



Kalmar offers the widest range of cargo handling solutions and services to ports, terminals, distribution centres and heavy industry. Kalmar is the industry forerunner in terminal automation and in energy-efficient container handling, with one in four container moves around the globe being handled by a Kalmar solution. Through our extensive product portfolio, global service network and ability to enable a seamless integration of different terminal processes, Kalmar improves the efficiency of every move. Kalmar is part of Cargotec.
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Kalmar OneTerminal

Optimise your performance every day





One Solution. One Team. Kalmar OneTerminal

Realise the full potential of your terminal operations today

Kalmar OneTerminal provides an integrated automation solution delivered by one core team that brings together Kalmar and Navis software systems, equipment and services for seamless deployment.

Whether you are automating a greenfield site or an existing one, Kalmar OneTerminal will help you realise your investments sooner and optimise your terminal's performance for

today and tomorrow. You can expect Kalmar's superior service and dedicated operational support throughout the lifetime of your terminal.

With one key contact and one core team, Kalmar OneTerminal makes automation accessible, mitigates the risks involved, and helps you realise the full potential of your terminal operations.

Response to industry challenge

In today's container terminals, automation is widely accepted as the way towards improved productivity, efficiency and competitiveness. However, it is often perceived as a difficult task that requires terminal operators to integrate multiple complex systems from various equipment and software providers.

With the port industry on the verge of the next big wave of automation, Kalmar and Navis

lead the way in addressing the challenges that the industry faces. Kalmar OneTerminal provides seamless integration of the technologies that enable three field-proven automated terminal concepts. It is an integrated offering and an approach by which Kalmar and Navis experience and expertise are applied in partnership with you to help realise your potential.



Automating new and existing terminals

Whether building a greenfield terminal or converting a brownfield terminal, Kalmar OneTerminal ensures that your automation systems work together optimally. Until recently equipment automation was primarily considered for new terminals. Now Kalmar solutions can help realise the transition from a manual operation to a partial or fully automated operation. By implementing a step-by-step approach you will be able to transition your operations, layout and business model progressively.

The latest terminal designs combine a range of the leading container handling technologies.

To ensure automation is as easy as possible for terminals to adopt, Kalmar OneTerminal provides you with a range of products that can be deployed and configured in the most common operational models. The combined experience and expertise of Kalmar and Navis is applied to ensure an efficient realisation or transition. You will have one partner with the industry's leading team of experts at your service – not only during project implementation but also after the go-live, and when the operations are ramping up and then during the lifetime of the solution.

Optimise your performance every day.

Kalmar OneTerminal has been designed to support your terminal's evolution. Whether you are looking to make incremental improvements to your existing automated operation, or further improve operations through design and development, Kalmar will work with you to develop and align our solutions.

Whether you opt for an ASC, AutoRTG or AutoStrad terminal, Kalmar OneTerminal provides an integrated and automated platform that brings together Kalmar and Navis experience and expertise.

You can expect the shortest time to value, high efficiency and dedicated operational support to maintain and optimise your business performance over the lifetime of the solution.



The industry standard TOS: Navis N4

The right container terminal operating system (TOS) can ensure the long-term success of a terminal by being efficient, adaptable, cost-effective and scalable. In our rapidly changing world, you need a management system that enhances container terminal operational efficiency and supports future growth while reducing operational overhead expenses and maintaining customer-focused services.

Navis N4 is a sophisticated and modern technology platform that optimises efficiency and powers the intelligent movement of goods through container terminals worldwide. This next generation TOS is designed to offer unparalleled value and grows with the terminal at the lowest possible total cost of ownership (TCO). The N4 technology platform is very

maintainable and adaptable, allowing customers the flexibility and scalability they need to run their operations – from a single terminal to multiple terminals across multiple geographic locations.

In operation today at more than 100 sites worldwide, more than 130 sites have committed to Navis N4.

N4 is pre-integrated with Kalmar TLS as part of its software development cycle. The combined product offering is designed, developed and tested to ensure that it supports all the core operational processes demanded by each of the operational business models supported by Kalmar OneTerminal.

Controlling your equipment

The Kalmar TLS equipment control system is key to realising the full potential of your automated terminal. It ensures that your automated equipment and terminal operating system (TOS) work in harmony, conducting the right sequence while accommodating the exceptions that are typical in your operations. As a centralised system Kalmar TLS ensures easier implementation and reduced complexity.

As the most flexible and widely adopted equipment control system, TLS is able to interface with any type of system – thus ensuring your operations are captured in a single platform. The common automation platform integrates your automated equipment, process automation solutions and access control, safety and fault monitoring systems.

The container flow from ship to yard requires seamless and safe operation of ship-to-shore cranes, horizontal transportation and stacking systems. With all automation integrated in Kalmar TLS, it allows you to focus on integration testing and securing safe interactions between equipment. This ensures both a smooth start to operations and a high productivity level at go live.

Three terminal concepts

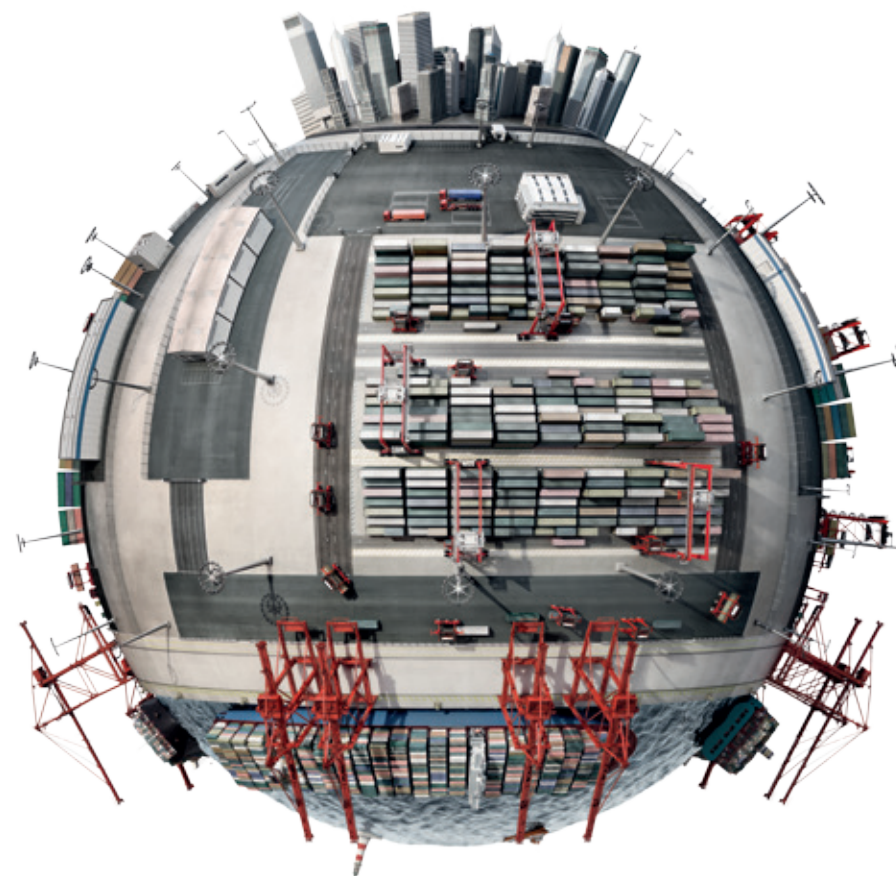


ASC terminal

End-to-end automation from water- to landside is possible through the combination of Kalmar ASCs, AutoShuttles and automated truck handling. The solutions improve the efficiency of operations, space and energy consumption by ensuring a predictable and sustainable performance.

The combination of ASCs and AutoShuttles is easily scalable, helping you maintain high

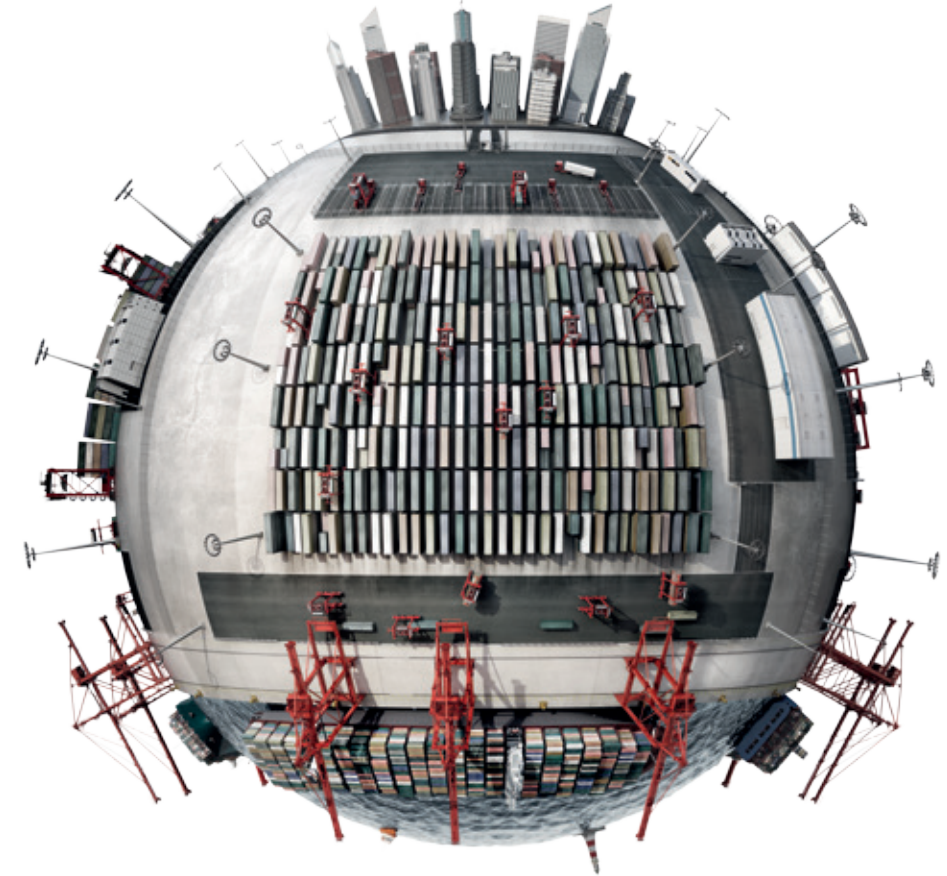
waterside productivity and ensuring the capacity can be increased in phases. For brownfield terminals, the space freed up could be used for an expansion of the stacking area that enables you to increase operational income. The solution helps you avoid unexpected interruptions that impact productivity and profitability.



AutoRTG terminal

Rubber-tyred gantry cranes (RTGs) are the most popular equipment for container stacking at terminals around the world, especially where high-capacity stacking and good manoeuvrability are key requirements. To drive greater operator safety and efficiency your existing RTGs can now be automated, allowing them to be safely managed remotely and at an operator ratio of 1:3 for exception handling.

The AutoRTG is a great solution for both medium-sized and larger terminals. In addition to automating the RTG you can make operations even safer by removing the need for people to be in the handling lane under the crane by introducing automated shuttle carriers.



AutoStrad terminal

AutoStrad operations are typically suitable for small and midsize terminals. Its realisation can be simple, low-risk and achieved within a relatively short time frame. Only a single piece of equipment is required for the automation of your quay, stack and landside operations. You can convert from a manual to an automated straddle carrier terminal without any temporary drop in capacity and throughput.

The AutoStrad navigates based on virtual routes within 2 cm accuracy, providing unmatched reliability and flexibility. In combination with the ability to simply deposit the box on the pavement, decoupling the duty cycles of quay and yard cranes, and allowing building of buffer stacks behind the crane, the flexibility of the technology moves you ahead. This intelligent technology makes the AutoStrad the most flexible way to realise your automated terminal.



Kalmar Care for automation

Kalmar is dedicated to optimise the value of your terminal equipment throughout its lifetime. Maintaining an automated terminal is a whole new game – and we are the most experienced player in the field.

including asset structures and maintenance programs. They will also help in training and recruiting technicians, and support your operators in their daily work during the early steps of your operations.

Fast track to commercial operations

Kalmar Care start-up services are designed to streamline the commercial operations start-up phase. Our expertise has been proved in real life cases, helping you to reach the planned throughput even months earlier. In the heart of the service is our core team. Your maintenance management is set up faster, required competencies are at hand from day one, and your maintenance personnel trained by experienced professionals. For example, our experts will plan and implement CMMS,

Making sure your business never stops

Kalmar Optimal Care contract provides guaranteed availability of your equipment or terminal, as well as financial predictability, over a longer term partnership. If you select Kalmar start-up services, the same core team will continue to support you 24/7, optimising the value of your terminal. With Kalmar Optimal Care, you can reach even 10% savings in operational costs through, for example, our spare parts management and other optimisation services.

Examples of services in Kalmar Optimal Care contract

Technical services <ul style="list-style-type: none"> • Inspections • Preventive and corrective maintenance • Software and automation maintenance • Component replacement and overhaul • Port infrastructure maintenance 	Availability management <ul style="list-style-type: none"> • Maintenance planning and optimisation • Availability reporting (CMMS) • On-line trouble shooting 	Spare parts management <ul style="list-style-type: none"> • Inventory management • Capital item management and financing • Logistics management
Operations <ul style="list-style-type: none"> • Skilled operations personnel 	Training <ul style="list-style-type: none"> • Technical training • Operations training 	Financial services <ul style="list-style-type: none"> • Rental and leasing of mobile equipment

Read more at kalmarglobal.com/kalmarcare



Supporting realisation

Experience and expertise

Planning and implementing a major terminal automation project may take four or five years, but the service life of the system can be over two decades. Through experience and expertise, Kalmar will work with you to design and implement the optimal configuration of the solution, focusing on ensuring project success and optimising terminal performance.

Both Kalmar and Navis have successfully completed large automation projects over the past decade. These experiences, alongside the development of our products, have all contributed to the formation of the OneTerminal solution.

Success is not achieved at go-live, but needs to be built up over time and repeated every operational day. With Kalmar OneTerminal our

people, work with you on a day-to-day basis to provide you with an unique insight into the performance of all components within the solution, whether it is the equipment fleet, the IT systems or the operational performance of the terminal.

The experience we have gained from our automation projects have allowed us to get to where we are as an organisation. Today, our combined knowledge is the best-in-class in our industry.

As a customer, you can expect this experience to translate into the shortest time to value, high efficiency and dedicated operational support. We will maintain and boost your business performance over the lifetime of the solution.