



MEGA-TERMINAL OPERATIONS

PSA International

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In container shipping, the idea that "big is beautiful" seems to be in vogue. Ever since the invention of the humble container in the 1950s revolutionised the face of global manufacturing, international trade flows have only grown bigger. More than 60% of seaborne trade now is containerised, with Drewry estimating that over 685 million TEU was moved worldwide in 2015.

Propelled by the strong growth in trade flows and the rise of China as the 'mega' factory of the world, containerships and terminals have also grown in size. In the last decade, the largest containerships have grown exponentially from 8,000 TEU to almost 20,000 TEU today. Shipping liners have undergone waves of consolidation, and joined forces in strong alliances to fully utilise their biggest ships. These developments have changed the landscape of the container handling industry dramatically, and influenced the shape and development of megaterminals today.

PSA'S FLAGSHIP TERMINALS

At PSA's flagship terminal in Singapore, having to think big is not new. The world's largest transhipment hub port, PSA Singapore Terminals (PSA ST), operates 58 berths over 7 terminals with a capacity of 40 million TEU annually. Its facilities at Tanjong Pagar, Keppel, Brani and Pasir Panjang operate seamlessly as one integrated container port, and handle large-scale and complex transhipment operations 24 hours a day, 365 days a year. Regularly recognised as an industry leader in port operations and management, PSA ST was voted "Best Container Terminal Asia (over 4 million TEU)" at the 2016 Asian Freight, Logistics & Supply Chain Awards for the second consecutive year. At the end of 2014, PSA ST became the first port in the world to have cumulatively handled 500 million TEU.

The sheer number of the containers that pass through PSA ST everyday means that PSA has always had an abiding fascination with technology, innovating to simplify and create competitive advantages. One example is its proprietary IT solution PORTNET®, the world's first nation-wide business-to-business port community solution. Paperless, collaborative and dynamic, the streamlined connectivity it provides the shipping and logistics community was a clear pace-setter in the port industry. Over time, the services increased, and today it connects almost 10,000 users who make over 220 million transactions a year.

Handling high volumes alone does not make a mega-terminal, however. Today's mega-terminals also have to have the expertise and capability to handle the complexity that a mega-vessel call entails. For instance, bigger ships mean the inevitable obsolescence of old terminals that do not upgrade to cater for these mega-vessels. Just to welcome today's mega-vessels alongside, ports need deeper harbours, longer and wider berths, and longer quay cranes. These mega-terminals also need ample landside facilities to ensure they can accommodate the higher peak cargo loads at each vessel call.

In Singapore, PSA is expanding with the addition of Pasir Panjang Terminal Phases 3 and 4, specifically designed to serve the next generation of mega containerships with almost 6,000 metres of quay length and water depth of up to 18 metres. When the expansion is fully operational by the end of 2017, PSA ST will be able to handle a total of 50 million TEU annually.

Another example of how PSA constantly looks ahead to ensure that its terminals are future-ready is in PSA Antwerp, at the group's second flagship

terminal. A bold exercise is underway in Antwerp to move the MSC PSA European Terminal (MPET) from behind the locks to the Deurganck dock outside the locks by end of 2016. This will enable MPET and the port of Antwerp to become a core European gateway and transhipment hub. When fully developed, MPET will be the largest container terminal in Europe, with a quay length of 3,550 metres and a handling capacity of 9 million TEU.

MEGA-TERMINAL TECHNOLOGY

The larger volumes that mega-vessels carry also mean that port technology has to evolve to ensure productivity and operational service levels stay high. Port operations and planning processes have become more complex as shipping alliances grow larger, and slot sharing between ships becomes more commonplace.

In order to overcome ever-increasing constraints on space, time and labour, PSA ST is developing automation and control systems within the port in partnership with the Singaporean government. This includes intelligent planning technologies to handle the exponential increase in information flows, and a proposal to design, develop and test-bed an autonomous truck platooning system for use on Singapore's public roads. At PSA ST's Pasir Panjang Terminals (PPT), live operational trials of automated guided vehicles (AGVs) are currently underway. In addition, PPT Phases 3 and 4 which are undergoing development will feature the latest port innovations, such as a zero-emission, fully-automated electric yard crane system.

In line with PSA's strategic focus on port and related logistics innovation, the Group's new corporate venture capital arm, PSA unboXed, was set up in 2016. PSA unboXed seeks to nurture start ups that create innovative logistics solutions for the maritime and trade ecosystem, by fusing infocomm technology with engineering and transaction solutions. The same year, PSA ST launched the PSA Living Lab at PPT, which enables start ups and technology solution providers to test-bed new ideas and systems in a live port environment at the world's largest container transhipment hub.

A GLOBAL TERMINAL OPERATOR

Including its flagship terminals in Singapore and Antwerp, the PSA Group today participates in over 40 terminal projects across 16 countries in Asia, Europe and the Americas. These projects - of many shapes and sizes - serve every major trade route, with links to all continents and countries, providing shipping lines with global connectivity through its network. Together, the PSA group handled 64.1 million TEU in 2015, making it the world's largest port operator by equity-weighted throughput.

In partnership with shipping lines and local governments, PSA continues to extend its presence into key growth regions around the world. Greenfield projects are currently under construction in Mumbai and Buenaventura (Colombia). It is also poised to capture opportunities that may arise from China's ambitious 'One Belt, One Road' economic development plan, with several of its Chinese portfolio projects positioned strategically along the maritime half of the initiative.

In 2015, it invested in Beibu Gulf-PSA International Container Terminal, a joint venture between Beibu Gulf Port Group, Pacific International Lines (PIL) and PSA in Qinzhoushi City. The joint venture terminal is PSA's first foray in the South-Western China region, one of the fastest growing economic regions



in China. The region has also been earmarked by the Chinese government as a key gateway connecting the Silk Road Economic Belt and the 21st-Century Maritime Silk Road. It is positioned to support the opening up and development of the southwest and mid-south regions of China. Commencing operations the same year, the Beibu Gulf-PSA International Container Terminal is equipped with super post-Panamax quay cranes of 23-row outreach, able to handle the biggest megavessels. It also establishes PSA as the first and only global terminal operator in the Guangxi-Beibu region.

WORLDWIDE EXPERTISE

For a global terminal operator, achieving repeatable operational excellence in multiple locations every day is no easy feat. Every terminal is different: set in varying physical configurations, serving a unique set of customers and framed under local regulations and practices. Every day on average, PSA moves about 180,000 TEU worldwide with the highest efficiency and reliability.

Yet the competitive advantage that a global terminal operator like PSA brings to the table is the ability for even smaller terminals in its network to capitalise on its well-established operational franchise, multiple areas of domain specialisation and long lasting relationship with customers.

With over 40 years of experience and expertise in developing, managing, and operating container hub and gateway ports, PSA is familiar with setting the pace in the design and development of terminals for different market needs. PSA also works hard to engage all the major shipping lines regularly to meet their present and future needs, in the locations that matter to them, to provide them with the operational excellence that keep their ships on schedule.

PSA's network of terminals consistently harness the advantage of group-wide best-in-class practices and differentiating work methods, to deliver the high levels of operational excellence that its portfolio of customers and stakeholders worldwide have come to rely upon.

PAINTING THE FUTURE

Buffeted by the twin forces of globalisation and technology, the container handling industry has seen much change in the nature of cargo flows. These forces continue to shape the development of ports and terminals, as terminal operators work through the trickledown implications of larger-than-before vessel calls on their facilities, equipment, information systems, security and even environmental sustainability. PSA will continue to find new ways to innovate and push the boundary of possibilities in the industry, alongside its customers and partners. Indeed, given the unprecedented rapid pace of change, it has become PSA's consuming priority to work with its customers and partners to co-create the best outcomes in our collective future.

ABOUT THE ORGANISATION

Following corporatisation in 1997, PSA began its internationalisation drive and transformed into a leading global port group. Today it participates in around 40 terminals in 16 countries with flagship operations in Singapore and Antwerp. As the port operator of choice in the world's gateway hubs, PSA is "The World's Port of Call".

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