BULK TERMINALS *international*

WINTER 2018

THE OFFICIAL MAGAZINE OF THE ASSOCIATION OF BULK TERMINAL OPERATORS

SAFETY FIRST
Advice from the experts on the ongoing issues affecting the industry

MAKING A MARK
Why building a brand can mean big business for ports

DUST STORM
How to avoid the hazards when handling dry bulk

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KEEPING OUT OF HARM'S WAY

BY SANDRA SPEARES

Safety concerns played a major role in discussions at ABTO's conference in Hamburg this year – sadly, many of the major danger areas such as liquefaction, enclosed spaces and deaths in ports due to accidents with equipment, fire and explosion continue to dog the industry

Welcome to the latest edition of *Bulk Terminals International*, fresh from our successful conference in Hamburg.

One of the biggest issues affecting shipping at the moment is safety and, as Captain Richard Brough of ICHCA pointed out to delegates, things are still not as safe as they should be in ports — at the time of the conference there had been 41 deaths among stevedores this year and most of these are in the developed world (figures for the developing world are not available, for the most part).

There were 202 casualties among seafarers, resulting from dust explosions, fire and asphyxiation due to lack of oxygen in the holds. Sadly, that figure has risen even since the conference took place and warnings there about the comparative ease with which one could cause an explosion certainly did not fall on deaf ears. How to best avoid those accidents, new techniques to use and innovative technology formed a good part of the debate in Hamburg.

Another issue that has been pushing up the agenda for the industry is mental health, and how that may impact on individuals' performance in ports and on ships. The industry is finally coming to realise that current working methods need to be adjusted in order to ensure that maritime personnel can work safely in a secure environment.

How prepared the industry is for the next wave of environmental legislation is a moot point, not least when it comes to issues such as ballast water management. Our sector has never been known for being fast off the mark when it comes to implementing new rules – the time it takes to ratify IMO conventions is a good example of this.

The feeling seems to be that until there are deemed to be positive benefits for operators to install the necessary technology, they will not be rushing to do so — see the last-minute stampede to fit scrubbers on ships. In addition, waste reception facilities shoreside seem to be conspicuous by their absence.

Elsewhere, Amsterdam's decision to pull the plug on coal throughput has left many people wondering whether, when deciding to invest in ports, their guarantees when it comes to public private partnerships are worth the paper they are written on.

While the decision to cut down on harmful air emissions is a laudable one, investors may need a level of protection going forward that they might not have anticipated when first considering a PPP option.

Cyber threats loom large in shipping and, Chris Gibson of Templar Executives pointed out at the conference, there are definitely areas where industry players should be working together to combat the problems.

Another issue that port and terminal operators need to consider more carefully is that of marketing and Ian Mills gives us the benefit of his views in this edition on how ports and terminals can better market their services and unique selling points.

We hope you enjoy *Bulk Terminals International*, which gives you a flavour of the extensive discussions that took place in Hamburg.

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PROS AND CONS OF GOING GREENER

IAN ADAMS, CHIEF EXECUTIVE, ABTO

A number of issues were discussed at the recent *Bulk Terminals 2018* conference, including the impacts – environmental and otherwise – of biomass

Welcome to the latest edition of *Bulk Terminals International*. As members and regular readers will be aware, *Bulk Terminals 2018*, the second ABTO annual conference, took place in October. This time, we were in the German city of Hamburg – an excellent location. The conference was well received and you can find a full report in this edition.

Delegates enjoyed a networking event on the first evening, on board river cruiser *Diplomat*. Although the weather was not the best, we managed to see some of the port of Hamburg before the sun went down and the serious networking began.

During the conference itself, we heard some encouraging news about dry bulk shipping, with rates appearing to be recovering. However, as is often the case, there have more recently been reports to the opposite effect. Dry bulk has always been a difficult area of shipping, but there is still an over-supply of ships operating in the sector and so markets will continue to be difficult for a while longer. It appears that certain types of ships may be experiencing an upturn in their rates, most recently the freight rates for capesize vessels, which typically carry cargoes of iron ore or coal.

The same cannot be said for the smaller panamax vessels. Their typical cargoes are coal or grain, but their freight rates still appear to be in the doldrums. The danger of writing about the markets for a quarterly magazine such as this is, of course, that by the time the article is published things could be very different – let's hope so!

Moving away from ships and on to commodities, one of the historically most transported and handled by terminals is, of course, coal. However, over the past few years, trade in coal in Europe has been declining. Environmental factors have been behind this decline, with CO_2 identified as one of the main greenhouse gases produced by mankind. Amsterdam – Europe's second largest coal port – unveiled a sustainability strategy early in 2017, which means the port

will stop handling coal by 2030. The UK, meanwhile, has seen coal imports plummet over recent years. Some of this volume has been replaced with biomass, but that has brought its own problems for the terminals.

Even Newcastle in Australia – the world's largest coal export port – has decided that with coal being 90% of the port's throughput means that it is now vulnerable to this decline in the fuel's consumption. Roy Green, the new chair of the Newcastle Ports Board, has stated: "Coal has been at the heart of the Hunter economy for the better part of two centuries and it will continue to be central to the prosperity of the region and Port of Newcastle for some time to come, However, there is also an urgent need to diversify the Hunter economy and the port's business.

"Clearly, the long-term outlook for coal is a threat to the port and Hunter region, but it is also a huge opportunity. While the world's demand for our coal is beyond our control, our ability to invest in new sources of growth and innovation is not. Among our challenges will be ensuring a level playing field for the development of a viable and competitive container terminal."

Meanwhile, in the northern Australian state of Queensland, vessel queues off the port of Dalrymple Bay Coal Terminal have now reached a new record of 46, with some scheduled to wait for almost four weeks before being loaded with coal. This is thought to be fuelled in part by traders speculating that China will experience a shortage of domestic coal in the new year.

As mentioned, coal is in part being replaced by biomass. You may recall that in my column in the previous issue, I referred to a blog for Carbon Brief by Professor Sir John Beddington – the UK government's chief scientific adviser between 2008 and 2013 – in which he expressed concerns about the use of biomass. A recent report by the Committee on Climate Change in the UK has said that biomass has a role to play in a low-carbon economy, but only if sustainably sourced.

The report, *Biomass in a Low-Carbon Economy*, points out both the benefits and potential negative impacts of using biomass. Sustainable biomass use could meet up to 15% of the UK's energy demand by 2050 and the report describes how future supplies of biomass can be sustainable. It says sustainable low-carbon bioenergy is possible, but only in certain circumstances if certain practices and criteria are applied. The complete life cycle of greenhouse gas emissions needs to be taken into consideration when evaluating different biomass, as it has the potential to produce more emissions than fossil fuels.

Interestingly, the report recommends that the government encourages a move away from using biomass for road transport, heating buildings and power generation. The latter could be considered, however, if it incorporated carbon capture and storage (CCS). The report also says that the government should support the increased use of CCS. Unfortunately, it would appear that there remains a number of unanswered questions about the use of biomass. I only hope that we do not look back on this period with regret.

Another environmental issue that was discussed at the conference were the so-called IMO 2020 regulations. From 1 January 2020, ships will be required to consume fuel with a maximum sulphur content of 0.5%m/m. This will have an impact on running costs when you consider that fuel is between 50% and 80% of the operating costs of a vessel.

Recently, we have seen many owners announcing that they are installing exhaust gas cleaning systems (EGCS), commonly known as "scrubbers". EGCSs allow the vessel to continue to use the same fuel as they currently do and thus keep costs down. Although this equipment is not cheap (between US$5-10m per vessel) payback can be a little as a year depending on the price differential of the fuels.

Only time will tell whether more shipowners opt for a technical solution or a fuel solution. It depends on many factors which solution is best for a particular vessel.

Finally, it is once again that time of year when we at ABTO would like to wish all of our members, their staff and readers of *Bulk Terminals International* a merry festive period and a prosperous new year.

WORLD NEWS ROUND-UP

The state of the bulk market was high on the agenda at ABTO's conference in Hamburg in October, with speakers raising a range of key points about the industry

CONFERENCE VENUE ELBPHIL HARMONIE HAMBURG

The bulk segment has traditionally been seen as something of a "Cinderella" in the market and has slowly and steadily worked its way out of the doldrums and is today cash flow positive, Frank Grone, director of freight-forwarding group Frachtcontor, told *Bulk Terminals 2018* delegates in Hamburg recently.

It is now 10 years since the market collapse and the container market is struggling to get back on track. Some areas, such as tankers, have had some good times in between, he said, but "the entire segment is now under severe pressure".

The market correction has come at a price – some 60m dwt was scrapped in 2015 and 2016 at "ridiculous prices" while financing banks took serious "haircuts" and owners were faced with a complete wipe out of their invested capital. The trigger for recovery has been a healthy growth in demand and in 2017 this was to the tune of 4% with 3% expected for this year, Grone said. Fleet growth was moderate in 2017.

Congestion and slow steaming have been two ingredients for recovery as they keep tonnage off the market. "Slow

steaming is still the flavour of the month, but a three-four knots increase in speed could kill the upturn," he warned.

The challenge for European terminal operators is the fact that Germany now uses 36% energy derived from renewables. And Australian coal port Newcastle is now planning an ultra large container terminal to cater for a projected massive increase in movement of containerised cargo, which may be an indication of market attitudes going forward, Grone said.

In summary, he says growth looks positive and fleet growth manageable, but there are a number of challenges. These include the trade conflict between China, the US and EU, which will have a negative effect on the shipping market. "The market is not only driven by hard facts, but also by sentiments," he said. While the immediate impact of restrictions on soya bean trades may be positive in the short term for South American suppliers, ultimately China will have to turn to the US for supplies. Trade barriers are generally negative in the longer term, he added.

Another area of uncertainty is what will happen as a result of the global sulphur cap due to come into force in 2020. Grone estimates on the basis of current use that 66% of all fuel burned at the moment will have to be switched by 2020 to comply with the rules.

Going forward, there are options. Owners can either continue to burn high sulphur fuels and risk fines and port state control detentions and trade bans, or install scrubbing technology or switch to gasoil. Scrubbing technology is expensive, while the price of gasoil will also be higher.

Meanwhile, suppliers will be reducing stocks of high sulphur because of reduced demand. Only 1,200 owners have decided to retrofit scrubbers, but there are 60,000 vessels to be dealt with. The upside for tanker owners is that there is likely to be movement of gasoil from the Middle East, he said.

The challenge for shipowners will be how to pass the costs on to charterers and to realise the competitive advantage of installing scrubbers. Another strategy may well prove to be partnerships between charters and owners of ships with scrubbers, Grone concluded.

DRIVERS FOR DEVELOPMENT

Dry bulk is not doing that well, according to Anthony van der Hoest, director commerce with advisors MTBS. He told conference delegates that figures were down by 10% in Hamburg, while compared to last year in Antwerp there was a moderate growth of 1%, with breakbulk at 0%. Rotterdam, meanwhile, has seen a large decrease in dry bulk. There is a competitive and hard market in this region, therefore, he said. The core market has a big impact on volumes but the situation is challenging.

Amsterdam is an import destination for approximately 20m tonnes of coal, with Rotterdam receiving approximately 30m tonnes, largely from Russian sources. There are a number of coal terminals in Amsterdam including Yara and Hess International, but Amsterdam has announced that it wants to stop coal trade through the port by 2030, despite the fact that there is a public-private partnership (PPP) coal concession in place at the port until well beyond the cut off date.

Commenting on the decision to stop coal throughput at Amsterdam, van der Hoest said he believed it was a political move. With the sole shareholder being the municipality the port had no real choice. Alternatives are difficult as the container segment is not fully utilised.

In any event, the question will be what to do with such a large terminal facility post 2030. The city is growing rapidly and it is possible some of the space will be taken for housing. Other opportunities might be biomass or another green energy. There are already plenty of terminals in the port handling general cargo with the aim of competing with existing players in the relevant segments.

The question is how to deal with this situation as well as a market that is changing rapidly, he told delegates. One approach is to continue to compete while running down volumes handled. The other is to try and secure new business, such as biomass handling.

From a mergers and acquisitions perspective, the situation is interesting with a lot of money in the general ports' market, said van der Hoest. There are investors out there if you have a sound terminal portfolio, he told delegates. "Ports are attractive again, very attractive".

Europort, for example, is looking for new shareholders because the existing ones wish to sell. This often happens with infrastructure funds because at some point they need to close the fund.

There are also opportunities for new PPPs and MTBS is looking at two ports in Ukraine that have seen booming grain exports in recent years. The two ports are being privatised and offer a good opportunity for any investor considering a bulk grain or breakbulk opportunity in that country, he said.

A lot of new grain terminals are being set up in the country and traders are looking to establish themselves. However, he warned, they are traders, not terminal operators and therefore don't necessarily have the necessary expertise to handle commodities.

Beyond Europe, coal use is increasing in China, India and Japan, while the United Arab Emirates is building "greener" coal plants that require imported coal to run.

Africa, meanwhile, is in need of export facilities for its bulk commodities. One has to look at value drivers behind the investment, van der Hoest said. These include whether the project generates enough cash flow to pay dividends to shareholders, if there is growth and what risks the project represents.

In considering such projects, there needs to be an assessment of who is capable of handling it best in order to mitigate the risks. These contracts are not a one-off – they are always specifically tailored to a particular terminal., he said.

One such example is Takoradi in Ghana, where a new dry terminal is to be built with three berths capable of handling capesizes. The facility is being built to handle output from the bauxite

and manganese mining close by. This project will improve the transport chain and therefore cut costs and it is possible to use these savings and recoup on investment. Any project should have these kinds of drivers.

Adapabilty to change is key in all commodities. Companies that can change quickly will survive, he said. These also relate to PPPs and change during the life of the contract.

Sometimes contracts dictate that only one commodity can be used and maybe this attitude should change – given what has happened in Amsterdam with coal. It may be that compensation clauses should be included in contracts to take into account such policy changes.

In Africa, there is huge demand for new export facilities, so van der Hoest felt it would be good to tailor facilities not only for dry bulk export, but also for other things, for example a container terminal in the future.

"The important thing is to think outside the box with your public partner. Risk should be allocated to the party who is most able to deal with it. Risk-adjusted returns are important. Focus on your returns, if you don't look at the risk, any PPP will fail."

REPORT RECOMMENDATIONS

Intercargo has commended the Isle of Man Ship Registry for the "timely publication and the clarity of the casualty investigation report" into the loss of the vessel.

In August 2017, 2012-built supramax bulk carrier *Cheshire* was en route from Norway to Thailand, fully loaded with cargo declared by the shipper as being "ammonium nitrate-based fertiliser (non-hazardous)" and not liable to self-sustaining decomposition. Nevertheless it did suffer cargo decomposition in the mid-Atlantic that led to rising temperatures in the cargo holds and the generation of toxic gases.

The report makes some important recommendations including amending the misleading cargo name from "ammonium nitrate-based fertiliser (non-hazardous)" to "ammonium nitrate-based fertiliser (not otherwise classified)"; the fertiliser manufacturers to provide further information on the behaviour and carriage of this cargo; and consideration of whether the current International Maritime Organization (IMO)-stipulated test for assessment of self-sustaining decomposition properties of an ammonium nitrate based fertiliser is adequate, Intercargo said.

"Ammonium nitrate-based fertiliser (non-hazardous) is currently designated in the IMSBC Code as a group C cargo. These are cargoes that do not liquefy

(group A) nor possess chemical hazards (group B). It is clear from this incident that this cargo, or at least some of the ammonium nitrate based fertilisers shipped as this cargo, should not be treated as group C," Intercargo says.

"It is our hope that future work at the IMO will lead to the correct designation and description of this cargo within the IMSBC Code, thus furthering the safer carriage of cargoes and safer voyages."

EMISSIONS TOOLKIT

To reduce emissions across the maritime sector, national authorities need to first quantify those emissions and then develop a strategy to reduce them, according to the International Maritime Organization (IMO), the global regulatory body for shipping. With this in mind, it has released a new set of free-of-charge toolkits to assess and address emissions from ships and ports.

The Ship Emissions Toolkit and Port Emissions Toolkit have been developed under the GEF-UNDP-IMO Global Maritime Energy Efficiency Partnerships Project, in collaboration with its strategic partners, the Institute of Marine Engineering, Science and Technology and the International Association of Ports and Harbors.

For more information and to download the toolkits, visit: glomeep.imo.org/resources/publication

SCRUBBERS SEIZE ADVANTAGE

Bulk cargo owners' rush to fit scrubbers may well prove to their advantage, according to Maritime Strategies International's (MSI), which predicts a two-tier market for early adopters, with higher charter rates and asset values as cost of low sulphur fuel goes up.

In an article entitiled "Scrubbing up: the impact of fitting a scrubber on charter rates and asset values" by MSI analyst Will Fray, scrubber-fitted dry bulk vessels could get a significant premium over those burning more expensive low sulphur fuel and higher asset values will reward those owners that fitted the technology early.

"As long as significant fuel price differentials remain between HFO and LSFO –and MSI believes there will be in the long term – vessels with scrubbers installed will attract a charter premium," he says. "As more and more ships fit scrubbers, and over time as the finance is collectively repaid, vessels without scrubbers will face steep discounts and will become increasingly uncompetitive."

BIMCO BOOST

BIMCO was very satisfied with several developments at the recent meeting of the Marine Environmental Protection Committee at the International Maritime Organization, the trade association says.

Two key developments were the adoption of the ban from 1 March 2020 on the carriage of non-compliant fuel, and the compromise reached on collecting data from the world fleet on fuel oil non-availability and quality without any delay in the implementation of the 2020 sulphur rules.

"We are very satisfied overall with the outcome of MEPC 73. The industry retains a fixed implementation date, which is important, while at the same time, we addressed the safety concerns," says Lars Robert Pedersen, BIMCO deputy secretary general.

DIP IN CONFIDENCE

Shipping confidence dipped very slightly in the three months to end-August 2018, according to the latest Confidence Survey from international accountant and shipping adviser Moore Stephens.

The average confidence level expressed by respondents was down to 6.3 out of a maximum possible score of 10, compared to the four-year-high of 6.4 recorded in May 2018.

Confidence on the part of owners, however, was up from 6.6 to 6.8, equalling the highest level achieved by this category of respondent when the survey was launched in May 2008, with an overall rating for all respondents of 6.8 out of 10.

Confidence on the part of charterers was also up, from 6.7 to 7.0, the highest level for nine months. The rating for managers, however, was down from 6.7 to 6.2, and for brokers from 6.3 to 4.9.

Confidence in Asia was up from 6.1 to 6.3, equalling the highest rating achieved over the past 12 months.

The likelihood of respondents making a major investment or significant development over the next 12 months was up from 5.2 to 5.5 out of 10. Owners' confidence was up from 5.5 to 6.5, but charterers recorded a drop from 6.7 to 4.0. Expectations of major investments were up in both Asia (from 5.9 to 6.1) and Europe (from 4.8 to 5.3).

The number of respondents who expected finance costs to increase over the coming year was down to 59% from 63% last time.

Owners (up from 64% to 70%) and charterers (up from 33% to 50%) expected such costs to increase, but managers (down from 65% to 45%) and brokers (down from 75% to 71%) were of the opposite opinion.

Richard Greiner, Moore Stephens Partner, Shipping & Transport, says: "A small dip in confidence is not the news the industry wanted to hear, but confidence remains at its second-highest level for four-and-half years. Moreover, it is significant that the confidence of both owners and charterers actually increased.

"Concerns about geopolitical factors dominated the comments from respondents," he says. "These were led by President Trump's efforts to transform US trade relations, but also included state support for shipping in China and South Korea. Shipping will always stand to reap the benefits of its global identity and presence, but will also court the risks that this must inevitably embrace.

"Fortunately, shipping is accustomed to playing on the big stage, against a volatile backdrop and to a demanding audience. The Baltic Dry Index is up on a year ago and oil prices are on the rise.

"These and other positive portents encourage the belief that shipping is starting to recover, albeit slowly, from a ten-year downturn," he concludes.

WHY BUILDING A BRAND CAN MEAN BIG BUSINESS

In a competitive marketplace, bulk terminals need to get to grips with marketing and build powerful brands that put them ahead of the rest, says Ian Mills, Principal of Lawrence Mills Consulting

To many, marketing is like an iceberg – some of it is visible, but most is out of sight below the surface. The visible element of marketing is about communicating with customers using techniques such as advertising, PR and, increasingly, sponsorship. The latter allows you to place your name in unusual locations that will be seen by a much larger audience, for example a Formula one car. There are also well-known logos and straplines such as "**Just do it**".

In the business market where there are a smaller number of customers but making much higher-value purchases, we see a different form of communication, including exhibitions, seminars, presentations, briefings, and so on. However, for many organisations the principal way of communicating with customers, both existing and potential, is through its sales force.

Over the past few years, a new form of communicating has appeared – social media, which has rapidly become one of the most essential marketing tools. This encompasses Instagram, Facebook, Twitter, YouTube and other platforms. Social media is relevant to both the consumer and business markets and has several major advantages: it can be directed to a more targeted audience, right down to an individual person if required, whereas traditional advertising scatters its message widely. It allows two-way communication and, importantly, can react very quickly to changing events, news stories, and so on. Current research indicates that most ports use Twitter and LinkedIn, but rarely Facebook.

At the start of this article, it was noted that most marketing activity is out of sight. Such activities cover a wide spectrum, including the development of marketing strategies, plans, market research, identifying and developing new markets and understanding how markets change. Bulk terminals have recently experienced an example of this, with the demise of the coal market but equally, the growth of the new markets such as renewables.

Marketing is about understanding and developing your markets, a market being a collection of your customers, your competitors and potential customers. Each business, including bulk terminals, will have its own type of marketing. Research currently being undertaken by myself into port marketing has shown that very few ports have a formal marketing department. They all, however, "do marketing" in order to engage with and develop their customers. For many ports, marketing takes place in their business development teams, who also handle their market research.

A constant debate for many ports is who exactly is "the customer'? Is it the shipping line, the end customer (whose goods are inside the container), the shipper, logistics operators, haulage, service companies or stakeholders, and so on? The simple answer is, of course, that it's all of these. Bulk terminals have the benefit of knowing exactly who their customers are.

One powerful part of marketing, which for many is seen as a "black art", is branding. This was demonstrated by two recent events: first at a seminar at the 2017 London International Shipping Week entitled *Are Organisations in the Maritime Industry Exploiting the Power of Branding?*.

The second was a comment from a senior industry figure: "Port marketing is still mainly about features and benefits and hasn't moved on to strategic

considerations such as positioning and branding.'"

We live in a world of brands and while they are the most prevalent in the consumer world, branding is just as much a part of the business world –including ports, for example Liverpool's Superport.

SUPERPORT LIVERPOOL

So, what exactly is branding and why is it so important? To start with, what exactly do we mean by "brand". The term "branding" denotes ownership. Modern-day branding still denotes ownership but by metaphorically "burning the mind". It does this by using a variety of techniques designed to register with us. How many times have you walked down the street and subconsciously glimpsed at a sign, a poster on a bus or a shop window?

A brand is an image or perception of the product, service or organisation. This perception is what customers and stakeholders believe the organisation, product of service has to offer. This offer is called "the brand's proposition". One of the simplest yet most powerful definitions of a brand is that it's a promise guaranteeing delivery of its proposition.

Propositions comprise of both tangible and intangible elements, such as expectation. Just think what you expect when you see:

As a brand is held in the mind, we need to use tangibles (things we see and hear) in order to identify it. These include:

- The brand's name

MAERSK

- It may have a colour

- It may have a logo

- It may have a strapline
  "We move more than cargo"

There are other methods that organisations use to identify a brand. A powerful one is music. For example, TV programmes such as *Coronation Street* and *Match of the Day* are all strongly associated with a theme tune to reinforce their brand.

Brands can also be countries as they possess a name, a logo (its flag) and they use music – their national anthem and they have a proposition, for example "Made in Germany". People can also be brands, celebrities being the most obvious examples.

So why do we brand? We do this because branding delivers some very important benefits to the organisation, ultimately increasing sales and profitability. These benefits include:

- Demonstrates quality, for example Mercedes.
- Can add value – a branded product will command a price premium.
- Lets the organisation easily communicate a complex issue. If you see the word "America" or its flag , you understand what it is without having to describe it.

- Creates loyalty. You've all heard of being "brand loyal" – this is something that affects all of us. We take pride in our allegiances to particular brands. This might be choice of car, coffee shop or clothing and means that instead of making a rational choice, we operate on autopilot and make a choice purely based on the brand we are loyal to.
- Generates additional profits. It's a well known research finding that companies with strong brands are more profitable than those with weak ones or that don't have brands.

Branding's most important quality is that it's unique. A brand is the one attribute that cannot be copied. Establishing the brand is as important, if not more, than establishing the product or service that may be replicated.

Creating a brand cannot take place overnight and requires research, thought and investment. It is essential that the research to understand a terminal's current offer is undertaken independently and externally otherwise the organisation's staff and stakeholders will only say what they think the organisation wants to hear.

In my recent research, I spoke to a customer of several bulk terminals. It was surprising what was said about them and their perceived strengths and weaknesses, yet I suspect they believe they are supplying a good service.

So, what has branding got to do with ports, especially bulk terminals? All ports are principally branded by their location, but they can add an extra identity, for example "Gateway" or "Superport". Liverpool's Superport proposition says it is more than just a port with its port-related activities and in particular:

- Its geographical footprint is far greater than just its host city
- The port has a regional, economic development role, including inward investment

Turning to bulk terminals, the question must be raised: why aren't they branded? They all have the same name "the bulk terminal" and are only distinguishable to the next bulk port by location. What is different from Immingham Bulk Terminal to Bristol Bulk Terminal?
Of course, in reality there are many differences between them, be it type of bulk, customers and services, and so on, which require long, explanatory descriptions.

However, just as with the previous example of "America", if a bulk terminal was branded, for example "The Omega Terminal" then automatically it has a unique identity ensuring that over time, what it is, where it is and what is does and offers (its proposition) will be easily and quickly understood and will generate brand loyalty.

To summarise, in today's competitive and challenging markets, branding is a powerful tool that you can use to help a bulk terminal gain a competitive edge and increased profits.

Ian Mills is currently undertaking research into the marketing of maritime freight ports at Solent University.
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ASSOCIATION OF BULK TERMINAL OPERATORS

VIGAN

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HANDLING AGRIBULK WITH EASE

COMPANY NEWS

Belgium-based VIGAN Engineering S.A. designs and manufactures a complete range of pneumatic and mechanical conveying systems for products in bulk, not only through the supply of equipment, but also by managing complete turnkey projects.

While offering both mechanical and pneumatic solutions, VIGAN is widely recognised throughout the world as an expert in pneumatic agribulk handling technology.

MARKET TRENDS

Over the past decade, the global grain industry has slowly but constantly evolved revealing the following market trends:

- The growth in worldwide population and grain production has led to increasing demand for grain storage solutions and silos with larger storage capacities.
- Increased capacity and speed required by industry players continue to have a huge impact on the grain trade, the main reason why larger-sized equipment is required for unloading increasingly larger vessels.

These trends came to evidence throughout various projects and requests that VIGAN has faced over the past few years. Consequently, VIGAN has adapted its equipment to worldwide industry changes and new standards.

The VIGAN NIV 600 pneumatic ship unloader has now become the standard, representing on average 60% of NIV-type pneumatic ship unloaders sold by VIGAN over the past five years.

Each machine is customised and optimised according to customer's technical requirements and site specifications: gantry type (stationary, self-propelled on rubber wheels or on rails); unloading capacity (from 160 to 800 tons/hour); boom length (up to 30m); diesel/electrical power unit, and many other specific optional devices.

VIGAN NEW PRE-ASSEMBLY HALL

FOCUS ON EFFICIENCY

VIGAN NIV-type pneumatic ship unloaders are typically suitable for medium size vessels up to post-Panamax, mainly due to their boom length, which can reach up to 30m.

VIGAN's pneumatic equipment will handle most free-flowing products with densities between 0.5 and 0.9 and a natural angle

of repose of less than 40°. These include all kinds of grains (corn, wheat, barleys), oilseeds, raw materials for animal feed, wood pellets, specific chemicals such as soda ash and alumina, and also slightly compacting products such as soy bean meal. With its optimised and gentle handling process, VIGAN's equipment does not damage the products.

As each case is specific, VIGAN helps customers make the right choice. It is important to ensure that the selected machine is the most suitable for the required job, which is generally a rather complex matter. To unload, for example, up to five million tons of seeds per year, VIGAN usually recommends the use of one or two pneumatic ship unloaders on a gantry. For higher unloading rates, VIGAN recommends a mix between NIV and SIMPORTER (mechanical ship unloader). In this case, the pneumatic ship unloader would also be dedicated to assist in the cleaning of ship holds, which is the least efficient phase during the unloading of seeds, especially for mechanical unloaders.

The main advantages of the pneumatic unloaders are efficiency, reliability and cost-effectiveness. Pneumatic systems offer:

- The most efficient cleaning of the vessel or barge hold
- Low energy consumption (0.7 kW/h per ton unloaded), thanks to the direct drive of VIGAN high-pressure multi-stage centrifugal turbo blower(s) and its frequency steering
- Very low breakage/damage of the products
- No spillage or contamination, thanks to the totally closed design
- No dust: filter with sleeves and automatic self-cleaning
- Low noise thanks to acoustic insulation

NEW PRE-ASSEMBLY HALL

VIGAN continuously invests in research and development and larger manufacturing facilities to offer handling equipment in line with the market demand. We invest in the design of even higher capacity equipment, such as 800 tons per hour pneumatic ship unloaders.

In order to serve our customers better and to be prepared for the future, VIGAN has expanded its manufacturing facility in Nivelles, Belguim, with a major extension of an even larger pre-assembly hall, adding 2000 m^2 to its existing 10,000 m^2 factory based here. This means that pre-assembly of all ship unloaders in VIGAN's factory guarantees quality and shortens erection time locally, thereby cutting expenses to the minimum.

For more information, please visit:
vigan.com

TWO VIGAN PNEUMATIC GRAIN SHIP UNLOADERS TYPE NIV 600 TPH / 500 KW INSTALLED IN 2018 AT CALACA HARVEST TERMINAL INC. IN PHILIPPINES.

GRAINS OF TRUTH

While commodities such as iron ore and coal can be planned with greater efficiency, grains are influenced by many factors, from the weather to trade wars. Yet, says Basil M Karatzas, trade in this consumable is up by 50%


BASIL KARATZAS

Worldwide seaborne trade of grains (wheat, corn, soybeans, and so on) adds up to almost 500m tons per annum and in the past decade, this trade has shown a more than 50% cumulative increase. Still, the iron trade stands at almost 1.5 billion tons and thermal coal trade stands at one billion tons per annum and they are substantially more important than grains in terms of volumes.

While iron ore and coal are industrial commodities, grains are a consumable (whether by humans or as animal feed) and the grain trade is driven by more vital fundamentals. These are driven by human consumption, directly and indirectly.

Wheat is a stable of the human diet from time immemorial in the western world; in modern life, and as a greater proportion of the world population achieves middle-class living conditions, wheat is replacing corn (such as tortillas in Latin and South America), and a greater proportion of Asian populations are getting accustomed to wheat bread.

Middle-class living standards entail higher consumption of meat, whether white or red meat, which drives demand for soybeans, corn, maize, and so on. Even for animals raised on grazelands, grains are utilised in the last months of feeding for fattening of the animals and greater output.

While industrial commodities whose mining and production can be planned with greater efficiency, grain production is influenced by weather conditions, primarily rains or warmer summers. The well-documented weather effects El Niño and El Niña have known to be affecting negatively grains production in South America due to increased rainfall, but reduced rainfall in the Pacific Rim and in countries from Indonesia to Australia.

As this weather cycle is not always predictable, variations in grains farming can affect worldwide production, pricing and trading patterns.

Likewise, in the past few years, unusually warm summers in Ukraine and eastern Europe have negatively affected grains production, which has influenced trading patterns. In general, weather patterns have an element of uncertainty for the production and trade of grains worldwide, which, on average, increases uncertainty for shipping and pushes freight rates higher, all else being equal.

In the past year, the grain trade, and specifically the soybean trade, has been on the front pages of newspapers as several countries have been targeting US grain exports in retaliation to tariffs imposed on their US imports. In the wheat trade, Mexico, America's largest importer of wheat at approximately $400m in 2017, this year has imported 38% less wheat from the US and systematically has sought to replace US imports with imports from countries of South America.

In the soybean trade, China is by far the largest importer of US grains including soybeans, but in 2018, in retaliation to US tariffs on Chinese imports, China has imposed tariffs on US agricultural products and has sought new suppliers in international markets. China imports approximately one-third of US soybean production, and at $14bn annually, soybeans (used as feedstock for pig farming) exports to China is the second most valuable export trade to China, after airplanes.

China, as the world's largest soybean importer, is rather dependent on US soybean in the short term. However, it is estimated that China could shave 10-20% of their soybean imports without affecting pig farming output, while Brazil is poised as an aggressive entrant to replace the Chinese soybean imports from the US. All along, in the 2018-19 harvest season, the US is expected to produce an all-time high 4.6 billion bushels, which will entail high stockpiles and crashing prices.

From a transport point of view, and mostly from the supramax (approximately 55,000 dwt) to panamax (approximtely 82,000 dwt) dry bulk vessels on which the international seaborne grain depends upon, many a shipping company has come to depend on the grain trade as a business strategy.

Volumes are on an increasing trend driven by solid fundamentals (rising living standards drive demand): eating habits are social habits, and thus, newly-found demand for wheat flour will not change soon; seasonality and weather dependency has the element of uncertainty with new trading routes appearing every few years; grains are vessel-friendly cargoes that are not putting excess stresses on the hull of vessels or causing excessive wear and tear; talk of trade wars, to the extent that they do not escalate to fully blown collapse of trade, could be beneficial to shipping.

In a typical example, US wheat exports from the US (predominantly from New Orleans) to Mexico (predominantly to Veracruz) is a week's long sailing voyage, while imports from South America take twice as long to ship.

The graph depicts selected total seaborne grain trades where the increasing trend is clearly visible in all main trades. Even the notoriously difficult years of the financial crisis in 2008-2010 this market has grown, a trend that is even more noticeable since 2012.

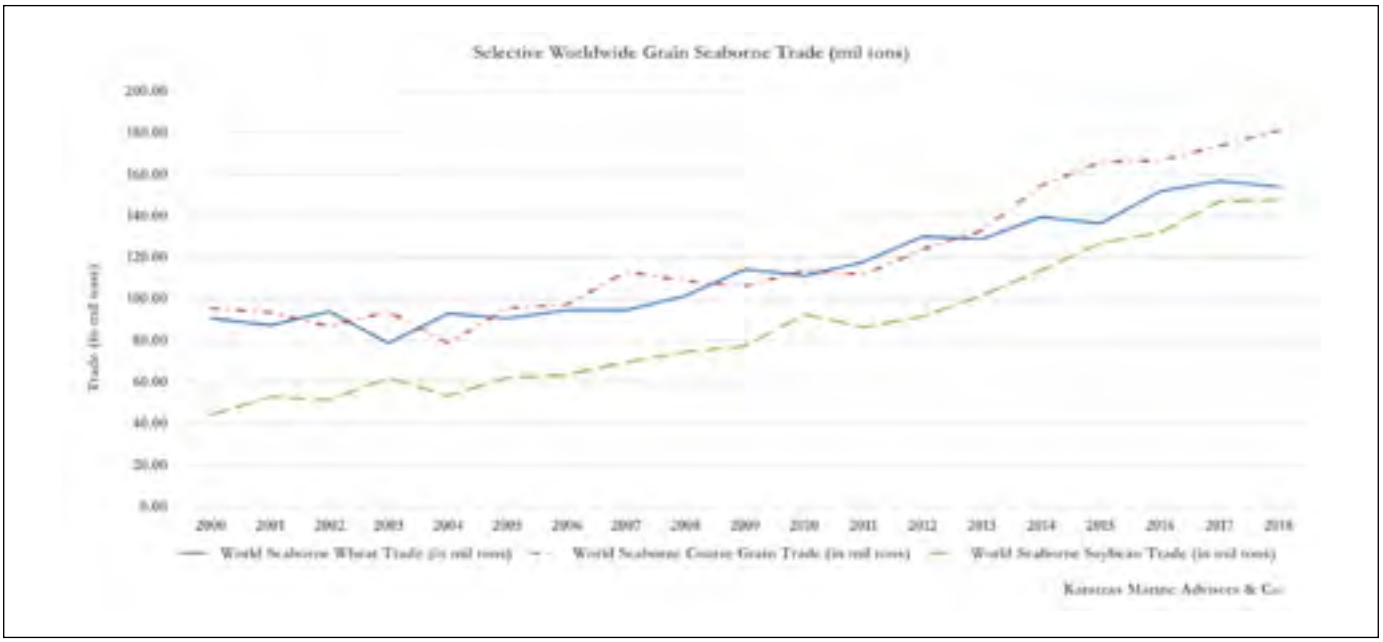
The past year and 2018 have been softening marginally, but it is not expected to be critical.

Shipping is a notoriously volatile industry and often a crucible of efficiencies. Despite the disheartening news of trade wars and other higher barriers to trade, quiet often, reality finds surprising ways for new markets and trends.

It is, therefore, with the greatest surprise that just recently it was reported in the international business press that Iran, of all places, is stepping up its US imports of soybeans… US-imposed sanctions on Iran notwithstanding, that are severely curtailing Iranian crude oil exports, Iran is buying ever more soybean from its archenemy.

As they say, never a boring day in shipping!

Basil M Karatzas is the Founder and CEO of Karatzas Marine Advisors & Co, a New York-based shipping finance and shipbrokerage firm. For more information, please visit: karatzas.com



TOOLS OF THE TRADE

How can bulk terminal operators ensure they choose the right crane for the job? Professor Mike Bradley of the Wolfson Centre for Bulk Solids Handling Technology had some sound advice for delegates at the recent *Bulk Terminals 2018* conference

Professor Mike Bradley, director of the Wolfson Centre for Bulk Solids Handling Technology says there are often people coming to the organisation asking for advice on whether to purchase grab cranes or continuous ship unloaders (CSUs) for a port project.

When it comes to bulk solids handling, the answer is always "it depends", Bradley told delegates gathered at the recent ABTO conference in Hamburg.

"One key issue is efficiency, where CSUs are generally the best bet, versus flexibility where a grab crane might be the better option, because you can handle materials with different bulk densities just by changing the grab," he said.

"The CSU is better in terms of efficiency, although it is generally designed around a specific cargo. If you want high rates of unloading, CSUs are better and they are also less dependent on an operator's skill".

There are many different types, each with their own advantages.

Considering the level of degradation of the cargo, the screw type discharge offers quite low degradation, whereas the bucket elevator might be more efficient, but will create much more dust emission.

"If you want large throughput, then choice is more limited," Bradley told delegates. "Bucket wheel unloaders offer the opportunity of unloading large quantities from big ships, but they have dust issues.

"Pneumatics are also interesting because they are available on much shorter lead times and have lower weight on the quayside. Energy consumption is high, however and a lot of time will be taken in cleaning the last remaining percentages of product from the hold."

When it comes to grab cranes, there are three main types: gantry cranes, horsehead cranes and the traditional single boom crane.

For the biggest discharge rate, the gantry is the best option. However,


PROFESSOR MIKE BRADLEY

they are high-cost, high-weight items and have a long lead time to obtain. "If you want efficiency, highest weight and lowest maintenance, nothing will compare with a gantry crane," Bradley said.

The traditional single boom crane is cheaper and lighter, but more affected by wind. Although cheaper to buy, they are more costly to run. The horsehead crane, meanwhile, is somewhere between the two.

When it comes to using a fixed or mobile crane, this decision is affected by a number of factors, Bradley said. Fixed cranes are designed for the purpose, with long lead times. They are heavier on the quayside, but better balanced, which means that they are safer and also require less maintenance.

Mobile cranes, meanwhile, are easily available and can be redeployed elsewhere, are light weight on the quayside, but efficiency and safety features can be compromised. They tend not to incorporate their own hoppers and often have more hydraulic drives, with not such a good view.

Bradley advised only buying such a crane if mobility issue was a key consideration. Using a mobile crane in one place for a long period of time is not an efficient use of capital, he concluded.

STEMM MOVES IN ON BASEL

Auhafen Muttenz Basel port terminal has just started using a completely new system for biomass unloading and storage in large silos.

Stemm's clamshell grabs 4CH-16000-1,1 type, with a capacity of 16m^3, are designed to handle all kinds of bulk commodities and biomass, up to a density of 1.1 T/m^3.

The installation has been carried out by Stemm's technical team in collaboration with Swiss company Stephan, which specialises in all types of lifting equipment, bridge cranes and equipment for the combustion of wood and biomass sectors, wood burners and boiler feeds.

Biomass traffic in the Rhine and other large European rivers has increased considerably in recent times and consumption and production of combustible resources is on the rise.

Stemm installed an electrohydraulic clamshell grab powered by four hydraulic cylinders, that work directly on the grab's shells, applying a very powerful, uniform and constant penetration strength.

The grabs can work in any position within the ship, even on sloping working positions, in an almost horizontal position. They work continuously 24 hours a day, transmitting at all times the position of the valves, incline, operation pressure, oil temperatures and electric motor.

For vessels carrying very compacted materials, due to their hold conditions or weather circumstances, Stemm grabs have their own system called scratching, which operates automatically and performs a previous and/or simultaneous scratch when handling the product inside the hold. That way, they obtain filling factors superior to any other type of clamshell grabs, the company says

LIEBHERR LIFTS OFF

Liebherr has been assisting in scrap operations with scrap and metal trading company M Kaatsch, an international company whose core activity is the recycling of reusable materials.

The company operates a scrapyard at the Neckar port in Plochingen, Germany, with an annual throughput volume of over 1.4 million tonnes and has been working with a new Liebherr LH 150 C High Rise Industry Litronic material handler – the first LH 150 with electric drive to be used in an inland port.

The new material handler is equipped with a 400 kW electric motor with frequency converter. Together with the standard Liebherr ERC energy recovery system, the machine achieves a total system output of 661 kW.

Fast, smooth work cycles are made possible due to the additional gas cylinder mounted on the boom, while the winding system with roller deflecting guide on the undercarriage allows travel paths of up to 100m from the infeed point.

In the configuration specified by Kaatsch, the upper carriage is installed on a high-rise crawler undercarriage. This guarantees an optimal view of the working area.

The LH 150 C High Rise Industry has a radius of up to 28m with its 15m long boom and 13.5m long stick and can therefore cover a large working area. With a huge load-bearing capacity of up to 13.6 tonnes at a 27m radius, high volumes of material can be handled.

KAATSCH IS A FAMILY-RUN BUSINESS

KONECRANES CONTRACT

Konecranes has signed a contract for the delivery of an Automated RTG (ARTG) System to PT Prima Terminal Petikemas, a subsidiary of state-owned port operator PT Pelabuhan Indonesia I (Persero).

The ARTG system on order includes 12 ARTG cranes with associated software, interfaces and services.

The Government of Indonesia is carrying out a nationwide freight transport programme to improve the movement of goods through the country's vast waterways.

Indonesia is a strategically important country for Konecranes, the company says. With its products and services, Konecranes is contributing to the country's drive to become a global top 10 economy by 2025.

ISLAND OPERATION

E-Crane has been working again this year near Balikpapan on the Indonesian island of Kalimantan to install a new crane at the coal terminal.

Two cranes have been installed at the port, each of which will have a design unloading capacity of 1,500 tons per hour and can unload deck barges up to 12,000 DWT into two dedicated hoppers each.

THE **BALANCE** OF TECHNOLOGY & EXPERTISE

We sell solutions, not products. We utilize a personalized approach to help solve our customer's most complex and heavy-duty handling needs. E-Cranes deliver high performance and reliability, while also significantly reducing operating costs, power consumption, and environmental impact.

E-CRANE.COM

E-CRANE GIVES THE GREEN ADVANTAGE

COMPANY NEWS

Energy consumption and environmental impact are key when it comes to investment in new port equipment — in other words, the environmental impact of a port crane needs to be minimised. On the other hand, the cost associated with handling one ton of bulk material also has great importance, as this shows the economic feasibility.

When handling difficult dry bulk materials as well as steel scrap, hydraulic material handlers have become standard and are considered the most suitable solution for the job. Wherever you look, traditional rope cranes are being replaced by hydraulic units that are faster and more versatile.

ENERGY COST

Over the past few years, the move towards greater energy efficiency can also be seen on modern hydraulic material handlers. Several manufacturers now supply machines with hybrid systems where the energy released during the boom down function is stored into accumulators. When the boom is lifted again, the stored energy is utilised to support this movement. Usually, an additional cylinder is required in combination with an energy storage system. Suppliers claim to save 30-35% on energy bills.

At E-Crane, we have not gone down the same track as our basic design already results in the most energy efficient hydraulic crane available on the market. Utilising the principle of equilibrium, where the stick is mechanically connected to the rotating counterweight by means of a connecting rod, the load can be moved from point A to B at a fraction of the energy usually required. The energy savings achieved using hybrid systems on a material handler all of a sudden become insignificant. The E-Crane philosophy is simple: start from an energy efficient design rather than adapt a fundamentally inefficient one.

On any E-Crane, the machine's centre of gravity always stays within the slewing ring, as the movement of counterweight and stick are synchronised. As a result, a balance situation is maintained and guaranteed at all times.

When working with lighter loads, the movable counterweight makes the arms go up almost spontaneously as it pulls the boom up. When working with heavier loads, the movable counterweight assures smooth lifting at low hydraulic working pressures.

ELECTRIC POWER

There is also a tendency towards electrically powered machines, instead of the traditional diesel-powered material handlers, even on mobile machines. For material handlers, this is considered to be a product innovation.

What others see as an important innovation has been common practice for decades at E-Crane — electrically powered machines are nothing new for Belgium's only manufacturer of bulk handling cranes. All machines are equipped with an electrical motor as the main power source and have been for some time. When no shore power is available, the machines can be equipped with a diesel generator set. Switching between shore power and diesel is possible in all circumstances. The optional use of a VFD (Variable Frequency Drive) can further reduce the size of a diesel genset, if this is required.

NOISE REDUCTION

Another major issue in modern ports is noise levels. As more and more terminals are close to urban areas, there can be strict rules as to the maximum sound level for new equipment. It is therefore often a requirement that an extra effort is made to reduce any noises from the port cranes in the best way possible.

Thanks to the electro-hydraulic powertrain working at relatively low hydraulic pressures, the E-Crane is already one of the most quiet cranes on the market. However, as an option, E-Crane can install an additional sound dampening package to meet even the strictest demands.

THE ADVANTAGES

The equilibrium principle, perfected and implemented successfully in well over 200 cranes by E-Crane, provides a nearly perfect balance between the movable counterweight and the weight of the crane boom and the stick plus half of the payload, at all radii.

Outstanding benefits are:

- Very low energy consumption compared to any other hydraulic material handling machines
- Very low wear costs as the crane operates with low pressures and the balance is ensuring an equal load spread on components
- Smooth, harmonic crane movements
- High operator comfort, supporting high productivity and excellent ergonomics
- Extremely quiet inside and outside
- Unique, adjustable floating point (automatic boom float), which helps to ensure grab filling in difficult conditions and prevents damage to ships and tools
- Lowest OPEX in the industry

The E-Crane design provides the highest quality fabrication of all load-carrying steel constructions, high-class corrosion protection and reliable hydraulic components from renowned suppliers, such as Rexroth and Caterpillar. Design classification meets the highest possible standards in FEM or DIN, with the longest design life. Electronic controls include remote diagnostics and the possibility of semi-automatic crane operation.

All crucial spare parts, including slew bearings, pumps and cylinders are in stock in one of the regional DC's around the world, and available at very short notice even in the most remote locations. This reduces the operator's need for spare parts stock to only those parts needed for regular maintenance as well as consumables, plus a limited selection of items, which are convenient to have on hand.

AFTER SALES SERVICE

E-Crane prides itself in not only supplying equipment, but rather long-term solutions for bulk material handling challenges. After delivery and installation, E-Crane personnel remains present on site to carry out operator and maintenance staff training, as this is a practice both client and supplier will benefit from.

When it comes to in-depth training courses for operators, maintenance personnel and terminal managers, additional training can also be arranged at the E-Crane Academy at the company's headquarters in Belgium.

In addition, E-Crane can also carry out all maintenance activities for clients. All-in maintenance contracts are in place for an increasing number of E-Crane users around the world, so that the crane owners can focus on their core business. Regular site visits by a certified E-Crane field service technician are made to support the client in the best possible way and to carry out preventative maintenance tasks. E-Crane further assists in optimising the unloading process by continued operator training, bottleneck identification and process evaluation, and by making recommendations on how the terminal operations can be optimised as a whole.

Furthermore, E-Crane is on standby 24/7 in case of emergencies and also guarantees the availability of replacement parts, should they be required, as part of the all-in maintenance contracts.

All of which illustrates E-Crane's strong commitment to being a long-term partner, rather than just a crane supplier.

CONCLUSION

Where others claim to offer green alternatives, E-Crane really delivers — even more so when looking at machines that reach a life of 60,000 hours and more. E-Cranes provide longer outreach ranges than typical material handlers, starting from 25m, all the way to 50m. This outreach allows for unloading any type of barge or ship with minimum clean-up. E-Crane duty cycle capacity ranges from five to more than 60 metric tons.

Although E-Cranes are compatible with any type of hydraulic grab, E-Crane's clamshell buckets are designed with a powerful closing force affording maximum fill and eliminating spills and carry-back. The E-Crane operator's cabs are equipped with a state-of-the-art control system for easy machine operation which builds operator confidence, reduces cycle times and maximises productivity.

All in all, the E-Crane design makes the machines ideally suitable for high-volume industrial and mission critical applications in the most demanding working conditions — something that has been proved many times on all continents.

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DUSTING DOWN

Dust poses a hazard when loading or unloading bulk cargoes and while new designs cut down the risks, employees need to be fully aware of the dangers and take steps to reduce them

Choosing the right equipment to load or unload bulk material is essential – not least given the dangers posed by dust from products such as cement for the health of port workers as well as members of the public in ports close to urban areas. New designs emphasise not only the more eco-friendly aspects, but also that they can improve efficiency in handling. Most bulk cargo handling equipment companies emphasise the dangers of dust when handling products and build safety practices into their equipment.

One such company, Guttridge, says many years of experience have taught it that an explosion caused by dust is not something that anyone wants to have to witness, and it has even been known to cause serious injuries and fatalities.

"Thankfully, the risk of explosions from dust has decreased in recent years. 30 years ago probably the most protection there was against dust was for employees who were encountering it to wear a mask. Apart from that, it was basically down to luck. Now, however, with the introduction of the ATEX Regulations, there is a greater understanding of the risks posed," the company says.

The risk of dust explosions was emphasised at ABTO's recent conference in Hamburg. Professor Mike Bradley, director of the Wolfson Centre for Bulk Solids Handling Technology, told delegates that mobile plants are one of the commonest causes of fires because

of hot surfaces, and cause a lot of fires in flat stores. Therefore controlling dust is very important. In biomass handling, for example, one hour of cleaning is needed for three hours of operation and cleaning machines are also dangerous.

Dust spread needs to be contained as well, with sensors and isolation systems. "Housekeeping is the single most important thing," Bradley said. "If there is dust on the floor, it can cause a secondary explosion that is more dangerous. If you can write your name in the dust on the floor, you have the potential for a devastating secondary explosion."

Explosion characteristics and dust emission properties and prevention and extinguishing properties are all things that need to be considered and understood about a cargo. Good design and operation minimises risk but even with the best designs an accident will occur, said Bradley. "Have expertise on tap and do a regular review of the accident plan, which engages people with it. Isolate the control centre from the risk centre. Business continuity planning is also essential."

NEW DESIGNS

Examples of cement handling designs include Siwertell's ST 640-M, which has recently been picked by GCCM Holdings for South Texas Cement's terminal at the US port of Corpus Christi with a high-capacity ship unloader.

The Siwertell ST 640-M unit will have a continuous rated cement-handling capacity of 1,500t/h and will be able to unload ships of up to 60,000 dwt.

"GCCM and South Texas Cement made the decision that their new terminal would be best served by a mechanical unloader," says Siwertell sales manager Patrik Henryson. "The factors considered during the decision-making process included unloading times, venting requirements, electrical demand, capital and lifetime maintenance costs, ship size and storage capacity." Machine size and unloading rate were also extremely important, as well as the ability to handle ships of different sizes.

The unloader is currently being built and will be delivered fully-assembled by heavy-lift ship to the port. Siwertell will supervise its commissioning and the unit is expected to come into operation in June-August 2019.

Siwertell ship unloaders and loaders are based on screw conveyor technology, in combination with belt conveyors and aeroslides, and can handle virtually any dry bulk cargo, such as alumina, biomass, cement, coal, fertilisers, grain and sulphur.

Cement carriers can be loaded by gravity or by pressure from a silo, but special types of vessel equipped with compressors and pumps are more likely to be used, which are self-discharging.

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.

MacGregor cement handling systems, for example, use both mechanical and pneumatic arrangements that can be adapted to any size and shape of vessel, and cater for newbuildings as well as retrofitted vessels.

Screw conveyor technology is used, which incorporates a totally-enclosed conveying line for environmentally-friendly operation in all weather conditions.

Screw conveyors are designed to handle powdery cargoes such as cement, fly ash and limestone powder, and are completely enclosed for dust-free operation.

Italy-based Gambarotta Gschwendt is another company that supplies various types of screw conveyors. The machines are also widely used for recovering and conveying dust in dust-filtering ecological plants, in any sector.

Screw conveyors can be divided into two main groups, namely horizontal ones that are generally used for powdered or small materials to be conveyed horizontally or with slight inclination (which may reach 45° or more) and vertical screw conveyors, which are used for vertically lifting fine-grained material (also known as screw elevators).

OVERLAND CONVEYOR

Asia Cement Group, meanwhile has deployed a 13.7km long Beumer troughed belt conveyor in Sichuan. The conveyor has been extended from the 12.5km overland conveyor that Beumer used to convey limestone from its quarry to a cement silo.

The troughed belt conveyor runs through hilly terrain and nature reserves, over streams and unstable ground. The second project includes two additional overland conveyors, with an overall length of 13.7km, transporting limestone to the cement plant.

Unlike the first project, the task here was to build the conveyor across inhabited areas. Noise emission limitations set forth by the government also needed to be taken into consideration.

FROM THE QUARRY TO THE CEMENT PLANT: BEUMER GROUP BUILT A 12.5 LONG CONVEYOR THROUGH HILLY TERRAIN AND UNSTABLE GROUND IN THE CHINESE PROVINCE OF SICHUAN. AN ADDITIONAL, SMOOTH RUNNING SYSTEM IS ADDED WITH A LENGTH OF 13.7 KILOMETRES. THIS SYSTEM CAN FEED A POTENTIAL THIRD CONVEYOR WITH LIMESTONE. © BEUMER GROUP GMBH & CO. KG

A MOBILE SOLUTION FOR CEMENT AND CLINKER

COMPANY NEWS

Today's maritime routes enable the movement of all kinds of products all over the world. To eat New Zealand kiwis in London, Italian Parmesan cheese in South Africa or Spanish olive oil in Korea is possible due to trading companies shifting products from one part of the world to the other. This applies to cement, which might be produced in the US with Turkish clinker, or in Australia with Japanese one.

The main ways to import cement products today are as follows:

BAGGED CEMENT IMPORT TERMINAL

This is the easiest and most risk-free way to start in the cement business, importing bags inside sling bags of 1.5 to 2MT. If it all goes wrong, there is no industrial site to worry about, only the problem of how to sell off the bags and pay the rent on the storage facility. Generally, low-volume cement imports are branded with the exporter's company name. If the number of imported bags increases, then an own brand name can be considered.

It is easy to store bags using this import system, but it does entail a considerable number of split bags due to the delicate consistency of the paper material they are made from. The risk of rain during the charge and discharge of the product has to be taken into consideration to avoid damaging the cement.

BIG BAG CEMENT IMPORT TERMINAL

Similar to the previous method, but for this a storage centre will be needed, as well as a big bag breaker, small silo and packing machine, together with a palletiser and wrapping machine. Investment will be required to set up this system and install these machines, so it requires a long-term vision in order to cover the investment. A local brand name will be used from the start and, due to the use of a small silo, bulk cement companies can be reached, increasing the type of clients.

BULK CEMENT IMPORT TERMINAL

This requires much higher investment as silos will be required to store the cement. The capacity of the silos will be determined by the size of vessels that can enter the port. Bigger vessels tend to mean cheaper cement on site, but a larger number of silos will be required, meaning a higher initial investment. In this solution, bulk and bag material is sold, so a packing machine is again necessary.

CEMENT GRINDING STATION

This fourth scenario is the only one that allows companies to produce their own cement by importing clinker and mixing it with different raw materials, such as gypsum, limestone, pozzolana, fly ash, slags, and so on. Although a larger investment is required, the use of portable grinding stations means the capital expenditure is considerably reduced.

With a capital expenditure smaller than a conventional bulk import terminal, it is possible to produce up to half million tons of cement per year. This allows clients to produce the type of cement required for different markets by combining raw materials and grinding to the needed or appropriate blaine.

The modular grinding solution was implemented in the market six years ago by Spanish cement engineering company Cemengal. Today, with more than 35 units sold, it represents a high percentage of sites in the importing cement terminals.

Starting with a small 12tph grinding capacity and reaching more than 70tph, clients are able to reach their sales target with these parameters.

The advantages of modular grinding stations compared to the other solutions described here and compared with conventional grinding stations are as follows:

- Quick payback
- A moderate investment
- A portable solution, the grinding station can be moved if required
- The yearly cement production of the Plug&Grind® Classic is around 100,000 tons per year of cement; for the Plug&Grind® XL it is around 250,000 tons per year of cement; for the Plug&Grind® X-treme, it is around 400,000 tons per year of cement; for the VP&G®, it is 500,000 tons per year of cement
- Depending on the model, the time scales are between seven to 10 months complete delivery FCA basis
- First cement production is nine to 12 months after the contracts are signed, depending on the selected model
- The footprint for the whole equipment infrastructure is the smallest in the cement industry
- This grinding plant is a Cemengal patented unit
- The plant is mobile, very compact, easy to assembly and transferable to other locations
- The equipment comes pre-assembled inside the regular containers and modules, from Cemengal's facilities in Spain.
- The plant is fully equipped and ready to produce cement after the final assembly
- It is very simple and easy to operate and maintain
- It aids logistics by grinding raw materials at required destinations or close to concrete batching plants, thus avoiding the handling of cement directly (dusty, leakages and more expensive, and so on). If required, the client can always pack up the containers and transfer cement production elsewhere
- Sustainability across the business process, providing efficiency during operation, distribution and logistics

Today, clients including global cement producers (Argos, CRH and Lafarge Holcim), regional cement producers (CENOSA, Semen Merah Putih, Mombasa Cement, Cementos Melón), local cement producers (Ndovu Cement, Kampala Cement, Cemento Regional), as well as newcomers to the industry have put their trust in the modular and portable grinding station Plug&Grind® with excellent results.

CASE STUDY

A major Indonesian cement producers with an annual production of 6.2 million tons has a plant with a clinker production line of 10,000tpd and its own seaport. It is planning to construct a second clinker line of 10,000 tpd, beginning operation at the end of 2019. In 2016,the company decided to implant a multi-node distribution system, transporting clinker instead of cement, and placing medium-sized modular grinding facilities in different islands. By the end of 2016, it had installed three of these units on Sumatra. During the next couple of years, it will install the rest of the grinding network and have more than 10 units of modular grinding system (Plug&Grind®), enabling it to be closer to the end cement consumer.

PLUG&GRIND®

Today, Plug&Grind® has four different models of modular grind station

Plug&Grind® Classic was launched in 2012 at a conference in Ghana,West Africa. Just a few months later, the first units were sold in Kenya and Saudi Arabia. This model can produce more than 12tph of cement and the FOB delivery has been reduced to just seven months.

Plug&Grind®XL Although demand for Plug&Grind® was good, the market was demanding a larger size for this modular and portable solution. In 2014, the Plug&Grind® XL arrived on the market. This larger model captured the attention of new clients, including large cement producer. The Plug&Grind®XL is able to produce more than 30tph of cement and has a short FOB delivery of eight months.

Plug&Grind®X-treme The new Plug&Grind® X-treme includes a fourth-generation separator, Magotteaux XP4i, and is able to produce 50tph with delivery of just nine months FOB.

VP&G® This model reaches 70tph capacity with a vrm. It is the best solution when the client is grinding slags or other high -moisture-content products. It can be on site and producing cement in just a year.

There are many possibilities for companies to work with imported cement products, all of which have clear advantages. Cemengal is ready to help clients find the best solution.

For more information: **cemengal.com**

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 Grabs 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.

Each grab is manufactured under the industry's strict quality controls, according to the QAP approved by our experts. We are only too aware that delays in shipping can result in exorbitant costs so we keep a full stock of spare parts, and our committed after-sales service team is available to see to all our customers' needs in the quickest possible time.

With grabs to handle bulk, logs, scrap, underwater dredging and more, please don't hesitate to contact us to talk through your needs.

MRS GREIFER

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BREAKING THE CHAIN

In spite of repeated warnings, accidents when handling bulk cargoes in port are sadly still common. Innovative equipment and thorough training of staff are the solution

QUAY CRANES ARE HIGHLY EXPOSED ON PORT QUAY SIDES

Casualties when handling bulk cargoes in ports sadly continue to be common and while correct use of equipment is a key factor so, too, is design to ensure loading can be achieved with the best degree of stability. Insurers the TT Club have again warned about the problem, saying that while quay crane collisions with ships are nothing new, warnings about the dangers of accidents have not stopped them from happening with "continued regularity".

Not only are quay cranes expensive pieces of equipment, they are also highly exposed on port quay sides. According to the Club's claims analysis, quay crane incidents are the highest cost ones for port and terminal operators, with collisions representing more than half of the costs involved, with 20% involving boom to ship collisions.

In advice to TT Club members, risk management director Peregrine Storrs-Fox says laser technology is one way of avoiding collisions although "there will be varied reasons why such technology has not been deployed". He warns that when an accident happens, insurance will not pick up all the costs, particularly those that relate to lost management time or reputational damage.

As Andrew Huxley, regional

development director at the Club, commented at the recent ABTO conference in Hamburg: "Insurance does not pay for everything. A statistic published by the UK Health & Safety Executive suggests that for every £1 that you get back from your insurance policy, there is between £8 and £36 of uninsured cost that you won't get back.

"This includes reputational damage, potential loss of contracts, increased maintenance costs and overtime," he told delegates "The best thing is to not actually have the loss in the first place."

Storrs-Fox suggests that trip-wire boom anti-collision systems can be effective. "The trip wire is the most common form of boom anti-collision system. While these devices continue to be supplied by crane manufacturers where the specification is not prescriptive, the trip-wire system is really only a boom collision detection system. The trip-wire may appear cheap, but requires maintenance to keep tension on the wire. Fundamentally, however, the trip-wire is ineffective since it is typically only activated about 1m from the boom, whereas a crane moving at full speed may travel 3.5m before stopping."

Laser technology, he says, is economically viable when you consider the injuries, damage, delays and expenses incurred as a result of an incident. Bearing this in mind, it is surprising that laser technology is not used more to cut operators liability exposure. "Unfortunately, the incentive to act may only come after a collision has been experienced. TT Club alone has handled 325 such incidents over the past 10 years. All types of quayside crane are at risk – those involved in container, bulk and general cargo operations," he says.

Experienced outfitting is also essential, he says. "Fitting proven electronic sensor devices to all quay crane booms to prevent them colliding with ships could save the port industry millions of dollars of damage and operational downtime. But remember to have them installed by someone who knows what they are doing."

STORM TROOPERS

Key components in preventing accidents, improved handling and loading are at the centre of Samson's new updated bulk handling equipment. The new generation STORMAJOR from Samson Materials Handling is available in three models:

- STORMAJOR 380 Series, for materials with a bulk density ≤1 t/m^3, such as cereals, fertiliser or alternative fuels
- STORMAJOR 450 Series, for materials with bulk densities from 0.9 to 1.6 t/m^3, such as additives, light minerals or fertiliser
- STORMAJOR 800 Series, for materials with bulk densities from 1.5 to 2.1 t/m^3, such as heavier minerals or ores, sand and gravel.

The new design combines a mobile truck unloader with a moveable boom. This unit allows operators in ports, goods depots and stockpiles to receive bulk materials directly from trucks, front-end loaders or other loading equipment and to load them into vessels or railway wagons. As the equipment is fully mobile, it can also be used for stockpiling of bulk materials.

Ease of maintenance and versatility in its requirements were also considered in developing the new design. The boom is attached below its centre of rotation, so that fines do not collect in the bottom of the machine.

The feed section of the main chute is completely decoupled from the conveying sections, which means that if necessary, bulk materials with particularly poor flow properties can be actively shaken to make the process more efficient.

The standard angle of the transfer chute walls is already an effective measure to reduce the danger of bridging when handling different materials that do not flow well.

Each version of the STORMAJOR has two travel and power options. A wheel-mounted version is towed, or a tracked machine has its own drive. When moving the machine fully loaded, it can be equipped with additional outrigger support.

The new design is offered with a choice of engine and drives. For example, the conveying sections can be either electrically or hydraulically driven. The self-driven versions can be equipped with diesel generator sets with various emission standards, up to TIR5.

The main drive concept depends on off-site power supply or pumps and generators driven by the diesel generator sets. The "power twin" sets new standards with an additional distribution gear directly flanged on to the diesel generator set.

Each STORMAJOR can be further tailored to the specific requirements of the application. These include additional transfer chute systems, various lining options for chutes and conveyor, de-dusting solutions, additional enclosures for the conveying sections, operation and maintenance platforms, operator cabins and lighting packages.

SAFETY ISSUES

Correct handling of potentially dangerous cargoes is also an issue and the London P&I Club has published a loss prevention guide on risks associated with the carriage of coal cargoes, with particular emphasis on gas monitoring and ventilation.

The guide says the management of coal cargoes and the proper use of gas detection equipment are key elements in the prevention of coal fire claims. It sets out requirements relating to the installation, use and maintenance of gas detection devices and the different types of sensors involved in their operation.

It also includes a checklist of good gas monitoring techniques, and recommendations on the use and care of this specialist equipment.

Despite the risks associated with the transportation of coal, the majority of ships carry such cargoes without incident. "Ultimately," says the London Club guide, "the key to proper and efficient use of gas detection and monitoring equipment is the crew's full understanding of how the unit works, and their familiarity with its functions and proper, prescribed maintenance routines. Adhering to the requirements and recommendations in the IMSBC Code greatly reduces the risk of fire and helps prevent incidents from becoming major casualties."

As Captain Richard Brough, technical advisor to ICHCA International pointed out to ABTO delegates in Hamburg, casualties continue to dog the industry and he highlighted the INTERCARGO survey recently that pointed to 202 seafarer casualties in the past 10 years relating to bulk cargoes, mostly as a result of liquefaction. Other recent incidents include a mass poisoning on board an Iranian tanker which affected eight people, three of whom died. Liquefaction incidents are quite common.

"We have a lot of problems with bulk cargoes and bulk carrying equipment". Lifting equipment also presents safety hazards. Shipping is slow to catch up with other industry sectors on safety issues," he said.

Some buzz words in this area, he said, include actionable data – using data more intelligently – and cloud solutions. "Would you rely on a cloud for the back-up of your data? A company in the UK recently lost all of its data because it relied on the cloud and the cloud failed," he said.

Ports are looking at smart port systems to move product through the port more effectively. The biggest source of fatalities in ports today is reversing vehicles and people being struck by containers, he said.

Training is also very important, Brough said. The ILO Port Development Programme covers how to deal with bulk cargo and container operations and port supervision, and there is a plethora of information on the ILO website on how to train trainers on these subjects, as well as training videos.

The message is that it is not just a question of training staff, but assessing their competence to deal with situations in the workplace.

MOBILE HANDLING SOLUTIONS FOR BUSY PORTS

COMPANY NEWS

Changes to berth availability, multiple activities taking place at ports and variations in product supply and demand can create complications for all port operators.

The new generation STORMAJOR® from SAMSON Materials Handling can help port operators reduce uncertainty and risk on a daily basis by providing a reliable yet mobile loading facility, available with a selection of extra features tailored to the specifics of each operation.

The culmination of years of development, STORMAJOR® brings versatility and reliability to busy ports, stockyards and goods depots. The new streamlined design provides excellent handling across a range of materials.

There are three types of STORMAJOR® currently available:

STORMAJOR® 380 Series
For materials with a bulk density ≤1 t/m^3, such as cereals, fertiliser or alternative fuels

STORMAJOR® 450 Series
For materials with bulk densities from 0.9 to 1.6 t/m^3, such as additives, light minerals or fertiliser

STORMAJOR® 800 Series
for materials with bulk densities from 1.5 to 2.1 t/m^3, such as heavier minerals or ores, sand and gravel. Specifications for STORMAJOR® units beyond the 800 Series are available upon request.

There are a variety of features and benefits that firmly place this new generation STORMAJOR® in a league of its own for receiving, loading and stockpiling dry bulk materials:

- The STORMAJOR® receives from trucks and front-end loaders and then transfers the product directly to the vessel. It is comprised of an integrated reception hopper and outloading boom, which eliminates double handling of materials that can result in material degradation.

- Conveying dry bulk materials quickly and effectively requires a direct transfer path for the material in order to reduce blockage risk and material loss. In this new design, the material falls straight from the feeder discharge to the boom feeding point. This limits the material contact with the chute and positions the product optimally on the outloading boom. (Figure 1)

- The outloading boom is located directly beneath the pivot point. As material passes through the machine, this new design protects it from material ingress. (Figure 2)

- The main transfer chute to the boom is separate from the reception feeder. This means that bulk materials with particularly poor flow properties can be actively shaken to make the process more efficient. (Figure 3)

- The power pack is located for easy access and maintenance (Figure 4)

- The STORMAJOR® is available with a choice of travel options. The wheeled option is tow travel manoeuvred, while the track-mounted version can be propelled under its own power. The larger tracked option is also fitted with stiffened steelwork, wider tracks and out-rigger support wheels travel allow it to travel even with 75% material load.

- The STORMAJOR® can receive from trucks and front-end loaders directly without any special fittings. The wide universal entry hopper permits rapid material reception and acts as a buffer facility to allow for quick

vehicle turnaround and therefore more efficient vessel loading.

- The outloading boom can be used for loading as well as stockpiling. It has a slewing range of +/- 40° and an operational luffing range of up to 25°, providing greater precision in loading and stockpiling. Standard booms are available up to 24m, allowing for stockpile heights of up to 10.5m.

SAMSON has been providing mobile dry bulk materials handling equipment for more than 50 years across a variety of industries and sectors. SAMSON Materials Handling is part of the AUMUND Group with offices and service support worldwide.

For more information, please visit:
samson-mh.com

THE NEW GENERATION STORMAJOR® IS DESIGNED IN ACCORDANCE WITH DIN 22261-2 (EXCAVATORS, SPREADERS AND AUXILIARY EQUIPMENT IN OPENCAST LIGNITE MINES) AND DIN22101 (CONTINUOUS CONVEYORS – BELT CONVEYORS FOR LOOSE BULK MATERIALS)

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FIGURE 1

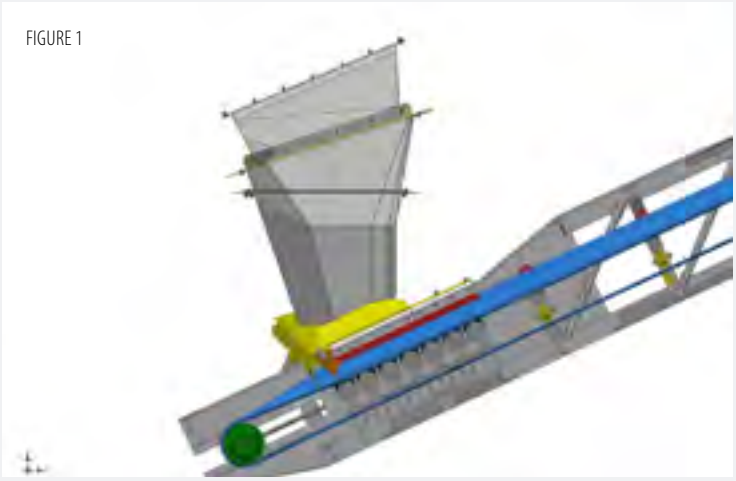


FIGURE 2

FIGURE 3

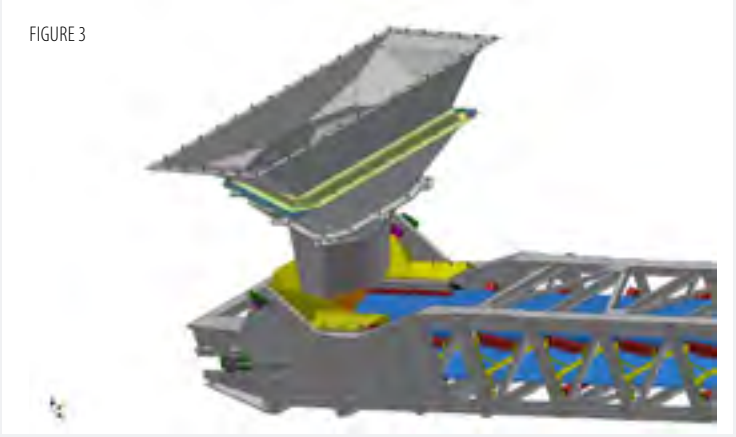
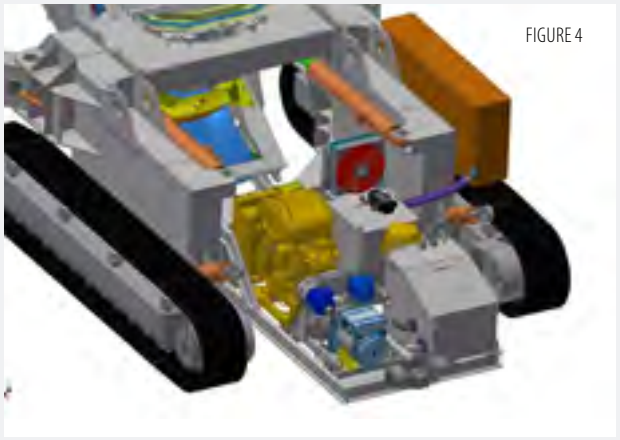


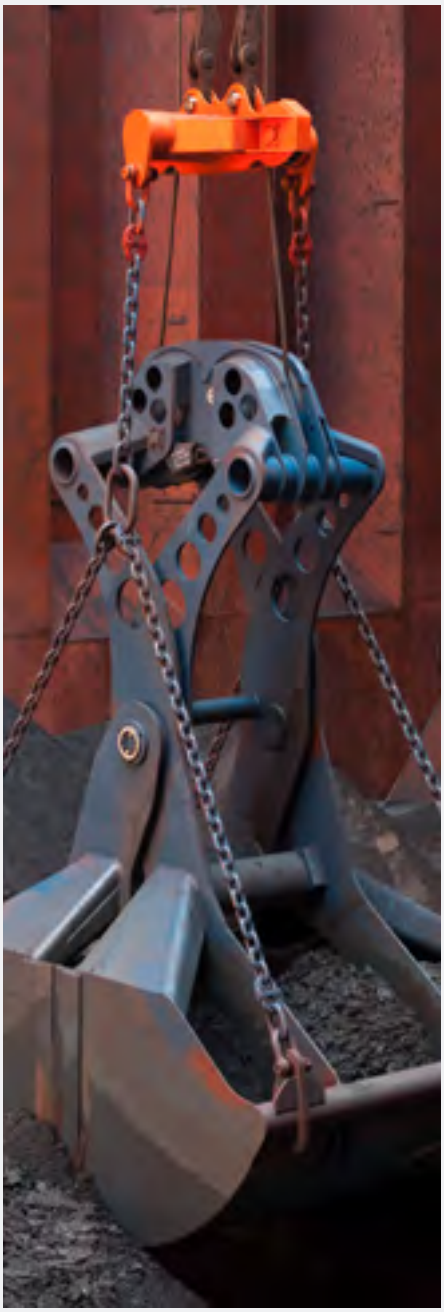
FIGURE 4



(GRAPHICS SAMSON MATERIALS HANDLING)

THE NEMAX®: FASTER, LIGHTER, STRONGER

COMPANY NEWS



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

The strong drive for innovation is an important, if not the most important, pillar of Nemag's success. One of its 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, complicated and high-risk 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

Nemag wanted to accelerate this engineering process by substituting the slow learning-by-experience method with virtual rapid prototyping. It therefore launched its ground-breaking 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, Netherlands, Nemag initiated a PhD research project and developed special simulation software to analyse and visualise 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 grab combines the lowest deadweight and the highest payloads with the shortest closing time. The result is a 10% productivity increase, lower maintenance costs and considerable time savings during the trimming phase.

WANT TO KNOW MORE?

Nemag is 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.

The company 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 customised grab solutions, Nemag has also successfully introduced a fully standardised series of clamshell grabs for mobile harbour cranes such as Liebherr and KONE-Gottwald cranes. The very competitive standardised 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, specialised rubber-lined lip sealing systems for handling powdered cargo, the patented Nemag quick-release link and the Nemag rope pear socket, plus 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.

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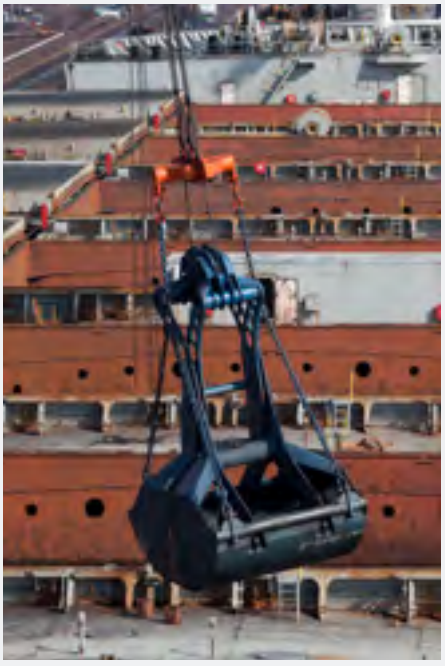
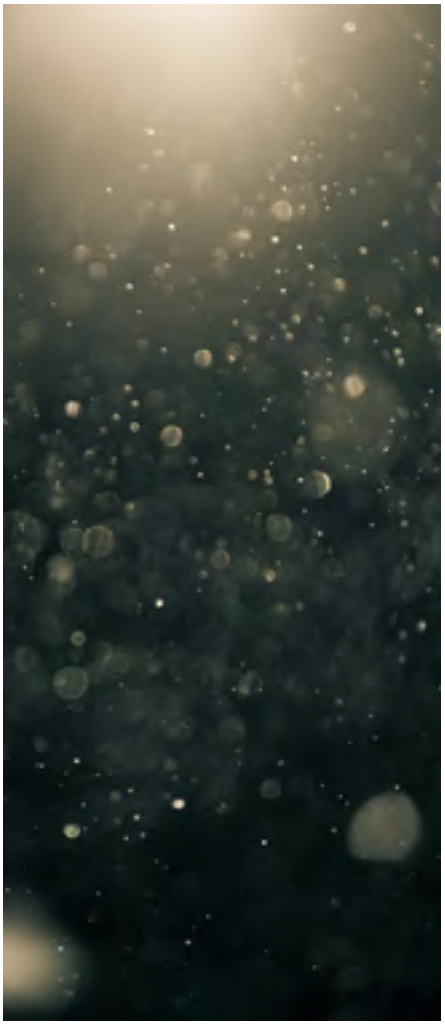


LOADED QUESTIONS

From minimising dust to ensuring fast, cost-effective transfer of cargo, there are many issues to consider when choosing loading and unloading equipment



Handling material and ensuring it is properly stored and processed is a key part of the loading and unloading process. As Mike Bradley, director of the Wolfson Centre for Bulk Solids Handling Technology, told delegates at the recent *Bulk Terminals 2018* conference in Hamburg, moving products to flat stores or silos are just two handling options.

Automated flat stores used to be very popular and offer good flexibility, but tend to use a larger ground area, Bradley said. "At the extreme end, you can use a shed, which gives a benefit in terms of segregation, but these are labour intensive and there will be dust issues. In terms of silos, mass flow or core flow are major issues that need to be considered, depending on the nature of the cargo."

The kind of dust generated must also be considered. Biomass dust, for example, creates more health hazards so requires a higher level of containment. Keeping draughts out and well-designed shutes are also very important to stop dust moving around.

"There is also a whole science of transfer point design that has emerged, which is much more gentle and effective in reducing dust," said Bradley. "If you plan a project, you have to have an idea of what kind of feedstocks you want to handle. If you don't settle on a specific range, you are going to be disappointed by the performance. You can have flexibility, but it is more expensive. If you want the highest efficiency, equipment is going to be more specialised."

One of the most important thing is "know your enemy" he concluded. "The first rule of warfare is understand the material you are going to be handling."

The Wolfson Centre has produced a guide covering the issues mentioned here –TITLE OF THE GUIDE. For more information, visit: www.gre.ac.uk/engsci/research/groups/wolfsoncentre.home

ZERO TOLERANCE

As far as dust minimalisation is concerned, loading and unloading specialist Siwertell has recently secured an order from Irish mining company Boliden Tara Mines DAC. The specially-designed loading system will serve the company's new terminal located in Dublin Port's Alexandra Basin and will ensure close to zero dust emissions.

"Boliden required a flexible system capable of handling a variety of cargoes and a wide range of vessel sizes, but with a very strict approach to dust emissions," explains Siwertell sales manager and advisor Peter Göransson. The new system

comprises a triple-enclosed belt-type ship loader, with luffing and slewing capabilities, a reversible shuttle-belt conveyor with dual remotely-operated connection points, as well as a triple-enclosed jetty and overland conveyor.

It will handle zinc and lead concentrates, which are transferred from rail wagons to a receiving storage building. From here, a conveyor belt leads to a new quayside facility in Alexandra Basin. The new system will be capable of loading ships of up to 10,000 dwt at a continuous rated capacity of 600t/h.

The steel structures for the ship loader will be produced in the Far East and equipment will be mainly supplied from Sweden. The overland and jetty conveyor will be produced in Ireland. It is expected to be fully operational by August 2019.

LOGISTICAL FOCUS

Another key consideration is the safest and most practical way to handle products in bulk. Addressing delegates at *Bulk Terminals 2018*, Michael Gubbins, logistic optimisation vice president at mining company Codelco in Chile, said most of the copper concentrates the company handles head for Asia. Logistics plays a huge part in the company's operation because of the size of Chile and Codelco operates through eight different ports.

The company has been introducing new equipment in recent years, including autonomous technology, and has also been building a containerised bulk handling facility. Handling of concentrates using truck transport is particularly problematic and Codelco's solution has been to ship all the copper concentrates it sends to the northern Chilean ports by container, where they are then loaded on to ships.

All the company's operations are focused on increasing productivity and resolving the challenges of bringing the product to port. The company is moving towards having an intermediate transfer station to take advantage of new shiploaders that can move faster, Gubbins said.

MEASURE OF SUCCESS

AAL, one of the world's leading breakbulk and heavy lift operators, has announced the successful deployment – for the first time in Australia – of multi-lift vacuum units used in the discharge of pipes with its partner Qube.

The cargo, which comprised 24,996 steel coated pipes units (18m in length each and weighing a total of 13,386t), was loaded in Baoshan China and discharged in Darwin.

Traditionally, pipeline handling operations are handled by hooking up the pipe during vessel discharge. Landside activity has also typically harnessed crane and pipe grappling hooks for handling. However AAL and Qube deployed the use of the multi-lift vacuum units for the entire discharge operation in Darwin.

When it comes to weights, industrial equipment supplier SICK has extended its range of bulk materials measurement technology. The LMS111 Bulkscan, which provides highly-accurate, delay-free volume and mass flow measurements to maximise throughput of a wide range of bulk materials including waste, crops and food ingredients. The equipment is an alternative to a conventional belt weigher. The multi-echo, time-of-flight

AUTO CUE

Use of autonomous equipment in ports is on the increase and the purchase of new technology is accelerating, Richard Brough, technical advisor at ICHCA, told delegates at *Bulk Terminals 2018*.

Marine autonomous surface ships are being developed, as are automatic berthing systems and all sorts of new technology.

However, technology can cause problems. Ports are supposed to have waste reception facilities when unloading from vessels is in progress. At present, many ports are not complying with the International Maritime Bulk Cargo Code as far as getting rid of bulk cargo residues which need to be handled safely.

ICHCA has started a number of new working groups, one of which is on handling bulk cargoes and a second on dangerous goods. Others involve data and handling straddle carriers.

PORTS SHOULD HAVE WASTE RECEPTION FACILITIES WHEN UNLOADING FROM VESSELS IS IN PROGRESS

laser scanning technology enables a reliable output of the material's volume and mass flow. In addition, the material's centre of gravity is continuously monitored to help avoid uneven loading and resulting belt wear.

"By measuring the load height profile every 20 milliseconds, the LMS111 Bulkscan delivers an accurate, continuous profile measurement," Darren Pratt, SICK UK's national product manager for industrial instrumentation, explains. "It then works out the volume of the material using the belt speed, which can be provided as a fixed value or input via an encoder in the case of a variable speed belt. The mass is computed from the volume and a known density of the material."

"Asymmetrical belt filling or unequal bulk distribution can cause off-track running. The load height and centre of gravity also have important wear, energy efficiency and safety implications in bulk conveying," he says. "As it's non-contact, there is nothing to wear out with the LMS Bulkscan and it remains accurate without the regular recalibration needed for conventional scales."

SICK has also developed the Safe AGV Forklift, an innovative, PLd/SIL2-certified safety solution that enables a driverless forklift to continue to operate productively in an automated factory or logistics environment, even when the forks are in the load carrying position.

Designed specifically for AGV forklifts with a drive wheel, the SICK Safe AGV Forklift integrates two SICK laser scanners providing protective fields in front and behind the vehicle, with a SICK Flexi Soft controller and a SICK encoder to monitor the speed of the vehicle.

Seb Strutt, SICK UK's senior product manager for machinery safety, says: "When the SICK Safety Laser Scanner protective field is obscured by the forks carrying a load, or during loading and unloading, the AGV can continue to proceed at a safe speed of 0.3m/sec, without requiring supervision. In addition, the SICK scanners operate a warning detection field as well as a protective stop field, so that the AGV slows when objects are sensed at a distance, reducing the wear and downtime associated with constant start/stop operation."

FLEXIBLE APPROACH

Meanwhile, new technology available from Trelleborg is targeting the ship-to-ship (STS) transfer market.

STS transfer is becoming increasingly popular as it allows vessels carrying liquid cargo to transfer offshore, which is more economical when a ship has multiple unload points throughout its journey or when draught restrictions prevent it from entering port.

According to Vincent Lagarrigue, director of Trelleborg's oil and marine hoses: "STS transfer is an essential and widely used part of efficient and cost-effective transport of oil all over the world.

"However, as the industry evolves, it is crucial that we continually evaluate the long-term effectiveness of oil transfer solutions at each part of the value chain, along with operability," Lagarrigue maintains.

Trelleborg's Kleline STS hose consists of two carcasses made of steel cables, which enable the hose to withstand accidental kinks or crushing forces. The nippleless design – in contrast to a standard nipple hose design – means there is no stiff metal connector in between different sections of the hose.

The hose is therefore much more flexible and the continuous inner liner and integrated gasket create a perfect seal.

This means that there is no need for gaskets at each connection, therefore increasing the simplicity of installation and resulting in a hose that can withstand stresses and strains for longer.

SICK'S SAFE AGV FORKLIFT OPERATES SAFELY IN AN AUTOMATED FACTORY OR LOGISTICS ENVIRONMENT

BUILDING BRIDGES

As the bulk cargo segment starts to emerge from a long maritime downturn, shipyards are not only producing innovative new ship designs, but are also having to consider major issues such as installing eco-friendly technology to meet upcoming regulations on ballast water and sulphur emissions

Classification society DNV GL has joined forces with Graig Shipping Group to develop a new generation of ultramax bulk carriers.

Having worked together on ship designs previously, the two companies got together in 2017 to look at a new generation of ships that would focus on fuel efficiency while including cutting edge technology.

This new initiative was designed to take into account forthcoming environmental legislation and new efficiency standards.

"There is a gap in the dry bulk market for quality, fuel-efficient, competitively priced and environmentally friendly dry bulk ships to service the needs of end users," said Hugh Williams, Graig chief executive, in a paper about the project.

The Diamond 53 design served as a basis for the project they called "Diamond 2", which aims to deliver a new design that will retain value in future markets.

"With more demanding cargo owners, who face pressure from shareholders, and the strong likelihood of increased and early scrapping, we see a strong market need for new cutting-edge technology to facilitate such a step

forward," said Andrew Westwood, senior Vice President, at DNV GL – Maritime.

The team worked with Dr Zhao Ye and his team at Econovo Marine Engineering to develop the 63,200 dwt Ultramax dry bulk carrier, *Diamond 2 63K*.

The new prototype focuses on operational efficiency and flexibility, low fuel consumption and compliance with regulatory requirements. It takes advantage of state-of-the-art hull optimisation, ballast water management and easily installed exhaust gas cleaning technology.

Using DNV GL's formal hull optimisation service ECO Lines, the hull lines were refined using leading-edge computational fluid dynamics simulation technology, parametric modelling and systematic optimisation for well-researched operating profiles.

The design features an asymmetric stern, a high-efficiency propeller and a rudder with a vortex-reducing bulb. The vertical bow design improves performance across a wide range of weather conditions.

Graig expects the efficiency enhancements to result in a fuel consumption of 14.6 tonnes per day at an optimised speed of 12 knots.

The vessel will be equipped with a MAN main engine. Sophisticated software was used to optimise the auxiliary machinery and all on-board power-dependent systems to provide maximum efficiency with minimum fuel consumption.

To reduce the load on the generator sets, the designers opted for low-consumption, low-maintenance LED lighting as well as frequency-controlled seawater cooling pumps and engine room fans.

Waste heat recovered from two auxiliary engines and an exhaust gas economiser are used to power a section of the boiler. DNV GL's COSSMOS machinery modelling tool was used to assess and improve the integrated system of the vessel.

The ship will be scrubber ready, so that scrubbers can be fitted should the owner decide on that solution rather than going down the low sulphur route, for which the vessel is also prepared, DNV GL explains.

The main and auxiliary engines are NOX Tier III-compliant. The Energy Efficiency Design Index can meet Phase 3 requirements, which are 30% below the International Maritime Organization (IMO) reference line for bulk carriers.

The ship has five cargo holds and the tank tops are strong enough to carry heavy cargoes. The double-skin, hydraulic folding-type hatch covers are double-sealed to protect cargo such as grains from seawater ingress. Four on-board 35-tonne cargo cranes with efficient, pollution-free electric winches allow the vessel to perform loading and unloading operations without shore assistance. For crew security, the steering gear room doubles as a citadel in the event of a pirate attack

Ballast water management is handled using an IMO-approved treatment plant that conforms to the strict requirements of the US Coast Guard.

Graig plans to expand the *Diamond 2* platform to include larger-sized vessels, including mini-Capesize ships.

BALLAST BUSINESS

Shipyards are coming up with a range of initiatives to handle new regulations such as those covering ballast water.

Philip Rabe, sales manager at Damen Green Solutions at Damen Shipyards, told delegates at *Bulk Terminals 2018*, that ballast water regulations touch on improving safety, streamlining operations and ensuring environmental compliance.

Damen employs about 12,000 people in about 36 yards. The company produces 160 vessels a year and has produced over 6,000 vessels since 1968.

When it comes to ballast water, IMO's regulations have been in place since September 2017. Controlling invasive species is extremely difficult once they are in the system. The issue is so extensive in the marine environment that only 16% of the marine eco regions of the world have no reported invasive species, said Rabe.

Within one year, ships will have to have a system to deal with the problem, but many are not prepared for these changes. Compliance with the IMO regulations is possible either through using an improved ballast water treatment system, using drinking water stores, not discharging – an option some owners are taking up – or discharge to a reception facility.

Systems are either UV related or use chlorine to kill organisms. Studies have suggested, however, that 14% of systems currently available are inoperable and 29% have problematic operations, 43% seem to be working and 14% are definitely working, he suggested. This is a serious consideration given the amount of money needed to fit a system – which in the case of a VLCC could be of the order of $3m.

"These systems are new, they are complex, they have to do a lot of things and they fail," Rabe told conference delegates. Authorities should be cracking down harder on the issue than they actually are, he believed. Ships are being fined, although fines are not that big, but if companies are found to be discharging ballast water in violation of the rules, the operation will be shut down.

The US Coast Guard is ahead of the curve on the issue, he said, with its annual report stating that in 2016 there were about 110 deficiencies, 216 in 2017 and operations restrictions were imposed on 17 vessels. These results were from a "very small number of checks", he added.

Damen has a container-size ballast water management system, the Invasave Mobile System, which can go from port to port and take care of ballast water according to IMO regulations. The equipment treats the filtered backwash from the system and is transported by truck to different ports.

Hamburg is one port that has been experimenting with the system, he added, as it is not keen on using chlorine-based systems.

"What can you do as a port operator if someone says they are struck on the berth because of a port state control inspection? There has to be a plan," Rabe said.

DRY-DOCKING DEVELOPMENT

As well as its collaboration with Graig, DNV GL has also teamed up with VesselMan to provide an optimized solution for dry-docking management

Customers of VesselMan, a cloud-based project management tool for dry-docking, will now be able to access DNV GL's Best Practices for dry-docking as part of their services.

While dry docking is essential during a ship's life, without proper management and planning, ship-owners and operators can often experience cost overruns, lengthy dock stays and lost opportunities, the partners say.

"By combining DNV GL's broad knowledge and experience with dry-docking processes and VesselMan's cloud-based management system, we are offering a more professional and modern approach to dry-dock management, making shipowners and operators better equipped to plan and execute their dry-dockings in future," says Bjørn Berger, head of department, maritime advisory, at DNV GL.

Over the years, DNV GL has built up a dry-docking standard suitable for any ship type and ship operator. The Best Practices are incorporated in VesselMan's system as templates with easy to follow checklists for every step of the dry-docking process. With a digitalised solution, such as the one offered by VesselMan, DNV GL's standard is now accessible at any time to customers throughout the world.

"VesselMan provides a full overview of the entire fleet and enables an effective and transparent collaboration between management, customers, yards, suppliers and site-team during the dry-docking process," says Glenn Edvardsen, CEO of VesselMan. "Having DNV GL Best Practices available 'out of the box' on our platform, clients will have a robust and unique tool that can easily be adapted into modern digital management operations – and as such, with great potential for cost reductions."

BIMCO CONTRACT UPDATES

BIMCO has revised and updated its two standard ship repair contracts: REPAIRCON, which is for major work at a repair yard; and MINREPCON, which is for minor repair work that can be done by contractors when a ship is in port.

Both contracts were approved at BIMCO's recent Documentary Committee in Copenhagen. Modifications and improvements have been made to the REPAIRCON contract, while MINREPCON has undergone a full review.

"Ship repair is a major undertaking and it's important that both parties are fully aware of their respective part in the process," says Søren Berg of shipping group Lauritzen, who led the team that drafted the revised contracts.

"The improvements made to the structure and content of REPAIRCON will help owners and contractors more easily understand their contractual rights and liabilities.

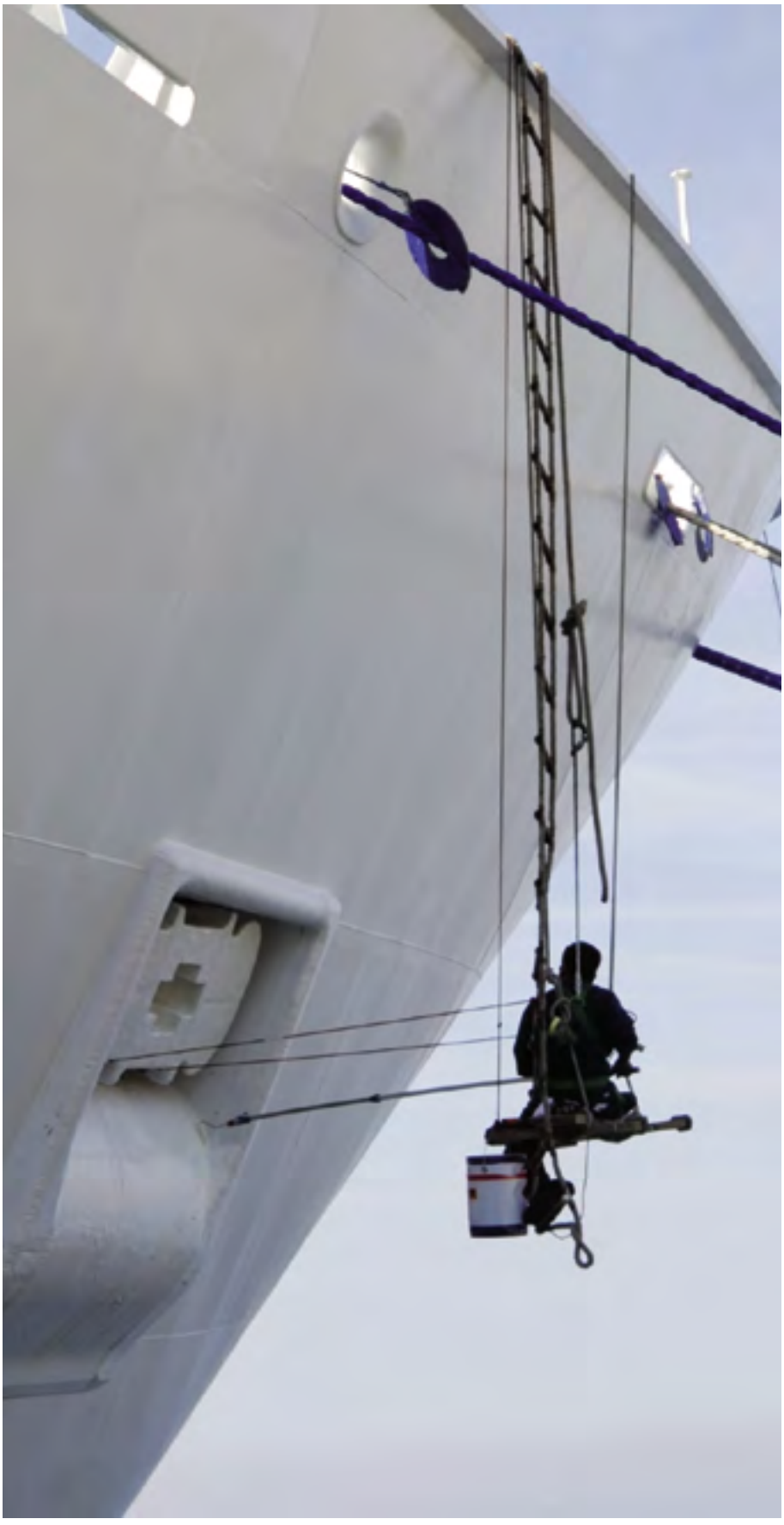
"Covering major and minor repairs, REPAIRCON 2018 provides a clearly written framework agreement that should be the first choice of contract for major ship repair projects. It is the result of bringing together interested parties and consulting selected ship repairers and owners who have used the current REPAIRCON form.

"For minor repair and maintenance work, MINREPCON 2018 provides a much-needed alternative to contractors' own terms, which can often be problematic and expose owners to unexpected liabilities and obligations.

"There is a clear need for a contract for small, ad hoc repairs, such as a plumber attending to deal with blocked drains, or an electrician to sort out lighting problems," Berg says.

"In MINREPCON 2018, we have incorporated a clearly stated liability and limitation regime, a key feature often absent from contractors own terms and conditions."

Both contracts are available on BIMCO's secure editing system for Microsoft Word, SmartCon.



TOP COATS

As well as a range of innovative coatings coming to the market, a new international standard is under development to cover underwater cleaning

BIMCO has joined forces with a number of industry partners to come up with an internationally recognised standard for hull coatings in the face of growing concerns over the impact of hull biofouling on the marine environment.

The move is all the more important in view of the sheer size of the marine coatings market, which, according to a recent report by MarketsandMarkets is projected to grow from US$3.31bn in 2017 to US$3.93bn by 2022, with a particular emphasis on the expanding bulk cargo segment.

Eight different organisations are involved in the standard's development, including paint manufacturers, ship owners and cleaning companies, with the aim of taking a holistic approach to establishing an international standard that will work in practice. The standard is expected to be finalised in 2019.

As BIMCO explains, underwater cleaning is only allowed in a few locations around the world and there is a trend for coastal and port states to tighten their rules for underwater cleaning, as well as an increase in ports

prohibiting it all together. "This may increase emissions from shipping as fouling increases the fuel consumption or in worst case force the ship to change its route," the trade association says.

"Creating an international standard is important. We need more places available around the world for underwater cleaning. We believe that a standard that is safe, efficient and environmentally sustainable, will encourage states to make more places for underwater hull cleaning available," says Aron Frank Sørensen, who heads the working group and heads BIMCO's Marine Technology and Regulation.

The standard will ensure that the result of the cleaning is in accordance with a set of specifications, that the environmental impact of the process and coating damage is controlled and that the cleaning process is planned, safe and effective.

Part of the standard will therefore relate to how to ensure that the paint is not damaged during cleaning and that debris and wash-water is collected in a practicable and sustainable manner.

It will also cover how shipowners can use it in their ongoing maintenance plans and will establish an approval system for underwater cleaning companies, which are currently unregulated and fragmented.

"What is needed today is a standard that ensures that companies providing underwater cleaning services operate to a high standard that can apply wherever in the world they operate," Sørensen says.

"Everyone will benefit from it. The cleaning companies will benefit because they will have certain standards to live up to, the ports because they can rest assured that the environment is not polluted by cleaning residues, the paint manufacturers because reporting will be standardised, improving the quality of execution, and the shipowners because they will have more places available for underwater cleaning, once the entire process is regulated and safe."

The standard undergoes thorough practical trials prior to launch, with the aim to send it to appropriate international organisations for endorsement.

ON GUARD

Jotun has responded to market demand for a cargo tank coating that allows greater cargo flexibility, long-term performance and vessel utilisation with the launch of Tankguard Flexline, which is based on the Flexforce technology.

According to Marc Giesselink, global director for tank coating at the company: "The aggressive nature of some cargo types, which can be absorbed into tank coatings, stressing and ultimately damaging them, as well as leading to lengthy ventilation periods after unloading, has, until now, been problematic.

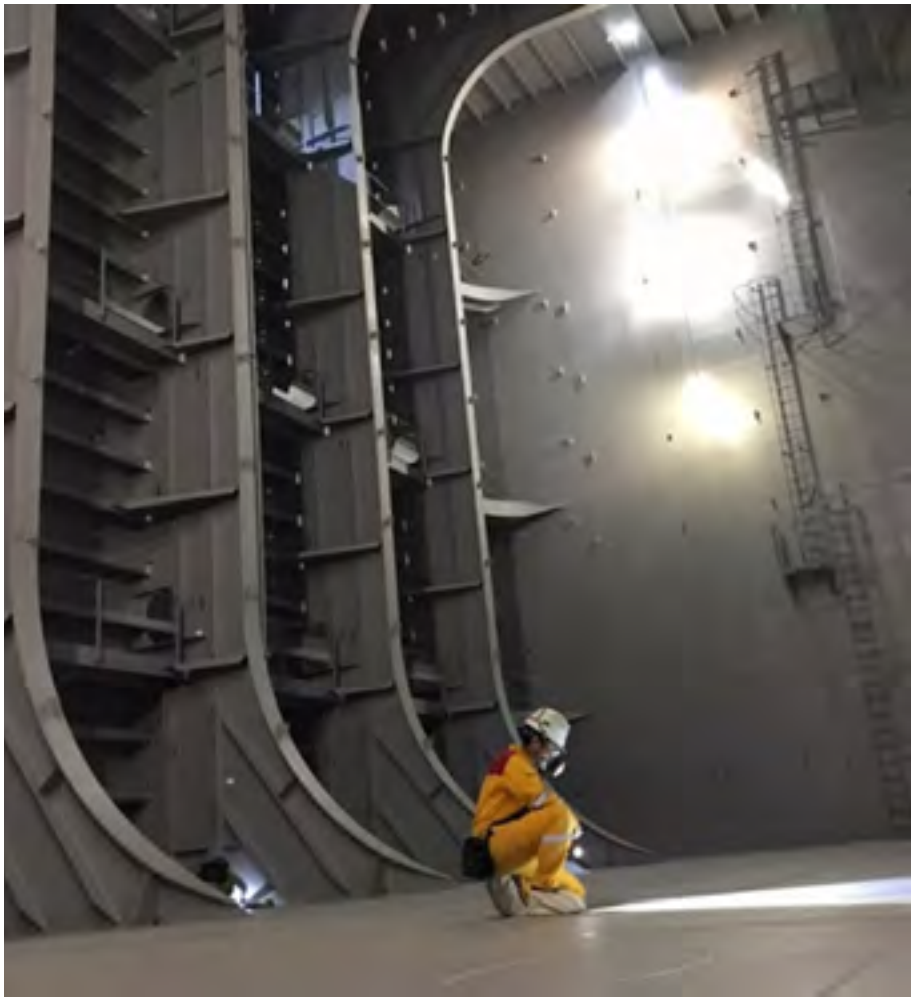
"This has an obvious knock on effects upon vessel availability and utilisation.

"Tankguard Flexline has been developed to solve this pressing industry problem, with its Flexforce technology designed for effective operation enabling vessels to carry critical and aggressive cargoes shipped in coated cargo tanks. That provides full flexibility, leading to full vessels and a real business advantage for our customers."

Solvoxirane chemistry is at the heart of the solution, Jotun says. Standard tank coatings typically absorb low molecular weight, aggressive cargoes leading to swelling that stresses the structural network of the coating film.

However, the composition of the Solvoxirane chemistry provides greater coating flexibility, minimising structural stress over repeated absorption/desorption cycles.

Faster desorption times also lead to decreased ventilation requirements, quicker turnaround and enhanced vessel earnings. Typically, one day saved on ventilation equates to USD 14,000 in increased earnings, the company says.



CANAL CLEAN-UP

Hull cleaning company HullWiper has joined forces with Talleres Industriales, a leading provider of subsea services, to provide a hull cleaning service in the vicinity of the Panama Canal.

HullWiper launched a global programme last year to offer shipowners and operators a cost-efficient, brush- and diver-free alternative to traditional hull cleaning methods that is both environmental and bottom-line friendly.

Managing director Simon Doran says: "With our remotely operated vehicle (ROV) now available in the Panama Canal, owners and operators of commercial vessels in the transit queue can use their waiting time to remove marine fouling and enjoy the benefits of improved vessel performance, fuel savings and lower GHG emissions, without any extra downtime or harming the marine ecosystem."

HullWiper's ROV system uses adjustable seawater jets under variable pressure to remove fouling, instead of brushes or abrasives, minimising the risk of damage to expensive anti-fouling coatings.

No divers are used, so there is no risk to human life and cleaning can be conducted day or night, in most weather conditions, and while cargo operations are underway. Removed residues are collected by an onboard filter and deposited into dedicated drums onshore for locally-approved environmental disposal.

FALLING FOUL

AkzoNobel, meanwhile, is in the process of developing a new approach to fouling prevention technology, which uses ultraviolet light-emitting diodes (UV-LED). The pioneering solution – which uses underlying technology developed by health tech firm Royal Philips – will be applied to underwater surfaces to eliminate fouling growth.

The innovation will integrate UV light-emitting diodes in a protective coating scheme that will allow for the UV light to be emitted from the coating surface, providing the total prevention of biofouling accumulation on the surface of the protected area.

The total control of biofouling represents a substantial economic and environmental benefit,and when realised, the impact of this new technology on vessel owners and operators will be hugely significant, the company says.

"In our sustainable fouling control initiative, we actively explore and develop alternatives to biocidal-based solutions," says Oscar Wezenbeek, director of AkzoNobel Marine and Protective Coatings. "This development is a great proof point of our continuous focus on delivering eco-friendly solutions to our customers."

AkzoNobel estimates that its existing product, Intersleek, has helped shipowners to save over $3bn of fuel and 32 million tons of CO^2 since its introduction to the market in 1996.

FIRE FIGHTING

Another new launch is PPG's PITT-CHAR NX fire protection coating. The epoxy intumescent coating offers reduced coating thickness, lower weight and faster application, at the same time providing outstanding strength and durability according to the company.

The intumescent coating system is designed to protect against the most severe hydrocarbon hazards including pool fires, jet fires and explosions, including both on and offshore accidents.

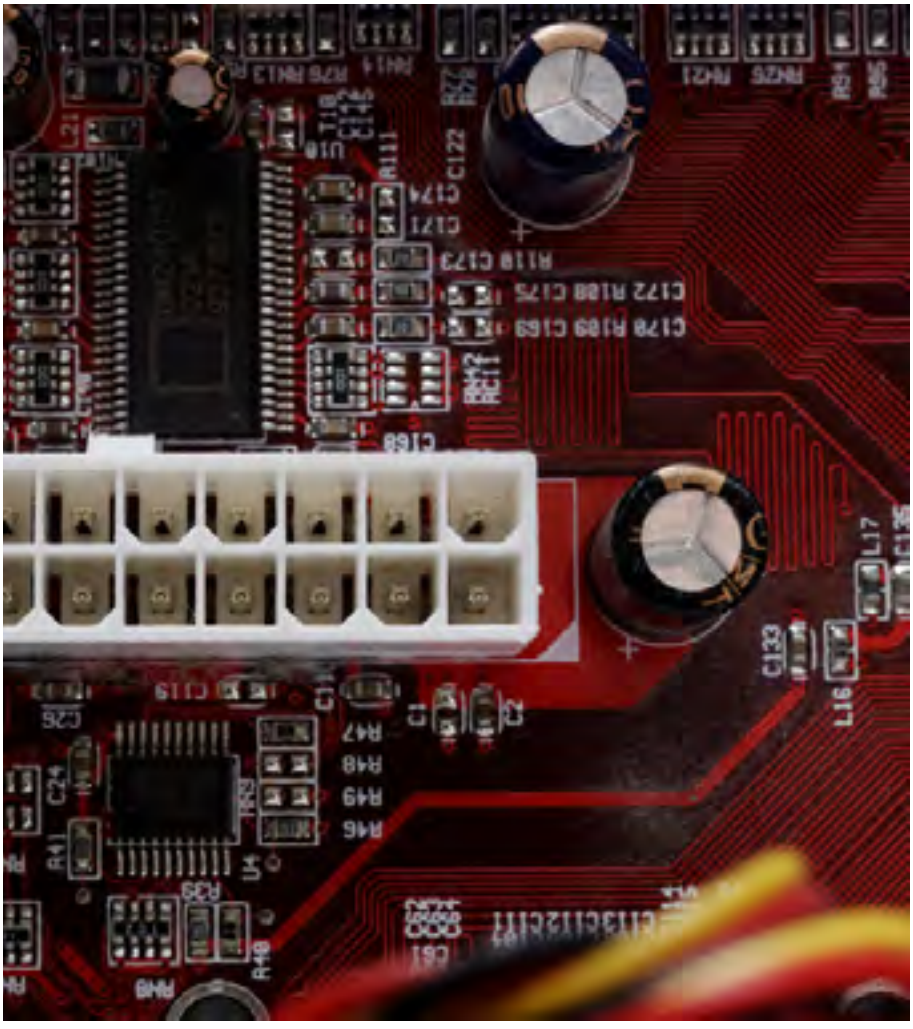
"PITT-CHAR NX is a major advance in passive fire protection technology, combining higher safety performance in a thinner, lighter coating that is faster to apply," says Richard Holliday, global product manager at PPG's protective and marine coatings business.

PPG says the oil and gas industries are facing ever more complex fire scenarios that can potentially involve pool fires, jet fires and explosions in both onshore and offshore environments and these projects also demand fast throughput during fabrication and application to maximise efficiency.

"We designed PPG PITT-CHAR NX to reduce uncertainty by ensuring it is capable of protecting against the full range of hydrocarbon hazards. Owners and designers no longer need to choose between solutions optimized for jet fire or pool fire – PITT-CHAR NX does both," adds Holliday.

FUTURE PERFECT

As autonomous shipping and computerisation of ports increase, cyber security is one of the industry's hottest topics. A range of initiatives and innovations aim to assist terminal operators and users alike



With an increasing focus on autonomous ships and more computerisation in ports, the industry as a whole is increasingly opening up to potential cyber problems, Chris Gibson, director MCERT at Templar Executives, told delegates *Bulk Shipping 2018*.

Cyber security is now a hot topic for the shipping industry, he said, pointing to one statistic that stated over 40% of crew members had been on a vessel that had been hit by some form of cyber attack.

Incident response, Gibson said, is more of an art and it is very difficult to imagine the impact of an incident until you have actually lived through one, as was the case with the Maersk cyber attack last year, for example, when it took 90 minutes for the company to lose some 45,000 systems.

"Being cyber secure has to, at some point, become a cyber advantage," said Gibson.

There is not a huge difference between the issues faced by the finance sector some 10 years ago and what the maritime industry is facing today, he said. New regulations from 2021 will require companies to be actively involved in cyber security and ships are already required to be safe and secure, so cyber

should be playing its part in this process already, Gibson told delegates.

All parts of the industry are reliant on each other so the problem needs to be taken as a whole. There are many different people working in ports, for example, any one of whom could infect the systems being used.

"There is a lot more that could be done and could be achieved through collaboration," Gibson said. "We are not sitting there pretending each of us is an island. We can help each other get better at it."

It is important to know exactly what systems are in place because "if you don't know what you've got, how can you defend it? It is always the little bit of the system that someone has forgotten about that gets hacked," he said.

"Some systems will be more critical to the organisation than others, but you have to understand what you have. Most of the time, when people are hacked it is someone else that tells them. When you have been hacked you have to respond very swiftly information-wise and manage the situation quickly."

It is also essential to get things back up and running quickly as business continuity is also going to be affected in any attack.

When it comes to the insurance, there are cyber exclusions in most policies, so how does one keep up with new threats? While it is difficult to defend against a deliberate and highly targeted attack, about 80% of attacks can be averted by doing basic things correctly, Gibson said.

These include updating software, changing passwords and making sure people cannot plug in USB sticks at will. The key thing is that boards understand the risks and take key decisions to deal with them.

Templar has partnered with Wartsila to provide a maritime response team to deal with potential problems. Most maritime organisations are too small to have a large security team, but this service can help with emergency response or it can point companies in the right direction when they need more information about security.

PORTS SMARTEN UP

Dr Sebastian Saxe, chief digital officer at the German Ministry of Economy, Transport and Innovation, highlighted to delegates some of the issues that needed to be addressed in busy ports such as Hamburg.

These include emission levels, managing the flow of traffic quickly and safely, maintaining infrastructure, promoting alternative energy solutions and creating buffer zones between residential areas and the port facilities.

New technology provides opportunities to make such processes more efficient. For example, the smartPORT programme, established in 2015.

According to Dr Phantian Zuesongdham, head of smartPORT Chief Digital Office at Hamburg Port, scenarios in the programme look at what may happen in the future, for example the use of autonomous vessels, which are currently undergoing trials.

What impact these will have on ports is one issue, including ensuring safety and reliability of service. Another is autonomous berthing and what impact this will have on quay walls and the ability to extend the life of the quay wall.

Other prototypes include multi-touch tables, which can be used for planning port visits – previously, this information was paper based. The use of touch tables could improve decision making and contacts between pilots and other interested parties.

At the centre of the smart port is the port traffic centre, from where all individuals can access information and data. Gathering data will be automated underwater drones, used for examining port facilities underwater, and smart buoys used to measure the depth of the ports and collect data about tides, flow velocity and water quality.

Intelligent tugs will also be used in data processing to make best use of time slots within the port. The whole supply chain within the port can also be analysed to ensure best practice.

Taking a broader view, not just a port-restricted one, will be key to the future, said Zuesongdham.

PILLARS OF CYBER STRENGTH

Helping ports anticipate and withstand potential combined cyber attacks, the EU-funded SAURON project is one of a number of security initiatives taking place across the globe, Federico Carvajal, telecommunication engineer at Valencia University, told delegates at *Bulk Shipping 2018*.

These include ports that have been classified as being critical to the national infrastructure of their own countries.

SAURON is composed of four pillars – physical security, cyber security, hybrid security (which combines the two) and early warning of port personnel in case of a big event. It provides an "awareness platform" that combines physical security systems with detection of threats in cyber space.

SAURON takes account of the systems already in place in ports and integrates and analyses them in real time to prevent attacks and facilitate decision making.

Real-time face recognition is an important part of the system, as is the ability to trace people and vehicles through the port, taking into account different companies working in the same area.

As far as the hybrid component is concerned, in the case of a fire for example, the question arises as to who has control of the servers, which may control different parts of the port's activities, Sarvajal told delegates at the conference.

A key issue in such a scenario would be how to prevent attacks on the main systems while a fire is being fought, with the potential cascade effect of a single incident on the whole port area.

Different scenarios will be tested using the Port of Valencia and the Port of Piraeus as examples. The system will be capable not only of detecting and analysing attacks, but will also analyse normal events that can present problems, such as two people logging in in two different parts of the port with the same log-in details.

CLOUD COLLECTION

Elsewhere, technology is being developed to offer real-time sea-state data as a cloud-integrated service.

Marine measuring organisation Miros Group, for example, recently launched a product that will make dry measurements of the sea state available through the cloud as a service. For customers, this means flexible access to real-time data without having to cover the investment in data collection and transfer equipment.

"Making sea-state data available in real time through the cloud was a major step forward, but we believe that offering this as a pure service will be equally as important for our customers," says the company's chief executive Andreas Brekke.

Miros' line of IoT (internet of things)-based dry sensors, with no equipment exposed to water, is the key to the new service offering. "With a dry system there is virtually no maintenance once the system is in place. That allows us to be secure in providing the service without the customer having to pay for equipment maintenance," says Brekke.

Customers may also purchase the sensors if they choose and subscribe to the cloud service.

The Miros Wave and Current Radar collects sea-state data on wave parameters, wave spectrum and surface currents. The company's Rangefinder and Wavefinder adds water level and draught measurements to the package, all available through the cloud. The Miros portfolio also includes oil spill detection.

Brekke says: "Delivering on service-based contracts requires exceptional confidence in the equipment. With zero-maintenance, dry sensor technology and data sharing through the cloud, we can now offer our customers the most affordable and flexible sea state data services at the highest level of reliability."

STREAMING CONSCIOUSNESS

Green marine newcomer Yxney, meanwhile, has been marketing its own new software to high-profile clients including Solstad.

Maress is a cloud-based software that combines existing data streams from vessels with AIS and other available data sources, and presents the user with actionable information and an overview of the performance of the entire fleet, as well as for individual vessels.

The software creates a historic baseline for each vessel in all operational modes, allowing the daily performance of each vessel to be compared against the baseline and adjusted for the actual operational pattern, in order to identify deviances and sub-optimal operations.

"Maress allows shipowners to work closely with clients to reduce fuel and emissions," Yxney chief commercial officer Sindre Bornstein notes. "The full energy efficiency potential becomes visible when Maress is used to monitor fleet performance. The ability to visualise efforts with hard data is a motivational factor for everyone involved – crews, on-shore personnel and, not least, clients."

CYBERSECURE SOLUTION

Leveraging advanced data analytics, artificial intelligence and operational optimisation by location, OceanManager has introduced vesFMS for the management of vessel maintenance, supply, procurement, crewing and safety.

"vesFMS is the first cybersecure fleet management solution that provides all requisite modules for technical management," says OceanManager CEO, Rajan Vasudevan. "It is a constantly evolving platform that provides all the tools that vessel operators need to improve technical management, planning and execution.

"Designed for ease of use and low human touchpoints, vesFMS reduces administrative burden while improving quality of data and reporting."

The system is completely integrated with its mobile platform mAuditor for audits, surveys and inspections and the enterprise HSEQ solution delivering compliance with TMSA, OVID and ISM requirements.

Built with open architecture for strong integration with partner products vesFMS will improve "single window" operations, with seamless integration to voyage management, supply chain management and passage planning.

It has an AI-based digital assistant that aggregates data, location and uses voice-based inputs to provide recommendations and help make decisions based on reliability, costs, safety and procurement making direct impact on the bottom line and improved reputation with clear outcomes.

The vesFMS applications platform has been built from the ground up with open architecture and with threat modelling across the product development lifecycle, adds Vasudevan.

GAME PLAN

German ports and terminals have been looking at new projects as operators consider how to get ahead of the curve

Hamburg finally got the green light this year to dredge and rebuild the channel at the port, giving at least a metre more depth – a move that will be good news for bulk shipping using the facilities, Axel Mattern, chief executive of the Port of Hamburg Marketing Association told the Association of Bulk Terminal Operators annual conference recently.

It has taken 17 years and many battles with European regulators to get the go ahead for work on the Elbe. Up until now, ships that are more than 15-16m across the beam have not been able to pass each other and have had to wait to enter the port. "Hamburg is back in the game" as a result of the approval, Mattern says.

Daniel Hosseus, managing director of ZDS, the Association of Germany Seaport Operators, told the conference that the Association's ports handle approximately 120,000 ships per year and about two thirds of Germany's seaward foreign trade, or 300m tonnes per year, 24m tonnes of grains, oil seeds and feedstuffs and 35m tonnes of energy sources such as coal and natural gas.

Setting aside container traffic, there is breakbulk cargo, passenger transport, paper products and offshore wind. Bulk cargo makes up about two fifths of the total of 300m tonnes. The port of Rotterdam alone handles about 465m tonnes of cargo annually so German ports are seeking to get closer to that figure, Hosseus said.

There are many challenges, one of the most immediate being Brexit, he said. Nobody knows what the final deal will look like, but it will probably change business in terms of procedures and customs practices. There will be opportunities for the UK to do things differently, which in the long run may change the competitive situation.

Another big issue is US trade policy, Hosseus said. This is somewhat unpredictable and there is uncertainty as to how the situation will develop as far as restrictions are concerned, with a possible realignment of cargo flows, perhaps resulting in increases in cargo handled in Europe.

Then again there is the Chinese economy and what is happening as living standards rise and changes is attitudes to climate change and energy policies bite, he added. China is investing massively in transport infrastructure with its One Belt, One Road project. This initiative is not just about land corridors, but also sea links, and aims to connect China with Europe and central Asia, and

Europe with central Asia. Central Asia will become a new source of cheap labour and also, over time, a new market for goods from both Europe and China. One Belt One Road

Another route that needs to be considered is passage through the Arctic. While there are potentially much shorter distances between Europe and Asia and shipping is bound to increase, Hosseus said he was not sure how extensive it would be. It would potentially, he believed, be more important for one-off trades or transshipping. For liner shipping, there would still be ice to contend with and also the size of ships is limited going through certain segments.

Another big issue is new energy sources and what the knock-on effect will be on terminal operators as far as issues like oil storage or coal handling are concerned. In Germany, there is a very strong push by the government to move away from traditional energy sources towards renewables. Coal extraction in Germany has declined steadily over the past 10 years or so, Hosseus said. At the same time energy consumption has not necessarily declined and coal imports have been steadily increasing over the same period of time, with around 15-16m tonnes handled by German ports.

Energy policies, in Germany and elsewhere will have a huge impact on the handling of commodities. As a trade association, said Hosseus, ZDS looks for good hinterland connections that can accommodate trade flows because "only if the hinterland works can trade work".

THE TRANSPORTATION NETWORK IS THE MOST EXPENSIVE CHALLENGE UPFRONT © HHM / ANNETTE KRÜGER

In Germany, there is a national ports concept and a national transportation plan that work towards improving infrastructure. The transportation network is the most expensive challenge upfront, Hosseus said. The German federal government alone is investing about €15bn a year in transportation infrastructure, but competition law is just as important, including the public/private interface. "We want the best possible legal framework and good competition law," he said.

Another important point is what is happening at EU level, Hosseus continued. Port services regulation looks at the division of labour between the public and private sector, what private companies need to contribute in terms of investment and what concessions are worth. These factors directly affect the relationship between public and private operators or ports and who pays for what.

He also called for environmental and energy policies that are competitive: "There is no point in driving us out of the market."

Automation, meanwhile, will hit the shipping industry in many different ways and is not restricted to container handling. Connected to automation is digitalisation of big data, but Hosseus said he saw no reason why bulk terminal operators should not become service providers or data providers by offering new kinds of information to customers.

The other point Hosseus discussed was 3D printing. Although he said he has yet to be convinced that 3D printing is a major game changer, "I think 3D printers will be important for one-off pieces, for spare parts and special parts, but for mass production I am not sure the technology will be a big improvement compared to plastic moulds and that kind of production," he said.

"We will have to see what kind of raw materials are needed for 3D printing and what kind of chemicals and how the chemicals will be transported."

BIGGER BERTH

Meanwhile, the inauguration of a new berth at Cuxhaven in Lower Saxony will give terminal operator Cuxport 8.5 hectares more handling area in future, with the ability to handle ships with a draught of up to 14.30m. The completion of berth number four means more transshipment for the high-performance seaport, which leads the North Sea ports in the offshore sector.

Cuxport won the concession for the berth after a European-wide tender, with the contract signed in February 2016. The terminal operator had been working at capacity limit for quite some time.

"True to our multi-purpose strategy, our terminal areas can be used for the handling of many different types of goods," said Cuxport managing director Hans-Peter Zint. "We'll be continuing with this approach with berth number four, which offers the possibility of handling heavy goods as well as breakbulk or rolling cargo."

The inauguration ceremony marked the end of a two-year construction phase which, with a total investment of €36m, was completed within time and budget. This investment in infrastructure will enable Niedersachsen Ports and Cuxport to guarantee handling capacities for particularly heavy loads.

BALTIC LINKS

A vision for inland waterway transport (IWT) in the Baltic Sea Region, as well as means to strengthen inland shipping, were highlighted in Brussels when Baltic Sea Region (BSR) members met to discuss the future of inland waterway transport project EMMA. This three-year project has moved inland shipping and inland waterways such as Elbe, Oder and Vistula higher up the political agenda.

Inland waterway transport is considered to be a green and smart transport mode, which is well integrated in multimodal supply chains with a good share of the modal split, BSR members heard. Inland waterway transport represents 6% of the total transport volume in the EU, consisting mostly of the transport along the Rhine and the Danube.

However, during the three years, project EMMA has promoted sustainable inland shipping across the Baltic Sea Region successfully, highlighting the potential of many BSR countries to contribute to a more sustainable transport system by enhancing inland navigation and increasing its modal share in the transport system.

The initiative was approved as a flagship project in the Policy Area Transport of the EU Strategy for the Baltic Sea Region, reflecting the importance of developing inland navigation in the Baltic Sea Region.

"A lot of countries that want to push this transport mode further take this momentum", said Stefan Breitenbach from the Port of Hamburg Marketing.

Project EMMA draws attention to these countries because there is potential that needs to be fulfilled by closer co-operation of all stakeholders involved. IWT is well-considered in strategic transport network planning and legislation, the delegates heard.

Integration of waterways into the TEN-T network brought investment forward, since a lot of financing is directed to core network corridors. Here as well, national regulatory frameworks are clearly a challenge and there is a need for harmonised national rules and regulations. For instance, in Sweden inland navigation is heavily affected by pilot and fairway dues that decrease its competitiveness.

Johan Lantz, CEO of Avatar Logistics, called for a level playing field for the whole of Europe and stressed that the price of pilotage is currently a deal-breaker in Sweden when it comes to inland navigation.

In Germany, the EMMA pilot focused on improving transport management with the development of a digital map that combines RIS data with traffic flow relevant information, helping to achieve more efficient IWT in the Baltic Sea Region.

On long distances, shipping is the most environmentally friendly way of transporting goods when carbon dioxide emissions between different modes of transport are compared. According to the project, an alternative fuel network is in operation serving a modern, smart and green IWT fleet.

Transition points between different waterway classes and interlinks are established. However, stronger co-operation of stakeholders is needed.

"Inland shipping will not become an alternative for long-haul transport without a strong voice and active sector asking for further legislative and regulatory improvements," Breitenbach said. "Much more input is needed from the sector by its associations involved in the sector. This means strengthening of lobby networks by active memberships in national and European associations and organizations.

Dominant transport modes, namely transport by rails and roads, are of course still needed, and road transport especially for the last-mile, but IWT still does not play an adequate role in ensuring the transport system reaches its potential. IWT supports sustainable transport aims and also as such should be better promoted," he concluded.

STRONG TIES

The ports of Hamburg and St Petersburg have developed strong economic, cultural, social and scientific contacts over the past 50 years or so, with recent moves to strengthen ties between them further.

In spite of the politically tense situation, the ports still maintain their dialogue and close business co-operation and recently celebrated the 15th anniversary of Port of Hamburg Marketing's opening of a representative office in St Petersburg.

Exports to Russia include general food stuff and luxury foods, chemical products, machinery and equipment. The most important imports are coke and mineral oil products, coal, crude oil and natural gas, as well as chemical products.

CELEBRATING THE 15 ANNIVERSARY OF PORT OF HAMBURG'S ST PETERSBURG REPRESENTATIVE OFFICE (FROM LEFT): ARBI ABUBAKAROV, VICE-CHAIRMAN OF THE COMMITTEE FOR INTERNATIONAL RELATIONS OF THE ST. PETERSBURG CITY GOVERNMENT, SERGEY MOVCHAN, VICE-GOVERNOR OF ST. PETERSBURG, DR TORSTEN SEVECKE, STATE SECRETARY FOR THE MINISTRY OF ECONOMICS, TRANSPORT AND INNOVATION IN THE HANSEATIC CITY OF HAMBURG, NATALIA KAPKAJEWA, HEAD OF THE PORT OF HAMBURG MARKETING'S REPRESENTATIVE OFFICE IN ST. PETERSBURG © HHM

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COMPANY NEWS

Golfetto Sangati has more than 90 years of experience in the grain handling industry

Part of the Pavan Group since 2010, Golfetto Sangati develops, builds and installs turnkey plants for durum wheat, maize and rice mills, as well as ship loading and unloading systems, and storage for raw materials and finished products.

It has more than 90 years of experience in grain handling, developing advanced systems for the handling, cleaning, calibration, selection and storage of seeds and other commodities, such as wheat, corn, barley, soybean, sunflower seeds, rapeseed, coffee and rice.

Clients can be certain that our extensive knowledge in the design and engineering of integrated technology systems for grains and grain-based food will ensure the best solution for them.

At the end of November 2017, Düsseldorf engineering group GEA – one of the largest suppliers for the food processing industry — purchased the Pavan Group.

This acquisition creates a truly global group, with design and engineering know-how marrying up with an extensive sales and servicing network, offering all sides growth opportunities and new markets.

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SHIP UNLOADING

TRASMEC continuous mechanical unloader

GRAIN TERMINALS


GOLFETTO SANGATI CONVEYORS AND GRAIN TERMINALS

Golfetto Sangati is one of the few companies able to design, manufacture and install full grain terminals, from intake, to storage and cleaning/treating equipments, up to loading.

RECENT PROJECTS

Yuzhnyi Port project (Ukraine): design, manufacture and delivery of one mobile TRANSLOAD shiploader, rated at 2,000 tph with KIKO system.

Barcelona Port project (Spain): supply of one TRASMEC ship unloader (600 tph) for soya beans, including a shiploading boom for soya meal (200 tph).

Cocoa beans project in Toronto (Canada): design, manufacture and delivery of handling system for cocoa beans. Intake, cleaning and bulk load out for raw material to chocolate manufacturers.

Further more information, please visit:
www.golfettosangati.com
www.pavan.com
www.gea.com
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SAFE AND SOUND

There are a number of cutting-edge Italian port technology suppliers in the market putting safety very much on the agenda

BRIEDA'S REMOTE GROUND CONTROL STATION RECREATES SOME OF THE CABIN AMBIENCE
© BRIEDA CABINS

As a specialist in ergonomic cabins, control stations and desks for manned and remotely-operated cranes, Porcia-based Brieda Cabins has been participating in a new initiative by The Port Equipment Manufacturers Association (PEMA) to produce a paper on crane operator health and safety.

The report includes 20 key recommendations for crane manufacturers and terminal operators on how to improve cabin ergonomics and safety for drivers of manned rubber-tyred gantry (RTG) and ship-to-shore (STS) cranes.

"We are delighted that PEMA has chosen to include crane operator health and safety as one of its industry best practice reports," says Brieda CEO Siro Brieda.

"We were pleased to contribute to the report with key findings and recommendations from in-depth scientific studies conducted with the Biomedical Technology Department at the University of Milan and the EPM (Research Unit-Ergonomics of the Body Posture and Movement), as well as our 40 years of practical experience designing and building crane cabins and control stations."

The report covers topics including cabin vibration, maintenance, ambient temperatures, airflow, emissions, integrity of glass floors and fall risks.

TURKISH INVESTMENT

Turkey's Yilport has been hitting the headlines with its plans to operate a concession at the container terminal at the port of Taranto in southern Italy, for which it now has a green light.

According to Robert Yuksel Yildirim, chairman of Yilport Holding, Yilport is committed to Taranto's rise in the port industry. "Yilport's interest is particularly geared to the agri-food sector, although the emphasis in the first instance is on the development of the container terminal, with Yilport keen to develop container volumes," he says.

The company is set to negotiate with major global container shipping lines and feeder services to gain their commitment to the terminal, with the aim of boosting container volumes. The company will also be working closely with the public and private stakeholders, Yildirim says.

Yilport also "intends to collaborate with local operators to develop breakbulk, project cargo and ro-ro traffic."

The facility at Taranto will be the first Yilport terminal in Italy and the company plans to invest heavily in infrastructure, equipment and technology. The first developments and investments will be the installation of ship-to-shore cranes , rail-mounted gantry cranes and a Navis terminal operating system.

SIGNED AND SEALED

Machine industry firm Bedeschi has picked up a number of new orders for the supply of a SHL 25/1400 for the handling of fertilisers, with a capacity of 1000 t/h for ships up to 30,000 DWT. The order was signed with engineering company Barata Indonesia, which will manage the civil works concerning the manufacturing of the structural steelwork for the shiploader. The end user is East-Java-based fertiliser firm PT Petrokimia Gresik.

Another recent contract for Bedeschi was with Algerian-based Sarl Djedei for the supply and installation of a new reclaimer BEL F 100/13, complete with belt conveyors to convey the bulk material to the silos. The machine will be used to reclaim the clay and feed three production lines.

In addition, two Bedeschi eco-hoppers assembled in Chioggia, near Venice, were recently despatched to the US. The eco-hoppers are equipped with pulse-jet bag filters with high filtration engineering and less compressed air consumption.

NEW CHAPTER FOR CAVOTEC

Global engineering group Cavotec has officially opened its new production facility in Milan. The production plant features the latest in sustainable building materials and technologies, including the capacity to generate 230kW of solar power. It is also equipped with geothermal heating, has 2,730m^2 of office space, and 12,264m^2 devoted to engineering and production.

"Not only are we opening a state-of-the-art production facility, we're opening a new chapter in the Cavotec story," says group CEO Mikael Norin. "These premises will ensure that we build the manufacturing and supply chain excellence that will see Cavotec realise its full potential."

Cavotec Italy is one of the group's seven Centres of Excellence worldwide. As part of the Ports & Maritime Division, Cavotec Italy focuses primarily on the development and manufacture of shore power solutions and MoorMaster automated mooring, as well as crane electrification solutions such as cable reels.

SULPHUR SAFETY

Another company active in the ports sector is Terni-based SAMMI, which designs and builds ship loaders and unloaders.

These machines are comprised of movable frames, which cut down on transportation operation times and allow material to be evenly distributed over the entire stowage area, maximising the load and reducing dust emissions into the surrounding environment. The company provides equipment for a wide range of commodities, including salt and coal and offshore transshipment of bulk sulphur using belt conveyors.

According to the company, offshore transshipment of products is a popular choice at the moment because of the reduction in transshipment times while still observing environmental regulations.

Equipment is versatile – for example, one system is designed to handle sulphur, but can also transport coal and iron ore of various gravities, using inverters in the extractors.

The company says: "Special attention has been paid to environmental safety by reducing the formation of highly-explosive sulphur dust, by installing a retractable chute at the outlet of the ship loaders. The plant and its components are suitable for operation under hazardous conditions in compliance with the Atex Classification."

DREDGING DUTIES

Many companies need equipment in the short-to-medium term to carry out pumping work in a wide variety of sectors, from the chemical industry to the food industry, from the maintenance of ports or dams to dredging of canals and rivers.

Italian dredging equipment manufacturer Dragflow recently supplied a hydraulic pump and hydraulic power pack for the Marina di Militello harbour dredging project.

The company says a versatile solution to address the problem of sand sedimentation close to the pier was required. A crane was equipped with an hydraulic pump suspended by steel cable, together with an hydraulic power pack to provide the energy to the pump.

Dragflow pumps have also been used in combination with small, remote-control dredgers or larger dredgers, depending on the characteristics of the port area, the amount of sediment accumulated and the distance to which they must be transported.

SINGLE-ROPE GRAB SOLUTION

COMPANY NEWS

Our radio-controlled, single-cable clamshell buckets are the ideal choice for handling loose materials such as grain. They do not require any external power supply, are universal and applicable on all cranes, with radio control managing the opening of the clamshell.

The focal points of Negrini's radio-controlled, single-rope grabs are:

- Reduced adherence of materials inside the shells
- Smooth emptying of material, avoiding recoils that can damage the crane
- Can be fitted on any crane with a hook, and are fully independent
- Do not require any power supplies or control cables
- Opening and closing times are halved, compared to the electro-hydraulic model
- Zero operating costs, with no power supplies, motors, filter pumps, and so on
- Can be used and maintained by non-specialised personnel
- Underwater model available for use submerged in water, mud, and so on
- Easy, low-cost maintenance

HIGH-PERFORMANCE SHELL

The new shell conformation allows the smooth transit of materials without impediment and helps continuous release when unloading, without sudden surges of materials.

HIGHLY VERSATILE

Bucket characteristics can be changed by swapping the shell, with the option of fitting large shells for shifting light materials, or smaller tough heavy shells for very compact materials.

The lifting device does not require a hydraulic or electrical system to move the bucket and a single cable or hook is enough. The bucket is opened when suspended using a remote radio control. Closure occurs simply by resting the tool on the ground.

An underwater model is available for operating submerged in water or other fluids. The bucket is designed for heavy use in dust, sand, and dirt, and can withstand very hot or cold conditions.

The cables are guided into the tool through two radial shaped semi-bushings, made in a bronze-aluminium alloy to limit friction and wear on the cable. The semi-bushings do not need greasing or maintenance and do not jam the bucket. It is easy to see their state of wear and decide when they need replacing. The semi-bushings are removed separately to permit replacement without having to extract the cable, resulting in a quick and easy operation.

For more information, please visit:
www.negrini.org

CHINA TAKES CENTRE STAGE

The eastern nation continues to be the major market player for bulk operators, but questions remain on the impact from trade sanctions

If China has been driving the trade in iron ore and coal with its massive industrial expansion programme and obtains the necessary steel to carry it out, analysts suggest that the first phase of growth is coming to an end – not least because of the need to avoid severe environmental consequences.

In a recent article, James Frew of analyst MSI said that while he expected demand for iron ore, coking and steam coal to drop, the second phase of Chinese development would see increased demand for another range of products. He suggests that the flattening out of Chinese demand for iron ore and coal will have a serious effect on bulk cargo operators, in particular those who have been investing heavily in the capesize segment. Operators in this area will begin to feel the pinch in the next decade, Frew said, as the industry indulges the usual trend of rushing to shipyards to place orders. There are, of course, some who may weather the storm by switching to new in-demand cargoes like bauxite.

CHINA IS UNDERGOING A MASSIVE INDUSTRIAL EXPANSION PROGRAMME

Frew also believes there will be an upswing in LNG trades into China as the country moves to more eco-friendly power sources and opens more gas-fired power stations. He estimates that gas demand for domestic consumers will also increase.

That said, Frank Grone, director of Frachtcontor, told *Bulk Terminals 2018* delegates in Hamburg recently that the music is "clearly being played in the Pacific Rim" while China continues to be the major player on the bulk commodities stage.

Demand for iron ore has been the major driver and the iron ore market should increase by about 2% this year and continue upwards, with suppliers in Brazil and Australia ramping up production, he said.

Demand from the Chinese market is still there, Grone maintains, and locally produced product is nowhere near the quality of imports. Coal is also a market driver, with a 7% increase in Chinese imports and Indian imports up 6%. The overall increase in seaborne coal trade is 3-4%, which is in stark contrast to Europe where imports have fallen. China, India, Japan and Korea import approximately 900m tonnes of coal per year compared to the two biggest

importers in Europe – the UK and Germany, which import approximately 110m tonnes annually.

BIMCO analysis says that so far, 2018 "has delivered as promised" and the question was whether the fourth quarter final results will an increase in the Baltic Dry Index further.

This, it suggested, is unlikely as "the demand for Capesize is facing headwinds, with Chinese iron ore imports down by 0.5% for the first 10 months, while the Panamax long-haul trade of soya beans from the US Gulf to China is expected to fall well short of last year.

"While the spot freight rates for all dry bulk sectors are profitable at current levels in early November, it is only little more than a year ago that this wasn't the case. Going into Q4, the unknown territory of a trade war will bring challenges for the dry bulk market. As the peak season for US soya bean exports will undoubtedly disappoint and renew the pressure on the dry bulk shipping market, we must not forget that the recovery has only recently gained a foothold.

"Capesize freight rates have improved the most in Q3-2018 (+51% y-o-y), somewhat against the odds. Chinese iron ore imports are down, while six valemax have started their maiden voyage from Chinese shipyards to Brazil to load the first cargo of iron ore. They bring the total new-built deliveries for the year up to 15 valemax, with 18 still left on the order book, primarily for 2019 delivery."

The re-entry of Indonesia as a bauxite exporter to China is also worthy of mention, BIMCO believes, echoing comments elsewhere about demand for bauxite cargoes. Transshipments outside the Port of Kamsar have turned many of the new cargoes into capesize loadings mostly heading for the Far East and helping to ease the pain of lost iron ore cargoes, BIMCO says.

Handysize bulkers "seem to have fallen completely out of fashion since January 2016, when 10 ships were ordered. Interest has never been this low since records began in 1996. Since February 2016, just 63 units have been ordered, for a combined purchase price of US$1,146m. This price can be compared with Very Large Ore Carrier (VLOC) orders in January 2018, where four Chinese shipyards received orders for 14 VLOCs (208,000 DWT) for a total of US$630m."

BIMCO suggests the reason for this development may be that "owners and investors expect demand outlook for larger ships to be better than that for small ships, given the industrialisation of the industry, which is going on in terminals and among customers and shipowners". It remains to be seen whether larger ship operators hopes will be realised.

The continuing weakness in demolition activity means BIMCO has revised its fleet growth estimate for 2018. "Where the demolition is down as a result of human nature in the shipping market (that is, not handling the supply side with care), the changes to the demand side relate somewhat to the trade war, the drought in Europe, the limitation of grain exports by Australia, and China growing its iron ore imports slower than forecasted.

"The fleet will now grow by 3.0%, if our revised demolition estimate of just 4m DWT (down from 5m DWT) is realised," it says.

Meanwhile, the trade war and Chinese tariffs on imports of US soya beans can now clearly be seen with the start of the soya bean peak exporting period in the US. In the first eight weeks of the 2018/19 marketing year, accumulated US exports are down 39%, from 12.2 million tonnes on 26 October 2017 to 7.5 million tonnes on 25 October 2018.

"While weekly exports this season have been consistently lower than last season, the week to 18 October marked the single biggest decrease, from 2.5 million tonnes in the corresponding week last year, to just 1.1 million tonnes. This represents a 56% reduction. The week to 25 October confirmed the downward trend," BIMCO's Chief Shipping Analyst Peter Sand says.

"In addition to the fall in total exports harming the shipping industry, an increasing proportion of the demand comes from destinations closer to the US, further lowering the overall tonne-mile demand.

"While in the first eight weeks of last marketing year China accounted for 70% of total US soya bean exports, the trade war has led to the Chinese taking just 4% of exports this marketing year. The US has seen a 97% decrease in the amount of soya beans it sends to China, from 8.5 million tonnes in the first eight weeks of last season, to just 201,700 tonnes in the same period this year," Sand says.

"The driving force behind the lower exports is the drop in Chinese demand. In the first eight weeks of last year, exports of US soya beans to China averaged a million tonnes a week. This year, soya beans have only been sent to China in three of the eight weeks."

In other areas, as the move towards LNG starts to take a hold, LNG carrier *Stena Blue Sky* has delivered its cargo to the first privately-owned LNG terminal in China, Swedish tanker owner Stena Bulk said.

Chinese gas distributor ENN Energy Holdings invited the LNG carrier to become the first vessel to unload at the new Xin'ao Terminal in Zhoushan, Ninbo region in August this year

Chinese companies build their own LNG terminals and import the fuel directly because they aim to meet higher demand and reduce their dependence on supplies of LNG from state-owned companies. The Zhoushan terminal has a capacity of three million tonnes of LNG per year.

"Being 'first in China' is a very rare title and we are all proud we participated in such an event," Erik Hånell, President & CEO Stena Bulk, said. "Each one of the operations was distinct as each piece of terminal equipment was being operationally used for the first time. It took resourcefulness, patience and a problem-solving attitude, but it was a successful operation," at the time.

The vessel also underwent a PSC inspection while at the terminal, receiving zero observations.

STEPS TO SAFETY

The *Bulk Terminals 2018* conference in Hamburg included plenty advice from the experts on a range of safety issues that are essential for port operators to address

So far this year, there have been over 40 deaths among stevedores, resulting from dust explosions, fire and asphyxiation due to lack of oxygen in holds.

Five new working groups have been established at the International Cargo Handling Co-ordination Association (ICHCA), on bulk, dangerous goods, straddle carriers, incident analysis, and digitalisation and automation.

Research has been presented to the International Maritime Organisation (IMO) on how many incidents there have been in the past few years with seafarers dying on vessels due to depleted oxygen. The research found 106 during the time frame covered, 88 of which were due to asphyxiation and 18 to cargo explosions.

The statistic was appalling, Richard Brough of ICHCA told delegates at *Bulk Terminals 2018*. Despite all the information and testing equipment available, people are still dying, he said.

It is very important that people are aware of the CTU code, he maintained, mentioning an app in development which can be used to find out how to deal with bulk cargoes. Lloyd's Register has also produced a useful guide to upcoming legislation in this area.

ICHCA has also signed up to the World Port Sustainability Programme, launched in the Port of Antwerp a few months ago. The aim is to get together to have a stronger voice at the IMO on issues of common interest.

As well as safety issues such as drug and alcohol abuse and mental health issues, common issues for ports include affordable and clean energy, sustainable ports, pollution on land and sea, and how to introduce more women to the industry.

Richard Steele, executive director of Ports Skills and Safety, also addressed delegates on hazards in ports. The trade association's members handle about 95% of UK cargoes and passengers by volume across UK quays. The trade association produces guidance on topics including biomass, confined spaces, training and induction for example.

Steele pointed to research by an IMO sub-committee on solid bulk incidents pointed to 70 seafarer and 36 shore worker fatalities, many in enclosed space incidents.

Asphyxiation incidents on hold access ladders are a major danger point. Many of the accidents take place in ports during loading and unloading operations so "this is a real issue for ports and terminals with vessels alongside and there are hazardous spaces in ports and terminals as well".

In 2017, injuries included 29% for slips, trips and falls, 16% of accidents involved driving, including straddle carriers, where there are significant risks, 21% include people being hit by machinery, 12% were manual handling problems and 7% falls from height.

The majority of accidents were on quaysides (29%) with 18% on ships. Container ships are still the most likely vessels on which to have an accident, with bulk vessels are lower down the table, he said.

In terms of managing risk, this should start with effective quality risk assessment and focus on the hierarchy of controls, starting with elimination and moving down to protective equipment.

"The question is whether we are spending too much time on administrative controls, signage and giving people hard hats – necessary though these things are – rather than at the top of the hierarchy, showing the regulator that some thought has been given to the issues," Steele said.

"Biomass, for example, presents a number of risks including fire, explosion, occupational health and hazardous atmospheres, and these are the issues that ports need to be able to handle."

> "Humans are a resource and are essential to creating a safe environment. Use them to establish what you are doing well. How often do employees spot problems or stop the process because they think something is wrong? Managers need to listen to people and create an environment that promotes safety-positive behaviour

A lot of core safety is about compliance, that is doing what the law requires, he said. Clearly, skills and training are critical, but Steele said that in the UK, since 2000 there had been 3.9 incidents per hundred employees. The government set a target to reduce that and it has been reduced to 1.44 per 100 by 2017.

This 59% reduction is great, he said, but looking at the past few years, statistics have reached a plateau so what needs to happen is a holistic approach to health and safety.

Health and safety culture, overall health and mental health are important points. As far as culture is concerned, the key is trying to get people to think in a different way about safety to ensure as few accidents as possible happen. The view of human beings is that they are seen as something of a liability – how can one stop them doing something stupid, Steele said.

"Humans are a resource and are essential to creating a safe environment," said Steele. "Use them to establish what you are doing well. How often do employees spot problems or stop the process because they think something is wrong? You need to listen to people and create an environment that promotes safety-positive behaviours and empowerment."

Health is a bit of poor relation when it comes to safety, Steele says: "Health tends to be handled by the HR teams and safety by the safety teams and never the twain shall meet."

Port Skills and Safety is working on emotional involvement and getting people to be aware of the risks – if they are not healthy, they are more likely to lose concentration. Currently, some 40% of all work-related ill health is categorised as a mental health issue, he said.

If staff are stressed or suffering from mental health issues "do you want them doing safety-critical operations. Do you want them working alongside other people in your team unsupported?" he asked.

Steele stressed how important it was for managers to support the mental health challenges of their workforce. "You cannot train out all accidents, but you need to tackle these things to get closer to a zero accident rate," said Steele.

"For managers, the situation is difficult not least because of confidentiality issues. Staff could be put on mental health training courses, so that there are always people available who can listen and point those in need to helpful resources," he concluded.

So how much safety training needs to be done in ports, Professor Mike Bradley, director of The Wolfson Centre for Bulk Solids Handling Technology, asked delegates. Safety training is necessary not least to meet government guidelines, he said.

Training needs to be specific to the job and trainers must have the right capability. Processes and equipment need to be provided and any subcontracted training needs to ensure the right methodology and understand your business. Delivery can be through staff buddying, or workshop events. It is also important to get feedback on whether it is effective.

In many companies, HR carry out basic safety training, whereas at a more intermediate level new entrants are taught about safety as it affects their particular job roles and will probably consider how to address situations when they go wrong. Refresher courses are needed to ensure people are up to date.

With any training plan, it must be remembered that people learn at different rates and in such a multinational industry, there can be language issues.

Keeping records is also important, not least because it is a defence if something goes wrong, Bradley explained.

Competence is the goal in any safety culture and training must lead to competence. Training programmes alone are insufficient in a dynamic industry, but if coupled with a comprehensive assessment then companies can start to get something really valuable.

"Be safe not sorry. Plan ahead and be prepared," said Bradley.

FIGHTING FIRE HAZARDS

Fires are much more common than explosions, Bradley told delegates, but fire protection is not as strongly mandated – there is not as much money in selling protective equipment in fire protection.

However, fires can come at great financial cost, for example, one at the Tilbury biomass plant some years ago led to repairs costing $15m, but lost generation cost more like $35m even though the plant was up and running in a matter of months.

Common causes of fire may be friction and self-heating, or overheating equipment. Many cargoes self-heat, possibly through fermentation, and many materials oxygise. It is also important to keep cargoes dry because wet rot can make them ferment. Monitoring the moisture content is important, as is turning over the cargo regularly.

When it comes to silos and hoppers, fires happen because there are so many factors that one is not in control of. Fires are foreseeable incidents, but an incident can develop slowly and not be immediately apparent. Early detection is essential – once smoke is detected in a silo, for example, it will be too dangerous to send someone into it.

One of the most effective measures is the use of multi gas detectors, which can detect combustion at very low levels, Bradley said. Once detected, extreme care needs to be taken – there is potential, for example, for backdraft explosions. "What is needed is a non-access way of fire-fighting. Spraying with water needs to be used with care because it could destroy the silo.

"If you put water on top of bulk commodities it may not permeate through and kill the fire. Trying to get the material out of the silo is also dangerous and silos need to be inert in any case before material is taken out.

"To kill the fire inside a silo, the oxygen needs to be taken down to 2%. This can be done through nitrogen injection."

BUSINESS CONTINUITY

Business continuity is a well-established risk management process that identifies potential impacts on an organisation and provides a framework for building resilience, with capability for an effective response to safeguard the interest of key stakeholders, including reputation and brands, Andrew Huxley, regional development director at insurers the TT Club, told delegates.

Risks include fire, damage to key infrastructure, berth blockages, structural failures, terrorism with related denial of access issues and cyber attacks that could cause disruption or reputational damage. Loss of key personnel can also be an issue. "These issues can happen not just to you, but to key suppliers," he warned delegates.

"A good business plan will analyse the business and its potential risks and their impact. Once you understand the business, you assess the risks by going through different scenarios, then a strategy is developed. This will include assessing the business' appetite for risk and how much pain it can handle financially. The plan, therefore, needs to be developed at board level," he explained.

"Once the plan is in place, it needs to be rehearsed, whether through a paper exercise or a full blown test of a potential incident situation. If situations can't be avoided, they must be managed. There is a statistic that suggests that 70% of businesses that don't have a business continuity plan never re-open or stop trading with 18 months following an incident," Huxley said.

A good plan is a living plan and changes every day, so it needs to be continuously reviewed, said Huxley. It is also important to learn from other people's mistakes in dealing with a critical situation.

WHAT'S ON

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

31 JANUARY – 1 FEBRUARY 2019
19TH COALTRANS USA
MIAMI
www.coaltrans.com/usa/details.html

17 FEBRUARY 2019
MIDDLE EAST GRAINS CONGRESS, DUBAI
DUBAI
https://latifundist.com/sobytiya/1840-middle-east-grain-congress-2018

18-20 FEBRUARY 2019
18TH COALTRANS INDIA
NEW DELHI
www.coaltrans.com/india/details.html

26-28 FEBRUARY 2019
GLOBAL GRAIN ASIA
SINGAPORE
www.globalgrainevents.com/asia/details.html

27-28 FEBRUARY 2019
MVTTC, NEW ORLEANS
NEW ORLEANS
http://mvttc.com/mvttc_conference/

4-6 MARCH 2019
INTERCEM DUBAI
DUBAI
www.intercem.com/dubai2019

3-7 MARCH 2019
MULTIMODAL AFRICA 2019
LAGOS
www.multimodalwestafrica.com/

6 MARCH 2019
DUST CONTROL FOR PROCESSES
CHATHAM
www.gre.ac.uk/about/faculty/engsci/research/groups/wolfsoncentre/coupro/sc

12 MARCH 2019
PORT AND TERMINAL OPERATIONS FOR BULK CARGOES
CHATHAM
www.bulkterminals.org/js/plugins/filemanager/files/Port_and_Terminal_Operations_for_Bulk_Cargoes.pdf

19-21 MARCH 2019
INTERMODAL SOUTH AMERICA
SAO PAULO
https://10times.com/intermodal-south-america

09-10 APRIL 2019
TOC ASIA
SINGAPORE
www.tocevents-asia.com/en/Home.html

09-11 APRIL 2019
AFRICAN SUGAR CONFERENCE
NAIROBI
www.ibc-asia.com/event/africa-sugar/

15-17 APRIL 2019
GLOBAL GRAIN MENA
DUBAI
www.globalgrainevents.com/mena/details.html

01-02 MAY 2019
DESIGN OF EQUIPMENT FOR STORING AND DISCHARGING BULK MATERIALS
CHATHAM
www2.gre.ac.uk/about/faculty/engsci/research/groups/wolfsoncentre/coupro/sc

7-9 MAY 2019
ANTWERP XL
ANTWERP
www.easyfairs.com/antwerp-xl-2019/antwerp-xl-2019/

21-23 MAY 2019
BREAKBULK, EUROPE
BREMEN
www.breakbulk.com/bbeu2019-interest/

22-23 MAY 2019
NUMERICAL MODELLING OF SOLIDS HANDLING AND PROCESSING
CHATHAM
www2.gre.ac.uk/about/faculty/engsci/research/groups/wolfsoncentre/coupro/sc

OCTOBER 2019
BULK TERMINALS 2019
TO BE CONFIRMED
www.bulkterminals.org/events.html

TERMINAL TALES

DREDGING UP THE PAST

Hamburg was an excellent venue for ABTO's second conference, although the weather for delegates' trip round the port by night made it difficult to see through the spray at times. What is clear is the boost to the port's facilities that the new dredging programme will bring.

Fights with local authorities or environmental groups with different views on activities in ports seems to be something of a feature at the moment. Amsterdam has now pulled the plug on coal handling in the port, leaving users wondering what to do next. Bearing in mind some of the battles that have been going on in Australia about dredging, marrying up the expectations of port users and other local interests continues to be a challenge.

POWER RANGERS

Shore power is another issue that appears to hitting the agenda to a greater degree than in the past. Many have shied away from this issue because hooking up to shore-based power supplies is problematic in terms of compatibility of equipment. Another issue is that the shore-based power supplies can, in some cases, be less green than those on the ship and therefore don't tick the environmental box.

The conference heard that there are new toolkits on the IMO website from Global Maritime Emissions and Environmental Protection Programme and while the IMO exists to promote safety of life at sea, it has begun to "creep ashore" to some extent with such toolkits. The port of Long Beach, for example, is aiming to be emission free by 2025-30 and it is trialling trolley trucks powered from an overhead electric source that will drive down to the port with no emissions whatsoever.

Long Beach is in competition with Los Angeles next door and "if you have two ports in competition," Captain Richard Brough of ICHCA told delegates, "customers may consider switching from one to another because of concerns over their image or branding."

BEETLE DRIVE

Another recurring theme at the conference was how to get shipping to take notice on issues such as ballast water – regulation is in place, but many operators seems to be burying their heads in the sand. The scramble to fit scrubbing systems to meet the 2020 sulphur cap requirements will perhaps show the way in this respect but, as one speaker suggested, owners and operators just can't see the financial gain for themselves as far as ballast water treatment equipment is concerned and have not got past the massive financial outlay.

One good example of how things could go wrong was provided by New Zealand. As Richard Brough of ICHCA pointed out at the conference, with ballast water and biosecurity such hot topics, New Zealand has just spend NZ$2m trying to wipe out two beetles that came into the country on a pallet. Food for thought.

EXPERT ADVICE

Watch out experts is the message from International Transport Intermediaries Club (ITIC), which is warning that the role of expert witness should not be undertaken lightly and that all professionals acting in this capacity should be aware that they could face legal action for negligence.

A recent case cited in ITIC's newsletter suggests that experts should be careful when giving opinions that could be challenged in court with subsequent legal action. While the case cited ended without the expert in question being taken personally to the cleaners, ITIC says: "In addition to potential liabilities, even an 'innocent' expert can face substantial legal costs dealing with a claim. At best, only a proportion of these costs will ever be recovered." You have been warned.

NEW
Short Course 2019

12-13 March 2019

Port and Terminal Operations for Bulk Cargoes

University of Greenwich Medway Campus, Chatham Maritime, Kent, UK

For anyone concerned about or responsible for the safe handling and storage of bulk materials in ports and on the sea

Course Leader: Mike Bradley, Professor of Bulk and Particulate Technologies and Director of The Wolfson Centre

Subjects covered include:

- Ship unloading technologies
- Conveying technologies
- Storage and discharge technologies
- Loading and unloading control
- Rail and road out loading equipment and control
- Explosion and fire risks and management
- Mobile plant and safety
- Developments in automation and autonomous vehicles
- Dust control and environmental protection
- Controlling cargo damage
- Wear protection and maintenance
- Cargo characterisation for handleability and other issues

abto
ASSOCIATION OF BULK TERMINAL OPERATORS

UNIVERSITY of GREENWICH
The Wolfson Centre for Bulk Solids Handling Technology

More details at: WWW.BULKTERMINALS.ORG/EVENTS/COURSES-AND-TRAINING.HTML


WINNER 2018
BEST SHIP LOADER &
UNLOADER SYSTEM
IBJ AWARDS
NEUERO
Industrietechnik