

Kalmar

STRADDLE CARRIERS

for shuttle operations



When **SPEED** is of the essence

Kalmar Straddle Carriers for shuttle operations enable you to decouple your container movements from quayside to landside, allowing your cranes to operate at their optimal best at all times. They are able to pick and place containers directly on the ground, so other cranes are never kept waiting and are free to get on with their main job, moving containers.

Manoeuvrable and agile.

Kalmar's range of straddle carriers are extremely agile. Our electric and hybrid models feature a drive and steering system that controls each wheel individually. This gives our straddle carriers the ability to move diagonally in a "crab" mode, or even pirouette on the spot around its vertical axis. This high level of manoeuvrability enables much shorter work cycles and can help reduce terminal congestion.

A flexible range for you.

Kalmar Straddle Carriers are built on 70 years of experience working with terminal operators around the world and feature three different power sources, advanced safety features and one of the best operator experiences available.

Cut your CO₂ emissions.

We support our customers' ambitions to become more eco-efficient by providing solutions, such as our electrically powered Kalmar Electric Straddle Carrier that will help you reduce your fuel consumption and emissions, optimise cargo flows and cut overall operational costs. Eco-efficiency is the future of cargo and material handling, with new and more advanced technologies helping us do more with less. You can also cut noise and light pollution when you fully automate your operations with a Kalmar AutoStrad™ solution.



A FLEXIBLE

range for you

Every Kalmar Straddle Carrier features a modular design that can be tailored to meet the needs of your business. You have three different straddle carrier solutions to choose from:

Kalmar Electric Straddle Carrier.

The eco-efficient Kalmar Electric Straddle Carrier produces zero emissions at source and provides a flexible solution that can easily be adapted to meet your requirements. You have a choice of battery solutions and charging options plus a range of supportive products that can help to enhance your overall operations.



Kalmar Hybrid Straddle Carrier.

The Kalmar Hybrid Straddle Carrier with start-stop technology delivers all the power you're used to, with up to 40% reduction in fuel consumption and up to 50 tons less CO₂ emissions per annum than a traditional diesel-electric machine. A regenerative energy system captures electrical braking and spreader-lowering energy, then stores this for re-use in Lithium-ion batteries.



Kalmar Straddle Carrier.

The Kalmar Straddle Carrier offers high performance, excellent fuel efficiency and low noise. Featuring a diesel-electric drive, this straddle carrier complies with the latest exhaust emission regulations.



The Kalmar AutoStrad™.

The Kalmar AutoStrad can pick, carry, stack and place containers independently. The Kalmar AutoStrad delivers a safe, eco-efficient and effective automated horizontal transport option. Its scalability and flexibility mean it is suitable for a variety of terminal operation modes.



Why a Kalmar Straddle Carrier is a great

CHOICE



Kalmar Straddle Carriers are highly efficient, productive, safe and comfortable to operate. They are the best choice of horizontal transport to work in partnership with your ASCs and quayside cranes, driving even greater efficiencies between your quayside and landside operations.

Extremely efficient. All of our straddle carriers are fitted with the most efficient drive units, with our electric and hybrid machines exceeding the most stringent carbon emissions standards globally. In fact, our hybrid machine can reduce your carbon emissions by up to 40% and our electrically powered eco-efficient Kalmar Electric Straddle Carrier has zero emissions at source. Automated stop-start technology helps drive greater efficiencies when you are coupling an electric power source with a diesel one.

Easier to maintain. With safe and easy to access servicing points and less moving parts, our electrically powered straddle carriers will ensure you spend less time and effort keeping your equipment operating optimally. Plus, our electric and hybrid straddle carrier ranges feature a rope hoist system with only six pulleys, making it highly efficient, safer and easier to maintain than other systems.

Highly productive. Our range of straddle carriers offers you the highest levels of productivity, as you can handle a full range of containers from 20ft to 53ft and, when fitted with an extendable twin-lift spreader, two 20ft containers can be handled simultaneously. All of our straddle carriers are easy to operate and have servicing intervals of up to

1000 hours, keeping your machine's downtime to a minimum. Plus, all servicing points are easily accessible from the top of the frame.

Safer. Kalmar Straddle Carriers feature the strongest frame in the industry, with a streamlined yet extremely rigid design with no external bracing. The structure enables easy access to all key components, which are well protected within the frame. Coupled with superior cabin visibility, your operators will stay safe and be in control at all times.

Our entire range of straddle carriers feature active stability control. This system continually monitors the speed, turning radius and spreader position and will slow the machine down automatically when needed. This helps the driver operate the straddle carrier in a safe manner.

Ergonomic cabin design.

The cabin was designed in cooperation with our customers. It features a spacious interior, window shaping to reduce night-time reflections, and low cabin noise. Ergonomically designed with an intuitive user interface, dimmable LED lighting and an optional 180 degree electrically adjustable seat, it puts everything in easy reach for your operators.



BE SAFE

Lower your **EMISSIONS** without compromising on power

Lowering your carbon emissions often means compromising on power, but that doesn't need to be the case.

The Kalmar Hybrid Straddle Carrier is able to reduce your emission by up to 40% by using a regenerative power system coupled with a highly efficient diesel engine that uses less fuel. You will also benefit from lower noise levels as both our electric and hybrid machines are incredibly quiet. Any light pollution can also be dramatically reduced when operating a Kalmar AutoStrad™ as it does not require lights to operate in the dark.

Clean power on the go.

Kalmar's FastCharge™ system can charge your Kalmar Electric Straddle Carrier while it is in operation in your yard. No more lengthy re-charging times, as your straddle carriers can now recharge at strategically placed fast-charging stations during normal operations. Typical recharging times are only 30 to 180 seconds at 600 kW. The result? You get faster turnaround times, increased productivity with as high as 90% utility rates, less noise and zero emissions at source.

You can also charge your Kalmar Electric Straddle Carriers at a CCS charging point between shifts or when not in operation. 45 minutes of charging provides up to 240 minutes of operating time.



CCS charging

Cut your costs by going electric.

Electrically powered straddle carriers are quicker and easier to maintain as they have less moving parts and can cut your fuel bills as electrically powered solutions are usually more cost-effective than traditional powered solutions.



FastCharge™

ECO EFFICIENCY
IN ACTION



A flexible SOLUTION

The Kalmar Charge Family.

Electrically powered solutions are usually available as a one size fits all solution, which you need to build your business around. Not any longer, as our electrically powered straddle carriers provide a flexible solution that can easily be adapted and matched to fit your operational requirements.

Battery options:

High Energy Battery.

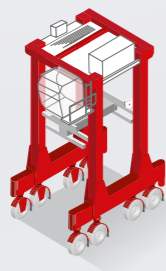
A battery solution with a high energy capacity that can provide half-shift autonomy between charging events. With a High Energy Battery, you can schedule your battery charging to align with operator breaks through a standard CCS charging point, which will keep your equipment running without the need for charging between scheduled breaks.

Operation time without charging

240 minutes

Charging time

45 minutes



High Power Battery.

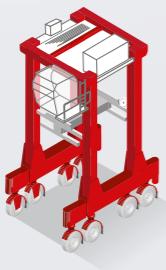
A battery solution optimised for high power charging which can be charged in few minutes with a Kalmar FastCharge charging station, without your operator leaving the cabin. With a High Power Battery you can operate your equipment 24/7 by using operational waiting times to opportunity charge your battery.

Operation time without charging

45-50 minutes

Charging time

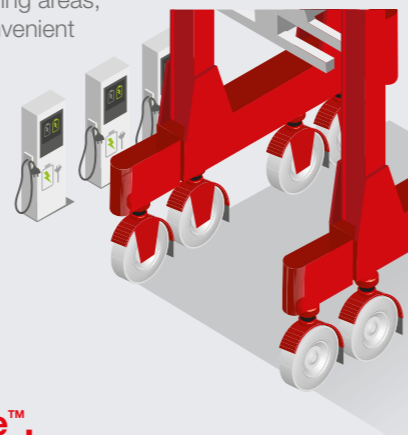
5-6 minutes



Charging options:

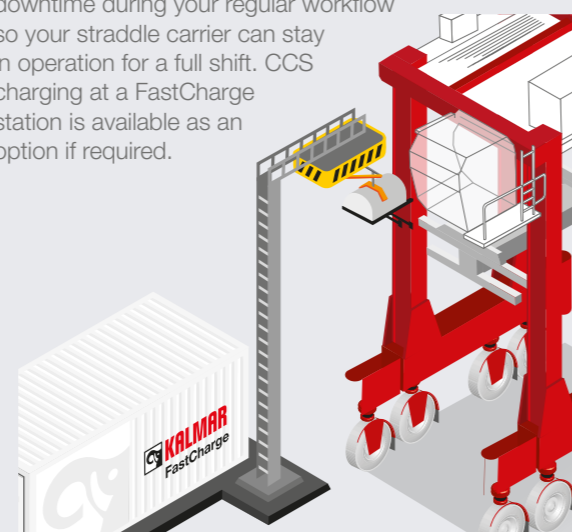
CCS Charging.

All Kalmar Electric Straddle Carriers can be charged with a standard CCS charging unit, either supplied through Kalmar or other manufacturers. These can be located near break or holding areas, where is most convenient to charge your equipment.



FastCharge™.

The Kalmar FastCharge™ System uses strategically placed pantograph charging stations in your yard to opportunity charge your battery quickly during idle or downtime during your regular workflow so your straddle carrier can stay in operation for a full shift. CCS charging at a FastCharge station is available as an option if required.



Enhance your operations

Kalmar offers a range of supportive products that can enhance your overall operations.



Kalmar Charge Optimiser.

The Kalmar Charge Optimiser automatically assigns charging tasks to the equipment operator, to avoid queues at charging stations and ensure the highest utilisation rates at your charging points.



Kalmar Insight -Energy Module.

In addition to providing real time operational data of your equipment fleet, the Energy Module allows you to monitor

each of your electrically powered straddle carrier's battery charging status and gives greater visibility to charging key performance indicators.

Kalmar One

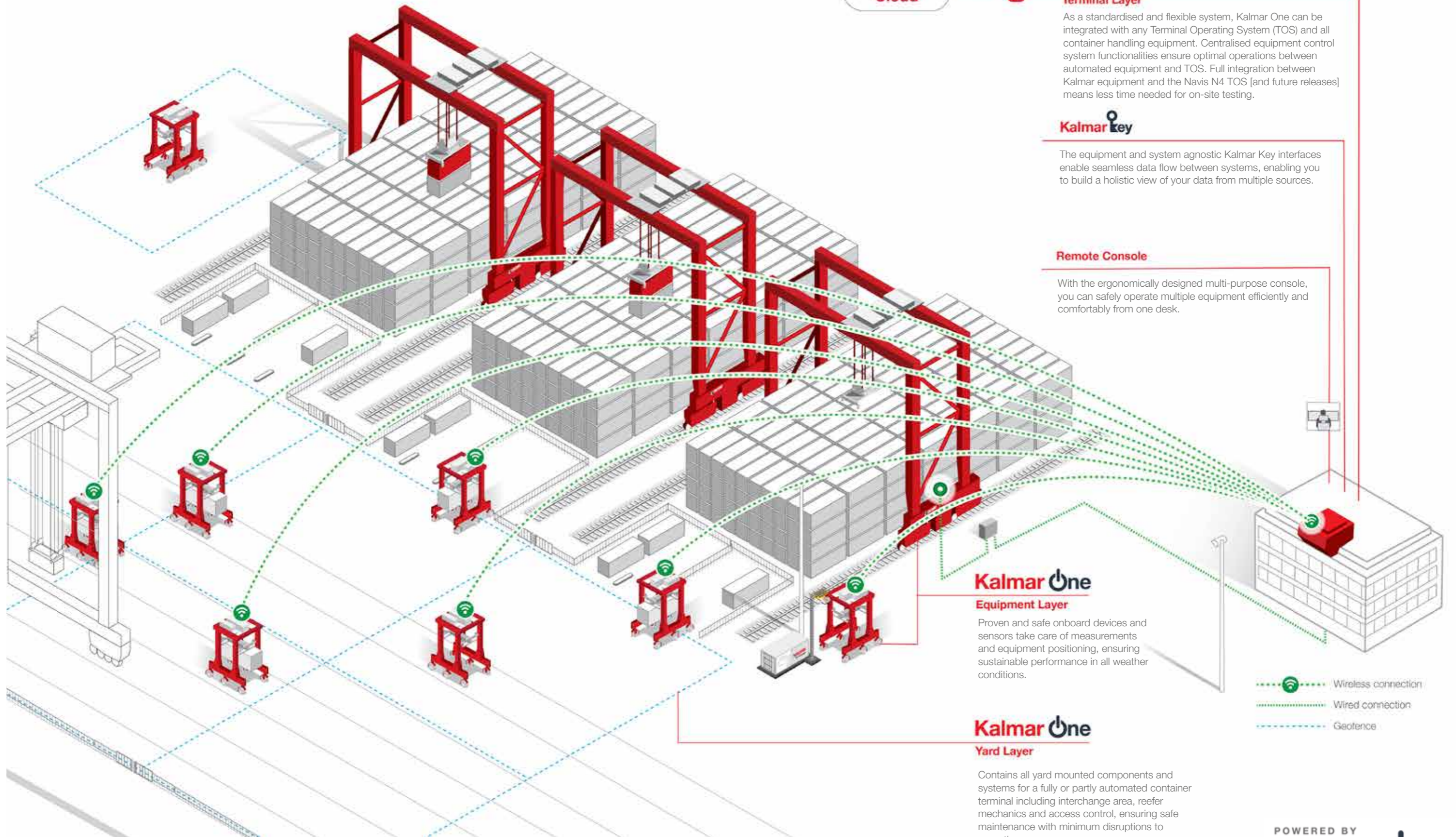
Kalmar One - Fleet Optimiser.

The KalmarOne Fleet Optimiser module provides job scheduling and dispatching in automated terminals. Our Fleet Optimiser is capable of assigning charging tasks for automated equipment to minimise delays and use each charging point as efficiently as possible. This service is available for AutoStrads only.



Kalmar AUTOSTRAD

for Shuttle Operations Application



Kalmar One

Terminal Layer

As a standardised and flexible system, Kalmar One can be integrated with any Terminal Operating System (TOS) and all container handling equipment. Centralised equipment control system functionalities ensure optimal operations between automated equipment and TOS. Full integration between Kalmar equipment and the Navis N4 TOS [and future releases] means less time needed for on-site testing.

Kalmar Key

The equipment and system agnostic Kalmar Key interfaces enable seamless data flow between systems, enabling you to build a holistic view of your data from multiple sources.

Remote Console

With the ergonomically designed multi-purpose console, you can safely operate multiple equipment efficiently and comfortably from one desk.

Kalmar One

Equipment Layer

Proven and safe onboard devices and sensors take care of measurements and equipment positioning, ensuring sustainable performance in all weather conditions.

Kalmar One

Yard Layer

Contains all yard mounted components and systems for a fully or partly automated container terminal including interchange area, reefer mechanics and access control, ensuring safe maintenance with minimum disruptions to operations.

-  Wireless connection
-  Wired connection
-  Geofence

Kalmar One

AUTOMATION REDEFINED

Kalmar One automation system is a flexible, scalable and open automation system.

With proven functionalities and well-established processes, Kalmar One will help you streamline and automate your operations. It offers a standardised open system that is compatible with all types of equipment irrespective of manufacturer, making it quicker, easier and more cost effective to deploy.

Each automated Kalmar equipment application is powered by Kalmar One. Kalmar One contains automation and software products and modules that are standardised and harmonised for all different application types. Each of these applications has its standard blueprint of Kalmar One products, which allows us to offer and deliver the same proven and tested solutions to all our customers yet configured to each customer's individual needs.

Safety in mixed traffic.

Instead of having to create fenced off areas to separate your automated equipment from manual equipment, Kalmar has been a pioneer in the use of geo-fencing, where virtual boundaries are created using local satellite systems or ground based transponders set into the ground to create lanes. This allows for automated equipment to work safely within a designated geo-fenced area. Manually operated equipment would continue to work normally outside of the geo-fenced area and follow standard road markings and signs.

Operate your equipment remotely.

The Kalmar Remote Console has all the required functions, controls, information and guidance enabling your operators to control equipment remotely. It is quick, safe and easy to switch between equipment allowing your operator to handle several cranes at a time. Large format screens provide a clear view of exactly what is happening with each piece of equipment. In addition, the operator can manage semi-automated moves from the desk, tracking the movement of each container and then prompting the operator when they need to take over or validate a move. Even if your operations are fully automated the console can be used for exception handling.

The console is ergonomically designed and can be personalised to optimise operator comfort and safety.



Kalmar Key. Open up your choice.

Kalmar Key provides a set of open automation interfaces that will allow you to build a complete end-to-end automation solution that is exactly right for your business by using Kalmar One as a common central automation system. With Kalmar Key, you will be able to choose who you work with and adopt an agile way to further develop the capabilities of your equipment and software, possibly with third-party developers.

With an equipment-agnostic approach, Kalmar Key enables a vast range of new applications and equipment to be connected for a total automation solution. Additionally, open interfaces enable a holistic view of data from multiple sources, allowing you to optimise your operations continually and with ease. Opening up your possibilities.



Automate your truck handling.

Kalmar automated truck handling is the first patented solution in the world that automates your landside operation. By introducing automated truck handling in your operations, you can build an end-to-end automated solution, which enables faster turnaround times, a higher level of safety for truck drivers and is reliable in variable weather conditions.

External truck loading uses a truck lane laser measurement system that pinpoints the exact locations of the truck trailer's twistlocks, chassis or container so that the crane can lift it and place it efficiently and safely. Automated truck handling can work with trailers with twistlocks, internal chassis and cassettes up to 4 TEU long, both coupled and decoupled operations can be supported.



KEEP MOVING

with Kalmar Service

To keep your business moving Kalmar Services offers a range of services that can help you keep your equipment moving optimally.



Kalmar Care.

Care that keeps your business moving.

With Kalmar Care you get a flexible service that's built around your business. Including, the experience and knowledge of Kalmar's dedicated staff, coupled with transparency and increased predictability of costs.

Kalmar Care is available in three different service models: our two customisable contracts – Essential Care and Complete Care – and our flexible solution On Demand Care.

Service models:



Essential Care:

a maintenance solution to keep your equipment in an optimal condition.



Complete Care:

a complete service solution providing peace of mind and maximum equipment uptime.



On Demand Care:

top-of-the-line service whenever you need it.

- Maintenance Planning
- Preventive Maintenance
- Predictive Maintenance
- Corrective Maintenance
- Preventive Spare Parts
- Corrective Spare Parts
- Lubricants
- MyKalmar
- Kalmar Insight
- Tyre Maintenance
- Battery Maintenance

	Maintenance Planning	Preventive Maintenance	Predictive Maintenance	Corrective Maintenance	Preventive Spare Parts	Corrective Spare Parts	Lubricants	MyKalmar	Kalmar Insight	Tyre Maintenance	Battery Maintenance
Essential Care	●	●					●		●	●	●
Complete Care	●	●	●	●	●	●	●	●	●	●	●
On Demand Care	Top-of-the-line service whenever you need it										

More SUPPORT

Our job doesn't stop once we deliver your new application. We also offer a range of support services that help keep your new Kalmar Straddle Carrier and equipment running at their

optimal best. With a global network of over 1,500 service and technical support staff in over 100 countries, we will always have someone nearby to provide the support you need.

MyKalmar.

Keeping your cargo moving.

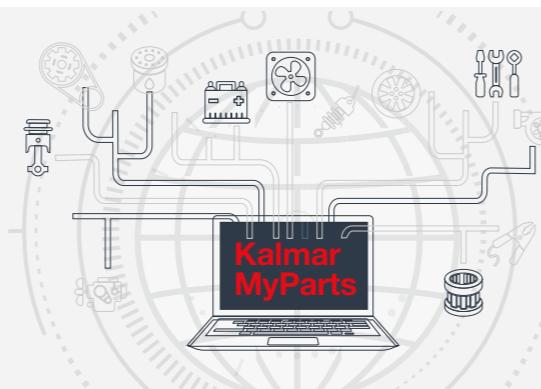
The MyKalmar portal brings together many of Kalmar's digital services into one place. With a single point of access and a user-friendly design you'll benefit from greater visibility and control over your maintenance activities, parts ordering and equipment performance - helping you improve your operational performance, safety and efficiency across your entire fleet.



Kalmar MyParts.

A smarter way to order your parts.

Kalmar MyParts is your one stop shop for all the parts you need which is accessible through MyKalmar. Open 24/7, accessible on any screen and available in different languages, MyParts stocks 100s of thousands of Kalmar Genuine Parts at any given time and we can have them delivered quickly to you, no matter where you are in the world. You can search, order and then track your order all through the same application. MyParts has been designed to make your life easier.



Kalmar Insight.

Optimise your operations with Insight.

Kalmar Insight* is a performance management tool for cargo handling, which gives you an easy to use overview of your fleet operations, by aggregating data from multiple sources, including equipment built by other manufacturers. Review your entire fleet activities, schedule maintenance activities and order the required parts automatically. All enabling you to take action on real-time information, that will help improve your overall operations immediately. Kalmar Insight comes fitted and ready to be activated in all new Kalmar equipment, it can also be retrofitted into existing Kalmar equipment or those built by other manufacturers.



*Installation costs and/or an annual subscription fee may apply.

Kalmar Training.

Enhance your skills.

To get the most out of your new machine our training centre offers a range of courses for both your technicians and operators. Operators can be taught how to drive the machine for optimum performance and minimum waste, and to learn what needs to be checked daily for optimal safety. Technicians can be educated with the knowledge they need to keep your new equipment in top condition in a safe way. Courses are a mix of theory and hands-on experience.



Kalmar Genuine Parts.

When the right part matters. When something needs to be replaced urgently, you need a spare part that meets your exact needs – immediately. Kalmar offers a rapid delivery service for over 50,000 premium-quality genuine parts to anywhere in the world, with installation support if needed.



Kalmar Modernisation Services.

Kalmar Modernisation Services enables you to upgrade your fleet including Automatic Stacking Cranes (ASC), Rubber Tyred Gantry Cranes (RTGs), Rail Mounted Gantry Cranes (RMGs), Ship to Shore Cranes (STS), and Straddle Carriers and help maximise their performance. With our industry-leading experts and decades-long experience we can help you lower your fleet's total cost of ownership and adapt to your changing operational requirements.



Kalmar Automation Support Services.

Kalmar offers a range of support services to help keep your automation software running smoothly.

Automation Software Updates, which are done quarterly and ensure your software has the latest fixes and enhancements.

Automation Remote Support, which allows you to address unplanned incidents or interruptions 24/7. On-site Automation Personnel Services, where we can offer additional resources to support your tech team in managing your automation software.

Automation Software Deployment, is a tailored service that can assist your tech team with software updates, on-site deployment and can be extended to cover minor configuration changes to entire system upgrades.

Professional Services offers a vast range of automation support services from process optimisation to emulation services, training or customised automation solutions.



Kalmar Terminal Design Services.

Building a new terminal, changing operational mode or renewing your current operations is a demanding and risky task, which is why you want a knowledgeable and experienced partner. Kalmar Terminal Design Services, with over 250 projects delivered globally in the last 15 years, provides a full range of design services to help you realise your ambitions and improve the capacity and flow of cargo through your terminal.





KALMAR

Making your every move count

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