

BULK TERMINALS

SPRING 2018 *international*

THE OFFICIAL MAGAZINE OF THE ASSOCIATION OF BULK TERMINAL OPERATORS

THE ROAD TO GLOBAL CHANGE

How China's outward-facing initiatives will impact on the industry

ROCK SOLID?

The burgeoning cement trade faces an interesting year ahead

IN THE BAG

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CAUTION IS KEY

BY SANDRA SPEARES

Although there are signs of a boost in demand for coal, cement and iron ore in Far Eastern markets, safety and security issues are of growing concern to bulk terminal operators. Cautious optimism is the name of the game in the year ahead

Welcome to the latest issue of *Bulk Terminals International*. It looks like a busy year ahead and I hope you enjoy the range of features in this issue on the matters that concern you. Media headlines indicate that, despite pressure due to environmental concerns, the coal trade is not yet dead (see p37) – Far Eastern demand is ensuring that. Developments in Asia are also driving other sectors such as cement trades (p21).

Iron ore trades between Brazil and China for commodity giant Vale have ensured a spate of new orders for ore carriers in the past few months (p55). Such orders have also been driven by the need for new tonnage in this particular industry segment, where VLCC to VLOC conversions have been called into question by casualties such as the *Stellar Daisy* in March 2017, the sinking of which is still under investigation.

Meanwhile, with the introduction of the new sulphur cap now less than two years away, the shipping industry has to bite the bullet in its approach to the issue, with trade associations calling for a ban on carriage of fuel that does not meet the sulphur requirements. More bullet biting will be needed in

making the decision whether or not the scrubbing technology route is the way to go to tackle the problem (p11).

Bulk terminal operators also have to tackle an increasingly important issue – how to handle safety and security within the port perimeter (p50). Cyber attacks are likely to become more prevalent, involving an increasing level of sophistication. Port operators will need to ensure they have the systems in place not only to protect the port infrastructure,

but also the technology and autonomous systems they use.

Other safety issues that will remain on the agenda include the need for adequate secure and weather-proof storage at ports. Ensuring that cargoes are safe from absorbing excess moisture is just one of the issues to be tackled, not least in when one considers the risks of cargo liquefaction. Port facilities' proximity to urban centres will make it essential for operators to tackle any outstanding issues they have with the safe movement of cargoes, such as cement, which could have polluting consequences if improperly handled (p42).

Bulk terminal operators have a good deal on their plate this year and we will all be looking for good times ahead following a tough decade for the industry as a whole. As BIMCO pointed out in its recent market reflections report, cautious optimism seems to be the name of the game, with the emphasis very much on caution as the industry seeks to build on advances made in 2017.

I hope you enjoy *Bulk Terminals International* – and please get in touch if you would like us to cover any issue that particularly affects you.



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AN INDUSTRY EYE

IAN ADAMS, CHIEF EXECUTIVE, ABTO



Welcome to the latest edition of *Bulk Terminals International*. I hope that all the positive forecasts that have been made for 2018 come to fruition and we see improved trading positions for us all over the next 12 months.

ABTO was recently invited to attend the Bulk Materials Handling Committee (BMHC) at the Institution of Mechanical Engineers (IMEchE). The BMHC has a diverse membership consisting of members of IMechE such as Professor Mike Bradley (also a member of ABTO's Members Advisory Panel), several other learned societies and trade associations are also represented, which have members with an interest in the subject. These include the Materials Handling Engineers Association (MHEA), the Solids Handling and Processing Association (SHAPA) and the Institution of Chemical

Engineers. In addition, there is input from the British Standards Institute. The meeting covers a wide range of topics and receives input from several other IMechE Committees, such as the Food and Drink Engineering and Pharmaceutical Committees. We have accepted an invitation to join the Committee as a full member for future meetings.

The BMHC organised a one-day seminar with the title "Bulk Handling for Large Infrastructure Projects" on 28 February at the IMechE headquarters in London. A report on this seminar will appear in our next edition.

We continue to keep a close eye on developments at IMO. A recent development of interest has been the Assembly elections for Council membership, which was a lot harder fought than in previous years.

The Category A membership was unchallenged, as it has been for many years. Unusually, we did see a challenge in Category B, which resulted in a change of membership, with Australia and the United Arab Emirates replacing Argentina and Bangladesh.

Australia had previously been a Category C member of Council and it has been replaced in this category by Jamaica, which lost its seat on the Council to Peru back in 2013.

The remaining challengers of Algeria, Antigua and Barbuda, Nigeria and Saudi Arabia failed to gain sufficient votes to unseat any of the incumbents.

The full list of Council is:

- » Category A (10 states with the largest interest in providing international shipping services):

China, Greece, Italy, Japan, Norway, Panama, Republic of Korea, Russian Federation, United Kingdom, United States.

- » Category B (10 states with the largest interest in international seaborne trade):
Australia, Brazil, Canada, France, Germany, India, Netherlands, Spain, Sweden, United Arab Emirates.
- » Category C (20 states not elected above, which have special interests in maritime transport or navigation and whose election to the Council will ensure the representation of all major geographic areas of the world):
Bahamas, Belgium, Chile, Cyprus, Denmark, Egypt, Indonesia, Jamaica, Kenya, Liberia, Malaysia, Malta, Mexico, Morocco, Peru, Philippines, Singapore, South Africa, Thailand, Turkey.

Many of us were shocked by the events in the South China Sea in January. The 136,000dwt tanker *Sanchi*, which was Iranian owned and Panamanian flagged, collided with the Hong Kong flagged *CF Crystal* 160 nautical miles off the coast of Shanghai.

The crew of *CF Crystal* were all saved thankfully and the vessel has managed to limp into port where the damage to her bow is being assessed. Unfortunately, the crew of the *Sanchi* were not as fortunate.

After the collision the cargo onboard *Sanchi* ignited. She was carrying 136,000 tonnes of natural gas condensate, a very volatile material. The crew of 30 Iranians and two Bangladeshi seafarers are all missing presumed dead. *Sanchi* has now sunk and there are concerns about the likely pollution threat that it poses. It is

estimated that the financial cost of the incident is more than US\$110m, and while the environmental impact remains uncertain, it will almost certainly be profound and extreme.

The question must be asked: how in these modern times did two vessels of this size in unrestricted waters manage to collide with such a devastating effect?

Sadly, this is not an isolated incident. The United States Navy had two vessels involved in collisions in the same sea during 2017. The first incident claimed the lives of seven sailors, while the second incident accounted for the deaths of a further 10.

In all, over 200 ships were lost last year. While some were the victims of environmental effects such as typhoons or hurricanes, sadly the clear majority were lost because of poor practice.

About best practise our thoughts once again turn to the annual conference. After the success of last year's conference, plans are moving forward with *Bulk Terminals 2018*. We have decided that the location will be Hamburg and we are currently in the process of finalising a venue. We hope to make an announcement very soon and hope as many of you as possible will be able to attend.

In the meantime, we have issued a call for papers. If there are any terminals that have any case studies to present on the theme of improving efficiency, safety or environmental compliance, you would be particularly welcome at the conference.

The feedback from last year's conference showed that real-life lessons are particularly popular presentations. If you have an idea of a presentation

that you would like to see, please send your suggestions in to Simon Gutteridge at events@bulkterminals.org.

ABTO continues to grow and we shall endeavour to ensure that our membership gets their voice heard in all the right places.

This year, IMO has two meetings of each of the Maritime Safety Committee (MSC) and Marine Environment Protection Committee (MEPC), as well as the sub-committee Carriage of Cargoes and Containers (CCC). We will be represented at all the meetings where our presence will enhance the debate.

Remember to keep an eye on the website for any papers. If you see something that you want to discuss, please do not hesitate to get in touch.
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AN INAUGURAL SUCCESS

Biomass, safety and security issues were just some of the items on the agenda at ABTO's inaugural conference in October, when port operators, equipment suppliers and other key industry players met in London for two days of discussions



LORD PRESCOTT

Bulk Terminals 2017: Achieving Efficiency and Compliance was attended by all sorts of industry luminaries, including former Deputy Prime Minister Lord Prescott. During a rail connectivity session chaired by Julian Worth, Chairman of the Chartered Institute of Logistics and Transport, Lord Prescott said he felt developments in trade within the UK mirrored to some extent China's One Belt One Road initiative, albeit on not quite so large a scale.



SUSAN OATWAY

Drewry's Senior Analyst Susan Oatway took a look at the future of the bulk cargo market as China slashes steel production to reduce emissions. Meanwhile, the challenges facing bulk terminal operators looking to make the transition from coal to biomass were also put into sharp focus at the conference.

"Biomass is not one material," said Professor Mike Bradley, Director of the Wolfson Centre, urging terminal operator delegates at the event to



MIKE BRADLEY

carefully evaluate the various types of biomass products before investing in new handling and storage facilities for them.

The storage of biomass products, specifically wood pellets, was a key point raised by Dr Mi-Rong (Kimberly) Wu, Project Manager at Dutch port simulation consultancy TBA. She informed the more than 50 bulk industry leaders present that biomass volume, rather than weight, has to be taken into

account when considering silos and storage facilities.

“Silos have been known to explode because of incorrect handling. For solid biomass products, temperature and CO emissions must be constantly monitored,” she warned delegates.

For those terminal operators considering a transition from coal to biomass, she said adjustments in terms of handling processes and storage requirement are necessary, along with in-depth investigations into logistics and material characteristics.

The biomass sessions were nicely rounded off by David Wragg, Business Development Director at Hargreaves Industrial Services, and Gary Sharpe, Project Director (Mersey) Peel Ports Group, both of whom provided insightful case studies of terminals that have successfully made the transition to biomass.

The event also included a number of sessions on safety and security issues. “The maritime industry is 5-10 years behind other industries in terms of cyber security,” said Andrew Fitzmaurice, CEO of cyber security experts Templar Executives.

Port security issues were highlighted by Peter Cook, Director at PCA Maritime, not least the proper implementation of the ISPS Code, while Aron Frank Sørensen, Head of Maritime Technology and Regulation at BIMCO, gave details of industry initiatives on cyber issues.

Other sessions included one by Paul van Eulem, Director of consultants MTBS, who outlined the Takoradi Bulk Terminal project for Ghana Ports & Harbour Authority, while a presentation by Telestack’s Carl Donnelly outlined the flexibility offered by mobile units in ports.

Safety and environmental issues were covered by Dr Rob Berry of the Wolfson Centre, with the serious question of cargo liquefaction examined by David Bolomini of the International Group of P&I Clubs. Andrew Huxley, Regional Development Director at TT Club, meanwhile, considered the most likely injuries to occur in bulk terminals.

Richard Daley, Director of Turner & Townsend Suiko, looked at the important role of lean thinking and how to build high-performance work teams.

ABTO chief executive Ian Adams said: “The topics explored over the two-days provided operators with a great deal of information on how best to optimise operations for greater energy, environmental and cost efficiencies.

“It was very satisfying to know that all delegates left the conference – our first event since establishing the Association 18 months ago – commenting on the high quality of the papers presented. We have seen a significant growth in ABTO membership over the past few months and anticipate this continuing.”

DAVID WRAGG



RICHARD DALEY



PAUL VAN EULEM



PETER COOK



ARON FRANK SORENSEN



ROB BERRY



ANDREW FITZMAURICE



CARL DONNELLY



ABTO is holding its 2018 conference – **BULK TERMINALS 2018: Improving safety, streamlining operations and ensuring environmental protection** – in Hamburg in October and we look forward to another successful event. For more information, visit: www.bulkterminals.org

BULK TERMINALS 2018



THE ANNUAL CONFERENCE OF
THE ASSOCIATION OF BULK TERMINAL OPERATORS (ABTO)

WORLD NEWS ROUND-UP

Safety and security, as well as meeting the new environmental requirements are hot topics for owners and operators, as the industry looks to see the green roots of recovery following years of tough times

The three best performing dry bulk terminals in the world are Santander and Bilbao in Spain, and Quebec in Canada, according to BIMCO's *2017 Dry Bulk Terminals Vetting Report*.

Santander was rated first in all four major categories: terminal handling of loading/unloading; terminal mooring and berthing arrangements; information exchange between the ship and the terminal and terminal equipment.

The report evaluates terminal and port performance from around the world to improve safety standards and the turnaround time of ships calling in.

The results provide an insight into what it takes to be a "good bulk terminal", – but BIMCO still needs more reports from members to establish better ratings and statistics, and to show a more robust picture of the current standards at terminals around the world.

"In general, we see a good standard across the world, but with some complaints, for example due to language problems," says Aron F Sørensen, Head of Maritime Technology and Regulation at BIMCO. "But even with an increase of 35% of reports coming in this year compared to 2016, we still need more data to make valid global statistical analysis."

Generally, the standard is good, with over 93% of ports reviewed as average or better, with positive feedback coming from the communication between ship and terminal, the loading and unloading and the standard and maintenance of equipment.

At the other end of the spectrum, a number of ships complained of a lack of language skills when visiting certain ports; permanent pressure on ship/crew and master; unexpected claims; and unnecessary bureaucratic and offensive port authorities. In addition, ports rated badly when the cost of terminal services was either too expensive or the service was non-existent.

BULK COMMODITY DEVELOPMENTS

Meanwhile, in further reports on the industry, Drewry Shipping Consultants recent dry bulk analysis predicts dry bulk shipping charter rates will recover from the second quarter of 2018 on the back of strengthening Asian iron ore demand,

It says in its *Dry Bulk Forecaster* that for the medium and long term, it holds to previous forecasts. "Chinese steel production is expected to pick up pace at the end of winter, in the second quarter of next year, by which time

production curbs will have relaxed," the report says. "Strong infrastructure and construction activities will strengthen steel consumption. Meanwhile, the Chinese government is closing down inefficient and highly polluting mills; this will pave the way for efficient millers to produce high quantity steel, strengthening demand for high-grade imported ore. Growing grain consumption in African and Asian countries will support grain trade."

China's One Belt One Road initiative will also drive dry bulk shipping in the long run, Drewry says. On the supply side, the dry bulk fleet will grow at a moderate pace in the coming years. Improving charter rates are reviving the interest of shipowners in the newbuild market. However, fleet growth will remain in check because of the thin orderbook and IMO regulations (low deliveries in the short-term and high demolition activity in the long-term). Hence, a big chunk of the orderbook will be replacement tonnage.

Nonetheless, there is a downside for the short term. To tackle pollution caused by high coal consumption in the winter months, the Chinese government is cutting down steel production, which

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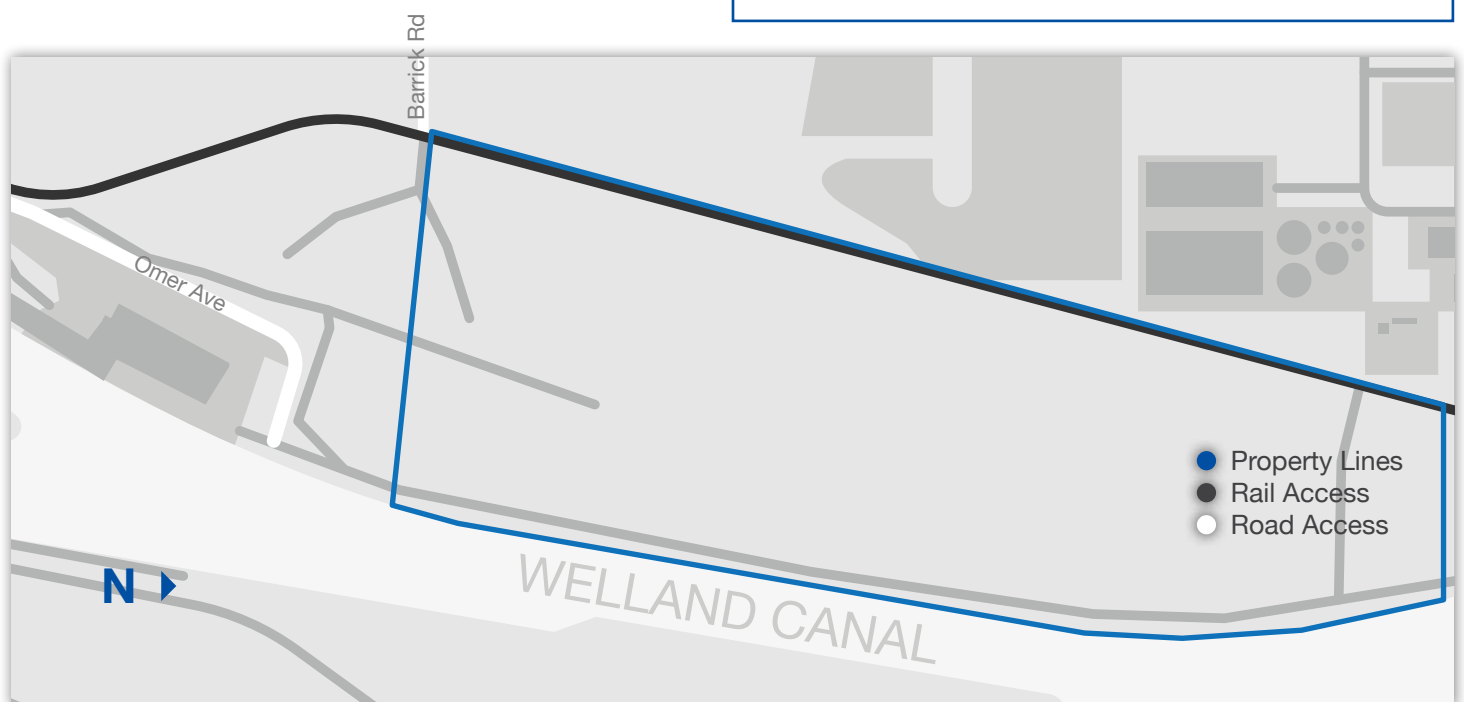
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Approximate Acreage: 86

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KEY NOTABLES

- Close access to highways
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- Private lot
- Potential for dock development
- Dock accessible



will directly impact demand for iron ore in the short term. As per the proposed policy, the government might impose a 50% cut on existing steel production of 40 million tonnes, but this goal looks highly ambitious.

"We believe a 25% cut is more achievable, in which case there would be a reduction of 20 million tonnes of steel production, which as a result would reduce demand for iron ore. Even though iron ore demand will remain strong in other Asian countries, such as South Korea and Taiwan, we do not expect this demand to be strong enough to offset the impact of reduced demand from China," comments Rahul Sharan, Drewry's Lead Analyst for dry bulk shipping.

"In brief, the next few months notwithstanding, a bright future is expected for the dry bulk charter market, providing solace to shipowners and shipyards alike," adds Sharan.

Although many have been predicting the decline of thermal coal use because of environmental pressure, strong demand from Asia is still driving a positive thermal coal market.

Meanwhile, Paul Flynn, Chief Executive of Australian miner Whitehaven Coal, said in a recent Reuters report: "The coal price improvement has thrown into stark relief the robustness of underlying demand in Asia. This had been masked until recent times by the surplus of capacity constructed during the last cycle. This period has now passed."

"We made global thermal coal our favourite commodity in October and stuck with it," Jeremy Sussman, New York-based analyst at brokerage and investment bank Clarksons Platou, commented in the report.

UPBEAT ATTITUDE

International accountant and shipping adviser Moore Stephens expects optimism to triumph over pessimism in the shipping industry over the next 12 months.

Partner Richard Greiner says: "According to a recent study, pessimists live longer than optimists, and shipping is short of neither. But the industry has always valued longevity as well as new blood and it certainly ended 2017 in more optimistic mood than it closed the previous year.

"In 2018, freight rates will harden if there is a further reduction in tonnage overcapacity and an acceleration in ship demolition. Money will still be available for the right investment. Shipping will continue to be impacted by geopolitical uncertainty, which could be influenced in either a positive or negative way by elections in Brazil, Iraq, Italy, Mexico, Russia and elsewhere.

"US interest rates are likely to go up over the coming 12 months, and the implications of new accounting standards will start to bite. Smart technology will assume increasing importance, adding value and improving safety, but putting pressure on R&D budgets. Doubts will persist about the sufficiency of low-sulphur fuel, and gas will become an increasingly attractive option for powering new and converted tonnage as the price of oil recovers.

"The riddle wrapped in a mystery inside an enigma that currently presents itself as Brexit will continue to fuel pessimism and optimism in more-or-less equal measure."



A WORKER LEVELS THE COAL ON A FREIGHT TRAIN IN TAIYUAN IN NORTHERN CHINA'S SHANXI PROVINCE. (AP PHOTO)

DAMAGE DANGER

An investigation by The Swedish Club into auxiliary engine damage has revealed that the majority of all damage takes place immediately after maintenance work.

A key finding is that 55% of casualties occur within only 10% of the time between overhaul, corresponding to the first 1,000 hours or so of operation after overhaul. In most cases the damage occurs only a few hours after start-up.

Peter Stålberg, Senior Technical Adviser at The Swedish Club explains: "Auxiliary engines run at high revolutions and have a common lubrication system for both cylinder and crank case lubrication.

"They are not under the same strict regime from the classification society as the main engine and maintenance is often carried out by the vessel crew," he says.

"We see incorrect maintenance and wrongful repair in all too many cases, and poor lubrication management is also a major contributing factor to auxiliary engine break downs.

"With an average repair cost of more than USD 345,000, we cannot emphasise enough the principle that prevention is better than cure," Stålberg concludes.



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YEMEN GUIDANCE

In response to the threats arising from the conflict in Yemen, BIMCO, ICS and INTERTANKO have published interim guidance on maritime security in the southern Red Sea and Bab al-Mandeb. Shipowners and operators should be aware of new threat patterns in the area.

The European Union Naval Force (EUNAVFOR) and the Combined Maritime Forces (CMF) have advised that a range of threats other than piracy, such as sea mines and water-borne improvised explosive devices (WBIEDs), are potential risks in the area.

The interim Guidance on Maritime Security in the Southern Red Sea and Bab al-Mandeb is available at: www.bimco.org; www.ics-shipping.org; www.intertanko.com

SULPHUR CAP LOOMS

Leading environmental organisations and the global shipping industry have joined in calling for an explicit prohibition on the carriage of non-compliant marine fuels when the global 0.5% sulphur cap takes effect in 2020. IMO has agreed that from 1 January 2020 the maximum permitted sulphur content of marine fuel (outside Emission Control Areas) will reduce from 3.5% to 0.5%.

Unless a ship is using an approved equivalent compliance method, there should be no reason for it to be carrying non-compliant fuels for combustion on board.

The 2020 sulphur cap will provide substantial environmental and human health benefits as a result of the reduced sulphur content of marine fuels used from that date. At the same time, the 2020 cap will significantly increase ships' operating costs and will present major challenges to governments that must ensure consistent enforcement across the globe.



CYBER TRAINING

KVH Videotel has launched a cyber security training programme, produced in association with BIMCO, to address the threat of ransomware and other computer system breaches that could severely affect the safety of ships' crew, systems, and operations.

"A cyber attack can severely impact and impair vessel performance," says Mark Woodhead, KVH senior vice president, EMEA. "Many cyber incidents onboard are triggered accidentally by seafarers opening phishing email attachments or hyperlinks, or using infected removable media, so this training programme explores how to minimise these risks by making personnel more aware of the types of malware."

ON A CLOUD

Transas has launched its first package of applications built on THESIS, a unified cloud-based platform for managing operations across the full breadth of the maritime ecosystem. The advanced "A-Suite" package also sets a new

precedent by utilising the latest in machine learning techniques to reduce the potential for human errors on the bridge, or poor decisions elsewhere in the vessel operational chain.

In addition to the officers and crew working on board ships, the benefits of A-Suite will be available to personnel managing VTS systems and those running shore-based fleet operational centres or even training facilities, allowing them to participate in real-time decision support and post-voyage analysis.

"Technology shouldn't be an end in itself, but a tool to achieve an end," says Transas CEO Frank Coles. "We want to help the industry improve by enabling it to make better decisions and boost competitive advantage, using machine intelligence to augment the human in the loop. We are bringing to market a set of revolutionary AI-powered e-navigation tools apposite to the needs of modern ships operating in an increasingly automated and digital world."

SLEWING CRANES

COMPANY NEWS



Liebherr Maritime Cranes is a division of the Liebherr Group that specialises in cargo handling solutions for ports as well as for the shipping and offshore industry. Liebherr Port Equipment products include ship to shore cranes, mobile harbour cranes, rubber tyre and rail mounted gantry cranes, reachstackers and straddle carriers.

Highly efficient slewing cranes for installation on quaysides, in harbours and in dockyards are available on fixed pedestals (FCC) and on rail-mounted travelling gantries (TCC).

Fixed cargo cranes (FCC) are space-saving handling solutions for vessels up to post-Panamax class. The slewing cranes installed on fixed foundation pedestals comprise both cylinder luffing as well as wire luffing slewing or double girder cranes. They provide the optimum balance between restricted space and cost effective turnover.

The product range of travelling cargo cranes (TCC) is distinguished by the design and the technology in harbour crane construction.



The sophisticated combination of slewing crane and customised rail-mounted portal crane sets new standards in terms of innovation, flexibility and cost effectiveness. The series of TCC cranes is suitable above all for handling containers, bulk goods and cargo in sea and inland harbours.

Liebherr Port Equipment covers an extensive range of mobile harbour cranes which includes seven sizes with load capacities of 42 t to 308 t. With more than 1,300 units delivered in 100 countries worldwide Liebherr mobile harbor cranes convince in all application areas. Their flexible range of applications comprises:

- highly efficient container handling
- bulk operations
- the handling of scrap
- general cargo
- and even heavy lifts up to 308 tons, just by an easy exchange of the lifting attachment.

Unique technical remarks as the optimised undercarriage concept, the hydrostatic transmission or the specially developed crane control make Liebherr mobile harbor cranes the most powerful handling equipment worldwide.



Each mobile harbour crane is available with numerous purpose-planned options for every operating task, size of vessel and type of freight.

Liebherr reachstackers profit from many years of development experience in the maritime sector. A variety of highly efficient innovations, a comfortable and ergonomic design as well as impressive performance distinguish the Liebherr reachstacker.

In this way, it is a versatile handling solution that can be deployed for any kind of terminal.

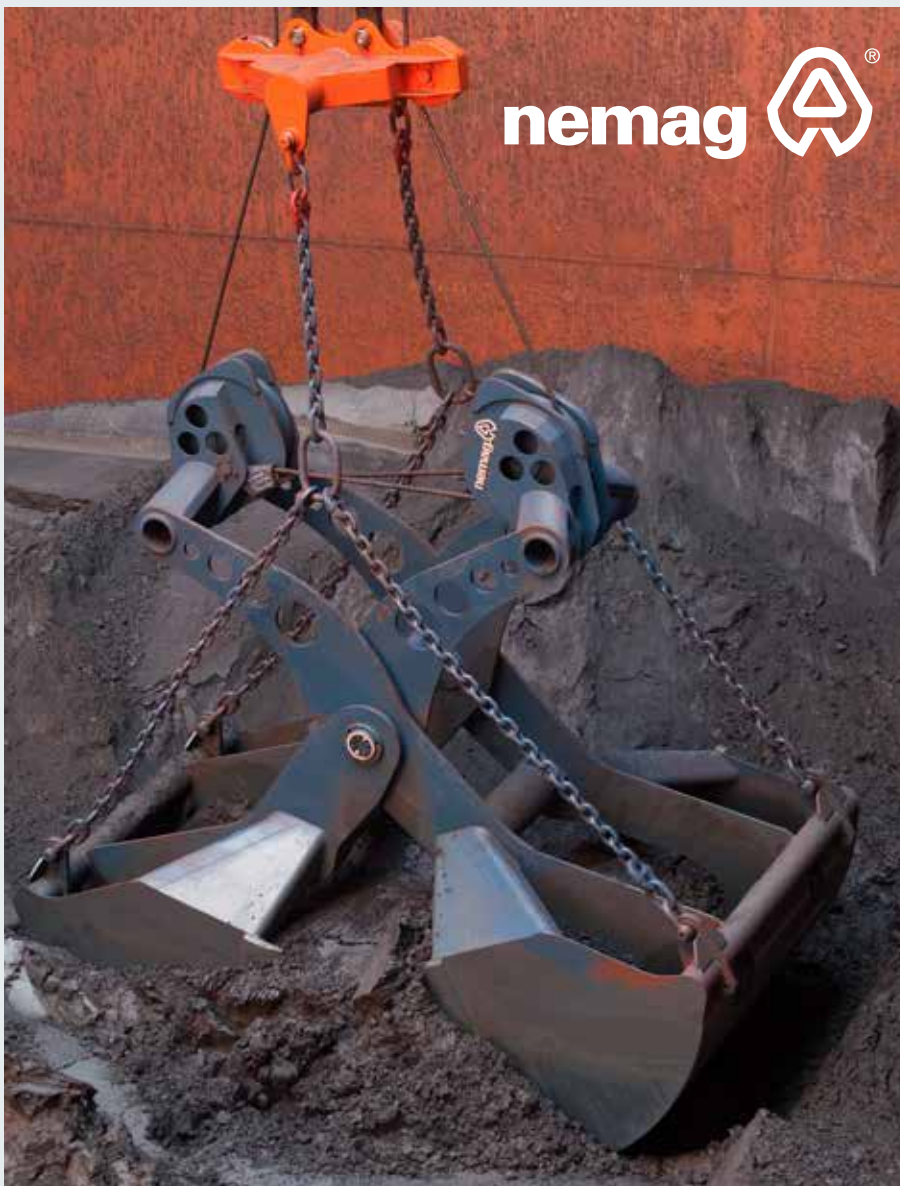
Moreover, Liebherr specialises in highly immersive simulation-based crane operator training.

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COMPANY NEWS

The patented nemaX® grab for iron ore, >10% higher productivity than all comparable clamshell grabs, way stronger and the lowest maintenance cost ever.



INNOVATIVE SOLUTIONS

The dry bulk terminal operator environment is changing quickly. This calls for innovative solutions to address these new market challenges, including enhanced safety, increased productivity, reduced maintenance costs and reduced labour costs, to name just a few.

The strong drive for innovation is an important, if not the most important, pillar of Nema's success. One of the innovation goals set in 2009 was to develop the most optimal grab by means of virtual prototyping. Developing new grab types and making significant design changes has traditionally been a slow, expensive and high-risk process. It is a complicated process and predicting the performance of a new grab design is difficult. This traditionally led to step-by-step development based on empirically acquired results known as the play-it-safe approach.

VIRTUAL PROTOTYPING SOFTWARE SYSTEM

Nema wanted to accelerate this engineering process by substituting the slow learning-by-experience method with virtual rapid prototyping. The company therefore launched a groundbreaking research and development project in 2009. The goal was to create a validated software design tool capable of predicting the combined behaviour of grab and bulk material.

In close collaboration with Delft University of Technology and the TATA Steel Plant in IJmuiden (NL), Nemag initiated a PhD research project and developed special simulation software to analyse and visualize the interaction between the grab and bulk material. This resulted in the Virtual Prototyping Software System, which provides valuable insight into the behaviour of grabs in material in a virtual environment and also helps to optimise the lifespan of wear-induced parts in the grab.

THE NEMAX®

All available data, experience and knowledge was combined and this resulted in the development of a revolutionary new and unique grab for iron ore: the nemaX®. This new generation of grabs combines the lowest deadweight and the highest payloads with the shortest closing time. The result is a 10 per cent productivity increase, lower maintenance costs and considerable time savings during the trimming phase.

Want to know more?

Nemag is currently launching a series of whitepapers about the nemaX®.

Please visit nemag.com/nemaX and download the whitepapers.

PREFERRED PARTNER

Nemag, a family business founded 93 years ago, is the preferred partner for the handling of dry bulk materials and has a strong reputation around the world. Nemag provides a full range of grabs and various types of quick-release links and rope pear sockets. Whether it is the handling of coal and iron ore, loading and unloading wheat, silage, scrap materials, minerals, biomass or other bulk goods, Nemag has a sufficient and reliable solution.

The aim is always to reduce handling costs per tonne of dry bulk materials transferred for steel plants, power stations, OEMs and commercial terminal operators. In addition to customized grab solutions, Nemag also successfully introduced a fully standardized series

of clamshell grabs for mobile harbour cranes such as Liebherr and KONE-Gottwald cranes. The very competitive standardized solutions with short lead times and extremely productive properties are used by the biggest and most successful bulk handling companies in over 60 countries.

The key to the company's success lies in its innovative capacity and its development of new products for the dry bulk industry. This, in turn, has led to several innovations, such as the invention of the scissor grab type, specialized rubber-lined lip sealing systems for handling powdered cargo, the patented Nemag quick-release link and the Nemag rope pear socket, and the introduction of a new generation of environmentally-friendly clamshell grabs.

Alongside innovation, customer support and a very intensive after-sales service are of paramount importance to both Nemag and its customers. A global network of specialised representatives supported by Nemag specialists are ready to assist customers worldwide.

INNOVATIVE TECHNOLOGY AWARD

For the second time, Nemag has won the innovation price at the annual IJB Awards last November in Amsterdam. The International Bulk Journal rewarded Nemag with the award Innovative Technology Award (category Cargo Handling). Riny Stoutjesdijk, Sales Manager at Nemag: "We are very proud to be able to contribute to the industry to make it more efficient with innovative products and to get rewarded for it."

For the latter, Nemag was also awarded the IJB Innovation Award in 2014 by the International Bulk Journal. So far, Nemag is the only grab manufacturer to receive the Innovation Award in this challenging category.

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THE ROAD TO GLOBAL CHANGE

BY TERRY GIDLOW

The CEO of ship agents WaterFront Maritime Services looks at China's new outward-facing initiatives, such as the Belt and Road Initiative, and the impact they will have on the bulk terminal industry



TERRY GIDLOW, CHIEF EXECUTIVE OF WATERFRONT MARITIME SERVICES

For millennia, China has shaped and influenced global trade. The requirements of this geographically vast, diverse and complex nation have most recently been dictated by China's need to feed, fuel and protect its growing population, while maintaining its domestic status quo. Having now achieved this and established an equilibrium of sorts, China is looking outwards. It is doing so by laying forth its ambitious plans to proactively redraw the blueprint for world trade and position itself an open, progressive and dynamic geo-political force, which will sit firmly at the centre of the global economy for generations to come.

That the Chinese Communist Party is in the process of significant transformation was confirmed by Chinese President Xi Jinping at the most recent National Congress of the Communist Party of China (NCCPC), a twice-decade meeting of the Party leadership. At the meeting, he declared: "The Chinese nation ... has stood up, grown rich, and become strong – and it now embraces the brilliant prospects of rejuvenation ... It will be an era that sees China moving closer to centre stage."



In large part, the Belt and Road Initiative (BRI) will be the primary vehicle for this change. Through a swathe of internal and international development initiatives under the BRI banner, which encompass building of infrastructure, investment in critical goods and services, and a range of social and economic support programmes, the Chinese government's BRI strategy plans to bring sustained wealth for all. In geo-political terms, through one all-encompassing programme, China is now playing its hand. For this reason, it is time that every service provider involved in bulk supply chains sits up and takes note.

TWO PATHS TO SUCCESS

In broad terms, the BRI seeks to significantly improve bi-lateral trade links, increase regional co-operation and bolster capital flows worldwide through the investment in and linking up of several continents, and the previously less accessible topographies and economies that bind them.

At its core, the BRI is made up of two different paths through which China seeks to bring business across the developed and developing world. The plan aims to leverage and provide opportunity into the long term for the world's growing middle class and will, as a consequence, bring about a

recalibration of who we do business with, when and how.

On one side, the overland Belt and Road route will connect Europe and the Middle East to China through Central Asia, across China's hinterland and onwards through Southern Asia. The maritime Silk Road aspect will simultaneously connect China, South East Asia, India and Africa. These trade routes will be enabled through a network of ports, terminals, industrial zones, storage facilities and the adjoining logistics infrastructure, facilities and communities that connect them. Naturally, this means that the impact will be felt across the maritime and logistics industries worldwide, given that the way in which goods and services are accessed, moved and utilised worldwide will inevitably shift.

While the BRI is very much a Chinese government-led initiative, which will directly engage more than 68 countries and their combined 4.4 billion citizens (some 63% of the global population), most of the leg-work is being exercised by privately-run Chinese companies, using Chinese bank loans.

According to recent Thompson Reuters data, some US\$33bn in outbound investments has already been committed to BRI projects in 2017 (a 136% year-to-date increase on

2016), from a pot of US\$124bn due to be invested by the Chinese state over the next decade. This is separate to the significant sums (US\$220bn in 2016 alone) that Chinese companies have spent on foreign acquisitions across almost every industry – from sports clubs to Silicon Valley firms.

BRI AND BULK SUPPLY CHAINS

When it comes to ports and terminals, the impact of Chinese port and terminal operators having increased access to state funds and a mandate to invest, acquire, build and manage storage infrastructure will surely be felt.

We are already seeing Chinese-owned port and terminal operators pursuing opportunity worldwide armed with a level of protection against risk that private companies would struggle to match and, as such, they have been able to take on more ambitious and risky development projects.

This is evidenced by the fact that over the past 12 months, 50% of all port acquisitions worldwide have been led by or included Chinese buyers. Based on The Economist Intelligence Unit's research, Chinese companies had confirmed seaport investments or port ownership in 34 countries by September 2017, with 12 planned investments in another eight countries.

Looking at port investments, as an example, according to a recent report by boutique UK investment bank Grisons Peak, planned Chinese port projects outside of China under BRI-related schemes now total US\$20bn. This includes four key projects in Malaysia (Melaka Gateway, Kuala Linggi Port, Penang Port and Kuantan port) as well as a significant expansion of Tanjung Priok port in Indonesia.

These new deals join more widely discussed investments in the wholesale development of strategically significant deep-sea ports at Hambantota on the east coast of Sri Lanka, and at Kyauc Pyu, in Myanmar's troubled Rakhine state. Both projects are sizeable and include the development of adjoining industrial parks, connecting road, rail and air infrastructure as well as investment in IT and telecoms, health and education initiatives in these developing nations.

LATIN AMERICAN TOO

Further afield, Chinese companies have also agreed to \$7.9bn in Latin American infrastructure development deals since the start of the 2017, according to financial markets platform Dealogic, and are on track to surpass last year's deal volume of US\$9.9bn. This includes the acquisition of Brazilian port operator TCP Participações by state-led China Merchant Port Holdings Group for nearly US\$1bn, the latest inroads into South America for a Chinese state-backed group. This will significantly affect iron ore, grains as well as oil and gas.

This adds to China Merchant Port Groups portfolio of overseas investments, which the operational rights it now holds to 40 ports in 22 countries, including Nigeria, Sri Lanka, Togo and Djibouti, according to The Economist Intelligence Unit.

Given its scale, the BRI initiative will have significant implications for bulk supply chains and terminal operators worldwide, who will do well to try and get on the front foot in the early stages of BRI's roll-out. The good news is that this means it is not only Chinese interests that will benefit directly from BRI – the fruits are also ripe for the picking for international terminal operators,

commodity traders, brokers, ship owners and the port agents that serve them.

For terminal owners and operators, there are two principle considerations that will affect them; meeting the requirements of large-scale infrastructure projects worldwide in the immediate future, and where and how new storage terminals will be required to meet the longer-term capacity requirements and what it means for supply chains across key commodity trades.

OPPORTUNITIES AHEAD

In the immediate future, there will be opportunity for ship owners and bulk terminal operators as the increasing portfolio of BRI infrastructure projects enters development. This phase will require significant quantities of iron ore and construction materials. Steel products, cement cargoes and coal, in particular, will be required to develop this expansive network of roads, railways, ports, pipelines, power stations as well as industrial parks, quays, warehouses and everything that connects them and keeps them running. Demand will be particularly acute across South and South-east Asia, Central Asia and Central China, with significant opportunities for terminals across these regions.

According to recent media articles, major mining corporation BHP has projected that Chinese steel demand alone will continue to increase and will likely continue to do so for another 10 years, at least. On top of this, an estimated forecast of an additional 15m tonnes of steel per year will be required in the next decade to facilitate the construction of BRI projects.

BHP has reportedly identified 400 core projects that would require a total US\$1.3tn of Chinese and foreign investment to succeed, with power, railway, pipeline and transportation infrastructure projects reportedly taking the vast majority of this investment.

As the most influential global infrastructure programme proposed for a generation or more, China's Belt and Road Initiative is so vast and all encompassing that it can be difficult to conceive of the post-BRI trading environment. There is, however, one

certainty in this project – it will have an inevitable influence on bulk terminal and storage operators, their customers and the companies that serve them. The effects may not be immediate, but they will be lasting.

Pivoting outwards from China and spanning across South East and Central Asia, the Middle East, Africa and Europe, the Belt and Road Initiative is a development project of mammoth proportions. Ultimately, the BRI matters because it is not simply Chinese investment in projects in various countries. It is a carefully mapped, geopolitically charged blueprint for the future. In all, BRI is the manifestation of an economic and social philosophy so ambitious that it will eventually reshape the global trade dynamic and provide the vehicle and the soft power influence for China. It will cement China's position as the world's economic powerhouse for generations to come.

CENTRAL TO SUCCESS

Thankfully, bulk storage terminals and ports intersect the two elements of BRI – the overland Silk Road Economic Belt (the "Belt") and the 21st Century Maritime Silk Road (the "Road"). The positioning, capacity and operation of terminals for all bulk goods is therefore central to the success of the initiative, and to future trade dynamics across almost every continent.

It is critical, therefore that they partner with service providers such as ship agents WaterFront Maritime Services, which has a global presence, understands the requirements of terminals and bulk commodity trades, and can act as a critical source of intelligence and counsel as trade flows transform and adjust.

WaterFront Maritime Services is a full-service global ship agency business providing tailor-made solutions that deliver tangible value to its clients. Its service provision is expedited by utilising its proprietary network of local offices and stringently vetted Network Partners across hundreds of ports on every continent. It was founded by regional agency firms Ben Line Agencies and Sharaf Shipping Agency.

COMPLETE SYSTEMS PROVIDER

COMPANY NEWS

As a complete systems provider for packaging lines, BEUMER Group offers the BEUMER fillpac for the efficient filling of bags with material from the construction materials, cement, mineral and chemical industries. In order to further increase the performance and efficiency of this filling machine, the systems provider has now developed the BEUMER bag placer for valve bottom bags and flat valve bags.

With its standardised modular design, the new BEUMER bag placer from BEUMER Group provides numerous set-up options. The user can set it up at any angle by adding an optional turntable for example. This reduces the required floor space considerably. The system is equipped with an ergonomic control terminal. The improved Human Machine Interface concept makes controlling the BEUMER bag placer easy and intuitive. It can also automatically adjust to different valve bag formats.



THE GRIPPING SYSTEM AND THE APPLICATION UNIT APPLY THE BAG FROM THE BAG REAM SAFELY ONTO THE FILLING SPOUT.



THE GRIPPING ARM IS SUPPORTED ON BOTH SIDES. THIS ENSURES SMOOTH RUNNING EVEN UNDER LOAD.

BEUMER BAG PLACER FOR VALVE BOTTOM BAGS

The drive unit and the gripping arm are driven automatically by servomotors, ensuring precise positioning and energy efficiency. The gripping system and the application unit apply the bag from the bag ream safely onto the filling spout. The drive technology used in combination with the electric coupling of both servo drives of the gripping arm and the application unit minimises the number of necessary mechanical components. The sophisticated kinematics also reduce the vibration of the machine, increasing its service life significantly. An oil-free vacuum ejector ensures low-maintenance operation. And due to the fact that the gripping arm is supported on both sides, it keeps running very smoothly even at an output rate of 6,000 bags per hour.

The operator can use this version for PP, PE and paper valve bottom bags. Bag lengths of 350 to 650 millimetres and bag widths of 230 and 550 millimetres are possible as well as valve widths of 80 to 160 millimetres. The new system can handle 3,000 bags per hour, the high-capacity version up to 6,000 bags.



CAPACITY AND EFFICIENCY OF THE BEUMER FILLPAC CAN BE FURTHER INCREASED WITH THE BEUMER BAG PLACER AND THE REAM MAGAZINE.

The optional turntable is driven pneumatically with a swivelling range of up to 60 degrees or electrically with a range of up to 150 degrees. The modular design of the ream magazine can be adjusted to lengths from two to nine metres. The drive and end stop can be installed on either side. The ream magazine can be filled ergonomically even with varying heights of the filling spouts.

BEUMER BAG PLACER FOR FLAT VALVE BAGS

With the BEUMER bag placer for flat valve bags the operator can choose between two versions, depending on which side they prefer the placing unit. In order to considerably reduce its footprint, the bag placer can be set up at an angle of up to 60 degree by using the optional turntable. The BEUMER bag placer for flat valve bags is used for woven PP and PE bags with lengths of 600 to 800 millimetres, widths of 400 to 550 millimetres and valve widths of 125 to 150 millimetres. Its capacity is up to 2,400 bags per hour.



CEMENTING RELATIONSHIPS

The cement trade for bulk shippers looks set to rise, following a decline last year, in what will be “an interesting year for dry bulk shipping”, according to industry forecasters

Cement as a bulk trade saw a drop in demand last year, but it is forecast to rise in 2018, provided advice given to other bulk cargo segments – including slow steaming and a strong level of demolition activity – is followed.

Following a decline in 2017, 110m tonnes of bulk cement and cement clinker are expected to be shipped in 2018, a growth of just over 3%. And China remains all-important to the market this year, according to BIMCO.

The organisation’s Chief Shipping Analyst Peter Sand told the recent INTERCEM Shipping Forum that 2018 should prove “an interesting year for dry bulk shipping”.

While global GDP rates are expected to increase slightly on gains last year, the International Monetary Fund is forecasting global GDP rates to stay around 2018 levels, all the way into 2022, Sand said in his presentation.

The world trade volume growth in goods and services is expected to drop from 4.2% in 2017 to 4.0% in 2018,

he said, and the shipping industry’s challenge “was to understand that this is a good as it gets”.

In the dry cargo segment, keeping slow steaming around to safeguard recovery was necessary as was controlling the size of the fleet, he said. Shipping has, after all, seen many shoots of recovery blighted in the past because owners launched into a frenzy of newbuilding orders in response to improvements in the market.

According to Sand’s statistics, the dry bulk fleet is estimated to grow by 1.0% in 2018 (up 8m DWT net) however if demolition falls short by 4m DWT, fleet growth will jump to 1.5%.

The cement trade has followed the shipping industry down since the boom days before the 2008 crash, and improved fortunes for cement, echo those of the dry bulk sector generally, according to Sand.

Other industry players suggest that cement demand is back on track after a number of tough years, with a global

increase in cement consumption this year, following a small increase of about 1% during 2017. While China is obviously key in terms of considering any statistical analysis, the increase in cement demand expected this year is of the order of 3.3% if China is taken out of the equation, according to Reuters.

Volumes are now on the rise, in particular resulting from increasing demand in Europe. Rebuilding following the devastating hurricanes in the US means cement demand could rise by as much as 6% this year, particularly if President Trump follows through on some of his promised construction projects. Other markets, like China and Russia may remain flat during the coming year.

Recent forecasts in the Philippines suggest that a gap between local supply and demand may mean a shortfall in the cement sector for the years until 2020, leading to a deficit in cement for the next three to four years to 2020. How much of this shortfall

is made up by China or other ASEAN countries will be an on-going issue.

Development in India will also be closely watched in the years to come, with suggestions that the sub-continent could become the main exporter of clinker and grey cement to the Middle East, Africa and other developing nations of the world.

Cement plants near ports, for instance the plants in Gujarat and Visakhapatnam, will have an added advantage for exports and will logistically be well armed to face stiff competition from cement plants in the interior of the country, so construction of new facilities will be under the spotlight.

Meanwhile, the shipping of cement is becoming more efficient, led by developments in the Asia market where the demand has not only been heavy, but where there has been an influx of new-generation ships. These include the new generation LNG-powered cement carriers produced in the last couple of years by Ferrus Smit.

The cement fleet is definitely on the rise and, according to Simon Cox of Howe Robinson, speaking at the INTERCEM conference, it now amounts to 366 vessels, its largest number since 2010 and at 2.77m dwt its highest capacity in the same period.

Many of the new vessels entering the market are operating in the Far East, where, among other things, natural disasters have resulted in extensive reconstruction projects. More ships are due to enter the cement fleet in the next year or so, some of which will be bulk conversions.

The newbuildings launched in the past few months include the 7,800dwt *Cymbidium*, delivered by the Royal Bodewes group in early January.

The new types of vessel are equipped with their own compressors and pumps so are self-discharging. Currently, about 90% of the total bulk cement is carried in specialised self-discharging cement carriers, while bulk carriers load a small proportion of the total bulk cement trade, along with clinker as well as cement in bags.

ZHIPING SONG, CHAIRMAN OF CHINA NATIONAL BUILDING MATERIALS (CNBM)



ENVIRONMENTAL CHALLENGES

Cement products offer many challenges, not least when it comes to dealing with the environmental issues that are coming increasingly to the forefront of the debate. Cement producers cannot afford to ignore the issue.

This was a point well made by Zhiping Song, Chairman of China National Building Materials (CNBM) who was recently appointed as the new President of the World Cement Association.

He was recently in London at the Association's conference to discuss, among other issues, the challenges of sustainability and global overcapacity.

Song explained how CNBM is working to reduce overcapacity and increase industrial concentration by implementing large-scale rationalisation, reducing new production and reorganising merger and acquisition strategy, while expanding the business.

"We have been increasing the degree of industrial concentration of cement in China from 12% in 2006 to 57% in 2016, which set an example for the whole industry," Song told delegates.

CNBM is the world's largest provider of cement, with a capacity of 530m tons per year, and Song emphasised CNBM's efforts in the area of environmental protection: "The production of cement strongly depends on resources and is sensitive to the environment.

"We put the environment first because we know that some changes will be irreversible if the environment is damaged."

SLIM CONTRACTION

In the Mediterranean Basin region, FOB prices for prompt deliveries of bulk ordinary Portland cement and clinker registered a slim contraction compared to the previous month, according to CW Research's recent update of Mediterranean Basin cement and clinker prompt delivery cargo price assessment.

Commenting on the price development, Ana Almeida, analyst with the CW Group's European team, notes: "In the Med Basin region, cement and clinker producers are facing strong competition, mainly in the North African region. However, sporadic shortages in some countries can be seen as opportunities in the next months."

In February, FOB prices for bulk ordinary Portland cement decreased slightly month on month in the Persian Gulf and Arabian Sea region, while prices for prompt deliveries of bulk ordinary grade clinker also recorded a slim contraction. East African CFR prices for bagged cement suffered a slight fall when compared to the previous month.

"Expectations for higher levels of exports coming from Saudi Arabia are likely to bring some relief to the country's stockpile. For the moment, the region continues to struggle with that matter," Almeida says.

MACHINE, REPAIR & SERVICES

COMPANY NEWS



Established in 1977, MRS Greifer GmbH is a leading engineering company providing design, manufacture, supply and after sales services for grab buckets up to 30 m³ capacity. Our commitment to continuous research and development ensures our grabs are world leaders in terms of technology, quality and performance.

With five decades of experience in the design, manufacture, research and development of grabs, plus an extensive after-sales service backed by our team of highly skilled engineers, MRS Greifs has clients from every corner of the world.

We design grabs to fully meet the needs of our clients and the parameters within which they work, producing equipment capable of unloading all kinds of bulk cargo. Our machines include the latest features and are of optimal weight, ensuring an exemplary performance for a longer period of time. When it comes to hydraulics and other outsourced parts, we only use trusted brands so the highest quality is ensured.



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SMOOTH OPERATORS

Speed, efficiency and environmental friendliness are the three watchwords when considering the latest developments in the crane attachment and grabs segment, while versatility is an essential marketing tool for industry players

As ships get bigger, freight rates begin to improve after a long period of depression and the threat of demurrage charges makes fast turnaround essential. Efficiency of bulk handling in port is ever more essential, not least when competing against other port facilities.

Equipment needs to be able to handle an increasingly diverse range of products including biomass which may show a variety of physical characteristics. While inevitably it is difficult to provide a solution that meets all requirements, that is the challenge for those companies that service the ports sector.

Terminal operators may well pay a premium for equipment which does what it says on the tin. The higher specification and more efficient the equipment, the less likely an equipment failure that could cause expensive delays in port.

While cost clearly remains an important factor, a cost effective solution that minimises potential safety hazards is bound to be in demand. Cheap

equipment is, at any rate, not necessarily going to be the best equipment to do the job, particularly if it means higher breakdown rates and costly delays.

Having grabs that perform to the highest standards over long periods of time is clearly essential and the cost of grabs is a relatively small part of any bulk handling operation.

Performance monitoring of grab operations is now a feature of some of the leading systems, while data can be analysed to ensure that the grab is used in the optimum position for filling, for example.

Suppliers of grabs have also built up strong relationships with crane suppliers to ensure that when new cranes are on order as ports develop their infrastructure, grab suppliers can also benefit. There are therefore many more grab contracts coming through crane suppliers than was the case in the past. That said, some ports will still go direct to grab suppliers for their needs.

WOOD CHIP WOES

As well as the need to find cost-effective and lasting equipment, terminal operators also need to contend with a whole new range of products to handle. As the need to find alternative energy sources continues to expand, wood chips are one product that is becoming increasingly popular and needs to be handled in a speedy and efficient way.

Wood chips are transported in large amounts across the globe, being easier

to handle in bulk than some other biomass products. There are, however, several schools of thought on how best to handle the product. Verstegen, for example, says that while woodchips are often handled with orange peel grabs and many people are still under the assumption that they can only be handled with such grabs, they are actually "heavy, expensive and unfit for cleaning up operations".

The company believes that

orange peel grabs have a number of disadvantages, including a relatively high deadweight that reduces productivity and a large circular footprint, which makes entry to a smaller ship hold difficult or impossible.

Verstegen believes such grabs are also not suitable from a cleaning perspective "as the outflow of wood chips with orange peel grabs is uncontrolled and can cause difficulties with discharging direct into hoppers or trucks. Orange peel grabs are expensive and require more maintenance in comparison with clamshell grabs."

"The material is very light, but not free-flowing and during loading of the ships, the material is often compacted by wheel loaders in order to store as much of the product as possible in the holds. The combination of these factors create a lot of digging resistance for the grab".





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LAYING WASTE

As the handling of waste is an ever more important issue, STEMM's electrohydraulic type PH6-5500-0,9, with a capacity of 5.5m³, is one product on the market that aims to deal with waste effectively and efficiently. The company's grabs have double suspension to facilitate good stability and are mounted on overhead cranes.

The shells are of half-open type and are highly wear-resistant, a key consideration when handling high volumes. The hydraulics are fitted with a system that allows energy recovery in each manoeuvre, which makes the grab highly cost-efficient. The orange peel grabs are provided with special joints free of lubrication and maintenance, which do not require any oiling by personnel, thus saving on manpower. The grabs work semi automatically, but have been equipped with sensors and peripherals so they can also develop their work in a fully automatic process.

MAKING CONNECTIONS

Digitalisation is a key component in any port operation and, as speakers heard at the *Bulk Terminals 2017* conference, companies ignore this at their peril.

Konecranes is one of the equipment manufacturers participating in the Connected Industry Ecosystem, launched by innovation platform DIMECC. In the ecosystem, leading equipment manufacturers and digital solution and service producers join forces to cultivate data into new products and services. The idea is to transform rapidly increasing digital data into new creative business, bringing added value to customers.

One of the aims of the project is to learn how millions of lifting devices perform and use this knowledge around the clock to make customers' operations safer and more productive. In practice, this means that customers will receive new digital services, which are based on the data generated by equipment.

"Devices' capability to analyse their status and communicate their findings, combined with digitalised maintenance processes and real-time information for

our customers, will enable new developed service products," says Juha Pankakoski, Konecranes' Executive Vice President of Technologies. Cranes must also be able to adapt to their environment and operate autonomously as part of the logistics chain.

"Connected industry makes it possible to connect current manual cranes to a fast mobile broadband and thus become part of a digital factory."

Liebherr's intelligent SmartGrip grabbing technology, meanwhile, has a self-learning system that increases material handling performance and protects the crane from being overloaded.

The SmartGrip grabber technology is capable of optimising the filling rate of the grabber in a self-learning manner. In

this way, SmartGrip learns after just five lifting cycles how to optimise capacity utilisation of the grabber, even for less experienced crane operators.

Liebherr says SmartGrip combines a series of significant advantages in bulk handling by preventing overloads, increasing the material handling rate and, at the same time, alleviating crane operator stress. Advantages of SmartGrip when handling bulk goods include up to 30% greater material handling output, an optimised grabber entry angle and adaptation to the material being loaded – with no grabber change requirements.

Time and fuel savings and improved safety are additional features, the company says.



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SMB SHIP LOADING SYSTEMS

COMPANY NEWS

Flexible and reliable loading equipment is a prerequisite for the economical transhipment of goods by sea vessel. Through the use of customised systems, port facilities can be optimised, laytimes reduced and untapped potential fully exploited. SMB International therefore relies to a great extent on in-house manufacturing for major international projects.

As a company that specialises in systems relating to all aspects of loading, conveyor technology and materials handling, the German company SMB International has been developing customised ship loading systems for more than 20 years.

With more than 80 loading systems installed on behalf of customers in Asia, Africa, South America and Europe, the company understands how important short laytimes and fast transport processes are for the effective transhipment of freight. The faster a ship is loaded, the shorter the laytimes and the more economical the transport operation. SMB therefore relies on a two-stage production process.

Ship loading equipment is initially designed at the offices in Quickborn, near Hamburg in northern Germany. All mechanical and electrical devices are developed and custom-manufactured here according to the specific requirements of the project.

They are the basis for the precise implementation of the project and subsequent assembly on site. SMB can also draw from its many years of experience to modify or expand the capacity of older facilities and offer a range of additional options.

REQUIREMENTS VARY WIDELY

The ship loading systems are adapted and customised so that they can fulfil their specific purpose and task. The various systems available offer carrying capacities ranging from 5,000 dwt to 90,000 dwt (deadweight tonnage), with loading capacities of up to 2,500 t/h.

As circumstances require, SMB can develop systems for stationary deployment or for mobile deployment on rails. Three variants have become established solutions with regard to loaded goods: bulk material loading with cascade chutes, bag loading with helical chutes and combined loading for bags or bulk materials, with helical and cascade chutes mounted on the same boom arm.

Cascade chutes optimize the flow speed of the bulk material so that the grain size remains largely undamaged. The resulting dust is "caught up" in the wake of the sliding goods. In bag loading, the boom arm, which includes a conveyor belt, can swing over the ship with a length of more than 30 meters. At the outer end of the boom arm, the helical chute hangs vertically as the central element of the bag loading system. It transports the bags exactly into position in the loading area.



IN-HOUSE MANUFACTURING OFFERS FLEXIBILITY IN FACILITY CONSTRUCTION

FOCUS ON INDIVIDUAL REQUIREMENTS

When planning and realising a new project, SMB International focuses on the specific needs of the customer to deliver a customised solution. The Quickborn ship loading systems have proven their value over many years in operation – the long-term economic viability of the systems is a key consideration for the engineers.

In addition to shorter port laytimes, it is the lower insurance and transport costs, in particular, that make it possible for customers to make optimal use of the waterways. “Especially in places where conditions are less than perfect due to the infrastructure, systems must be adapted to the conditions on the ground, not the other way around”, says Heckel. This philosophy sets the German company apart from the competition and the success it has achieved confirms that SMB is right to continue to pursue this path in future.

“We made a conscious decision in favour of a high level of in-house production. This allows us to maintain high quality levels and guarantee reliability. Of course, we want to meet the expectations of our customers. But we are also always driven by our own high standards and aspirations”, explains Andreas Heckel.

For further information see www.smb-group.de.

TWO BRANDS – ONE IDEA

The two companies SMB and MBA focus upon the “material handling” segment. The planning, development, manufacture, global distribution and servicing of highly complex, automated loading systems, filling systems, measurement technology for fill levels and conductivity, palletizers and shiploading systems form the comprehensive product portfolio.

The SMB Group has consciously opted for a high degree of in-house manufacturing at its site in Quickborn near Hamburg. This enables customers’ requests to be implemented in a spontaneous, targeted and rapid manner, whilst retaining the same high quality. A high-end mechanical and electrical manufacturing facility coupled with the focus on pre-assembly allows the assurance of qualitative and delivery reliability.

Highly qualified installation and service teams work on domestic and global projects. The distribution network, which has operations worldwide, ensures swift and effective information-sharing and coordination.

Port Material Handling

Shiploading systems made by SMB. Bulk loading, bag loading and combined loading.



SMB GROUP

www.smb-group.de

DO IT YOURSELF

In ever-demanding market conditions, investing in self-unloading vessels may present the way forward and provide cost-effective solutions for terminal operators – as well as faster turnaround times for ships in dock

Design innovations in the self-unloader newbuild end of the market have been coming on in leaps and bounds. A recent example is Estonian company PlatanoEesti's launch into the bulk carrier segment with an order for mini capesize vessels with CSSC Shanghai Shipyard, China. The new ships will be Polar Code compliant and SeaQuest Marine Project Management is overseeing the construction of the first vessel, work on which is due to begin shortly.

As Maxim Romce, Managing Director of PlatanoEesti, says: "The Arctic offers new opportunities and now is the time to embrace them, but there are challenges and this is why innovative thinking is required. Our aim is to build a vessel that will outperform those

currently trading in the Arctic area, while still remaining competitive on conventional operating routes.

"Taking into consideration the fact that the Arctic area and its port infrastructure is still not sufficiently developed, we have decided to equip the vessel with cranes and grabs, to assist the local shippers in maximising their export efficiency. With respect to the sensitivity of the area, we were absolute to exceed all environmental regulations and are adopting the latest solutions to minimise environmental and safety risks and the vessel's carbon footprint, ensuring reduced fuel consumption, effective route planning and reliable communication in polar waters."

The vessel will be 250m in length, have a hold capacity of 130,000m³, feature advanced marine technology for navigation in Arctic waters with and without ice breaker assistance and will be equipped to load and discharge on its own. The vessel will comply with DNV GL's Ice Class IACS PC (6), Polar Code B and be optimised for ice navigation.

Its features underscore the role self-unloaders can play in the harsh environment of Arctic waters, bearing in mind the recent opening up of such potentially inhospitable areas to shipping on a year-round basis.

Other new designs of self-unloader to come into play recently include Vulica Shipping's additions to its panamax fleet of two newbuildings, also built in

China, which combine environmentally compliant technology with improved efficiency in cargo handling.

The two 67,150 dwt vessels were built at Jiangsu Ship Heavy Industry Co and are to be deployed for the trade from Vulica's parent Vulcan Materials Company terminal on the Yucatan Peninsula to ports on the US Gulf Coast.

The ships are built to Deltamarin's B.Delta68 SUL design, with the B.Delta82 type's hull but with a shallower draught handling and on-site assistance.

Bulk material handling specialist EMS-Tech designed and supplied the gear for the Vulica newbuilds, with aggregate unloading rates of 4,500 tonnes per hour, or 5,300m³ per hour. The self-discharging system is made up of two tunnel conveyors fitted with feeder gates and a 27m lift, C-loop elevator-conveyor, culminating in the 79m-long discharge boom. The newbuildings have seven cargo holds and different grades of aggregate can be segregated.

The ships are fitted with the MacGregor MacRack hatch system. MacRack, an electric-drive system that combines drive and lift operations for side-rolling hatch covers, offers economic and operational advantages at all stages of a vessel's life.

With the 0.5% sulphur cap is due to come into operation in 2020, there are already moves afoot to seek to ban the carriage of fuel that exceeds the new sulphur limit as regulators seek to sharpen up the industry's approach to the new sulphur controls and prevent owners from exploiting potential loopholes.

In this instance Vulica has gone down the scrubber route and will therefore be able to operate using IFO 380 intermediate fuel oil of 3.5% sulphur content, both at sea and when in coastal waters and manoeuvring in port. Anticipated consumption at a laden speed of 13.5 knots is of the order of 24 tonnes per day.

Meanwhile, the first inbound dry cargo transshipment from a CSL panamax self-unloader to a CSL self-unloading laker was performed last September in Sept-Iles, Québec.

Carrying a 56,500mt split cargo of anhydrite and gypsum loaded in Spain,

CSL *Metis* sailed to the bay of Sept-Iles, where the Great Lakes-bound cargo was transferred to Thunder Bay and Whitefish Bay. The transshipment operation, which opens up the availability of international raw materials to Great Lakes customers, was the first collaboration between CSL's Americas and Canadian fleets.

CSL's self-unloaders are designed to deliver large amounts of cargo quickly. Key features include the capacity to pinpoint cargo placement, the ability to minimise or even eliminate dust and spillage while discharging, and the ability to operate in areas where traditional dry cargo vessels cannot.

Discharge booms link up with shore-based takeaway equipment for a dust-free discharge and the new Panamax self-unloaders have dust collectors and bin vents as well as conveyor belt sprayers and covered discharge booms.

A key selling point with such vessels is the reduction of port congestion and demurrage costs, which are increasingly important in a market where costs need to be kept to a minimum. The aim is to reduce the time necessary for cleaning operations while improving discharge rates.

Another recent vessel, purpose built for the cement market, is the 7,800dwt ship

Cymbidium which was built at the Royal Bodewes yard, delivered in January 2018 and destined for use in the Caribbean.

All the equipment required for both pneumatic and mechanical unloading is installed on board. This is a capability not usually found on cement carriers of this size, as these are generally converted bulk carriers lacking the facilities needed to discharge themselves.

The hull form, bow design and propulsion system aim to reduce emissions by as much as 20%. The ship has four holds and cement is loaded using gravity and air slides.

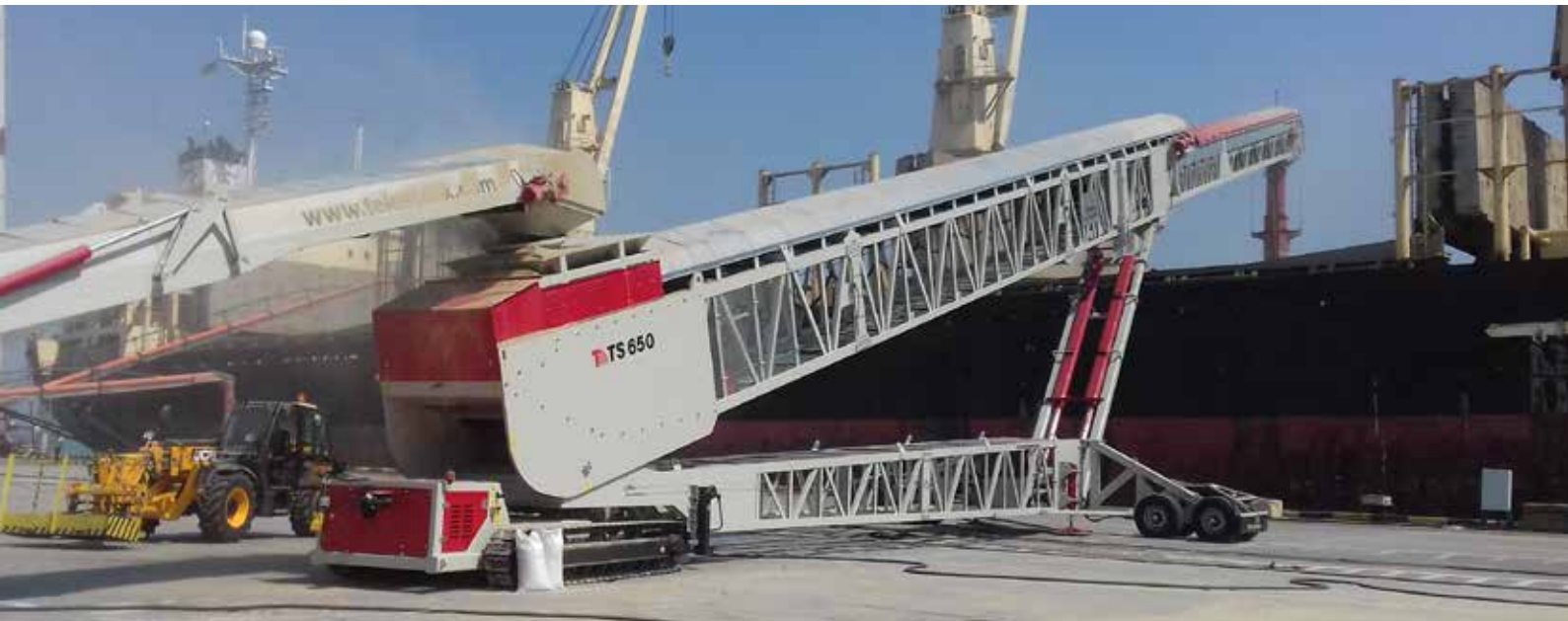
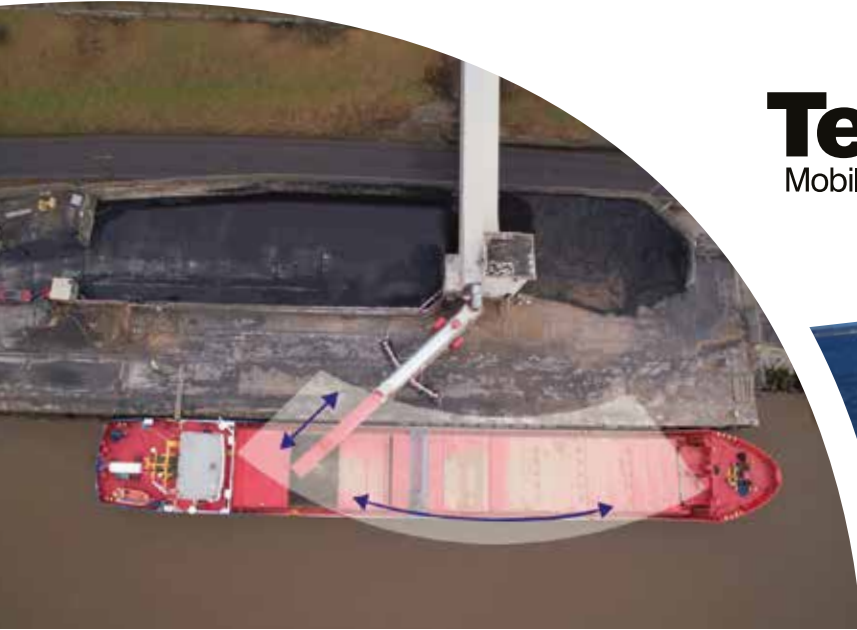
Alewijnse Marine was responsible for the electrical engineering and installation on board *Cymbidium*, which is the sister vessel of the 5,700dwt cement carrier *Furuvik*, recently delivered for operations along the Finnish coast.

Furthermore, the new vessels have been designed to be exceptionally efficient, through features including the sharp cross bow, the streamlined hull below the waterline and the integrated power on board.

As a result, the fuel consumption and accompanying emissions are around 20% lower than on comparable ships. This helps make the *Furuvik* and *Cymbidium* highly competitive in the market.



B.DELTA68 SUL (SELF-UNLOADING) BULK CARRIER (PHOTO VULICA SHIPPING)



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WHY CHOOSE TELESTACK?

- > Operational in less than 6 months
- > No Civil Requirements/ Planning Permissions
- > Unrivalled Mobility/Flexibility
- > Dust Containment/Extraction Systems
(Environmental Conditions)
- > Capacities from 100-3000 tph
- > Barge to Handmax/ Baby Capesize Vessels

#MovingToMobile

MOVING TO MOBILE

COMPANY NEWS

Telestack specialise in the complete design, manufacture, installation and commissioning of mobile bulk material handling systems and have a global proven record in a range of applications including ports & inland terminals, stockyard management, power stations, quarry and mining industries, rail yards, steel mills, cement kilns and many other bulk material handling industries.

PIT TO PORT TO PLANT

Telestack have decades of experience throughout every part of the logistics chain from Pit to Port and they continue to provide innovative and reliable mobile bulk material handling systems to its worldwide customer base. Telestack have thousands of installations across the globe in a range of applications and their products offer enhanced flexibility and efficiency in handling dry bulk material, whether from the Pit, the Port or Plant.

Telestack offers a wide range of mobile ship-loaders to load barges, coasters and larger vessels. Telestack's unique range of ship-loaders are designed

taking into consideration maximum free-board heights, beam and quayside widths. The customised design by Telestack ensures that each installation is specific to the requirements of the application, site, loading conditions and customer requirements.

Telestack offer a range of solutions for feeding shiploaders directly from trucks, wheel loaders or grabs, taking into consideration the limited quayside space available when loading these types of barges and coaster vessels. The direct loading equipment ensures the material is transferred from quayside to vessel as efficiently as possible, eliminating the double handling of material.

Telestack offer an extensive range of options to feed their mobile systems, so the client has a complete package 'to fulfil' the required needs. Telestack have a range of feeding methods from trucks, pay loaders, ground/overhead conveyor systems and tripper conveyors and also offer single feeding units to load/unload vessels which allows for a single unit for all processes.

The use of mobile systems throughout Ports and Inland Terminals continues to grow globally. The innovative nature of the Telestack range means Operators have the ultimate flexible solution for handling dry bulk in the Port/Terminal. The Telestack range offers many benefits to your operation including:

- » Increased mobility increases flexibility when handling your dry bulk;
- » No/Limited Civil Construction or Planning Permissions Required;
- » Lower CapEx investment when compared to Fixed Infrastructure & Mobile Harbour Cranes;
- » Environmental Considerations – Integrated Dust Extraction & Containment Systems;
- » Ideal for Multi – Cargo Berths when handling Dry Bulk/ Containers/ Break bulk;
- » Perfect investment for Stevedoring Companies ensuring lower costs per tonne;
- » Multi - functional Equipment – Same units for Shiploading/ Ship – Unloading, Stacking & Reclaiming
- » Short Lead Times from order to operational – Typically 10-24 weeks.



- 01 Stacking / Warehouse
- 02 Reclaiming
- 03 Barge Loading / Barge Unloading
- 04 Ship Loading – Radial Telescopic
- 05 Ship Loading – Cambered Boom
- 06 Ship Loading – Rail Mounted
- 07 Ship Unloading
- 08 Rail Wagon Loading
- 09 Rail Wagon Unloading

STACKING THE ODDS

Bulk cargo carriage covers a wide range of different products and specialist handling is essential. Bulk cargo facilities in ports are in constant operation and equipment needed to handling product must be safe to use, reliable and easy to maintain



Automated handling using stackers and reclaimers improves performance and safety, as well as enabling much larger quantities to be processed in a shorter period of time. This flexibility is key to using mobile equipment in ports or on projects that are in the first stage of development and where funding for future stages is uncertain due to market fluctuations.

Carl Donnelly, International Sales Manager at Telestack, says that as far as mobile equipment is concerned there are some misconceptions about how they add efficiency to the process and how they can work to the user's advantage in improving production rates. Environmental issues are obviously important when dealing with biomass products, for example.

Given the fluctuations in the market for bulk products, prices and supply and demand there is a good deal for the terminal operator to deal with. The key issue, Donnelly says, is flexibility, in order to minimise the effects of the uncertainty surrounding cargo flows, supply and demand and ship availability.

“There are a lot of misconceptions about what mobile plant can actually offer,” Donnelly says. “It is critical to manage and limit the risk. If we look at every situation, every terminal is different in the way they handle product and what infrastructure they have to handle certain materials.”

Many of Telestack’s customers are stevedores, port operators and shipping companies, whose key aim is to reduce the cost per tonne of moving bulk products and to minimise risk. This means eliminating over-handling, transferring more efficiently from onloading systems for stacking and reclaiming and ship loading more effectively.

In cases where ports have dedicated handling facilities, the question is how they use existing infrastructure to try and develop a new market, bearing in mind the risks. This can be done with a smaller capex investment and more flexibility in the system by using mobile equipment for phase one developments, he believes. The aim is to provide solutions that complement existing systems for loading or unloading which eliminate double handling, contamination or degradation of material being used, for example in moving product between a truck and a barge.

One of the biggest areas it considers is multi cargo berths where there could be bulk handling for three days a week,

followed by container handling at other times, for example.

Mobile equipment can be used on the quayside during the dry bulk phase of proceedings, Donnelly says, and can then be taken out of service during other periods of container operation. As the equipment is temporarily in port and used for a specific function, this means operators can take advantage of a short term contract or a small increase in production in a certain segment.

Another misconception is that mobile equipment cannot handle dusty materials. While fixed equipment has no moving parts per se, Telestack does seek to handle this issue at an early stage, depending on the product’s properties. Plant can be fitted for integrated dust extraction.

In a pit-to-port situation, mobile equipment is not going to be appropriate for the whole process, but Telestack will look at the whole supply chain to evaluate where it can be most effectively deployed, to eliminate dust and other handling problems and to control capex investment, Donnelly says.

The same equipment, for example, can be used for stacking and reclaiming as can be used for loading the vessel. In the event of a new contract, a user can have the service up and running in a short space of time, without having to seek planning permission, for example to cover the construction

of new fixed facilities, Donnelly explains.

It is also good for use in areas where the political or economic situation is volatile as equipment can be packed up and removed for later use if situations change. It is not a question of replacing existing infrastructure but adding efficiencies to it, he says.

For example, Telestack provided a ship unloading system for the Nectar Group in the Philippines where there was a new project in place, but uncertainty on how much capex investment was going to be injected in the first stage. This involved developing a clinker business in the port.

The company also recently signed a contract with Maersk for loading and unloading cement clinker in the port of Salalah in Oman. Maersk looks at this as a good stage one development and a new departure for them. “Where you can add efficiencies to your logistics chain, there is always room for improvements, there is always room for flexibility,” says Donnelly.

Flexibility also has a key role to play in ports where commodities such as iron ore and coal are handled in working environments that are potentially hazardous as a result of dust pollution.

In this environment, ABB says its stackers and reclaimers make yard management easier by providing a “precise stockpile model based on scanning by a 3D target position sensor, specially designed for harsh



environments." The gantry and bucket wheel are positioned with help of GPS for precise control of the stacking or reclaiming position, which optimises performance based on the stockpile model. The company says that this reduces wear and tear and improves the life of the equipment.

Stacker and reclaimer operations can also be provided as a complete package. For example, French company AMECO's reclaimers can be combined with a stacker, creating a full storage system. Its stackers also combine slewing, luffing and travelling movements to create piles with as little dust emission as possible. Machines can be specially adapted in order to be able to work with corrosive, abrasive or very humid materials.

Portal reclaimers can be installed inside or outside a storage building. For outside applications, a single boom portal reclaimer is the normal choice, according to the company. For this type of machine, the scraper arm is long enough to reach across the pile. For inside applications, double

boom portal reclaimers provide the advantage of being more compact. The bucketwheel reclaimer is used in applications where high reclaiming rates are required, such as power plants, mines and steel mills.

Meanwhile, the market for entry-level light duty warehouse equipment is on the rise and has sparked a number of alliances to take advantage of buoyant market conditions.

One example is the KION group's new strategic partnership with leading Chinese manufacturer EP Equipment. The partnership will focus on joint product development and supply chain synergies and is expected to make both parties more competitive in terms of their product offerings.

KION Chief Executive, Gordon Riske says: "The co-operation will further strengthen our position in the booming warehouse equipment market."

Kalmar, part of Cargotec, is another company that is expanding its coverage in the Asia Pacific region with its new Essential range, which includes

reachstackers and forklifts. There are four models in the range, with lifting capacities ranging from 45 to 57 tonnes. These machines can be delivered with a spreader or hook.

The equipment is compatible with another of the company's products, Kalmar SmartFleet, an equipment monitoring and optimisation tool that analyses performance data, and helps to further improve efficiency and productivity.

Compaction, degradation, segregation and contamination are just some of the concerns that need to be addressed when stockpiling material. Most products available, such as EDGE's mobile ship loaders and feeders, aim to be easily incorporated into existing conveying systems so as to ensure maximum flexibility.

Depending on the stockpiling method, the type of material being transferred, throughput and the requirement of mobility, fixed, mobile, tracked and track radial conveyor formats with various production rates can be deployed.



PORTAL RECLAIMER FOR COAL,
TAQA, JORF LASFAR, MOROCCO

NICHE OPPORTUNITIES

As environmental pressure surrounding the use of coal continues, there have been moves into the speciality coal market in recent months



As in many other commodities markets, China has continued to have a major role to play in the movement of coal during the course of 2017, and new terminal developments have underlined the continuing demand for a commodity which has long been targeted as environmentally unfriendly.

Investment in the speciality coal segment has been growing, based on its potential use for products like silicon metal. Entry into these markets has been of benefit for companies seeking to diversify their portfolio of business, offering entry into more cutting edge niches.

This has been the thinking behind new partnerships to explore the use of speciality coals. An example is that of Rotterdam-based Europees Massagoed Overslagbedrijf (EMO) and Singapore-based coal trader JERA Trading, which recently hooked up to enter the speciality coal market for the production of silicon metal for use in photovoltaics and computer integrated circuits. Such partnerships are proof that coal is far from being yesterday's commodity of choice.

In this instance, JERA will be responsible for the sourcing end of the equation, with EMO providing transshipment and storage at its Rotterdam premises.

Specialty coals are produced by a screening, blending and washing process. The coal purification will be performed in a recently refurbished washing and screening facility at a 10 hectares unit in Rotterdam port.

Given concerns about airborne pollution during the handling of coal, the manufacturing process uses a closed water circuit and has negligible emissions.

EMO Managing Director Mathijs Pelsma has outlined the thinking behind branching out into speciality coals. "Smartly diversifying our product portfolio of dry bulk commodities is our answer in the current energy transition."

JERA's Managing Director Ronan Lory, stresses the new sourcing opportunities for the growing silicon metal industry that the exploitation of specialist coal provides.

Meanwhile, Chinese seaborne coal imports have once again provided strong support to dry bulk shipping demand by increasing by 12% in 2017, compared to 2016, according to BIMCO statistics.

In 2017, China imported a total of 228.5 million tonnes of coal via the sea, compared to 204 million tonnes in 2016. China sourced 84% of all its imported coal from seaborne exporters which, compared to 80% in 2016, indicates that China is not only importing larger volumes, but also substituting landborne coal with coal from seaborne exporters. The total import of coal was 271 million tonnes in 2017, compared to 255 million tonnes in 2016.

While the biggest exporters of coal to China are Indonesia, Australia and Mongolia, exporting 40%, 30% and 13% respectively, the rise of US exports of coal to China has clearly been of benefit to the dry bulk shipping segment.

BIMCO's Chief Shipping Analyst Peter Sand comments: "The fact that Chinese imports of seaborne coal continued the growing trend seen in the second half of 2016 into 2017, provided strong



support to the generally improved demand conditions in the dry bulk shipping industry.

“The import of US coal is highly beneficial to the dry bulk shipping industry as it has a strong multiplying effect on demand, as it provides some of the longest possible distances. Chinese importers accept a journey of up to 45 sailing days when they import coal from Norfolk, Virginia and Baltimore, Maryland”.

ENVIRONMENTAL STRATEGIES

The environmentally unfriendly aspects of coal as a commodity have led ports such as Amsterdam to review their strategy on coal handling. In contradiction, some ports have been piling on the pressure to ensure maximum throughput of coal handling, resulting in industrial disputes at port facilities, as has happened in Australia.

Amsterdam announced its port strategy for coal going forward last year. This involves working with local businesses to encourage them to use their land more efficiently and attracting start-ups and scale-ups which ensure diversification and innovation, for the purpose of accelerating the energy transition away from coal.

The final stage of the strategy is scaling back the transshipment of coal. Transshipment volumes already fell by 7.5% to 16 million tonnes in the past year. Transshipment of coal is expected to fall by 29% over the next five years.

“The transformation in the energy landscape is unmistakable and will result in the phasing-out of coal from the energy mix. The strategic plan 2017-2021 therefore states that the Port of Amsterdam works on a scenario in which the port will be coal-free by 2030,” the plan states.

According to Chief Executive Koen Overtoom: “We are deliberately making room for the development of new activities and innovations. This is sensible from an economic point of view and more sustainable, as well as promoting employment.”

The storage and transshipment of fossil transport fuels such as petrol and

kerosene will continue to expand during the transition period.

The port is also in the process of developing the area into the “city’s battery”. The port generates heat for the city and is investing heavily in the production and storage of renewable energy. In late 2016, the port also became the co-owner of a wind farm based in the Afrikahaven area and coupled with the expected growth in the production of biofuels the aim is to boost the port’s credentials as a supplier of alternative power.

The availability of green sources of power has been one of the main breaks on investment in using cold ironing for ships in ports. One of the main drivers for the use of shoreside power for ships in port has been that it would be greener than using the ship’s own power supplies.

So far relatively few ports have power supplies available on shore that are greener than those available on new generation vessels, particularly where coal fired plants are used to generate power. Uptake of cold ironing has been less attractive than expected as a result.

Another contradiction is that environmental considerations may also encourage the use of coal because it is more environmentally friendly than the source available. Increased coal handling may also result from a decline hydro, nuclear and wind output in India, for example. This activity coupled with seasonal declines in coal mining output have led to increased imports of coal.

At the same time, the highly publicised ban on the import of pet coal, deemed to be several percentage points less eco-friendly than coal, seems likely to give a boost to seaborne coal trades to the sub-continent. Analysts said this was likely to benefit South African coal exporters, for whom India is a well-established market.

Safety issues also need to be considered. Bulk cargoes such as coal are liable to spontaneous heating and coal also emits methane which is a flammable gas. When mixed with air it can form an explosive mixture. Moisture is also taken into account and selecting a dome for storage is just one means of protecting the product from moisture.

One advantage of this kind of structure is its shape ensures that there is little dust build-up on sharp surfaces.

Another issue that needs to be addressed is how the product reacts over time and some technology providers suggest that stacker reclaimers are used to make it easier to store the coal by age and therefore use the oldest product first by ensuring that its location is pin-pointed.

TERMINAL DEVELOPMENTS

Recent new terminal developments include ALBA Asia’s new coal terminal at VO Chidambaranar Port Trust (VOCPT) in India. The 10-million-tonne terminal will help the port raise its coal handling capacity to 24 million tonnes by 2019. VOCPT is one of India’s top coal-handling ports, thanks to the presence of several power stations in the vicinity that use imported thermal coal to run their plants. The port handles coal for Mutiara thermal power plant, a 1,200 MW coal-based power station run by Coastal Energen.

The power plant requires 5-5.5 million tonnes of coal a year to produce power and the coal terminal operator and the power producer are discussing a long-term deal to import coal through TCTPL.

Meanwhile, Essar Ports has signed a 30-year concession agreement with the Government of Mozambique to develop a new coal terminal at Beira Port on a design, build, operate basis through a subsidiary, New Coal Terminal Beira, which is a joint venture of Essar and Portos e Caminhos de Ferro de Moçambique (CFM), which will own 30%. The project will ultimately enhance Mozambique’s coal handling capacity by 20 million tonnes annually.

Mozambique is estimated to have reserves of over 23 billion tonnes of coal, which makes the country a major coal exporter that is well placed to cater to the international steel and power industries, especially in India, China, Japan and Korea. The first phase of this project will be developed at a cost of close to \$275m and will entail developing dedicated berths, along with state-of-the-art, mechanised and environmentally-friendly systems.



Increase your profits with intelligent solutions

Your challenge may be to invest in a bulk handling solution that ensures profitable and sustainable growth for your business. Our expertise is to provide just that solution. Virtually any dry bulk material can be handled through safe and smooth Siwertell systems, and thanks to totally-enclosed conveyors, the operation is free from dust and spillage.



Ship unloaders



Road-mobile
ship unloaders



Ship loaders



Conveying
systems



Bulk terminal
solutions



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Siwertell

MOVES YOUR DRY BULK

COMPANY NEWS

Siwertell is a world-leading supplier of ship unloaders, road-mobile ship unloaders, ship loaders, mechanical and pneumatic conveying systems and bulk terminal solutions. All Siwertell solutions are created to ensure environment-friendly, efficient dry bulk handling operations. Our products are designed, marketed and sold from our facility in Sweden.

Siwertell can deliver the most efficient solution for almost any type of dry bulk handling operation. All terminals and ports have their own requirements and our systems can be tailored for any customer-specific demand. The loading, unloading and conveying systems can be seamlessly combined to handle almost all types of dry bulk material. No matter what requirements you face, we add flexibility to the process, creating the best solution for you.

Our solutions are designed to handle virtually all dry bulk commodities traded across the world. Whether you handle compact lumpy materials, free-flowing powdery cargoes or hazardous commodities, we provide you with an efficient, clean and safe operation.

Trouble-free dry bulk loading and unloading operations depend on optimum conveying arrangements. We deliver a range of conveyor solutions, from dedicated single-commodity terminals to complex dry bulk cargo hubs requiring a mix of conveying products.



Our loaders and unloaders come in a range of sizes and capacities to meet customer requirements. Unloaders and loaders are offered as either stationary or rail-travelling units. We build the solution to meet your installation needs.

We offer planned, on-demand and emergency maintenance service solutions to support you whenever you need us. Our Siwertell CARE service agreements allow us to take customer service one step further, offering preventative maintenance packages. With our service agreements, we make sure your operational needs are fully covered.

Siwertell technology provides you with the most environmentally-responsible and safe dry bulk handling operations on the market. Environmental protection has always been a key consideration for Siwertell and regulations are now imposing increasing demands on the industry to provide clean and quiet operations.

With a focus on minimal dust creation and spillage, low noise levels, high efficiency and minimizing risks, our products exceed all current environmental legislation requirements relating to dry bulk material handling.

Siwertell's enclosed conveying systems minimize the risk of pollution and health hazards when handling dangerous commodities. However, enclosed systems can create a risk of explosion and fire for some materials, for example sulfur. Siwertell addresses this problem with its 4S Siwertell Sulfur Safety System. The 4S detects and extinguishes fires and minimises the risk of explosions; safely containing them when they do occur.

Find out more www.siwertell.com
Contact information:
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service@siwertell.com

Siwertell

UNDER COVER

Keeping bulk cargoes safely stored is increasingly important and handling products like biomass requires a high level of expertise



Covered storage is a vital component in the handling of bulk commodities such as iron ore or coal, both from the point of view of open air stockpiles being environmentally unfriendly when located near urban areas and also because of the dangers that bulk commodities may pose for ships if moisture gains access.

Dry bulk cargoes in storage also need to be protected from contamination by materials stored outside the enclosed area, or dust and particles in the air.

While cargoes may not be dangerous in themselves, with the increase in regulations relating to air quality, there is increasing resistance to stockpiling outside, even where materials may not be damaged by rain.

Handling products such as biomass present particular challenges. One aspect of bulk solids handling is the lack of understanding in the general community of just how expensive that handling is as a part of overall operations when using materials, according to Professor Mike Bradley, director of the Wolfson Centre.

“In the case of using biomass to replace coal, you can get benefits on emissions, for example. However, when compared to using gas, biomass is much more expensive because of the solids handling element. This is important when it comes to energy policy. Handling of biomass can be very variable because all the materials are different or mixed with other materials. No one handling system can deal economically with these”.

Classification of biomass materials from the handling viewpoint was introduced a few years ago, Bradley told delegates at ABTO’s Bulk Terminals 2017 conference. They can be classed as pellets, rounded cohesive materials or flaky scree materials, which are very difficult to handle. Pellets are the dominant biomass material traded globally due to their cost effectiveness to transport.

In terms of unloading and storage options there are a number of issues to be considered. Breaking pellets up when unloading will create dust, which has to be dealt with. There are

also issues relating to whether batches of material need to be segregated or not. Safety concerns “are what have caught out most people who have built biomass terminals, dust in particular”. At Drax terminal in Yorkshire, for example, 10 tonnes of dust a day are collected by the cleaning crew.

In getting material out of the ships, the unloading options used need to be considered carefully. Continuous ship unloaders will give much bigger throughput for the same weight on the quayside, according to Bradley. The downside is that they are less flexible than grab cranes because, in this instance, you can just alter the size of the grab for a different cargo.

Chain unloaders are “very gentle but tend to be of a smaller size” while pneumatic unloaders have found a lot of favour, he said because they are “simple pieces of kit and you can get them on a very short lead time”.

He warned that the “type of CSU you use will have a big impact on the quality and throughput”.

HIGH VOLUME

As far as storage facilities for biomass are concerned, large volumes are needed and they need to be watertight. Good turnover is also necessary because “if you keep biomass in static storage for a long time, with many biomass materials you are going to have fires and self-heating. You need to think about dust, explosions and fire management. You will have a fire,” says Bradley.

Storage options include multiple silos, which have the advantage of being small, offering flexibility and the possibility to segregate different products or use them for different ones if one should prove not to be economically viable. Operating labour is low and space is less of a problem.

Dome-type technology of the type used at Drax power station is another possibility, which involves less investment and can be built quickly. The downside is a huge storage space is involved. Explosion and fire protection can be challenging. “Understanding the properties of the biomass you are going to handle is critical,” says Bradley.

Sensitivity to water is something else to think about with handling. Also biomass dust is not just a nuisance dust, he said. “The thing about biomass dust is that it is more mobile. It will rise more and stay suspended more.”

Biomass, when stored, can become mouldy over time and when broken up mould spores can be released. In the agricultural industry, this is the biggest single cause of industrial injury claims.

Proper storage, inside and away from moisture contamination is therefore important. Separation of contamination is not easy to do. Also there may be different types of wood pellet for example which may break up differently. Keeping facilities clean is very important. “If you can write your name in the dust on the floor, you have a catastrophe waiting to happen,” says Bradley. “It is dust on the floor that can kill people.”

Self-heating is also an issue for biomass material in storage. There is a maximum residence time for biomass and it may be shorter than one thinks. “If you are handling biomass you will have fires, it is not a question of if, it is a question of when.” It is not enough to trust the fire service; coping with

fires should be part of normal operational procedures.

Getting a wide range of samples of the material is also essential, because different wood pellets come from different sources and can need handling in different ways.

Biomass is still growing in terms of handling in Europe, but political drivers have a big part to play. Flexibility of use of facilities needs also to be considered. “There is a trade-off between efficiency and flexibility. If you want the highest efficiency, you have to be prepared to invest in a lot of specialised equipment.”

FIXED VERSUS FLEXIBLE

Fixed equipment such as silos, domes, fixed conveyors or ship unloaders will give benefits such as low operating cost, low manning and high throughput. However, mobile equipment may well offer benefits in terms of flexibility.

Recent developments include ESI Eurosilos opening of its new facility at Yara Porsgrunn. The 20,000m³ silo will store calcium nitrate, a fertilizer. The new silo forms the logistic link between the production of calcium nitrate, with an infeed of 150tph and the ship loading operation with 1,000 tph. It is part of Yara Porsgrunn’s growth strategy to scale up its production volumes.

Another ground-breaking project comprises a potato starch silo in Jiusan in China, with the first batch of 20,000 tons of potato starch stored safely. One of the challenges was to design and build the company’s mechanical systems into an existing silo at the production plant of the Beidahuang Group in Jiusan.

With vertical storage a new trend, ESI Eurosilos has also been designing very large silos, with capacities of 50,000m³ and above. One such is the Lünen power plant of Trianel Energy, Germany, with a 2 x 100,000m³ silo storage facility for steam coal.

The advantage of vertical storage is that facilities occupy less ground space, which is a plus point in ports where real estate values are a consideration. Installation is expensive, however, so the viability of the bulk cargo to be stored – in terms of long-term demand in the market – is a key consideration.

COMMODITIES HANDLING

HES International has signed an agreement with Valt, a 50% / 50% joint venture between Vitol and Sargeant, to acquire Valt Asphalt Terminal, a bitumen terminal located in Botlek Rotterdam. The terminal delivers storage, handling and blending services to the European and African bitumen market.

The acquisition is in line with HES International’s liquid bulk strategy to expand its storage footprint in Europe, according to Paul van Poecke, Head of Liquid Bulk Terminals at HES International.

“The existing and potential future storage capacity can play an important role in meeting the increasing local and regional bitumen trade flows, in particular with IMO regulations focused on reducing sulphur levels in marine bunker fuels kicking in by 2020.”

Sulphur is a product increasingly under the environmental spotlight with industry players including Siwertell, which provides totally-enclosed sulphur unloaders and conveying systems. Unloaders have capacities up to 1,800t/h and the company’s road-mobile units can discharge sulphur at up to 350t/h. Sulphur loaders operate at rates up to 1,000t/h.

Corrosive, polluting and hazardous, with the potential to explode and cause fires, sulphur is especially polluting when handled with machinery such as grab cranes and bucket elevators. Handling it in a totally-enclosed system is highly environmentally friendly, but it increases the risks of explosions and fires. Siwertell therefore developed its 4S safety system, which minimises the risk of explosions and fires.

To prevent such occurrences, 4S sprays water on the cargo at the inlet feeder and at conveyor transfer points. An automatic system lubricates and cools the end and intermediate bearings to reduce the risk of ignition.

Fire detectors are installed along the conveying line. They automatically start the water spray fire-extinguishing system and stop the conveyors to prevent a fire from spreading to storage areas. Extra thick steel casings can withstand a sulphur explosion, while venting valves relieve the resulting pressure.

IN THE BAG

Breakbulk and bagging companies have been expanding their footprint in recent months with a number of new developments in ports and new technology



Shell has announced an ambitious investment agenda for its refinery in Pernis in the Netherlands, which Rotterdam port describes as the “perfect job” for its heavylift and breakbulk cluster.

The construction of a new Solvent Deasphalter (SDA) will enable the Shell plant to separate heavier fractions from crude oil, so that a larger share of the petroleum can be processed into lighter, high-grade products. However, before this innovative unit can enter into full service later on in the year, its massive components first have to be moved to their new site, the port said.

“Rotterdam was a logical choice for shipping,” says Arthur de Leeuw, Commissioning and Start-up Manager of the Shell Pernis SDA project. “Among other things, the port has excellent logistics connections, both by land and by water.” And these connections proved quite useful. The SDA is made up of 10 individual modules – and each of them is as large as a sizeable block of flats. These modules were all transported to Rotterdam by sea.

“We were working on this transport and all the necessary preparations for over 18 months,” says Agility Project Logistics Operations Manager Leon van Veenendaal. “Stability was a particularly challenging aspect of this job. At 30m high, 35m long and 14m wide, the units are very tall and narrow. Still, the entire project ran without a hitch, thanks to close collaboration within Rotterdam’s heavy lift and breakbulk cluster.”

Rolldock took care of transport over water, the Schiedam firm of Mammoet

handled the final leg of the journey over land, and Agility bore responsibility for the overall co-ordination. "It's a good, real-life example of what a fantastic breakbulk port Rotterdam actually is," says Van Veenendaal. "It not only has quays for a job like this and all the required know-how and equipment, you also see that they have the right mindset here to bring a mega project like this to a successful conclusion. I feel sincerely proud of both our collaboration and the end result."

BAG PROTECTION

Protecting products from the environment is key and the Beumer bag-in-bag system quickly and reliably packs filled paper bags individually or in groups with a weather-resistant plastic film. This protects contents against moisture, dust, insects and other environmental influences during storage and transport. The Beumer bag-in-bag is easy to integrate into existing filling and packaging systems.

The impermeable film keeps dust from escaping from the filled bags and prevents product losses. The films have thicknesses of 30 to 100 microns, so material costs are low. The outer packaging in the paper bags does not require an intermediate layer made of PE, a fact which also cuts costs and increases filling performance. The highly efficient system is so reliable that ultrasonic welding of the bags is usually not necessary.

The Beumer bag-in-bag system comes out of a collaboration with Tentoma, and has a wide range of uses. For Beumer, the focus is on the packaging of bags, but the technology is also suitable for goods with lengths of up to eight metres and product circumferences of 600 to approximately 5,600mm. Thus the system can also be used for bar stock, insulation materials or consumer goods. Users can integrate it seamlessly into their work processes by installing it in existing feeding line. The bag-in-bag supplements the Beumer fillpac inline packer and the aletpac high-performance palletiser.

Bagging, film packaging and palletising can be easily and seamlessly combined in a continuous production line. Expensive modification and system changes are unnecessary, the company says. The bag-in-bag is designed for

in-line packers with a capacity of up to 800 bags per hour. The flexible system can be configured for three different applications: a semi-automatic insular solution; a fully automatic de-palletising, packaging and palletising line; or an integrated solution in which machines can be switched on individually. Thus the system can be adapted to specific customer requirements.

“ Beumer bag-in-bag system quickly and reliably packs filled paper bags individually or in groups with a weather-resistant plastic film. This protects contents against moisture, dust, insects and other environmental influences during storage and transport

FLEXICON APPROACH

US company Flexicon has introduced a new Wide-Inlet Bulk Bag Filler, which allows rapid filling and passage of large, moist or dense chunks and semi-solid materials into open or duffle top bulk bags.

The unit features powered height adjustment of the cantilevered fill head to accommodate all popular bag heights, pneumatically-adjustable bag hooks, a roller conveyor, automated vibratory densification/deaeration deck and load cells with automated controls. Material passes through a hopper equipped with a slide gate valve positioned above the filler, and through the filler's inlet chute that tapers from 26 to 20in² square before discharging into an open-top bulk bag.

A vibratory de-aeration deck activated at timed intervals during the filling cycle densifies the bulk material, stabilising the bag. When load cells signal that the bag is approaching target weight, a controller shuts the slide gate valve, releases the bag straps and activates a powered roller conveyor to remove the filled bulk bag from the filling area.

Constructed of carbon steel with a durable industrial finish, the system is suitable for sludge-like materials, disparate-sized scrap, mulch, stone, coal, wood pellets and other bulk material containing pieces, chunks, agglomerates, clumps and other materials too large or non-free-flowing for conventional bulk bags and fillers. The unit is also available in stainless steel for filling of potatoes, cassavas, turnips and similarly sized crops.

The company also offers patented Twin-Centerpost bulk bag fillers for low-volume, low-cost filling applications, and patented Swing-Down bulk bag fillers that lower and pivot the fill head to the operator at floor level for safe, rapid bag connections.

Other recent developments by the company include a new series of Bulk-Out Half-Frame Bulk Bag Dischargers which feature low-cost frames of variable heights and offsets to fit restricted areas previously utilised for dumping of smaller containers such as sacks, pails drums, boxes and bins.

The low profile dischargers are engineered to straddle downstream blenders, feeders, tanks or other equipment in areas with limited headroom, restricted floor space and/or obstacles that would preclude the use of conventional discharger frames.

Lacking an upper frame, the discharger provides overhead space for suspending of bulk bags using a forklift or plant hoist. It can also be configured to support new or existing bulk bag lifting frames that can be connected to bags at floor level and then forklifted onto the half frame within inches/centimetres of the ceiling.

Meanwhile, the Flexicon Mobile Flexible Screw Conveyor with multi-purpose hood transfers material discharged from bulk bags and/or manually dumped from hand-held sacks into elevated process equipment or storage vessels dust free.

Mounted on a frame with locking casters for in-plant mobility, the system improves mobility and reduces cost by eliminating heavy frame components typically employed to support bulk bags, relying on the user's forklift or plant hoist to suspend the bag above the unit during operation.

An iris valve positioned atop the dust hood allows variable control of flow through the bulk bag spout. A bag support tray and hinged door allow the manual addition of minor ingredients from handheld sacks.

The flexible screw conveyor transports both free- and non-free-flowing bulk materials including products that pack, cake, smear or seize, with no separation of blends. Mounting flanges at the discharge end of the conveyor support boom permit the addition of a metal detector below the conveyor outlet.

All material contact surfaces are of stainless steel finished to sanitary or industrial standards with the exception of the conveyor's polymer outer tube. The mobile frame is constructed of carbon steel with a durable industrial coating, and is also available in stainless steel.

ON THE SPOT

On-the-spot bagging is key to a new technology from IMGs. Its mobile bagging units are designed in Canada and manufactured under the RAPIDPACK brand name. The units are mobile, self-contained and capable of operating 24 hours a day, seven days a week.

The bulk cargo can be bagged on the spot at the port of discharge, or from a stockpile after delivery. The machines are mobile and versatile, therefore their usage can be customised to fit the clients requirements and needs.

IMGs bagging units are capable of bagging up to 140mt per hour, with weight values from 25kg to 100kg. Weighing of open-mouth bags, valve bags, form/fill/seal packages and IBC's are all possible. Units are equipped with gravity-fed automatic net bagging weighers and industrial weighing systems, which ensures absolute accuracy in weight. The bagging service can be provided on a lease, sale or as part of a larger full turn-key service.

Among other recent projects, the

company supplied bulk cargo handling equipment to fertiliser projects in Aqaba and Amman, Jordan last year.

The project involved transportation and integration of the Rapidpack In-Feed conveying systems, bulk bagging systems and stock monitoring software for phosphate facilities, with production capacity exceeding seven million tons annually.

IBM COLLABORATION

The Port of Rotterdam Authority has also announced its collaboration with IBM on a multi-year digitisation initiative to transform the port's operational environment using Internet of Things (IoT) technologies in the cloud to benefit the port and those who use it. The initiative will also prepare the Port of Rotterdam's entire 42km site to host connected ships in the future.

It begins with the development of a centralised dashboard application that will collect and process real-time water (hydro), weather (meteo) sensor data and communications data, analysed through the IBM IoT platform.

This will enable a new wave of safer and more efficient traffic management at the port.

"We are taking action to become the smartest port in the world," says Paul Smits, Chief Financial Officer of the Port of Rotterdam Authority. "Speed and efficiency is essential to our business,

and requires us to use all of the data available to us. Thanks to real-time information about infrastructure, water, air, and so on, we can improve the service we provide to everyone who uses the port, and prepare to embrace the connected, autonomous shipping of the future."

As the port begins its digital transformation, sensors are being installed across 42km of land and sea – spanning from the City of Rotterdam into the North Sea – along the port's quay walls, mooring posts and roads. These sensors will gather multiple data streams including water and weather data about tides and currents, temperature, wind speed and direction, water levels, berth availability and visibility.

This data will be analysed by IBM's cloud-based IoT technologies and turned into information that the port can use to make decisions that reduce wait times, determine optimal times for ships to dock, load and unload, and enable more ships into the available space.

With the new initiative, Port of Rotterdam operators will also be able to view the operations of all the different parties at the same time, making that process more efficient. Shipping companies and the port stand to save up to one hour in berthing time, amounting to about US\$80,000, the port estimates.



FACING THE CHALLENGES

From apps to mergers, shipmanagers are coming up with a range of ways to combine the demands of their core role with an increasing tide of regulation, automation and financial pressure



ULTRAMAX BULK CARRIERS, ARE UNDER CONSTRUCTION AT JIANGSU SHIPYARD

Recent years have seen increasing consolidation in the shipmanagement segment as companies seek to merge with others to provide not only a one stop shop, but to achieve greater economies of scale.

There have also been moves by shipmanagers to get into new lines of business, for example with the move by Dania Ship Management to extend ship management capabilities to include dry cargo in a partnership agreement with Clipper Fleet Management, part of the Clipper Group.

Shipping is changing rapidly, as evidenced by the attention given to automation and partial automation of vessels, and one of the challenges for shipmanagers is to keep abreast of those changes.

V. Group, for example, recently launched its bespoke vessel management app – ShipSure Mobile – which V.Group's Director of IT, Stephen MacFarlane described as "the future of ship management. The ShipSure app offers owners complete oversight, transparency and real time visibility at any time. We've moved far beyond the

traditional noon report to drill down into a broader range of data in real time.”

V.Ships, meanwhile, was recently awarded its first technical ship management contract in Shanghai's Free Trade Zone with Minsheng Financial Leasing. The contract covers four 64,000 dwt Ultramax bulk carriers, are under construction at the shipyard of China Shipping Industry Co. in Jiangsu and due to be delivered over the next year. Technical management for the vessels will be provided by V.Ships' Shanghai office.

One example of consolidation is the announcement last year of a merger between Cyprus-based ship and crew managers Columbia Shipmanagement and Marlow Navigation to form new entity Columbia Marlow, a move which boss Mark O'Neil says provides “two strings to one bow”.

He believes shipmanagers need to step up the plate with challenges including new technology and fierce competition in the current climate of increased consolidation and requirements to achieve economies of scale.

About 20% of the global fleet have third party shipmanagers and clearly the services provided can be more or less comprehensive, ranging from full management to partial provision in some service areas like crewing.

As a third-party shipmanager, the name of the game is to persuade owners to contract out and convince them “that they need to use us as we achieve economies of scale they couldn't do and remain competitive in the market,” O'Neil says.

O'Neil also emphasises the company's focus on “training and IT”, saying it has invested millions in building and operating training facilities round the world. Getting the right crew, and more importantly retaining them, is key. “I don't think we can ever invest enough in training”.

Shipmanagers' ability to follow the digitalisation process is essential, he says. This was the driver behind Columbia and Marlow's decision to



MARK O'NEIL, PRESIDENT OF COLUMBIA SHIPMANAGEMENT

“ We have to keep reminding ourselves that we are there to serve our clients. Our ultimate goal can't be outside investment, it must be client service

set up Blue Dynamics. Following on from this, Blue Dynamics formed a partnership with Lufthansa Industry Solutions last year, aiming to provide the highest standards of information technology relating to performance monitoring, predictive maintenance, remote sensing, procurement, logistics, crew planning and other important topics such as development resource sharing, lab utilisation and state-of-the-art development processes.

That said, O'Neil warns of the dangers of looking at services more than core functions. “If you take your eye off crew management you will be letting your client down,” he says.

In terms of digitalisation, it is not just a question of having the latest software but having a coherent digital vision and agenda. Anything put in place needs to be client, and future client-facing, he adds.

Shipmanagers also need to be able to demonstrate that clients are receiving the best service in a wholly transparent way and partnership with clients, crew and staff is essential. “We are a service provider, not an investment vehicle,”

O'Neil said in a recent podcast organised by Capital Link.

O'Neil is critical of some shipmanagers "flirtation" with outside capital providers with a view to a possible company flotation. He believes this could affect managers' ability to service clients effectively and that the hunt for outside investment and capital could prove a distraction, because the focus becomes the bottom line. "We have to keep reminding ourselves we are there to serve our clients. Our ultimate goal can't be outside investment, it must be client service."

TAKING THE RISK

Trying to pinpoint the potential weak spots during port state control inspection has always been a talking point, both in terms of the efficiency of the port state control inspections themselves and from the point of view of naming and shaming the culprits.

Risk profiling, according to marine risk firm Prevention at Sea is becoming more important to port state control inspections, during which inspectors single out the performance of the ship manager and the flag state recognised organisation in particular.

According to chief executive Petros Achtypis, port state control inspectors were starting to draw direct parallels between the risk profile of the ship and the performance of the ship manager and the RO. "There is a growing trend to look at ways to identify operational and management risks and detect any pitfalls that could lead to accidents or injury," says Achtypis.

"There are many factors affecting the ship's or the ship operator risk profile that should also be taken into consideration, such as the perception of risk; the level of training; the level of familiarisation; resilience; chronic unease as well as collective normalisation," he adds.

While some ship operators provide a library of task examples with the risk already calculated, Prevention at Sea believes this practice has an adverse effect as the identification of new risks will often be omitted while the task examples and calculated risk from the

library tend to be copied by the crew, leaving unique surrounding conditions such as weather conditions; the time when such tasks are performed; the level of training and perception of risk going unnoticed.

"The fact that vessel accidents still occur even when the ships have been PSC inspected means that the current risk assessment process should also take into consideration various qualitative factors and not just for example the type of ship or the place of build," Achtypis says.

VLOC FLEET CONCERNS

Pinpointing potential areas of risk and risk mitigation through the use of more advanced technology will have increasing potential going forward, however learning the lessons in retrospect for older tonnage may not be so easy.

During the months since the sinking of the *Stellar Daisy* in March 2017 while carrying a bulk ore cargo for Vale, in addition to another incident where cargo liquefaction is believed to have been involved, have raised a number of questions that those managing and operating bulk carriers will need to give increasing attention. One of these questions revolves around the viability of the sizable section of the VLOC fleet that was converted to the trade after several years trading as VLCCs.

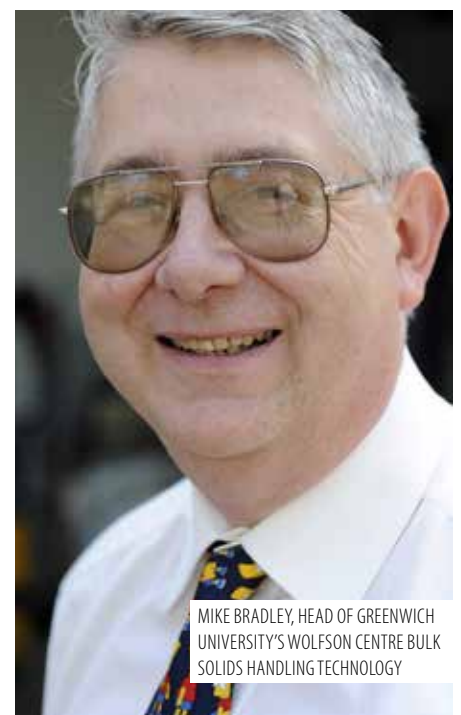
As Mike Bradley, head of Greenwich University's Wolfson Centre Bulk Solids Handling Technology puts it: "If you take something that is meant to be filled to the top with a low density material and cut a hole out of the top or several holes and then fill it a quarter full with something that is three times as dense, the change in the stresses on the structure are going to be pretty drastic. Even if reinforced I would doubt it would be possible to really know that such a conversion had the strength that it needed."

He adds the structural integrity of bulk carriers is so much poorer than tankers in the first place that to take a tanker that has had its life and convert it into a bulk carrier is just asking for trouble."

The Wolfson Centre has come up with a new testing prototype which it hopes can be taken forward by shipping companies and P&I Clubs so simplify testing procedures in ports to guard against liquefaction of bulk cargoes, another danger to the industry.

Since the *Stellar Daisy* accident, the report for which has yet to be released, operator Polaris has been inspecting its fleet of ore carriers. "In the interim, the Polaris managed fleet has undergone enhanced fleet inspection with all 18 converted VLOC vessels being subject to continuing special inspections by dual Lloyds and Korean Register. These inspections were carried out between April and October 2017. All vessels were carefully assessed by Class following inspection. In addition to fleet inspections, Polaris has also appointed additional staff to its management structure to oversee fleet maintenance and standards, being two Fleet Safety Management specialists who each have over 20 years of experience in such positions gained with well-established Korean shipping companies, the company says.

"Polaris has continued its fleet renewal programme by having 18 newbuild VLOCs on order."



MIKE BRADLEY, HEAD OF GREENWICH UNIVERSITY'S WOLFSON CENTRE BULK SOLIDS HANDLING TECHNOLOGY



ADDRESSING THE CYBER THREAT

Recent high-profile ransomware attacks have put Cyber Security firmly at the top of the bulk shipping agenda, says Samuel Brown at Templar Executives

What would you do if your all your technology systems shut down for a day? What about a week? We're not just talking about IT systems, but we must consider its interconnectedness between Operational Technology and plant equipment. Could your company survive if your most valuable intellectual property was stolen?

The benefits of the shipping industry's increasing use of technology are considerable, whether on board ships, in ports or in operational centres. Technology is already revolutionising how shipping movements operate by enabling machine performance to be monitored, thus improving operations, reducing costs and even preventing failures from occurring. Tracking and monitoring also helps with managing logistic lines and customer expectations.

However, as Cyber Security becomes ever more intertwined in the maritime ecosystem, the risks and potential for compromise need to be identified, understood and managed effectively.

In May last year, computers across the globe were hit by the "WannaCry" ransomware, and in June organisations were hit by another form of ransomware called "NotPetya". One of the hardest hit by NotPetya was AP Møller-Maersk, the Danish business conglomerate and largest container ship and supply vessel operator in the world.

As a result of the ransomware attack, Maersk was forced to halt operations at 76 port terminals across the globe and recovery involved reinstalling over 4,000 servers, 45,000 PCs, and 2,500 applications. Maersk estimates the cost of the incident at £250-300m, due to loss of business in the preceding quarter, with a cut of its profit guidance following Q3 of 2017 blaming the "continuing higher cost to recover services and reliability after the Cyber attack".

The true long-term effects of the NotPetya attack on Maersk are not yet known but its Chairman, Jim Hagemann Snabe, has said: "It was an important

wake-up call. We were basically average when it comes to Cyber Security, like many companies. And this was a wake-up call to become not just good – we actually have a plan to come in a situation where our ability to manage Cyber Security becomes a competitive advantage."

Maersk is a global organisation, responsible for 15% of seaborne freight. It has recovered well since the attack, but the consequences of being hit may not be manageable for a smaller company operating within already tight margins and without the "customer pull" a behemoth like Maersk can exert.

It is not just the shipping companies themselves that suffer from the effects of a Cyber attack, the whole supply chain can feel the effect. Maritime transport is essential to the world's economy: over 90% of the world's trade is carried by sea, so any disruption has wide-reaching effects. The 2017 Allianz Risk Barometer reported that business interruption (including supply chain disruption and

vulnerability) was the number one global business risk and is joined in the top three by Cyber incidents – four years ago, Cyber incidents ranked 15th in the top global business risks.

Business interruption and Cyber risks commonly occur concurrently; an organisation is only as strong as its weakest link. How long will it be before companies further up the supply chain – end customers and prime contractors – start seeking assurance from their suppliers that their maritime companies aren't the weak link that may cause them business disruption by not effectively addressing Cyber risk?

The global shipping industry offers a large attack surface. Danish Shipping's CEO panel reported that 69% of its members have been subject to Cyber crime over the last year. The interconnectivity of the maritime ecosystem introduces a number of new threats and includes the rise in the use of the cloud, mobile devices and remote working, the Internet of Things (IoT), including new vulnerabilities in old, as well as new industrial control systems and plant machinery.

For trade to move freely, it is essential for all stakeholders working in the maritime industry to be able to communicate and work with others remotely; as this practice increases, so does the risk. An Avast report in September last year found that there had been a 40% increase in mobile Cyber attacks in the past year. There have also been multiple reports of Denial of Service (DoS) and Distributed Denial of Service (DDoS) attacks against ports and it is inevitable that the rise in prominence of the IoT will facilitate the intensity and the frequency of this type of attack. Sadly, it looks like it is going to get worse: the number of internet connected devices is expected to exceed 50 billion by 2020.

Potential vulnerabilities of industrial control systems have been widely reported and this is particularly pertinent to the bulk shipping industry, with terminals' automated, semi-automated cranes, straddle carriers and other machinery widely used for moving freight to and from vessels. Importantly this extends to systems on board vessels that don't need to be connected

to the internet, as they may provide potential gateways for attackers. Without segregating and safeguarding systems, machinery that may seem benign could be used as a path to critical systems on the ship, even rendering it unseaworthy.

Cyber threats can propagate through a variety of means, but by far the most common route of entry into organisations' systems is via its workers – employees, crew and contractors. A test carried out in late 2017 demonstrated it was possible to conduct an unauthorised, malicious intrusion in to commonly-used ship navigation and control systems and alter the location of a ship as it appeared to human operators on their screens.

This attack was conducted by sending an email to the Master to open on his computer. However, this could have happened to any crew member and had the vessel been operational, it could have had serious consequences for the vessel, crew and even the operating environment.

Cyber Security on board vessels cannot be detached from the critical issue of safety. If vital systems were to fail due to a Cyber attack there could be business disruption, material damage and even the potential for loss of life.

There is an increasing acceptance that the maritime industry recognises the need to take action and improve Cyber Security resilience; it should firmly be an agenda for all management boards. Importantly, if the safety of seafarers is compromised, shipowners and operators will be in breach of the SOLAS convention and the International Safety Management Code. In June last year, an annex of the ISM code, "Resolution MSC.428(98)", was released.

The annex states that Cyber risks will now need to be addressed under the ISM code and by 1 January 2021, organisations will need to have annual documents of compliance that can be verified. To add to this, in May this year, the EU General Data Protection Regulation (GDPR) shall be enforced which brings with it the ultimate threat of fines of up to €20m (or 4% of a businesses annual global turnover, whichever is greater) for serious data breaches.

And yet measures to implement

Cyber Security best practice do not need to be expensive: Cyber Security training and education for all employees, backed up by a comprehensive suite of policies, can be a quick win that sets organisations on the road to Cyber Security maturity, compliance and ultimately security for their business.

Cyber Security is a topic that needs to be addressed at the highest levels in an organisation and the global shipping industry and bulk terminal operators' Boards are no exception. Captains of ships should be taking responsibility to introduce Cyber Security into the safety procedures of their vessel, leading by example in order to nurture a culture of positive Cyber Security practices.

Recent high-profile Cyber attacks, as well as lower-level Cyber disruptions, have demonstrated that Cyber Security is not only an avoidable issue for business, but it is also a matter of crew safety. This is a topic that cannot be avoided, especially within a fiercely competitive shipping industry.



Templar Executives is a leading, expert and dynamic Cyber Security company trusted by Governments and multi-national organisations to deliver business transformation through bespoke holistic Cyber Security solutions. For more information, visit: www.templarexecs.com.



UP FOR EXPANSION

UK and Irish ports will be hoping their expansion plans will not be not derailed by Brexit negotiations, while innovation is the name of the game as far as dry bulk is concerned



Julian Worth, chairman of the Chartered Institute of Logistics and Transport told delegates at the Bulk Terminals 2017 conference that, Brexit aside, derived demand was the key issue in ports and “we have to ride what the market throws at us. In the past five years everyone is aware of the catastrophic decline in coal and everyone has to adapt. There are more bulk trades to be exploited, but also there is a lot of non-bulk traffic coming through. Some 40% of what is moved on Britain’s railways is now consumer goods.

“Ports are having to reconfigure themselves. Northern ports are clearly going to become more important in the mix and therefore adapting rail freight links across the country is a really big issue.”

One expanding port is Blyth, which recently announced that it had negotiated a new £12m banking facility with Lloyds Bank that will enable the next phase in its expansion.

Major investments will now be made in relation to terminal infrastructure and the construction of new warehousing, as well as strengthening quays and installing new cranes. Blyth is now viewed as one of the UK’s fastest

growing trust ports. Chief executive Martin Lawlor said recently that work was shortly to begin on the Bates and Wimbourne Quay terminals in order to offer users a more flexible and future-proofed single terminal and work on dry bulk handling Battleship Wharf terminal will follow.

MANAGING BIOMASS

Biomass has featured heavily in port developments, although there is some debate whether it represents “a false dawn as a replacement for coal”. David Wragg, business development director at Hargreaves Industrial Services and Ian Atkinson, engineering director, at Spencer Group discussed biomass handling at the Port of Tyne at the recent ABTO conference in London in October. The port can take vessel sizes up to panamax and grab cranes, eco hoppers to contain dust and road vehicles to bulk storage are employed to service the Drax facility at the port.

Unloading rates with grabs on panamax vessels are up to 12,000 tonnes per weather working day, according to Atkinson. This is an interesting point because when unloading biomass pellets, for example, work may be halted if it starts to rain.

Managing and controlling risks really drives the design solution, said Atkinson. Materials handling is fairly straightforward, he said. “It is the bolt-ons that make these projects expensive”. Some of the challenges include minimising fire and

explosion risks and fugitive dusts emissions, as well as maximising operability and maintaining ease of cleaning are key, he said. Wragg also pointed to condition monitoring material to check product for moisture and measure temperature, so decisions can be made as to whether to put it in a silo or move it immediately.

Wragg explained that while the Port of Tyne does all the vessel logistics and once product is discharged from the hopper they take over and manage the silos and the logistics of the facilities.

Docking at the Port of Tyne, the bulk cargo vessel *St Dimitrios* sailed straight into the record books for discharging the biggest cargo of wood-pellets ever handled at the port recently, which were destined for the Drax facility.

Port COO Steven Harrison says: “The Port of Tyne has been pioneering handling of this type of cargo since 2010 – our skilled operation enables a cargo of this size to be discharged in only five days and stored in a purposely designed on-site storage facility. Our rail terminal then takes the pellets directly to the power station, eliminating road miles and increasing efficiency.” Since 2010, the Port of Tyne has handled almost 7 million tonnes of environmentally sustainable wood-pellets.

Peel Ports is the second largest port operator in the UK and moves about 65 million tonnes of cargo every year, with an investment of £550m in Mersey alone over the past five years, Garry Sharpe,

Project Director (Mersey) for Peel Ports group told delegates at the ABTO conference.

The Drax terminal opportunity came along in 2013 and the timeframe for starting production was a speedy one. Drax imports wood pellets from North America. Some 68% of Drax’s half year output was generated by biomass rather than coal, which gives a good idea of the shift in the UK from coal to renewable sources. Drax accounts for about 17% of UK renewable resources, Sharpe said.

Building Liverpool 2 gave the port a deepwater capability and freed up capacity to build the Gladstone biomass facility, Sharpe told delegates.

The first part of the Gladstone terminal was a lorry loading system. Phase two was continuous ship unloaders on the key edge and a key side conveyor among other equipment. There are a number of safety features in the silo systems and there is a good deal of complex equipment involved.

The terminal is built to provide three million tonnes of annual throughput with 33,000 tonnes per silo. Siwertell ship unloaders operate on the Archimedes screw principle and are rated 1,200 tonnes per hour.

Meanwhile, Lord Prescott told the conference that a key corridor of growth is the Humber and linking the Humber to Liverpool infrastructure is critical. He described this as “a global corridor now” and UK developments could be considered in the same light at the Chinese one belt one road project.

Brexit continues to weigh heavily on port operators’ minds. Freight volumes through the Port of Dover have reached record levels for the fifth consecutive year and the latest figures underline the need for a post-Brexit trade deal that benefits the port, which handles up to 17% of the UK’s entire trade in goods up to an estimated £122bn last year.

Chief Executive Tim Waggott says: “The recent year-on-year increases in freight traffic through the port and continued growth projections further highlight that this key trade route connecting Ireland, the UK and the rest of Europe is vital to the UK’s economic prosperity as well as the rest of the EU.



PORT OF TYNE

DOVER MOVE

Geest Line is relocating its south of England cargo handling to Dover following fleet expansion. The company's move from Portsmouth has been prompted by the need to accommodate revised scheduling times involving the weekend discharge of cargoes. It comes as Geest replaces its fleet of four charter vessels with five larger and newer ships, increasing capacity by over 40%.

Geest did investigate the port of Southampton which its base before Portsmouth but it does not have sufficient cargo-handling space for the company's particular needs. Its fleet handles all kinds of general cargo from tiny perishables to large project machinery, both container and breakbulk, returning from the Caribbean with fruit, mainly bananas, for the UK and European markets.

DUBLIN VOLUMES

The latest figures show that cargo volumes through Dublin Port hit record levels for the third successive year with growth of 4.3% to reach a new record level of 36.4m gross tonnes in 2017. This brings overall growth at Dublin Port in the five years since economic recovery began in 2013 to plus 30.1%.

To facilitate future growth, Dublin Port continues to invest in new infrastructure based on its masterplan to 2040 and a programme of works is already underway. The company invested €75 million in port infrastructure in 2017 and plans to invest a further €132m during 2018. Thereafter,

investment plans will need to accelerate to ensure that Dublin has sufficient port capacity for the years ahead.

Bulk liquid volumes, comprising mostly petroleum products, grew strongly by 6.6% to 4.3m gross tonnes driven by increasing road transport. On the other hand, Bulk solid commodities, such as animal feeds and grain, declined marginally by -1.0%.

Port CEO, Eamonn O'Reilly, says: "We are projecting another record year in 2018 with growth of about 5%. Dublin Port's growth is driven by domestic demand and both population growth and a stronger economy will continue to drive volumes up for the foreseeable future.

Dublin Port's multi-million euro infrastructure investment programme is matching our customers' continuing investments in new ships.

"While Brexit brings uncertainties and challenges to our business, the combination of investments by our customers and by Dublin Port is underpinned by a shared confidence in the future."

ABP's Port of Teignmouth also reported 2017 as a record-breaking year, which saw the port handle its highest tonnage of cargo since 2008.

The 10-year tonnage-handling milestone of more than 450,000 tonnes made up of clay, animal feed and aggregates. Recently acquired state-of-the-art equipment has included a new Mantsinen crane, representing an €850,000 investment.

Some 12.5 million tonnes of cargo were handled at ABP ports Newport, Cardiff, Barry, Port Talbot and Swansea with strong growth in both traditional and emerging sectors.

Year-on-year growth was seen in several commodities. Fertiliser to support agriculture and aggregates for manufacturing were 14% up on 2016, whilst animal feed leapt by some 54%. Recyclables increased by 72% and scrap metal, both exports and imports, doubled in volume compared to the previous year, registering a rise of 108%.

SHOREHAM STORAGE

Safe storage of commodities that may take on water is essential at ports like Shoreham, which plays a key role in the UK's timber trade. The port has had in excess of 80,000m³ of timber to store on its terminals, which means it must be stored neatly and efficiently to ensure quick dispatch.

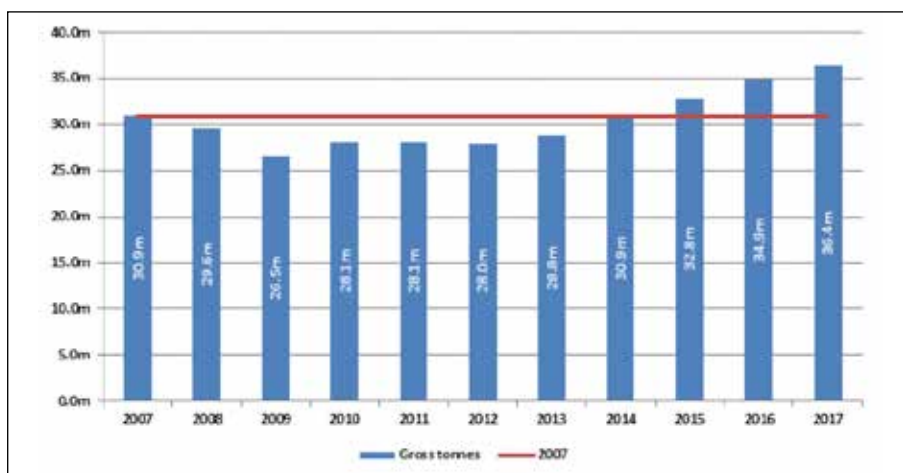
Its state-of-the-art Track-a-Pack system enables users to keep track of every pack of timber, so they can order as required.

Shoreham is the largest timber handling port along the south coast and discharges around 384,000m³ of timber each year. The majority of imports are from the Scandinavian Baltic ports of Sweden, Finland, Estonia, Latvia and Russia. There is 46 acres of storage over four terminals, which includes 41,829m³ of undercover warehouse storage.

The port is equipped with a modern fleet of cranes and forklifts with up to date innovations in order to facilitate some of the fastest discharge rates in the business.

The discharge rate is dependent on the vessel stow but is usually 330-400m³ per hour per crane.

Over the years, the port has built good relationships with its customers and offers a unique stock control system – Track-A-Pack, which uses bar code technology. This system enables 100% accuracy in stock movement details and provides an easy and accurate way for stock takes to be reconciled.



OVERALL GROWTH AT DUBLIN PORT 2007 – 2017



ALL ABOUT ORE

Ore shipments from South America destined for China have continued steadily in the last year and the renewal of the VLOC fleet with a spate of newbuilding orders is testament to optimism about the future

The size of newbuilding investment by companies such as Polaris, which transports ore from Vale's Brazil mines towards China, has been considerable. Part of the drive behind this is probably the need to reduce dependence on VLCC conversions to VLOCs, which have been under the spotlight in the past year.

VLOC conversions from tankers have taken centre stage following the sinking of *Stellar Daisy* with the loss of 22 lives a year ago. Since that time, some ships in the fleet have been scrapped and newbuilding programmes continue to provide for the trade going forward.

The level of investment suggests that VLOC operators are bullish about the state of the market, although admittedly much of the tonnage is being used to replace existing vessels.

Chinese imports account for over two-thirds of world iron ore trades, with a major proportion of the iron ore being sourced in Brazil. This long haul trade, analysts argue, supports the construction of VLOCs, which can achieve sizable economies of scale, meaning Brazil's competitiveness is enhanced when compared to closer competitors such as Australia.

Within the capesize vessel segment, these ships are highly specialised and really only operate on one trade route from Brazil to China. The market is dominated by a few players, notably *Stellar Daisy* owner Polaris Shipping, Berge and a few operated by other owners such as NYK. Approximately one quarter of the VLOC fleet were conversions, as of last year, hence the rush to fleet renewal.

A flurry of ordering of new ships started during the second half of last year when Polaris placed contracts with South Korean shipbuilders for 18 ore carriers of 325,000dwt capacity. These vessels are called "guaibamax", the maximum size that can be received at the Guaiba Island ore loading terminal in Sepetiba Bay in southern Brazil. Delivery is scheduled from 2019 to 2022 and long-term contracts of affreightment have been agreed with Vale for their deployment.

COMMODITIES GIANT

South America plays a key role as a centre for dry bulk trade because of the abundance of commodities to be supplied from the continent.

Ample supplies of coal, grain, iron ore are to be found, as are other bulk commodities like sugar and serve an intense trading pattern with centres like the Far East. China's appetite for investment in port developments was underlined by China Merchant Port Holdings announcement last year that it was buying a majority stake in Brazil's TCP Participações for nearly \$1bn.

As far as demands for bulk cargoes destined for the Far East are concerned, much trade is centred on the Atlantic Basin. Brazil, Argentina and Colombia are key bulk cargo exporters.

According to statistics from Platts, Brazilian iron ore exports to China in 2017 totalled 216.09 million metric tonnes, an increase of 1.5% from 2016, accounting for 61% of total Brazilian iron ore exports of 353.26 million. Sales value of shipments to China last year jumped 42% to \$10.24bn FOB, from \$7.2bn FOB in 2016. The yearly average price was \$47.39/metric tonne, up from \$33.85/metric tonne in the previous year.

In December, Brazilian iron ore exports to China fell 12.7% to 18.53 million metric tonnes, from 21.24 million metric tonnes in the previous year, 62% of total Brazilian iron ore exports, according to data from the Brazilian transport ministry.

Japan received the second largest volume of exports in December, at 1.83 million tonnes. Export growth iron ore is set to continue as evidenced by the investment in bulk tonnage, particularly given the additional production resulting from Vale's S11D mine development.

MORE FOR ORE

Last year saw Navios South American Logistics open an iron ore transshipment and storage port facility in the Nueva Palmira Free Zone in Uruguay.

Corporación Navíos invested \$150m to expand facilities and diversify its bulk

capacity to incorporate a new mineral terminal.

The new facilities, the region's largest independent dry cargo terminal, include the extension of the ocean pier creating two additional berths, a new dock for unloading barges with two unloading cranes, two stockpiles to accommodate no less than 700,000 tons of minerals, the addition of a new loading line connecting the stockpile area to the expanded ocean pier, and a modern dust control and water treatment system for the environmental management of the operations.

The new mineral terminal will have the capacity to move 10 million tons of minerals per year, with a loading rate of 3,900 tons per hour. The facilities can accommodate simultaneous loading of ocean-going vessels and unloading barges.

CHINESE IMPACT

Commodities giant Trafigura recently highlighted the impact that measures taken by China to restructure the steel industry were having on the iron ore market as far as purchasing patterns were concerned.

"Trafigura continued to pursue its strategy focused on building a flow of iron ore exports from Brazil via the Porto Sudeste terminal jointly controlled by subsidiary Impala Terminals and Mubadala. Volumes handled by the export facility near Rio de Janeiro continued to rise," the company's annual report said.

Trafigura highlighted the development of domestic sales from Chinese ports as a new departure. "By buying stocks held at ports and selling them to inland steel mills in local currency, we were able to access a significant number of new on-shore customers who do not habitually buy from the seaborne market. We expect to continue in a similar vein in 2018, with Porto Sudeste continuing to ramp-up and a continuing quest for acquisitions in the Brazilian mining sector that would provide supplies to feed the export terminal."

In Brazil, Porto Sudeste iron ore export terminal, that Trafigura jointly owns with Mubadala, boosted volumes with an estimated 10m tonnes of ore moving through the port in 2017, a 43% increase on 2016. "We expect the trend in volume growth to continue through 2018 as the joint Mubadala/Trafigura iron ore mining assets in Brazil are planning to increase production.

RECORD BREAKERS

The port of Santos hit a new annual record of cargo handling in 2017, reaching a total of 129,865,022 tons, 14.1% higher than the previous year.

Exports grew by 14.9%, driven mainly by the 79.8% increase in corn (14,280,349 tons), the 13.6% increase in soybeans (21,733,202 tons), consisting of grain and bran, and 1.9% of sugar (20,631,811 tons). These commodities alone accounted for 60.6% of the total exported and 43.6% of the general cargo operations in the Port of Santos in 2017.

Imports reached a growth of 12.1%, with fertilizer imports up 16.6%. Another load that performed well was sulphur (1,812,575 tons), widely used for fertilizer production, with a 4.6% increase.

VALE COBALT MOVE

Vale is seeking to sell un-mined cobalt worth hundreds of millions of dollars to investors, according to a Reuters report.

The initiative is reported to include streaming, which means investors make payments upfront while receiving future product at a discount. The potential deal for Vale is reported to be a first in the cobalt sector, although the finance vehicle is already used for precious metals. Cobalt is used for lithium batteries, a segment that is on the rise because of environmental pressures to cut emissions.

One Reuters source suggested that this initiative could be used as a means of funding development at Voisey's Bay in Labrador, where the company is seeking to expand an underground mine producing nickel.

BELT DRIVE

China's One Belt One Road initiative is set to have a massive impact on the development of ports in South East Asia, with some set to reap the benefits far more than others



Much attention has been centred on the likely impact of the One Belt One Road (OBOR) project on ports such as Singapore and Port Klang in Malaysia. Malaysia has been cited as being ideally positioned to pick up a massive slice of business, provided it can deliver the goods in terms of efficiency. Closer trading opportunities also seem likely as a result of the Kuala Lumpur-Singapore high speed rail link.

That said, all has not necessarily been going well for Malaysia's main shipping hub Port Klang, whose aim has been to challenge Singapore's dominant position in the market.

Plans to build a RM140bn port on Carey Island, close to Port Klang, have been put on hold for the moment. Port Klang has also been hit by falling volumes as the global shipping alliances moved operations to Singapore.

Other ports in the region have also faced significant challenges to improving their services and boosting infrastructure development, Minister for Construction U Win Khaing told the recent Asean and Asia Forum in

Singapore, stressing his country's need to improve infrastructure and suggesting that the country's own objectives reflected those of the OBOR initiative.

When it comes to Myanmar, meanwhile, it faces the dilemma of whether to focus development on Chinese links or on those with India. Beijing has indicated its willingness to provide massive investment in Myanmar, including port development and a special economic zone in Kyaukphyu in Rakhine, the province at the centre of the humanitarian crisis.

LEGISLATION WARNING

New legislation by South East Asian countries is likely to affect the flow of goods to and from some ports in the region.

One example is Indonesia, which has recently announced plans to introduce cabotage for ships serving its ports, resulting in protests from major ship-owning organisations.

The European Community Shipowners' Associations (ECSA) comments that under this new law, certain commodities can only be transported for import or export by national maritime transport

companies. Commodities affected are coal, crude palm oil, rice and goods for government procurement.

"This new law is a clear measure of protectionism and will impact seriously European shipping companies that have long-standing access to this market. European shipowners also warn that it puts at risk the Indonesian's business climate and confidence for foreign investors."

Martin Dorsman, ECSA's Secretary General, adds: "In a time when the EU and Indonesia are negotiating on a free trade agreement, the adoption by the Indonesian authorities of such a law is unacceptable."

The International Chamber of Shipping has also sent a letter to the Indonesian Minister of Trade warning that the move would be likely to have a wider impact on the Indonesian economy and result in increased costs

LOADING ISSUES

Owners and operators using ports in the region have claimed that they are, in some instances, coming under undue pressure to load cargoes when they are uncertain of the quality.

David Bolomini of the International Group of P&I Clubs raised concerns

about ports where rules covering the carriage of bulk cargoes do not apply and masters and crews have been intimidated. "Threats are serious, despite the fact the IMSBC Code is clear on the responsibilities of the role of master," he told delegates at the *Bulk Terminals International 2017* conference.

Considerable concern was raised about the quality of oversight by the authorities in terms of the Code's requirements, in particular following the tragic loss of the *Bulk Jupiter* in 2016. This accident occurred after a period of wet weather in the area where the cargo was loaded and, prior to loading, the stockpile had been open to the elements. The ship sank with the loss of 16 of her crew following her departure from Kuantan, Malaysia.

One problem Professor Mike Bradley, Head of Greenwich University's Wolfson Centre for Bulk Solids Handling Technology, has highlighted is the difficulty of getting a representative sample from a stockpile. Some master mariners have expressed concern that the current tests do not work with some cargoes. There have also been cases in which moisture content certificates are alleged to have been falsified.

More work in centres like the



OLDENDORFF CARRIERS

Philippines, Indonesia and Malaysia needs to be done in terms of strengthening oversight of the code requirements. Progress has been made and according to Bolomini, Malaysia, for example “stepped up to the mark following *Bulk Jupiter*”, he said.

PLATFORM PLANS

Plans to position a floating transfer platform in South Vietnam capable of discharging and loading all bulk carriers up to and including Newcastlemax tonnage at a discharge rate of up to 25,000 metric tonnes per day were announced by a partnership of Welhunt, Oldendorff Carriers and Haivan recently.

The platform will be the first and only multi-user facility in Vietnam and is specifically designed to be able to handle growing coal imports.

Oldendorff says: “Vietnam is currently facing a significant challenge to receive and export growing volumes of bulk cargoes due to shallow ports and relatively poor port infrastructure. Coal imports in particular have grown more than 100% per annum from 2010 to 2017 and the total volume of coal imported is projected to reach 60 million tonnes per annum by 2025.”

The FTP positioned in Vietnam has two cranes, hoppers and conveyor belts and will be able to tranship the coal from large ocean going vessels into shallow draught barges for delivery to customers.

“By using the largest and most economical OGVs, the coal can be sourced and transported from any port around the world. The barges will deliver the coal directly to the jetties of our clients across Vietnam and potentially other nearby markets in an environmentally friendly manner,” Oldendorff says.

LNG BUNKERING BOOST

Singapore has boosted its ability to provide LNG bunkering in the port with the Maritime and Port Authority of Singapore (MPA) injecting another S\$12m for the project. Half of this S\$12m has been set aside to co-fund the building of new LNG bunker vessels to facilitate the development of ship-to-ship LNG

bunkering in the port. The remaining half will top up MPA’s existing co-funding programme to support the building of LNG-fuelled vessels

Speaking at the recent Singapore Registry of Ships Forum, Andrew Tan, Chief Executive of MPA, said: “With the implementation of the International Maritime Organization’s 0.5% global sulphur cap on 1 January 2020, LNG is a viable and tested solution for shipowners. As the world’s largest bunkering hub, MPA will support future demand by promoting the development of ship-to-ship LNG bunkering in the Port of Singapore. This will provide the industry greater confidence in the availability of LNG across key routes.

Digitalisation and new technologies such as blockchain and smart drones are changing the way we work. To stay ahead, the Singapore Registry of Ships needs to embrace these technologies to offer value-added services to its customer.”

Increasingly, new technologies such as aerial drones armed with cameras and ship inspecting robots are being used for ship surveys. Such methods of remote inspection are safer and can save time and money as it eliminates the need for traditional survey methods such as erecting staging in the cargo tanks. Marine surveyors also do not have to risk their lives by having to climb high places or be exposed to adverse conditions to check for defects.

GROWTH PUSH

Port operator Jurong Port has announced plans to enlarge its footprint in the oil storage business in order to diversify revenue streams in the light of a fall in volume through its steel and cement terminals resulting from less shipbuilding and construction.

“We are transforming so we can intensify the operations, such that perhaps what used to take five berths will take three berths. We can use the additional freed-up berths for other types of businesses,” Chief Executive Ooi Boon Hoe told Reuters recently.

“We are not sounding the death knell to traditional cargoes. We just need to do more in other sectors.”

KAOHSIUNG DEVELOPMENT

Kaohsiung has secured certification as an LME delivery port, begun developing the South Star district, and constructed three new warehouse facilities, respectively, in the Qianzhen, Zhongdao, and South Star districts.

Principal goods handled and stored at the port include LME nonferrous metals, paper pulp, fresh food products, machinery parts/components, and chemical products.

This year, the zone expects to see increases in new categories such as frozen goods handling, containerised-cargo logistics, and large-scale steel coil cutting.



PORT OF KAOHSIUNG

LIGHT AT THE END OF THE TUNNEL

Weak demand for maritime and offshore equipment in global markets as well as tough competition mean that 2017 has been a challenging year for German equipment manufacturers. An upturn on port development is seen as promising, however, as new markets are developed and the pace of technological changes continues to pick up



Sales of German machinery and plant may have been taking a beating recently, but the ongoing development of automation in ports and for the shipping industry generally offer good opportunities for German companies.

“The growing digital possibilities have to be intelligently used in the interaction between operators, shipyards, equipment suppliers and beyond,” explains Martin Johannsmann, executive board member of Germany’s VDMA – Marine Equipment and Systems.

“Learning from one another across sectors” is the motto of the equipment and system suppliers. Their solutions are in demand in shipbuilding as well as associated areas in the maritime environment such as logistics, port technology and energy.

“In Finland, the autonomous unloading of cargo ships is already beyond the research phase and now undergoing practical testing, thanks to integrated systems from our company group,” adds Alexander Nürnberg, chairman of VDMA.



Another example he cites are port cranes from German makers, which supply information worldwide on equipment operating condition and performance optimisation as well as the condition of the cargo being transhipped, co-operating with upstream and downstream logistics systems. “Companies that are not alive to this development will be among the losers of digitalisation,” warns Johannsmann.

“In the production of maritime technologies, competitive advantages are also realised via intelligent automation solutions. New sensor technology, data evaluation algorithms and interface definitions (OPC UA) have to be integrated. The digital solutions contribute significantly to the achievement of economic and environment-friendly goals in shipping.

“This involves the use of electric hybrid propulsion systems, as already deployed on ferries, to reduce environmentally harmful emissions, and in overseas transport the set climate objectives can be realised with the intelligent use of alternative fuels, which can successively replace fossil fuels on ships.

“E-fuels will play a particularly important role in this respect. Makers of large engines and the VDMA are thus advocating a maritime energy transition. It is important here to think

beyond the internal combustion engine in itself and consider the overall propulsion system.”

The digitalisation of ports and terminal operations offers ways to realise a fourth industrial revolution, bringing with it safety, operational, and environmental benefits, delegates heard at the Port Equipment Manufacturers Association (PEMA) annual general meeting, which was held in the Spanish port city of Bilbao recently.

Cyber-physical systems, and interoperability between layers of IoT platforms are emerging as ways to improve throughput at ports and terminals, the meeting heard.

One of two opening speakers, José Llorca, Chairman of Puertos del Estado, stressed the importance of digitalisation in the ports sector, saying that it was “crucial to the quality and efficiency of services, and to align [the sector] with the industrial revolution 4.0.”

There is currently a great deal of discussion about industry 4.0, but implementing and profitably applying networked production and services involve considerable hurdles for many companies.

Commenting on developments in Hamburg, Economics, Transport and Innovation senator Frank Horch said recently: “We must get to grips with Industry 4.0, with digitalisation and how

this will change supply chains. We must develop the port to enable it to play a prominent role. The port of Hamburg must become a Port 4.0.

“We will improve the infrastructure, implement the fairway adjustments and secure good general conditions. When extending the port it will be important to identify how Hamburg as a broad based universal port can be economically sustainable, strong and generate new impulses.

“We are ready to take new paths – in usage, the type of development and in the partners we will achieve this with,” he concluded.

PEMA conference speakers Lamia Kerdjoudj-Belkaid, Secretary General of ports body FEPORT, and Richard Brough, Technical Advisor at ICHCA International, highlighted the broader challenges facing the ports and terminals sector.

Macro challenges discussed included regionalisation of trade flows, labour market disruption, regulatory changes, common standards for data analytics, state aid and private investment, the emergence of new business models, competitive collaboration, and sustainability.

German equipment manufacturers have been at the forefront of many developments in the port industry, not least as far as new generation technology is concerned.

THE TWO NEW LIEBHERR MOBILE HARBOUR CRANES LHM 420 WILL BE MAINLY USED FOR TANDEM



LEARNING TO SHARE

A good demonstration of port collaboration to share such technology is where the Dutch shipping community will enjoy a seamless way of consolidating and sharing Verified Gross Mass data, due to a new partnership between Portbase and Germany's Portrix Logistic Software.

Portbase, which runs a unique Port Community System in the Netherlands, will now use PLS's VGM solution to enrich the Portbase service Notification Verified Gross Mass to ensure its customers enjoy easy compliance with the latest SOLAS requirements.

Demurrage and detention (D&D) charges have been a particularly hot topic in ports in recent times. The use of the most sophisticated and up-to-date technology, it is argued by most equipment suppliers, is one way of ensuring a degree of protection from such charges.

As part of Portrix's Global Price Management (GPM) platform, the company has also developed a software application to manage D&D charges. The solution will transform the way D&D is handled, for carriers, freight forwarders and shippers worldwide.

The new software gives users an unparalleled global overview of D&D activity, with easy calculation of applicable D&D cost, and the ability to drill down and refine views, as well as determining which containers are at risk and actual costs being incurred. Users can then search for individual containers, customers and other options. Information can be easily accessed, analysed and, if desired, downloaded into Excel.

"We've been developing solutions for the logistics industry since 2001 and know the needs of our customers inside out," Voss states. "In a business environment that is ever more complex, demanding and competitive, we're focused on continually refining our solutions to simplify tasks, enhance productivity and increase profitability."

EMDEN INVESTMENT

To further increase the turnover capacity, the port of Emden's Nordkai terminal has invested in high-end mobile harbour crane technology from Liebherr. Early in 2018, EPAS received two new Liebherr machines, with a maximum lifting capacity of 124 tonnes at an outreach of up to 18 metres.

Liebherr's equipment has a synchronised lifting assist system, Sycratronic, which allows two Liebherr cranes to operate in tandem. A crane operator controls the movement of both machines, which are electronically synchronised.

While manual tandem lifts have to be restricted to 75% of the crane's capacity, Sycratronic guarantees 100% utilisation of the maximum load capacity. In tandem lift operation, EPAS can now lift up goods weighting up to 248 tonnes.

Greater productivity is also achieved through the ability to handle multiple ships simultaneously.

"The purchase of the two new Liebherr cranes is the prelude to a series of investments we are planning to provide our customers with the best possible service and competitive positioning in the future," says Heinrich Smidt, Managing Director of Ems Ports Agency & Stevedoring (EPAS).

MOBILE SOLUTION

Conductix-Wampfler has been selected by the Manitowoc Group to provide energy, data and hydraulic oil transfer solutions for the group's GMK6300L crane model.

Mobile crane manufacturer Manitowoc Cranes manufactures the six-axle GMK6300L crane in Wilhelmshaven and, with a nominal load of 300 tons and a lifting height of up to 117 metres, it is one of the highest performing models in the company's portfolio of all-terrain mobile cranes.

The transmission of media and data to the hydraulically driven bi-fold swingaway jib, which extends to up to 21 metres at the end of the 80 metre telescopic main boom, makes special demands on the performance and reliability of the system components supplied by Conductix-Wampfler.

"Conductix-Wampfler supplies a spring-driven hydraulic double hose reel with a winding length of 70 metre that meets our high standards of performance and quality," says Arndt Hollmann, Manager for Engineering Hydraulics at Manitowoc Cranes. So far, these winding lengths have been possible only with heavy hydraulically driven reels."

WHAT'S ON

The not-to-be-missed events for all those in the industry

12-14 MARCH

GLOBAL GRAIN ASIA

SINGAPORE

www.globalgrainevents.com/asia

13-15 MARCH

INTERMODAL SOUTH AMERICA

SÃO PAULO, BRAZIL

<http://10times.com/intermodal-south-america>

13-15 MARCH

**STORAGE AND DISCHARGE OF
POWDERS AND BULK MATERIALS
SHORT COURSE**

GREENWICH, UK

www.gre.ac.uk/engsci/research/groups/wolfsoncentre/coupro/sc/sdop

19-20 MARCH

4TH COALTRANS MIDDLE EAST

CAIRO, EGYPT

www.coaltrans.com/middle-east

26-28 MARCH

BREAKBULK

SHANGHAI, CHINA

www.breakbulk.com

28 MARCH

**BULK HANDLING IN LARGE
INFRASTRUCTURE PROJECTS**

LONDON, UK

<http://events.imeche.org/ViewEvent?code=SEM6620#>

09-11 APRIL

COALTRANS CHINA

BEIJING, CHINA

www.coaltrans.com/china

17-18 APRIL

PORT & TERMINAL TECHNOLOGY

SOUTH CAROLINA, USA

www.mcimedia.com/Eventhomes/eventlist/1

24-25 APRIL

TOC ASIA

SINGAPORE

www.tocevents-asia.com

30 APRIL-02 MAY

GLOBAL GRAIN MENA

DUBAI, UNITED ARAB EMIRATES

www.globalgrainevents.com/mena

01-03 MAY

MULTIMODAL 2017

BIRMINGHAM, UK

www.multimodal.org.uk

06-08 MAY

24TH COALTRANS ASIA

NUSA DUA, INDONESIA

www.coaltrans.com/asia

16-17 MAY

**ACI EUROPEAN ENVIRONMENTAL
PORTS CONFERENCE,**

ANTWERP, BELGIUM

[www.wplgroup.com/aci/event/](http://www.wplgroup.com/aci/event/Environmental-Ports-Conference)

[Environmental-Ports-Conference](http://www.wplgroup.com/aci/event/Environmental-Ports-Conference)

22-23 MAY

UK PORTS CONFERENCE

LONDON, UK

[www.waterfrontconferencecompany.com/conferences/](http://www.waterfrontconferencecompany.com/conferences/uk-ports-conference)

[uk-ports-conference](http://www.waterfrontconferencecompany.com/conferences/uk-ports-conference)

22-24 MAY

**PNEUMATIC CONVEYING OF BULK
MATERIALS SHORT COURSE**

GREENWICH, UK

www.gre.ac.uk/engsci/research/groups/wolfsoncentre/coupro/sc/pcobs

29-30 MAY

BREAKBULK EUROPE

BREMEN, GERMANY

www.breakbulk.com

04-05 JUNE

5TH COALTRANS POLAND

SOPOT, POLAND

www.coaltrans.com/poland

04-05 JUNE

COALTRANS POLAND

SOPOT, POLAND

www.coaltrans.com/poland

04-08 JUNE

POSIDONIA

ATHENS, GREECE

www.posidonia-events.com

05-06 JUNE

**PNEUMATIC CONVEYING SYSTEM
DESIGN ADVANCED COURSE**

GREENWICH, UK

www.gre.ac.uk/engsci/research/groups/wolfsoncentre/coupro/sc/adv-pc

07 JUNE

**ROTARY VALVES: DESIGN, SELECTION
AND OPERATIONAL ISSUES**

GREENWICH, UK

www.gre.ac.uk/engsci/research/groups/wolfsoncentre/coupro/sc/rotary-valves

04-07 SEPTEMBER**SMM, HAMBURG**

GERMANY

www.smm-hamburg.com/en/**10-14 SEPTEMBER****INTERNATIONAL CONFERENCE ON
CONVEYING AND HANDLING OF
PARTICULATE SOLIDS – CHOPS**

WOLFSON CENTRE GREENWICH

www.constableandsmith.com/events/chops-2018/**11-13 SEPTEMBER****GLOBAL GRAIN SOUTH AMERICA**

SÃO PAULO, BRAZIL

www.globalgrainevents.com/south-america**18-20 SEPTEMBER****SUGAR AND ETHANOL AFRICA**

LOCATION TBC

<https://energy.knect365.com/sugar-ethanol-africa/>**OCTOBER 2018****BULK TERMINALS
2018 – IMPROVING
SAFETY, STREAMLINING
OPERATIONS
AND ENSURING
ENVIRONMENTAL
PROTECTION****THE ANNUAL ASSOCIATION OF
BULK TERMINAL OPERATORS
(ABTO) CONFERENCE**

HAMBURG, GERMANY

www.bulkterminals.org/events**01-03 OCTOBER****AFRICAN PORTS EVOLUTION & AFRICAN
RAIL EVOLUTION**

DURBAN, SOUTH AFRICA

www.portsevolution.com/**02-04 OCTOBER****BREAKBULK AMERICAS**

HOUSTON, USA

www.breakbulk.com/events/breakbulk-americas-2018/**14-16 OCTOBER****THE WORLD COAL LEADERS NETWORK**

BARCELONA, SPAIN

www.coaltrans.com/world-coal-conference**14-16 OCTOBER****ASHTRANS EUROPE**

BARCELONA, SPAIN

www.coaltrans.com/ashtrans**17-18, OCTOBER****SOLIDS**

ANTWERP, BELGIUM

www.easyfairs.com/solids-antwerp-2018**17-19 OCTOBER****GREENPORT**

VALENCIA, SPAIN

www.greenport.com/news101/greenport-congress-2017**18-19 OCTOBER****BULKEX**

NOTTINGHAM, UK

www.mhea.co.uk/category/bulkex**09-11 OCTOBER****OVERVIEW OF PARTICULATE
HANDLING SHORT COURSE**

WOLFSON CENTRE GREENWICH, UK

www.gre.ac.uk/engsci/research/groups/wolfsoncentre/coupro/sc/pht**05-08 NOVEMBER****EUROPORT**

ROTTERDAM, THE NETHERLANDS

www.europort.nl/**06-08 NOVEMBER****WORLD ETHANOL AND BIOFUELS**

BRUSSELS, BELGIUM

<https://energy.knect365.com/world-ethanol-biofuels/>**06-08 NOVEMBER****PNEUMATIC CONVEYING OF BULK
MATERIALS SHORT COURSE**

WOLFSON CENTRE GREENWICH, UK

www.gre.ac.uk/engsci/research/groups/wolfsoncentre/coupro/sc/pcobs**07-08 NOVEMBER****SOLIDS**

DORTMUND, GERMANY

www.easyfairs.com/events_216/schuettgut-recycling-technik-2017_82627/schuettgut-2017_82628/**13-15 NOVEMBER****TOC**

AMERICAS, PANAMA

www.tocevents-americas.com/en/Home.html**04-05 DECEMBER****COMMISSIONING AND
TROUBLESHOOTING 'HANDS-ON'
PNEUMATIC CONVEYING SYSTEMS
SHORT COURSE**

WOLFSON CENTRE GREENWICH, UK

www.gre.ac.uk/engsci/research/groups/wolfsoncentre/coupro/sc/commpc

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