

Bromma Report

Summer 2013



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Think Twice and Increase Productivity

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Think Twice and Increase Productivity

Ships are getting bigger and bigger. Within soon Maersk will introduce its new Triple-E vessel, a gigantic ship that will be 400 metres (1,312 ft) long and 59 metres (194 ft) wide. While only 3 metres (9.8 ft) longer and 4 metres (13 ft) wider than E-class ships, the Triple-E ships will be able to carry 2,500 more containers. With a draft of 14.5 metres (48 ft), they will be too deep to use any port in the Americas or cross the Panama Canal, but will be able to transit the Suez Canal when sailing between Europe and Asia.

As the biggest vessels get bigger, also the size of the smaller ships will increase, as it is expected that the oldest - and smallest - vessel capacity is replaced. As a consequence of this development the whole vessel

spectrum will shift size-wise. Bigger ships require efficiency in operations – the ability to push more boxes, through an existing space within the same time-frame.

Productivity, Productivity, Productivity!

One way to unload mega-ships faster is to increase cycle speed. However, progress in this area is difficult. There are significant hurdles to increasing cycle speed – anti-sway and driver control issues are just two examples.

However, other productivity approaches – especially changes in spreader design – can



The Maersk Triple-E vessel is gigantic and will be able to carry more containers than any other ship. More TEU's calls for more efficient loading and unloading.



Tandem E³ is the new twin lift spreader from Bromma. It is spreader optimized to meet the productivity requirements from the new mega vessels.

have a dramatic impact on efficiency. Studies indicate that volume moved per ship-to-shore crane can vary as much as 40% between comparable terminals. The type of spreader used- and the brand of spreader selected, can have a major impact on operating efficiency.

A New Tandem Concept From Bromma

Bromma now introduces a new Tandem™ lift solution, specifically developed to meet the higher requirements on productivity coming hand-in-hand with the introduction of the new mega vessels and the overall growing vessel size.

A Spreader Solution - Not Only A Spreader

The idea of lifting two 40' or 45' containers with the same spreader is not new. Bromma introduced the Tandem™ spreaders on

the market almost 10 years ago. Various factors such as crane capacity and capacity to handle the containers under the crane have however held back on the implementation of such technology in the terminal operations. Another concern by the terminal operators has been the manual interaction needed and the time consumed when switching between Tandem and single lift operation.

Now Bromma extends the Tandem™ family with the Tandem E³ spreader, a spreader designed and optimized for handling 40' and 45' containers.

The development of Tandem E³ is driven by the introduction of Triple-E vessels and the expectations that a big share of the containers carried by these vessels will be 40' and 45'.

As a result of only handling 40' and 45' containers the weight of the Tandem E³ spreader has been held down. A lighter spreader is

faster and less energy consuming, important factors for any terminal operator but even more so when the mega-vessels starts sailing the oceans.

The Tandem E³ spreader is introduced as part of a further improved and revitalized Tandem™ concept. The concept includes - in addition to the various spreader models - a specifically developed Tandem headblock and an automatic electrical connector. The Tandem headblock includes expandable sheave wheels to provide better control of the balance between different container weights. The automatic connector enables the switching between spreaders to be made without manual interaction and within a significantly reduced time.

The new headblock is developed to be used in combination with the Tandem™ spreaders, but can be used with any Bromma spreader, as well as spreaders of other brands.

Bromma Marketing Director, Lars Meurling explains: *“The new Tandem™ concept enables switching between Tandem and single lift operation within three minutes and without manual interaction. This means that any effect in terms of productivity losses due to long switch times is eliminated. It also means that a major safety concern amongst the terminal operators can be avoided: humans climbing the spreader to disconnect and connect the electrical plug on the spreader is no longer needed. I believe the combination of the new headblock and the new E³ spreader will be a very attractive solution for terminals in general but specifically the terminals where the large vessels will call.”*

The new automatic connector is a joint development between Bromma and an external partner. The connector will be available through Bromma as well as through the external partners sales channels and can be used not only with the Bromma Tandem™ concept but with any spreader. It is developed to meet the general requirements for equipment mounted on a spreader including

extreme challenges such as snow, sand and heat.

Terminal Safety

Safety aspects play an important role for Bromma engineering when products are being developed or upgraded. No product leaves either the drawing board or the production facilities without being truly examined out of a safety perspective. As for the new Tandem concept the manual work when switching spreader has been eliminated. It can all be handled from the crane cabin or crane control. Vikram Raman, VP Sales says; *“Workers safety is a big thing for Bromma. As a market leader we have the responsibility to put to market only products that are of high quality and absolutely safe to work with. Container terminals in general are hazardous environments and Bromma alone can of course not change this fact. But, what we can do is deliver products that are truly optimized for safe operations. One part is often to reduce the need of manual handling to a minimum, or as for the new Tandem™ concept, totally remove the need of manual work”.*

No Compromises

The Bromma Tandem solutions are optimized for efficient handling of two 40´ or 45´ containers or even up to four 20´ containers with some of the spreader models. Spreader weight and functionality have been specifically targeted. We've made no compromises.

The new Tandem spreader concept will be delivered to the first customer mid-2013. The interest from the market is extensive.

For further information on the Tandem product line, contact your Bromma representative.

An Interview With Jan Hammargren

Head of Bromma Germany, Mr Jan Hammargren, came to Bromma as a trainee in the early -70's. After a few years of higher studies in Economics, he has held several important positions at Bromma including globally responsible for Service & Spareparts and Account Manager for Liebherr and Gottwald. Mr Hammargren was born in Sweden but has lived most of his life in Germany. From his office in Langenhagen, Germany Mr Hammargren is leading the sales also in Poland, Austria, Switzerland, Romania and Bulgaria.



BR Jan, you have worked for Bromma for more than 30 years, how did your Bromma story begin?

Jan *It was actually my father who started Bromma in Germany back in 1974. I began working for Bromma in Stockholm after school, that was in 1983. Since the early -90's I have worked at Bromma Germany, initially taking care of the OEM's, Liebherr and Gottwald, but now also the other customer segments.*

BR That's a long time, how has the industry changed during your years in Germany?

Jan *The industry has changed a lot since I started. Containerized handling has grown significantly. There are much larger ships. The competition between the terminals have increased which means lower prices per box but at the same time the loading/unloading time has decreased. This has affected the type of container handling equipment but also the need for high quality, high performance, low downtime, fast spare parts supply and easy maintenance of the equipment.*

BR How do you see the "thinking" of the customers has changed from when you entered the industry until today?

Jan *In former times the technical departments and the workshops in the terminals had the power to decide which equipment should be used. Today they are more like a consultant for the terminals and the final decision maker is sitting in the purchase department. This change has made it very important for Bromma to clarify even more than in the past that the initial purchase price for a spreader isn't the most important criteria when selecting equipment, it is the life time cost. Bromma has never wanted and can not be the cheapest spreader manufacturer. We want to provide our customers with the best spreader package throughout its lifetime!*

BR Germany has always been an important region for Bromma. The history of good relationships with terminals such as CTA and CTB goes many years back. How have Bromma been able to establish and maintain such a strong partnership with the customers in Germany?



Germany, a big country with strategic location between the Baltic Sea in the east and the North Sea in the west.

Jan *Bromma has never been just “any spreader manufacturer”. We have always been there to support our customers which I believe is one of the main reasons we have succeeded to remain strong after more than 50 years in this business. Bromma has over these years supplied spreaders of outstanding performance. We have been a problem solver for our customers. We have the best worldwide after sales services in the spreader market. The Bromma spreaders are easy to maintain. Spare parts are available on short delivery time and our pricing have always been fair and market oriented. Last but not least, business is about people. Our customers trust us. They know we are here and will support them through the product lifetime.*

BR What would you say is driving the market right now and how can Bromma adapt to the changing environment?

Jan *I think Bromma is already on the right track regarding the most important points driving the market, which I believe to be proven, reliable technology with high performance. The equipment must be easy to understand and easy to maintain. We are present, talking to our customers every day so we know very early about new trends, requi-*

rements, developments which we have to take very seriously. This has made us to what we are today, the market and technical leader. Just a few examples of our success in the last couple of years are the range of electrical spreaders, the spreaders for the automated terminals, our SCS³/SCS⁴ technology, Green Zone and the twistlock load sensing system.

“I think the main reason to choose Bromma on automated cranes is that these projects are no place to experiment with the spreaders.”

BR Automation is a strong trend in the container handling business. Bromma has delivered more than 500 spreaders to automation projects around the world over the last 20 years. How is the automation trend visible in Germany?

Jan *The automation trend is very visible in Germany. CTA was one of the first terminals which started in 2001 with a very high degree of automation using double spreaders on the ship-to-shore cranes, using AGVs and fully automated yard cranes. A few years later also CTB started to use more or less similar automated equipment. By the way both terminals are using Bromma spreaders on their automated cranes. I think the main reason to choose Bromma on automated cranes is that these projects are no place to experiment with the spreaders. The trend with automation will continue even though it will focus on larger terminals which we don't have so many of in my area.*

BR How can Bromma adapt to the development of traditional terminals transforming into partly- or fully automated terminals?

Jan *The answer is to keep our technical leadership and to develop our products further and Bromma will participate more in this development than our competitors. As we today*

already have delivered more than 500 units to automated terminals for automated stacking cranes and customers we have an unprecedented experience which makes it possible for us to have new and better technologies before our competitors. Especially on automated cranes you need the highest possible reliability and if a problem occurs you need to know what the problem is. Can the problem be solved and if so, how to do it? To help the terminal operator achieve this we have excellent tools in the SCS³/SCS⁴ system and Green Zone. We can identify the problem quickly and provide information to support the decision on what to do. Our systems can even help preventing problems from occurring. Green Zone includes the functionality to identify potential problems before they become real problems. Automation also effect Bromma when it comes to developments of safety and surveillance warning systems, positioning and guidance systems and the connection between the spreader and the TOS system of the terminals so we can learn a lot about systems which wasn't so important for us as spreader manufacturer in former times.

BR Technical leadership is always important, and today Bromma is among other things working to improve terminal productivity and enhance worker safety through technologies such as automated twistlock handling solutions. How do you think customers like CTA and CTB views such new solutions?

Jan *All terminals are interested to improve their productivity and enhance workers safety. The ALP system is already today of great interest and we will soon start a trial with the ALP system at one of the terminals in my area. I think also other customers around the world will follow the trial closely. This system will eliminate a manual step in the handling process which is very dangerous for the workers today. I'm sure that this product will be a success even though there will be a fight within the terminals especially with the unions in some parts of the world.*

BR Ships are getting bigger and bigger, Maersk is soon introducing the Triple-E vessels and as a result of this Bromma just launched a new multi-lift concept. How much do you think the Triple-E vessels will affect the work in European terminals?

Jan *The larger ships are already affecting the European terminals. Especially in Hamburg there are a lot of fights going on between the terminals and the environmental groups regarding digging out the river Elbe which is necessary for the larger ships to reach Hamburg fully loaded. The new Triple-E vessels will be too big to reach most of the existing terminals. For the terminals which can handle the biggest ships it will even more important to have the right equipment to provide the fastest possible service. We already see a development towards larger cranes with higher outreach, higher lifting capacity and the specification to lift multi-40'/45' containers. I believe our new Tandem concept is exactly the right tool for these terminals as it offers the required functionality. The automatic connector enables fast spreader exchange and the low tare weight reduces power consumption and allows the crane capacity to be used for lifting containers. For the mega terminals, speed will be of essence but on the other hand the speed on the quay side is dependent on how the terminals will increase the speed of the landside operation.*

"We must never forget where we come from. The customer buying one spreader is as important as the customer buying 50 spreaders. When we started this business, all customers bought only one or two spreaders"

BR You have been in the industry for many years, and you've seen the fast growth the industry experienced in 2003-2008. But, for the last years Europe and Germany have

had a flat growth and some say this industry has reached maturity. What is your reflections about the future?

Jan *Yes, Europe is facing a recession which will last for the next couple of years but Germany has succeeded better than most of the other countries and I think that from 2015/2016 we will see an increase of investments in Europe and especially Germany again.*

BR What's the most interesting developments/challenges you see on the market right now?

Jan *I think the development/challenges have not changed too much in comparison to the last decades. We have to develop and improve our existing and new products focusing on quality, reliability, performance and simplicity. The focus in the coming years will of course even more than today be on green design and green production. Environmentally related questions such as fuel consumption, emission, pollution and noise levels will be big issues. I think we will see an even higher percentage of all-electric spreaders in comparison to hydraulic spreaders than today. We have to continue to listen and react to the needs of our customers independently if it is a Mega terminal with 100 spreaders or a small river terminal with 1 spreader and we have to offer and support the applicable complete spreader package for each customer.*

BR Thank you!

Facelift Increase User Experience When SCS³ Turns SCS⁴

Starting from October 2013, spreaders specified with the high-end control system from Bromma will be delivered with SCS⁴. SCS⁴ is based on the specifications and functionality of SCS³ which was first introduced to the market in 2007. SCS⁴ has been further developed to include improved functionality and a higher performing hardware base.

When SCS³ was introduced it was the first of its kind with diagnostic and prognostic functionality as well as an integrated touch screen mounted on the spreader.

Even until today, no competitor has presented anything close to such a system.

The functionality of the new SCS⁴ is based on the specifications of SCS³ but it comes with new features that will improve the user interface and interaction. It provides **faster user interaction** due to the new, more powerful hardware. It also provides a new **menu layout that is further improved to provide ease of use.**

Push Operational Performance Higher

Compared to competitive spreader control systems SCS⁴ features a higher level of

user-friendliness, a significantly higher diagnostics level and the establishment of a new



area of functionality – spreader prognostics.

The SCS⁴ allows terminals to push operational performance higher. Among the many operational advantages of the SCS⁴ system – things that Bromma technology can do, that competing technology cannot – are the following:

- With the SCS⁴ system, terminal operators can perform various on-line functions, such as adjusting sensor limits or scanning for bus faults. (The single biggest fault problem on a spreader is a sensor that’s out of adjustment.)
- SCS⁴ enables the terminal to employ a predictive maintenance strategy. That is to use the system functionality to monitor things that indicate the need for maintenance. Rule based artificial intelligence is implemented in the system to monitor deteriorating spreader subsystem functionality. Examples of this are increasing time to telescope, increasing current required to drive a motor and flickering sensor signal indicating the need for adjustment.
- The SCS⁴ system can automatically transmit spreader events, logs and alarms to the terminal organization headquarters for comprehensive spreader fleet performance analysis.
- The SCS⁴ system dramatically simplifies

the electrical design of the spreader through a reduced number of relays and terminal points on the spreader (Greater design simplicity often results in greater reliability.)

- With the SCS⁴ system, terminal users can look at the error log even after the spreader is pulled from the crane. (With spreaders that use the for instance ASi, all data is very often lost when the spreader is pulled from the crane. The ability to review error log data is what allows the terminal to do retro-active fault analysis.)
- With the SCS⁴ system, terminal users can capture very specific diagnostic fault information immediately after a fault occurs. (Shorter fault duration leads to more uptime and fewer spreader change-outs.)
- With the SCS⁴ system, terminal users have access to all spreader diagrams, drawings and manuals right on the spreader. Also, the on-board touchscreen display has been designed for high readability and durable performance under the many challenging environmental conditions found at the port – such as sun glare and high heat, among others.

For further information on the new SCS⁴ system, contact your Bromma representative.

Same (SCS ³ /SCS ⁴)	New (SCS ⁴)
<ul style="list-style-type: none"> • Functionality • Architecture – Spreader CANbus • PLC from 3S CoDeSys • Diagnostic Runtime Engine – DRE • Crane Interface – DS444, BCAN or parallel 	<ul style="list-style-type: none"> • Hardware – SCS⁴ Panel, external battery and backup • CoDeSys version V3.5 & Dabe • User Interface – Menu system • Web interface – Download Event Log and Machine Package

Bridging the Gap in Automated Terminals

As the first company Bromma can today offer **fully automated twistlock handling systems**, named ALP and ALS. These systems fully automate the manual coning and de-coning of twistlocks during load and discharge operations. The system can be installed on the quay or integrated on a platform on the STS crane.

Bromma offers a fast and reliable system which can fix and remove twistlocks and furthermore stores about 95 per cent of the twistlock types currently available in internal stacks in a fully automatic process.

Until today there has been no alternative to manual interaction during coning and de-coning. The technology now introduced in the ALP and ALS products bridges the gap between an automated horizontal transport system and the quay crane which is becoming more and more automated. Unmanned

coning and de-coning offers a big advantage in an automated environment since there are requirements on safety zones in areas with automated equipment.

The systems offered by Bromma include in addition to the tools to mount and dismount the twistlocks, also magazines for storage capacity. The magazines can hold up to 1200 twistlocks or 2400 stackers. Given balanced load and discharge container figures, the ALP/ALS magazines provide capacity for discharging and loading a full deck or hold of containers of the 14.000 TEU container vessels of the last generation.

Safety and Efficiency Increase due to Full Automation

In container terminals today stevedores are still removing twistlocks during the discharge process and fixing twistlocks



Stevedores works in a dangerous environment.



during the load process. They work close to or even under suspended loads and move in the same area as the heavy machinery transporting the containers from the quay area to the yard. The handling of centre twistlocks when lifting four 20' containers in twin/tandem lifts is particularly dangerous because stevedores have to move between the containers to access them.

Automated Twistlock Handling - the benefits

- Increased safety - by removing stevedores from the hazardous areas
- Productivity increase - as a result of reduced pinning time
- Wide range of operational areas - ALP is flexibly applicable on the lanes or on STS cranes as well as in empty-stacks for vertical tandem, depending on terminal operational logistics and easily movable by straddle carrier and STS crane
- Can handle all standard containers - 20', 20' twin lift, 40', 45' with twistlocks on 40' or 45' positions, reefers, open tops and flat racks
- Damping system- smooth operation through integrated hydraulic damping technology absorbing high forces, reducing the impact on cargo, equipment and quay structure
- No external power supply, no CO2-emissions - the energy needed for operation of the system is generated from the weight of the container and spreader through a hydraulic power regeneration system
- Easy configuration, setup and control from operator or crane cabin through a WiFi based operator panel
- Reduced noise emissions - the integrated damping system reduces operational noise to a minimum

- Optional TOS integration - relevant data exchanged with the TOS in real time through a secure WiFi/LAN connection

ALP - Stand-Alone Twistlock Handling Positioned Under the Gantry Crane

The ALP is a stand-alone for automated handling of twistlocks. The platform is typically placed under the gantry crane. The ALP increases the efficiency in Straddle Carrier, Auto Straddle carrier and Truck/Trailer based operations. In addition to the efficiency improvement, the ALP contributes to increased safety in any terminal irrespective if mode of horizontal transport.

The unit is self-sufficient without the need of any external power supply. The ALP can today handle 95% of the existing twistlock and stacker types on the market.

ALS – Twistlock Handling System Placed on Crane Leg

The ALS offers the same functionality as the ALP but the system is integrated on a platform on the crane leg. The solution increases safety in the twistlock handling process and the efficiency of the overall operation in container terminals.

The ALS is an automated system. The ALS can today handle 95% of the existing twistlock and stacker types on the market.

For further information on the new automated twistlock handling solutions, contact your Bromma representative.



Introducing the 2nd Generation All-Electric Ship-to-Shore Spreader

Bromma pioneered the field of electric crane equipment by introducing the very first all-electric ship-to-shore spreader. Since 2008 the model has been in operation in several leading container terminals. Based on the experience and feed-back from these terminals, the functionality, performance and design has been improved. With deliveries starting mid-2013 Bromma is introducing the new generation STS45E.

Listen To Customers

Close cooperation with the customers has always been important for the Bromma engineering team. Based on experiences from the first years of operating the STS45E spreaders, Bromma has compiled feedback from the terminals. Based on this feed-back improvement areas have been identified and solutions have been developed to further strengthen the STS45E.

Michael Thysell, VP Product Development at Bromma explains: *“Sit down and really listen to the customer. Discuss, back and forward, in and out. No stone is too small to leave unturned for the Bromma engineers”*. Thysell continues: *“Now we have monitored the operation of the first STS45E for several years and together with the customers identified every angel that can be improved. These are things you can never know before the product has been in the tough environment of a container terminal for often many years. We have discussed the needs of the crane drivers, the needs of the service technicians, the requirements of the operation managers and crane manufacturers. We have really involved every stakeholders in this process”*.

Less Adjustments And Easier Maintenance

Reliability has been the key driver when developing this second generation all-electric



spreader. Many details, solutions and functions in the STS45E have been improved, all to achieve better productivity, longer spreader lifetime and easier service. Improvements have been done in the twin frame, the twin hoist and the inner roller. Furthermore the new STS45E is equipped with a new flipper motor and a new type of flipper arm. As with other all-electric spreaders from Bromma the STS45E has a new phase reverser with significantly higher capacity, less cables and higher serviceability.

7000 Nm Gearbox as Standard

The stronger 7000 Nm gearbox comes as standard on the new STS45E. The flippers guide the spreader into position on top of the container with a holding force of 7000 Nm before they give way. The flippers will continuously strive to keep to their lower position until an up command is given. The electric flipper consumes energy only when moving.

Green Spreaders Advantages

STS45E, as well as the other spreaders in the Bromma GreenLine™ family offer container terminals equipment that will help ports take additional steps toward "greener" operations. In addition, the GreenLine™ spreader family has clear operating advantages for terminals. Bromma all-electric spreaders are known for their inherent reliability, as well as their environmental and economic benefits. Due to fewer service points, lower weight, and the absence of hydraulics, Bromma all-electric spreaders have higher availability, simplified maintenance requirements, require less power and produce less emissions.

Greenline™ all-electric spreaders also have optional performance and productivity features that are only available from Bromma, including container weight verification technology and Bromma Green Zone™ productivity software – namely Roadmap™,



Bromma all-electric spreaders are known for their inherent reliability, as well as their environmental and economic benefits.

Fleet Doctor™ and Work Order™. Together, these productivity and maintenance modules offer a comprehensive approach to addressing a key terminal strategic issue – how to achieve the greatest reliability possible from the terminal's spreader fleet.

For further information on the new STS45E, contact your Bromma representative.

Commercial News

Meet Bromma at TOC

Bromma will exhibit at TOC in **Rotterdam, June 25-27**. Are you there as well? Come and meet the Bromma sales representatives and managements team, you find us in **Stand B20**. We will tell you all you want to know about our new products, interesting projects and other developments. Do you want a one-on-one meeting with us, just notify your Bromma representative or send an e-mail to sales@bromma.com. Also, do not miss the TOC conference and the panel debate on the current topic **"Container Weighing: Preparing for the Future"**. Bromma VP Marketing, Mr Lars Meurling will be one of the presenters to share his view in this area. Nor should you miss the presentation on **New Ways of ALP Dispatching**, by Bromma Product Business Manager Mr Rainer Kapelski.



New Contracts

The start of the year for Bromma has been very good with order intake in line with expectations. The first four months of the year include the following larger orders: YSX45E spreaders for **Port of Houston**, YSX45E spreader for **Khalifa Port**, STS45 spreader for **Port Newark Container Terminal**, STS45 spreaders for **Port of Tacoma**, YSX45E for **Pireaus Container Terminal**, STS45 and TANDEM Quattro spreaders for APMT **Algeciras**, STS45 spreaders for DPW **Southampton**,

STS45 spreaders for **Yilport, Turkey**, YSX40E and STS45 spreaders for **Westport**, STS45 for **HPC Odessa** and STS45 spreaders for **TC Paranagua**.

The orders from the first four months of the year include a TANDEM Quattro spreader for APMT Algeciras. Already on order from last year is the order for 8 Bromma TANDEM spreaders for APMT Maasvlakte II terminal.

New Ad Campaign

A new Bromma advertising campaign is just launched. Together with some of the worlds leading container terminals the importance of high productivity is highlighted. To view the full campaign, go to www.bromma.com

PARTNERS IN PRODUCTIVITY

Man Meets Machine In Hamburg

The creators of the future in container handling will be the innovators – teams with the imagination to join man with machine to achieve more productive performance. HHLA Container Terminal Altenwerder (CTA), with its pioneering automation and dual-cycle container handling, is one of these elite organizations. Part of HHLA, which also includes other highly efficient terminals, CTA can move 130+ containers an hour on mega-vessels.

In 10 years the facility has rapidly and reliably handled more than 20 million TEU. High-throughput automated terminals demand the highest reliability in equipment, which is why you will find 170 Bromma crane spreaders at HHLA today, with 95 of them at automated CTA. To create a "gold standard" terminal you need the right equipment, the right support, and the right imagination. You need a partner in productivity.

In Germany, and everywhere, Bromma is committed to helping our customers succeed.

A Tradition of Innovation **BROMMA**