

YARD AUTOMATION

Peace of mind with perfect spreader reliability

BROMMA

A Tradition of Innovation

ALL IS WELL IN YOUR AUTOMATED TERMINAL

Thanks to reliable spreader solutions from Bromma, your entire fleet of yard spreaders can be monitored and controlled from a central point, in or outside your automated terminal.

One by one, the world's terminals are being automated. And the driving forces are the same round the globe: higher productivity at a lower cost.

Yet automated terminal operation is particularly vulnerable to breakdowns, even more so than manual operation. Any unplanned standstill will last longer and the consequences both upstream and downstream are more troublesome.

That is why almost every terminal planning to automate are looking to the most reliable spreaders available – Bromma's. Because automated terminal operation is no place for experiments.

With close to 1000 crane spreaders currently in service or ordered to automated terminals, Bromma is your most experienced automation partner. Besides our proven record, our all-electric spreaders are appreciated for their reliability, ease of maintenance and durability.

Our yard spreaders put you in control of your automated terminal. And let you experience that desirable feeling that all is well.

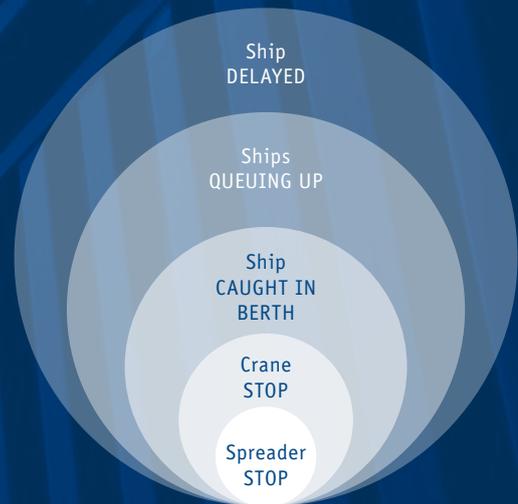
DRIVERS FOR AUTOMATING A TERMINAL

Automating your yard brings many benefits. Most obviously, safety is increased as fewer need to be present in the yard during operation. Automation also increases stacking capacity while reducing faults due to the human factor. Fewer people in and around the yard also reduces the risk of personal injury. Automation also means it will be easier to plan maintenance and crane performance more efficiently.



AVOID THE SPREADER BUTTERFLY EFFECT

If your spreader fails, so will your crane. Then ships will be delayed in berth, and soon vessels will begin to queue up outside the terminal. In worst case, your customers' goods will be delayed to its destination. This "butterfly effect" of unfortunate events can be avoided by investing in premium spreader quality and reliability. And that means money saved for everyone involved.



THE MODERN TERMINAL

Bromma delivered the spreaders to the world's first yard crane automation projects in the 1990s, and have since continued to lead the way in automation-friendly spreaders and software.

Thanks to our deep understanding and experience of terminal needs, we have played a key role in most of the automatic stacking crane (ASC) projects that have been carried out around the world.

One of our success factors is our eco-friendly, all-electric yard crane spreaders. Compared to conventional spreaders, all-electric spreaders are optimally suitable for yard automation due to their extremely reliable operation and robust design.

Thanks to options such as SCS⁴ or GreenZone, you can expect our spreaders to have a more predictable performance and lower maintenance requirements. In addition, the absence of oil eliminates the risk of oil leakage.

Potential problems can therefore be fixed during planned stops. This means you can avoid costly unplanned standstills and disrupted yard automation.

NO SURPRISES WITH BROMMA

Proven technical solutions

High quality raw materials and components

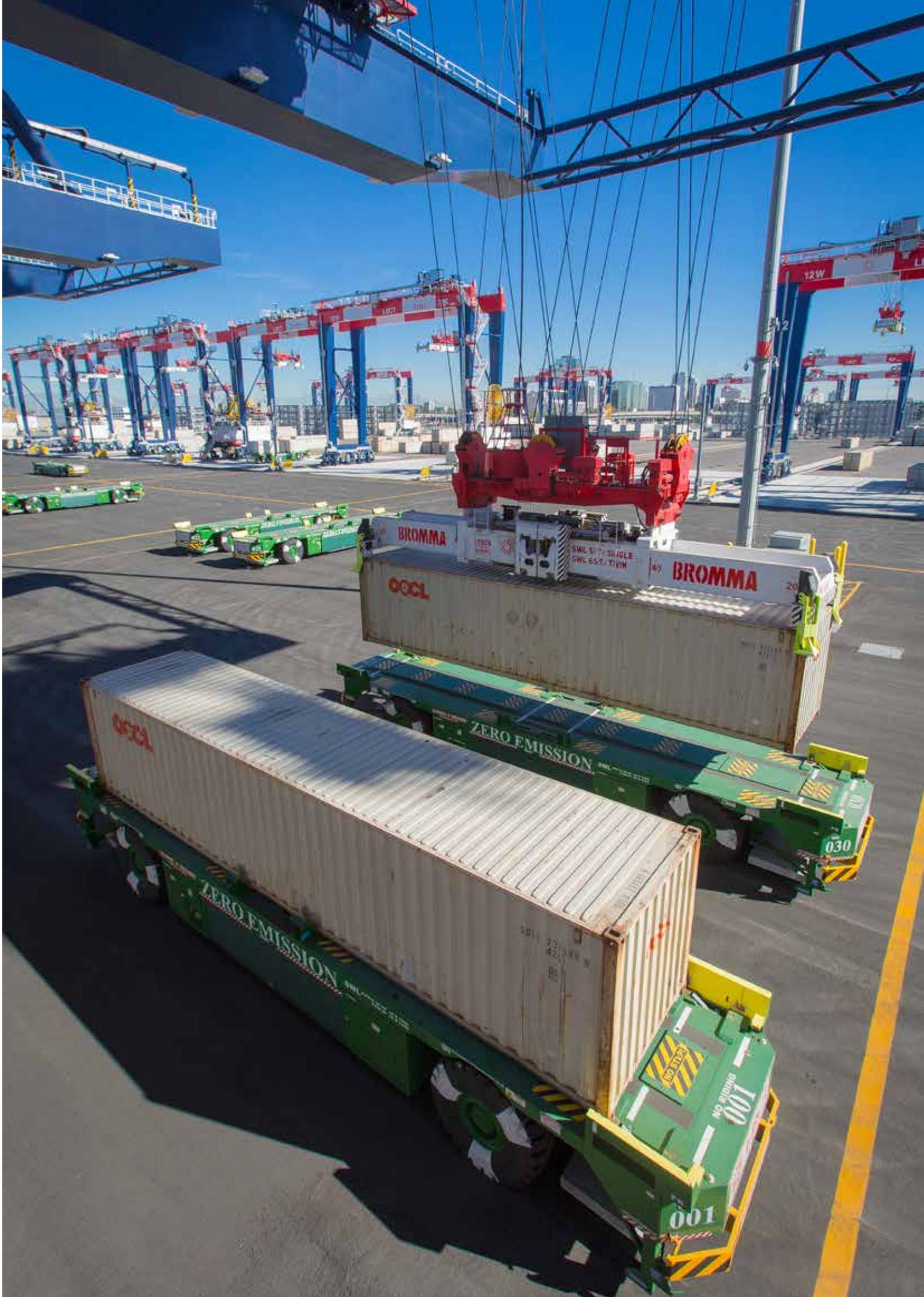
Solutions to reduce risks of accidents

Predictability of performance and maintenance requirements

MARKET LEADER IN ASC SPREADERS

More than 3000 all-electric yard spreaders sold.

Nearly 1000 units sold for ASC applications.



BROMMA

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BROMMA

ZERO EMISSION

ZERO EMISSION

NO DRIVING
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12W

12W

12

QUALITY THINKING THROUGH AND THROUGH

Bromma's success is due to a solid quality thinking down to the smallest detail. Our customers have come to expect maximum uptime and terminal throughput.

Product quality

At Bromma, ensuring highest product quality is an inherent part of our being. Our products go on and on and must always do. We are shaped by the Swedish tradition of settling only for the best quality. It is, quite literally, in our DNA.

Production quality

Our spreaders are made of high-quality European steel. This ensures high uptime and long service life as well as guaranteeing a sustainable production process. Manufacturing is carried out by skilled personnel in Asia. The best of two worlds.

Design quality

No two terminals are alike. Bromma spreaders are flexible enough to meet your specific needs. Our modular design platform makes it possible to build every spreader according to your specification.

Service quality

Any mechanical piece of equipment will eventually stop. It is an inevitable part of reality. But once it happens, you can trust us to be there to get you up and running again – fast. We are present all over the world so that you can count on our dedicated personnel to be there for you.



SWEDISH HERITAGE – QUALITY ASSURED

The Bromma brand carries a proud Swedish heritage. Considering its modest population, a surprisingly high number of brands of Swedish origin have over the years taken leadership positions in various industrial segments, including the automotive, power and technology, and pharmaceutical industry.

Bromma has been at the forefront of this industrial tradition for more than 50 years, and will continue to carry its industrial heritage into the future, thus ensuring quality, reliability and service-mindedness to customers around the world. So that you can depend on your automated yard to work as expected.



Successful yard automation is like a chain of interdependent events that must work perfectly together. And as the saying goes: a chain is only as strong as its weakest link.

Spreaders are located closest to the containers and therefore exposed to the elements and to constant G forces. It takes truly robust spreaders to withstand the strain and ensure uptime.

Bromma is the world's leader in spreaders. We have been in the industry since the dawn of containerization, always in sync with developments in the terminal industry.

We introduced spreaders for yard automation in the 1990s and have been a driving force ever since.

For example, we launched the first all-electric spreader in 2001.



This was a decisive moment in modern terminal history, lifting automated yard handling to a new level.

Our spreaders are always present when it comes to terminal automation – and will continue to be so in the future.

Almost as if they were an integral part of every automated terminal. And of logistics as such.



PRODUCTS

Bromma offers a range of spreaders suitable for yard automation, including our best-selling all-electric YSX45E spreader.

The Bromma YSX45E all-electric yard crane spreader is perfectly suitable for use in ASC applications. With their fewer service points, lower weight and absence of hydraulics, this spreader features high availability, easy maintenance and extended durability.

Made of European high tensile steel, these spreaders deliver high productivity performance, long service life and maximum safety. Yet they are surprisingly lightweight, in many cases several metric tons lighter than comparable spreaders in the market.

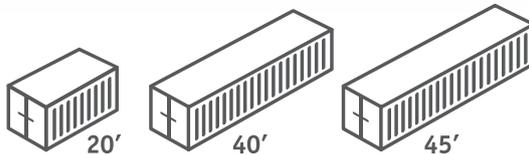
Since energy is consumed only when components are activated, energy consumption is reduced by 90% compared to a hydraulic spreader. This also implies fewer running hours for the components, thus reducing maintenance requirements while increasing reliability.

Incident prevention and environmental concern are priorities for these all-electric spreaders. And because the spreaders contain no oil, there is no risk of spillage and related pollution of your terminal.





LIFT COMBINATIONS



Other combinations also available

QUICK FACTS

90% reduction of power consumption (compared to a hydraulic spreader)

Silent and environmental friendly

High reliability with all-electric spreaders

Durable and strong despite low weight

Easy to maintain and long service intervals

Designed according to EN13001 and EN15056

TECHNICAL DATA YSX45E

LIFTING CAPACITY

(according to EN 13001, HC2, HD1, U7, Q3)

- 41 metric tons evenly loaded
- 41 metric tons $\pm 10\%$ eccentric loading
- Lifting lugs 4 x 10 metric tons in end beams

HOISTING SPEED

Max 1 m/s

WEIGHT

6.4 metric tons (without extra equipment)

TELESCOPIC MOTION

20ft to 45ft in approx. 30 sec

TWISTLOCK ROTATION

90° in approx. 1 sec

POWER SUPPLY

400/230 V AC 50 Hz or otherwise as agreed

MAX POWER CONSUMPTION

0–3.0 kW

CONTROL VOLTAGE

24 V DC

CONTROL SYSTEM

Relay (SCS⁴ available as an option)

INSTALLED POWER

Telescopic system 3.0 kW
Twistlock system 2 x 0.37 kW
Total on spreader 4.5 kW

ELECTRICAL CABINET

Stainless steel IP66

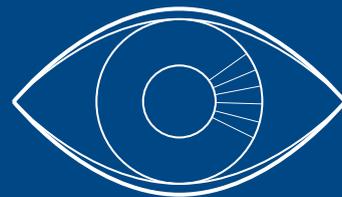
THE SOLUTION

Bromma offers complete spreader solutions for your automated terminal. These solutions include a range of options and features that improve the performance of your spreaders and let you control anything from an individual spreader to an entire fleet of spreaders.



GREEN ZONE™

Green Zone is an easy-to-use software app package that extends the reach of spreader data to the Internet. Combining SCS⁴ with Green Zone, you can remotely access operational data from each spreader in your terminal. Spreader data becomes transparent for e.g. operations and service personnel, allowing you to remotely monitor the performance of your spreader fleet.



TWIN TWENTY DETECTION SYSTEM

The Bromma TTDS is a tool to assist the crane operator in detecting a dangerous situation. The system is designed to sense the presence of two 20 foot containers in a 40 foot ship cell by detecting the gap between the two containers. Bromma's TTDS technology is based on seven photoelectric sensors. Five sensors are used to detect a gap, while two sensors are used to detect the presence of the containers.



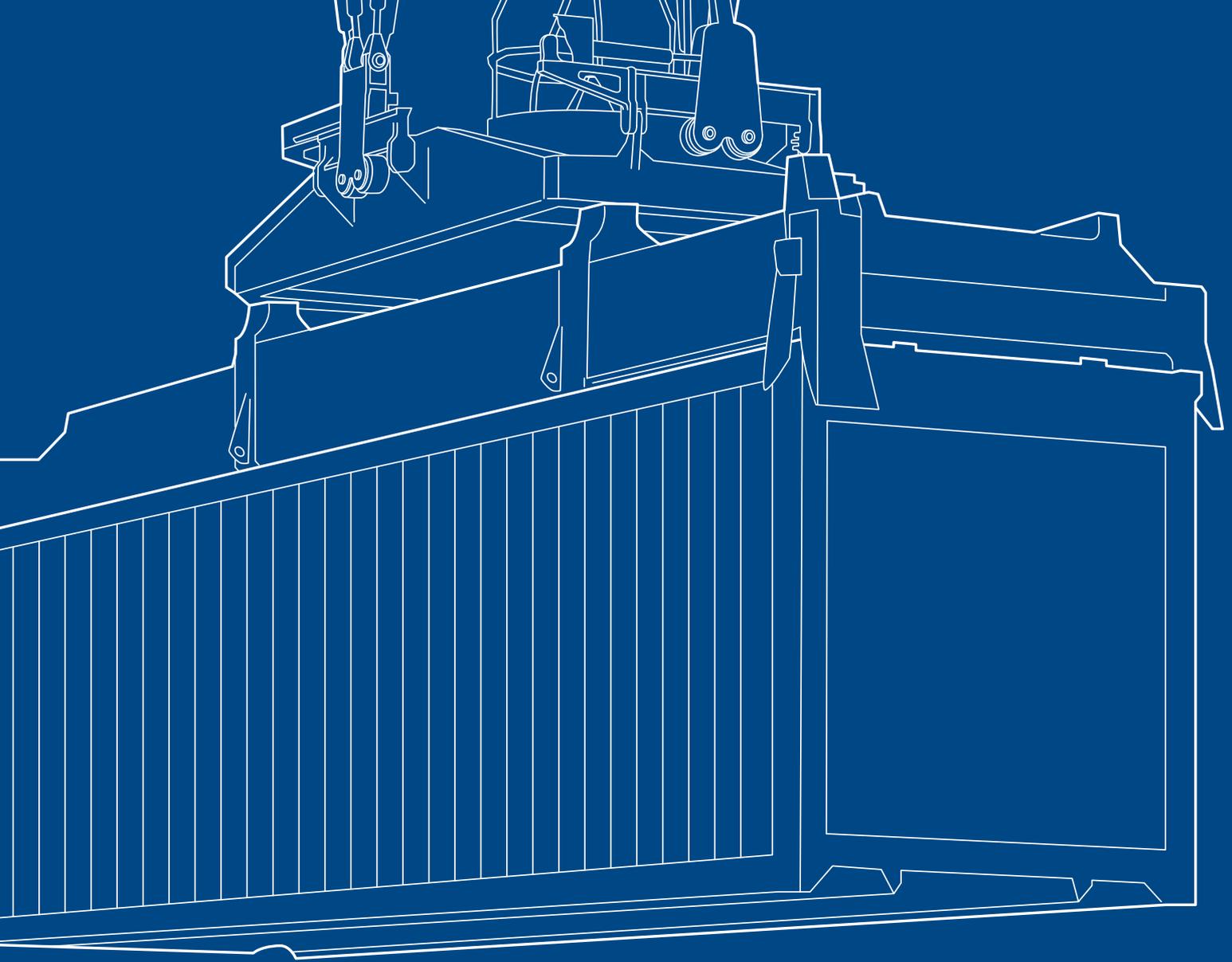
LANDED HOLD SYSTEM

The Landed Hold System is designed to sense whether the spreader is holding on to a container during operation. The system can help to improve accident prevention in automated terminals by providing information of the actual situation under the spreader, and thereby avoiding unfortunate situations.



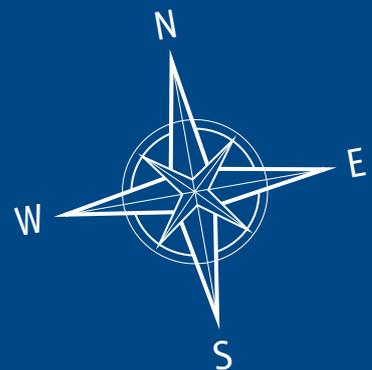
SCS⁴ CONTROL SYSTEM

The unique combination of Bromma's all-electric spreaders and control system provides exceptional operational reliability. The SCS⁴ is the latest control system version, introducing a step change in spreader control. Monitoring crucial operational parameters, SCS⁴ adds to the high spreader reliability necessary for successful terminal automation. Using rule-based intelligence, the control system helps you predict and prevent potential spreader problems.



LOAD-SENSING SYSTEM

Bromma's load-sensing system makes it easy to weigh containers during normal crane operation as part of the crane's lifting cycle. You don't have to spend any additional time on weighing containers, e.g. using a weigh bridge. This will help you cut lead times and make containers flow more smoothly through the terminal. The system also enables important functions for monitoring the operation and avoiding accidents when lifting.



ELECTRIC FLIPPER

Electric flippers help to smoothen and simplify the landing of the spreader on your containers, ensuring fast and effective operation in your automated terminal. Bromma offers a wide range of flipper arms for various customer needs and requirements.

SERVICES

Breakdowns will happen, whether we like or not. That's the very nature of any piece of mechanical equipment. Not even a Bromma spreader escapes being affected by the elements.

And although tools such as SCS⁴ and GreenZone improve predictability, things do happen out of the plan. Then it is important to have a close partner to work with.

Our services are all about ensuring your operational reliability. Our service portfolio contains every service you need to keep your equipment

operational at all times – services delivered timely and in a friendly spirit, on a global basis.

Besides spare parts, maintenance and repairs, we offer to help customers keep their equipment intact and in pace with time through our upgrade and refurbishment services.

At our training center, Bromma University, we provide customers with a comprehensive understanding of the spreader itself, the maintenance of the equipment and the latest development of our products.



Spare parts



Refurbishments



Service & maintenance

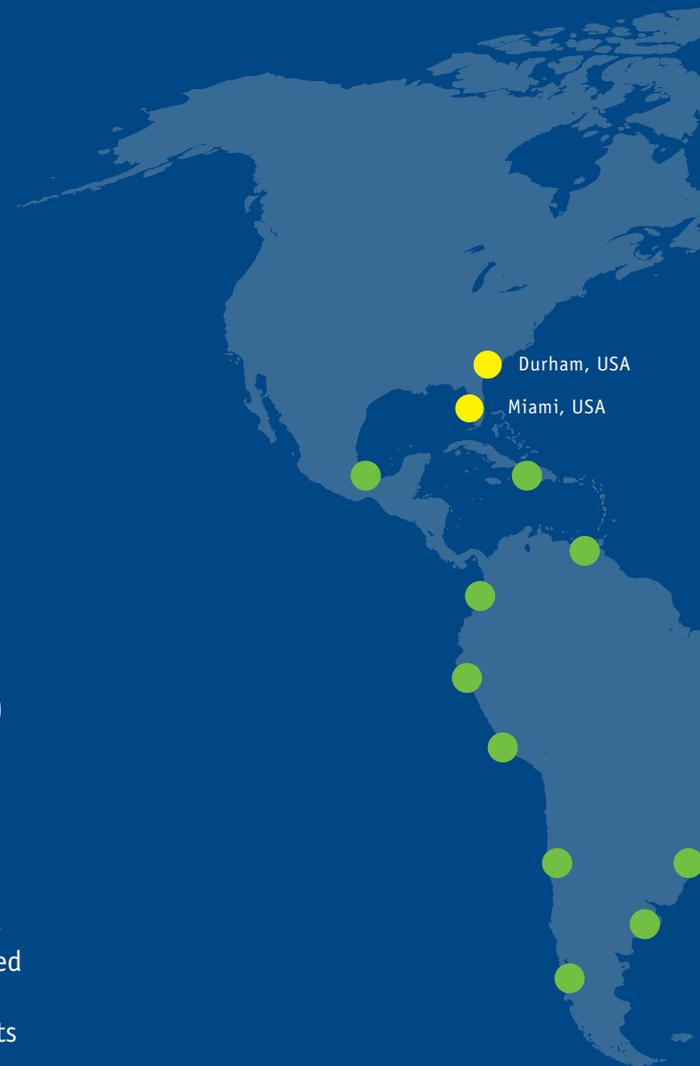


Training



Upgrades

We offer a complete range of spreader-related services, including spare parts handling, refurbishment (giving new life to used spreaders), and upgrading your existing equipment to current standards. We also provide service and maintenance agreements and many practical and theoretical courses.



A GLOBAL COMPANY

Bromma is a global organization with an extensive sales and service network around the world. Our spreaders are manufactured in Malaysia, at the heart of the dynamic South-East Asian market.

We have delivered spreaders to more than 500 terminals in over 90 countries on six continents. In all, more than 14,000 crane spreaders and rotators have been put into service, 9,000 of which are still in operation around the globe.

Today, we manufacture close to 2,000 spreaders of different types every year. Our spreaders are currently in use in 99 of the top-100 ports worldwide.

Our sales and service network has a far-reaching footprint. We are present with own sales offices on all continents, and with an extensive network of agents, we are able to support customers in every country in the world.



