

Learning & Listening in Germany



HHLA is the leading operator in Hamburg, the 8th largest port in the world

Among the great terminals of the world, few rival HHLA in Hamburg, Germany for scale and operational excellence. HHLA (Hamburger Hafen und LogistikAG) is the leading terminal of Hamburg (with approximately 65% market share), while Hamburg, a key European gateway, is the world's 8th largest port. Bromma, which has 115 telescopic spreaders in service today at HHLA (80 at HHLA's Container Terminal Altenwerder and 35 at HHLA's Container Terminal Burchardkai) is one of the principal suppliers of container handling equipment to HHLA.

One of the qualities that has enabled HHLA to achieve their leadership position in the world of container handling is the clear vision they have for their container handling operations. From a terminal design standpoint, Container Terminal Altenwerder is one of the first semi-automated container terminals in the world, with a fully automated yard operation. CTA features a combination of double-trolley ship-to-shore cranes and yard cranes. From a service standpoint, Mr. Rudiger Schultz, Managing Director of Service Center Altenwerder and Service Center Burchardkai, has articulated a distinctive philosophy of operations in order to optimize performance.

Central to Mr. Schultz's philosophy are three ideas. The first is to **invite key suppliers, such as Bromma, into real partnership**. The goal is not to "beat suppliers into performance," but to pursue strength through cooperation. The second is to **give the problem a face**. To achieve this objective

Mr. Schultz seeks to "pair up" senior managers on the customer side with senior managers on the supplier side. The third is to **seek specific outcomes**. In the case of spreaders, the general outcome is always *a more reliable spreader*. However, at HHLA, the **measurable outcome** is quite specific – to achieve **higher mean moves between failure by increasing spreader availability**.

"...to achieve higher MMBF by increasing spreader availability."

Over the past few years Bromma and HHLA have been working together to achieve higher MMBF at HHLA. The starting point for the **MMBF initiative** was an initial assessment conducted at HHLA by 14 members of the Bromma Stockholm team. This 14-member cross-disciplinary team was comprised of Bromma design engineers; mechanical, hydraulic and electrical engineers; service technicians; spare parts coordinators, and manufacturing quality control personnel. The assessment team sought to better understand both the performance of the spreader at HHLA and the performance of the HHLA system that the spreader is a part of. The Bromma assessment team was matched with a parallel team of 11 professionals from HHLA. Senior managers at Bromma, such as Carl Kesselmark, Director of After-Sales, and Lars Karlsson,

Director of Research and Development, began to "pair up" with senior leaders at HHLA, such as Philipp Muhlenhardt, Technical Director of SCA; Henning Verstege, Project Manager; Rolf Adebahr, Spreader Coordinator; and Rudiger Schultz.

Identifying Challenges, Achieving Outcomes

As a consequence of the assessment process, three key areas of challenge at HHLA were identified. The first challenge was to achieve maximum spreader uptime. One of the central needs in this area was to **achieve extremely precise automated positioning**, both out of the stack and in the stack. The second challenge was to train the HHLA team in order to maintain very high spreader uptime. Again, a primary task in this area was to **equip the HHLA team with the knowledge to maintain extremely precise spreader position**. The final challenge in raising MMBF was to **conclusively address simple, known spreader faults**.

To achieve these goals, the Bromma and HHLA team identified a "punchlist" of 48 key action items, and set about boosting performance across the board. The type of action items identified included new sensor arrangements for the twistlock operation; hydraulic motor drive change; alteration of the flipper arm to a flat shaft design; and alteration of the telescopic position logic to a constant repeat mode. Of the 48 items, 28



Mr. Rudiger Schultz, Managing Director of Service Center Altenwerder & Burchardkai

items were achieved at a 100% level; 8 items were achieved at a 90% level; 7 items were achieved at a 75% level; and 5 items were achieved at a 50% level. In addition, the Bromma-HHLA team identified five spreaders that were to receive "special handling" to see if, through further investment and upgrade, MMBF could be boosted even more in this mini-fleet.

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An Interview With Wilfred Simonsen



As a senior member of the Bromma management team for more than 30 years, Wilfred Simonsen brings a unique perspective to any discussion of container handling. Mr. Simonsen has served as Director of Engineering at Bromma Group, where he designed the first generation of Bromma's telescopic spreader line, and as Director of Sales and Marketing, where he laid the groundwork for today's global Bromma organization. Currently Vice-President, Business Development, for Bromma Group, and Chairman of the Bromma R&D Council, Mr. Simonsen continues to strengthen Bromma's global business partnerships as well as explore new avenues for advancing the transport industry. He was interviewed at Bromma headquarters in Stockholm.

BR: Wilfred, you have been with Bromma since the 1970s. What have been some of the best decisions Bromma has made, that have boosted its success?

WS: We've been fortunate to have had entrepreneurial leaders willing to take risks. Our decisions to invest heavily in the USA in the 1980s; to enter into a joint venture in Singapore, which led to the formation of Bromma Far East; and to build our Malaysia factory during the 1990s, were all decisions that at the point of investment were somewhat risky, but which have worked out extremely well. Our owner in the 1980s, the Axel Johnson Group, was a global company and they strongly supported our global ambitions. The shipping line division, Johnson Line, opened many doors for us around the world. We gained access to their offices, to their network, to their already established relationships with terminals worldwide, and to their representatives. In the early years our close working relationship with the Port of Gothenburg was quite important – it led to the world's first telescopic spreader, the first of many creative engineering successes. We decided long ago that the way we would operate is that we would think long-term about our relationships with customers, and that shaped our “never walk away from a problem” service philosophy – another good decision.

BR: Over the past 30 years container handling has changed considerably. What do you see for the next 30 years?

WS: Even though commercial factors may limit ship size to around 15,000 TEU, ships are going to get bigger, which will increase the need for faster ship loading and unloading. There will be further consolidation among the global players. More terminals will automate. In the developing world, we expect continuing high equipment investment. China illustrates this – you have low labor costs, but investment in the latest generation of container handling equipment. In the spreader equipment space, the spreader may very well begin to perform more varied tasks than it does today. The marketing environment will remain challenging for some European crane and component companies. Finally, we believe Bromma will remain strong, as the industry appreciates Bromma's values – the things Bromma stands for.

BR: A small group of dominant global operators have emerged in recent years. How are they changing the business?

WS: Terminals are getting bigger, with more mega-hubs to handle Suezmax vessels. We work increasingly on cross-border projects, which require careful coordination in our organization. We must think and operate globally as well as locally, and in the long-term, this is a favorable development for Bromma, because it highlights our competitive strengths in size and global reach. We're also increasingly entering into global agreements, which mean the standardization of technical specifications and terms of sale, as well as the harmonizing of global prices.

BR: Bromma already has very high market share. Where does Bromma go from here in terms of future growth?

WS: This is my primary task today. Organic growth in crane spreaders is not easy, but possible. New products will remain an important part of our future. Bromma has tremendous R&D capacity, and widespread knowledge, not only in our engineering organization, but also throughout our sales and marketing organization. Many members of the Bromma R&D Council have 20 or 25 years of container handling experience. So I expect some exciting new products to emerge out of the R&D pipeline in the future. The Bromma brand is a very strong name, and in the years ahead we also need to explore other Bromma-related businesses that might offer possible synergies with our present work. The mobile equipment area – spreaders and related products for reach stackers, FLT's, and straddle carriers – is one obvious area that awaits our attention. In general, we believe the future looks extremely bright for Bromma. Our sales went up by more than 30% in 2005, and they will again go up by more than 30% in 2006. This is a tremendous growth rate for a very well-established company, and demonstrates our market strength, and the brightness of our prospects.

BR: In the past, engineering staff had a primary role in specifying equipment. Today engineering managers are being joined by financial managers as key decision-makers. How has this affected Bromma?

WS: This is clearly a very important development, and a big challenge for us. Bromma has of course always been a very technically oriented company – this has been one of our core strengths. Now, though, we also need to work a little differently, and communicate well with senior financial managers, and this is one reason why we have invested such attention in our “Return on Investment” project. The “ROI” project has forced us to really study and “monetize” the various ways our equipment impacts terminal profitability – spreader weight and its impact on energy costs; spreader downtime and its impact on terminal productivity, and the like. Studying these numbers really shows where the money is made and where the money is lost in container handling. So we have learned, and feel good about our very strong competitive position in this “return on investment” area.

BR: Bromma is a global company, but it is of course also a Scandinavian company. How does the Scandinavian center affect how Bromma conducts its affairs?

WS: Certainly we believe our culture, with its emphasis on quality and craftsmanship, is an asset. Our company culture has contributed in very important ways to the strong reputation we have built around the world. We don't “cut corners” on materials or components here; we invest in the highest-quality Swedish steel and ship it around the globe to our factory in Malaysia. So there are no discussions about “how good is good enough” at Bromma; it's understood, in our culture, that only the highest quality is good enough. From a geographic standpoint, our location in Scandinavia is not a problem. The world is a big place, but the world has, in a sense, also grown “smaller,” and in any case, Bromma offices can be found throughout the world.

BR: Thank you, Wilfred.

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Spreader Specification

Pushing Forward In Ship-To-Shore Spreader Design



At the heart of any great terminal is a highly productive and reliable ship-to-shore spreader operation. In 2007 the Bromma R&D team will introduce a series of design enhancements intended to continue to boost ship-to-shore operational performance.

The next generation of Bromma advanced technology will introduce **the power of³ – Bromma SCS³**. This innovative Bromma

technology will be introduced in 2007, and will build on the established SCS foundation with new diagnostic and prognostic features that will significantly enhance user-friendly performance. In addition, a new **E-Series all-electric ship-to-shore spreader family** is being readied by Bromma's 30-man research and development organization. The E-Series is anticipated to have significant advantages

in the areas of spreader weight (lower weight reduces terminal operating costs), service, reliability, and the environment.

*"There's no doubt that **this spreader takes service points away**,"* comments Lars Karlsson, Bromma Director of Research and Development, *"and that has tremendous advantages for operators."* In the E-Series family, maintenance is simplified, as there

are no hydraulic hoses, and the clutter of mechanical connections is greatly reduced. Components, in general, are also more accessible. Finally, from a training standpoint, the elimination of hydraulics means that technical staff need not be skilled in spreader hydraulics.

The E-Series will also enhance reliability, since sensor points are reduced. Sensor design advances on the E-Series will complement the prognostic and diagnostic advances of Bromma SCS³. *"This convergence between the E-Series and Bromma SCS³ has the potential to make the E-Series a special spreader family,"* says Lars Karlsson. This spreader also promises to boost reliability because, in addition to the elimination of hydraulics, it features simplified mechanics. Finally, the E-Series is quieter, since there is no hydraulic powerpack. With no hydraulics, the possibility of oil leakage is eliminated.

The E-Series spreader family and Bromma SCS³ will be in field testing in 2007, and following this, will be available for purchase. For continuing updates on all Bromma products, check www.bromma.com.

Hitting New Heights

One of the ambitions of the Bromma sales organization is to listen well to our customers. Listening lets us learn, and learning is what allows us to develop strong relationships with the world's strongest organizations. During 2006 the commitment to listen has helped Bromma continue to achieve record sales volume well in excess of last year's 800+ crane spreaders. Indeed, through the 3rd quarter of 2006, Bromma had nearly arrived at last year's 800 crane spreader milestone. Bromma, which had sales growth of 30+% in 2005, anticipates similar 30+% revenue growth in 2006. Several major orders have contributed to this record performance.

In China, Bromma has recently won a contract for 63 telescopic spreaders for the new Dachan Bay project in western Shenzhen, China. Bromma will supply a total of 29 ship-to-shore spreaders to customer **ZPMC** for Dachan Bay – 15 separating twin-lift spreaders and 14 single-lift spreaders – which will operate under ZPMC dual-hoist cranes. These are the first Bromma spreaders to be fitted to ZPMC dual-hoist cranes working in Tandem mode, and are capable

of handling a single container, up to four 20' containers, two 40' containers, or two 45' containers at a time. In addition, Bromma has won a contract from ZPMC to supply a further 34 Marathon™ spreaders for the Dachan Bay project. Bromma Far East management in Singapore, along with Bromma's Shanghai, China office, are coordinating the project with **Shenzhen Dachan Bay Modern Port Development Co. Ltd.** in Shenzhen. Modern Terminals of Hong Kong is one of the leading equity partners in the Dachan Bay project.

The contract adds to what has already been another very strong year for Bromma in China. In addition to Dachan Bay, other major 2006 China orders include 46 telescopic crane spreaders for Xiamen, including most recently a contract from ZPMC for 19 Bromma Marathon™ spreaders for Xiamen SongYu RTGs. Also in 2006 Bromma has won contracts for 14 telescopic crane spreaders for Shekou, and a further 54 crane spreaders for Ningbo, Dalian, Nansha, Yantian, Taicang, and Yangshan. Bromma is the #1 supplier of telescopic crane spreaders throughout the wider Asia region.

In the crossroads nation of Turkey, Bromma has recently won a contract to deliver a total of 19 separating twin-lift and all-electric spreaders to **Yilport**, through a contract with container crane OEM **Mitsui**. The wider Middle East continues to be a key Bromma region, with many major orders during 2006, including 41 spreaders ordered for Saudi Arabia and 20 for the United Arab Emirates.

In Ireland, Bromma celebrated this year an important new milestone with leading crane OEM **Liebherr Ireland** – the delivery of Bromma's **200th spreader** to Liebherr – while in Finland Bromma continued to build

its global relationship with leading crane OEM **Kone**. Bromma recently won orders for 23 Marathon™ spreaders from Kone, including 15 to the Ukraine and 8 to Massport in the United States. Other major orders in the United States have included 19 spreaders to **APM Terminals** for their Los Angeles operation.

At Bromma we seek to *listen and learn*. Do this well, we know, and the order book will remain full. For continuing updates on recent Bromma commercial news, visit www.bromma.com.



Thinking “Bottom Line:” How Fleet Reliability Impacts Capital Allocation

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In the end, an outcome-driven approach to operations requires that significant outcomes be achieved, and in the case of HHLA, the results of the Bromma-HHLA partnership have been dramatic. At the start of the MMBF initiative, mean moves between failure related to the spreader only at HHLA averaged 1,500 moves. By the end of the initiative, mean moves between failure related to the spreader had been raised to 2,500 moves. MMBF related to the spreader was boosted even further on the 5-spreader mini-fleet - to fully 4,000 moves.

“The HHLA-Bromma MMBF initiative serves as the partnership model for Bromma After-Sales,” says Carl Kesselmark. “The unified vision and close cooperation we have experienced with Mr. Schultz is what has made these achievements possible.”

To explore how your terminal might achieve measurable improvement in spreader optimization, contact Mr. Carl Kesselmark in Stockholm at +46-8-620-0900, or email him at carl.kesselmark@bromma.com.



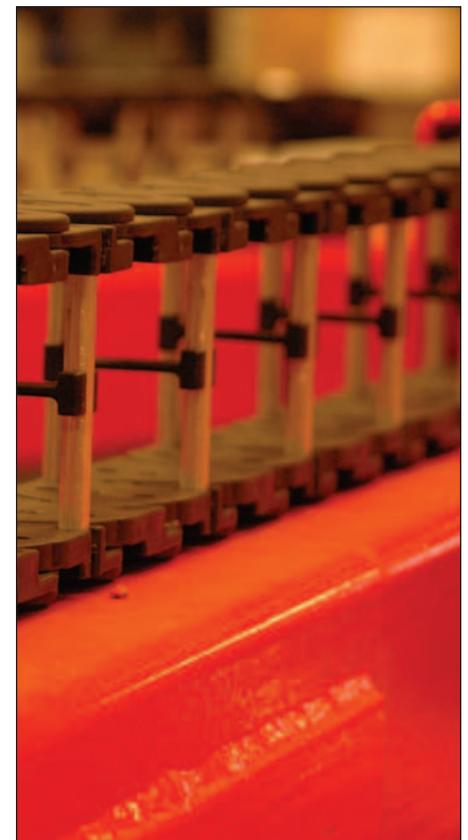
Capital allocation is a key strategic task for senior port managers. At some ports, a commitment to maximize return leads to a focus on cost containment at the *front end* of equipment investment. Yet capital investment, and most importantly, *return* on that investment, is highly correlated with performance, and performance is a function of reliability and productivity, not purchase price. One of the key benefits of higher reliability, for example, is a possible reduction in a terminal’s overall spreader fleet size, since higher reliability reduces the number of spreader spares that need to be kept on hand. A common crane-spreader ratio for many terminals is 1.6 spreaders for every ship-to-shore crane, or 16 ship-to-shore spreaders for a 10-crane fleet. However, a spreader with **higher reliability and availability can lower the spreader-to-crane ratio** – to perhaps 13 spreaders for every 10 container cranes.

By eliminating the need for excessive spares, a terminal can **free up capital for re-allocation to growth-producing initiatives**. For example, the elimination of three spare spreaders will reduce overall capital investment in the spreader fleet by US\$400,000 to \$500,000, depending on spreader type. For larger terminals, the savings will be even greater. For a terminal with 20 ship-to-shore cranes, for example, reducing the spreader-crane ratio from 1.6 to 1.3 will eliminate the need for 6 spreaders – thereby reducing capital investment requirements by some US\$1 million. In this way, a more reliable spreader will not only pay for itself *across* the lifecycle, but also **at the beginning of the lifecycle**.

A second important capital allocation factor is **spreader durability**. Bromma spreaders are well-known for their robust durability,

which translates, on average, into a somewhat longer useful lifetime. The Bromma advantage in durability often ranges from 10% (the difference between an average 9 years versus 10 years of active service) to 20% or more. The importance of a longer spreader lifetime is easy to see, as every year of additional reliable service delays the need for spreader replacement, thereby further conserving capital.

A strategic approach to spreader capital investment, including a consideration of how **reliability can reduce fleet size**, and how **durability delays spreader replacement**, is an important part of maximizing return on investment.



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