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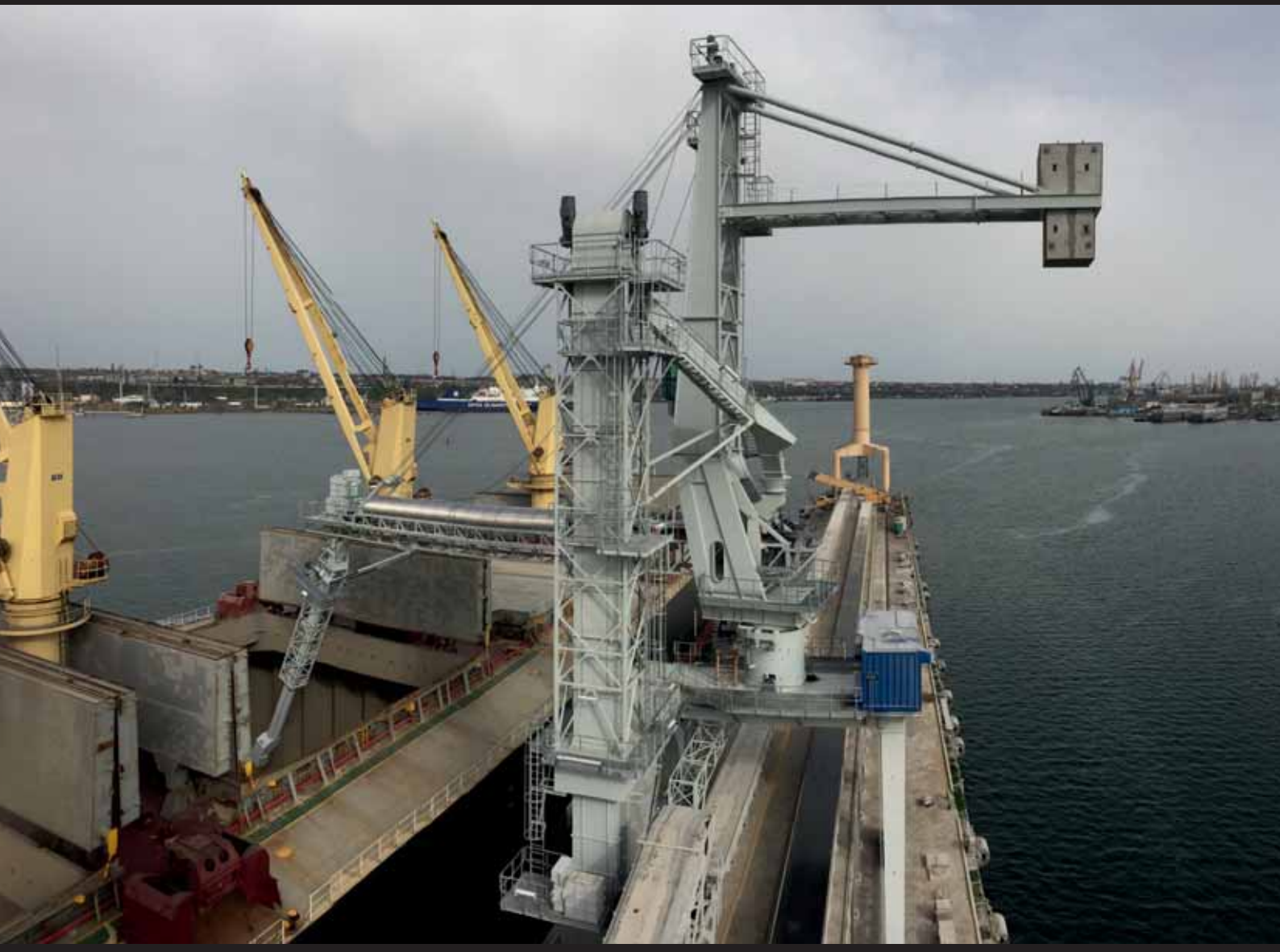

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Iron ore trade's renewed vigour continues

Signs of extra support for commodity imports into countries around the world have become more prominent during the past few months. Growth in global seaborne dry bulk trade has benefited. But there are still doubts about whether this improved pace can be sustained during the remainder of 2017.

A moderately encouraging background is provided by recent economic indicators. In the USA, European Union and Japan statistics point to more positive trends, implying stronger manufacturing and construction activity. In China, although the economy still appears to be well supported, rapidly growing debts reflected in policies designed to curb lending may adversely affect economic growth over the period ahead.

Iron ore

Steel production started this year briskly in the main raw materials importing countries. World Steel Association figures show that China's crude steel production in the first four months of 2017 was 4.6% above the volume seen in last year's same period, at 274mt (million tonnes). EU output was 4.5% higher at 57mt, while South Korea's total was up by 2.8% at 23mt. Japan achieved a 1.9% increase to 35mt.

While these rises imply additional imports of iron ore (shown in table 1) and coking coal, other factors can alter the relationship. Attention immediately focuses on China, the dominant ore importer. Further substitution of domestic iron ore supplies from Chinese mines with imports continues, but some of the large expansion of imports in recent months has been stored at ports. If these greatly expanded stockpiles are drawn down, import demand could be weakened.

Coal

Some forecasters are more confident about an increase in global seaborne coal trade in 2017 after decreases in the past two years. However, negative influences affecting import demand in many countries remain clearly visible. These are likely to persist in the longer term, given the worldwide strategy of switching towards cleaner fuels and renewable energy.

A large part of this year's expected growth in the global trade total is likely to reflect higher volumes into China. Already there has been a big rise. China's coal imports during the first four months of 2017 were 22mt or one-third above the same period of last year, reaching over 89mt. Both steel production and thermal power generation expanded, and additional domestic coal output only slightly restrained imports.

Grain

Global trade in wheat and coarse grains in the 2016/17 crop year ending this month looks set to edge upwards by 1%, reaching 349mt, according to the International Grains Council's latest estimates. Tentative calculations for the new 2017/18 year starting July suggest little change, just a small decrease to 347mt.

What clues about trade over the next twelve months have emerged? One indication is summer domestic grain harvests in northern hemisphere importing countries. Changes in these often affect foreign purchases. Currently there are more signs of higher production than lower output, but weather conditions over the weeks ahead will determine the results. Importers expected to achieve greatly improved harvests include France, India and Morocco.

Minor bulks

Forest products trade provides many bulk as well as non-bulk cargoes, including logs, sawnwoods, woodchips and pulp and other items. It is one of the largest 'minor' bulk categories, with global seaborne movements probably exceeding 350mt last year. Further growth could be aided by reviving construction and manufacturing activity in some importing countries.

Bulk carrier fleet

Among bulk carrier size groups, the Handymax 40–64,999dwt group is still growing briskly (see table 2), possibly increasing by 4% in 2017. Newbuilding deliveries are likely to decline this year, but scrapping of older vessels probably will be reduced also. Most of the new ships being delivered are in the 'Ultramax' sub-group (capacity exceeding 60,000 deadweight), a popular choice when ordered a few years ago.

TABLE 1: KEY IRON ORE IMPORTERS (MILLION TONNES)

	2012	2013	2014	2015	2016	2017*
China	745.5	820.3	933.1	953.4	1024.7	1070.0
Japan	131.1	135.8	136.4	131.0	130.0	132.0
EU-28	107.0	112.0	116.0	110.0	104.0	108.0
South Korea	66.0	63.4	73.5	73.3	71.5	71.0
Taiwan	18.5	20.5	21.3	23.8	23.5	23.5
Total of above	**1,068.1**	**1,152.0**	**1,280.3**	**1,291.5**	**1,353.7**	**1,404.5**

source: China Customs, AGDIIS, Bulk Shipping Analysis **BSA forecast for 2017*

TABLE 2: HANDYMAX (40-64,999 DWT) BULK CARRIER FLEET (MILLION DEADWEIGHT TONNES)

	2012	2013	2014	2015	2016	2017*
Newbuilding deliveries	20.9	14.7	11.4	16.0	13.2	10.5
Scrapping (sales)	4.7	3.5	3.2	3.1	4.3	3.5
Losses	0.1	0.2	0.0	-0.1	0.0	0.0
Plus/minus adjustments	0.2	-0.1	0.0	-0.1	0.0	0.0
Fleet at end of year	**147.6**	**158.6**	**166.8**	**179.5**	**188.4**	**195.4**
% change from previous year-end	+12.2	+7.4	+5.2	+7.6	+4.9	+3.7

source: Clarksons (historical data) & BSA 2017 forecasts **forecast*

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Americas coal trades 2017

Dr Tim Jones, e-coal.com

The improvement in the international coal markets compared to this time a year ago can only have come as very welcome news for some of the coal producers in the Americas, at least for the ones still surviving after the lengthy depressed period of recent years. One of the main factors which led to this increase was the intervention by the Chinese government, and its knock-on effect on the international coal market outside Asia, more of which is described below.

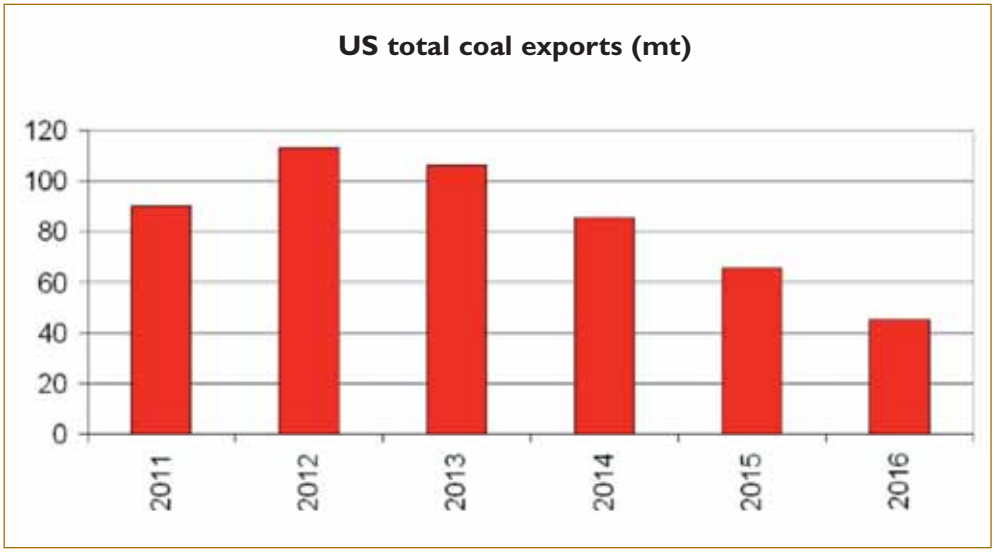
This time last year, it was noted how coal trade in the Americas had been under great strain during the previous year, and most operators on both the supply and demand sides had been experiencing great challenges. There was little to celebrate when 2015 came to an end, and although the first few months of 2016 were proving to be challenging again, there was optimism that improvements would be seen and for it to continue in 2017.

During the first quarter of this year there were a number of constraints on coal supply in some key producing regions, mainly due to adverse weather conditions affecting the mining operations there. With the Asian markets being the main driver of coal demand there was an expectation that a lull would occur as temperatures picked up after the winter months, and before demand for electricity increased again over the hot summer months as the vast array of air conditioners there goes into full effect.

The Atlantic spot market for thermal coal during the first quarter of 2017 saw prices in the US$80s per tonne FOB (free on board) range basis 6,000kcal/kg NAR (net as received) but these softened into the US$70s towards the beginning of the second quarter. The Asian market has been firmer due to supply constraints from some countries. Heavy rain affected output in Queensland and Indonesia in particular and this helped to boost the spot prices seen in the region. Where spot prices had been around the mid-US$70s per tonne FOB basis 6,000kcal/kg NAR in the middle of the first quarter, an increase was seen and the figure reached the mid-US$90s per tonne at the start of the second quarter, driven largely by demand from China. Spot prices eased a little after that spike and moved down into the high US$80s per tonne in April. The Asian market remains firmer than the Atlantic at the time of writing, and there have been new opportunities presenting themselves there to coal exporters in parts of the Americas.

All coal producers and consumers in the Americas have been affected by the policy of the Chinese government since the second quarter of last year, and that remains the key factor influencing the international thermal coal market at present. China's National Development and Reform Commission (NDRC) has been monitoring the price of thermal coal and stepping in to increase or reduce that price for the past year. A target range of price has been established at Yuan 500–570/t delivered North China. The NDRC intervenes if the price rises above Yuan 600/t or falls below Yuan 470/t and during the second quarter of this year spot prices increased too high for their liking. Thermal coal spot prices in the Americas could be affected by an increase in production in China, and this is the

main method the government would use to reduce the price. In other countries, such interference would be very unwelcome from producers, and it can be expected in China as well when the producers are benefitting from higher prices. Their co-operation would be necessary in order to increase coal output with the potential to bring the price down. A fall in demand for imports to China affects the international market, and although sales to Europe and the Mediterranean countries are important for the coal producers in the Americas they will not be immune to China's policy. Some analysts have suggested there could be a decrease in imports to China in 2017 of around 10mt (million tonnes) and more modest declines are expected to continue in the next few years. The price of coal achieved by the American producers in the international market is likely to be affected by the other major consumer in Asia during 2017 — India. High prices in the seaborne market have not been attractive to importers there, and combined with higher output by Coal India the demand has eased with a potential knock-on effect on prices. India's import demand has been forecast to remain moderate for the foreseeable future compared to the highs of a couple of years ago. This will influence prices in the Americas for some time to come. While other Asian countries offer growth in the coming years, their markets remain relatively small for coal shippers in the Americas. Their main markets in Europe continue to be put under threat by the European Union with regulations discouraging the use of coal. Gas-fired power generation continues to be favoured at the expense of coal and the decline of the industry is ongoing there.



Colombian shippers were able to sell a significant quantity of coal in the Asian markets last year, with some 5mt reported. Europe remained its main customer base, however, although that region is not a growth market now. There has been relatively little competition for the Colombians from other supplier countries into the European markets recently, with Russia being the only other supplier moving substantial tonnage there. With the lack of supply available from other countries into Europe, it was little surprise that prices increased significantly during the latter part of last year for the Colombian shippers. This year, the exporters in the Americas could see new price hikes based on a rather fine balance between supply and demand, with little scope for additional tonnage. This is largely attributed to the previously depressed market having led to less investment in production capacity for a number of years. Where import demand picks up, the spot market could see some volatility in the price despite the previously mentioned influence of China on the international market in general. China could end up dictating the range of price of thermal coal worldwide if its policy of protecting its domestic market succeeds. This may not be met with approval by the current administration in the USA, and it will be interesting to see how this plays out following the assistance already given to the coal and steel industries there since January.

In Colombia, Glencore reported preliminary results for 2016 with its Prodeco mine producing 17.3mt which was 0.3mt or 2% less than was recorded in the previous year. The heavy rainfall during 2016 adversely affected output at the mine. Glencore's share of production at Cerrejon was 10.7mt which was 0.4mt or 4% lower than that recorded in the previous year, and again this decrease was attributed to the adverse weather affecting operations during the year. During the first quarter of 2017, Glencore reported a comparable level of coal production as during the same period last year at the Prodeco mine. This amounted to 4.2mt. At the Cerrejon mine, Glencore's share of production in the first quarter was 0.2mt or 8% higher than in the same period last year, and reached 2.8mt. This was attributed to the easing of dust restrictions at that operation this year.

Canada has been importing less seaborne thermal coal during recent years, with only 1.67mt reported in 2016, which was a decrease from the 2.11mt recorded in the previous year. This level of imports is expected to be steady this year, and again in 2018. The USA supplied 0.27mt last year, with the only other thermal coal being purchased from Colombia at 1.4mt. Some of the material produced in Nova Scotia at the new Donkin mine could displace some demand for imported thermal coal. Like the European Union, the current Canadian government does not favour coal, and that could affect consumption and import demand in the future. Demand for imported thermal coal comes from Nova Scotia Power with up to 3mt required per year for its 620MW Lingan, 171MW Point Aconi, 154MW Point Tupper, and 307MW Trenton power stations. New Brunswick Power requires over 1mt each year.

Brazil is currently expected to have steady demand for imported coal overall, with some potential for additional PCI (pulverized coal injection) tonnage being required if steel production picks up. Thermal coal demand is forecast to remain flat as supply is directed only to existing power stations. Demand for thermal coal at the 360MW Pecem I and 360MW Pecem II plus the 360MW Itaqui power stations amounts to about 2.25mtpa. The facilities are owned by Eneva. Total coal imports by the Brazilian consumers amounted to 21mt in 2016 which was a decrease of 0.5mt compared to the previous year. Of this total, thermal coal imports are estimated to have been about 6.5mt last year.

Elsewhere in the Americas, the smaller markets include Argentina which has taken a steady import tonnage of around 0.75mtpa in recent years for the San Nicolas power station. Last year the total was reported to have increased a little

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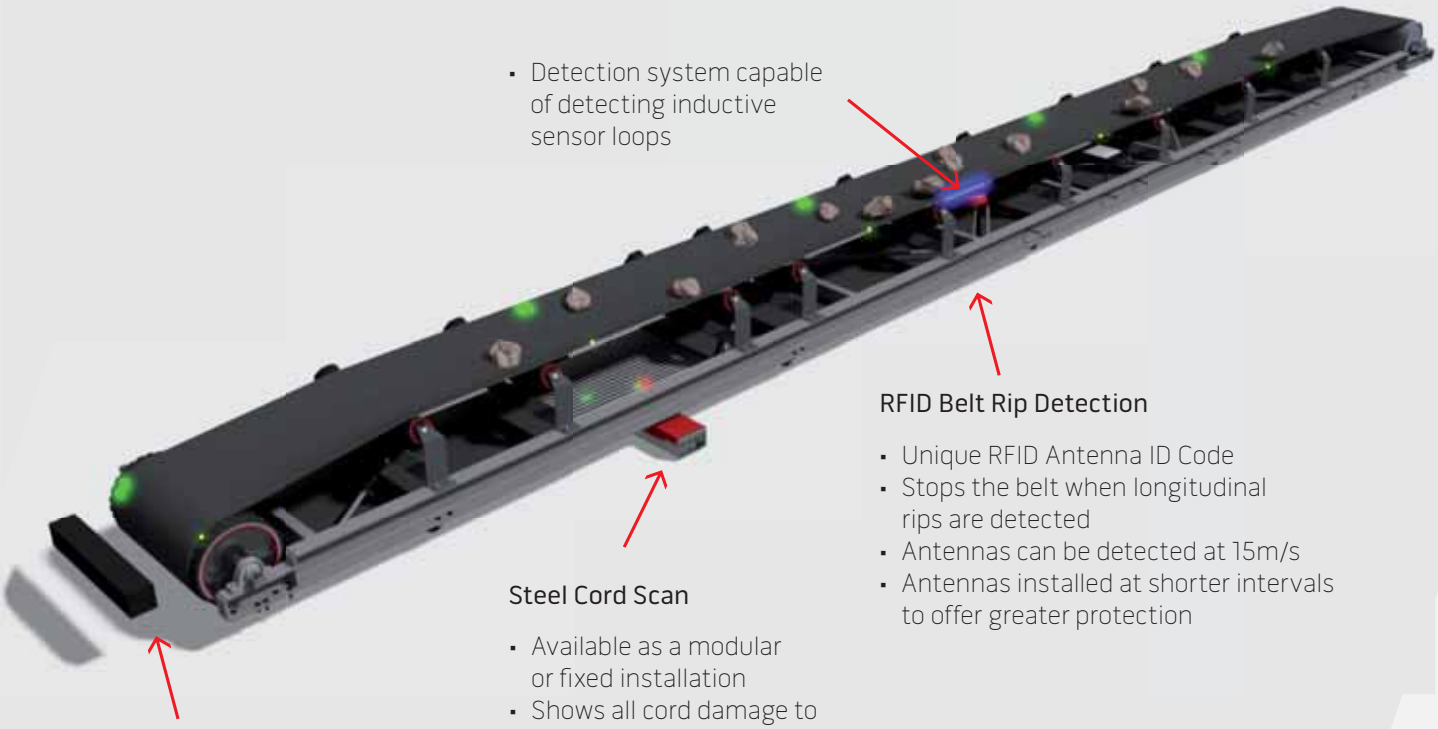

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compared to 2015 and reached 0.79mt compared to 0.75mt.

Puerto Rico needs up to 1.2mt of imported thermal coal each year for the Guayama power station owned by AES, and the cement sector can take about 200kt annually for the Essroc San Juan Cement and Gulf Coal Portland Cement plants.

The Dominican Republic has been exhibiting growth in demand for imported coal lately, although it is a small market compared to other countries. The central American nation's electricity sector includes the 128MW Itabo I and 132MW Itabo II power stations which are owned by AES, and the 45MW Haina power station owned by Empresa Generadora Electrica. Demand for imported thermal coal appears to be steady for the foreseeable future, and there is a new larger coal-fired power station due to be commissioned soon. This 680MW Punta Catalina power station is expected to be operating at full capacity next year. It is owned by Corporacion Dominicana de Empresas Electricas Estatales. The Dominican Republic's thermal coal imports reached approximately 1.13mt last year and this total is forecast to increase to 3mt by the end of 2018 if the power sector's expansion plans are fulfilled.

Smaller markets for thermal coal in Central America include those in Honduras where the 18MW unit at the La Grecia sugar mill can burn up to 50kt each year depending on bagasse availability and price. The facility is owned by Celsur. A further 20kt of thermal coal can be burned each year at the 11MW Envasa plant.

In the larger coal markets, the USA still shows relatively low demand for imported thermal coal this year so far, after a relatively mild winter helped to maintain coal stocks at the mines and power stations, while taking mainly Colombian product at lower freight rates than elsewhere. Demand from the country's major consumers has been lower, and so the mining companies have been reducing output in line with the domestic market which was particularly noticeable in the final weeks of the first quarter this year. One coastal customer, Jacksonville Electric is due to shut down its St Johns River Power plant next year. That will result in a loss of coal demand for the 1,200MW power station. There may be some price spikes when demand picks up elsewhere in the country if US thermal coal is in short supply initially, or if the rail system is unable to haul sufficient coal quickly enough, and it can then be expected that the customers near the coast will look to the seaborne market at that time. Colombian shippers are most likely to benefit when that happens. The closure of mines in recent years amid the slump in the coal market will have exacerbated the problem when demand increases, with imports being the main source of supply in such circumstances.

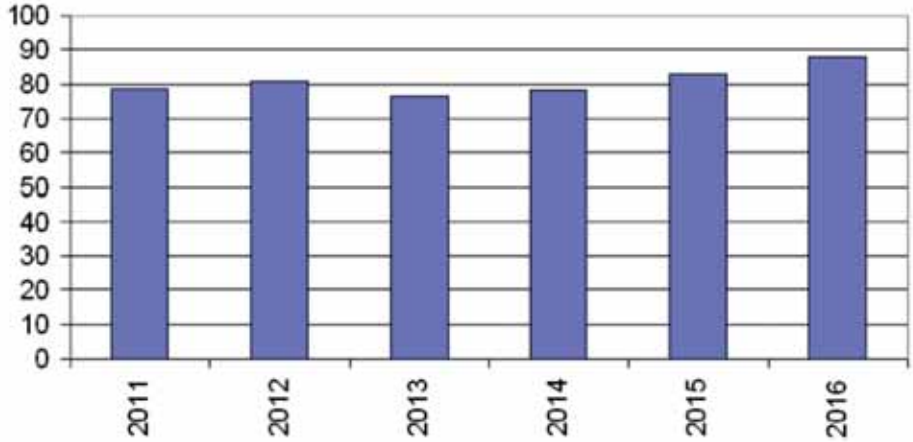
Chile is still a healthy market for imported thermal coal with growth in demand of some 20% recorded in 2016 to reach 11.2mt compared to the previous year's 9.3mt. Imports from the USA last year were, however, around 20% lower compared to 2015. The growth came from Australia, Canada, and Colombia. The Australian shippers delivered an extra 1.4mt in 2016. Chile's thermal coal imports were steady during the first quarter of this year, and are expected to pick up again on a monthly basis later in the year. Consumption by the electricity sector was higher last year, and with output from coal-fired units rising by some 20% it was similar to the increase in coal imports. Low hydro availability led to a decrease of around 15% in output from that source, and coal appears to have benefitted from that. More of the same has been forecast for this year until the rains come to boost water levels. That could take some time, however, as storage levels have declined during a prolonged period of drought. Demand for coal from Chile's electricity sector is expected to be firm in 2017 with an increase in requirements seen at new power stations as they ramp up. These include the 532MW Cochrane and 140MW Guacolda 5 coal-fired plants. Next year is also looking positive for coal suppliers as the 375MW Mejillones is commissioned. Further increases in thermal coal demand are not expected after that while no other additional coal-fired capacity is constructed. Any boost to annual requirements will then be weather dependent when output from hydro, wind and solar projects are affected.

In Central America, there has been growth in thermal coal demand in Guatemala which recorded an increase of 0.3mt compared to the previous year to reach 2.2mt in 2016. The country has a number of coal-fired power stations including the 300MW plant owned by Jaguar Energy which consumed around 0.3mt last year while one unit was offline. Demand could more than double when both generators are in operation. Corporación Energías San Jose required more imported thermal coal last year as well, to fuel its 133MW San José power station, as well as the 60MW Generadora Santa Lucia and 30MW Generadora Costa Sur plants. One of the main factors influencing coal demand in Guatemala is the rate of bagasse production in the sugar sector, but overall this year it is currently expected that total imports of thermal coal will increase compared to last year.

In Panama, about 275kt of imported thermal coal is required at the 120MW Bahia Las Minas power station which is owned by Celsia. The cement sector can take over 100kt of material each year for Cementos Panama.

The Mexican coal consumers recorded growth in imports in 2016 compared to the previous year with 8.3mt in total which was 8% or 0.6mt more. Thermal coal imports reached 7.4mt which was an increase of 0.6mt compared to the previous year. Imports of coal from the USA by rail offset a decrease in seaborne imports of thermal coal of 0.7mt which resulted in

Colombian coal exports (mt)



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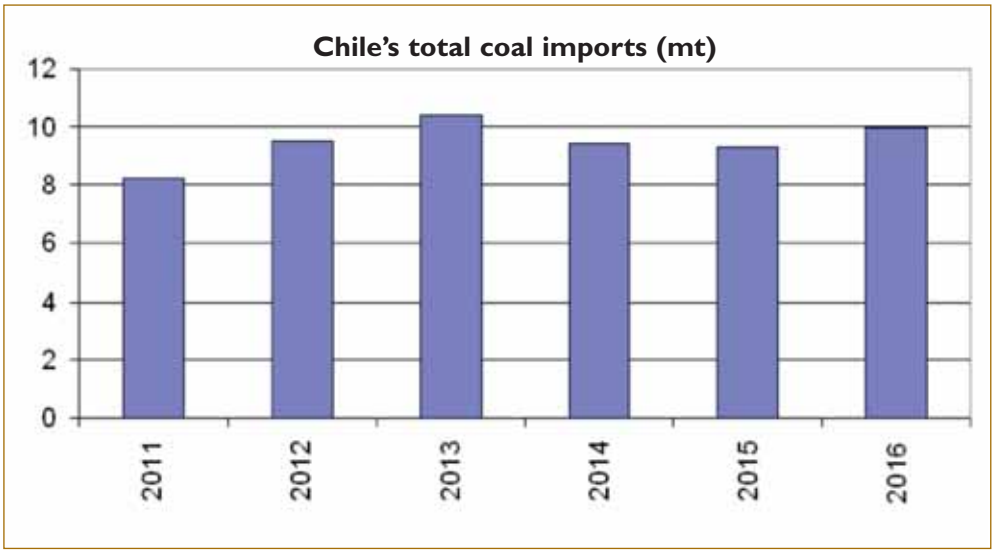


5.6mt being recorded. Some of this increase in thermal coal imports has been attributed to the lower availability of hydro power last year. Low rainfall in the north of the country persisted and water levels fell further in 2016 resulting in other fuels being required for electricity generation. Mexico's domestic coal industry also benefitted from this situation over the course of the year. Firm demand for imported coal is expected in 2017 while this shortage of water continues, and could increase by about 0.5mt this year, and again by the same amount next year. An increase in receivals of seaborne coal is possible with expansion of port facilities currently ongoing in Mexico. The Pacific coast Port of Lazaro Cardenas is increasing its coal handling capability by 1.5mtpa from the current 6mtpa. There is further potential to unload coal at nearby facilities. The large importer of thermal coal, state-owned generator Comision Federal de Electricidad (CFE) is due to issue its latest tender seeking more than 6mt of material at the time of writing. Contract tonnage supplied by Glencore and Trafigura will expire in July 2017 under existing deals, and the utility will be looking for new tonnage for the 2,100MW Petacalco power station. Delivery terms will be for the coming 12 months. The generator will require coal supplies for its 700MW Pacifico plant as well. With port infrastructure being expanded, CFE could import more coal in future, with up to around 8mtpa being mooted for the Petacalco power station and other electricity assets.

On the supply side, last year Canadian exporters shipped a total of 2.02mt of thermal coal which was a decrease of 0.21mt compared to the previous year. Anomalies occur in the market data, however, as Canada also exports coking coal which can be listed in different categories by certain customer countries. An example of this has been shown where exports to Korea amounted to 1.6mt according to the buyers, but Statistics Canada recorded zero tonnage to Korea in 2016. This was the first time this has been seen since records began for that market, and some caution needs to be exercised as usual in the murky waters of the international coal market. The overall picture of declining exports from Canada may therefore be somewhat more optimistic than it initially appears. Shipments of Canadian thermal coal at the beginning of 2017 have been firmer than last year appeared to show, and a steady result at the end of this year compared to last year appears most likely.

New production of thermal and coking coal was reported at the Donkin mine in Cape Breton during the first quarter of 2017, with the higher value coking coal being targeted at the export market. Some thermal coal is expected to be offered into the international market, but domestic demand is likely to allow only limited availability for that. Exports will be through the Port of Sydney, Nova Scotia. Donkin's owner, Cline, is also planning a new mine at the Vista project in Alberta. Up to 13mtpa of thermal coal could be produced there when fully ramped up but under current market conditions, the development is not expected to proceed in the near future.

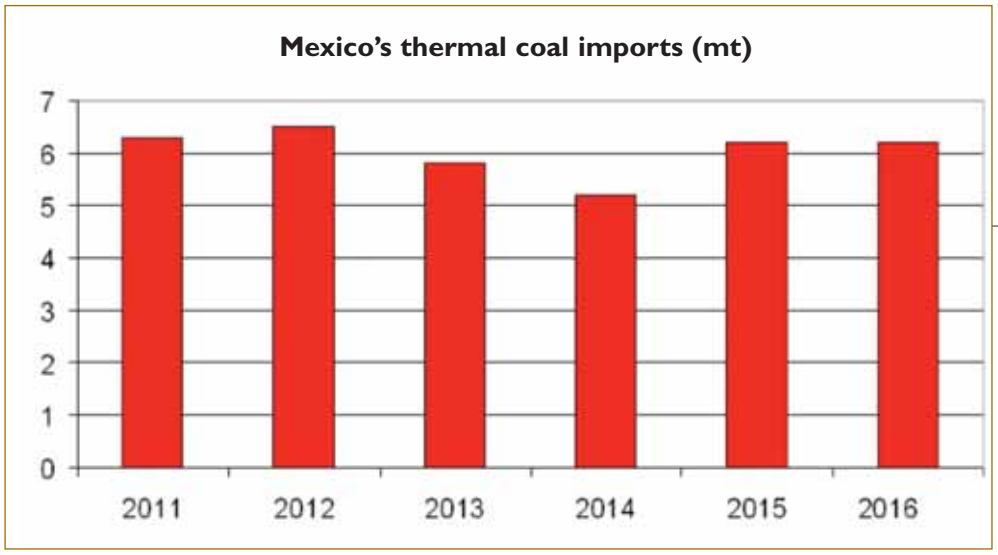
The US shippers enjoyed something of a resurgence in exports towards the end of 2016 and this continued during the first quarter of this year. The trigger for that is most likely to have been the surge in prices in the international markets in the months leading up to that time, and as was usually the case in the past, the US suppliers enter the international spot market when prices are strong and leave when they are not. This is why that country acquired the label of the 'swing supplier' and served to cap prices as supply increased out of the USA before the likes of China and India became large players in the seaborne trade. Most grades of US thermal coal have been reported sold from the producing regions including Central Appalachia and Illinois, and also the higher sulphur coals that can be handled by some European electricity generators. The surge in thermal coal prices also occurred for coking coal, and the supply of that became tighter. Those grades of US coal being used as thermal product which have properties allowing their use in the metallurgical industries overseas began to be sold into markets where they could be utilized, particularly in parts of Asia. Some of the quality of coals being used in the steel sector in Asia over the past six months could affect the quality of the product, but only time will tell. The latest expectations are for the US exporters to enjoy a better year in 2017 in the international markets than they have had for some time.

Colombian shippers had a firm year in 2016 helped by renewed demand in the Pacific markets, and the increased business continued during the first quarter of 2017 according to the latest information. Around 10% more tonnage is understood to have been shipped in the quarter compared to the same period last year, with markets in the Americas demanding more thermal coal to be delivered on the Pacific coast. Mexico and Chile have been noteworthy buyers this year, with the former country taking more coal during the first quarter of 2017 than it had done throughout 2016. This amounted to 2.1mt compared to 2mt and there could be more requirements during 2017. Across the Pacific, however, the deliveries of Colombian thermal coal decreased by some 50% during the first quarter of 2017 to reach only 0.5mt. Much of this decline was attributed to the Indian buyers losing interest in the more expensive imports compared to what they showed in early 2016. The major consumer countries of Japan, South Korea, and Taiwan awarded new business to Colombian exporters following tenders earlier this year, and deliveries are due to begin shortly, boosting the total for this year. In the American markets being served on the Atlantic side, business was quieter during the first quarter of this year, with reports indicating around 25% less thermal coal being

shipped there. Those markets would mainly be in the USA and Brazil. Across the Atlantic, some more trade was reported with the buyers in Spain where coal for electricity generation has been required. The Turkish market was also firmer during the first few months of this year. Cerrejon reported a total of 8mt shipped during the first quarter which was an increase of 9% while Drummond and Glencore reported steady business and total exports of 8.34mt and 4.55mt respectively. During 2017 the country's Ministry of Mines and Energy has forecast coal production to increase from 90mt last year to reach about 97mt in 2017. This would continue the increasing trend from the total of 85.5mt recorded in 2015. Most of the increased production is expected to be sold in the international markets, with about 90-95mt exported in 2017 after 88.6mt was recorded last year. The main target markets are expected to be Mexico and Chile on the Pacific side, with Asia also showing potential, while on the Atlantic side the exporters will be looking to exploit opportunities through the Mediterranean Sea in Turkey. Market uncertainties and unforeseen weather-related issues could, however, still affect that total by the end of the year but industrial action is less of an issue this year following recent new labour agreements with miners and rail unions. Indeed, the main risk to export shipments this year is likely to come from civilian action which could disrupt domestic transport of coal from the mines to the ports. The government has reported that such activities are rife at present, with several attempts to block the rail system each week. These are understood to be motivated mainly by environmental concerns among the public and organized groups.

The Venezuelan coal industry still languishes after mismanagement and political interference which has seen it decline substantially from its previous levels after the start of this century. At the time of writing, coal production is expected to resume at the Paso Diablo mine when machinery seized by the government from the mining company is made available again. Closure of the border with Colombia almost two years ago caused significant problems. There was some recovery reported during the first quarter of 2017 compared to the same period last year, when 0.225mt was recorded. This was 0.145mt more and appears to have included some Colombian coal stockpiled from some time ago. About half of this quantity was supplied to American markets in Brazil, the Dominican Republic, and Peru, while the remainder went to northwest Europe. While there have been announcements that new investment in the Venezuelan coal sector will be made available by the government, observers remain sceptical about any resumption in output for the foreseeable future.

While the coal producers in the Americas can enjoy a better time than they have had for a while, the market is unlikely to reach the levels seen last year in the coming months. Consumers are seeing a more attractive market again now too, with prices having eased from the peaks reached in 2016. This year will also give an indication of how easily the Chinese government can influence the international coal market and control the price of coal within the range it desires. This will affect all players in the Americas and many will probably be unable to do much about it. In the United States, however, there is now an administration which appears to be following through with its commitment to put America first, and to assist its coal miners and steel workers in particular. We might therefore see some more unexpected and unusual responses or initiatives from Washington DC in the months ahead, particularly where an uneven playing field is perceived in international coal trade.



Dr Tim Jones is Director of e-coal.com Consultancy and Editor of the weekly publication Coal Market Intelligence *which covers 11 spot markets worldwide, gives key information on the latest deals and tenders, company news, people and jobs, industrial relations, and ports, shipping, and freight rates.*

New BIMCO President sets course for digitalization

Anastasios Papagiannopoulos, CEO of Common Progress has been elected President of BIMCO, the world's largest international shipping association, with 2,100 members in more than 120 countries.

Papagiannopoulos has set three clear themes for his two-year presidential term. The first is to promote digitalization across the industry. BIMCO will be working on a range of projects using convergent technologies to pursue this objective, including applying new advances in software capability to develop a brand new contract editing tool.

Papagiannopolous said; "BIMCO is focused on driving efficiency, creating better information and increasing simplification, but all of our work to increase digitalization across the industry comes with a risk, and in everything — our work on cyber safety and security will remain a top priority, ensuring that our members' ships are safe, that their seafarers are aware of the dangers and our members' important information is secure".

Promoting digitalization will be key to achieving the president's second theme, which is to reduce the administrative burden for the ship's master. An administrative burden that BIMCO will be working to lift further through the removal of unnecessary regulations which no longer serve a purpose for the safe operation of ships.

Last but not least, the third theme is to encourage the successful implementation and effective enforcement of new stronger environmental regulations — clarifying the obligations and working to ensure regulations are practical and realistic to implement.

BIMCO will help shipowners navigate the Ballast Water Management Convention, by highlighting the key dates and advising on equipment selection and the operational realities. BIMCO will also continue to work with other associations and the IMO to help establish a feasible and practical implementation plan to meet the 2020 global cap on sulphur emissions.

Following Papagiannopolous's election, BIMCO confirmed that Sadan Kaptanoglu, managing director of HI Kaptanoglu Shipping has been elected as BIMCO's very first female President Designate.

Papagiannopoulos applauded her election saying that she was an inspiration to women across the industry and her appointment marked the organization's commitment to successful collaboration between nations, genders and beliefs.

Finally, he noted that while the shipowners' association is very different today to the original body established in 1905, BIMCO remains committed to being its members' trusted partner, through the provision of outstanding practical, technical and contractual advice, and he concluded saying: 'like The Odyssey BIMCO will navigate through rough waters with caution, without fear and looking to the future with confidence based on expertise and experience'.

HullWiper named Product of the Year

Environmental Leader Product and Project Awards 2017 recognizes benefits of brush- and driver-free hull cleaning system

The tangible financial, operational and ecological benefits offered by GAC EnvironHull's HullWiper has earned it the Product of the Year title in The Environmental Leader Product and Project Awards 2017. GAC's Andrew Boaz accepted the accolade at the Environmental Leader Conference in Denver, Colorado, USA, in early June.

The Environmental Leader Product and Project Awards recognize excellence in products, services and projects that provide companies with environmental, sustainability and energy management incentives and advantages.

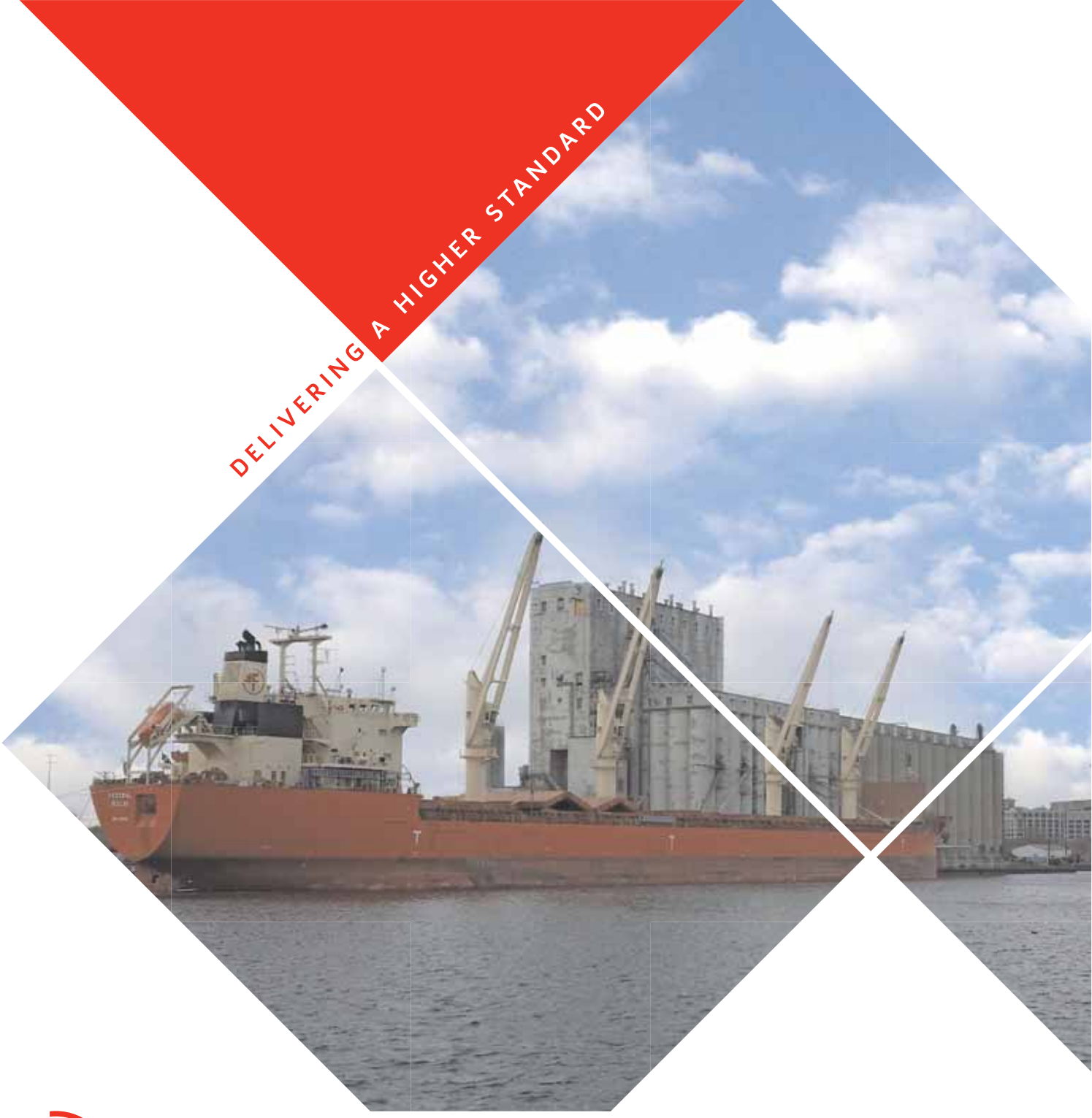
Launched in Dubai in December 2013, the diver- and brush-free HullWiper Remotely Operated Vehicle (ROV) delivers a foul-free hull with little or no down-time, whilst preserving both the delicate marine eco-system and human life. It uses water jets to remove fouling rather than brushes or other abrasives which can damage expensive coatings and collects debris from the operation for environmentally approved disposal on land, thus reducing the risk of cross-pollination of waters with alien species.

HullWiper's award is based on scores from a panel of distinguished judges with in-the-trenches experience in environmental management. They described it as a "unique product with tangible benefits" and "a good example of taking a process, asking how to improve, and to develop new equipment that incorporates safety, reliability, improved efficiency/cost, and environment all in one product." It was praised for its "definite impact on the bottom line in both the effects of its use and the cost of its use, making it more likely for ship operators to perform the task." Ultimately, the incentive of saving money also helps save the environment from unnecessary greenhouse gas emissions.

HullWiper's recognition in the Environmental Leader Product and Project Awards is the eighth major industry accolade for GAC EnvironHull. Managing Director Simon Doran welcomed the honour: "This Award adds to our growing collection of accolades and it is once again thanks to our colleagues who have maintained faith and support as we lead the way in ROV hull cleaning, as well as our industry peers who have recognized the benefits of HullWiper. This honour gives us an even greater incentive to continue our hard work and Research & Development to make hull cleaning safer and more environmentally friendly, whilst also extending the life of a vessel's coating system."

HullWiper has been approved for use at ports in the Middle East, Europe and Asia, and more than 550 hull cleaning operations have been conducted to date.

DELIVERING A HIGHER STANDARD



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"K" Line takes delivery of 'Forestal Gaia' woodchip carrier

Kawasaki Kisen Kaisha, Ltd., Tokyo, ("K" Line) has announced the delivery of *Forestal Gaia*, a woodchip carrier from Tsuneishi Factory of Tsuneishi Shipbuilding Co., Ltd., Japan. Delivery took place on 24 May this year.

Forestal Gaia is in dedicated service to Nippon Paper Industries Co., Ltd. for carrying woodchips for paper materials. She sailed on 24 May for Dung Quat Port, Vietnam as her maiden voyage.

She inherited this traditional and unique vessel name from a predecessor which was also engaged in long-time service to Nippon Paper Industries Co., Ltd. in the past.

Forestal Gaia is equipped with the latest environmentally friendly, safety-oriented features.

"K" Line is committed to continue offering its customers high-quality transport services in line with the company's corporate policy.

VESSEL DETAILS

LOA:	199.90m
Depth:	22.85m
Beam:	32.20m
DWT:	about 49,200mt
Hold/hatch:	6/6
Hold capacity:	about 3,600,000ft^3

NORDEN streamlines Dry Cargo Department

To service its customers even better, NORDEN's Dry Cargo Department has been organized into smaller, more specialized teams with increased agility and authority.

"The aim of the new set-up is to become even better at servicing our customers. We will simplify and amplify and empower throughout our organization. With our strategy Focus & Simplicity as our starting point, we are making processes more efficient and transparent and putting business authority at the frontline, where our many motivated people meet the customers and the market," says Head of the Dry Cargo Department Christian Vinther Christensen.

Benefits of the new set-up include among other things the following for NORDEN's customers:

- improved response time to customers and market;
- increased market knowledge and customer insights making NORDEN's customer service more relevant and authentic;
- with the spirit of a start-up in the scale of a giant, NORDEN will think big and act small in accommodating customers' needs be it globally or regionally;
- increased competitiveness through increased activity in the short-term market, making NORDEN able to serve more customers for their spot requirements;
- an even more passionate interest in its customers' business and needs; and
- a dedicated ambition to grow with its cargo customers through commercial innovation.

Focusing on efficiency and the environment

marine paints and coatings

Applying the right hull coating for efficient operations

In this current depressed market, with supply continuing to outstrip demand and driving down freight rates, ship operators are seeking sustainable solutions for more efficient operations, *writes Andreas Glud, Hempel Group Segment Manager, Marine, Dry Dock.*. Only around 80–85% of the world's fleet is currently being utilized, so reducing fuel costs remains a top priority. Efficient and well-maintained ships will enjoy lower operating costs and retain market value.

Simultaneously lowering the environmental footprint of a vessel has become important to ship operators, both as a moral obligation but also to adhere to stricter environmental regulations worldwide. Over the past few years there has been an industry drive to reduce the GHG emission levels of shipping. Significantly, the International Maritime Organization (IMO) recently took the decision to implement a global sulphur limit of 0.5% by 2020, and shipping companies are strategically researching and implementing more efficient solutions for their long-term operations.

One easy decision

Looking specifically at the dry cargo sector, one of the easiest and most inexpensive ways for more efficient operations and reduced fuel costs is to invest in a high-performance hull coating. Innovative modern coatings technology now delivers advanced

protection against fouling to reduce hull drag which optimizes fuel use and reduces CO_2 and other associated emissions.

Interestingly the best of today's fouling defence coatings are so effective that they are able to deliver a 6% fuel saving compared with the best conventional antifoulings over the entire service interval.

In 2013, Hempel launched the ground-breaking fouling defence coating, Hempaguard. It's the only hull coating on the market to combine the low surface friction of silicone with efficient fouling-preventing biocides in a single coat, delivering significant fuel savings compared with best-in-class anti-foulings. Hempaguard has been very well received by dry cargo ship operators as it retains its effectiveness during idle periods (of up to 120 days) as well as when switching between slow and normal steaming giving operators unrivalled flexibility over their fleet utilization, providing a competitive advantage in this difficult market.

Maximizing efficiency in the shipyard

But there are further ways to maximize efficiency and this can be achieved through faster and easier application during dry docking. Modern coatings are quick and easy to apply which minimizes labour costs for the shipyard and also allows the vessel to return to service more quickly. Compared with previous generations of silicone coatings, Hempaguard can be applied in a single coat and is faster drying which allows for shorter re-coat intervals, speeding up the entire process.

Better environmental choices

Despite the current depressed dry freight market, ship operators should never let efficiency take precedence over safety or environmental concerns. Self-polishing coating systems were introduced in the 1970s, which later generations integrated the antifoulant tributyltin (TBT) but these caused deformities in shellfish and a bioaccumulation of tin was detected in fish and other sea-life leading to the ban of TBT use in 2001.

Since then the focus has been on developing fouling control solutions that are kinder to the environment such as those that contain lower Volatile Organic Compounds (VOCs). Hempaguard for example releases 95% less biocide than traditional anti-foulings to deliver enhanced environmental performance.

Coating solutions such as Hempaguard offer the dry cargo sector efficiencies that extend beyond the ship operator. At Hempel, the company understands the need for flexible and efficient products for its customers which is why it continues to invest heavily in R&D to push the boundaries of the coatings industry.

Hempaguard®

Hempaguard is recommended for any type of vessel with any trading pattern as well as during extended idle periods. We believe that nothing compares with the Hempaguard fouling defence system.

hempaguard.hempel.com

Enhancing dry bulk coatings through the 'Digital Voyage'

Michael Hindmarsh, Business Development Manager at AkzoNobel's Marine Coatings Business, the supplier of International® coatings, discusses the importance of coating choices for the dry bulk sector, and how AkzoNobel is using the latest digital technology to help the sector make smarter decisions.

The year 2017 continues to be one of challenges for shipping. The industry is under pressure to further rationalize operations, while new regulations like the Ballast Water Management Convention, the 2020 Global Sulphur Cap, and EU MRV (Monitoring, Reporting and Verification) Regulation, are squeezing profit margins, and increasing the impetus on owners, operators and charterers to reduce emissions. More than ever, the industry needs smart solutions that will save them money, while reducing their impact on the environment.

At AkzoNobel, the company understands these challenges and gears all the research and development that goes into creating its products and services towards providing solutions that help to alleviate these pressures. The dry bulk market, like any other segment, can benefit from the full range of fouling control products, and the range from AkzoNobel has been used with success across this segment to meet different challenges.

It is essential to understand how the operating profiles of vessels in the dry bulk segment affect coatings selection and ultimate performance. Dry bulk vessels operate at comparatively low speeds and hence low fuel consumption. This means the influence of hull coatings on a vessels performance can be different on a dry bulk carrier in comparison to, for example, a container vessel, which operates at a much higher speed with increased fuel consumption.

Bulk carrier vessels may spend time at anchor waiting for access to ports, which may result in longer static periods. Coating selection is critical as certain products types can perform better under these conditions. In addition to this, if the vessels are idle for extended periods and underwater cleaning is deemed to be necessary, then the effectiveness of this and the potential damage to the coating may depend on what coating type has been specified. Scheme lifetime of the coating selection is another important factor. Some bulk carriers are dry docked every two-and-a-half to three years, as opposed to the more standard five years, so they often specify products that are designed for 36 months' performance. Finally, bulk carriers often suffer from grounding damage, or frequent anchor chain or tug damage; again, the choice of the coating scheme needs to take this into consideration.

Bearing these factors in mind, it's clear that dry bulk carriers have a specific set of needs. It is therefore vital that owners make choices based on accurate data, and use the full range of tools available to them to understand the effects that different coatings will have, and optimize the purchases they make. This will ensure that a full economic and environmental assessment can be made for the right choice of fouling control, and on-board maintenance. AkzoNobel uses a variety of tools to help owners and operators make these choices throughout the purchase and maintenance cycle, in what is referred to as the 'Digital Voyage'.

AkzoNobel believes that it is important to engage with customers in all segments to give a transparent assessment of which coating is the most suitable. Using tools such as Intertrac Vision, AkzoNobel can give a full assessment based on a vessel trading route and can make an accurate prediction of performance for each coating choice option. AkzoNobel's Intertrac Vision consultants are specially trained to educate customers on the different factors that affect coatings performance, and how to select accordingly. They will also importantly take into consideration the health of the dry bulk sector as this will also have an implication for the fouling control selections. Intertrac Perform, currently launched as a pilot initiative, will further enhance the value of this tool by providing visualization and validation of the performance predictions. By analysing power and speed profiles in accordance with the ISO 19030 standard, users will be able to identify whether coatings are performing optimally, and whether extra maintenance or service may be necessary.

The Intertrac range was also recently bolstered by Intertrac OBM, an online tool which records, visualizes and analyses Seastores purchasing patterns by vessel and fleet. Empowered by big data and machine learning, Intertrac OBM provides greater transparency and control over OBM paint consumption and purchasing. With real-time access to purchasing data, Intertrac OBM has several features, including streamlining purchasing behaviour to avoid small quantity orders and additional administration costs. It also identifies alternative ports with greater savings potential, and optimizes product choice to provide cost savings. The total efficiencies generated from Intertrac OBM can reduce organic spend by up to 20%. The tool officially launched worldwide at Nor-Shipping on 30 May, 2017.

AkzoNobel partners with The Ocean Cleanup for largest clean-up in history

The complete removal of plastic from the world's oceans has moved a step closer after AkzoNobel joined forces with The Ocean Cleanup to help turn the tide on marine pollution.

The partnership involves AkzoNobel providing advanced, biocide-free coatings technology for all the devices and equipment used by The Ocean Cleanup for the next five years.

It represents a major contribution to the organization's landmark efforts to clear plastic from our oceans. The cleaning is due to begin in the Great Pacific Garbage Patch in the next 12 months.

"Ocean pollution is a serious global issue impacting our society and our planet's future," said AkzoNobel CEO Ton Büchner. "As a world leader in the marine coatings industry, we believe we can make a meaningful contribution to overcoming the problem by taking action and supporting the fantastic work being done by The Ocean Cleanup."

The most high profile use of the company's coatings will be on the specially designed floating clean-up system which will collect the waste plastic. These biocide-free Intersleek products are already being used to help make the shipping industry more sustainable by reducing fuel consumption, cutting emissions and lowering the costs of operation.

"It is wonderful to add another big name to our growing list of supporters," said Boyan Slat, CEO and founder of The Ocean Cleanup. "Working together with a true global force in sustainable coatings technology will ensure that our systems remain protected, even under the most extreme conditions. Another benefit of the partnership is team AkzoNobel's involvement in the Volvo Ocean Race, which will help increase global awareness of the urgent need to remove plastic from our aquatic ecosystems."

A perfect fit with AkzoNobel's Planet Possible sustainability strategy, the collaboration follows on from the recent announcement that the company will also be an official sustainability partner of the next Volvo Ocean Race. This will include organizing a series of Ocean Summits focused on bringing science, politics, government and sport together in an effort to act positively on the issue of marine litter.

Founded in 2013, The Ocean Cleanup aims to remove half the Great Pacific Garbage Patch in the space of just five years. It employs U-shaped screens to channel floating plastic to a central point. The concentrated plastic can then be extracted and shipped to shore for recycling into durable products.

AkzoNobel's International brand is the world leader in high performance marine and yacht coatings, as well as industrial protective coatings. The broad product range includes antifoulings, foul release systems, fire protection coatings and above and below the waterline yacht coatings and paints.

New standard will benefit responsible suppliers, owners and the environment

Industry hails new ISO 19030 standard for measurement of changes in hull and propeller performance as ship owners and operators work to improve their fleet and hull performance, and reduce their fuel bills and emissions.

The ISO 19030 standard development took three years and involved collaboration by 53 expert industry stakeholders. "The standard represents a huge leap forward for shipping and the environment, and it would not have been possible without an extraordinary spirit of collaboration and consensus," agrees Geir Axel Oftedahl, Director of Business Development at Jotun Marine and Volker Bertram, Senior Project Manager at DNV GL..

As part of its efforts to raise awareness of the benefits of the new ISO 19030 standard, Jotun has hosted, in association with DNV GL, a series of world-wide seminars. Aimed at ship operators who are working to improve fleet and hull performance, the seminars have attracted significant industry interest, with operators offering their views on the new standard and how it will affect the shipping industry.

Oftedahl explained, "The new standard has been developed to accurately measure changes in ship hull and propulsion performance, and comes in response to industry calls for a fair and unbiased method of assessing claims over efficiency gains."

Oftedahl firmly believes the standard will contribute hugely to reducing losses caused by poor hull and propulsion performance. "With this standard we can finally quantify how solutions, such as advanced antifouling coatings, can tackle that issue – providing accountability and a return on investment for ship owners, while detailing the enormous potential for cuts in fuel costs and emission reductions."

Transparency

The standard comes at a time when market pressure and regulatory developments are forcing the maritime industry to focus on energy efficiency and meeting environmental challenges. Many stakeholders believe the standard represents a milestone and offers much needed transparency for buyers and sellers of a wide range of fuel saving technologies and services.

"The standard contributes towards increasing transparency in the industry and will be a key driver for enhancing environmental performance and vessel efficiency," believes Mike Servos, Energy Manager at Tsakos Columbia Shipmanagement.

Gary Haworth, Technical Manager at Northern Marine, agreed there is a need for more transparency. "We have a lot of clients with different needs. We've got to have a baseline, a way to compare the different products. Some might not like the standard as it takes away the 'black box' but the industry needs transparency."

Rory Kennedy, Senior Analyst, Energy Management at Royal Caribbean Cruises, commented, "The ISO 19030 standard is a very good baseline for ship owners to begin tracking their hull performance, which can significantly increase efficiency and reduce emissions; sometimes upwards of 20%. The standard should evolve over time to encapsulate the latest innovations in data analytics in order to facilitate the industry as a whole and push improving efficiency even further."

"We welcome the standard as we clearly see the necessity of standardization as a way of measuring performance," said Willy Arne Reinertsen, Vice President Technical Support at Kristian Gerhard Jebsen. "From a ship owner's point of view, we are often faced with suppliers promising significant savings but it's not easy to assess the gains. Going forward, it will be important that the standard can be revised to take account of technology developments."

Anders Lenning, Fleet Performance Analyst at Wilh. Wilhelmsen believes the standard will "provide operators with a better understanding of hull performance over time, especially in relation to capturing trends. Building more awareness and knowledge will be important."

Measure and manage

"There's a common consensus that if you can measure it, you can manage it, and we support that thinking," commented Karl Wisløff, Technical Manager at Colorline. "One can use the standard to document performance but different parties will have a different focus on it."

Jonathan Dowsett, Senior Fleet Performance Manager at Eagle Bulk Shipping weighed in, observing, "It is positive that the standard is now in place. While we intend to use the standard on ships outfitted with the requisite performance systems, broad use of the standard at this stage is unlikely."

"ISO 19030 is an important step in the right direction and, although the fruit of tremendous efforts of world class experts over the past few years, it might not be perfect in its present form," said Johnny Eliasson, Hull Coating Engineer at Chevron Shipping. "It is vital that it is being used, implemented and tested and that the experience is constructively conveyed back to the working group as that can help upgrade the standard further."

Challenges

While there is wide consensus that performance monitoring is necessary and good, some see challenges. "The standard will be beneficial for the ship operators who are working to improve fleet and hull performance, cut their fuel bills and reduce emissions," said Vineet Bhalla, Engineer Superintendent, MOL Tankship Management (Europe). "However, drawbacks are that the current shipping industry market conditions, which I believe will not make this tool very popular, specially when everyone is looking to cut costs."

He also made reference to the "fragile container industry" emphasizing that "owners and managers are only looking to comply with the mandatory new regulations, which includes a very expensive BWMS. Another deciding factor will be the cost of installing the supporting tools in order to use this standard," he pointed out.

Increasing scrutiny

Commenting on the challenges, Stein Kjølberg, Global Sales Director of Jotun Hull Performance Solutions, said that in today's market, the focus on energy efficiency and sustainable shipping is of extreme importance, as is the increasing scrutiny of company operations. "If you want to stay ahead of the game, customers need to recognize you as a provider of proven and reliable services that can be measured and benefit the customer and their stakeholders. Irrespective of the cyclic nature of shipping, it is the only way forward for responsible suppliers, owners and the environment."

Regarding the new standard, Kjølberg believes the ISO 19030 "opens up a huge potential for owners/operators, management companies and charterers to establish performance levels for their vessels in a very inexpensive way."

Quick return on investment

He explained, "The basic approach in ISO 19030-3, is to use noon reports. This way, operators will at least have indications on overall performance. By investing in some additional equipment, the accuracy can be further improved. In order to comply with ISO 19030-2, which is based on high frequency data, a datalogger, torque meter and some cabling is required. Alternatively flowmeters can be used. Both torque meters and dataloggers are becoming very affordable these days, and the return on investment is easily captured within a month."

Kjølberg further argued that even though ISO 19030 is a voluntary standard, "the ability to make better decisions for the future, improve transparency and achieve better alignment between the various stakeholders would be of high value to everyone involved. We urge operators to start using the standard, and they do not need to 'go all in' from the beginning. We recommend that they start by improving the quality of the noon reports and get familiar with the methodology. As a next step, they can look into investing in the required equipment in order to comply with ISO 19030 and get more accurate performance data."

Recognizing the benefits

Jeppe Skovbakke Juhl, Manager of Maritime Technology & Regulations at BIMCO, firmly believes a transparent and trusted standard is needed and will grow in importance as ship owners and operators work to improve fleet and hull performance. "As they start to recognize the benefits that a standardized approach can bring, they will use it more and more. It may not happen immediately, but there is evidence that companies will start to use the standard."

"Change and transformation is now happening," said Tobias Groger, DNV GL's Senior Consultant for performance solutions. "IS0 19030 will help operators better measure their hull and propeller performance by moving from the traditional ways of monitoring into the new era of big data, which can be used to boost performance."

Volker Bertram, Senior Project Manager at DNV GL, made the point of emphasizing that initially, performance monitoring was intended to guide industry towards better business practice, specifically more energy efficient ships operation. "However, once proper systems and procedures are in place, performance monitoring may also solve assorted headaches with respect to the coming EU MRV (monitoring, reporting and verification) and IMO DCS (data collection system) requirements.

Summing up exchanges at the recent Hull Performance & Insight Conference (HullPIC), Geir Axel Oftedahl opined, "The new standard delivered on its stated aims, and represents a good starting point to offer a level playing. It will evolve as experience is gained and ideas are shared for further improvements. In the spirit of HullPIC, more discussion is needed to further advance hull and propeller performance management, and support the widespread adoption of ISO 19030."

Jotun wins marine coatings award

Jotun's work on developing the ISO 19030 coupled with its Hull Performance Solutions (HPS) has won a coveted marine coatings award for its innovation and dedication to improving coating performance and fuel efficiency.

Jotun Hull Performance Solutions (HPS) Sales Director Petter Korslund accepted the award on behalf of Jotun. At the European Marine Engineering Conference and Awards in April this year, Jotun HPS won the Marine Propulsion Marine Coatings Award. The event, organized by Riviera Maritime Media and supported by its Marine Propulsion magazine, took place in Amsterdam and was attended by about 150 shipping executives.

"We are delighted to have won the award. It reflects our high standard of innovation and performance, and our dedication to attending to customer and industry needs," says Stein Kjølberg, Global Sales Director of Jotun HPS.

Criteria for the award included contribution to coatings-related technology or research that has led to a substantial improvement in coating performance. Improvement in fuel efficiency and environmental emission reductions were also recognized. Special reference was made to Jotun's role in the development of the new ISO 19030 standard for hull and propeller performance, which took three years to develop and involved collaboration by 53 expert industry stakeholders.

Paul Gunton, executive editor at Riviera Maritime Media, managed the awards scheme and worked closely with the judges. He said it was Jotun's initiative in exploring the idea of establishing a standard way of measuring, assessing hull performance that especially impressed the judges. "They liked the way that Jotun worked with others to bring the standard to fruition in 2016 and how data from its established Hull Performance Solutions programme had been used to support its development," Gunton said.

"With this standard we can finally quantify how solutions, such as advanced antifouling coatings, can contribute hugely to reducing losses caused by poor hull and propulsion performance," says Geir Axel Oftedahl of Jotun Marine, who managed the project on behalf of ISO. "This is a huge leap forward for shipping and the environment, and it would not have been possible without an extraordinary spirit of collaboration and consensus."

The award is seen by many as an opportunity to recognize the leaders of the maritime industry, whose innovation and dedication to efficiency and sustainable shipping is helping to transform the industry.

Success for barnacle-repellent active agent

Average global water temperatures are increasing. Ships are increasingly idling in subtropical/tropical areas and there is a growing regulatory movement against the transportation of invasive species by ships. This trio of issues, whilst of great concern for shipyards and ship operators alike, are catalysing great innovation in the coatings sector as the pressure is on antifouling coatings to perform through changing environmental and market conditions.

The issue of biofouling is becoming an increasingly dominant issue on the agenda of some Asian shipyards, with newly launched vessels laying idle in warming waters, suffering the effects of intense fouling during the three- to four-month fitting out process. This bio-accumulation on the hull can impact both the newly applied coating and the ship performance of a newbuild leaving the yard. This means the shipyards are pushing for antifouling solutions that ensure static performance during outfitting. Parallel to ship owners demanding solutions that are suitable, and ensure good fouling prevention for vessels with differing activity levels, whether they be in constant active service, idle for long periods of time, or have the risk of fluctuating between the two when considering the future.

This future-proofing approach to coatings is exerting major pressure on the coatings suppliers, but in turn is prospering great innovation and new approaches to the development and trialling of fouling prevention technology.

In Sweden, biotech innovator I-Tech AB has dedicated over a decade of research and development work to these issues from its hub in Gothenburg. Its quest to find, develop and commercialize a fouling prevention technology alternative commenced in the wake the IMO decision to ban the application of tributyltin (TBT)-based paints on vessels as of 1 January 2003.

The resulting Selektope story about its biotech approach to fouling prevention is one that involves chemists, marine biologists and engineers and a 'Eureka' moment which yielded an organic, non-metal compound named Selektope. The efficacy of this active agent is 0.1% of an antifouling coating's overall constituency. This was an innovation milestone for the industry that was subsequently followed by 15 years of trials, and exhaustive regulatory hurdles for the technology.

What the I-Tech research team discovered was a unique pharmacological mode of action that works to prevent barnacle larvae from settling on ship structures by inducing hyperactivity in the barnacle larvae. Selektope's fouling prevention mechanism works by temporarily stimulating the cyprid larvae octopamine

receptor and activating swimming behaviour. The effects of this neurological scrambling are temporary, with the larvae returning to normal functional capacity shortly after encountering the Selektope present in the ship's hull coating.

With an efficacy that requires just 0.1% of Selektope in an antifouling coating's overall constituency, this technology offers the opportunity for coatings suppliers to use just a fraction of the active substance needed to achieve comparable performance if traditional copper-based biocides are used.

Due to the powerful effects demonstrated, this first-of-its-kind coatings technology rapidly caught the attention of coatings suppliers in the early stages of its research and development. To this date, the testing of Selektope-containing formulations by coatings suppliers continues to accelerate at a rapid pace, with a multitude of commercial products making their way to market launch.

The decisive green light for global market deployment was signalled in 2015 when I-Tech received EC recognition for Selektope, enabling it to be included in anti-fouling products sold throughout the EU as of 1 January that year, in accordance with the terms of the EU Biocidal Products Directive. This came in addition to the already secured approvals for the use of active agent in Japan, China and South Korea.

The year 2016 was a big one for the technology. The first commercial, Selektope-containing coating products for use on ocean going vessels (OGVs) were launched in the market in addition to ship trials being conducted over a period of twelve months which yielded incredible results.

A copper-free coating product with Selektope was applied to the side walls of the 2010-built, 46,067dwt IMO II chemical and products tanker vessel *Calypso* during its first five-year survey at the Singapore yard Sembcorp. Calypso operates in several regions including East and south Asia, the Americas and Australia, making it the perfect ship for the trials. For Laurin Maritime, the application of a Selektope-containing coating came after several years of strong performance trial results.

The hydrodynamic analysis of performance data during the trial was carried out by independent party Propulsion Dynamics. Operating rates were measured by fuel oil consumption and power output. After 12 months, the vessel was measured to have increased its resistance to fouling by a total of 3% compared with a benchmark new vessel that would see an increase in resistance of 5–10%.

The trial on the *Calypso* also showed that the increase in resistance came mainly from the propeller, 3%, with the remaining resistance being measured on the hull. Very encouraging results for this game-changing antifouling ingredient.

I-Tech chairman Stefan Sedersten, applies caution when celebrating the successful trial results, saying that: "Although there are very convincing long-term performance results from patches, more time is required to confirm the promising results from *Calypso* [and] there would need to be further trials of Selektope for longer periods so that the long-term effects of the biocide can be measured."

These ship trial results, taken from a year's operation on a single ship, outline a promising future for Selektope as a contender to combat not only hard fouling. It also offers a powerful solution to the issue of static performance in addition to supporting the reduction of invasive species transfer and emissions by contributing to cleaner, more efficient hulls.

About I-Tech

I-Tech is a Gothenburg-based bio-tech company with global reach, holding all IP and regulatory rights to the antifouling agent (biocide) Selektope (generic name, medetomidine).

I-Tech is not a marine coating supplier, but rather supplies a unique active agent for inclusion in marine coating products for ship hulls.

I-Tech supplies the active agent to paint companies, which then include it within their paint formulations. Selektope is marine coating technology-agnostic. It is flexible enough to boost the performance of copper-containing marine coatings, but is also powerful enough to replace copper. There are many coating products that contain Selektope that are on the market.

For I-Tech, year-on-year results are strengthening. All the major marine coatings manufacturers are testing formations containing Selektope as they innovate to address arising challenges faced by ship owners, particularly around the issue of static performance and hard fouling prevention under differing vessel activity and environmental conditions. There are marine coatings on the market that have harnessed the power of Selektope and are being deployed on ships with great results. More global product launches from further coatings manufacturers are expected during 2017 and going forward. I-Tech is welcoming huge interest in the technology, both from marine coatings manufacturers and ship owners.

In terms of growth, Asia is the region in which I-Tech has celebrated the greatest advances — Japan and Korea in particular.

DCi

The Selektope compound is very effective in combating barnacle build-up, and only a concentration of 0.1% w/w is needed in an antifouling coating.

Set in cement?

Self-unloading vessels fulfil a vital need in the transport of cement cargoes

Jay Venter

Royal Bodewes delivers new self discharging cement carrier

Situated along the Winschoterdiep in Hoogezand, the Netherlands, Bodewes Shipyards is a member of the Royal Bodewes Group. The shipyard was founded in 1812 and focuses on designing and building ships according to market demands, based on the principles of quality, reliability, flexibility and Dutch craftsmanship. The shipyard was awarded with the prefix 'Royal' in 2012.

The Royal Bodewes philosophy is that the market dictates the configuration of ships, not vice versa, unlike what happens at a lot of other shipyards.

Consequently, a changing market requires evolving designs to keep pace with the changes. Although based on a proven design, which is standardized in many cost-saving aspects, *Furuvik* is a good example of extensive customizing to meet the customer's requirements.

Royal Bodewes has developed and built a 6,100dwt self discharging cement carrier, named *Furuvik*. Contracted at the end of 2014, the *Furuvik* was handed over to her new owners in the final week of February 2017. She then left the Eemsharbour, on her way to Finland for her first commercial voyage.

She is a very economical and efficient vessel and with her Ice class 1A notation she is flexibly employable.

Maximum hold volume cement carriers

By Mario Rämmele and Juha Schirmer, IBAU HAMBURG, Germany

SUMMARY

Next to investment, operating costs and equipment reliability the space utilization of cargo holds has become the most important issue in the design of self-unloading cement carriers. IBAU HAMBURG is a solutions provider in this niche market with a number of unique design features that offer ship operators added value. In this article, we will look at this approach more closely.

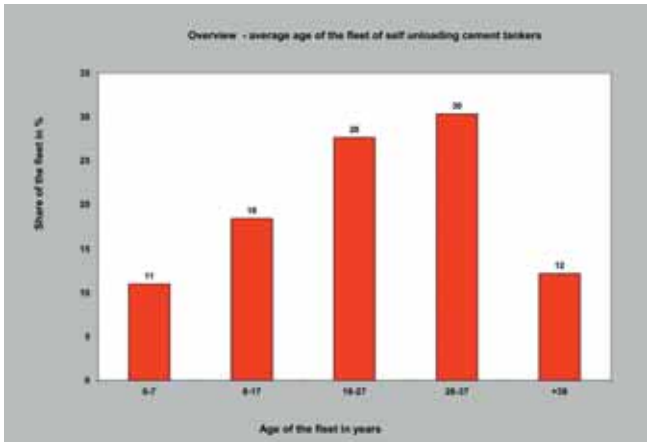

Fig. 1: Overview of the average age of the fleet of self-unloading cement tankers.

1. INTRODUCTION

In coastal logistics, self-unloading cement carriers of 3,000dwt to 15,000dwt are increasingly used by a number of cement producers and traders. There is a rapidly growing fleet of these cement tankers, which can enter almost all harbours because of their relatively small draught and which are either new builds or conversions of bulk carriers. *Figure 1* gives an overview of the age of used cement carriers, showing the necessity for modernization.

Today's self-unloaders need no-shore based ship-unloading equipment and have a bulk handling system, which offers decisive advantages to the transport of cement and other cementitious products (fly ash, ground granulated blast furnace slag, etc.) including:

- totally enclosed bulk handling system;
- no cargo contamination in the cargo holds;
- loading and unloading is unaffected by weather conditions;
- deliveries can be accurately planned and completed; and
- fully automated equipment for high loading/unloading rates.

The self-unloading cement carriers are equipped with pneumatic discharge systems in the cargo holds to fluidize the material and achieve a 99% discharge rate[1]. The fluidization system comprises inclined aeration panels (*Fig. 2*), which cover the complete hold bottom. Cement flows to the lowest points in the holds, where flow-control gates are installed, which allow an adjustable and computerized flow. In the IBAU concept, the flow-control gates are connected either to screw pumps or screw conveyors for transporting the cement from the ship hold to shore-based storage facilities. The IBAU Screw pumps facilitate large unloading capacities of up to 350tph (tonnes per hour) for each pump. Furthermore, the IBAU Pump makes it possible to reach long conveying lengths of up to 600m.

The IBAU Design favourably competes with other designs for material transport such as vacuum/pressure systems, screw conveyor/blow tank systems, pressure tank systems or drag chain/bucket elevator/pressure tank systems, which all require a significantly larger space than the IBAU System[2]. Space loss is a real issue for self-unloading cement carriers and the IBAU System provides better load/volume efficiency. Other issues are investment and operating costs. The IBAU Concept allows for easy assembly, less maintenance and wear and with the new Gdischarge system the power requirement for the discharge system is minimized.

Fig. 2: Hold compartment with aeration panels.

Fig. 3: IBAU Midship tunnel design.

Fig. 4: IBAU Screw pump for cement carriers.

Fig. 5: Ship-to-shore pipeline connection.

2. Maximum hold volume with midship tunnel system

With the midship tunnel system it is possible to achieve 85% or more active volume of the cargo hold. An active volume of 5,000m³ allows for the transport of 6,000 tonnes of cement. *Fig. 3* illustrates the midship tunnel design, which can be adapted to new builds as well as the conversion of existing bulkers. Such a conversion is possible in less than three months.

The unique midship tunnel goes along the complete length of the cargo hold or several cargo holds and divides the holds into a portside and starboard compartment. It is formed by a steel structure with a conical shape, which has a displacement function for the material to be discharged above the cone and creates enough space for the conveying equipment to be installed below the structure.

The midship tunnel eliminates the need for an additional bottom of deck hold for the discharge equipment in other designs. Specially designed and patented IBAU Screw pumps (*Fig. 4*) are used, which have a very low feed point and allow a lateral feed from the left and right hand side. Each pump transports cement at up to 350tph. For the transport of 1,200tph cement, a total of four IBAU Pumps are recommended. Ships with smaller capacities such as barges and where there are shorter conveying distances use screw conveyors instead of the screw pumps. When different material types such as cement and fly ash have to be transported one after another with the same self-unloading carrier, then it can be useful to install a vacuum cleaning systems for the final material.

IBAU Screw pumps allow high back pressures of up to 2.5 bar to overcome the pressure drop in long conveying lines, due to the material sealing plug effect which allows a pulsation-free feeding of cement into the conveying line without increasing wear. Therefore, IBAU developed and patented a new pump system called the Vpump with a very low feeding point. Another advantage is its space-saving design, allowing for more cargo hold space and the transport of larger quantities of material. The pumps are supplied with oil-free conveying air by screw compressors, which are located in on-deck houses, together with the filtering equipment. Flexible hoses (*Fig. 5*) for connection to the shore and ship pipes are carried by on-board cranes. The pipeline can be arranged in bends and can include horizontal and vertical sections to fit around existing equipment and constructions. Such a layout simplicity and flexibility is impossible with mechanical conveying lines, which have to run straight.

Loading lines on deck are equipped with motor actuated IBAU Two-way valves for directing the cement into the selected holds (*Fig. 6*). The compressed air is generated by on-board compressors. For highest reliability, cement loading and reclaiming for the self-unloader can be completely automated and computer controlled. During loading, cement is automatically directed into the holds, while the ship is balanced. Unloading rates can be pre-selected and the operator is given information about all the hold and discharge equipment at any time. IBAU HAMBURG can fit the computer systems with the latest state-of-the-art technology to ensure highest possible through-the-hold capacity with the shortest laytime for the ship in port.

3. Energy savings with the IBAU Gdischarge

The idea behind the Gdischarge was to optimize the energy requirement for cement silos with an advanced discharge control system using the latest roots blower technology. With a controlled limitation of the differential pressure for the panel aeration, the power used for the generation of compressed air can be significantly reduced so that positive displacement roots blowers can be used instead of conventional roots blowers or screw compressors[3]. Furthermore, due to less pressure loss and other energy saving operations, the energy consumption and energy costs are significantly reduced.

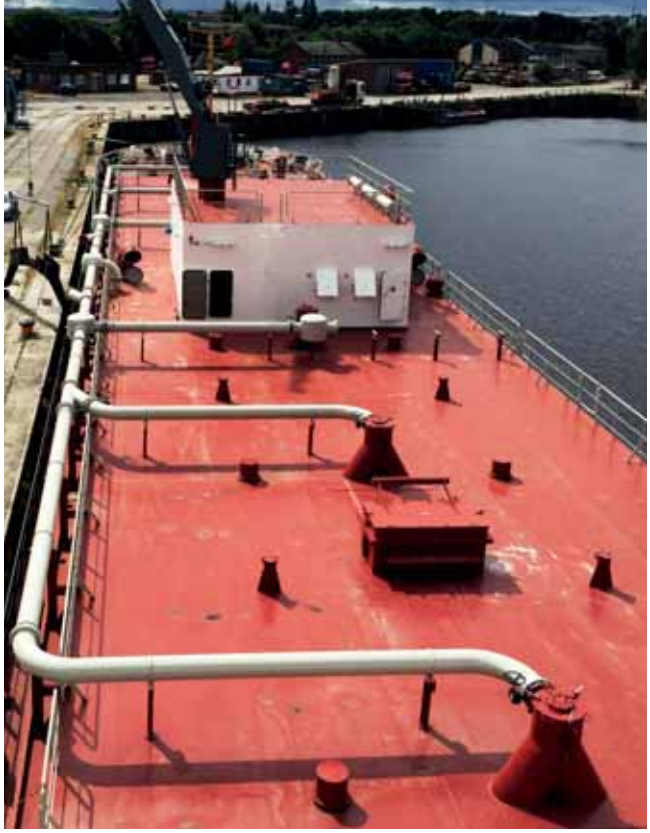

Fig. 6: Cement distribution to the holds.

A frequency converter for the blower and a pressure sensor at the blower form the control unit, which is linked to an intelligent controller (BB). This controller regulates the opening and closing of the flow-control gates for the hold discharge to achieve the appropriate discharge rate and adjusts the motor speed of the blower depending on the back pressure in the flow line. Target and actual pressure in the flow line regulate the air quantity of the blower. The blowers that are used by IBAU allow a very wide control range from 25% to 100%. The blowers are both robust and durable, very easy to service and maintain and provide complete oil-free aeration air.

The new patented Gdischarge system has been tested under real operational conditions at several cement producers[3]. The results of the Gdischarge are very impressive and lead to significant savings in power consumption, higher loading rates of downstream equipment and less wear in the system, when compared to conventional discharge systems. The excellent test results achieved at different silos with differing extraction rates can be achieved on any site. Due to its outstanding performance IBAU HAMBURG has now decided to use the Gdischarge as its standard for all new cement silos as well as self-unloading cement carriers.

4. Latest project examples

In the last year, IBAU Hamburg has equipped a total of six self-unloading cement carriers with ship sizes between 5,000dwt and 9,000dwt and the patented Gdischarge, some are purpose-built new cement carries and some are conversions of existing bulk carriers. Two case studies are:

4.1 *Furuvik*

The Royal Bodewes Shipyard in Hoogezand, the Netherlands, completed at the beginning of 2017 a newly built 6,145dwt self-unloading cement carrier (*Fig. 7*). The vessel will be sailing in the Baltic Sea mainly for Finnsementti which operates several cement and slag plants and terminals in Finland. The IBAU System comprises one ship loading system of 1000tph, four storage holds with aeration panels and 4 x 1,350t capacity as

Fig. 7: Furuvik.

Fig. 8: Cembrook.

Fig. 9: Cemgulf.

well as one IBAU Pump IB-D 350 for unloading cement with 350tph over a conveying distance of 260m.

4.2 *Cembrook* and *Cemgulf*, Hamburg, Germany

Brise Schifffahrts GmbH, a long-term customer of IBAU Hamburg has ordered two more self-unloading systems. One is the new built 5,000dwt cement tanker *Cembrook* (*Fig. 8*), which is equipped with a loading system of 500tph, four storage holds with 1,250 tonnes each and one IBAU Pump IB-D 350 for unloading 300tph of cement over 150m distance. The other system is for a conversion of the *Langballig* to the 5,000dwt *Cemgulf* (*Fig. 9*) and comprises a shiploading system for 300tph, 2 x 2,500 tonne storage holds as well as an IBAU Pump IB-D 350. Both cement tankers are operated by Baltrader, one of the leading international service providers for cement logistics.

5. Outlook

The market for coastal cement is growing. This has to do with the concentration of cement production capacities and the growing demand for cement terminals, which need to be close to urban centers with high demand to keep logistic costs low. Self-unloading cement carriers are seen as the most cost efficient and environmentally clean method of distributing cement. However, there are large differences in the self-unloading technology and design. The IBAU Midship tunnel design provides a number of advantages and is becoming more and more popular with new and repeat customers.

1 Rämmele, M.: Advanced Technology for Self-Unloading Cement Tankers. Presentation, Intercem Workshop, 8th-9th April 2002, Amsterdam, The Netherlands

2 Rämmele, M.: Development of Cement Shipping Systems. ICR, July 2005

3 Rämmele, M.; Urbach, I.: Making Cement Silos Even Better. Cement International 1-2017

Self-discharging ships supplied by Lion Bulk Handling

Lion Bulk Handling designs and engineers its own key components in the maritime and portside material handling market, adding other proven technologies from leading manufacturers to form its completely integrated systems.

With 50 years of design and engineering experience in equipping dry bulk ships, barges, supply vessels, harbour loading and unloading equipment, drilling rigs and floating terminals, Lion Bulk Handling's business brands Kintec, Carlsen, Ruyter Offshore and Bulk Academy offer a wide range of systems and products in the field of material handling, amongst others, its self-discharging ships:

Self-unloading ships have dry material handling systems, which allows unloading at any terminal with a minimum of receiving facilities.

Self-discharging ships

A self-discharging ships/cement carriers (SDCC) or self-unloader is defined as a vessel that has a bulk material handling system on-board which allows unloading at any terminal with a minimum of receiving facilities.

Lion Bulk Handling's Carlsen brand has been a supplier of SDCCs for more than a decade. Hundreds of ships and barges worldwide have been equipped with Carlsen loading and unloading systems.

To meet specific project requirement, the company supplies both pneumatic and mechanical loading and unloading systems. The unloading capacities may range from 100tph (tonnes per hour) for barge unloading systems to over 1,200tph for large self-unloading ships.

Several materials can be transported and conveyed with Carlsen material handling systems, including powders such as cement, fly ash, barite, bentonite, lime, gypsum, and so on. The dry bulk materials are transferred to the receiving storage facility in the most simple and cost-effective way possible.

The self-unloading ships or SDCC have dry material handling systems, which allows them to discharge independently of any harbour, side loading or unloading systems, and to keep control over loading and unloading logistics in any weather conditions.

Air slide loading systems

Air slide loading systems use a slope that harnesses gravity to convey fine powders. This is achieved by forcing air through a porous fabric for the required fluidization.

Screw conveyor loading system

The Carlsen screw conveyor (or auger) loading system features sufficient design versatility to accommodate loading applications in almost any industry.

Double re-loader system

The double re-loader system uses a set of vacuum pressure tanks to pneumatically discharge the vessel. It uses two tanks in tandem allows for a nearly continuous flow.

Screw conveyor system

The screw conveyor system for self-discharging cement carriers uses screw conveyors to transport dry material to and from the holds. The installation of compressors and pressure tanks also enables pneumatic discharging.

Screw pump system

The screw conveyor system for self-discharging cement carriers uses screw pumps to transport dry material from the holds to the silo. The installation of compressors and the screw pumps enables pneumatic discharging.

E3-Cargo System

The E3-Cargo System uses a minimum of components to transport cement to and from the cargo holds. This makes the system energy-saving, efficient and economical.

Other products and services

Lion Bulk Handling also supplies products to service the following applications: mini bulk terminals, ship-unloaders, shiploaders, offshore vessels, offshore rigs.

These products range from air compressors, air receivers to ball valves, loading bellows, vacuum pumps and many more.

SAAM acquires Guayaquil dry bulk facility

Chilean terminal operator SAAM has announced that it is to take over management of the Trinipuerto dry bulk terminal at the Ecuadorian port of Guayaquil. This installation is adjacent to Terminal Portuario Guayaquil (TPG), which SAAM has operated since 2006. The new concession will be for 40 years.

Although SAAM's existing facility mostly handles containers, the Trinipuerto installation will continue to handle dry bulk consignments, as well as acting as an overspill terminal for the port's burgeoning container traffic.

"We are making an important investment of $60 million in 2016-2017, which includes expanding the berthing line by 120 metres to 480 metres and incorporating modern new handling equipment," notes SAAM managing director Macario Valdés, who says that current business is expected to triple in the next few years.

He says that the company is evaluating new business opportunities in the region. "We are also leveraging our assets to strengthen our leadership position," he says, pointing out that the new investment will enable SAAM to consolidate the market it already has for imports and exports in the Port of Guayaquil and also expand this.

Trinipuerto, which is accessed via the Santa Ana channel, has 125 metres of berthing line, where alongside draught is 9.75 metres. It can accommodate vessels of up to 220 metres in LOA. The terminal itself covers an area of 58,146m^2 and has 14 grain storage warehouses capable of accommodating up to 140,000 tonnes. Two further 25,000-tonne grain warehouses are planned.

In terms of handling equipment, it has seven hydraulic grabs, two mechanical grabs, ten mini-loaders, one bucket payloader, four bagging machines (able to bag up to 50 tonnes per hour), one fertilizer mixer, one dozer and four portable conveyor belts (able to transport up to 150 tonnes per hour).

Barry Cross

Bunge consortium awarded Rio de Janeiro wheat terminal

In Brazil, the Maravilha consortium, which was put together by Bunge and M.Dias Branco, has been awarded the concession for the Terminal de Trigo (Wheat Terminal) in the Port of Rio de Janeiro. The concession is for 25 years, with the possibility for a renewal period of a further 25 years upon expiry.

In the tender organized by the National Waterways Transport Agency (Antaq), it put forward a bid of $360 million.

The RD J05 terminal involved covers an area of more than 13,000 square metres and was included in the private sector development initiative known as the 'Growth Project'. It will require investment of $28.5 million.

The total value of the contract is $158 million, with the concessionaire paying an additional $11,900 per month and $0.40 for every tonne moved.

BC

ADM to complete expansion in Santos and Pará

The Brazilian arm of Archer Daniels Midland (ADM) has recently completed expansion of its export capacity at its terminal in the Port of Santos. It can now despatch up to 8mt (million tonnes) of grain annually, which is an increase of one third, allowing the company to maintain its leading position in the agribulk sector.

The expansion, which cost $85.19 million, was undertaken two years after the port authority extended the existing concession by 20 years up to 2037, allowing ADM to handle grain, including soya and corn.

According to ports director Eduardo Rodrigues, recent changes to ports legislation, allowing concessions to be lengthened in exchange for more investment, had been welcomed. This has allowed maximum concessions to be extended from 25 years to 35 years, with extensions at the end of the expiry period to add up to a further 35 years. This applies to all concessions signed after 1993. In theory, ADM's concession could now be extended to 2067.

"For us, it would make sense to increase investment if our concession period were extended," he said.

Currently, ADM, in association with other operators, is looking into upgrades to rail connectivity to the terminal. However, Rodrigues stresses that this would require "considerable" levels of investment.

ADM is also close to finishing expansion of the company's capacity at its Barcarena terminal, in Pará, which is a joint venture with Glencore. This will eventually be able to handle 6mt, a four-fold increase over existing capacity.

BC

British Steel completes transfer of 50% stake in Redcar Bulk Terminal

On 1 June, British Steel announced it had completed the transfer of a 50% stake in Redcar Bulk Terminal from Tata Steel, agreed as part of the original purchase of the Long Products Europe business.

British Steel Executive Chairman Roland Junck said: "We are delighted to announce today that we've recently completed the transfer of a 50% stake in Redcar Bulk Terminal from Tata Steel. "As we look to grow our business and increase our footprint, the terminal is the perfect strategic fit for British Steel. Not only does it sit next to our Teesside Beam Mill, it enjoys a coveted position in the North East which offers a superb gateway into the industrial heartland of the UK and opens up additional new routes across the globe — not only for ourselves but businesses throughout the region.

"I would like to thank Tata Steel for their support during the transfer and praise the management and employees at Redcar Bulk Terminal who, during the last 12 months, have not only helped secure the future of the terminal but started laying firm foundations for its future success. They have led a major restructuring exercise, secured significant new contracts and increased the number of new products being handled. "Redcar Bulk Terminal is very much open for business and we have every confidence it will not only complement British Steel, but be the perfect partner for businesses throughout the north of England."

Sue Jeffrey, leader of Redcar & Cleveland Borough Council and Chair of the Shadow South Tees Development Corporation, said: "The Redcar Bulk Terminal is of strategic importance to the South Tees Site offering huge potential for businesses with international markets. Since the devastating closure of SSI (Sahaviriya Steel Industries), we have been working to secure a long-term future of this key asset and this helps stabilize the position. I look forward to working with British Steel to ensure the terminal plays a major role in the future of the whole South Tees Site." Ben Houchen, Tees Valley Mayor, said: "This commitment is good news for Tees Valley, it helps secure the future of the Terminal which is one of the deepest on the East Coast offering huge potential for international trade for the region.

"The Tees Valley has a healthy pipeline of interested parties looking to invest and this is one of many examples of the confidence in the area. I look forward to working closely with British Steel and other key partners to attract inward investment and bring new jobs to the Tees Valley."

Redcar Bulk Terminal facts

- British Steel owns a 50% stake in Redcar Bulk Terminal. The remainder of the shares are controlled by the Official Receiver following the collapse of SSI in October 2015;
- 79 people are employed at Redcar Bulk Terminal
- the terminal operates a 320 metre long quay which can accommodate vessels up to 17m draught;
- the wharf is HMRC-approved and enjoys direct access to the National Rail Network along with excellent road links to both the A19 and A1(M) roads;
- the terminal operates 24 hours a day all year round;
- key imports include petroleum coke, granulated slag and aggregates; and
- key exports include metallurgical coke and furnace ready scrap.

About British Steel

British Steel was formed in June 2016 when Greybull Capital acquired the Long Products business from Tata Steel. The business has a proud heritage and a passion to build stronger futures — the pace at which it is evolving means it is strengthening its long-term capability and building a sustainable future, as an industry leader, for British Steel, its employees, customers, suppliers and local communities.

British Steel produces more than 2.8 million tonnes of steel every year. From this, it manufactures more than 1,450 different specifications of steel that is rolled into wire rod, sections, special profiles, rail, bloom and slab. It employs 4,800 people (4,400 in the UK, 400 in France). The business is made up of the following facilities:

- Scunthorpe integrated steelworks;
- Teesside Beam Mill, Lackenby;
- Special Profiles, Skinningrove;
- Hayange Rail Mill, north east France;
- Immingham Bulk Terminal (port terminal);
- Engineering business, Workington;
- National design consultancy; and
- Associated distribution facilities in the UK and Ireland.

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FLSmidth wins operations contract in Morocco

FLSmidth has won a five-year contract from OCP S.A. (formerly known as Office Chérifien des Phosphates) to operate port equipment for handling phosphate, fertilizers, and sulphur. The port is located in Jorf Lasfar, El Jadida, 100km south of Casablanca, Morocco. The contract marks FLSmidth's first Operation & Maintenance contract in Morocco.

FLSmidth was awarded this contract as part of OCP's 'ecosystem' initiative to benefit the local economy by bringing external know-how and hiring local workforce. FLSmidth was selected as partner due to its extensive know-how and commitment to source locally.

"We are extremely proud to be awarded this contract. It marks the culmination of a long-standing partnership between OCP and FLSmidth and is an important step in materials handling equipment operations in Morocco. We will deliver productivity enhancement to OCP by operating and maintaining the equipment we have supplied ourselves," said Claus Christian Torbøl, Senior Vice President, FLSmidth Operation & Maintenance.

Cargo volume at Riga rises by 2.1% in first quarter

The Freeport of Riga in Latvia finished the first quarter of 2017 with a positive balance — cargo volume increased by 2.1% compared to the last year. The month of March was also successful; the handled cargo volume was 7.9% more than in March 2016. The increase is mainly attributed to the positive performance of coal, container and timber segments.

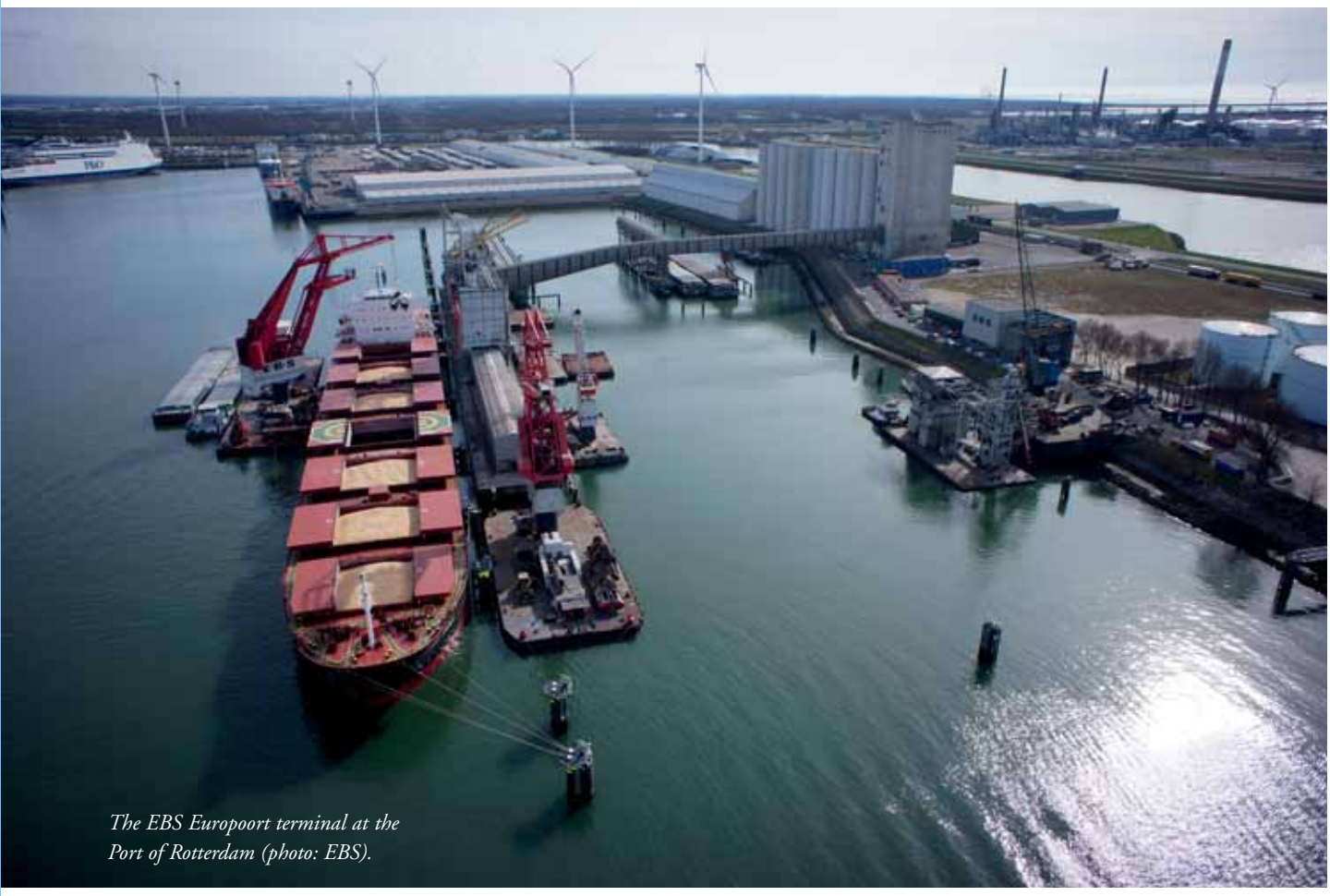
In the first quarter of 2017 3.5mt (million tonnes) of coal were transshipped via Riga port, which is 18.4% more than during the same period last year. According to the Freeport of Riga Authority's market analysis data Russia's coal export flow through the Baltic Sea ports has significantly increased compared to the first quarter of 2016. Thus, the coal cargo volume has increased at both Russia's own ports and coal terminals of Riga port and at Ventspils port. Dry bulk segment demonstrated the positive quarterly figures also in grain, wood chips, sawn timber and metal cargo groups. The total volume of metal group bulk cargo — ore, scrap metal and ferroalloys — has increased by 32.8% compared to 2016. Thanks to a significant increase in lumber and woodchip cargo groups, the timber volume transshipped by the port has reached 1mt and increased by 3.3% compared to the last year.

In the first quarter of the current year there have been very positive developments in general cargo segment, where the last year's cargo turnover index has been exceeded by 15.4%. The volume of containers, handled at the port, continues to grow. In the first three months of 2017, 110.4 thousand TEU of containers were transshipped through the port of Riga, which is the first quarter's highest figure over the Port of Riga history. Ro/ro cargo turnover of general cargo segment has also increased by 33.9%. This increase is largely attributed to the Tallink ferry line more intense activities during this year.

The Freeport of Riga is the largest port in Latvia. In 2016 cargo turnover volume amounted to 37mt. The Freeport of Riga is a multi-functional port with a modern and secure infrastructure, where high quality services are provided by 194 private enterprises operating at the port, including 35 stevedoring companies (cargo handling terminals).

The Freeport of Riga Authority (FPRA) manages the port, and is responsible for the maintenance of the port infrastructure, for the port security, as well as for the port land and infrastructure leasing to private enterprises. The FPRA is the executive body that implements the Freeport of Riga Board decisions on port development. The FPRA is not engaged in commercial activities at the port. Its revenues consist of port dues, collected from the vessels, as well as of land and berth rent fees. The FPRA operates in compliance with the principles of non-profit organizations — its financial resources are spent only for the port management and development.

Reflecting on the Netherlands



The EBS Europoort terminal at the Port of Rotterdam (photo: EBS).

Diversification is key to the future at the port of Rotterdam

The port of Rotterdam is diversifying as Europe's drive to reduce its carbon footprint poses challenges to traditional cargo flows, writes Michael King.

Europe's commitment to environmental protection and improvement is creating new challenges for traditional industries such as power and steel production. Nowhere is this more evident than at the port of Rotterdam, the continent's leading dry bulk hub in terms of volume.

The Dutch port handled a mammoth 461.2mt (mt) in 2016. However, even this mighty total represented a 1.1% slide in throughput compared to 2015. Of more significance, much of the decline came in the dry bulk sector as volumes handled at the port's slew of renowned stevedores dropped 6.2% year-on-year to 82.3mt. Iron ore and scrap volumes slumped 7.8% to 31.2mt, coal throughput fell 7.3% to 28.4mt and agribulk slipped 3.5% to 12.2mt.

Hugo du Mez, bulk and energy advisor at Port of Rotterdam Authority, told *DCI* the primary reason for the drop off in coal cargoes was the closure of coal-fired electric plants in the Netherlands and the increased usage of wind and solar power to replace coal-fired electricity production in Germany.

"The coal business is not looking so positive," admitted du Mez. "We had seen some increases in traffic in recent years, mainly because coal was cheaper than natural gas, so utilities were burning a lot of coal. But now coal-fired power plants are being closed in the Netherlands and Germany so there is less demand for steam coal and we don't see an increase in the coming years. Solar and wind power capacity is increasing both in Germany and the Netherlands so coal is being pushed out of the energy mix.

"It's also very uncertain what will happen to coal-fired plants in the Netherlands after the general elections earlier this year. We're not sure who will be in the new coalition government and what will be their policy towards coal-fired power generation. It could be bad news for coal plants."

Although two new power coal-fired power plants — Engie's Maasvlakte Power Plant and Uniper's MPP3 — opened in the Rotterdam port area last year using imported steam coal handled at EMO's bulk terminal, the port will see the closure of Uniper's MPP 1+2 coal-fired power units in July. "Although the two new power plants together have more capacity in

Going global

Apart from seeking out new cargo flows that help Europe meet its carbon emission goals, another means of revenue diversification for the Port of Rotterdam Authority (PoR) could come from its growing overseas interests.

PoR is developing a World Port Network to generate new business opportunities around the globe and promote trade with Rotterdam. By bringing the 'Port of Rotterdam' brand and port development and management expertise to growth markets, the Authority believes this will both help ports across the world to achieve their maximum potential as well as generate more cargo and revenue for Rotterdam.

Along with Rotterdam, the World Port Network currently consists of SOHAR Port and Freezone, a fast-growing port in the Middle East, and Porto Central, a greenfield development in Brazil.

The SOHAR Port and Freezone is one of the fastest growing ports in the world, located in an area of 2.000 hectares in the Sultanate of Oman in the Persian Gulf. The port has been operational since 2002 and is managed by Sohar Industrial Port Company (SIPC), a Joint Venture between the Port of Rotterdam and the Sultanate of Oman Government. "At this moment, SOHAR Port and Freezone houses world class companies, such as C. Steinweg and Hutchison Port Holdings, as well as one of the world's largest iron ore terminals, built for Vale's operations, the Brazilian mining giant," said Hugo du Mez, bulk and energy advisor at Port of Rotterdam Authority. "In the past five years, the cargo volumes of the SOHAR Port and Freezone have grown significantly from 11mt (million tonnes) to 45mt."

Porto Central is a major greenfield port development, located in proximity of the economic heartland of Brazil. This joint venture between the Brazilian company TPK Logística S/A and the Port of Rotterdam is designed to serve as the gateway to the states of Espírito Santo, Minas Gerais, Goiás, Mato Grosso, São Paulo and Rio de Janeiro. "This region accounts for 64% of Brazil's GDP and provides access to more than 100 million people," explained Du Mez. "Besides its proximity to the main agricultural regions and iron ore producing areas, Porto Central is located near Brazil's major offshore oil and gas fields, making it a perfect location for offshore support, oil handling and storage. Porto Central will be the landlord port manager, with best-in-class terminal operators, serving the industry with large scale, common user, 25-metre deep-water drafts, and port facilities for all cargo types. Construction is expected to start in 2017."

Earlier this year PoR also entered into a memorandum of understanding (MoU) with the state Government of Ceará, Brazil to study development opportunities in Pecém port. Similar to PoR's previous deals, after studying the potential for cooperation, the idea would be to agree a joint venture arrangement to develop the port which is located close the city of Fortalez and had throughput of 11mt last year, including substantial volumes of coal and iron ore.

"This may lead to a joint venture for the Industrial Port Complex of Pecém," said du Mez. "The Industrial Port Complex of Pecém is close to Fortaleza. It is a brownfield port with a throughput of 11mt in 2016, mainly coal, iron ore, containers and LNG.

"The two Brazilian PoR projects are independent and complimentary, as they serve distinct hinterlands 2,500km apart and will handle different commodities."

PoR has also signed a partnership agreement with Indonesian Port Corporation Pelindo I in Medan, North Sumatra, for the development of the new deep sea port Kuala Tanjung. PoR will conduct a feasibility study for the new port together with Pelindo I. "A project organization will be created for this purpose that will include a number of the Port Authority's employees locally and based in Rotterdam," said du Mez. "Depending on the outcome of this feasibility study, the Port Authority will assess whether it will enter into a joint venture with Pelindo I for the further realization of the port."

PoR will also continue to look for more international opportunities as part of its diversification strategy. "What we are doing is building our international network by looking at other regions that are, or were, doing well," he added. "If we can invest in ports, this will generate more cargo and some of this cargo, especially where our involvement leads to more Dutch investment in those ports, should generate more cargo into Rotterdam from those regions."

Megawatts than the old MPP1+2 plant, the net increase in coal demand is limited because the new plants are more efficient," explained du Mez.

He said iron ore imports last year were hit by the dumping of Chinese steel although, on the upside, there was an increase in the export of scrap to Turkey.

EBS plans to further expand its covered storage facilities at its Laurenshaven terminal where it will construct 126,000m³ of new storage sheds.

"Most of the iron ore we receive goes to the German steel industry and their blast furnaces," he adda. "But they have lots of competition from steel imported from China so there has been less demand for iron ore. Also some of our clients needed to realign and renovate their blast furnaces so that lost us some business."

Recently, EBS has taken a 60,000m³ storage shed into operation.

Iron ore and scrap volumes were up marginally by 0.5% in the first quarter compared to a year earlier, however, and du Mez was hopeful of further gains this year. "There should be no more blast furnace realigning this year so that's a positive," he said. "The steel industry is also performing better than last year. So this should mean more iron ore is needed as stocks will need to be replenished. There have also been anti-dumping regulations against China by the EU, although countries like Russia and Brazil are still dumping into the EU market. It all depends on steel prices and demand — if there is more demand, then that is good for European steel producers. But China still has steel production overcapacity so we expect more exports this year from them into Europe."

Rotterdam's ability to receive Valemax bulk carriers had long been a bonus while the Brazilian ore exporter Vale sought access to Chinese ports and instead deployed the huge vessels elsewhere including on routes to Europe. Now Vale has access to China for its ships and exports, the trade via Rotterdam has ceased, although it could return in the future. "It has all but disappeared — the ships were meant for Brazil to China trade so that's where they are deployed now," he said. "EECV did have plans for their dedicated terminal for ThyssenKrupp Steel Europe. The idea was to make it possible for Valemax ships to be received. Previously they had to go to EMO as EECV didn't have the capacity."

One stevedore that has continued to invest in new capacity is European Bulk Services (EBS) which operates two multipurpose bulk facilities at Rotterdam. EBS, a subsidiary of HES International, plans to further expand its covered storage facilities in the Port of Rotterdam at its Laurenshaven terminal where it will construct 126,000m³ of new storage sheds. An additional 40,000m³ of storage shed capacity is also due to be built at its Europoort terminal.

The investments are part of HES International's stated strategy of becoming a European market leader in the handling of bulk products that require covered storage, such as agricultural products, biomass and specialty minerals. "These new multi-purpose warehouses are in addition to the existing 525,000m³ and will bring the total covered storage capacity to 691,000m³," said a statement from EBS. "Recently, EBS has taken a 60,000m³ storage shed into operation which was announced in June 2016.

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Jan de Wit, Managing Director of European Bulk Services, said the new storage capacity would enable EBS to better serve the demand for quality storage in the Port of Rotterdam. "By investing into state of the art land-based facilities, we can reduce the cost for floating storage in barges while improving the quality and safety of operations," he added.

Last year Rotterdam also saw throughput losses in agricultural products as an excellent European harvest saw less imports from overseas. Agribulk throughput fell by 3.6% to 10.4mt although the category rebounded in the first quarter of this year when it rose 14% year-on-year to 2.9mt. However, it seems unlikely the Q1 performance will continue through the full year. "Last year and this year will probably be the same for volumes," predicted du Mez. "We have seen increases mainly because of soybeans coming from Brazil, but last year agribulk declined as there was more use of European corn and rapeseed. We will see the same this year because European crops are expected to be better this year."

Du Mez said the port of Rotterdam would continue to look to diversify in the future (see box) while also seeking to reduce the port's own carbon footprint. "The big thing here is true across Europe and it's about coming to terms with energy transition," he explained. "As a port we're very dependent on fossil fuels — coal, iron ore and oil. But to reduce our carbon footprint we need to reduce reliance on these cargoes and find more bio products, perhaps not this year but we'll to do this more and more in the future.

"But for dry bulk cargo it's not that positive because iron ore and coal are not renewable and carbon capture and storage solutions are very expensive. On the other hand, biomass and wood pellets can be burnt in power stations, and biomass can also have other applications like refining so we're looking into that kind of business. We're looking for new business and at the same time keeping the present business as positive as possible."

Geographical advantage for Cargill and its subsidiaries

Cargill

Active in the Netherlands since 1959, Cargill, an international provider of food, agriculture, financial and industrial products and services, has grown to include about 2,300 employees at 11 sites throughout the Netherlands, in Amsterdam, Bergen op Zoom, Deventer, Rotterdam, Botlek, Sas van Gent, Schiphol, Swalmen, Velddriel, Wormer and Zaandam.

Marcel Smits, Chief Financial Officer of Cargill, emphasized three aspects of the Dutch business climate as key factors in Cargill's continued investment in the Netherlands. Smits emphasized the geographical advantages that the Netherlands offers, which include a strategic position in Europe, access to nearly 500 million consumers and a superb logistics infrastructure.

"The Netherlands is a hub for agricultural innovation," said Smits. "The Dutch have a long history of agricultural productivity — there has always been a very progressive agricultural community."

Next, Smits emphasized the geographical advantages that the Netherlands offers, which include a strategic position in Europe, access to nearly 500 million consumers and a superb logistics infrastructure.

Cargill's Amsterdam office at Schiphol also greatly benefits from its proximity to the world-class airport. "It's very nice to be right next to Schiphol," said Smits. "We have a very international group of staff that needs to travel frequently for business."

Third, Smits spoke to a cultural element that Cargill and the Netherlands share, which includes an international business orientation, an emphasis on corporate social responsibility and sustainability, and a progressive yet pragmatic approach to business.

About Cargill

Cargill is an international producer and marketer of food, agricultural, financial and industrial products and services. Founded in 1865, it is a privately held company that employs 139,000 people in 65 countries.

The company helps customers succeed through collaboration and innovation, and its committed to sharing its global knowledge and experience to help meet economic, environmental and social challenges.

IGMA

Between 2015 and 2016, IGMA, a subsidiary of Cargill, renovated a 37,000m^2 site at the Port of Amsterdam, for the storage and transshipment of agricultural products such as soya, grains and maize, many of which are supplied to IGMA by various shipping companies, mainly from South America.

About IGMA

IGMA, is a leading bulk transshipment terminal at the Port of Amsterdam. It is active in the transhipment of bulk cargoes, ranging from agricultural products to coal and minerals.

BECO – providing buckets, grabs and attachments for more than 40 years

BECO is a company with a broad assortment of tipping trailers, attachments, modifications and grabs, that are used in various applications. BECO has manufacturing plants in Europe: in the Netherlands and Poland. For more than 40 years, BECO has been providing high-end, ready-to-run technological solutions. It offers solid, uncompromising products. Sturdy responses to taxing technical challenges: BECO shows its customers the effective way forward. Tailored products to provide customers with an effective and efficient solution.

For companies working in the sectors (related to) agriculture, (infra-) construction, excavation contracting, mining, dredging, and demolition/recycling BECO offers a complete assortment of:

- tipping trailers for agricultural and heavy duty use;
- **attachments:** wheel loader equipment, excavator equipment, demolition equipment, concrete skips (pouring silos); and
- **modifications:** excavator fronts and booms; and
- grabs

Buiscar, which is part of the Beco Group, manufactures terminal and industrial trailers.

A strong team of over 150 enthusiastic employees ensures the quality is always up to standard. Service standards are high at BECO. All products are developed and manufactured by using contemporary CAD/CAM systems, Inventor and Femap.

In order to be able to meet its customers' needs, BECO is continuously looking for improvement of its products and extension of its existing programme.

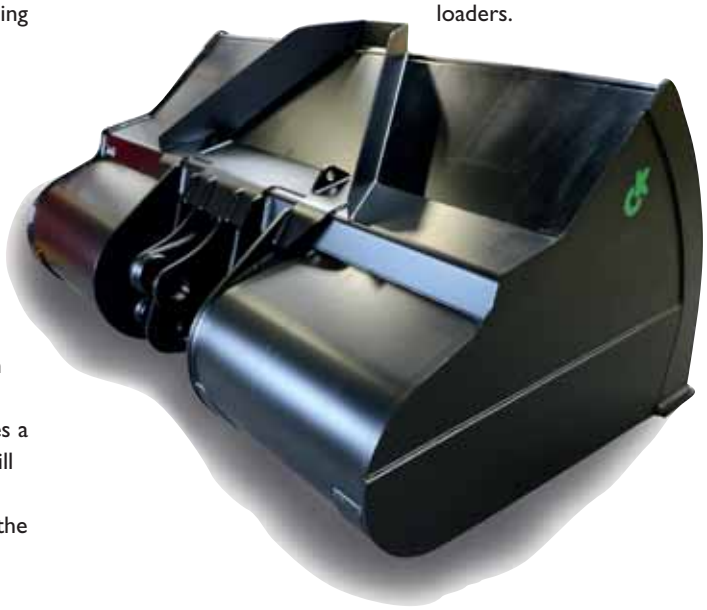
One of the latest developments is the co-operation with C. Klein BV (CK) in 2016, which concerns the manufacturing of heavy duty attachments in port equipment and Industry. One of CK brand's innovations is the so-called Bonus bucket, which has proved its success in heavy material handling.

This product, established in close collaboration with Dutch bulk terminals in coal and ore, has several advantages:

1) In the first place, the unique model of the buckets ensures a fast and steady load process. The bucket is designed to 'fill itself'.
2) Next to this, the weight of the load is brought closer to the machine than conventional buckets, enabling the operator to lift over 15% extra volume each cycle. So the use of these buckets leads to much lower handling cost per tonne using the same machine.

Like every BECO product, these buckets are made of high quality wear-resistant material, improving uptime and ensuring a long and reliable lifetime. These are values that are highly appreciated in port activities.

Recently, three 17m^3 coal buckets have been manufactured (picture on this page), equipped for being connected to Caterpillar 988K wheel loaders.



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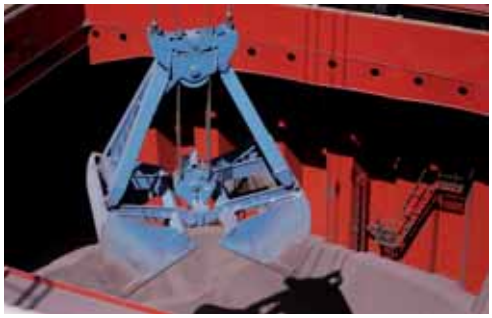

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HES International further expands covered storage capacity at subsidiary European Bulk Services (EBS)

Arist impression new shed EBS Laurenshaven terminal.

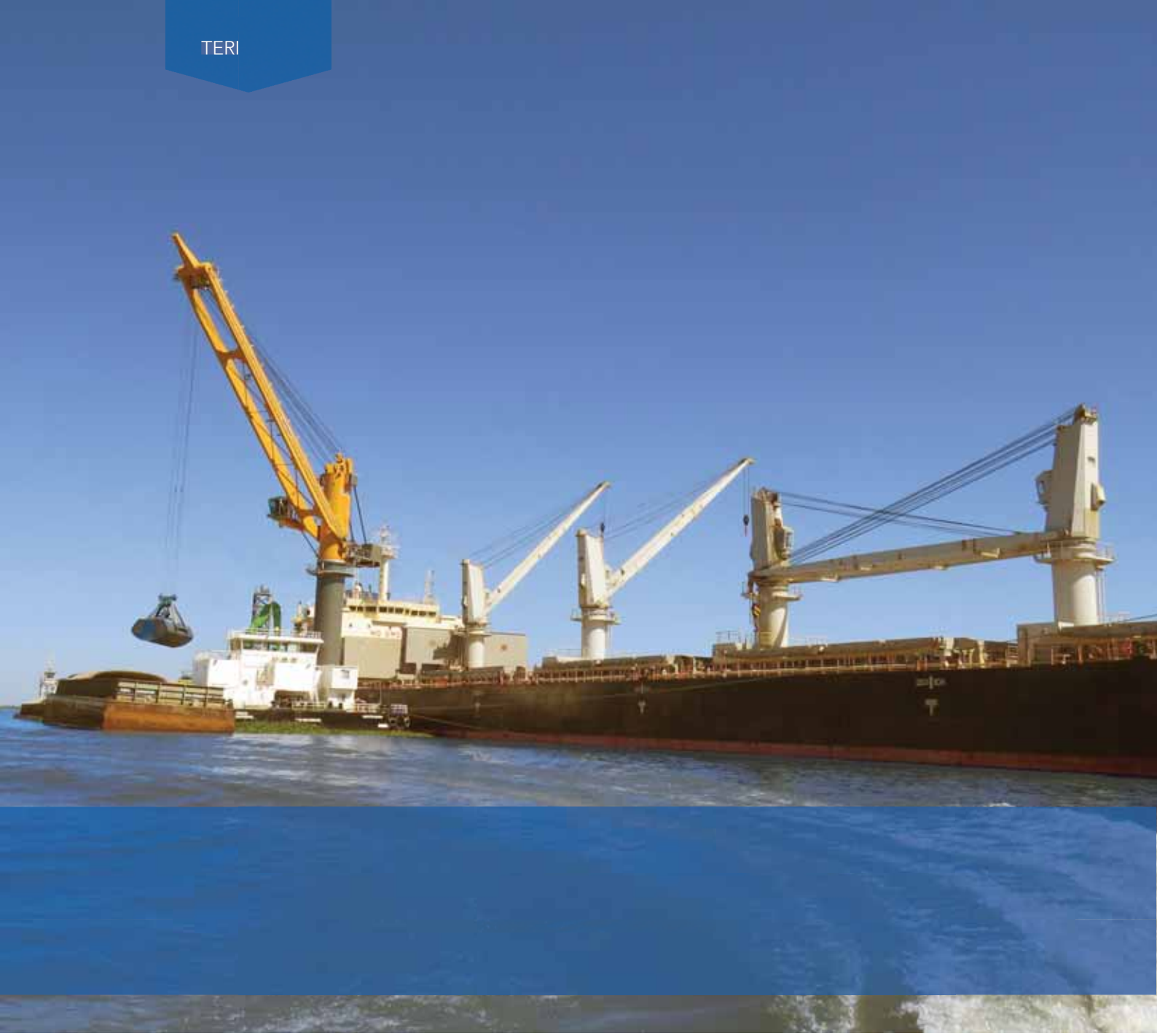
HES International announced at the beginning of May that its 100% subsidiary EBS will further expand its covered storage facilities in the Port of Rotterdam. At its Laurenshaven terminal, EBS will construct 126,000m³ of storage sheds. Furthermore, EBS plans to construct an additional 40,000m³ storage shed at its Europoort terminal. These new multi-purpose warehouses are in addition to the existing 525,000m³ and will bring the total covered storage capacity to 691,000m³. Recently, EBS has taken a 60,000m³ storage shed into operation which was announced in June 2016. This shed, supported by a long term contract, is suitable for various dry bulk products.

Jan de Wit, Managing Director of European Bulk Services: "The new storage capacity will enable us to better serve the demand for quality storage in the Port of Rotterdam. By investing in state-of-the-art land-based facilities, we can reduce the cost for floating storage in barges while improving the quality and safety of operations. The design will be carried out with a strong focus on flexibility for our customers and our stringed safety and environmental standards."

Jan Vogel, CEO of HES International adds: "Next to our ambitions to grow our liquid storage business, it is HES International's strategy to also become a European market leader in the handling of bulk products that require covered storage, such as agricultural products, biomass and (specialty) minerals. We are therefore very happy that so soon after our announcement for a new petroleum storage terminal at Rotterdam's Maasvlakte, we are now also making visible progress in expanding our warehouse facilities — a direction that we are also pursuing in other European ports."

Expansion Rotterdam Laurenshaven location

The new shed at the Laurenshaven will be equipped with a new crane and is amongst other suitable for minerals, biomass and agricultural products. Construction will occur on land previously used for storage of coal and is anticipated to commence immediately after receipt of the permit.



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Connectedness and the supply chain at the heart of business success

- figures show goods distributed from the Netherlands can reach Europe's 160 million consumers within 24 hours;
- the Netherlands ranks number one globally for its logistics and distribution network, according to the EU Transport Scoreboard and DHL's Annual Connectedness Index.

As businesses increasingly look to establish a foothold in the European market, the ability to have fast, efficient and reliable access to Europe's more than 500 million consumers is seen as critical to a business's commercial success.

Often a country's logistics and supply chain capability is central to the decision, with the Netherlands seen as a pioneer in supply chain innovation due to its first class infrastructure, skilled workforce and digital first approach.

On the topic, Netherlands Foreign Investment Agency (NFIA) Commissioner Jeroen Nijland said: "Many investors that come to the Netherlands come for the convenient access to the European market. The Netherlands is a leader thanks to factors like our excellent physical infrastructure, and our geographical location as the gateway to Europe.

"With hubs like the Port of Rotterdam and Schiphol airport, companies can access up to 160 million consumers within 24 hours of leaving Amsterdam or Rotterdam. We have more than 900 distribution centres of North American and Asian companies in our small country; and our port infrastructure has been ranked best in the world for a number of years by the World Economic Forum (WEF)".

The Netherlands has become a hub for specialist logistics services such as medical devices, agribusiness, fresh food and the retail fashion industry.

Talking on why they established their European distribution network in the Netherlands, luxury fashion brand Michael Kors CEO John Idol said: "The construction of our new distribution centre is an important and exciting step in the evolution of the brand. The scale and sophistication of the facility reflect our commitment to substantial growth across all channels of distribution in both Europe and the Middle East."

Other brands utilizing the Netherlands network include Adidas, Forever 21, Esprit, Timberland and Tommy Hilfiger, but fashion isn't the only industry realizing the benefits of the small but well-connected country.

Medical product company Hollister, which launched their European distribution centre in The Netherlands in 2008, now serves more than 90 countries worldwide from their hub in the Brabant region.

Talking on the move, Hollister's Logistics Services Manager for Europe Hugh Berry said: "We quickly discovered that Brabant is a logistical dream. The location between the major ports of Rotterdam and Antwerp is ideal. We have two international airports within close proximity, in Schiphol and Brussels, and we are relatively close to England, France and Germany, where our main clients are established."

About the Netherlands Foreign Investment Agency

An operational unit of the Dutch Ministry of Economic Affairs, the Netherlands Foreign Investment Agency (NFIA) connects users with a broad network of business partners, regional economic development organizations and government institutions to facilitate international expansion.

Throughout the years, NFIA has supported thousands of companies from all over the world, including Bombardier, Cisco, Danone, Fujifilm, Huawei, LG Electronics, SABIC, RWE and Tata Consulting Services, to successfully establish their businesses in the Netherlands.

Grain storage management

Safe storage of grain on farm is a key to successful farm management. Harvested grain may be put into bins at acceptable moisture contents, but is it safe? Knowing what temperature and moisture contents are acceptable is critical for the safe storage of grain. The following information sheds some light on what to watch for in stored grain during springtime conditions.

More stored grain goes out of condition or spoils due to lack of temperature control than for any other reason. It cannot be emphasized enough that the control of temperature in a bin of stored grain is absolutely critical. Geographically, Western Canada is located in a region which gets North America's most severe temperature fluctuations from one season to the next. The transition between these extremes can happen rapidly or gradually. It is during these transition periods when stored grain is most at risk, due to a phenomenon called moisture migration. Moisture migration happens inside the bin when the difference in grain temperature and the outside air is the most extreme.

Properly drying and cooling your grain in the fall is crucial to preserving grain quality through the fall and winter months, and well into spring. If your grain was harvested in hot, dry conditions in the fall you must be careful to bring down the temperature of that grain to enable safe storage through the winter. Likewise, if due to weather conditions at harvest time you have put your grain in the bin at a higher moisture content than usual, you must also be careful to lower the temperature to a point where you can safely store the grain over the winter.

As outside temperatures begin to rise in springtime, continued monitoring of your grain bins is required. In spring, as the ambient temperature of the air outside the bin starts to warm up the bin wall also tends to warm, which in turn warms the adjacent grain. This results in the air adjacent to the bin wall warming up as well. At this point the warm air creates a moisture current that moves upward through the grain on the outside perimeter of the grain mass. As this air warms up and starts to move, it will pick up moisture from the grain and carry it upwards. As the moistened air nears the top of the bin, it moves toward the centre where it encounters cooler grain temperatures. This air cools down and starts to move down the centre of the bin, laden with the moisture it accumulated during the upwards cycle along the bin wall. During this part of the cycle the air starts to release this moisture.

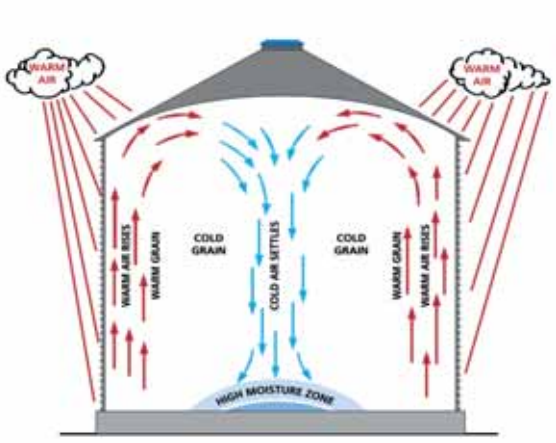
The lower the air migrates in the bin, the more moisture it will give off. Therefore, high moisture due the condensation of the cooling air occurs at the bottom centre of the bin. In and around this area of high moisture you can expect grain spoilage to occur. If grain is to be stored in the bin for any length of time it is important to bring the grain temperature up to a point that will prevent the abovementioned from happening. In order to accomplish this, it is recommended that the grain temperature in the bin be raised to approximately 10°C. It is important as a producer to consult safe storage charts that will show what length of time you can store the grain at its current moisture and temperature, continued monitoring is vital.

Aeration (warming) at this point should be accomplished with .05 to 0.1cfm/bus, and only until the desired, uniform temperature is achieved throughout the bin. From this point forward going into warmer temperatures, the temperature of the grain should be monitored throughout the summer and controlled accordingly using aeration.

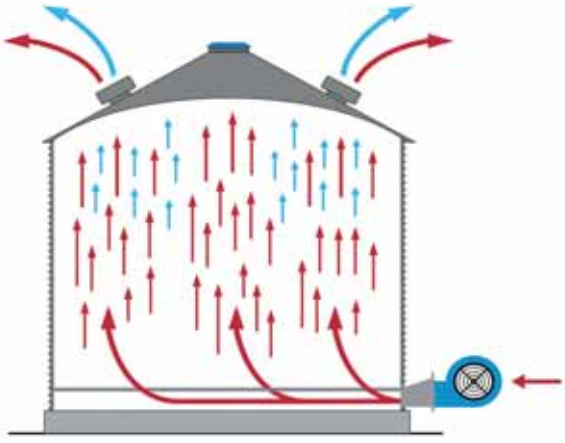
By utilizing aeration inside of grain bins you are able to minimize the effects of moisture migration and maximize the benefits of temperature control within your bin. The diagrams on the next page depict spring moisture migration in a bin without aeration versus when aeration is being utilized.

In circumstances where you need to warm grain to finish drying in springtime conditions, it is recommended that the temperature be brought back up gradually. This will help preserve the quality of the grain kernel. Once the grain has been successfully dried, it is recommended that when possible the grain be cooled again to be stored at approximately 10°C.

In summary, monitoring moisture and temperature conditions in your bin, and having an aeration system in place to help regulate these conditions, is key to successful grain storage.



Without an aeration system



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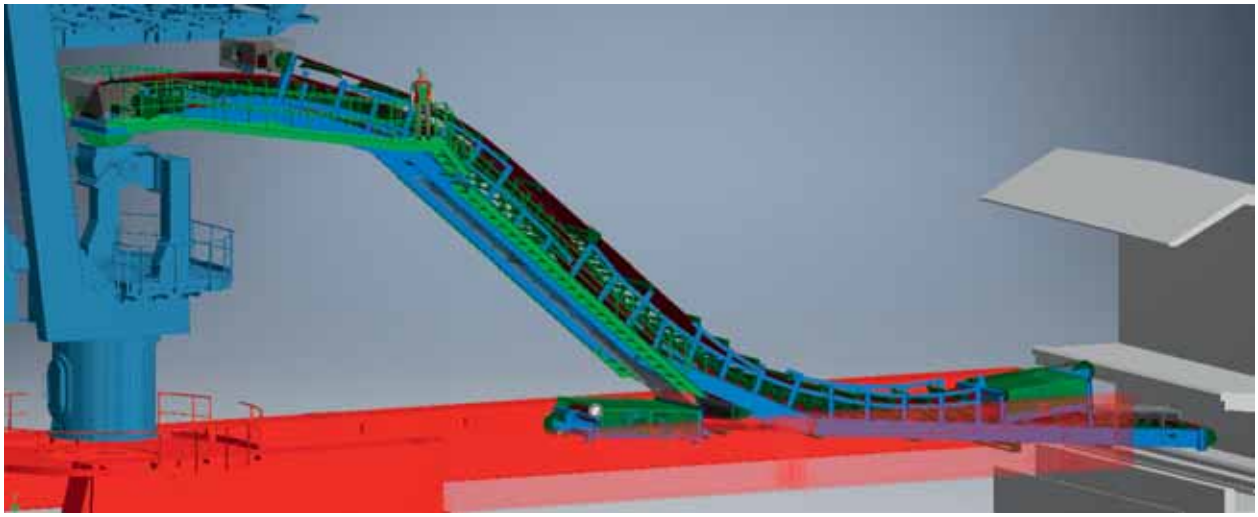
Dos Santos to supply high angle conveyor to Yara



Dos Santos International is pleased to announce they have been awarded a contract to provide their DSI Sandwich belt high angle conveyor to Bedeschi S.p.A. for the Yara Sluiskil project in the Netherlands. The DSI Sandwich high angle conveyor will transfer urea and amidas prills at a rate of 600tph (tonnes per hour) at a 40° angle. The material will be transferred from the tripped dock conveyor and elevated to the shiploader boom conveyor. The sandwich conveyor discharge is centred on the bridge rotation axis of the boom, allowing the boom to rotate freely. DSI was awarded supply of the sandwich conveyor by Bedeschi, which was awarded the contract for the supply of the shiploader for the plant in January 2017.

DSI Sandwich belt high angle conveyors take on many forms and offer many advantages. Each DSI sandwich conveyor uses two standard, smooth-surfaced conveyor belts, face-to-face, to gently but firmly contain the product being carried. This not only makes steep angles possible. It also offers a spillage free, environmentally sound operation because the material remains sealed between the carrying and cover belts. The use of all conventional conveyor parts ensures high availability and low maintenance costs, as well as interchangeability of components and fast delivery of replacement parts. A DSI sandwich conveyor is capable of higher conveying speeds and greater capacity than other high angle conveying methods. The availability of wide belts and hardware makes capacities greater than 10,000tph easily achieved with a DSI sandwich conveyor. High angles of 90° are typical, and lifts of 300m are easily accomplished.

Dos Santos International is an authority on sandwich belt high angle conveyors. It was founded and led by the inventor of the system, Joseph Dos Santos. DSI was founded on its extensive worldwide experience in sales, engineering, and construction of bulk materials handling systems and equipment. This has included major contributions that have expanded the range of bulk handling and transport solutions. Most notably advances in sandwich belt high angle conveyors have led to their worldwide utilization. The expertise of DSI spans a wide range of materials handling systems and equipment including high angle conveyors, high powered, high capacity, high lift slope conveyors and long overland conveyors utilizing the very latest technology.

Aerial view of the Yara Sluiskil factory in the Netherlands.

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Mid-air discharge point makes Tüfentobel RopeCon® even more flexible

Since 2005, a RopeCon® system has been transporting inert material along a long valley at the Tüfentobel landfill site in Switzerland, which will eventually be backfilled. The belt is being extended in several stages. It discharges the material onto a debris cone directly where it is to be used. Finally in March 2016, a novel concept was implemented which has further increased the flexibility of RopeCon®.

Relocating the discharge point of Tüfentobel RopeCon® in various stages was part of the overall project plan from the very beginning. The idea was to discharge the material at all times as close as possible to the location where it was to be used. The discharge point has been relocated several times already since the installation went into operation so as to keep transport routes as short as possible for both the trucks supplying the material and the bulldozers spreading it from the discharge point. In March 2016, a second RopeCon® was finally installed directly into the rope span of the original system, which now discharges the material onto the new conveyor at a height of approximately 20m. The new RopeCon® system can operate in both directions. This allows for two different discharge points which can be fed alternately. The second RopeCon® system requires no support structure of its own but rather uses the track ropes of the original system. The running wheels of the second installation return onto the track ropes on a set of rails. An important advantage of the extension concept was that even during the assembly work the original system could be kept in operation to the greatest extent possible. Long shut-down periods were thus avoided.

New, patented tool from RToddS Engineering prevents dropped fasteners

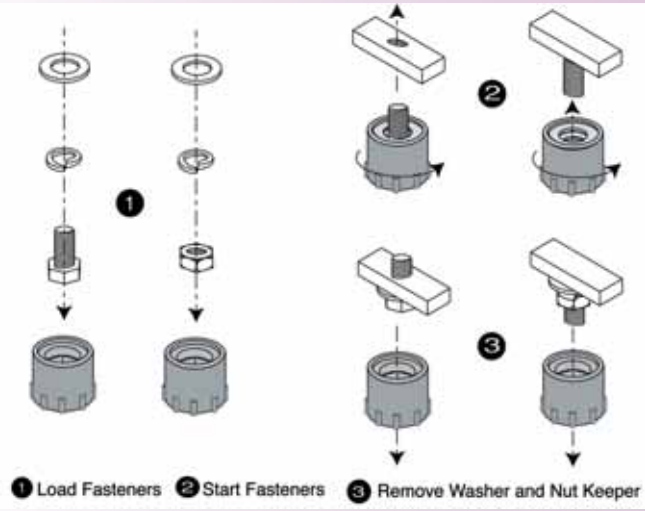

Figure 1: How it works.

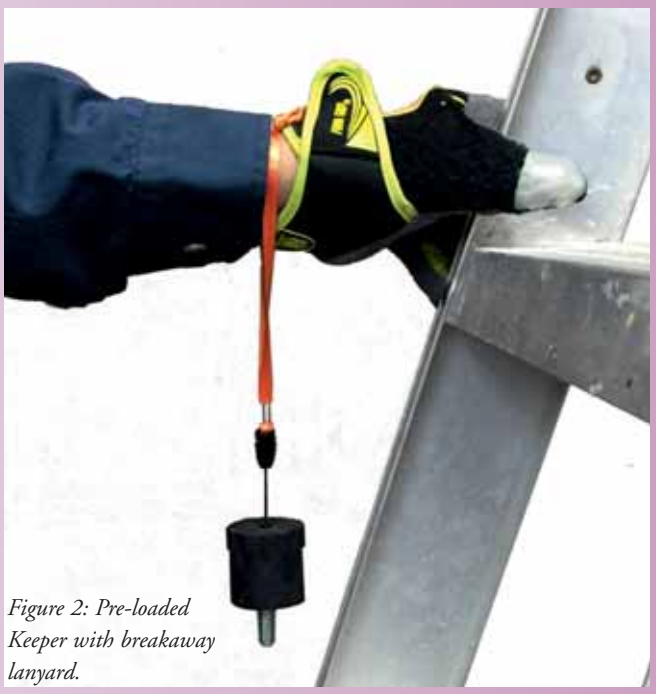

Figure 2: Pre-loaded Keeper with breakaway lanyard.

Figure 3: A typical Washer and Nut Keeper set.

There are more than 50,000 OSHA recordable incidents involving "struck by falling object" every year in the United States, according to the Bureau of Labor Statistics. That's one injury caused by a dropped object roughly every ten minutes.[1] Many of these injuries are significant and some fatal. The cost of accidents and the effects on the worker and company are well documented. But what about the cost of a near miss or an incident that damages expensive machinery? A new tool has been developed to help reduce incidents of dropped fasteners and the related costs.

RToddS Engineering's patented Washer and Nut Keeper is a flexible rubber socket set that can be loaded with any combination of nuts, bolts or washers of a given size. Once loaded, the fasteners stay in the flexible socket and in perfect alignment for starting them either in a tapped hole or on a stud or bolt. The flexible socket has ribs for easy gripping. Once the fastener stack is started, the Washer and Nut Keeper is removed and the final torqueing is done with conventional sockets or wrenches.

What is the cost of a dropped fastener? It could be as little as the time it takes a staff member to leave the work station and find the fastener or, if dropped in a machine such as a pump or into a process, it could be catastrophic — ruining expensive equipment or product quality. What if it was a speciality fastener and the last one on hand? Is it reasonable to risk final assembly while short one fastener, or is the project put on hold until a replacement is found?

While in most cases being struck by a falling fastener isn't lethal, OSHA calculates the direct cost to the employer for a lost time injury due to a contusion is over $27,000.[1] If a worker is just one floor up and drops a fastener, it can take several minutes to retrieve the fastener and try again. Even at a total labour cost of just $50 per hour, that's a couple dollars or more every time a nut, washer or bolt is dropped — assuming that it can be found again. When trying to start a combination of fasteners (for example, a nut, flat washer and lock washer) in hard-to-reach locations or at an awkward work position, it's not uncommon for there to be multiple mishaps before they are started without dropping or cross-threading them.

The Washer and Nut Keeper can help solve this age-old problem, improving safety and productivity at the same time. Fasteners can be preloaded into the flexible sockets before work is started to ensure the proper sequence of fasteners and speed up site work. Gloves can be worn while using the device to reduce lacerations, which OSHA estimates the direct cost to the employer at over $19,000[2] per incident.

Each socket is designed with a series of cavities that securely hold the fasteners in place, and the base has an opening for a standard ratchet drive or extension. A Washer and Nut Keeper can be designed for any combination of standard, metric or speciality fasteners. A typical set of eight is a ¼ inch through ¾ inch set for US Standard and SAE fasteners. The Washer and Nut Keeper is protected by US patent 9,416,810 B2 and foreign patents pending.

RToddS Engineering, LLC is located in Palm Coast Florida. The Principal, R. Todd Swinderman, is a licensed Professional Engineer in Florida and Illinois specializing in bulk material handling and conveyor safety training.

References:

1 The Sky Isn't Falling (And Your Tools Shouldn't Either) EHS Today, March 2016

2 https://www.osha.gov/dcsp/smallbusiness/safetypays/estimator.html

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SAMSON material feeder for UK biomass power plant

SAMSON Materials Handling growing in power

Aalborg Energie Technik (AET) has placed a repeat order for a Samson® material feeder for the reception of biomass at a power plant situated in Newark, UK. AET specializes in providing engineering solutions for biomass-fired boiler plants and had previously worked with SAMSON to provide material feeders for a project in Morayshire Scotland.

This new Samson® material feeder will receive MBM (meat and bone meal) direct from 28-tonne tipping trucks and 35-tonne front end loaders before conveying the material onto a screw conveyor for incineration.

The Samson® feeder includes a 3m-wide rubber belted apron design unit mounted on a steel structure and supported by double apron bars located at every pitch of the conveyor chain. To accommodate a variety of trucks and loaders the universal entry point includes a 4.5m wide flared entry section thus increasing the volume of the feeder entry and reducing vehicle alignment time.

The equipment belt is oil and fat resistant and fasteners and belt cleats are produced in stainless steel to increase the longevity of the equipment.

This feeder unit is designed to receive material at a variable rate up to 600m³/h and discharge material at a variable rate up to 180m³/h. The hopper itself provides a holding capacity of 60m³.

By eliminating the need for deep pits and underground hoppers Samson® material feeders are easily introduced into existing power plants. They can be configured to suit a variety of material characteristics through varying belt widths, body and entry designs, material feeder construction and discharge interface.

About the AUMUND Group

The AUMUND Group is active worldwide. The conveying and storage specialists has special expertise at its disposal when dealing with bulk materials. With their high degree of individuality, both its technically sophisticated as well as innovative products have contributed to the AUMUND Group today being a market leader in many areas of conveying and storage technology. The manufacturing companies AUMUND Fördertechnik GmbH (Rheinberg, Germany), SCHADE Lagertechnik GmbH (Gelsenkirchen, Germany), SAMSON Materials Handling Ltd. (Ely, England), as well as AUMUND Logistic GmbH (Rheinberg, Germany) are consolidated under the umbrella of the AUMUND Group. In conjunction with the headquarters of the manufacturing companies, the global conveying and storage technology business is spearheaded through a total of ten locations in Asia, Europe, North and South America and a total of five warehouses in Germany, USA, Brazil, Hong Kong and Saudi Arabia.

SAMSON to provide a material feeder for a biomass boiler plant (example).

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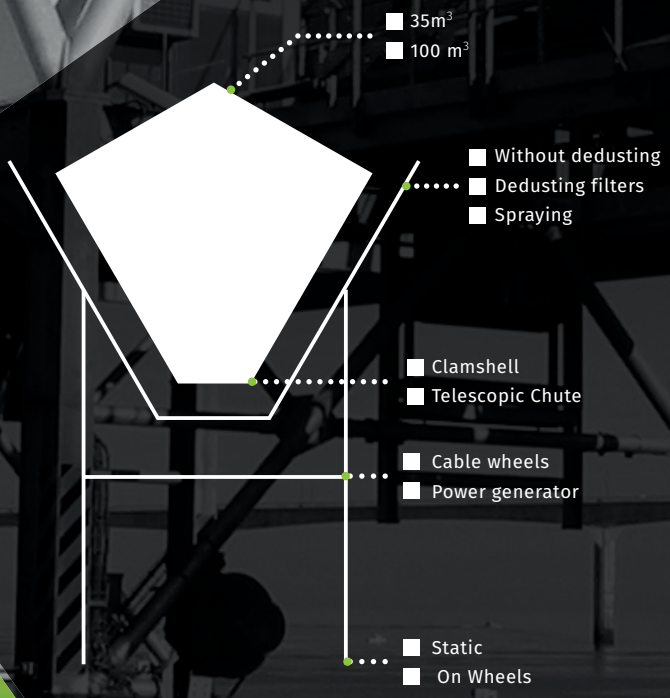
BULK UNDER CONTROL

MULTI-BULK HOPPER



GENERAL CHARACTERISTIC		
Util capacity	35m³	100m³
Feeding height without dedusting filters or with spraying	10m	11.5m
Feeding height with dedusting filters	12m	13m
Opening diameter without dedusting filters or with spraying	7m	9.5m
Opening diameter with dedusting filters	5.5m	8m

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Downflo® Evolution: shape defines performance

The shape defines the performance — the new Downflo® Evolution dust collectors (DFE) with 'triagonal' filters.

'Form follows function'. Until a few years ago, this design maxim was still of secondary importance in filtration technology. Bag filters and cartridge filters in a round shape were the standard in dust filtration. The housing and cleaning methods matched this traditional shape of filters. In recent years, however, there has been a clear trend towards application-oriented solutions which are based on innovative shaping.

The Downflo® oval dust collector with its oval cartridges was a crucial step in the improvement of filtration performance. This was followed by the PowerCore® technology, which set entirely new standards, both in shaping and in housing design, and allowed for a significantly more compact system design. These dust collectors are up to 70% more compact than conventional dust collectors. Changing the filter pack also takes only one fifth of the time in a direct comparison.

Increased cleaning performance with lower differential pressure, easy handling and maintenance.

These objectives are achieved with the latest development, the Downflo® Evolution (DFE) dust collector (Figure 1). The Donaldson engineers have developed a filter cartridge with the shape of a rounded triangle. These 'triagonal' cartridge filters with Ultra-Web® filter media guarantee perfect airflow conditions and the filter cakes can be removed effectively using the automatic, compressed air-saving 'MaxPulse' pulse cleaning system (Figure 2). In addition, the new design of the filter cartridges results in significantly more compact dimensions for the dust collector and thus in an outstanding output density. Depending on the application, the number of cartridges can be reduced by up to 40% in comparison with conventional cartridge filter systems. The ease of maintenance is just as convincing. The quick release fasteners on the 'triagonal' cartridge filters can be opened and closed at a touch without any tools.

The shape of the 'triagonal' cartridge filters guarantees perfect flow conditions and the filter cakes can be removed very efficiently using automatic, compressed air-saving 'MaxPulse' pulse cleaning system. (Images: Donaldson)

The Downflo® Evolution dust collector was developed in accordance with practical needs and permits use in a wide spectrum of applications, from the pharmaceutical and food industries through metal and glass processing to laser cutting technology for volumetric flows from 2,500 to 150,000m³/h.

The use of innovative materials and technologies and the implementation of a flow-optimized shape results in sustainable, economical solutions for a wide range of dedusting tasks and allow tailor-made customer solutions of the system's technology. The prerequisite for this is a comprehensive range of innovative filter media and filter elements — supported by a high-performance after-sales service.

Donaldson, with its headquarters in Bloomington, MN, USA, was founded in 1915. It is a globally leading company in the filtration industry with approximately 140 distribution companies, manufacturing plants and distribution centres in 44 countries. Donaldson's innovative filtration technologies help to improve people's living standards, improve the performance of machines and systems and protect the environment.

AUMUND conveyor for Iran pelleting plant

AUMUND pellet conveyor type KZB (example photo: AUMUND).

An AUMUND conveyor is to be installed in a new pellet production plant in the Province of Khorasan Razavi in Iran. It will be a 41.6-metre-long KZB 1400/350/6 with a capacity of 540tph (tonnes per hour) of iron ore pellets. This example of the excellent working partnership between AUMUND's head office in Germany and its subsidiary in China promises a growth in market share for the future of AUMUND Fördertechnik's Metallurgy Division, in Iran and elsewhere. After extensive negotiations, and with the support of AUMUND Fördertechnik, AUMUND China won an order for Iran from a Chinese Project Institute. A decisive factor in this success was the know-how and expertise of the specialists of the metallurgy department in Rheinberg, who knew exactly how to satisfy the specific requirements of the customer.

The conveyor is placed at the final stage of the pellet cooler. The product from the pellet cooler is transported by this 41.6-metre-long conveyor to ongoing storage and further processing. The advantages of the AUMUND conveyor were convincing. The standard solution at this point in the process was an inexpensive belt conveyor, but in practice the belts had to be changed too frequently because the material was too hot. This was not only costly but also caused production down times. The AUMUND pan conveyor is a very reliable solution with no temperature problems, much lower maintenance and no down times for belt changing.

Two factors led to the success of the order, on the one hand the team at AUMUND China's excellent customer relations, and on the other, the sophisticated technical solution, which together triumphed over the competition.

AUMUND is confident of being able to set the benchmark with this project for quality and know-how in the heavily contested Iranian market and thus increase its market share.

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Mantsinen appoints new CEO from within the family company

The CEO of Mantsinen Group Ltd Oy will change on 1 July 2017. The current CEO, Martti Toivanen, will retire and Mia Mantsinen (M.Sc. (Econ.), EMBA) has been chosen to be the new CEO.

Mia Mantsinen has a career spanning over a decade as CFO of the group, then as Sales and Marketing Director and finally as Vice President of the Material Handling Machinery unit.

"I have experienced a lot — and learned even more. It is a great honour and a great responsibility to become CEO of our family company. Mantsinen already has a history spanning over 50 years, during which we have continually improved the logistical efficiency of our clients," says Mia Mantsinen.

Expansion of operations

During recent years, the company has especially focused on the development and expansion of operations.

"The time has come to take time for myself and my family. It is a joy to leave this company in good shape for Mia. I am also glad we found a new CEO from within our family company in order to continue our work for the good of our clients and the company," states outgoing CEO Martti Toivanen.

New executives

Even though Mantsinen's business is about heavy industry and the flow of goods, it is still based on human knowledge and is very much a person to person business. In a family company everyone has a face: employees, partners, clients and owners alike.

One example of this is the selection of new executives from within the organization. Accordingly, Mia Mantsinen's post as VP, Material Handling Machinery unit will be handed over to Tapio Pirinen, currently an Area Sales Directors of the unit, at the beginning of July.

Mantsinen Group Ltd Oy

- Founded: 1974, entrepreneurs since 1963
- areas of business: Logistic services for industry, manufacturing and development of material handling cranes and their attachments
- head office and manufacturing plant: Ylämylly, Liperi, Finland. Subsidiaries in St. Petersburg, Russia and Gothenburg, Sweden.
- main shareholders: Veli Mantsinen, Mia Mantsinen, Mikko Mantsinen

The turnover of the group grew significantly in 2016 to €55.7 million. Further growth is expected following the launch of the world's largest hydraulic harbour crane, Mantsinen 300, which took place in March. Additionally, Mantsinen will begin logistic services at Metsä Fibre's new bioproduct mill in the summer of 2017. The economic upturn was already felt by Mantsinen during 2016 and the company believes that domestic and Russian sales as well as exports will develop positively in the near future. Mantsinen group currently has over 450 employees, 250 of them working in Finland.

Siwertell signs unloader order for new UK biomass-fuelled power plant

Siwertell, part of Cargotec, has signed a contract with the Spanish-Korean consortium, TR-Samsung, for a Siwertell ship unloader to support a new biomass-fuelled power plant under construction in Teesside, Middlesbrough, UK. The order was booked in Cargotec's fourth quarter 2016 order intake and the delivery will take place in October 2018.

"The plant's owners want to employ the best available technology for its new facility," says Peter Goransson, Siwertell Sales Manager & Senior Advisor. "It's crucial that the high-capacity fuel-delivery system overcomes the challenges of safety, cargo degradation and environmental impact."

Limited space meant that the structural footprint of the unloader had to be as small as possible, while the tail-end of the gantry had to be able to move aside to allow passage behind the equipment.

"We provided extensive references demonstrating our ability to meet the owner's high standards and design criteria," says Goransson. "Important factors included compliance with environmental directives, a proven track record of good reliability and safety, high through-vessel discharge rates and the ability to handle sensitive products with minimal cargo degradation or breakages."

Siwertell will deliver a tailor-made, rail-mounted ST 790-type D Siwertell unloader, which will be located close to the 299MW plant in Teesport. It will discharge wood pellets and wood chips to a matched Siwertell jetty conveyor with a movable transfer trolley, supplied as part of the contract. Siwertell biomass unloaders are also equipped with a new-generation safety system to mitigate the risks of fire and dust explosion when handling biomass in an enclosed space.

The unloader has a rated average capacity of 1,200tph (tonnes per hour) and a maximum rate of 1,320tph, designed to meet the plant's requirements of 16,000 tonnes/day. It is equipped with a dual truck loading system for continuous direct truck loading at a rate of 300tph. This is a redundancy feature that allows operations to continue if the shore conveying system fails.

Siwertell ship unloaders and loaders are based on unique screw conveyor technology, in combination with belt conveyors and aeroslides, and can handle virtually any dry bulk cargo, such as alumina, biomass, cement, coal, fertilizers, grain and sulphur. Siwertell's product portfolio includes ship unloaders, mobile ship unloaders, ship loaders, conveying systems and complete bulk terminal solutions, all of which are designed to ensure environmentally-friendly and efficient cargo operations.

Siwertell unloader.

The 'Smart Dino': a logical step in cost saving

Van Beek is working on making its Dino mobile bulk truck loader 'smart'. For example, company is equipping its Dino with sensors that will be able to predict when maintenance will be needed. In order to avoid reinventing the wheel, Van Beek is working with a partner which is sharing its vision and its extensive expertise in the area: UVS Industry Solutions. Eveliene Langedijk, director of UVS Industry Solutions, explains why it was decided to develop the Dino 4.0.

UVS Industry Solutions was set up in 2001 and focuses on cost-saving maintenance. An important part of this is to predict when maintenance is necessary — preventative maintenance. To date, this has mainly been done based on averages: a bearing is usually due for replacement after X number of operating hours. "A logical next step is to equip machines with sensors that measure when a bearing actually needs replacing," explains Langedijk.

Saving costs with Smart Industry

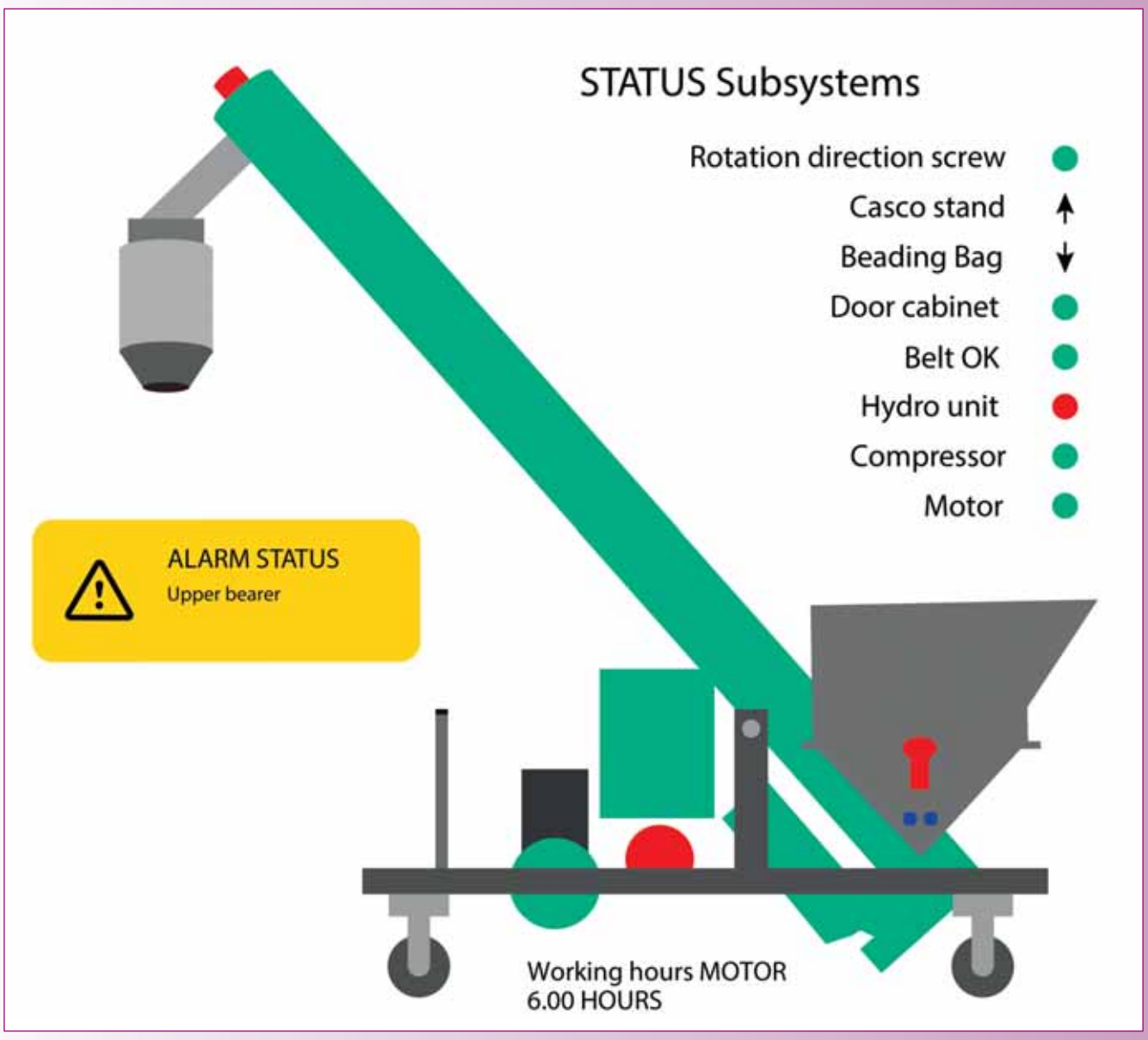
Many companies therefore found using Smart Industry was another way of making further cost savings. "Smart Industry is not an aim in itself. The ultimate aim is cost saving and a better service to the client and technology is a means of doing this," says Langedijk.

Ambassador

Because UVS Industry Solutions soon saw the endless possibilities in this area, the company became an ambassador for Smart Industry in the Netherlands. This means that the company is very busy with all sorts of innovative technological developments such as vision systems, GPS & RFID (radio-frequency identification) within production environments and industry. "The intention is to look further. What else is possible and how do we translate that into something our clients can use?" explains Langedijk.

Pioneers among themselves

At a meeting about Smart Industry Langedijk got into conversation with Van Beek-director Perry Verberne. "It seemed a good match. Van Beek has long been toying with the question of how to apply Smart Industry and we soon agreed that the Dino is



particularly suitable for this."

Smart Industry is customized too

For every machine, Langedijk takes a good look at where is the best place to fix the sensors. "This involves a lot of questions. What exactly do you want to measure? What is the machine used for and what forces are exerted on it? What is an optimum position for the sensors? They must not of course get in the way. You also want as few sensors as possible because otherwise the whole machine is full of them."

Better service and better Dino

This contributes to a better customer service and an improved Dino. Services are limited to a minimum because they will only be carried out when it is really necessary. Parts are replaced just in time.

Big data

At the same time, Van Beek can collect data on how the Dinos perform in the field and respond to this. Who knows, an electric motor may be able to tackle the transport of a particular product much more easily than was assumed to date, and future Dinos can be equipped for the same application with a lighter and cheaper motor. Perhaps it appears that operators turn off the Dino much too often with the emergency stop instead of in the normal way, then Van Beek can point this out to extend its life.

"This is also a process of awareness-raising," says Langedijk. "Meanwhile more and more companies understand that in the end this gives a machine that is better tailored to the wishes of the client."

BEUMER Group: digital transformation

Effectively shaping digital transformation

What will the world of logistics look like in a couple of years? Will drones with stock orders fly through storehouses, will robots deliver ordered goods to the final customer and will truck drivers activate 3D printers in their trailers to manufacture the order during transport?

Logistics is one of the industries where the influence of the digital transformation process is particularly strong. This is because digital logistics offers considerable potential when it comes to costs and speed. The smart integration of digital technologies can especially make intralogistics more efficient and environmentally safe.

The new BEUMER app enables users to keep an eye on the current status of the machines connected to their system using their mobile devices. (photo: BEUMER Group GmbH & Co. KG)

BEUMER Group takes an active part in shaping this change initiated by networking and digitalization. In addition to know-how in terms of digital technologies and processes, a major challenge is to plan and realize digital innovation together with the customer. On the one hand, potential brought by digital innovation is to be anticipated in the existing product portfolio. On the other hand, the focus of digital transformation is set on new business segments opening up for BEUMER Group.

The customer is at the centre of all development of digital business models. Close and iterative co-ordination with and involvement of the customer is therefore a key prerequisite for digital transformation. For BEUMER Group's customers, this creates sustainable value for tomorrow's logistics.

BEUMER Group is an international leader in the manufacture of intralogistics systems for conveying, loading, palletizing, packaging, sortation, and distribution. With 4,000 employees worldwide, BEUMER Group has annual sales of about €750 million. The BEUMER Group and its group companies and sales agencies provide their customers with high-quality system solutions and an extensive customer support network around the globe and across a wide range of industries, including bulk materials and piece goods, food/non-food, construction, mail order, post, and airport baggage handling.

Down and dirty with coal handling equipment

Louise Dodds-Ely

Sumitomo's bucketwheel CSU makes its mark on the coal market

Sumitomo Heavy Industries Material Handling Systems, which was founded in 1912, manufactures a wide range of material handling equipment for the handling of coal and other commodities. Its long history in the bulk handling industry started in 1919, when the first conveyer belt was installed at a Japanese copper refinery. Since that time, it has expanded its product range to include various kinds of stockyard machines, such as stackers, reclaimers and shiploaders, and it has been supplying products not only in Japan, but also exporting to countries such as China, Taiwan, Korea, Indonesia, Chile, and USA.

One of Sumitomo's most prominent products is the bucket elevator type continuous ship unloader, which is ideal for unloading coal. Its first machine was supplied in the late 1970s, and since then, over 80 units have been installed worldwide. Sumitomo's CSUs have satisfied many customers with their wide capacity range from 1,000tph (tonnes per hour) up to 3,500tph, and they have all been highly praised for their stable and efficient unloading performance. The remarkable efficiency of the CSU is made possible by some unique functions such as bucket elevator swing-out and catenary mode bottom clean-up. Further enhancement is possible by the addition of a variety of optional functions like coal leveller, water spray, etc. to meet user needs.

Sumitomo's customers enjoy dedicated after-sales services, which is not limited to the supply of spare parts and includes inspections and repairs leading to a lifetime support programme using stress analysis techniques to maintain the integrity of the machines. The programme is effective for CSUs more than 20 years old, where it can concentrate on specific parts of the CSU subject to wear, where by identifying such areas for replacement, will result in prolonging the service life of the CSU as a whole.

Sumitomo's recent orders include one 3,500tph CSU from a Japanese power plant this March, with another 3,500tph CSU now under fabrication, to be delivered this autumn to a Japanese steel mill. This machine will be dedicated to iron ore handling. The commissioning of two 2,200tph CSUs for a Taiwanese power plant is almost complete. Sumitomo is aiming to secure more orders from Asia, which it sees as a very active market.

KRÖGER grabs for coal handling

Environmentally friendly grabs are gaining ground in the bulk handling market.

Grabs from Kröger have been long established in almost all ports and harbours in Germany, whether on the coast — for example, in Hamburg, Brunsbüttel and Bremen — or in inland ports such as Duisburg, Düsseldorf, Cologne, Andernach and Ludwigshafen.

Kröger grabs are now spreading more widely throughout Europe — due in great part to their technical benefits — as well as the rest of the world, as recent orders from Asia and South America show.

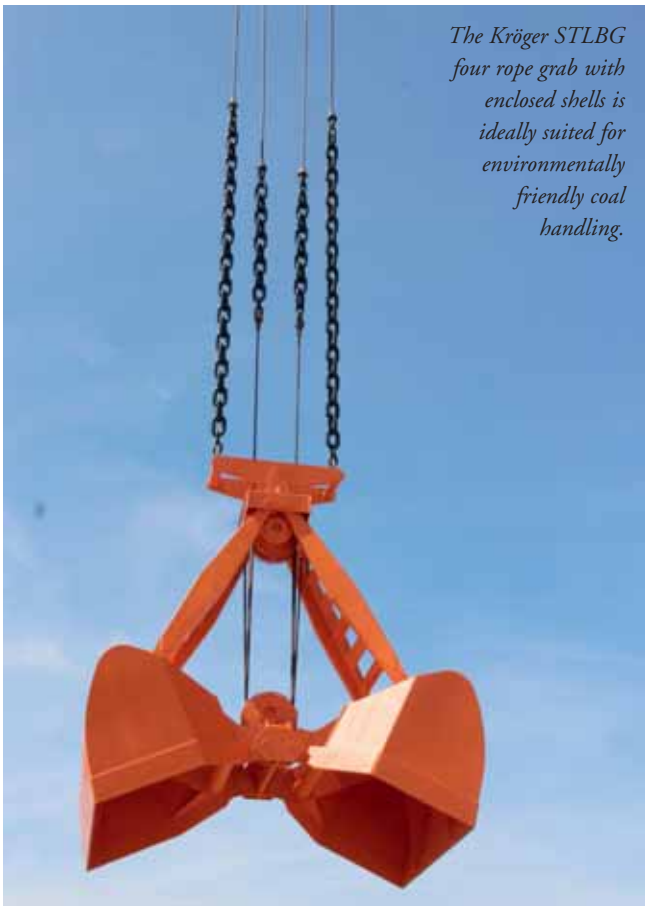
Weight-optimized configuration, achieved by special materials and an innovative design, provide an improved payload capacity when coal handling which enhances productivity. With the optional Kröger Zero-maintenance bearing system, there is no longer any need for time-consuming and annoying lubrication procedures, which additionally enhances the efficiency of the overall transshipment operation.

For port companies working in coal handling, it's becoming increasingly important to reduce emissions for environmental reasons and to satisfy legal requirements. Many handling companies are located in the vicinity of residential areas. As a result, it's ever-more vital to avoid environmental impacts such as dust formation and ground water pollution.

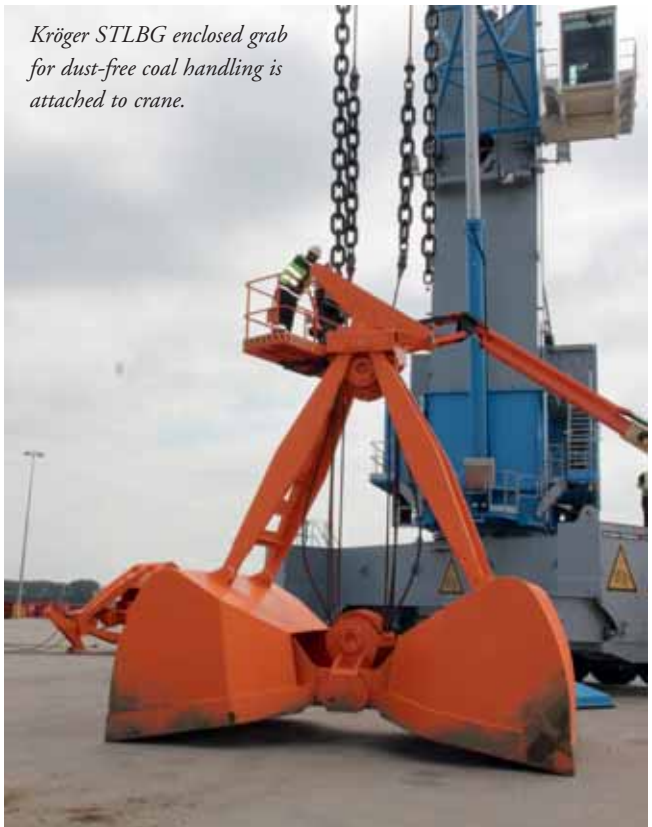
Rainer Buessing, director of sales and marketing at Kröger Greifertechnik, with extensive experience in loading and shipping practices, provides an overview of the necessary requirements on future-oriented, ecologically responsible coal loading grabs. "Open the grab jaws. Grab the bulk goods. Transship. Things are no longer that simple in harbours and ports," he says. "Today it implies: Grab the bulk goods. Do not lose any of it. Protect the environment."

What applies to free-flowing bulk goods is required more and more in coal handling, too. There are three main areas in a grab that need to work in an eco-friendly manner: the specifically raised grab jaws, the grab edges and the hinge bearings.

Starting with the eco-friendly grab jaws: while open grabs were absolutely normal in the past, today the winds occurring on the water and in the harbour compel the handling companies to protect their conical coal piles appropriately against material losses. Therefore the grab's jaws are raised above the angle of repose, which results to an enclosed configuration of the shells. It's the perfect solution to avoid blowing-off coal dust.



The Kröger STLBG four rope grab with enclosed shells is ideally suited for environmentally friendly coal handling.



Kröger STLBG enclosed grab for dust-free coal handling is attached to crane.

Second, matters become more complicated during the tight closing of the grab edges, as this requires higher effort in terms of structure and design so that the jaws are able to operate tightly even under extreme loads and continuous, long-term usage.

In 90% of cargoes being handled — such as coal — tight closing of the grab shells can be achieved by the use of double Pantanax round-bar steels, both on the bottom scrapers as well as the side blade. The jaws close tightly through the bedding in of both the linked round-bar steels until a watertight closure is reached and loss of material is avoided.

Third, the protection of the environment from oils, greases and lubricants which could squeeze out of the hinge bearings and fall of to ground or water is becoming increasingly important. This issue can be totally avoided with the use of the above mentioned Kröger Zero maintenance technology. Hence, undesirable follow-up costs are eliminated.

"So", Rainer Buessing sums up, "Kröger shows that grabs can meet both, economic and ecological requirements in coal handling operation."

Kröger Greifertechnik GmbH & Co. KG is a manufacturer of grabs based in Sonsbeck/Niederrhein in Germany. Its core products include rope, motor-hydraulics and hydraulic grabs. The target markets are, in particular, customers in the sectors of sand and gravel extraction, ports and general bulk handling as well as waste incinerator plants. End-users and distributors at home and abroad are among its customers.

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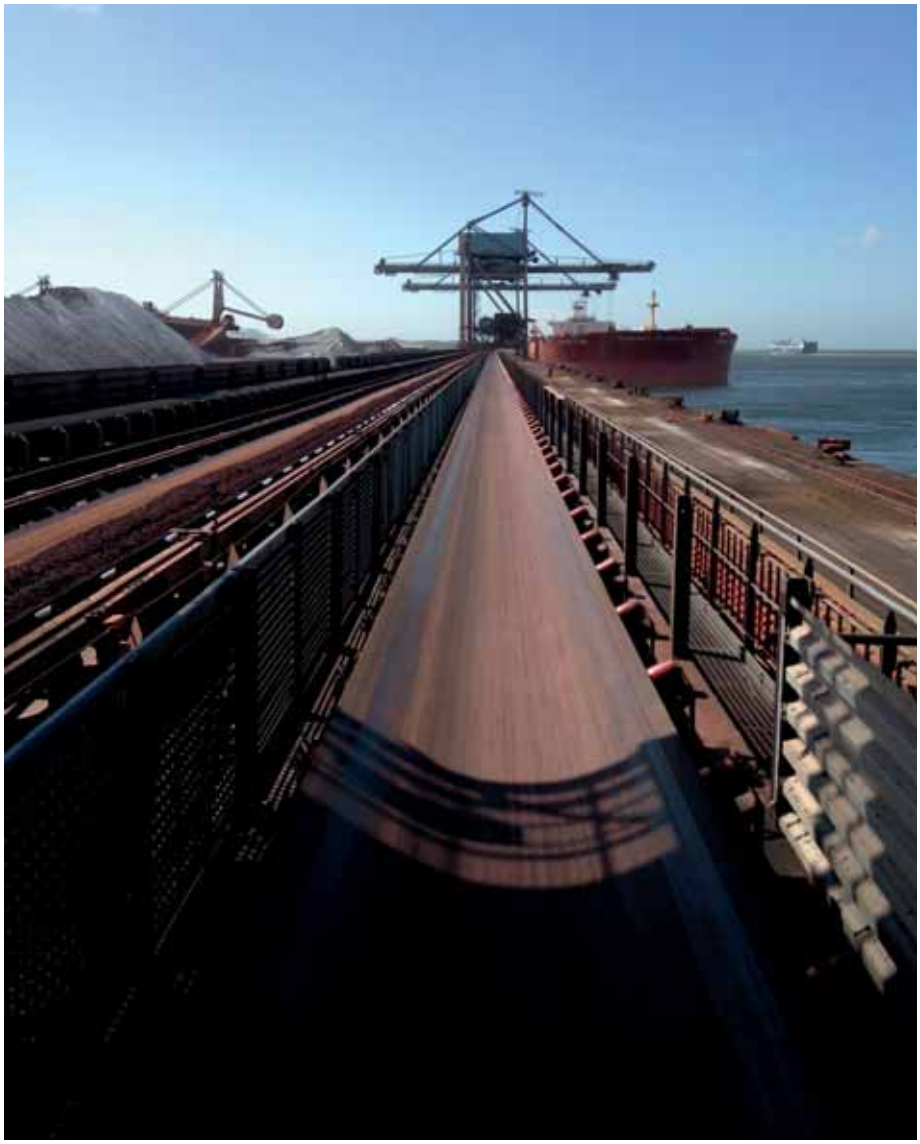
Progress in replacement of conveyor belts at coal terminal Rotterdam



N.M. Heilig BV is in the process of delivering new conveyor belt systems to one of Europe's largest and most modern bulk cargo transshipment facilities in Rotterdam, the Netherlands.

This terminal not only transships ores for the German steel producers located in the Rhine and Ruhr area, but also manages their largest stocks of raw materials.

In September 2015, N.M. Heilig BV received the order for the replacement of the conveyors at the quay side, as well as conveyor belts in the transshipment fields at the terminal. The order consists of conveyor belt systems with a length of 400m up to 1,300m, with capacities of 5,000tph (tonnes per hour). In total, 9km of conveyor belt systems have to be replaced with new systems at this terminal.

N.M. Heilig BV's extensive expertise in the design and manufacturing of conveyor systems contributed to the success of this project.

This project includes N.M. Heilig BV's Moveable Discharge Tripper, which create a more dynamic material handling system; this system that has the ability to discharge material to other conveyors which are positioned alongside the conveyor, or can continue transport of material to discharge at the head pulley.

Conveyors with a moveable head discharge system make it possible to select more than one discharge position of the conveyor. All conveyors are coated with a heavy duty preservation duplex system, which guarantees a long lifetime.

A particularly notable modern technique created in the design and installation of this project is the long conveyor belt systems in the coal transshipment field, which can operate in the original and the reverse direction — and an ultra-modern development is the inclusion of belt turnover systems. The belt turnover system turns the upper part of the belt downwards at the moment the belt gets to the head pulley of the conveyor system. At the moment the belt arrives back to the tail pulley, the belt is twisted again to the original upper part. This system prevents any risk of material leakage below the conveyor systems and meets safety requirements. This system is interesting at inaccessible areas such as bridges, tunnels or over-passes.

The first phase of this impressive project took place while the terminal remained in full operation, so it was essential to minimize downtime. N.M. Heilig worked efficiently and effectively from the date of the order, and was able to start on-site assembly of the first conveyor only six months after the order date. With a highly motivated large project team of N.M. Heilig BV's own engineers, mechanics and project managers this first phase has been completed. The next phases will take place from August this year, until all conveyor systems at the terminal have been replaced, which is scheduled to take place in 2021.

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Increasing efficiency of coal transshipment terminals

Mobile stackers from TTS LLC, Latvia.

Today, due to a range of economic reasons, coal terminals sometimes face a problem when they are not running at full capacity. One possible solution is reducing handling rates, which increases competition among stevedores who then have to find ways to expand their range and the quality of their services, increasing the efficiency of their work processes.

Latvian engineering and production company TTS has many years of experience in the manufacture of transshipping equipment for coal handling in seaports, production locations, process plants. Sometimes these are large complex turnkey terminal projects, often just separate equipment units for a particular task.

Below is a case study, which perfectly illustrates how small investments can significantly improve efficiency and offer the market a new quality service.

The customer involved in this project was a coal terminal in the port of Vysotsk, Russia. This company has been operating since 2004 and is engaged in the loading of Russian steam coal to vessels up to Panamax size for export to the countries of western and northern Europe. There are 680m of berthing line in the operation. In 2015, cargo turnover amounted to 5.68mt (million tonnes) of coal. The following coal handling systems are in use at the terminal:

Mobile stackers – final production stage.

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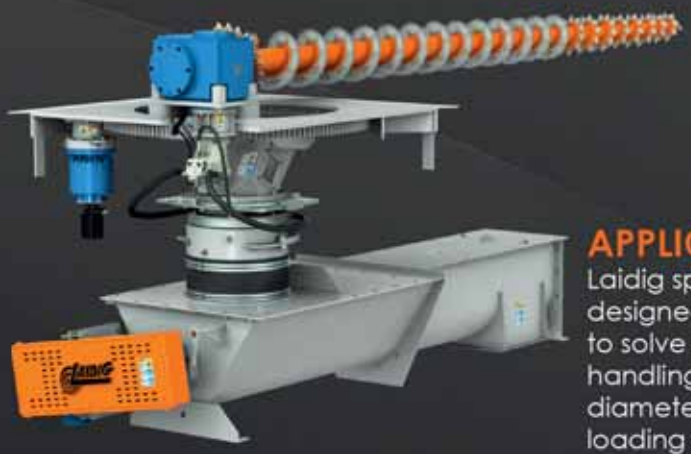

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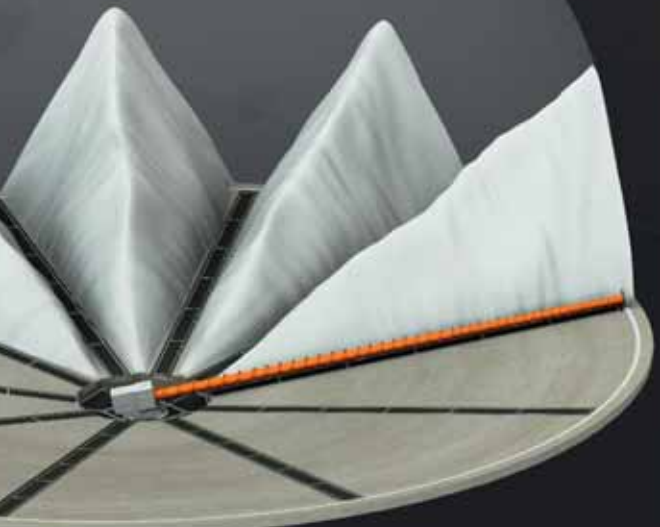

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supplied in open cars by railroad. Daily unloading rate is up to 300 cars;
- unloading of wagons is carried out by ten universal hydraulic unloaders;
- to transport cargo from unloading area to the warehouse, ten front wheel loaders are in use;
- a number of mobile conveyors with adjustable angle of inclination are used for storage of cargo (stacking); and
- the loading of ships is carried out by 14 gantry cranes.

The customer tasked TTS with improving the coal cleaning from metal contaminations and increase the efficiency of stacking (to increase the height of the stack up to 10m and stacking performance up to 600tph (tonnes per hour) at a maximum angle of inclination of the boom). In addition, the equipment had to be inexpensive and easy to maintain, and the term of commissioning as short as possible. Also an important part of the technical project was a necessity to ensure the firmness of the mobile conveyor's receiving hopper upon hits of the bucket while contacting with the wheel loader.

To achieve this task, TTS engineers developed a mobile stacker with built-in magnetic cleaning. Despite design simplicity, all set tasks have been solved. Instead of the commonly used electrical magnets, TTS used permanent magnet of large length. Such a magnet requires no power supply and has a constant high power for the extraction of metal contaminants.

The increased length of the magnet (almost two times greater than the standard one) provides more efficient extraction of contaminants from deep layers of coal on a conveyor belt. Particular attention is paid to the strength of the boom and the construction of the receiving bunker. The housing of the hopper is significantly enhanced with special steel in the contact area with the loader's bucket and is able to withstand high impact loads, even in the cold. A reinforced wheel chassis makes it possible to move the stacker quickly between storage areas without the risk of damage upon the uneven surface of the technical passages of the warehouse.

A powerful single hydraulic system provides fast changing of the boom angle to reduce dusting during the early stacking. The drive of the chevron conveyor belt is also hydraulic, which makes it possible to smoothly vary the speed of the belt and stacker performance without expensive frequency converters and complex control system.

As a result, the customer gained a new level coal metal contamination cleaning system, increased by 3% occupancy of the warehouse and cut equipment mechanical repair costs.

The main profit is certainly improved cleaning, because pollution is critical for steam coal consumers. For stevedores, poor cleaning means fines from cargo owners, shipment delays on complaints and low competitiveness. Therefore, coal cleaning positively impacted the attractiveness of the stevedore for shippers, as a company offering a new level of quality service in the region. A reduction in maintenance costs and a significant reduction in stacker downtime due to damage will reduce the rate on the transfer of cargo and strengthen competitiveness.

At present moment TTS modifies four mobile stackers, operating in the port of Vysotsk, with a dust dumping system. For this reason, existing machines will be equipped with a water mist overspray system. Modular structure of the stacker allows to make modernization by adding water tank and distribution system with minimal efforts. There will be frame with special nozzles installed at the end of the boom, which covers material flow with the smallest water drops. This procedure makes it possible to drop dust generation by 90% with minimal water consumption. Such non-complex modernization enables considerably reduced dust concentration in the coal loading area.

Kinshofer range includes grabs for coal handling applications

Kinshofer GmbH is a major manufacturer of attachments for loader cranes and hydraulic excavators, as well as for rotators, tilt rotators and rotary actuators. The headquarters of the global company has been located in the Bavarian village Waakirchen/Marienstein, Germany. Since 2007, Kinshofer has been part of the Swedish company Lifco AB.

The company, which began in a small garage in the Bavarian uplands, now has a worldwide presence. It owes its position to innovation and quality. The company has a range of subsidiaries and sales offers worldwide to promote its products.

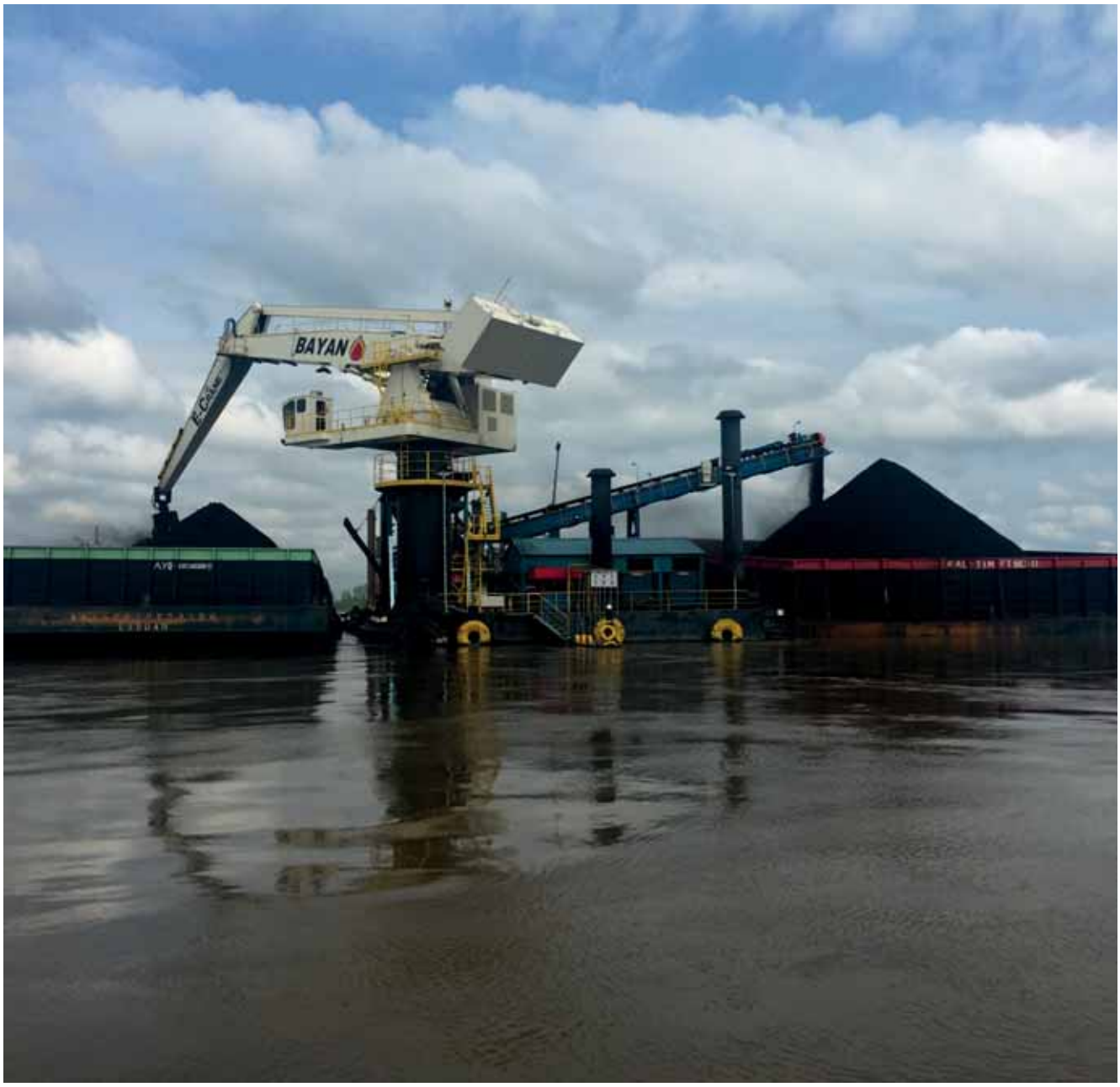
Grabs are a major part of Kinshofer's product range, and these are used for a variety of applications and commodities — including coal.

These days, many customers opt for enclosed clamshell buckets to handle coal, not least because their enclosed nature is a great contributor to the elimination of dust emissions in the coal handling environment.

Kinshofer offers a wide range of clamshell buckets, some of which are available with exchangeable shells, so can be used for a range of applications.

All grabs are manufactured to a high quality, using 400 and 500HB steel, guaranteeing a long life. For excavators up to 25t and loading machines up to 40t operating weight, there are already grabs available with Kinshofer's HPXdrive. This is a revolutionary concept for hydraulically operated grabs. The rotation of the arms of the grab is generated by two hollow shafts, which run opposed, and have a helix thread, hydraulically driven by a single piston. No hydraulic cylinder is required.

E-Crane sees continued growth in Southeast Asia



E-Crane Worldwide has been seeing a strong demand for its products, with a substantial number of cranes being used in the coal industry. Even though market conditions have not been very favourable over the last few years, E-Cranes still find their way to users around the world and in Southeast Asia (SEA) in particular. One of the main reasons is that E-Cranes help reduce the operational cost for their users while increasing the terminal reliability, so investments can still be justified

A good example can be found in Indonesia where E-Crane has received a repeat order for two coal handling E-Cranes. These two additional 2000 Series E-Cranes are scheduled to be shipped to Balikpapan for Bayan Resources, less than two years after the successful commissioning of Bayan Resources' first E-Crane.

This 2000 Series E-Crane has been working near Kota Bangun on the Mahakam River in Central Kalimantan, unloading 180–230ft flat deck barges into a dedicated hopper feeding a barge loader since the end of 2015.

'Through barge' unloading rates of well over 1,500tph (metric tonnes per hour) have been accomplished, with further room for improvement.

E-Crane prides itself in not only supplying equipment, but rather 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. Additional training can also be organized at the E-Crane Academy in the E-Crane HQ in Belgium, for more in depth training courses.

In the instance of Bayan Resources, E-Crane is also carrying out all maintenance activities for its client. An all-in maintenance contract is in place so that Bayan can focus on its core business: coal mining. Weekly site visits are made to support the client in the best possible way. E-Crane further assists in optimizing the unloading process by continued operator training, bottleneck identification, process evaluation and by making recommendations on how the terminal operations can be optimized 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.

All of the above illustrates E-Crane's commitment to being a

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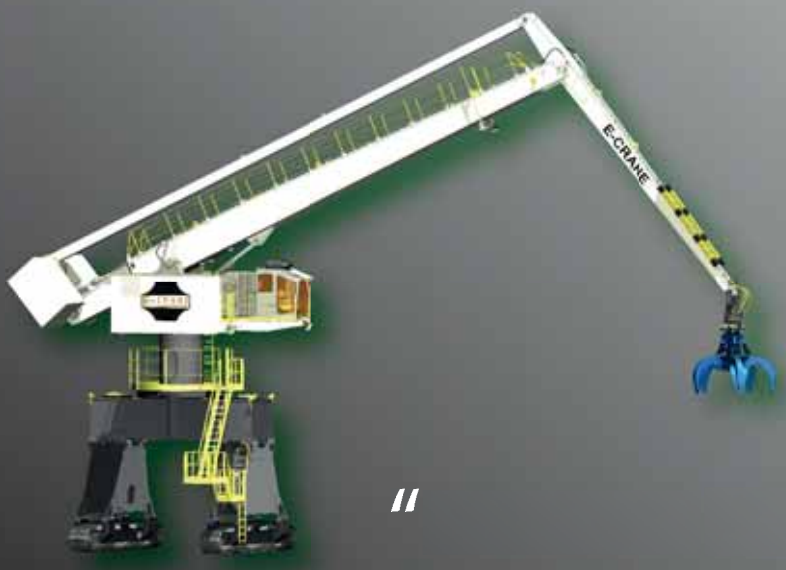

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long-term partner, rather than just a crane supplier. At the same time, the operational cost (energy consumption and maintenance cost) is also reduced while the machine lifetime (as a result of the crane classification) and reliability are increased, making E-Crane an advantageous economic solution.

The two units currently in production for transportation to Indonesia in the fourth quarter of this year will be supported in the same way, an option also available to clients in many other parts of the world as well. This is all part of E-Crane's philosophy that it needs to be present where its clients, or rather partners, are.

Bayan's two new E-Cranes will be used at its terminal near Balikpapan unloading barges ranging in size from 270–330ft. The layout will be such that one barge can be unloaded from one fixed position by these two cranes, without the need to shift the position of barge or cranes. The machines will be replacing two rope cranes and the E-Crane columns will be modified in such a way that the same foot print and bolt pattern can be maintained, eliminating the need for expensive civil works. Furthermore, the existing hoppers (two for each E-Crane) will receive an upgrade by adding kick plates at the back of the hopper structure, in order to increase the lading area for the grab and to reduce the time required to position the hydraulic clamshell over the hopper. These measures will certainly have a positive effect on the unloading cycle times and in this way help optimize unloading efficiency for many years to come.

Another E-Crane for Indonesia

Another floating E-Crane will also be delivered to Kalimantan in 2017 to an undisclosed Indonesian client. This particular E-Crane — with a maximum outreach of 38m and a grab capacity of 30 metric tonnes — has the ability to load Panamax and Capesize vessels at rates of well over 1,500tph. Material will be transferred directly from barges into the aforementioned seagoing vessels.

This particular 2000 Series E-Crane is scheduled to be put into operation in the fourth quarter of 2017, immediately after the installation of the crane in a shipyard in Batam, Indonesia.

E-Crane

E-Cranes provide longer outreach ranges than typical material handlers, from 25m to 50m. This outreach allows for unloading any type of barge or ship with minimum clean-up. E-Crane duty cycle capacity ranges from 5 to 50 metric tonnes. Although E-Cranes are compatible with any type of grab, E-Crane's clamshell buckets are designed with a powerful closing force affording maximum fill and eliminating spills and carry-back. E-Crane cabs are equipped with a state-of-the-art control system for easy machine operation which builds operator confidence, reduces cycle times, and maximizes productivity.

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Wear-resistant grabs from CFS Handling serve the coal market

Civettini Italo & c sas — under the brand name CFS Handling — is a major designer and manufacturer of bulk handling equipment for commodities including coal. The company remains at the forefront of the industry with the development of its electro-hydraulic buckets as well as its mechanical rope grabs.

The company's product range includes mechanical, hydraulic and electro-hydraulic buckets as well as hydraulic and electro-hydraulic grabs.

In the coal sector the CFS handling brand is very well known.

CFS is able to offer a wide range of buckets and grabs to meet the needs of its customers. Its equipment is widely used in industry sectors including: ports, cement, steel works, scrap, coal, grain, zirconium, demolition, waste, shred material, turning chips, urban solid waste, paper, cast iron ingots, ores, slag, bales and so forth.

The CFS team aims to meet its customers' needs as closely as possible, as each different material handled has its own specific characteristics that may require its own grab.

The company has 30 years of experience, so it is able to guarantee high quality, good prices, excellent design quality and customer focus.

CFS Handling is in operation worldwide. Its equipment can be found in countries from Brazil to Russia, for large production machines with buckets from 18m^3 to 40m^3, with hydraulic Bosch Rexroth special applications for faster closure and optimized landing costs and boarding.

CFS Handling uses wear-resistant building materials which characterize its machines, such as Hardox 500 for the blades or automatic greasing systems on the bucket. This enhances the grab's features and decreases maintenance time, prolonging bucket life.

Civettini Italo & c sas continues to research materials and components of increasing sophistication and high-performance, such as hydraulic grabs fitted with diesel engines of 60kW and the ability to lift 20m^3 with a remote control for cereals and for use with the cranes used by its customers who have not yet adopted the use of port cranes such as those supplied by Terex Gottwald or Liebherr.

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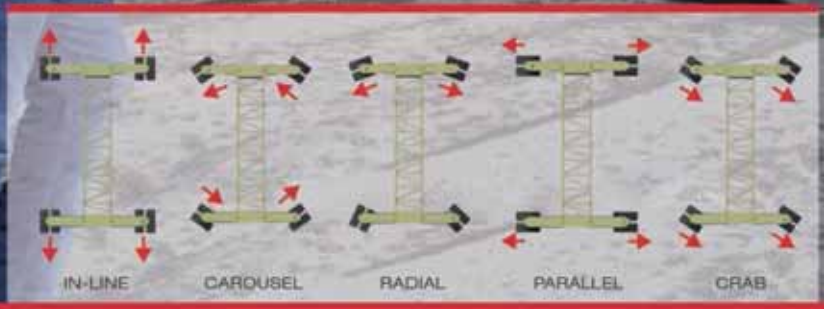

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Transshipping coal — and more — with ARK

Armada Rock Karunia Transshipment Pte Ltd was established in Singapore in September 2010. Together with its subsidiaries and associates (collectively "ARK" or "ARK Transshipment"), ARK owns, operates and manages floating cranes/loading facilities and tugs & barges to provide innovative and reliable fully-integrated offshore transshipment solutions for the coal and dry bulk industries of Indonesia and South-East Asia. Aiming to be one of the leading offshore transshipment companies in the region, ARK is always improving its capabilities to better meet its clients' needs and, at the same time, continuing to invest in enhancing its traditional strengths.

Driven by growing demand for coal and other dry bulk commodities, ARK is also extending its geographic reach with more assets and new operational areas. With its strong association with the top coal producers in Indonesia and the major power plant operators in Indonesia and overseas, ARK is poised to play an important role in the sea-borne coal industry in Indonesia and South-East Asia. The continuous expansion and reorganization of its fleet with a flexible operations strategy allows it to optimize usage of its vessels and diversify into other businesses as and when the opportunity arises. ARK maintains long-term and strong relationships with its stakeholders and partners such as clients. shippers, agencies, and also financial institutions as part of its team effort to build a leading offshore transshipment company operating in Indonesia and South-East Asia.

Services

Floating cranes/loading facilities

ARK's floating cranes/loading facilities are designed to meet the toughest conditions in terms of loading capacity and working environment. The floating cranes/loading facilities transship dry bulk cargo from barges to ocean-going bulk carriers (up to Capesize) and ARK provides stevedoring crew, mooring gangs and has dozers and loaders on the barges to ensure optimum shifting of the bulk cargo for efficient operations. The company is also able to unload dry bulk cargo from bulk carriers to barges (offshore) and from barges and/or bulk carriers directly to shore.

Tugs & barges

ARK's fleet of owned and managed tugs & barges is used for the transport of dry bulk cargo from the inland jetties to the anchorages to be loaded onto either gearless (using floating cranes/loading facilities) or geared ocean-going bulk carriers. ARK also provides domestic inter-island barging services and even international barging services to South-East Asian countries (using ocean-going tugs & barges and/or self-propelled barges).

Fully-Integrated offshore transshipment solutions

ARK is always prepared to support the specific requirements of its clients and its goal is to provide innovative and reliable fully-integrated offshore transshipment solutions. It is able to handle the entire transshipment operation for its clients — from the loading of the dry bulk cargo to its barges at the inland jetties, the barging of the cargo to the anchorages and then the transshipment of the cargo onto either gearless (using floating cranes loading facilities) or geared ocean-going bulk carriers.

The monitoring and supervising of all loading activities will be handled by ARK and its professionals will continuously assess the operational processes to optimize efficiency, thus reducing costs for its clients. It is also able to provide a fully-integrated discharging solution for its clients, unloading dry bulk cargo from bulk carriers to barges (offshore) and from barges and for bulk carriers directly to shore.

CDM coal and ash handling system boosts efficiency at US university

Enclosed drag chain conveyor elevates bottom ash into the ash bin.

A university in the northeastern part of North Dakota, USA, needed to upgrade its central heating system. The winters in the region are long and cold requiring a seven-month heating season. The small campus consisted of administrative buildings, several lecture halls, and dormitories. The heating plant on campus had a boiler that produced steam which was distributed underground to each of the buildings for heating and water. The ageing system was costly to operate due to high maintenance and lack of efficiency. The university hired a contractor to design and build a new central heating system with the goal of gaining operating and heating efficiency while adhering to a strict budget and calculating an overall return on investment of less than five years.

To achieve the university goals, the contractor not only purchased a new high-efficiency boilers but also needed an efficient material handling system for the coal and ash. North Dakota's abundant coal reserves made it an economical fuel that offers high heat content (BTU) per tonne. The material handling system, engineered and manufactured by CDM, started with a truck receiving conveyor. The conveyor was designed to handle material flow rates of 55tph (tonnes per hour) to ensure the plant never ran short on fuel. The conveyor is located in a covered receiving area below grade in a concrete pit. Dump trucks back into the covered area and unload the coal into a hopper.

The receiving conveyor meters the flow rate from the receiving hopper elevating the coal approximately 40' at a 70° incline. The coal was delivered in an open air truck exposing the material to the environmental elements. The transport and exposure created a delivered material that had a wide range of characteristics; from free flowing fines, to 2" minus product, to wet product that could potentially cake and even freeze. The vast range of coal characteristics required a CDM 142STD OO1 series of chain.

This chain design provided a skeletal flight profile which would effectively carry material with a broad-spectrum of characteristics. The design of OO flight style allowed the

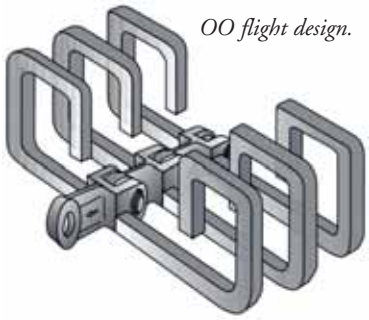
Drag chain distribution conveyor depositing coal into storage silos.â

Z-style conveyor pattern elevates coal from the receiving pit.

Transfer conveyor in the power house allows for metered draw-off to feed the boilers.

conveyor to handle these various properties consistently and efficiently. The coal is transferred into a bunker distribution conveyor. The confines of the plant and the desire to maintain a small of footprint on campus were key design elements for the project. This made the use of the CDM En-Masse conveyors very appealing due to the high efficient utilization of space which correlated to a small conveyor footprint, when compared with other types of conveyor technology.

The truck receiving conveyor is designed to handle 2" minus coal and meter the flow rate to the downstream equipment. Coal is typically not a challenging material to handle; however due to environmental exposure and multiple handling, widely varying particle size and lack of consistency in material characteristics coupled with the freezing conditions, temperatures in the region can reach –40°F, provided conveyor design challenges. To account for these variances, CDM designed the conveyor to operate at a conservative speed and provided a chain that is robust enough to handle and break-up friable, frozen coal while also profiled to handle free flowing fines.



OO flight design.

Downstream of the truck receiving conveyor CDM supplied the bin distribution conveyor along with manually operated slide gates. The purchased bins were supplied with bin level indicators which provided operators and monitoring personnel with ample warning to close the upstream gate and open downstream gate/s to provide uninterrupted flow. Due to the small footprint of the plant, CDM needed to convey the coal back toward the terminal station of the conveyor in order to fill the first of four bins. CDM accommodated this requirement by supplying the conveyor with an intermediate plate and using the return chain to move the product in toward the terminal station, letting the coal drop down into the lower conveying chamber where the coal is distributed into the storage bins. Coal is then drawn off the bins using screw conveyors which directly feed the four boilers.

After the burn process is complete ash is the by-product that remains. The ash from the boilers is fed to the final En-Masse conveyor in the system. The ash conveyor collects the bottom ash from the boilers and also collects fly ash from the baghouse. The totally enclosed conveyor transfers and elevates the ash without emissions from inside the facility to an outside bin. Ash is highly abrasive, sluggish, and holds a temperature on average of about 400°F. To accommodate the elevated temperatures, as well as the abrasive product, and to maintain a seal on the boilers, CDM constructed the conveyors using abrasion-resistant plate (AR 400BHN) and provided all shaft penetrations with high temperature packing gland shaft seals. The conveyor was engineered with a spring loaded take-up to allow for cushioning to protect the chain from shock loads, upset conditions, and differential thermal expansion between the conveyor housing/casing and the chain.

CDM engineered each conveyor with zero speed switch sensors, plug chute and chain break sensors which were wired into the control room. CDM designed the material handling conveyors with quantified cost savings through component standardization across all supplied conveyors. CDM was able to provide maximum standardization among the conveyors with commonality between bearings, sprockets, shaft selection and design, gear reducers, and several other ancillary components. After the first year of operation university officials stated the new plant saved hundreds-of-thousands of dollars in heating and maintenance costs; outperforming expectations and projected to come in under the five-year ROI (return on investment) target. In addition to the evaluation of capital costs, the goal of reduced maintenance has also been achieved. The En-Masse drag conveyors have had zero unplanned downtime and only require inspection upon routine maintenance.

For more than 40 years, CDM Systems has provided high-quality En-Masse conveyors and conveying systems that stand out for their quality, dependability, and operational efficiency. The company uses its material handling experience and industry knowledge to solve the most difficult bulk transportation challenges. Its conveying systems are specifically designed for reliable 24/7 operation in aggressive and high-temperature applications. Whether unloading trucks, railcars, or vessels, or moving commodities within a process facility, CDM Systems can provide the technical support and the right equipment designed specifically for its customers' needs.

Megarollers used to move coal – and other commodities – worldwide

With a history of innovation, research and development spanning over 35 years, Megaroller is entrenched as a leading manufacturer of long-lasting, innovative and environmentally sound conveyor rollers and conveyor idlers for the mining and bulk material handling industries. Products carried by the company's roller include coal.

Megaroller products are trusted by large global companies in mining, minerals processing, petrochemicals and agricultural industries in Australia, South Africa, the United States of America, Canada, China, Zimbabwe, Zambia, Chile, Indonesia, Papua New Guinea, Namibia, and Botswana.

Company history

In 1982 Julian Roman, invented the world's first heavy duty High Density Polyethylene (HDPE) rollers. Roman had in mind to create a better, quieter, more economic roller than the conventional steel roller. His rollers were put into production in South Africa and introduced into the market as the 'Africa Roller' and the 'Roman Roller'. With change of ownership in 2005 the company started to trade as Megaroller.

Subsequent to the establishment of Megaroller in South Africa, it opened satellite factories in Australia, Chile and Canada, granting Megaroller the capability to supply with market leading production times to any country or continent. The products for Australia were initially manufactured in South Africa and exported to Australia, but due to high demand, an Australian Factory was built in 2010.

Megaroller Australia Pty Ltd is headquartered in Perth, Australia. The plant boasts a custom-built manufacturing line which is operated according to stringent quality standards.

New technology

The face of conveyor technology is rapidly changing as new products flood the market. Ultimately, conveyor technology seeks to be safer, greener and more sustainable, whilst proving more efficient, capable and of greater economic benefit to the client.

To address these concerns it was necessary for Megaroller to develop a roller, using the latest technology and advanced materials, that will: surpass the lifespan of conventional rollers; maximize the efficiency of each element within the roller, so that the theoretical lifespan of each element would complement each other; and ensure a superior product, regardless of extreme temperature changes, uniquely harsh working conditions, and the problem of chemical and coastal conditions which attack and destroy conventional steel rollers. Secondly, it is essential that in the event of eventual bearing failure, the roller would not cause any damage to the conveyor belt, thereby minimizing the running costs of such a conveyor.

After, extensive research and testing, Megaroller achieved the lifespan and goals of the initial objective with the introduction of its heavy duty HDPE (high-density polyethylene) roller. The Megaroller has successfully adopted all the positive characteristics and had eliminated all the negative characteristics of the conventional steel roller. At the same time it complies with the standards, specifications and requirements of the user and incorporates features over and above the expectations of the end user. The Megaroller HDPE roller is currently in its fifth generation.

Megaroller introduced a new 'lite' roller in 2015, which is up to 60% lighter than conventional rollers. "We are continuously

Megaroller production facility.

Megaroller's South African production facility.

investigating lighter and stronger materials," says Jannie Kotze, CEO of Megaroller Australia. "Steel rollers are still valuable to our industry and Megaroller will be introducing a new steel roller later this year," he says.

Track record

Megarollers have been sold and distributed worldwide for the past 35 Years. In Australia Megaroller products have been installed by most of the mining companies.

Company assets and product offering

Megaroller Australian production facility

Megaroller's state of the art production facility is located within the supply heart of Australia's largest mining geography, Perth Western Australia. Megaroller is proud to employ Australians, to supply only the very best to the Australian market. The current premises located in O'Connor, allows a capacity of 5,000 rollers per month. Production could be further expanded to 8,000 rollers per month.

Megaroller's South African production facility

The South African production facility is widely regarded as one of the world's most advanced roller body production facilities, where Megaroller has its very own cutting-edge extrusion and injection moulding facilities. The plant covers a substantial 10,000m^2, where it is fully capable of producing 60,000 rollers per month, affording Megaroller a pre-eminent position as a supplier of HDPE conveyor rollers.

Products

Megaroller manufactures an HDPE heavy duty roller, HDPE light duty roller, steel hybrid and impact rollers.

The leading product of Megaroller is its HDPE roller.

Megaroller HDPE Rollers are recognized as being of very high quality. Their advantages include:

- market leading lifespan;
- highly resistant to wear by abrasion;
- HDPE reinforced with 2mm steel;
- UV resistant;
- light weight (40% lighter than steel), making them manual handling friendly;
- fire retardant — highly beneficial in underground mining;
- very low friction coefficient;
- watertight sealing arrangement;
- recyclable;
- HDPE material is corrosion-friendly with a non-stick surface, extending the conveyor belt life;
- highly resistant to chemicals, acid, water and wear;
- lighter weight of the HDPE rollers means a 'low breakaway', thus a significant reduction in energy or start-up costs on conveyor drives;
- its construction means the rollers have a reduced noise level (70% less than steel rollers);
- the rollers are dynamically balanced and then machined, resulting in outstanding concentricity;
- will absorb higher impact force from conveyed material due to use of high quality plastic components;
- only the best quality bearing brands, SKF or FAG, are used in Megarollers;
- the roller body is reinforced with a 2mm steel tube resulting in a heavy-duty application roller;
- 100% belt friendly;
- anti-static hybrid rollers can be produced on request; and
- performs well in harsh weather and extreme applications.

HDPE heavy duty rollers

Megaroller HDPE Rollers are an innovation in reinforced high density polyethylene (HDPE) conveyor rollers. These rollers are designed for use in then most extreme conditions, high belt

speeds and heavy loads. Three patented technologies (the sealing arrangement; bearing and seal housing; and reinforced roller shell), result in a robust, long-lasting and ecologically sound alternative to conventional steel rollers.

All plastic components have been designed in house and are produced in Megaroller's Australian factory.

Megaroller PolyLite HDPE rollers

Megaroller's PolyLite HDPE rollers are an economic, lightweight and superior quality conveyor roller, designed to minimize economic cost, environmental impact and manual handling risks. PolyLite Rollers incorporate Megaroller's patented technologies, and are engineered to operate in a wide variety of environmental conditions. Megaroller's ground-breaking design, patented bearing housing and sealing arrangement, and an HDPE roller shell made from the purest HDPE available, result in a lightweight roller that outperforms and outlasts other similar in class products. These rollers minimize manual handling risks, reduce overall downtime and ensure longevity in the most extreme conditions. All plastic components of the PolyLite rollers are fully recyclable and are manufactured in house.

Megahybrid steel rollers

Megaroller hybrid rollers are unique combination steel/HDPE conveyor rollers. Designed for the toughest of circumstances, Megaroller's steel rollers prove to be a better balanced, longer-lasting roller. Incorporating Megaroller's proven sealing arrangement, and patented HDPE bearing and seal housing in a standard steel conveyor tube, the Megahybrid Roller provides the desired attributes of steel rollers, without the negative characteristics of a steel based bearing housing.

Megaimpact & rubber disc return rollers

Megaroller's impact and rubber disc return rollers are designed to absorb the impact of large loads of ore falling onto conveyor belts. This range of rollers incorporates Megaroller's proven sealing arrangement, and patented HDPE bearing and seal housing, to deliver strength and durability in hard working conveyor systems.

The Megaroller difference

With the research and development put into design and manufacture of its rollers, Megaroller products are extremely high quality. They surpass the requirements for a wide variety of conditions and have succeeded in eliminating the majority of problems suffered in the use of some other conventional rollers. Megaroller now confidently offers its product to the market with a full two-year guarantee after inspection of the end-user's conditions. Coupled to this, it offers an extensive back-up service, and is available to its clients at all times, to assist with any problems, and/or queries.

Megaroller believes that it has succeeded in its overall objective to design, manufacture, supply and service a superior product, and remain competitive in a field that suffers abuse from some who market and sell inferior products that end up causing extra expenses in the long term.

High throughput, low dust levels when moving coal by conveyor belt

Flexco skirting systems effectively stop material spillage at the transfer point

Flexco offers various skirting systems to avoid loss of material in belt conveyor transfer areas in coal mines, steel mills and wood processing facilities. Fasteners combined with skirting systems effectively isolate the material on the belt without damaging the belt cover, enabling operators to easily reduce dust levels while increasing material throughput. Flexco supplies easy-to-install skirt clamps for a wide range of load levels.

Flex-Lok skirt clamps are a new addition to the Flexco range: customized for various conveyor systems, they are even suitable for large and heavy-duty conveyance tasks. On the other hand, Flex-Lok Mini Clamps are ideal when space is limited — the rubber sealing strip is only 8mm to 16mm thick, while the thickness of the standard version is between 8mm and 25mm. Flex-Lok skirt clamps can be easily installed by one person, because the clamp plates position the retaining rod of the rubber sealing strip. The skirt clamps can be mounted diagonally or vertically on the conveyor structure.

Flexco supplies Flex-Lok skirt clamps for a wide range of load levels. They can be easily installed by one person (photo: Flexco Europe GmbH).

The Flex-Seal skirting system is a dynamic containment unit which completely seals the loading zone parallel to the belt. The system reduces dust levels by closing gaps through which material can spill. Problems such as belt damage and belt wander no longer occur. The thickness of the Flex-Seal rubber skirt varies between 8mm and 19mm with this solution. Flexco also offers a cost-effective solution that is especially suitable for confined spaces — the RMC1 skirting system.

All three of these Flexco solutions are designed for easy installation — the clamp bolts are designed to allow the clamp wedge to rotate through 360°, locking it in place, and an additional anti-vibration clamp pin ensures that the clamp bolt remains in place even under extreme conditions. Service technicians can safely perform installation and maintenance work on the skirting system from the sides of the conveyor system. The individual system components are corrosion-resistant and highly resilient to ensure a long service life.

In the case of all three systems, the skirt rubber exerts no tension at all on the belt, causing no premature wear or scratches on the belt cover. The Flexco range includes the rubber LRS15-R and LRS15 PU skirts, which are simply to install and quick to service. They offer highly effective solutions in combination with the fasteners. No bolt, nuts or additional special tools are required for assembly.

The RMC1 skirting system by Flexco is a cost-effective and space-saving solution (photo: Flexco Europe GmbH).

About the company

Flexible Steel Lacing Company (FLEXCO), headquartered in Downers Grove, Illinois in the USA, is a major international provider of mechanical conveyor belt fastener systems, belt cleaners, belt positioners, impact beds and pulley lagging for light- and heavy-duty applications. With the company's innovative solutions, end-users can substantially reduce downtime and increase productivity. FLEXCO Europe GmbH is the German subsidiary of FLEXCO, and is headquartered in Rosenfeld, where the company currently has about 60 employees.

Keeping a grip on the coal market: Calim Grabs delivers worldwide

Calim Grabs (Calim Kepce) has been engineering, manufacturing and delivering equipment to customers and port authorities since 1970. In that time, the company has earned a strong reputation in the grabs and marine equipment industry. Calim Grabs specializes in the manufacture and repair of grabs which are used to handle a wide range of materials, including coal. Its well-trained and experienced staff work to develop highly efficient and cost-effective grabs. The company's product range, one of the most complete on the market, offers high lifecycle value, heavy-duty grabs such as quality rope operated, hydraulic and electro-hydraulic or motor grab catalogue, radio remote control grabs etc. Since the company was founded, it has delivered over 2,650 grabs to customers around the world. As well as its standard product range, it also regularly develops customized, unique solutions for specific situations when the customer needs these.

The company's domestic and international market activity has been growing since the end of 2011. One source of satisfaction for Calim Grabs is the recent sale of 20 units to Latin America. Over the last few years, the products have been in operation in the largest ports in the world. Port activity is one of its key sectors and it is very conscious of the market's new demands concerning product efficiency and evolution. Calim's products can be seen all over ports, cement and steel factories and on ships worldwide. They are especially popular in Latin America, North Africa, Venezuela, the UK, Romania, Pakistan, Singapore, Ireland, Bangladesh, Cyprus, Ghana, Madagascar, the Ukraine, Sudan and more. The company also ships spare parts with any purchased product which may be needed in, say, six months, at no cost. Calim's main customers are: crane manufacturers; stevedoring companies; dredging companies; shipping companies; fertilizer companies; cement companies; mining companies; alumina producers; steel manufacturers; and electrical power plants. Calim Grabs has gained great expertise in handling all types of cargo, including: fertilizer; coal; gypsum; grain; soyabeans; sand; scrap steel; rock; clinger; cement; iron; ore; salt; petcoke; wood; chipboard and many more.

Calim Grabs' products are extremely high quality. The company is proud to own a modern equipment facility that is able to adapt very quickly to technological developments in the world.

CALIM GRABS will remain a reliable name in the equipment industry.

TR1600: FOUR ROPE CLAMSHELL GRAB FOR COAL

The TR1600 is an efficient tool for handling coal and other commodities including grains, fertilizers, other ores, clinker, bauxite and other bulk material. TR 1600 has 3–50m³ capacity, it has two-line opening and two-line closing functions. The mechanical structure for opening and closing is efficient and original. No maintenance is required except greasing. The grab is easy to use and can work under any circumstances. The grab is mainly used on gantries, ships or port cranes to load and unload bulk cargo, including coal.

Technical features.

- used to transport loads with densities of 0.5–3 tonne/m³ density;
- four-rope system;
- capacity of 3m³ to 50m³;
- painted twice to protect against corrosion.
- bucket jaws are made of special Hardox 500 steel material;
- casted steel pulleys are used.

Up-to-date braking technology with Pintsch Bubenzer's innovative thruster series

The early history of Pintsch Bubenzer involved a close relationship with the German coal and steel industries of the 1960s. Gerhard Bubenzer Sr. started his own business, Bubenzer Bremsen, producing weight-loaded drum brakes for German lignite mines (RWE), in 1958. These brakes were installed on the huge bucketwheel excavators and stackers, in the Cologne area, in Germany. After Ruhrkohle AG was founded in 1968, to consolidate the existing coal mines, Bubenzer Bremsen started delivering explosive-proof brakes, to meet the requirements for underground coal mines.

Since that time, based on the experience gained from the mining and steel industry, Bubenzer Bremsen managed to grow at a steady pace and expanded to other markets. In 2007, when Gerhard Bubenzer Jr. retired, the company was acquired by Schaltbau Holding AG and integrated to its drive technology corporate area, which is represented by PINTSCH BAMAG Antriebs- und Verkehrstechnik GmbH, in Dinslaken, Germany. The company was renamed Pintsch Bubenzer.

In 2016, 312 people worked at the company headquarters in Kirchen-Wehbach and the subsidiary in Dinslaken, achieving a turnover of €68 million.

In the sectors of port equipment, shipbuilding and offshore engineering, mining, steel industry, utilization of wind, mechanical engineering and construction of special vehicles, Pintsch Bubenzer is a world leader in braking system design and manufacturing, with safety built into every product.

The range covers everything from tiny disc brakes, with 300Nm brake torque, up to 2m band brakes, which are able to produce 400,000Nm, as well as drum and lever brakes, fail-safe caliper brakes, and motor-mounted applications. Accessories like hydraulic units, gear and elastic couplings, brake discs, shrink discs and buffers are also available.

One product of which Pintsch Bubenzer is particularly proud is its own thruster series, called BUEL®.

A thruster is the 'counter-force' to the brake spring and is used to release the brake. Standard thrusters have been known, as a reliable component of brake systems for many years. Nevertheless, with a design principle which remained the same for decades, it was no longer possible to meet the requirements of modern equipment specifications.

As the laws of physics were the limit of the prior technology, Pintsch Bubenzer started the design process from scratch.

The result was a thruster which is more than twice as strong as the equivalent size of the old design and on top of that also twice as fast in terms of closing a lever brake (150ms, faster

Pintsch Bubenzer disc brakes installed at an RWE lignite mine, still with the old impeller wheel design.

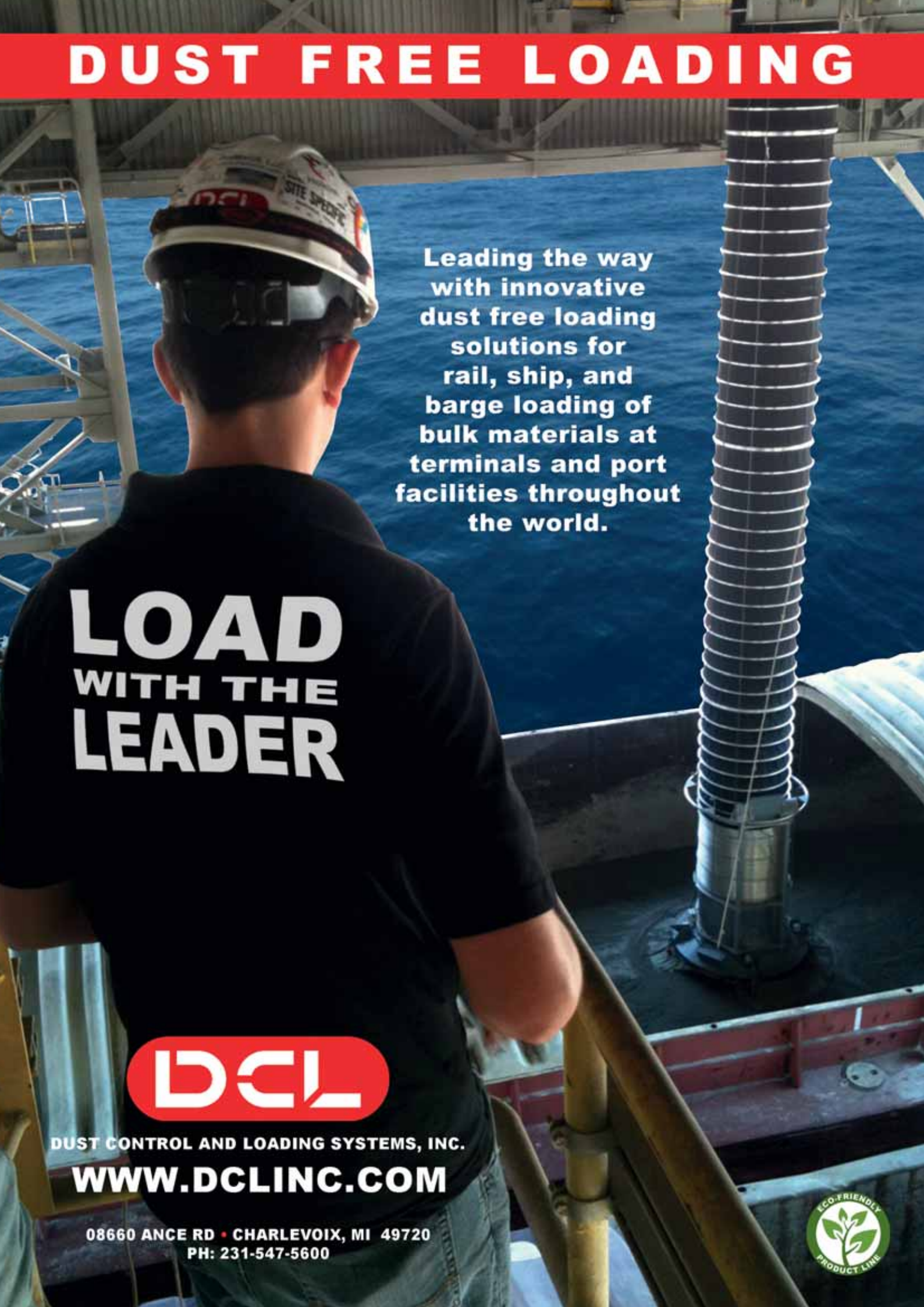
setting times possible).

The initial trigger for the development came from the port industry. However, applied to a mining environment, especially long distance conveyor belts, the benefits of the BUEL® have become even more obvious. Compared to the previously utilized impeller wheel, the BUEL® uses a highly efficient gear pump, to generate the hydraulic pressure. After it has reached the maximum, a pressure switch shuts down the pump and keeps two solenoid valves powered, so the brake remains open. The whole control logic is handled by a small microcontroller, inside the unit. Therefore the customer just needs to switch on and off the three-phase power supply, to release and close the brake. For a conveyor operation, for example the pump will be running for less than five seconds to pressure the system. Afterwards only two valves need to stay powered. So now, if the conveyor operates for six days, the pump only needs to do a five-second cycle. The impeller wheel design, in comparison, would have been running for six days straight. In terms of energy consumption and wear of the parts, which equals lifetime, the BUEL® is a game changer.

Such new developments are the key to staying competitive in this market and an investment in the future. That is why Pintsch Bubenzer's state-of-the art research and development centre is currently building one of the biggest flywheel dynamometers in Europe. It will be used for dynamic tests of brake equipment, up to 30,000Nm. The development, which started in 2014, was a joint venture between a local university and Pintsch Bubenzer.

Despite huge projects in the port market, Pintsch Bubenzer is still present in the mining business.

One of the most sophisticated products in the catalogue is a closed loop conveyor control system. It was developed to synchronize numerous conveyor belts in the RWE lignite mines Garzweiler and Hambach, which are two of the biggest open cast coal mines in the world. The latest coal-related project was commissioned in September 2016. Brake equipment for two SANDVIK shiploaders, was installed at Port Waratah Coal Service in Newcastle, Australia. With an annual capacity of 145 million tonnes of coal, another global player is relying on state-of-the-art equipment, made in Germany.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Shiploading technologies

Mechanical shiploader integral part of Golfetto Sangati's grain handling systems

Golfetto Sangati grain handling systems benefit from over 90 year's experience

Italian company Golfetto Sangati designs, builds and installs turnkey equipment for grain handling and milling. Shiploaders are an important part of the company's product range.

Through its brand Berga, Golfetto Sangati has developed a strong reputation in the design and construction of complete port systems for loading and unloading ships. Cargoes handled by its equipment include free-flowing or non-free-flowing materials such as wheat, corn, barley, soyabeans, sunflower seeds, rapeseed, coffee, sugar, rise and soya meal.

The company designed and built more than 50 port installations and tens of other handling systems all over the world.

Transload mechanical shiploader

The Transload is a mechanical shiploader designed and manufactured in the Italian offices and factories of Golfetto Sangati. All equipment is customized to meet the exact requirements of the client, in order to comply with technical, operational requirements and specific site characteristics.

Transload can load vessels up to 120,000dwt and can be stationary or mobile on rails or wheels.

The handling capacity ranges from 200tph (tonnes per hour) to 2,000tph handling cereals and a wide range of free-flowing materials as well as meals. Cargoes are handled with chain conveyors or belt conveyors depending on the quay layout and customer requirements. In addition, the loading telescopic pipe can be provided both with a kick-in/out system or a mobile trolley in order to provide the most suitable solution for the purpose.

The Transload is equipped with a self regulating dust suppressor system useful also for directing and distributing the product flow.

The full control system installed in each shiploader includes:

- automation system equipped with PLC board, main control unit, I/O card, network interface and control panel;
- control cabin with ergonomic chair equipped with commands and controls;
- remote radio control (emitter and receiver);
- CCTV and audio control;
- smoke and fire detection; and
- connection with main operational station via fibre-optic and/or wireless connection

In addition, an anti-collision system specifically designed by Golfetto Sangati prevents any risk of collision during the movements. This is really helpful during low visibility situations due to weather conditions or blind spots, preventing accidents due to human error. This system is mainly comprised of:

- travelling collision detection;
- collision detection of the horizontal boom;
- collision detection of the vertical boom; and
- product hatch automatic detection.

Particularly notable elements of the Transload include:

- very low energy consumption in operation;
- peak capacity 10% to 15% higher than rated capacity;
- extremely versatile during operations thanks to the wide range of movements allowed, and to the equipment installed onboard; and
- advance loading regulation system that makes it possible to operate in best conditions in terms of pollution (noise and dust)

The most recent Transload projects installed include:

- **Canopus project**, including design, manufacture, delivery and start-up of a new shiploading terminal in the Port of Costanta (Romania). The scope of supply includes one Transload mobile shiploader rated at 800tph and the relevant handling equipment from truck intake to storage and ship load-out.
- The **project in the Port of Yuzhnyi** (Ukraine) including design, manufacture, deliver and start-up a new shiploading terminal. The scope of supply includes one mobile Transload shiploader rated at 2,000tph, with conveying route inside the machine composed of belt conveyors (width of 1,800mm). During the design, the outline of the steel structure was optimized considering the significant loads of the various components.
- **Romano project** in Italy provides for a wide refurbishment of an existing vessel and the installation onboard of a complete loading system (1,500tph based on soyameal): the product transferred from Panamax size vessel to Romano vessel, is then loaded into barges heading to facilities in the heart of production lands through the Po river.

DESIGNED, ENGINEERED AND BUILT

WITH 90 YEARS OF EXPERIENCE AND EVOLUTION

Golfetto Sangati is an Italian company who designs, manufactures and installs turnkey plants for grain handling and milling. Part of the Pavan Group, is a strong industrial entity answering to the market`s requirements in competitive way and with technologically advanced solutions, originated from extensive research, expertise and know-how.

Golfetto Sangati is the owner of Berga brand: with more than 50 installations done and having a leading role in the technological progress from the first pneumatic unloaders to the latest mechanical loaders/unloaders, Berga is a point of reference for the design and construction of complete ship loading and unloading systems for ports.

The Berga product range, completely designed and assembled in Italy, is composed of handling and storage systems, loading and unloading systems on wheels or tracks with handling capacity ranging from 50 to 2000 t/h.

GOLFETTO SANGATI
A COMPANY OF PAVAN GROUP

www.golfettosangati.com - info@golfettosangati.com

VIGAN growing expertise in shiploading

Since its first shiploading installation 25 years ago, Belgian company VIGAN has gained considerable expertise in shiploading technology for agri-bulk and fertilizer cargoes, and is now recognized as a key player and partner of reference in this niche market.

Continuous shiploaders are used for uninterrupted handling and transport of bulk product.

Loading is carried out mechanically: the cargo is transported through the loading boom by an integrated belt or chain conveyor and discharged by gravity into the ship hold via a telescopic loading chute. The loading boom is usually mounted on a slewing ring that can reach up to 40 metres to ensure optimal hatch coverage. The combination of telescopic and rotating movements allows for continuous and uniform loading operations of the ship holds.

VIGAN loaders are designed for almost any kind of bulk products (with densities ranging from 0.2 to 1.8t/m³), and are suitable for all sizes of barges and ocean going vessels.

Customized solutions

Most continuous high capacity loaders load grain that is delivered to the quay via conveyors. To ensure parallelism, most loaders are mounted on a self-propelled gantry on rails usually with cable reels. In some cases, loaders are on a self-propelled gantry on rubber wheels, with diesel generator; or on a fixed structure.

VIGAN loading machines guarantee a capacity of up to 2,000tph (metric tonnes per hour).

Several optional devices are available to adapt the loader to specific working conditions.

For instance, shiploaders can be equipped, at the end of the telescopic loading pipe, with a slewing elbow that plays the role of thrower.

The advantages of this system include:

- it is simple, reliable, and allows for good distribution of cargo in the hatches, including trimming;
- it is purely static — there is no belt, no drum, no electrical feeding, no guiding roller, etc.;
- there is no limit in the slewing angle of the loading head — it can do as many turns as needed with its 360° slewing motor, in order to increase the shiploading radius.

Dust control

In most ports, controlling dust emissions are a major concern and keeping dust under control is a prerequisite.

Operators need a good balance between capacity/efficiency and dust control.

VIGAN is adapting its dust control according to local site regulations.

VIGAN loaders fulfill these requirements thanks to various alternative solutions, without compromising on efficiency and reliability:

- a fully retractable cover of the telescopic conveyor boom;
- automatic self-cleaning filters mounted on the top of the integrated belt conveyors; and
- the dust-free loading head which can be installed at the end of the telescopic loading pipe.

For instance, the bottom of the telescopic spout can be equipped with a large dust skirt at the outlet.

A level sensor controls the automatic luffing of the skirt at the bottom of the loading pipe during the loading process. The dust skirt always remains in contact with the pile of grain in order to control the dust emanation. Luffing generally occurs by automatic step of 20cm.

Shiploading projects flourish

For some time, shiploading projects have been flourishing in the European region, mainly in France and Eastern Europe where grain export rates are very high.

This, coupled with well-developed port infrastructures, has led companies to invest in silos for the storage of grains collected through local farmers. The stock is then redistributed and exported abroad.

This is the case in Rouen, one of France's biggest port and a French leader of grain exports, that has seen the creation of numerous sites specialized in the loading of grain in bulk.

In this framework, the company Beuzelin inaugurated a new 50,000-tonne port silo, "Maison Bleue", in Rouen in 2016. The company unloads, from small vessels, grain coming from around 2,000 local customers, stores it in the silo and redistributes its stock via the loading of biggest vessels exporting cereals to the African Continent.

This is possible thanks to a VIGAN combined 400tph ship-

unloader/800tph shiploader installed in 2016.

The VIGAN shiploader is equipped with a 24m-high bucket elevator of 800 tonnes/hour that transfers the grain from the quay conveyor to the upper transfer conveyor. The elevator and the chain conveyor are both controlled by frequency inverter.

The 25m loading boom feeds a telescopic loading spout that is equipped with a large dust skirt at the outlet.

The same month, VIGAN also supplied a shiploader to Szczecin Bulk Terminal (part of Copenhagen Merchants group) in Poland. VIGAN is particularly proud of this repeat order from Copenhagen Merchants, after the installation of a 1,000tph shiploader for Danstore in Liepaja (Latvia) in 2012.

The Port of Szczecin is one of the main ports for bulk cargo in Poland, a large agricultural country that became a big exporter of agro-food product since its membership to the EU in 2004.

SBT multi-bulk terminal, that is fully operational since 2016, serves as an outlet for agricultural exports from Poland and neighbouring countries. Loading and discharging are carried out directly between the terminal and vessel.

A 1,000tph VIGAN shiploader has been designed for the loading of grain vessels of up to 60,000dwt.

The shiploader is mounted on a self-propelled gantry on rails. The transfer of grain from the upper silo chain conveyor to the loading head is by an inclined chute, made from TRITEN wear-resistant plate. This chute loads the shiploading head which consists of a machine room, a

ABS initiative improves bulker loading safety

New tool delivers a comprehensive approach to atypical loads for bulk carriers.

ABS, a leading provider of classification and technical services to the marine and offshore industries, has introduced a new service and analysis tool that will allow atypical cargoes on bulk carriers. The software streamlines loading analysis and provides a safer approach to loading atypical bulk cargo.

"ABS understands that maintaining a leadership role means finding ways to improve safety and efficiency for industry," says ABS Executive Vice President for Global Marine Dr. Kirsi Tikka. "Our new steel coil loading solution delivers customization options to expand the range of loads that can be carried safely by bulk carriers."

In developing this new software and service, ABS has taken a comprehensive approach to steel coil loading. This new capability helps improve efficiency, enabling faster decisions regarding the safety of nontraditional loads. Using the ABS loading analysis software enables timely and accurate decisions about the achievable safety for steel coil loads that are not included in the loading manual.

"Bulker owners and operators are looking for every opportunity to keep their fleets operating in challenging market conditions," adds Tikka. "We recognize how important it is for the bulker industry to expand their service, and we also understand the critical role that safety plays."

ABS understands the unique operational and regulatory challenges that the bulker sector faces and has pioneered solutions to address both environmental requirements and vessel performance. As a leader in marine classification, ABS classes all bulk carrier designs and sizes, from Handy and Handymax to Capesize and Very Large Ore Carriers (VLOCs), and is positioned globally to provide exceptional class services, including timely reviews of nontraditional cargo loads.

About ABS

Founded in 1862, ABS is a leading international classification organization devoted to promoting the security of life and property and preserving the natural environment through the development and verification of standards for the design, construction and operational maintenance of marine and offshore assets.

loading boom of 21m and a telescopic loading spout equipped with a large dust skirt at the outlet.

The VIGAN machine has been designed and made ready to receive, in the future, a 300tph pneumatic barge unloader.

VIGAN is continuing to gain even greater expertise in shiploading, with several shiploading projects in the pipeline, mainly for high capacity equipment designed for the loading of ever bigger vessels.

Manitowoc MLC165s enable barge-shipping of wind turbine towers

Two Manitowoc MLC165s were instrumental in enabling two companies to ship wind turbine towers on a barge across Lake Michigan, USA.

The low groundbearing pressure of the crawler cranes meant the companies could perform dual pick-and-carries on the job site without the need for ground preparation.

The smooth crawling action of the cranes gave operators precise control in manoeuvring the cranes near the lake's shore.

Cicero, Illinois-based Broadwind Energy, an industrial manufacturer of components for energy and infrastructure markets, had been looking for a chance to ship its wind turbine towers across the Great Lakes for a number of years. The company's plant in Manitowoc, Wisconsin, has direct access to a deep-water port and had sought an opportunity to load its steel towers onto barges to be shipped by the Great Lakes.

When a customer placed an order for Broadwind towers in mid-2016 to be delivered to a wind farm located in Ohio, Broadwind had the chance to put its barge shipping plans into action.

"Transporting wind tower sections on a barge had been a long term goal at Broadwind," explained Matt Boor, OEM Project Manager at Broadwind Towers, Inc. "We were granted this opportunity and we had to work quickly to devise a plan for how to lift steel tower sections onto the barge. We immediately began brainstorming in a lot of after-hours sessions with Trans-Link Services, our transportation and logistics partner, to come up with a plan for efficiently loading the towers onto a barge without damaging them."

Trans-Link, based in Manitowoc, Wisconsin, developed a plan with Broadwind that would have two crawler cranes lift the tower sections from either side in a dual tandem lift, and then crawl them toward the sea wall to be placed on the barge. The key to success for the project, as Troy Flentje, owner of Trans-Link, explained, would be finding crawler cranes with low groundbearing pressure and a smooth crawling mechanism.

"I had the Manitowoc MLC165 in mind as we were planning the project because I knew that these cranes would have the low groundbearing pressure we needed," he said. "With two of these cranes we were able to crawl the towers toward the barge without using mats or other ground preparations. It has also kept our options open for moving the cranes around the site for other applications."

The plan worked well, as the two companies saw success straight away. The first dual lift took approximately 20 minutes, and subsequent lifts were completed with increasing speed. Over the course of the project, Trans-Link and Broadwind shipped 138 separate wind tower sections, each of them loaded onto a barge using the two 182-ton (US)-capacity MLC165s. The heaviest loads had the two cranes lifting 70 tons (US) in tandem, each using their 275ft boom.

"One option would have been to use a spreader bar and a much larger crane, but I wanted to use two crawler cranes so we could have more manoeuvrability on the site. Also the 30-ton (US) to 70-ton (US) sections measured up to 90ft long, so we couldn't 'belly lift' them without damage," Flentje explained.

The project was completed in September last year. It not only marked the first time the two companies shipped wind tower sections by barge together, it marked the 14th year of their partnership. Of course, the first time the two companies barge-shipped wind tower sections together will always be one of the highlights. The first lifts even inspired local news coverage for the two companies on broadcast networks.

"Using the MLC165s to tandem pick these loads has been fantastic," Flentje said. "I thought that crawling the cranes together with the loads on the hooks would be the biggest challenge, but the crawler action has been so smooth and precise that it has been a relatively easy process."

Minneapolis, Minnesota-based Hayden-Murphy Equipment was also a key company on the project, renting the two cranes to Trans-Link. Hayden-Murphy has been in business for more than 50 years and is a major supplier of construction equipment to the Midwest, including several of Manitowoc's crane brands. Said Bob Krause, sales representative at Hayden-Murphy: "The two Manitowoc MLC165 crawler cranes with short boom configurations were the perfect fit for this project and customer."

ARE YOU READY...

AGRICO SALES

Sophisticated shiploading solutions from Russia's Technoros

Product Association Tehnoros was established in 1991. Nowadays, Tehnoros is a leading Russian designer and manufacturer of complex materials' handling and transport equipment of various applications. The company's product range includes high-quality shiploaders.

Tehnoros specializes in the custom-design and implementation of unique engineering solutions that are based on detailed analysis of the technical features of every project, operational conditions and individual needs of the customer.

For years, the specialists at Tehnoros have carried out more than 100 unique and complicated projects for major companies in the oil and gas industry, mining, metallurgical, chemical and nuclear power industries, shipbuilding, military industrial complex. The company offers great expertise in equipment for cargo transportation and logistics infrastructure.

Tehnoros's capabilities mean that it is able to meet fully the requirements of the modern market, and to design, manufacture, deliver and maintain sophisticated and customized (non-standard) equipment which meets the highest global standards.

Tehnoros is active in the design and production of material handling equipment for dry cargo commodities. As an engineering company with a long history, Product Association Tehnoros is able to offer comprehensive shiploading solutions for the organization of transport flows of bulk cargo from the place of unloading to vessels of various classes.

The benefits of co-operation

Product Association Tehnoros has solutions for the transportation and transshipment of goods. It designs all the equipment necessary for a shiploading complex — internal logistics, transportation volumes and parameters of the goods, and also production of this equipment, delivery, installation and service.

Tehnoros is also able to modernize existing shiploading facilities. The flexibility that is built in at the design stage makes it possible to reduce financial costs by integrating new equipment into the existing facility. A further advantage is that all equipment meets set objectives.

The advantages of complex equipment:

Tehnoros has the expertise to propose a set of optimal individual interconnected technical and technological solutions to optimize the final cost of the project; all aimed at achieving the lowest-cost handling and maintenance costs.

The integrated use of the proposed equipment makes it possible to ensure continuity in the entire processing chain at a shiploading facility, including loading and unloading, transshipment, warehousing and storage of bulk cargo for various purposes.

Mechanization and automation of the process of transshipment, i.e. the use of special equipment, greatly reduces labour intensity; shortens the time and quality of loading/unloading of material; increases turnover; and increases the economic efficiency of economic entities.

Types of bulk cargoes

When designing equipment for a shiploading facility, Tehnoros takes into account the main properties and characteristics of transported goods, and its influence on the parameters of main and auxiliary equipment. DCi

Cargo Stars & Stripes

US equipment manufacturers

Jay Venter

DSI successfully implements portable dry fog system at Florida Port

Global solutions provider and manufacturer of industrial dust suppression systems, Dust Solutions, Inc. (DSI), recently completed the delivery and startup of a portable Dry Fog system at the Port Everglades Terminal in Fort Lauderdale, Florida. The system was installed at a cement terminal to address dust emissions during the shiploading and unloading process.

A key concern for the client when evaluating dust suppression technologies was to select a solution that could be applied at various locations since cement unloading occurs at different hatches throughout the facility. To fully address their dust suppression needs, either a system installation would be required at each hatch or the ability to quickly and efficiently move the selected system was necessary. Dry fog was selected as the technology of choice because of its effectiveness in suppressing cement dust without adding significant moisture to the material.

To address the issue of mobility, DSI designed a portable Dry Fog system where the system controls are housed in a portable cart which run four 10ft fogging manifolds. The manifolds are lowered into the cargo hold creating a blanket of fog which agglomerates to dust particles that are generated during material movement and would otherwise escape the hatch into the open environment. The system can easily be transported by a two-person crew and set up in as little as thirty minutes after initial implementation. On-site visual inspection and air quality testing have taken place since installation and all unloading activities have been cleared and accepted while the Dry Fog system is operational.

High-efficiency vibrators for spreaders, pumpers and dump trucks

Cougar® MDC12-400/700 vibrators offer powerful bulk material movement for concrete pump trucks, salt/sand/gravel/fertilizer spreader trucks and dump trucks.

Martin Engineering has introduced a 12VDC electric vibrator that combines superior performance with long-lasting reliability to improve material flow in specialized hauling and distribution vehicles. Cougar® MDC12-400/700 vibrators from Martin Engineering offer powerful bulk material movement for concrete pump trucks, salt/sand/gravel/fertilizer spreader trucks and dump trucks. Able to be retrofitted to most standard brackets, the high-efficiency design uses less current and runs at a lower temperature, while retaining the same power as comparable models. The result is longer equipment life with lower operating expense and maintenance costs by reducing material buildup, slow unloading, clogging and bridging.

"Slow discharge or blockage occurs for several reasons – humidity, material consistency, etc., but out in the field, the most aggravating reason is when vibration equipment fails," said Allen Twidell, Mobile Market Manager for Vibration at Martin Engineering. "When that happens, everything stops and operators need to take steps to manually dislodge material using shovels or rods to poke at the clog, or mallets to bang on the side of equipment. These actions can result in equipment damage or sudden discharge, which can be dangerous. Additionally, the extra time and labour raises operating costs and reduces productivity."

Powered by a high efficiency 12-volt DC motor with a maximum draw of 13 amps, the oversized permanent magnet design reduces demand on the vehicle's electrical system. Drip-impregnated armature windings carry the current, and sealed, oversized bearings eliminate lubrication requirements, keep contaminants out and ensure ongoing performance with minimal maintenance. A more sustainable operating temperature coupled with high-temperature Class F insulation puts less stress on internal components, leading to better efficiency and greater durability.

Delivering a force output of 400 lbf (90N) for the pumper/spreader model or 700 lbf (160N) for larger spreader applications, the internal components are housed in a heavy-duty aluminium alloy case. Weighing only 18 lbs (8kg), the unit features a more compact design than comparable vibrators on the market. To eliminate moisture penetration, Martin designers placed the terminal box underneath the vibrator to better secure the electrical wiring, then filled the box with silicone rubber for added protection against moisture and other contaminants.

Featuring machined surfaces and sealed with O-rings to create dust-tight and water-tight protection, the vibrator carries an IP-66 rating, ensuring that it can withstand punishing winter and summer environments. The external surfaces are smoothed and painted to eliminate buildup of fugitive material.

Designed and manufactured in America, the MDC12-400/700 is intended to replace less reliable, foreign-made models at a competitive cost to the consumer. Able to fit most existing brackets, the unit has a specially designed mounting base with three holes on each of the four legs, which permits selection of four different mounting patterns to the equipment. With a 10 in. (254mm) pigtail cord ending in a two-prong plug, the unit fits most truck electrical systems.

"Even before this vibrator went into full production, it was adopted by a speciality snow removal equipment manufacturer as their standard unit," Twidell pointed out. "With the more efficient compact design and Martin's performance guarantee, this vibrator has received a positive reception from the industry for its superior construction and lower cost of ownership."

One of the first 12 volt DC truck vibrators for these applications was a Cougar® branded model that was patented in 1964. Martin Engineering – the world's largest supplier of industrial vibrators – acquired Cougar Vibration in 2010 and has been one of the vibration industry's most prolific innovators since the company's inception in 1944.

Efficiency as standard: customer benefit of Dome Technology and ES² partnership

Collaboration with Engineering System Solutions (ES²) is a critical component of each Dome Technology project.

Sixteen years of partnership have produced a high level of synergy for Dome Technology and Engineering System Solutions (ES²), a team that continuously collaborates to develop innovative bulk storage options for the marketplace.

With both companies headquartered on the same campus, Dome Technology and ES² work closely on bulk-storage and architectural projects around the world. The team has developed an effective, proven system for collaboration, something unique in construction.

"The stigma in the construction world is that contractors often disagree with engineers because engineers are so inflexible. Having the relationship we do with Dome Technology, we can work toward the most economical solution on a problem," said ES² project manager Adam Aagard. "We have a good relationship with the contractor, and we can incorporate their feedback to improve our constructibility, which can save money."

The team's latest development is the Drive-Thru DomeSilo™ for cement and fly-ash storage, allowing companies to fill truck or railcar directly from the storage structure and speeding up the process of product reception to delivery.

The Drive-Thru DomeSilo incorporates a fill pipe, storage vessel, ladder access, truck scale and appropriate foundation. "Companies can save on building a single drive-through storage facility by eliminating the need for multiple mechanical systems, two operators and multiple structures," Dome Technology sales manager Lane Roberts said, noting that the DomeSilo is less expensive to build than a silo of similar capacity.

The new model allows for direct load-out, where stored product flows through a hopper and into the truck or railcar. For example, a dome storing cement will provide 99% reclaim utilizing a fully fluidized floor. "Dome Technology is providing a full turnkey system, not just the storage bin," said ES² CEO Doug Weber.

Customers who select a dome from Dome Technology gain access to the ES² experts, who can engineer the dome, the electrical system and the mechanical systems. "One of the biggest benefits that we have is not just that we can design the structure, but that we can design the whole package," Aagard said.

ES² is involved in each Dome Technology project from the beginning. An engineer plays a pivotal role in the sales process, often making initial sales trips to lend technical support on the mechanical and electrical side. That way, no customer requests are lost in translation since engineer and contractor are present from the beginning to discuss expectations, and customers get quick feedback about a project's feasibility.

When a single team engineers the entire scope of the project, a facility benefits from streamlined and seamless systems, not to mention a reduced construction schedule since the engineers and contractors work closely together. "When it's all in-house from the design and construction standpoint, it takes a ton of risk off the customer, and also it's faster — there's no one we can blame for delays in the schedule," Aagard said.

After 40 years of dome building and industrial construction, Dome Technology understands the importance of collaborating with companies like ES² that are also eager to pioneer better ways to store and handle bulk products.

"In every project, Dome Technology and ES² incorporate innovative technology to maximize storage capacity and system performance with an economical solution," said Dome Technology CEO Bradley Bateman.

Design phases

The Dome Technology team builds bulk-storage domes for the mining, grain, sugar, cement, energy, fertilizer, biomass and fly ash industries. Experts at Dome Technology and ES² work through these phases for every project:

Schematic design phase: this phase begins with a feasibility study to determine if the construction is technically possible and if projected income will justify anticipated building costs. Front-end engineering design (FEED) is an essential part of this, during which the design-build team provides preliminary plans with an acceptable +/- estimate to help customers determine if a project's scope fits within budget. The Dome Technology and ES² team estimates costs by being as specific as possible in the early stages of engineering, yielding accurate estimates at the outset.

Design development: After completing the civil design, material handling is addressed, which includes determining the best systems for conveyance, dome reclaim systems and rail and truck loading and load out. Barge and shiploaders and unloaders are also arranged through partnerships with other companies. ES² engineers provide structural, mechanical and electrical engineering and plan for necessary monitoring systems. Geotechnical analysis is conducted by a third party to ensure proper site conditions are present.

"In these processes, we work with Dome Technology for value-added design. Working with the contractors who are building this gives a lot of value in the process to save money," ES² principal Jason South said. "We develop buildable concepts, drilling down to the most cost-effective solutions."

General Kinematics welcomes new product to the family

General Kinematics officially added its new VIBRA-MILL® Vibratory Lump Breaker to the family of GK vibratory products in the first week of April 2017 and it is already making waves in the industry. This new high energy vibration lump breaker reduces lumps, clumps, bumps, and agglomerations in powder and bulk material. These lumps develop naturally during production, storage, and shipping but the VIBRA-MILL® Vibratory Lump Breaker brings it all back to grain size.

As a vital start to the line the VIBRA-MILL® Vibratory Lump Breaker eliminates blockages and eradicates lumps before they reach the mixing tank. Even four-foot lumps are reduced to minus 20 mesh grain size, increasing product consistency.

How it's unique

The General Kinematics VIBRA-MILL® Vibratory Lump Breaker uses high energy vibration and tumbling action to break apart powder and bulk product without damaging it with rotating blades. This keeps customers' product pristine while breaking down inconsistencies caused by moisture.

What VIBRA-MILL® vibratory lump breaker is bringing to the table

A simple, open tub design that lends itself to easy loading, special vibratory service motors for increased uptime, and single jam-proof deck means the VIBRA-MILL® Vibratory Lump Breaker can be relied upon to do the work. It even has various feed options and adjustable screen size to fit each customer's needs depending on their application. The VIBRA-MILL® Vibratory Lump Breaker provides fines removal and high capacity reclamation rates to make the most out of the processing line.

Across industry

From the food industry to mining, the new VIBRA-MILL® Vibratory Lump Breaker brings the value and reliability of General Kinematics to the customer's processing line. Whether one is working with flour, sugar, fertilizer, or limestone, GK's powder handling solution is built to provide outstanding results.

The General Kinematics VIBRA-MILL® Vibratory Lump Breaker uses high energy vibration and tumbling action to break apart powder and bulk product without damaging it.

Discover R&D

This new application has been developed due to the efforts of R&D at GK. General Kinematics' innovative Research and Development department is driven by requests from its customers to solve their process challenges. Continuously testing materials and trying new applications enables GK to provide the best equipment. GK is proud of the progress its team has made in the past 57 years.

Superior's new Speed Sensor can be mounted on multiple idler styles

Superior Industries, Inc., a US-based manufacturer and global supplier of bulk material processing and handling systems, has added a new Speed Sensor to its conveyor component accessories offering.

The Speed Sensor monitors the speed of a conveyor belt by producing electronic pulses interpreted by a PLC or Superior Speed Sensor module. The unit's sensors help operators control conveyor shutdowns, monitor belt slippage, and trigger warning systems.

Fitted for CEMA C and D idlers, Superior Speed Sensors are available for belt widths ranging from 24–72 inches and are protected by a two-year components warranty. They can be mounted on a clean side roll, return roll, or troughing wing roll.

About Superior Industries, Inc.

Superior Industries engineers and manufactures groundbreaking, bulk material processing and handling equipment and cutting-edge machinery components. From its headquarters in Morris, Minnesota, USA, the manufacturing firm supplies bulk crushing, screening, washing and conveying systems for industries including construction aggregates, mining, bulk terminals, agriculture, power and biomass. In addition to its home plant in Minnesota, the 45-year-old Superior operates from additional facilities in Arizona, Georgia, Illinois, Michigan and Nebraska, USA; Alberta and New Brunswick, Canada; and three locations in Brazil to serve South American markets. DCi

Superior Industries' Speed Sensor monitors the speed of a conveyor belt by producing electronic pulses interpreted by a PLC or Superior Speed Sensor module.

British Steel delivers £126m turnaround

First year of independence brings major turnaround for British Steel

On 1 June this year, British Steel reported a £126 million turnaround in its first year as an independent business, providing a solid foundation for further growth. The company made £47 million profit (EBITDA — earnings before interest, tax, depreciation and amortization) in the 12 months ending 31 March 2017 — its best performance for a decade.

Other highlights include:

- supplied all of the rail for the Crossrail project in London — 57km of track in total;
- 500 new employees joined since 1 June 2016;
- 50 new people starting this month;
- new Chief Executive Officer appointed;
- £40m of capital investment pledged for 2017/18;
- employees given 5% stake in business, 3% salary sacrifice concludes;
- recently completed an ownership transfer securing a 50% stake in Redcar Bulk Terminal; and
- second-year focus on increasing steel-making capability and market footprint, and improving product quality.

On the first anniversary of its launch, since being acquired by family investment office Greybull Capital LLP, the company has reported a profit of £47 million (EBITDA) for the 12 months ending 31 March 2017. The Long Products Europe business — formerly owned by Tata Steel and purchased on 1 June 2016 — had recorded a £79 million loss in the previous financial year.

The company has significantly improved profitability despite a 44% increase in the cost of raw materials. Annual turnover was £1.2 billion. The volume of steel produced was 2.7mt (million tonnes) versus 2.9mt in 2015/16. Sales were 2.5mt versus 2.6mt for the previous year.

British Steel's plan to build a sustainable future is firmly on track after cost-saving initiatives, product development and

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market growth secured consistent profit in each quarter. This turnaround has enabled the company to deliver planned capital investment, and it today announces plans to invest a further £40 million in 2017/18.

British Steel Executive Chairman Roland Junck said: "The transformation in this business is remarkable and that is down to our remarkable people who have embraced, engineered and led change. They are the reason we can today reveal the best financial performance in the long products business since 2007 and they are the reason I have great optimism for the future of British Steel. I'm delighted to be able to confirm that our employees will return to full pay today having sacrificed 3% of their salary to make last year's sale and the turnaround plan possible.

British Steel credits its employees for the great success of its first year of independent operation.

"In 12 months we have started transforming from an inward-looking production hub into a profitable, more agile business by controlling costs, improving our product range and quality, and through strategic investments. After significant capital investment, we have made a small net profit and although it hasn't been easy an entrepreneurial spirit is starting to flow through British Steel — it means we are fast becoming the efficient, customer-focused business we need to be.

"As we look to further grow the business it is important our employees, who have played such a vital role in the successful implementation of the turnaround plan, should share in our future success. I'm therefore delighted to set out the employee share scheme, an almost unique initiative in our industry to recognize their contribution.

"We've worked closely with our shareholders, customers, suppliers and government and I'd like to thank everyone for their support as we look to build a sustainable future."

British Steel operates five independent business units, all launched in September 2016:

- **Primary Products** (iron and steel making): £21m cost reduction delivered while maintaining a firm focus on supplying the quality and service required by customers;
- **Rail:** supplied all of the rail for the Crossrail project in London — 57km of track in total for the new tunnels and associated rail connections. Final delivery was made at the end of May and British Steel has been rated as one of Crossrail's top-performing suppliers on a range of metrics including delivery and quality;
- **Construction:** the business has an extensive UK distribution network aligned to its manufacturing units ensuring it continues to provide a comprehensive product range and unrivalled customer service to meet the needs of the construction market. The business is working with government to lobby for council procurement policies to ensure all public construction projects have access to British steel. It has supplied hundreds of tonnes of steel sections for Northern Ireland's biggest hotel development — the stunning 23-storey, 300-bedroom Grand Central Hotel in Belfast — in partnership with Fabrite;
- **Wire Rod:** has achieved the highest sales and manufacturing output for six years with continuing success in automotive sales growth. New bigger product size range launched and significant success in sales into the bright drawing markets; and
- **Special Profiles:** launched a local business transformation strategy to strengthen its competitive position through investment, growing sales and reducing costs. The plan includes a committed investment of £1.8 million to improve the surface quality of products, which is scheduled for completion in summer 2017. The business has also broadened its product portfolio and secured a significant supply position for its cutting edge products in the USA with Caterpillar.

British Steel CEO Peter Bernscher said: "British Steel has achieved a remarkable turnaround but this is just the beginning. "To guarantee our future as a sustainable business for decades to come we must now seize and capitalize on the opportunities that have been created.

"Maximizing and growing our steelmaking capability will be key, but success will also depend upon increasing our footprint in new and current markets and products, continuing to improve on quality and optimizing manufacturing routes, while developing our people, the power of our brand, and the strength of our supply chain.

"While the challenges the UK steel industry has faced over the last decade have not gone away, we continually respond to the market and stay flexible in an effort to overcome them. Therefore it is vital we continue to work with governments, our customers and suppliers to build our businesses and support the regions in which we operate as we look to become the global supplier of choice."

Paul McBean, Scunthorpe Multi-Union Chairman, said: "Exactly one year ago I hailed our employees for making the launch possible. Today I praise them in equal measure for giving us a fantastic platform upon which to build.

"It's not been easy but Britain needs a thriving steel industry. That's what we're intent on delivering and that's what the new government must support because today's news isn't mission accomplished. The share scheme and reinstatement of employees' full salaries are both deserved and welcomed. I'm also pleased to see British Steel is continuing to make the significant capital investments this business needs but people should be in no doubt, a lot of hard work lies ahead. However, I have great confidence in our employees and as we continue our growth they will ensure British Steel keeps flying the flag for manufacturing excellence at home and abroad." DCi

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