Germany's biggest and most powerful cargo trucks: the Kalmar DCF520-12.

This front load truck can be equipped with a container spreader as well as special 2,800 mm forks for lifting single cargo items weighing up to 52 tonnes. Petersburg explains: "Handling heavy individual items with reachstackers requires several workers and takes a disproportionate amount of time. The growing amount of non-containerised cargo made the acquisition of special machinery necessary."

The ultimate in flexible operation

The new combi-truck for containers and general cargo was exclusively designed by Cargotec on the basis of the 67-tonne standard heavy duty truck – the DCF52-1200. The inverted forks of the duplex mast allow for the stacking of two containers on top of each other. The Kalmar spreader has fixed forklift pockets. It can be rotated by ± 5° around its vertical axis to compensate for non-parallel approaching positions.

The Kalmar machine is powered by a 260 kW Volvo engine. Its maximum speed with a full load is 20 km/h. A fully automated Dana power shift transmission with four forward and reverse gears ensures jolt-free shifting, while the maintenance-free wet multiple disk brakes slow the truck down safely under all conditions. All components – motor, power transmission, hydraulics and electronics – communicate in real-time via a redundant CANbus, providing the driver with continuous information on the operational state of the machine and its loading equipment. The maximum noise level inside the comfortable Spirit Delta cabin is 72 dB(A), measured from the driver's ear.

Exchanging the loading equipment

During a typical shift, both forks and spreader are needed and must be interchanged several times. This is facilitated by a quick and highly efficient system: when not needed, the spreader is placed on a rack the size of a 20' container, which also contains the forklift pockets. To be replaced by forks,

Kalmar's spacious Spirit Delta cabin is the quietest and largest in its class

Thanks to its 2,800 mm forks, relocating a 21,000 kg terminal trailer is no problem for one of Germany's largest trucks

The 20' rack stores both the spreader and the forks. Changing the equipment takes only a few minutes

the spreader is placed on top of the rack, after which its two hydraulic hoses, the e-plug and two fastening bolts can be removed. The truck then turns towards the forks and picks them up. As soon as the bolts are fastened, the machine is ready. If needed, the spreader rack can easily be moved. The truck system was designed on the basis of everyday practical requirements.

Other special features include two cameras to safeguard the danger zones at the front and the rear, a central lubrication system, and a customised tank filler neck position at the rear to accommodate the low filling station on site. The comprehensive safety concept includes broad steps, an additional ladder at the right side of the cabin and a V2A rail on the front mudguards. Following extensive testing, the machine was granted the dynamic cornering stability certificate required by both the trade union and HHLA.

GERMANY

Working with wire

Customised Kalmar forklifts move 850,000 tonnes of wire rod per year for ArcelorMittal in Germany

Inconspicuous but essential: wire rod, drawn from billets at steel mills, is a key pre-product for the car, furniture, piano and steel cable industries. ArcelorMittal's Hamburg-based operation produces wire rod of 250 different types and grades, ranging from 5.5 to 16 mm in thickness. The company's annual wire rod production amounts to 850,000 tonnes, or more than half of its total steel output of 1.3 million tonnes.

Founded in 1970 as HSW (Hamburger Stahlwerke), the plant has been part of the international ArcelorMittal Group since 2007 and currently employs 550 people. Marc Schölermann manages the company's transport operations.

Marc Schölermann (left), ArcelorMittal, and Jens Sczepan, Manager Mobile Service North for Cargotec Germany

The Kalmar trucks can carry up to four coils on their 2,800 mm double rams

Accuracy is vital in the factory hall, since even the smallest scratches affect the quality of the wire rod

He is in charge of a fleet of 13 Kalmar forklilft trucks, which have been serving the Hamburg premises for more than nine years. These trucks are used for transporting the 1.25 x 1.25 m wire coils all around the 60 hectare factory area. Each truck is equipped with a 2,800 mm double ram capable of carrying up to four 1.5 tonnes coils at a speed of 20 km/h.

Made to last

Three daily shifts in all weather, load temperatures of up to 300°C, indoor and outdoor operation with poor visibility placing additional strain on the drivers – the Kalmar DCE150-12 trucks face tough conditions. Nevertheless, they reliably log up to 3,000 operating hours per year.

Together with the logistics department, Schölermann coordinates the use of the machines. He says: "We are given instructions on a daily basis. One of the trucks is reserved for the second stage of production, at which point the wires are pulled. Three trucks each are needed for loading lorries (up to 70 per day), rail wagons and ships. Another machine takes coils to the container loading station and two operate in the warehouse and storage areas. In addition, there is one all-purpose truck with regular forks."

Tailored performance

To accommodate the steel plant's special needs, the machines have been heavily customised. Special features include reinforced duplex masts with lifting heights of 5,400 mm and additional mast rollers; climatised Spirit Delta cabins with mini levers, joystick controls and additional seats; a central lubrication system; and special air filters with a higher degree of pre-separation.

At the request of the operator, two of the trucks were equipped with a compressor to enable the use of pneumatic tools, such as a nail gun for securing the load. Cargotec found the perfect solution by integrating the compressor with the motor, avoiding a separate installation. Despite its modest appearance, wire rod is extremely delicate – even the most minute scratches and indentures can lead to production interruptions, for example in tyre manufacturing. This is why the cabins are equipped with additional seats. Each transport is accompanied by a loading supervisor, who scans the products and approves individual grades.

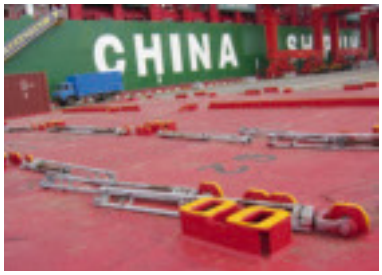
To protect the wire rod, the ram must be perfectly horizontal when loading the coils. The mast position is controlled by a sensor. Oliver Kah, Industrial System Distribution Specialist for Cargotec Germany, explains: "Features such as this are tailored to meet the customer's most specific demands. Because special mast positions are standard requirement in the paper industry, our solution for ArcelorMittal matched our experience in that field." A lowering stop provides additional safety for the load.

Operator approval

The Kalmar machines require maintenance every 500 hours. Change intervals for gear and hydraulic oils were quadrupled by the introduction of the extremely fine prefilters.

In addition to technical specifications, it is important that a high-performance machine meets with its operators' approval. ArcelorMittal's truck drivers unanimously praise the quietness and clear layout of the climatised cabins, as well as the truck's driving characteristics – in spite of its reduced maximum speed of only 20 km/h. The electronic Easykey access system protects the truck from unauthorised use, which has resulted in a drastic reduction in accidents and damage.

Their transport routes are up to 1,000 metres long, regardless of the weather



MacGregor lashings
secure mega container ship loads

A run of orders for mega-sized container carriers has seen Cargotec nominated as a key supplier for loose container lashings, further securing its reputation for handling high-performance tasks

Cargotec's range of MacGregor lashings offer the highest possible cargo safety standards and are quick and easy to operate to meet tight port schedules

Cargotec is supplying loose container lashings for two series of mega-sized container ships, totalling 17 vessels, which are being built at Samsung Heavy Industries in South Korea. The first contract, was received in February this year and came from United Arab Shipping Company (SAG) with Gulf Co-operation Council, for its newbuilding order of nine 13,100 TEU container vessels. The second contract, confirmed in March, came from China Shipping Container Line (CSCL), and requires Cargotec to supply eight shipsets of loose container lashings for CSCL's series of 14,000 TEU container ships.

"Both of these orders are extremely important for us and the CSCL order is the biggest single deal we have won so far in the China area for our lashing business," says Tommi Keskilohko, Sales Manager for container ships at Cargotec.

A series of five 4,500 TEU container ships also being built at Samsung will additionally feature MacGregor loose container lashings from Cargotec. These vessels are destined for a leading independent container operator, Seaspan Corporation. Cargotec will also secure container loads onboard Seaspan Corporation's series of eight very large container carriers also under construction in Korea. The contract calls for Cargotec to deliver loose container lashings for a series of eight 13,000 TEU very large container carriers, which will be delivered from Hyundai Heavy Industries and Hyundai Samho Heavy Industries staring in 2011.

Safe and robust design

The containers onboard all vessels are exposed to numerous external forces such as wind and waves and the mass of the cargo which is also accelerated by ship movements. Each year a large number of containers are washed overboard as a result of insufficient lashings; extreme weather; and/or incorrect loading or overloading.

Container lashing systems need to have margins for rough handling and therefore safe and robust design is important to reduce operational errors and to ensure durability. Cargotec offers a range of MacGregor and AllSet lashing products and systems, which have designs based on years of experience. They offer the highest possible cargo safety standards and are quick and easy to operate to meet tight port schedules.

Cargotec's daughter brands Hiab, Kalmar and MacGregor are recognised leaders in cargo and load handling solutions around the world.

MacGregor is the global market-leading brand in marine cargo handling and offshore load-handling solutions. Customer-driven MacGregor engineering and service solutions for the maritime transportation industry and the offshore load-handling and naval logistics markets are used onboard merchant ships, offshore support vessels, and in ports and terminals.

MACGREGOR

Global success
for best ever RTG

The Kalmar E-One² rubber-tyred gantry (RTG) crane has set the industry's standards high when it comes to productivity, reliability, eco-friendliness and safety. Customers agree as Cargotec received a series of recent orders across the globe

Russian stevedore expands

Baltic Stevedoring Company (BSC) has significantly increased its handling capacity by ordering six Kalmar E-One² RTGs and ten Kalmar TR618i terminal tractors. Delivery of the machines will begin already this year with all units arriving within the first half of 2011. The new equipment will boost the terminal operator's handling capacity at the Port of Baltiysk, as container volumes in the Kaliningrad area continue to rise.

BSC is part of major Russian port operator Novorossiysk Commercial Sea Port (NCSP), who already operates Kalmar forklift trucks, reachstackers and terminal tractors at the Port of Novorossiysk.

According to Sultan Batov, General Director of BSC, the customer's previous experience with Kalmar equipment convinced them to turn to Cargotec when equipping the new Baltiysk container terminal.

He says: "Kalmar cranes feature excellent reliability and less maintenance due to the absence of a hydraulic unit. The machines' easily accessible service points, combined with unmatched maintenance intervals, also helped us in our decision to specify this equipment. We are confident that Cargotec's expertise, covering a whole range of port equipment and services, will help our business go from strength to strength."

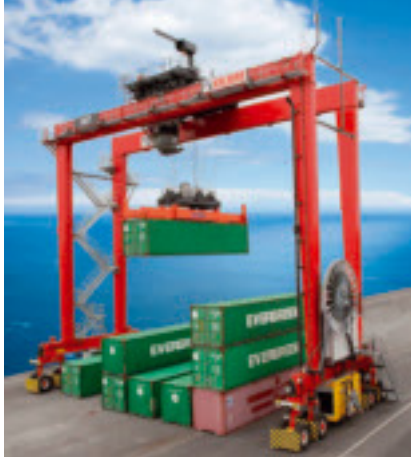
Mexican port chooses Kalmar

Cargotec has received an order for two E-One² models from Infraestructura Portuaria Mexicana S.A. de C.V. (IPM) – a subsidiary of Pinfra. Cargotec has also agreed to upgrade two of IPM's existing quay cranes starting early next year. These cranes are in addition to the new Kalmar ship-to-shore crane Cargotec will deliver to IPM this year.

With machines set for delivery in early 2011, the new deals signify IPM's desire to enhance its terminal operations at the Port of Altamira, as container traffic in the region increases.

Ricardo Kolteniuk, Director of Administration at Pinfra says: "These latest agreements are the result of our close cooperation with Cargotec and its superior product quality and service."

IPM's growing fleet of Kalmar equipment includes two DRF reachstackers, two DCD empty container handlers and ten terminal tractors. This latest order will also bring IPM's total number of Kalmar E-One RTGs to four.



In 2011, Vietnam's Saigon Newport will receive six new Kalmar Zero Emission RTG™ cranes (like pictured)

Salvador Sanchez, Director of IPM adds: "From reachstackers to RTGs and STS cranes, we are committed to working together with Cargotec as they can offer the comprehensive range of innovative cargo handling solutions a world class facility such as our requires."

Two new customers in Vladivostock

Cargotec has also received orders for its market leading E-One² RTGs from two customers based at Russia's Far East Port of Vladivostock. The port is experiencing rising monthly throughput figures which can be attributed to its healthy export business and favourable location close to Asian-Pacific markets.

SOLLERS Far East LLC, a Russian automobile company, and Vladivostok Container Terminal (VCT) have both opted for Kalmar E-One² RTG cranes with the 16-wheel design. Cargotec's 16-wheel units, in combination with the light weight of its cranes, put less stress on terminal surfaces compared to conventional 8-wheel units.

The car manufacturer has its own quay and terminal at the Port of Vladivostok for the delivery of containerised auto parts. To increase the efficiency of its logistics operation, SOLLERS Far East has ordered one 16-wheel Kalmar E-One² RTG, two Kalmar DRF450-60S5 reachstackers and two Kalmar TR618i terminal tractors.

VCT is a subsidiary of FESCO – one of Russia's largest and oldest transport companies. It plans to further strengthen its operations with the purchase of two 16-wheel Kalmar E-One² RTGs and four Kalmar TR618i terminal tractors.

Tero Pajunen, General Director, Cargotec RUS LLC says: "Cargotec is committed to serving customers in Russia. It's a vast country that is home to one of the world's largest railway networks and multiple bustling seaports serving international clients. Our parts and service centre in Vladivostok is just one example of how Cargotec delivers peace of mind by operating close to our customers."

The E-One² RTG

The machine itself boasts the industry's lowest lifetime costs, consumes considerably less fuel compared to conventional diesel-hydraulic RTGs and minimises environmental impact.

As a result of Cargotec's thorough hazard analysis and intense product development work, it has raised these market-leading RTGs to a whole new level of safety. Features include: a redesigned EE-House, safer access, a new fail-safe PLC control platform and reduced noise levels.

With further enhancements that include options for a Variable Speed Generator (VSG) and Zero Emission RTG™ with mains supply, the E-One² also meets the latest environmental demands whilst remaining productive and cost-effective. It provides operators with fuel savings of up to 60 per cent, compared to conventional RTGs, through the use of the VSG and an optional hybrid package.

Market force

In a sector increasingly driven by fuel-efficiency, safety and environmental concerns, Cargotec accounted for 20 per cent of all RTGs delivered worldwide in the last completed year of records (2009).

The market also continues to demand more and more measures to improve operational efficiency, with automation and intelligence at the fore. Indeed, Smartrail® – Cargotec's auto-steering system for enhancing RTG controls and operation – is virtually a standard request now, featured on over 80 per cent of the Kalmar cranes sold in recent years, while approximately half specify UniQ™ – Cargotec's customised intelligent platform designed for improving overall performance and management of container handling equipment fleets.

Lord of the heights

Jaroslaw Barra

Operating a rubber-tyred gantry (RTG) crane in a busy port terminal is not for those with a fear of heights. Jaroslaw Barra from Poland loves his job, despite the pressure of being responsible for the smooth transfer of containers and the safety of others

Rubber wheels as high as your head slither on the icy ground in the nippy wintry weather. A hundred tonnes of steel glide momentarily as if without a master towards the icy harbour basin.

No problem, Jaroslaw Barra, an RTG crane operator from Poland, has everything under control. He sits up above in his well-equipped cabin at the Baltic Container Terminal (BCT) of Gdynia in Poland.

Containers weighing tens of tonnes are neatly transferred in the crane grabs to lorry trailers or from trailers into stacks to await shipping.

The responsibility is enormous, but this demanding job has its advantages: Barra jokes that at 25 metres up, he feels as if he is lord of the entire terminal.

"Operating large, fast vehicles is a boy's childhood dream. I've found my vocation, even though the sheer size of the machine initially terrified me," Barra grins.

It is hard to imagine a more impressive piece of machinery. For its size, Cargotec's Kalmar RTG crane moves agilely on its eight wheels. To reach the operating cabin of this container handler, you first have to climb a series of ladders and metal stairs. As you go

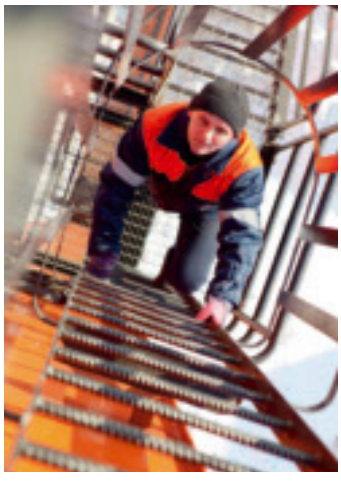


PHOTO BY Blazej Maziarz

Operating large, fast vehicles is a boy's childhood dream. I've found my vocation, even though the sheer size of the machine initially terrified me.
– Jaroslaw Barra

higher, trucks and terminal tractors seem to shrink into toys and the rows of containers look like Lego bricks. The cabin affords a wide vista to the sunny coastal city across one of the largest ports in the Baltic.

Cabin with all mod cons

The ascent does not make crane operator Barra breathless, nor does his head spin. He vaults neatly into the cabin. A radiator keeps him warm in the cabin, which hangs below the trolley. Inside the cabin, not even the screeching gulls can be heard.

"I've also got air conditioning so that I don't get baked alive during the summer," says Barra, as he shows the conveniences of his workspace, which has been designed by Ruukki, a leading supplier of cabins for mobile equipment, together with Cargotec.

It's as if sitting on air. Apart from the steel support structures, the cabin is almost entirely made of glass.

"An unobstructed view is essential for work and safety reasons," the crane operator points out.

"In peak seasons, there are over a dozen RTG cranes on the move at the same time in the terminal area. Vehicles come and go, rail freight is loaded or unloaded. You need to be able to predict situations. It's important to notice what's happening around you. This is a giant step forward in cabin equipment and structures compared to older models, especially in safety," Barra enthuses. Electronics dominate. It is easier to avoid unnecessary crane movements and so energy is saved.

A screen in front of the sturdy operator's seat shows what is going on behind the diesel engine through cameras fitted to the crane legs. Every effort has been made to minimise blind spots, which are prone to cause damage and accidents.

The cabin features a second screen, which shows whereabouts the containers now are and where they have to be taken to. The operations centre at the terminal constantly updates positioning data by radio.

Terminal zones given female names

There are 18 numbered RTG cranes in operation at the BCT terminal, which has been divided into zones, each of which has been given a female name.

Shift manager Jerzy Stec has allocated the work. "I operate 15, it's in Carolina," says Barra using the slang of the trade.

Each day he examines the crane's logbook and maintenance manual. He is now operating a crane with a motor that has done more than 11,000 hours. The mechanic had nothing untoward to report. The diesel engine starts at the push of a button and the drive from the parking place can begin.

Not for the faint hearted

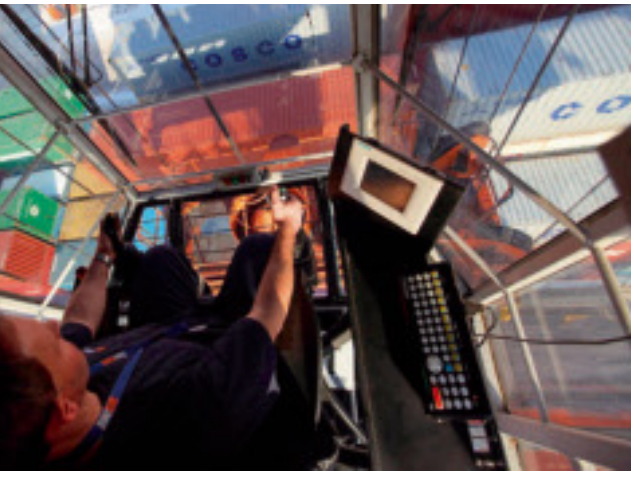
This job is not for the faint hearted, nor for acrophobia sufferers. This was clear from the outset when, some twenty years ago, Barra got a job as an electrical fitter at the terminal. His eye was caught by these enormous vehicles, which began to magnetise him.

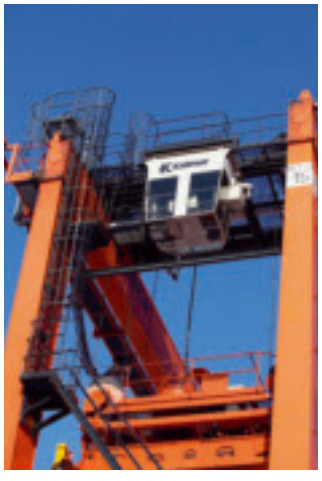
Access to the control seat of a mobile crane meant rigorous studies. Barra has passed driving tests for all of the handling machinery at the port, from forklift trucks upwards. The candidate's physical condition, hearing, sight and stress tolerance were examined.

Shift manager Jerzy Stec (right) and Barra

Barra has acquaintances who realise only once they are high up at the control panel that they are better suited to working at ground level after all.

"Initially, I, too, was so nervous that my shirt was wet through by the end of the shift. Now, I just laugh about it."





A version of this article first appeared in the stakeholder magazine of Ruukki, a supplier of metal-based components, systems and integrated systems to the construction and engineering industries.

Security scanning does not disrupt container cargo operations

By 2014, all containers inbound to the US must be scanned for radiological materials; Cargotec responded to this requirement by offering a spreader-mounted radiation detection system

Many governments worldwide are strengthening port security with their own national security in mind. In the US in 2002, the USA Container Security Initiative was launched and five years later a Congress bill was passed that stipulates that all US inbound containers must be scanned for radiological materials by 2014. Other governments are considering following suit.

"It is clear today that the risks of nuclear smuggling are as real as ever," says Troy Thompson, President of Cargotec Port Security. In April 2010, at the 46-nation Nuclear Security Summit held in Washington, DC, it was revealed that during the past ten years there have been many confiscations of enriched uranium intended for the 'black market'."

Taking initiative

Cargotec's response to the US initiative has been to develop SafePort radiation scanning technology that can be installed on crane spreaders, straddle carriers, shuttle carriers, or other mobile equipment, such as on marine vessels engaged in security operations. It has been validated in US government testing to achieve an isotope identification accuracy level of 99.9 per cent, with minimal false positives and false negatives.

"Introducing the scanning technology on a modular basis to a variety of Cargotec mobile platforms, creates effective and efficient port security with no impact on cargo flow," says Mr Thompson. "In today's challenging economic environment, it is essential that security solutions do not interfere with the normal rate of port commerce.

Influencing the decision

"The present opportunity for ports in the US is to operate as true stakeholders in the container scanning process. While the outcome has been defined – 100 per cent container scanning to detect rogue nuclear materials – the final methods to be selected for the implementation of such scanning remains to be fully determined. Ports now have an opportunity to engage in discussions that will

Troy Thompson: "Ports now have an opportunity to engage in discussions that will influence the selection of container alternatives that will be least disruptive to port commercial operations"

SafePort radiation scanning technology can be installed on mobile equipment such as crane spreaders

influence the selection of container alternatives that will be least disruptive to port commercial operations.

"In particular, ports still have the ability to influence the decision as to whether scanning will be performed by traditional port container handling equipment, in the normal course of port operations, or at special container scanning centres during an added 'security step' typically conducted at the perimeter gates of the terminal."

Proven experience

CPS equipment delivered to a US port includes a spreader-mounted radiation detection system for the container terminal at Charleston, in South Carolina. A Bromma STS45 separating twin-lift 20ft to 45ft telescoping spreader is outfitted with radiation threat identification technology that can scan containers while the spreader is in transit during the normal course of ship-to-shore operations.

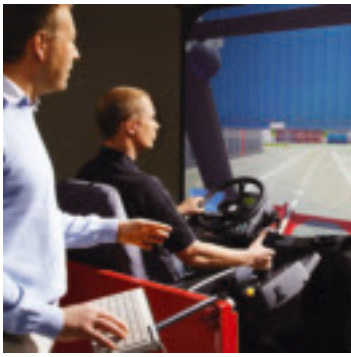
Mr Thompson highlights that: "The most important issue that remains to be decided today in terms of scanning containers for nuclear materials is not 'if' it should be done, but 'when' and 'how'.

PHOTO BY Satish Kumar Beella

From harbour to home?

Art Container's mission is to give new life to old containers otherwise waiting to be demolished. The Italian design and build firm can customise homes, kiosks, showrooms, reception facilities and offices to no limit. These cost effective, quickly implemented, durable, expandable and highly unique spaces make us wonder if containers could possibly have a "second life" more adventurous than the first!

CARGOTEC
we keep cargo on the move™



EcoService

Economical and ecological solutions from Cargotec

EcoService brings new products and concepts to benefit all types of heavy-duty materials handling operations - from handling cargo at major ports and terminals through to specialist industrial applications, where equipment needs to be efficiently maintained to deliver maximum uptime. Our range of EcoService products deliver reduced costs and improved productivity.

EcoService includes training courses that reduce running costs, exchange parts that provide an economical alternative to new components and flexible maintenance programmes that reduce downtime.

Try our savings calculator at www.cargotec.com/cta to find out how much you could save or email your contact details to eco.service@cargotec.com for further information.