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Coeclerici Logistics' fleet operating in Indonesia (East Kalimantan): from top FTS Bulk Pioneer employed at Lubuk Tutung and Tanjung Bara anchorage for Kaltim Prima Coal; FTS Bulk Sumatra, FTS Bulk Celebes, FTS Bulk Java and FTS Bulk Borneo employed at Muara Pantai anchorage for PT Berau Coal.

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Soya trade continues advancing

Various indicators of import demand for commodities in many countries look positive. As a result, world seaborne dry bulk trade could see a solid advance this year. But there are still doubts about how strongly several key elements will evolve. with prospects for parts of coal trade in particular surrounded by uncertainty.

Some assessments of global economic activity are becoming more encouraging. The latest (early March) update published by the OECD organization suggests that the world economy could pick up modestly over the next two years. After a sluggish 3% average GDP increase in 2016, the pace is expected to accelerate to 3.3% this year and 3.6% next year, amid improving business and consumer confidence.

Grain

Among commodity trades with a favourable outlook, soya movements, included in the 'grain' category, are expected to continue increasing. Global trade in soyabeans and meal is now approaching the symbolic 200mt (million tonnes) annual volume. Figures shown in table 1, summarizing US Dept of Agriculture forecasts, suggest a 4% rise in the current 2016/17 marketing year, raising the total to 203mt.

Robust consumption trends, together with insufficient or lack of domestic production in the importing countries, underpins the upwards trend in soya trade. More than two-fifths of the total is comprised of China's imports, which seem likely to strengthen further by 4% to reach 87mt in 2016/17. Other Asian importers, and numerous countries elsewhere could also purchase extra quantities.

Iron ore

Higher steel production may be achievable in a range of raw materials importing countries this year, but there are few signs of robust expansion. Compared with the circumstances twelve months ago, however, the global steel market is looking more solid, with higher prices demonstrating an improved demand/supply balance.

Statistics for steel output in the first two months of 2017 show greatly improved levels (compared with a year ago) in key producing countries importing iron ore. But more evidence of a sustainable revival is awaited. In China — the dominant buyer — while potential for steel output growth seems limited, iron ore imports could rise well above last year's 1,025mt, assuming additional domestic ore is replaced with imports.

Coal

Amid further signs of restraining influences affecting coal purchases in several of the main importing countries or areas, optimism about global trade growth has receded. Nevertheless the picture is not uniformly negative. For example, a recent report pointed to a possible robust rise in imports into the Middle East area, as demand from power stations and cement works strengthens.

In India, however, one of the major buyers, a weakening trend has become a notable feature. After falling slightly in 2015, seaborne coal imports appear to have declined much more sharply in 2016 by around 10%, down to just below 200mt. Consumption of coal in power stations has not been growing as strongly as expected, while output from domestic mines has risen, resulting in imports diminishing.

Minor bulks

Trade in steel products (coil, sheet, plate and other items) is a large element of the minor bulks. Estimates of global seaborne steel products movements in 2016 suggest that the total may have been almost flat, at just over 400mt. European imports rose, but US imports declined. Exports from the dominant supplier, China, fell slightly.

Bulk carrier fleet

Another deceleration in fleet growth occurred last year in the Panamax (65–99,999dwt) bulk carrier sector, as shown in table 2. The newbuilding deliveries volume was similar to that of the previous year but scrapping increased. During 2017, both key influences could see reductions. But estimates are tentative, because unpredictable freight market conditions will have an impact. Higher freight rates in recent months have already been reflected in reduced pressure for scrapping.

TABLE 1: WORLD SOYABEANS AND SOYAMEAL IMPORTS (MILLION TONNES)

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17*
European Union	32.9	29.5	31.4	33.5	34.2	34.1
China	59.3	59.9	70.4	78.4	83.3	87.0
Other Asia	27.5	27.8	30.3	32.3	34.2	35.9
Others	31.8	33.8	38.9	41.0	43.7	45.7
World total	**151.5**	**151.0**	**171.0**	**185.2**	**195.4**	**202.7**
% change from previous year	+4.0	–0.3	+13.2	+8.3	+5.5	+3.7

source: US Dept of Agriculture, 09 March 2017) *Oct/Sep marketing years* **forecast*

TABLE 2: PANAMAX (65–99,999DWT) BULK CARRIER FLEET (MILLION DEADWEIGHT TONNES)

	2012	2013	2014	2015	2016	2017*
Newbuilding deliveries	27.1	19.9	12.8	9.9	9.6	7.5
Scrapping	8.7	5.0	4.8	6.7	8.3	7.0
Losses	0.0	0.0	0.0	0.1	0.0	0.0
Plus/minus adjustments	–0.1	0.1	0.1	–0.2	–0.2	0.0
World fleet at end of year	**169.4**	**184.3**	**192.3**	**195.2**	**196.3**	**196.8**
% change from previous year-end	+12.0	+8.8	+4.4	+1.5	+0.6	+0.3

source: Clarksons (historical data) & BSA 2016 forecasts **forecast*

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Asian coal trade 2017

Coal being loaded onto a barge in East Kalimantan, Indonesia.

Dr Tim Jones, e-coal.com

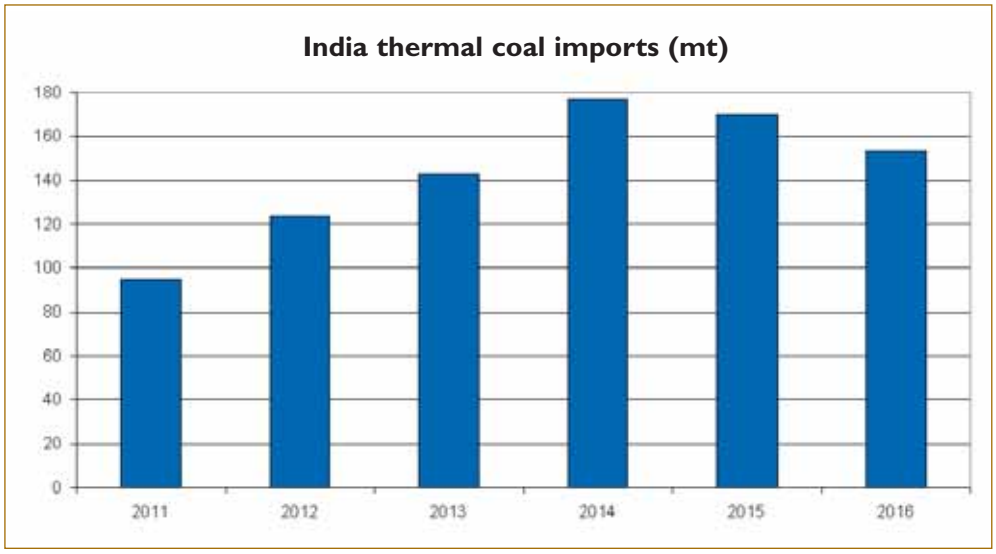
The international coal markets have been settling down during the first quarter of 2017 after an unexpected level of activity seen in the second half of 2016 when prices surged amid renewed demand. Most of that demand originated in the Asian markets, and many of the suppliers based there as well as those in Australia and South Africa saw some major benefits compared to the difficult time they have experienced in recent years.

The Asian thermal coal market is forecast to require about 705mt (million tonnes) of imported material during 2017 according to the latest data available. This compares with some 712mt recorded provisionally for the previous year. China is expected to be the largest market for imported thermal coal with almost 160mt required this year, which is about 10mt less than was recorded in 2016. India is likely to be the second largest market this year, with around 145mt of thermal coal imports forecast to be required after several consecutive years of declines in import demand since the 176.5mt recorded in 2014. Japan is expected to retain its relatively steady demand for about 130mt of thermal coal this year after recording imports of 130.5mt in 2016. Next in market size this year is South Korea which remains steady at about 104mt of thermal coal required, compared to around 104.7mt recorded in 2016. These four countries account for more than three quarters of the total thermal coal import demand in the Asian market.

Taiwan is forecast to see some growth in demand for thermal coal in 2017 with around 64mt expected to be shipped there compared to the 60mt recorded last year. Further growth is forecast over the next few years and the total import tonnage could reach more than 70mt by 2020. The Malaysian thermal coal market is also growing and in 2017 the total demand for imported thermal coal is forecast to reach around 24mt. This growth is expected to continue and the country is likely to import more than 30mt by 2020. The Philippines and Thailand are each expected to have thermal coal import markets close in size to Malaysia this year, and both are forecast to grow to see demand reach around 27mt by 2020. Vietnam is one country in Asia which is seeing more rapid growth in thermal coal import demand from the 10mt or so expected in 2017. By 2020 this total is forecast to reach close to 30mt and compares with less than 1mt required in 2010. Its domestic production has not been sufficient to match the growth in coal-fired power generation as the country developed over the past couple of decades. These five countries account for a further 20% of thermal coal demand in the Asian market, leaving the remaining 5% or about 35mt being sought by smaller markets including those in Hong Kong (11mt), Pakistan (8mt), and Sri Lanka (2mt)

and a number of consumers including Indian Ocean and Pacific Ocean islands taking around 1mtpa (million tonnes per annum) each or less.

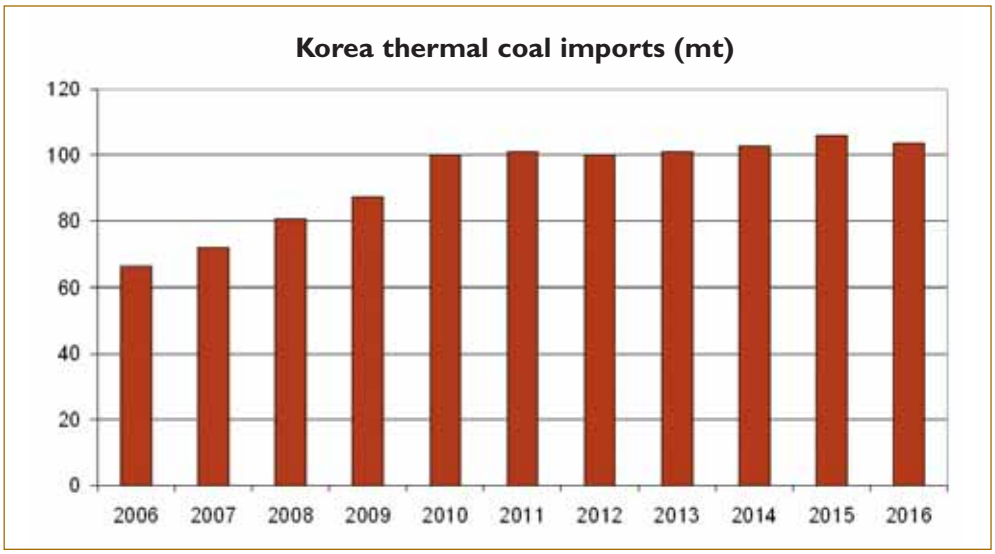
Hong Kong has had relatively steady demand for thermal coal in recent years, but is forecast to require less imports in the next few years, declining to around 7.5mt by 2020. On the other hand, Pakistan has been seeing growth in demand for thermal coal and is expected to import around 12mt by 2020. Smaller buyers in Asia include Mauritius, New Caledonia, New Zealand, and Reunion, which take a few cargoes each year, with the occasional purchase of a cargo or two being made by Bangladesh during some recent years. Trade has been recorded for the United Arab Emirates each year, with about 400kt being indicated.



While some Asian countries are seeing growth in the total demand for imported thermal coal, the overall picture suggests relatively modest growth from around 705mt in 2017 to about 715mt by 2020. That figure is also less than that recorded in the peak years of 2013 and 2014 when 727mt and 748mt was recorded respectively. Forecast ongoing weaker import demand from China over the next few years is the main reason for this lack of higher overall growth in Asia.

The past year has seen some growth in China's thermal coal imports where a total of 168.6mt was recorded. This was an increase of 36.9mt or 28% compared to 2015. Government intervention in the domestic industry led to increased interest in imports during the second half of 2016 as production was limited with a consequent rise in the price of Chinese coal. Demand from the electricity generating sector also rose at that time. As the year end approached, almost 20mt of imported thermal coal was recorded in November which was almost double the usual monthly intake over the past year or more.

Indian buyers were taking less thermal coal from Indonesia last year, with significant declines recorded in the latest statistics available at the time of writing. Reliance on South African material picked up during the year, and with very low freight rates during part of the year, there were opportunities for purchases to be made from Colombia as well. The coal and freight markets firmed towards the end of the year, closing down those options to Indian consumers. The South African spot price at Richards Bay was attractive earlier in 2016 and was competitive against the Indonesian material normally purchased by Indian consumers.



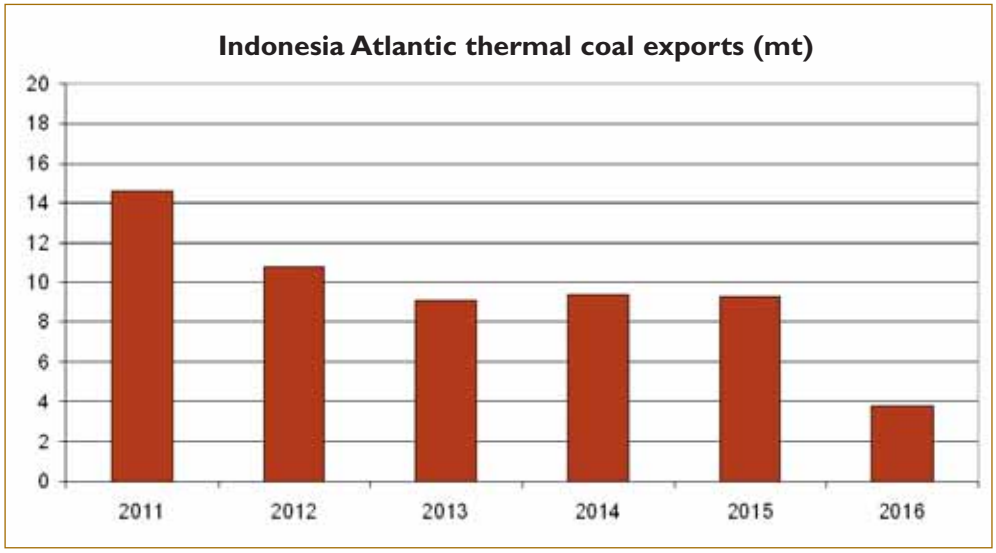
Colombia reported higher shipments to South Korea last year, and after a weaker year overall, there was a boost during the final month of 2016. Canadian exporters shipped 2.3mt less thermal coal there in 2016 compared to the previous year.

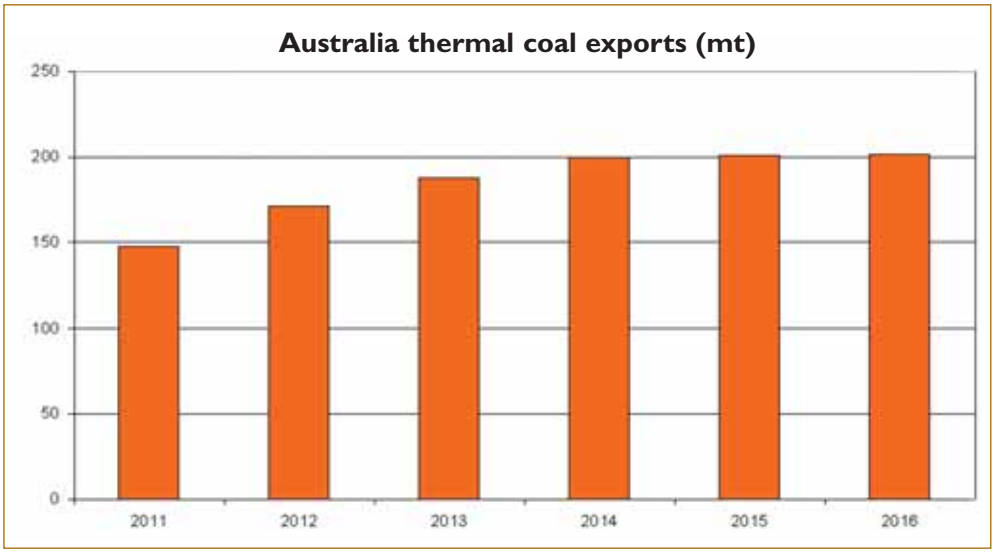
Taiwan saw some changes in the pattern of coal consumption last year, with less being used for electricity generation as demand for power decreased compared to the previous year. Other sectors of the economy recorded some increased demand, however, and that helped to offset the softer demand in the power sector. Australia and Indonesia are the main suppliers to Taiwan with about 25mt each shipped in 2015. Russia is the next largest shipper with around 7mt shipped in that year. The total for last year at around 60mt was similar to 2015. Taiwan's energy policy will see increased use of renewables for power generation in the coming years as nuclear power is being phased out due to concerns about the Fukushima disaster in Japan six years ago. The proportion of electricity generated by renewables is planned to be increased from about 4% currently to about 20% by 2025. This does not prevent new coal-fired facilities being developed, however, and Taipower would purchase the electricity if it was required. The most recent addition to the coal-fired power base in Taiwan is the Linkou 1 power station which was commissioned in November 2016. Another 800MW of coal-fired capacity is due to come on line at the Talin 1

More tonnage was taken and used for blending with domestic Indian coal.

Japan's thermal coal imports from its main supplier, Australia, were around 3mt lower during 2016 compared to the previous year. This accounted for most of the decrease in overall imports throughout the year as well. Liberalization of the power sector in Japan last year may have some effect on interpretation of thermal coal import data, and this is more likely to become apparent as more data becomes available this year allowing comparisons with previous years. Nuclear power generation combined with an increase in solar power during 2016 limited the use of coal-fired power generation.

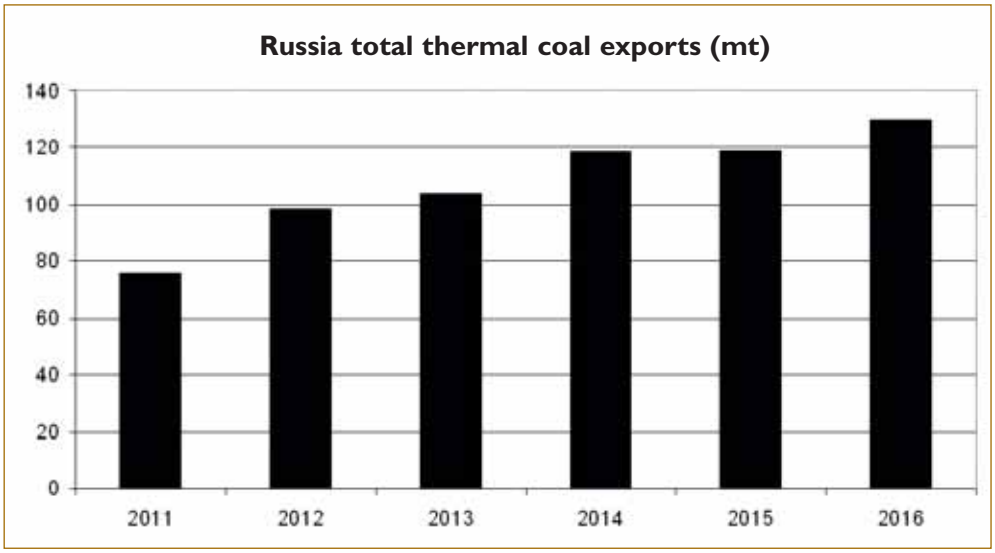
A general decrease in demand for electricity affected South Korea's thermal coal demand during 2016 and as a result the total tonnage reported for imported thermal coal was 1.1mt less than in 2015. The 104.7mt recorded was despite a decrease of 7.2mt from the main supplier country, Australia. Indonesia, South Africa, and





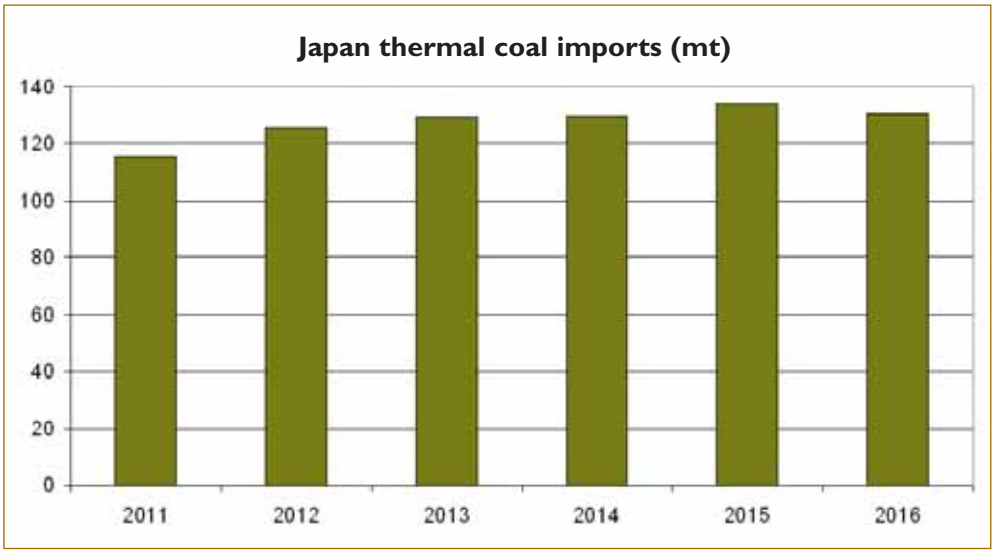
plant, with a second similar size Talin 2 unit after that. Linkou 2 will add more capacity when commissioned and all these additions are forecast to increase demand for imported thermal coal by around 3.5mtpa by 2018. After that, more expansion of coal-fired capacity is expected to increase demand for imported thermal coal by an extra 2.5mtpa.

Strong growth in imports of Indonesian thermal coal was seen in Malaysia last year, and around 2mt more was taken from there to bring the total to about 15mt. The overall total is believed to be about 23mt for 2016, making Indonesia the main supplier to Malaysia. Australia and Russia supplied the bulk of the remainder with a few cargoes of South African material proving competitive on occasion as well. Power utility TNB is due to commission its new 1GW Manjung 5 coal-fired power station in October this year which will lead to growth in demand for imported thermal coal in the coming years. Another larger coal-fired power station, the 2GW Jima East plant, is due to be fully commissioned by 2020.

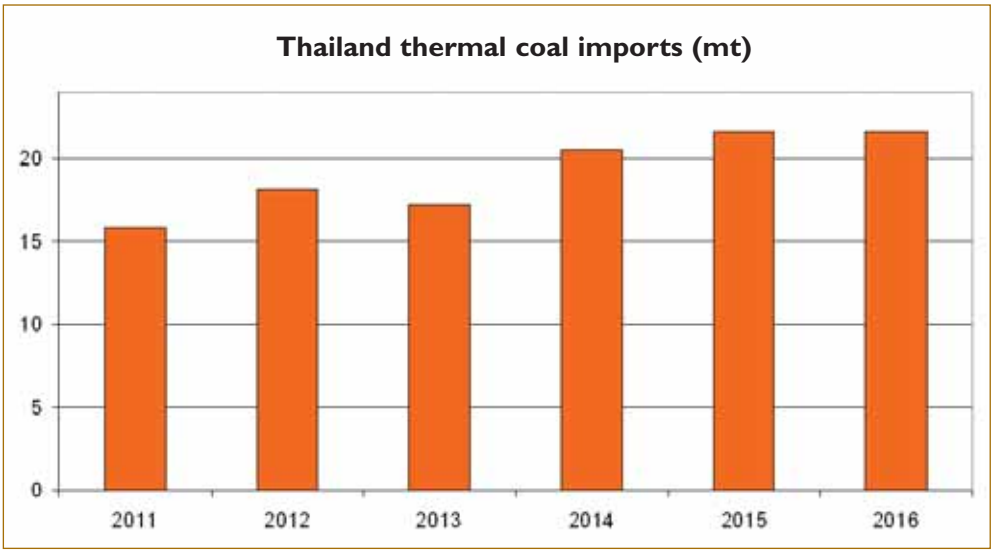


Almost 70% of Pakistan's 8mt of thermal coal imports came from South Africa last year as delivered prices were competitive with Asian sources. Most of the remainder was shipped from Indonesia, and the main consumer in Pakistan is currently the cement sector. Over the next ten years, Pakistan is planning to construct a total of 7GW of coal-fired power generating capacity which will require around 13mtpa of imported thermal coal. Indonesian and South African shippers are set to benefit from this, with two plants being sited at Port Qasim. Lucky Power and Sinohydro are two of the developers in this expansion programme. The new coal terminal at Port Qasim can handle Supramax vessels and has a capacity to import 12mtpa of coal as well as facilities to export cement and clinker produced in Pakistan.

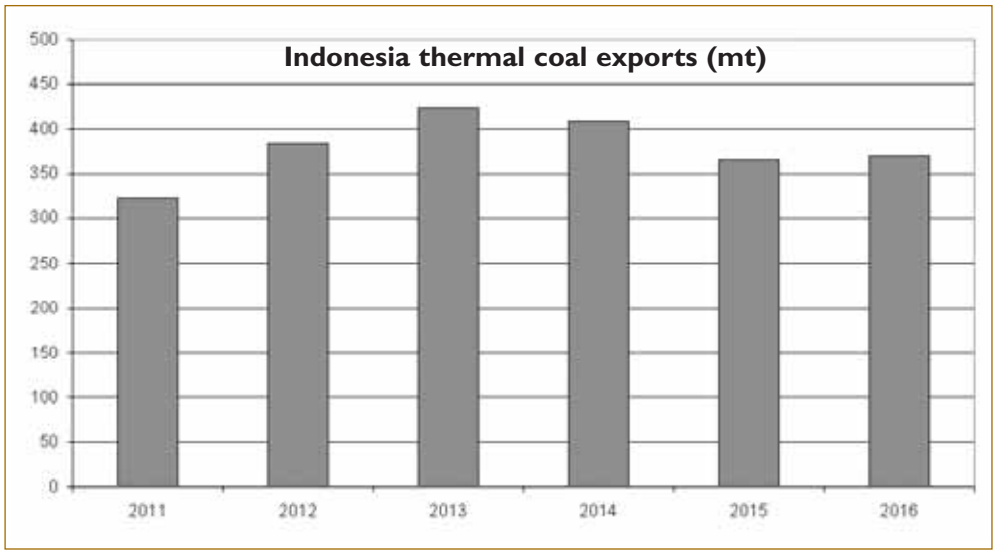
Thermal coal consumers in the Philippines imported more material in 2016 with the main supplier country being Indonesia. Additional cargoes were taken from Australia as well and the total for last year overall is believed to be around 19-20mt. This was an increase of some 3mt compared to 2015. Electricity demand in the country grew by about 10% in 2016 compared to the previous year, and coal met some of that requirement. An additional 1GW of coal-fired capacity was commissioned in 2016 with eight new units coming into operation in the country. Further expansion is under way and another 500MW has already come on line this year,



with 680MW more due to be commissioned in 2017. Another 1.2GW is scheduled for commissioning next year, with a further 1.4GW due to be on line by 2020. Demand for imported thermal coal is therefore expected to grow by some 3mt each year until 2020.

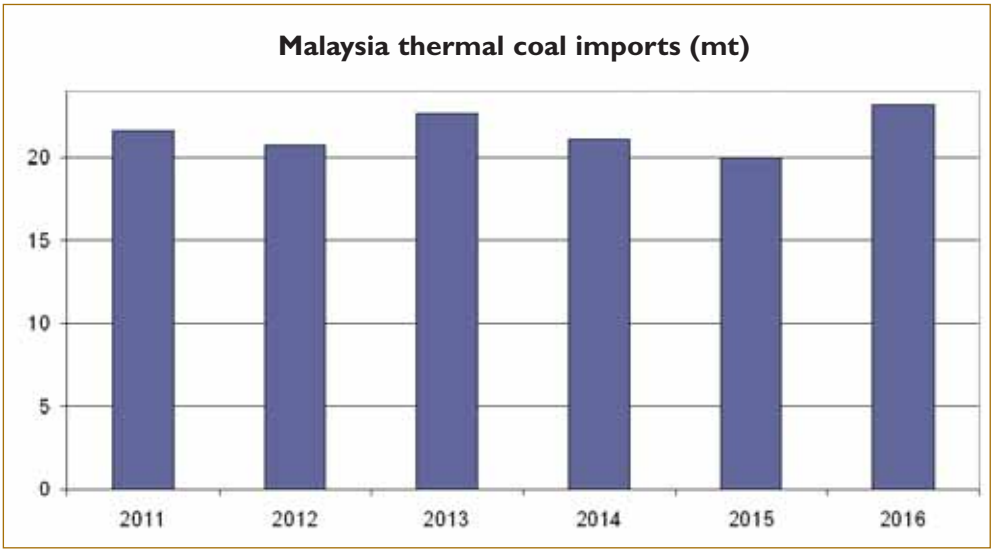


Last year, Thailand recorded an increase in thermal coal consumption amid growing electricity demand. The additional coal burn was in place of hydro and gas power. There were some conflicting signals, however, as industrial demand for thermal coal appeared to be lower and overall coal statistics which include lignite suggested the latter was in lesser demand. Thailand's coal-fired power expansion plans have been thwarted recently, with delays and cancellations resulting from public opposition. Major developments like the 800MW Krabi station and the 2GW Thepa plant are facing delays, and the 600MW Chachoengsao project has been postponed following its environmental impact assessment earlier this year. With the current climate adversely affecting coal demand in Thailand, the latest forecast suggest demand for imported thermal coal will be flat for the foreseeable future.

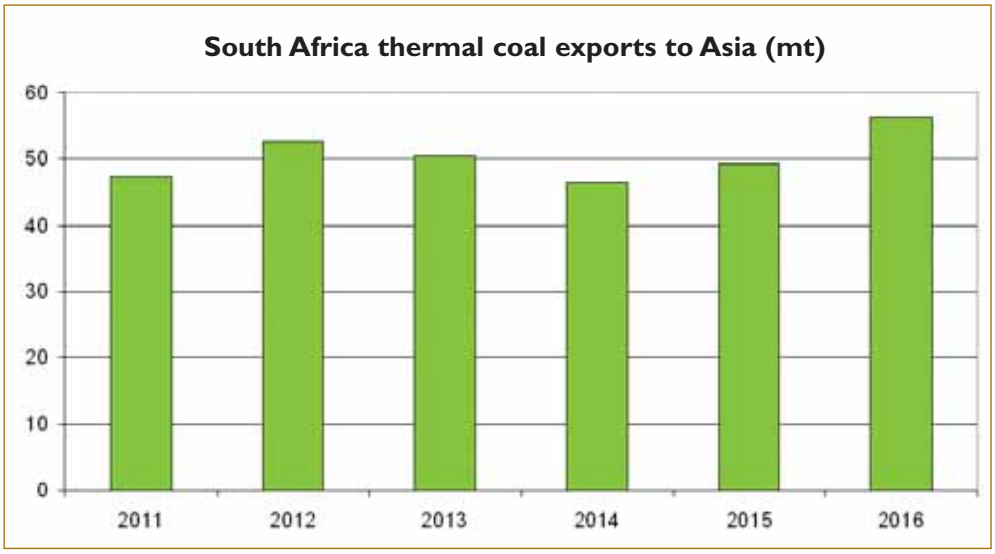


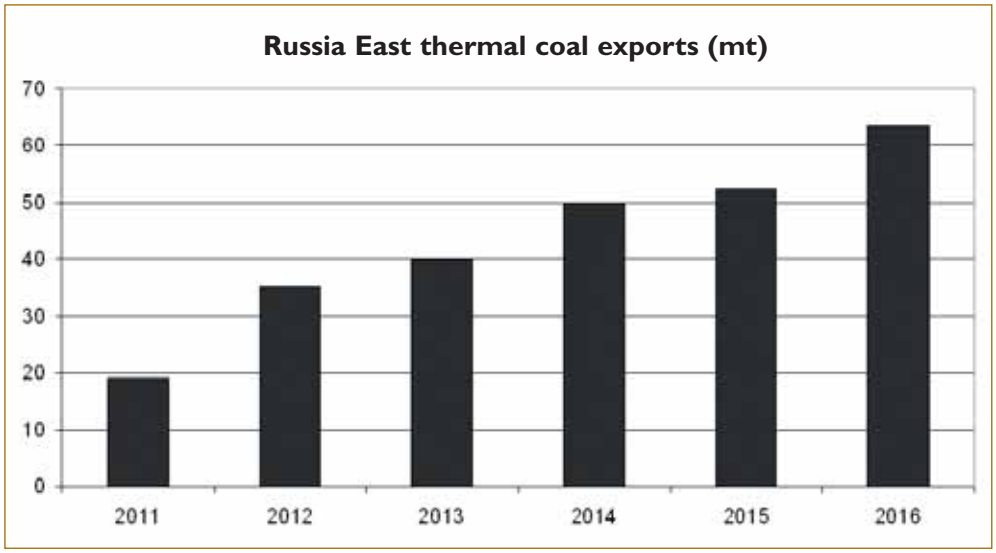
Vietnam's near doubling of coal imports in 2016 compared to the previous year saw a total of 13.6mt recorded. About half of this can be identified as thermal coal. China has been a longer established coal trader with Vietnam and its total shipments in 2016 were stable at about 1.7mt. Australia and Russia saw an additional 2.4mt shipped in 2016, bringing their respective totals to 3.8mt and 4mt. Indonesian shippers supplied 3.2mt last year and that was also an increase of 1.4mt compared to the previous year.

Over the past few years, Vietnam has constructed around 14GW of coal-fired power generating capacity and its domestic thermal coal production is still able to supply over 50% of demand. Last year about 40mt was produced which was somewhat less than the 41.5mt recorded in the previous year. New coal-fired units continue to be commissioned, with the latest being 600MW of the Duyen Hai 3 plant, which will require imported coal. A further 14.5MW of coal-fired capacity is under construction and all of it could be commissioned by 2021. Following that, another 10–11GW could be brought on line by 2025. At least 70% of the coal requirement will have to be met by imports from Australia, Indonesia, Russia and China, with other supplier countries able to ship appropriate material entering that market when delivered prices are competitive.



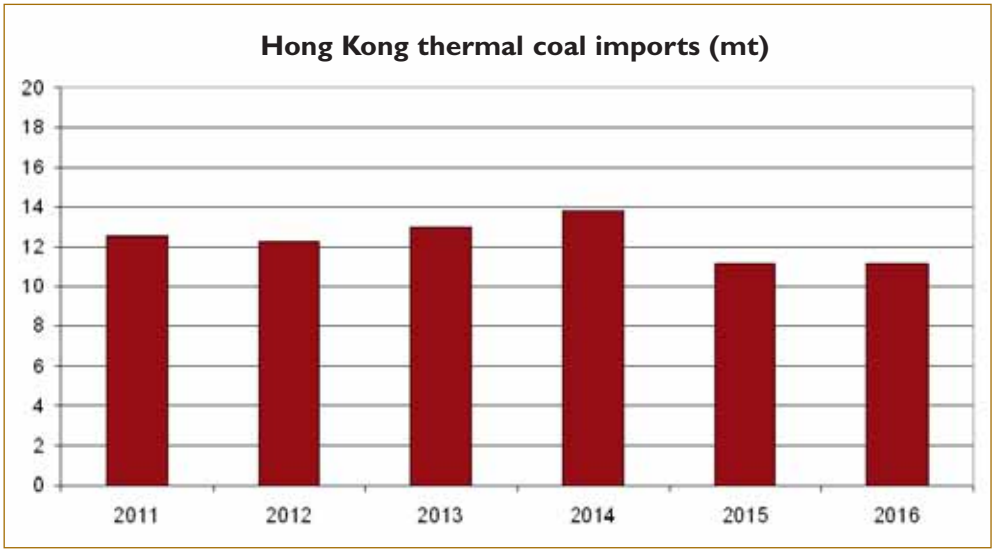
On the supply side in Asia, the Chinese exporters recorded a better year in 2016 compared to the previous year, but now the total is small in comparison to what it was at its peak. The figure of 3.75mt was recorded last year which was up from the 1.1mt seen in 2015. The tightening of production by the government in mid-2016 made even less coal available for export and this is unlikely to change significantly for the foreseeable future despite an easing of the limits as prices firmed later in 2016. The vast domestic coal output of 3.45bnt reported in 2016 was a decrease of 6% compared to the previous year. This year, production is forecast to increase somewhat but substantial volumes of Chinese thermal coal are unlikely to enter the international market while their prices are uncompetitive.

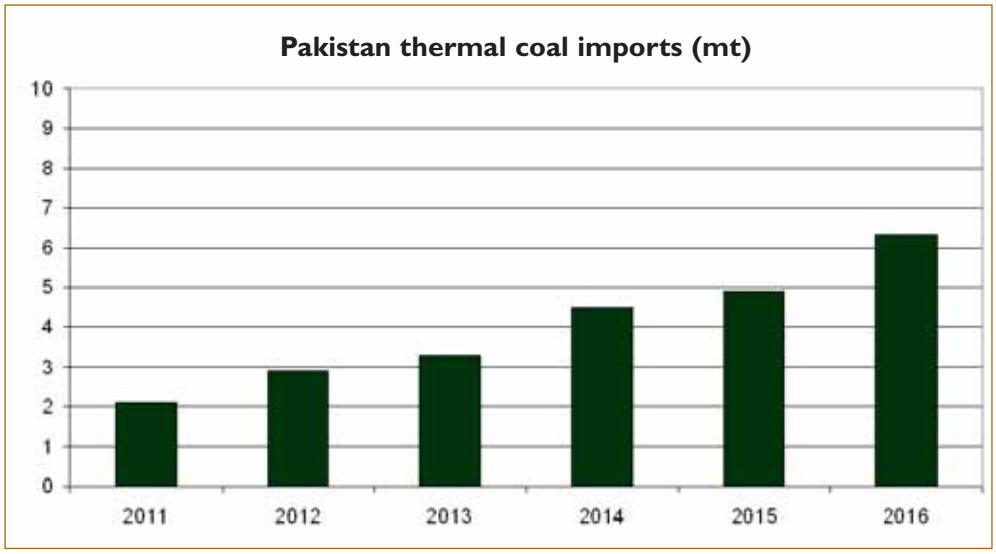




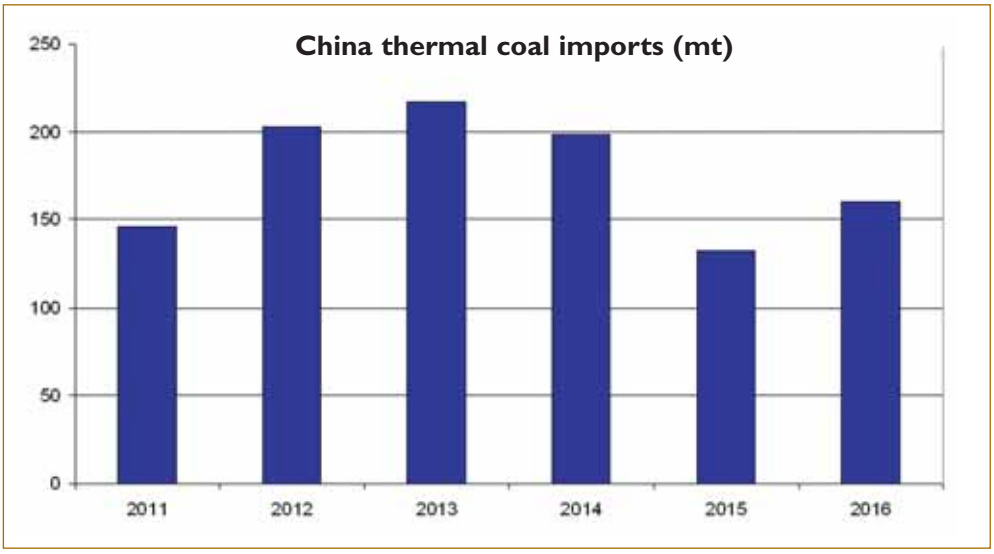
Russia shipped around 60mt of thermal coal to markets in Asia last year, which was an increase of more than 10mt compared to 2015. Growth was seen in all the major buyer countries including Japan, Korea, Taiwan, China, and also in Vietnam.

Indonesian exporters benefitted from the restrictions on Chinese production last year, with more than 10mt of additional shipments being recorded to that market. About 30mt of China's import growth has been attributed to the Indonesian shippers in 2016. An estimated total of 360mt of Indonesian thermal coal was exported in 2016 with final figures not confirmed at the time of writing. The fall in demand from India was the most significant factor affecting the Indonesian shippers last year, with an estimate of around 20mt less thermal coal shipped there. Growth of more than 2mt, however, was seen in the smaller market in the Philippines. Interest in Indonesian thermal coal has been firm so far this year, and with an estimated 435mt produced in 2016 there may be better prospects in 2017. The total produced in 2015 was 466mt. The problem for the Indonesians is the high level of coal production which the government has been attempting to control for several years in order to conserve material for its domestic power sector. A total of around 490mt is anticipated to be mined this year, which would be almost a fifth higher than the government desires. Much of this over production will again be due to the smaller operators in the country which have proved difficult to control for the past couple of decades. Demand from consumers within the country, however, is expected to increase in 2017 to about 120mt compared to about 90mt last year, leaving around three





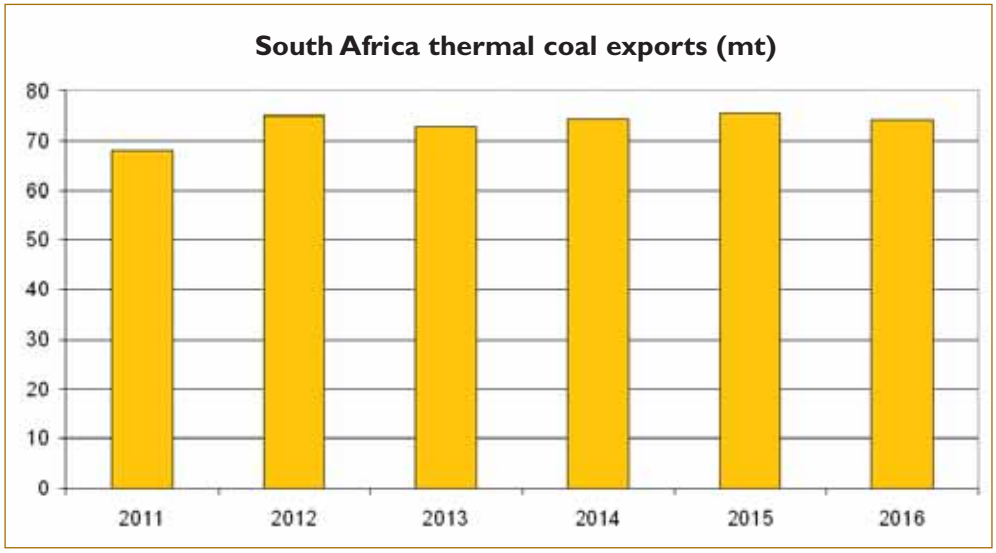
quarters of output available for the export market. About half of the country's planned 35GW expansion in power generating capacity will be coal-fired, leading to additional demand for coal in the coming years if the plans are fulfilled. There are currently some doubts as to whether this will be achieved within the timeframe announced by the government last year. Similar doubts about Vietnam's planned expansion mentioned above have been expressed by UN environmental sources at the time of writing, so the Asian coal sector continues to be somewhat murky.



Australia recorded a decrease in exports in 2016 with 200.1mt reported at the year end. This was about 2mt less than had been recorded in 2015 and was attributed to lower purchases from the major thermal coal markets in Japan and Korea last year. Other consumer countries helped to offset those decreases, and these included Pacific Rim countries with firmer thermal coal utilization energy policies such as Chile, Taiwan, and Vietnam. Even buyers in the Atlantic took more coal from Australia in 2016, with over a one hundred percent increase recorded to 1.2mt. This was the highest level recorded there for a number of years.

The indicator spot price for thermal coal at Newcastle was at its lowest since 2007 at the start of 2016 when US$49.00/t FOB (free on board) basis 6,322kcal/kg GAR (gross air dried) was recorded. By November the spot price had increased substantially to reach US$110/t FOB basis 6,322kcal/kg GAR and peaked at that level before decreasing. The significant upward change in the spot price was largely attributed to strong buying by Chinese traders later in the year. In the Australian coking coal market, the spot price increased by over 300% in the four months between August and November to reach US$311/t FOB. This has since softened, but is still in a much better state for the producers than it had been a year ago.

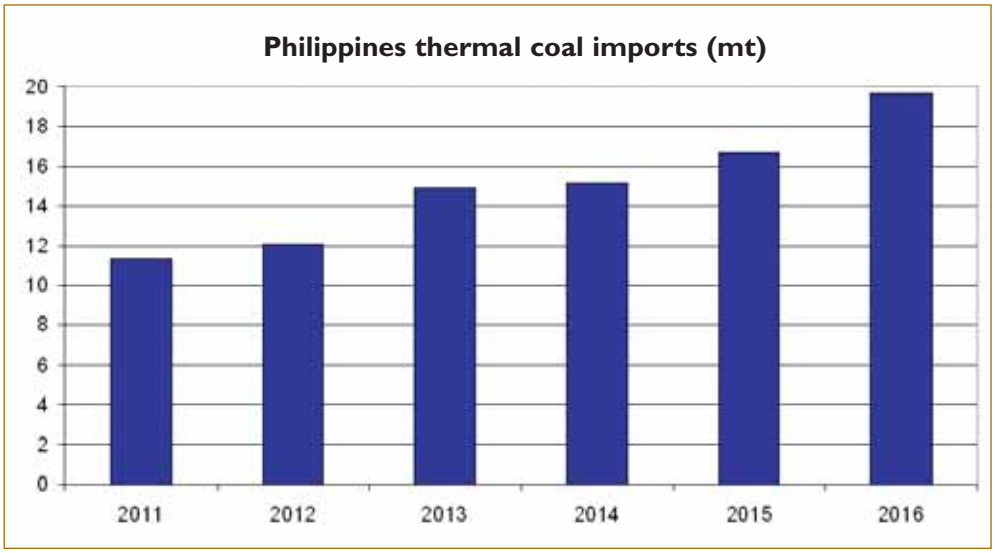
The final month of last year was better for the Australian shippers, and new record monthly loadings were recorded at the coal terminals. Exports from New South Wales increased last year to reach 172.9mt which was 3mt more than had been recorded in the previous year, and Newcastle Coal Infrastructure Group increased its exports by over 4mt to reach 53.3mt last year. The Queensland ports saw a weaker export year in 2016, except for Hay Point which recorded an increase of over 4.5mt.

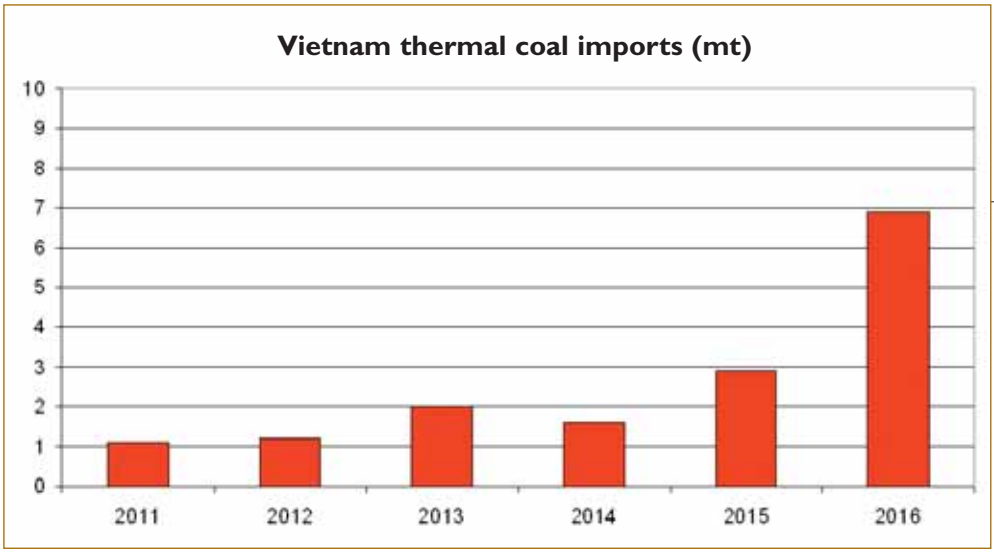


The latest forecasts indicate a flat or somewhat weaker export market for the Australian shippers over the

next year or two. This is mainly due to an expected decrease in demand for their coal from China and India, and lesser potential for growth into the expanding but smaller markets in Southeast Asia such as Vietnam.

Although coal prices have eased back from the peak seen last November, the market remains in a much better condition for thermal and coking coal exporters into the Asian markets. Some may be tempted to increase their output during 2017, but there have been few signs of a significant change in the supply/demand balance from what it is at the time of writing. This suggests 2017 will see a relatively steady market compared to what happened in the second half of 2016. With all things related to the international coal market, however, anything can happen. DCi

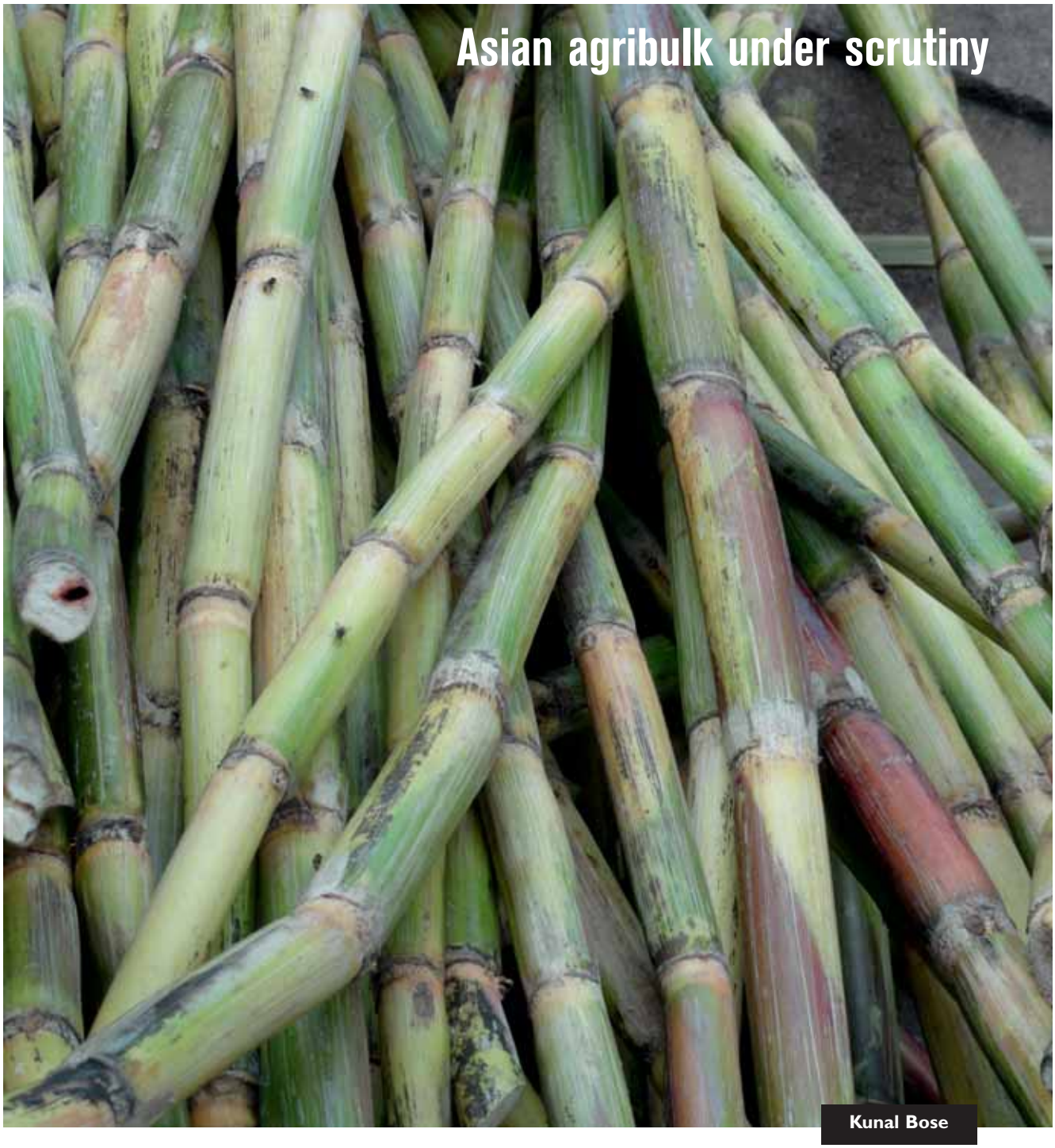




Dr Tim Jones is Director of e-coal.com Consultancy and Editor of the weekly publication Coal Market Intelligence *which covers 11 spot markets worldwide, gives key information on the latest deals and tenders, company news, people and jobs, industrial relations, and ports, shipping, and freight rates.*

Global impact of India's import/export policies

Asian agribulk under scrutiny



Kunal Bose

"India's decision to import or export at any point during a season will invariably move the global agri commodity market in a major way. This cannot be otherwise when the country involved has a population of close to 1.3bn. When bad weather visits leading India to scamper for imports of commodities such as oilseeds, pulses and sugar, prices in the global market will shoot up. Movement of prices of raw and white sugar at Intercontinental Exchange in Chicago and LIFFE, respectively through the current season so far is mainly triggered by speculation about India going to import good volumes to compensate for shortfall in domestic production," says sugar producer and agriculture specialist Om Prakash Dhanuka.

Speculation in sugar was fuelled principally by a small number of companies located in Maharashtra and Karnataka owning

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refineries and traders who saw in imports an opportunity to make profits. Proponents of imports, however, had to contend with two roadblocks. First, the cane crushing industry is divided over the desirability of imports even while Indian Sugar Mills Association (ISMA) has recently for the second time revised downward the 2016/17 season (October to September) production estimate to 20.3m tonnes from 21.3mt (million tonnes) in January and 23.4mt ahead of the start of current sugar year. Second, the 40% customs is a disincentive to importing sugar. A food ministry official now says the government may "reduce import duty for a short period to facilitate a fixed amount of import of raw sugar in the current season."


Om Prakash Dhanuka.

Dhanuka who was formerly president of ISMA says: "At 20.3mt, India's sugar production will be the lowest in six years. But this does not automatically warrant imports since the season opened with stocks brought forward from 2015/16 were 7.75mt. Furthermore, the review of monthly mill despatches till March makes it likely that sugar consumption this season will be down to 23.8 to 24mt from 24.8mt in 2015/16. Demonetization of the country's two highest value currency bills leaving cash shortages with the masses for making routine purchases, fall in sugar use by bulk consumers such as producers of soft drinks and confectionaries and lower sales through ration shops on New Delhi not willing to bear the burden of subsidy have shrunk sweetener demand. Therefore, 2017/18 will start with enough stocks of over 4mt to take care of demand for the first two months by when enough new season sugar will start flowing into the market." India's production of early season variety of cane will be sufficiently large forcing mills to start crushing between end October and mid November.

Notwithstanding the sharp division in the industry on imports, ISMA concedes that the government may allow imports of 500,000 tonnes more as a balm for mills in Maharashtra and Karnataka which because of acute cane shortages resulting from drought in the past two season could use barely 40% of their crushing capacity. An ISMA member says: "We are putting two caveats on imports. First, import decision should be taken in May at the earliest by when we should have a clear idea of supply and demand. Second, imports should be restricted to Maharashtra and Karnataka. If anything, the north and the east have sugar surplus where flow of imported sugar will harm the industry."

New Delhi will at any point tread with caution on imports. Any big arrivals of sugar of foreign origin based on erroneous estimate of local supply could once again condemn the local industry to big losses compromising its capacity to settle cane bills in time. It was not long ago that at one point sugar factories owed farmers around $4bn for cane received by them. A few hundred farmers then under acute financial distress committed suicide causing national outrage. There is cyclicality in global sugar production and India is no exception. Depending on local production and stocks available with factories, India has in the past been either an importer or exporter of sugar. For example, production collapsing to 14.538mt in 2008/09 forced the country to import over 2.403mt of sugar. In the following year, imports were substantially higher at 4.08mt. On the other hand, there are instances in recent years when bumper sugar production led India to export large quantities of sugar.

"India has deep commitment to free trade. At the same time, the country has to be protective about the interest of cultivators and also those connected with the farm economy. This is the case with the US and European Union. Crisis overtakes sugar whenever ex-factory prices of the sweetener fall short of production cost. The best way to avert this will be to establish a linkage between cane and sugar prices," says Dhanuka. But the challenge in the suggested dispensation will be to guarantee a fair and remunerative price of cane for farmers even when sugar meets with a bearish phase. Let a fund be created for this purpose by way of a special levy on sugar. A point not to be missed is that sugar retails in India at prices much lower than in most countries, developed as well as developing.

As for global sugar outlook for 2017/18 season, Int FCStone, a Fortune 500 services company, predicts a 5.6% growth in production to 186.3mt when demand is to rise by 1%. This will translate into a global deficit of 462,000 tonnes and fall in stocks to 63.1mt, the lowest since 2011/12. India, having received good rains during the 2016 south-west monsoon after two consecutive years of drought, the cane crop to be harvested next season should be a bumper one. Dhanuka says: "Though early to make an estimate of the 2017/18 Indian sugar production, the guess at this point, based on land coverage and plant shape, is between 25 and 25mt." But any crop projection for the next season made at this point will come for radical revision if the warning by private weather forecasting agency Skymet that the 2017 south-west monsoon could be below normal at 95% of the long period average. Earlier, however, India Meteorological Department director general KJ Ramesh said El Nino was unlikely to make any impact on monsoon development as it would appear around June, when the monsoon had set in.

Pulses and edible oils

A lot more than sugar, edible oils and pulses are politically sensitive commodities for which India is perennially import-dependent. Whenever their prices shoot up, the government will invite criticism for not anticipating shortages in time and arranging imports. But New Delhi is now not only more alert of such eventualities creating political storm, but it has set in motion programmes that by way of productivity improvement will progressively reduce the country's import reliance on edible oils and pulses. A new idea of prime minister Narendra Modi is that New Delhi should unceasingly explore the possibility of striking arrangements with a select group of countries which will produce extra amount of pulses and oils for supply to India on a long-term basis.

As the first mover of the programme, Modi during his visit to Mozambique last year saw an agreement signed between the two countries under which India will hopefully start importing "100,000 tonnes of pulses in two years" from the African nation. To make a success of the endeavour, he made the commitment that India would buy every grain that Mozambique would have on offer at prices not lower than New Delhi announced minimum support prices (MSP) for pulses produced in India. New Delhi is also exploring the possibility to grow pulses in Myanmar wherefrom it imports a good amount every year and Ethiopia and Uganda.

Extreme dry weather both in 2015 and 2016 in principal growing regions limited India's pulses production to 17.06mt in 2015/16 agriculture year (July to June) against 17.15mt a season ago. Better behaviour of the monsoon in 2013/14 led to pulses production of over 19mt in 2013/14. India needs annual supply of around 24mt of pulses, which are a principal source of protein for the masses. As for edible oils, India meets around 60 to 70% of its annual requirements by way of imports consisting mainly of palm oil from Malaysia and Indonesia. The country imported about 14.5mt of vegetable oils, both edible and non-edible during 2015/16 oil year (November to October.)

The search for security in supply of pulses and edible oils at all times prompted India to urge agriculture and agrarian development ministers of BRICS member countries when they met in Delhi in September to grow pulses and oilseeds for exports to India. Urging Brazil to grow pulses which India will buy, New Delhi offered it technology. Significantly at the meeting, a joint declaration was made envisaging agricultural technology co-operation and innovation through the creation of a basic agricultural information exchange system, adoption of climate resilient agriculture technology, deploying ICTs in agriculture to give farmers access to inputs, technology and financial services, increasing income of farmers with small holdings, improved water management in face of adverse climate changes and promoting pulses production.

Fortunately for India, aided by a fairly good south-west monsoon in 2016 (June to September) which left enough moisture in soil to support winter crop production, it is poised to harvest at least 20mt of pulses and 35mt of oilseeds, up about 35% over the previous year. Even then, the country will remain dependent on imports of about 4mt of pulses and also very large volumes of oils. But are not farmers responding to the enthusiastic call of the prime minister and upward revision of MSP brought more land under pulses and oilseeds now paying dearly for harvesting bumper crops? Reports keep pouring in from growing centres of falling prices of pulses and oilseeds as official procurement agencies are not geared to buy at MSP all that is offered by growers. Seeing farmers becoming a victim of their own success, Pravin Dongre, chairman of India Pulses and Grains Association says: "If they keep getting low prices then they will shift to other crops and the entire cycle of shortages, price rises and big imports will get repeated." Many farmers have started considering shifting to sugarcane and wheat cultivation from pulses and oilseeds, say district level officials.

After suffering degrowth and stagnation caused by bad weather in recent years, India's foodgrain production in the current season will be close to 272mt against 252.23mt in 2015/16. The second advance estimate by the agriculture ministry says India will harvest a record 108.86mt of rice, 96.64mt of wheat, 22.14mt of pulses and 33.60mt of oilseeds. New Delhi is committed to doubling the income of farmers in the next five years. For that to happen, the government must release sufficiently large funds for procurement of grains at MSP and creation of many new storehouses across the country. Growers must not get penalized for harvesting bumper crops as is now happening with pulses and wheat.

Whatever criticism is levelled against New Delhi, it can rightly claim credit for often playing right with customs on agricultural commodities to protect the interest of growers and consumers. Consider the case of wheat. Driven by the need to improve its availability so that retail prices do not pinch consumers, the government abolished the 10% import duty on wheat in December. The duty was earlier reduced to 10% from 25% in September. Now that the country is harvesting a bumper wheat crop, which has started arriving in some states leading to price falls, the 10% import levy has been restored. Despite India on the verge of a record wheat production, trade officials say imports in the financial year ended March 2017 would not be less than 5.5mt. The government simultaneously for the first time in a decade has put an import levy of 10% on pigeon pea whose local prices started falling on production climbing to 4.23mt in the current season from 2.56mt in 2015/16. To the relief of farmers, coinciding with introduction of 10% import duty, prices of both wheat and pigeon pea have started looking up.

Much of the palm oil imported by India is grown in Malaysia.

While import duty adjustment will always remain an important tool to protect the interests of growers and consumers depending largely on weather deciding local crop availability, the government should use its own trading houses and also the more fleet footed ones in the private sector to buy and sell agri products in the world market at all times. The practice demanding high trading skills will add to profits of trading houses as it will be an insurance to bring products to India whenever the situation demands. DCi

Brazil achieves all-time record in grains and oilseeds

Patrick Knight

All-time record of 220 million tonnes of grains and oilseeds in Brazil this year

Ideal conditions in all growing regions of Brazil, will result in an all time grains crop of 220mt (million tonnes) 2016/17. This will be almost 20mt more than last year's grains crop, when a very strong El Niño phenomenon resulted in Brazil producing less soya beans and maize than in 2015.

Less than 20mt of maize was shipped last year, rather than the 30mt of 2015. Six million tonnes less soya beans also left last year compared with the 54.3mt of 2016.

This year, almost 106mt of soya will be produced, compared with 95.4mt last year. The most spectacular increase involves maize, and an all time record 87.4mt is now expected, 21mt more than last year, an increase of almost a third. The winter maize crop, now being planted as the last of the main soya crop is harvested, will total 58.6mt, 44% larger than the 2016 winter crop. This giant winter crop will come on top of a summer maize crop of almost 29mt, 31% more than that of 2016.

World maize prices were at record highs in 2016, a year when demand for the Brazilian grain was strong, but supply was limited. Brazilian farmers who feed millions of tonnes of maize and soya to poultry and pigs each year, were forced to import about 4mt of maize in 2016. This was six times as much as in the previous year. Most of this maize came from nearby Argentina and Paraguay, but some was shipped in from the United States. The high price of feed last year, which fed through to cause the price of meat to rise, caused domestic sales of chicken and pork to fall in Brazil in 2016, and made exports of meat less profitable as well.

More than 23mt of the 105mt of soya and maize to be exported this year will leave from four ports in the north of the country, Itaqui, Vila do Conde, Itacoatiara and Salvador, as access to these ports by road, waterway and rail gradually improves. Up to 40mt of soya and maize are expected to leave from ports in the north by 2020, even though the area planted to grains in

EARNINGS FROM BRAZILIAN FARM PRODUCE

	US$ billion 2016	2015
Soya	25	28
Meat	15	15
Sugar	11	9
Forest products	10	10
Coffee	5.5	6

EXPORTS OF SOYA BEANS

	million tonnes	US$ price tonne	Earnings US$
2017	58.0	370	21.5
2016	51.7	370	19.3
2015	54.3	386	21.0
2014	45.7	509	23.3
2013	42.8	533	22.8
2012	32.9	530	17.5
2011	33.0	498	16.3

SOYA STATISTICS

	area, million hectares	production (mt)	yield (tonne/ha)
2016/17	33.9	102.5	3.0
2015/16	33.3	95.4	2.9
2014/15	32.1	96.2	3.0
2013/14	30.2	86.1	2.9
2012/13	27.8	81.5	2.9

the region is not expected to increase much. On the other hand, the grains shipped from ports in the south will remain static, or possibly even fall, as there is little spare land for more grains to be planted close to ports in the region. Transporting grains up to 2,000km south from farms in the north and centre of the country, is costly and rising.

Grains shipped from the north take less time to reach ports in Europe, Asia and North America than do those shipped from ports in the south and centre of the country, as well as from ports in Argentina.

Although almost half of the soya and maize grown in Brazil is now produced in the north and north east of the country, two thirds of what is shipped still leaves from ports in the south, after facing long road or rail journeys.

About 30mt of grains now leave each year from the leading grains port, Santos, which is followed by Paranagua, Rio Grande, Sao Francisco do Sul, and Vitoria in the south and centre of the country. Relatively new, so equipped with the more modern installations, loading times at the ports in the north and north east are also faster than those in the south. Shippers using Santos in particular are often obliged to pay substantial fines for the pollution caused by grains falling from trucks. Some of this grain rots, annoying residents who live closer to the port installations at Santos, than is the case at more isolated and newer installations at ports in the north and north east. At the moment, most of the 30mt of fertilizer which Brazil imports each year, arrives at Paranagua. This port is the closest to the states of Parana and Rio Grande do Sul, where Brazilian soya and maize was first planted many decades ago. This explains why so many blending facilities are still located at Paranagua. The trucks which carry soya and maize from the north and centre, are able to take this fertilizer as a return cargo, reducing the overall cost of transport. This trade is set to gradually fall, as new fertilizer blending facilities are built at northerly ports. This is allowing farmers in the north to get the fertilizer they need more cheaply than is now the case.

This year's record grains crop draws attention to the importance grains, as well as a wide range of other farm produce, have for Brazil's trade balance. Trade is one of the few measures which has remained positive during the past three years of economic difficulties. Exports of all farm products, including meats, sugar, coffee and forest products, as well as grains and oilseeds, earned Brazil $85 billion in 2016, which was 46% of all the country's export earnings. The total will be at least 5% greater this year, despite the fact that the lower prices of soya and maize, will mean revenues do not grow at the same rate as volumes do. A total of 25% of all Brazil's farm export earnings result from sales to China, and Brazilian soya forms two thirds of all the beans imported by the Asian giant. Imports by China of soya beans, and other commodities can be expected to grow, along with population increase, and the growing urbanization and consequent increase in the consumption of meat, particularly of poultry and pork. Soya beans alone are responsible for 21% of all Brazil's earnings from the export of farm produce.

A recent study by the ministry of agriculture, suggests that Brazil could become self sufficient in wheat in a few years' time. For the past 30 years, Brazil has imported at least 50% of the 10–12mt of wheat consumed there each year, the majority coming from neighbouring Argentina. Various new varieties will be planted, and like winter maize, the wheat will be planted once summer soya has been harvested. Much of it will be irrigated.

During the 1970s, when the amount of wheat consumed was little more than half the present amount, Brazil was self sufficient in wheat in some years. This was mainly because imported wheat was taxed, and wheat and bread prices were kept artificially high.

Brazil's farmers are relieved that the TPP, the Trans-Pacific Partnership, the proposed trade partnership between the United States and 12 countries in Asia, has been scrapped, and also that relations with Mexico have fallen to a low ebb. Brazil is not a member of the Latin American Free Trade Association, to which Mexico and Canada as well as the United States belong. As a consequence of the deteriorating relationships between Donald Trump and the Mexican administration, Brazil hopes to be able to sell a range of farm produce, notably maize, beef and pork, as well as sugar and other goods to Mexico, as well as more easily to Asian countries than would be the case were the TPP to have gone ahead.

DCi

Soya for export.

Dry bulk market springs a surprise but sweats on slower second half

THE RECOVERY OF BULK CARRIER EARNINGS HAS FIRED S&P ACTIVITY, VALUES AND NEW ORDERS BUT MARKET FACES AN UNCERTAIN OUTLOOK FOR THE BALANCE OF THE YEAR

Maritime Strategies International (MSI), a leading independent research and consultancy has forecast a positive short-term outlook for dry bulk freight rates, but has cautioned on second half prospects. MSI notes a persistent and positive shift in dry bulk market sentiment in recent weeks, with most Baltic indices at their highest point of the year.

Capesizes led the charge with spot rates rising to almost $20,000/day in late March — more than five times their levels of just a few weeks earlier, although they have since fallen to $15,000/day. Meanwhile Panamax rates have risen above $11,000/day for the first time this year, having averaged $7.500/day during February. Handysizes are now over $8,000/day, up almost 50% since February.

Supporting the better spot rates are pockets of stronger underlying fundamentals, such as Brazilian iron ore exports (up 10% year-on-year [yoy] in Q1) and Chinese coal imports (up 48% yoy). This is partly explained by a recovery in industrial activity in China — steel output is up 6% yoy for the year to date.

"MSI is more positive on the near-term outlook for Capesize spot earnings, partly driven by the latest data for Chinese steel and iron ore import demand," says MSI Senior Analyst Will Fray. "However we do expect this support to wane in Q2/Q3 and are still mindful of large port stockpiles of iron ore and evidently we are more negative than the FFA market for June and September periods."

Better rates have brought the S&P market back to life with an increased pool of potential buyers supporting a noticeable rise in the number of transactions taking place. Some 190 second-hand vessels were sold during Q1, up 86% on the same period of 2016.

Values have risen sharply too — ten-year old Capesizes and Panamaxes rose in value (by 21% and 25% respectively) from February to March, to reach their highest level since late 2015. There are signs of life in the newbuilding market too, with four Kamsarmaxes and two Handysizes contracted in March.

Stronger rates have also been the key driver behind weaker demolitions, with just 4.4m dwt scrapped in Q1, compared with 14m dwt in Q1 2016. The combination of a dearth of vessels being offered for scrap and robust steel prices has led to an increase in prices being offered by Indian and Bangladeshi breaking yards, which have risen by about $50/LDT in the past month to $360–390/LDT for bulkers.

MSI has also lifted its Panamax rate forecast for 2017, with rates broadly similar to March's average for June and September. In the Handy/Supra sector, a revived Indonesian ore trade and stronger Latin American grains exports should support spot rates for smaller geared bulkers in Q2. However MSI's forecasts are again relatively weaker towards the end of this year, partly due to weaker US grain exports.

About Maritime Strategies International

Since its inception in 1986, Maritime Strategies International (MSI) has established itself as one of the shipping industry's foremost independent research and consultancy firms. Its success is built on a strong focus on maritime economics and econometric modelling. MSI provides a comprehensive range of advisory services, including forward valuations market forecasts, reports and commercial consultancy services for all shipping sectors. MSI asset price forecasts are used by ship finance providers holding 40% of all shipping bank debt and it provides analytical and methodological support to give the context and credence to its results.

IMO must fully investigate return of tin in hull coatings

The re-emergence of organotin in marine hull coatings is of increasing concern, with academics and environmentalists calling on IMO to investigate the use of tin in silicone-based foul release systems and other ships hull coatings.

While use of the organotin tributyltin (TBT) was outlawed as an active biocide almost ten years ago, the International Maritime Organization (IMO) is claimed to "have left the door open" for tin as a catalyst, but according to some academics the amount of organotin used suggests it could be acting as the active agent.

Dr Rik Bruer, a former researcher at Netherlands research institute TNO and now managing director of Finsulate, a manufacturer of a non-toxic antifouling wrap, said: "I have seen for myself that something strange happened with the formulation of these foul release coatings. Until 2002 I worked at TNO and at that time the chemistry of the silicone foul release coatings seemed to be in order. There was some organotin in there, but this is known to be a catalyst for curing these coatings.

"About a year ago, I studied the Materials Safety Data Sheets of recent versions of these foul release coatings and it turns out that the amount of 'catalyst' added is more than ten times higher compared to 2005. For me there is no debate that there is a purpose beside the catalyst activity and that the risk of spreading tin compounds again to kill marine life is eminent."

While shipowners may have thought the use of organotins in marine hull coatings was completely outlawed in 2008 with the ban on tributyltin (TBT), they can still be used as a catalyst if organotin content does not exceed the allowable limit of 250mg/1kg of paint. Dibutyltin and dioctyltin are the organotins under most scrutiny.

The question is why are organotins still being used when there are much safer chemicals available that are just as effective as catalysts for curing hull coatings? Even small amounts of organotin leaching in to the sea can impact marine fauna in the same way as TBT.

Professor Daniel Rittschof, a specialist in barnacles and other arthropods at the Duke University in North Carolina, U.S.A., said: "Part of the problem is that at very low concentrations, less than 1/1,000th of the amount in coatings, organotins cause molluscs to change sex and/or become behaviourally castrated, with male following male pheromones and female following female pheromones."

While some manufacturers' Safety Data Sheets have detailed the use of organotins in their paint systems, Rittschof said: "The effects of dibutyltin and probably dioctyltin are similar to TBT. Organotins at very low levels alter enzymes that process steroids, which is why molluscs change sex."

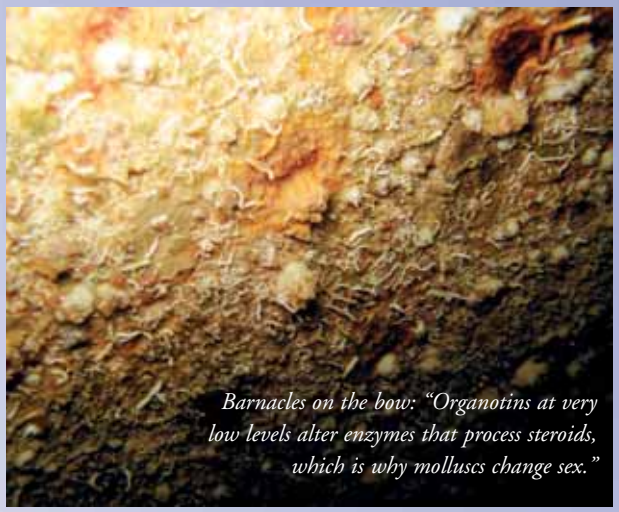
Boud Van Rompay, chairman of Subsea Industries, the manufacturer of the Ecospeed hull coating system, said: "Only a proper and independent investigation will determine whether some paints exceed the permitted levels. But like most people in the industry, we had thought the days of toxic tin in hull coatings was long gone. It is very worrying to hear this may not be so."

Acknowledging that, as a manufacturer of non-toxic hull coatings, he does not purport to be unbiased, Van Rompay questioned whether silicone-based hull coatings are relying on the presence of organotins as an active ingredient to prevent fouling, rather than a catalyst to deliver 'non-stick' properties to the coating.

Referring to a recent report in *Fairplay* magazine, he said: "Independent research on the tin content of some foul release coatings appears to have identified levels allegedly exceeding the limits set by the IMO's Marine Environmental Protection Committee (MEPC). This tends to support earlier research indicating that this type of paint appeared to be having a toxic effect on aquatic fauna in a way that led to the ban on tributyltin (TBT) in 2008.

"However, it is important that independent laboratories assess the biofouling on these hulls, underwater or in drydock, to measure the levels of toxicity. We need to have clear evidence on how these silicone-based coatings are affecting marine organisms, which are vital to the marine eco system."

Citing a 2013 study that noted dibutyltin 'showed toxicity toward fish and shrimp' even when used as a catalyst, Van Rompay' said: "There are studies available in the public domain that should have already raised alarm bells."



Barnacles on the bow: "Organotins at very low levels alter enzymes that process steroids, which is why molluscs change sex."

Inchcape Shipping Services launches Maritime Advisory team

Inchcape Shipping Services (ISS), a leading maritime and logistics service provider, is expanding its maritime service portfolio with the launch of its Maritime Advisory team.

The new Maritime Advisory team offers experience and expertise across all maritime sectors from containers, bulk, tankers and passenger shipping, matched to capability across transportation infrastructure including ports, rail, road and aviation.

ISS's Innovation group has recruited staff within the team from the 'Big Four' advisory firms, covering investment banking, economics, management and transportation consulting.

Commented ISS Chief Innovation Officer Bryan Phillips: "Our new advisory team is supported by ISS's leading industry experts and local offices. This is the first of an exciting new pipeline of products and services we are releasing which expands on our existing platform offerings."

The types of advisory services offered include M&A transaction services, market studies, forecasting, financial modelling and strategic assignments. These services will be supported by unrivalled information and insights from the global ISS network of over 300 offices across 70 countries.

ISS CEO Chris Whiteside added: "Providing independent advisory services is a natural extension of our core offering and what is in essence the role of a maritime service agent. This will introduce new customer segments to the group and expand our range of services to existing customers."

Maritime consultancy in the digital age

Britannia Maritime Consultants, a boutique consultancy based in Singapore, has been launched to specialize in maritime casualty and expert witness/opinion.

Its founder and Principal is Paul Martin, a class 1 master mariner (unlimited), who was previously a marine pilot at two districts in the UK before entering the consultancy field more than seven years ago.

Martin's experience as a pilot allows him to bring invaluable insight to bear when investigating collisions, allisions and port operational matters. The consultancy can draw on marine engineers, naval architects, and salvage masters to provide a full scope of works. It is also partnered with an international law firm and can seamlessly integrate legal support if required. Other strategic partners include a specialized media company which can manage the public image of an organization that suffers a casualty.

Offering a fresh approach to maritime industry services at a time when market rates are depressed, the company's ethos is to embrace both the digital age and cloud-based systems to enable smart working and reduced costs.

According to Martin: "Traditional ways of working inevitably generate fixed overheads that burden a business. However with travel often required for cases, the marine consultancy industry is ideally placed to exploit current technology and re-define delivery of services to the market.

"Britannia Maritime Consultants utilizes the paradigm shift offered by the cloud using it for all aspects of the business, from routine administration such as invoicing and data management, through the collaboration of a highly skilled pool of expertise, to delivery of findings. This allows us to roll back the cost of overheads, yet maintain the quality. These savings can be passed on to the client".

Martin added: "Elements of the digital age could however work against an organization: mobile phones and wireless communications allow anyone to be an instant reporter! The negative image of, for example, an oil spill on a beach also needs to be managed, but is often overlooked. Working with our strategic partner, media management can be integrated with the technical aspects of an incident".

The portfolio of services Britannia is able to offer include:

- expert witness and opinion;
- investigating unsafe ports and berths;
- complete casualty management:
  - * incident investigation
  - * collection and preservation of data
  - * analyse ECDIS and VDR playbacks
  - * source and analyze AIS data if required
  - * crew interviews & statements in legal format
  - * assist the master and interact with the authorities
  - * oil pollution prevention
  - * determine liability
  - * estimate costs and monitor repairs
  - personal injury claims
  - * company representative during salvage/wreck removal
- liquefaction. Container loss. Steel coils;
- condition, suitability and pre port state control surveys; and
- project work.

Britannia is actively seeking to partner with quality practitioners which are also interested in a smarter way of working and who can add value to clients in the maritime industry.

ABS broadens Type Approval coverage for Subchapter M

ABS, a leading provider of classification and technical services to the marine and offshore industries, has expanded its Type Approval product certification process to allow original equipment manufacturers (OEMs) to meet compliance with 46 CFR Subchapter M Regulations.

"As the inland maritime industry begins preparing for Subchapter M compliance, owners and yards are looking for easy ways to find equipment that meets Subchapter M requirements," says ABS Americas Division President Jamie Smith. "The ABS Type Approval programme simplifies that process."

ABS Type Approval is a voluntary programme that provides manufacturers the benefit of an efficient product certification process. Participating in the programme allows OEMs to differentiate their products as approved equipment for use by the inland maritime industry. Selecting equipment from OEMs with ABS Type Approval streamlines the procurement processes.

Deck machinery must be assessed for polar compatibility, advises Thordon Bearings

With the Polar Code now in force, Thordon Bearings has urged shipowners and managers to verify that their vessels' deck machinery and systems can operate safely in the extreme temperatures encountered in Arctic and Antarctic seas.

Scott Groves, Thordon Bearings Regional Manager – Americas, said: "Conventional bronze bearings commonly found in everything from fairleads and lifeboat davits to winches and hoists require frequent maintenance and grease lubrication to ensure machinery is operationally effective. Yet while most lubricating greases can tolerate temperatures down to –10°C, ship operators must be aware that temperatures below this can severely affect viscosity and performance, potentially resulting in the failure of critical equipment."

He added: "The length of time crew members will be able to spend on deck to carry out regular maintenance and greasing will inevitably be limited, due to cold temperatures and the potential for frostbite. Another problem is the grease itself, which could pose a threat to the surrounding environment.

Thordon Bearings' ThorPlas-Blue range of polymer bearings.

"Conventional oils and greases, even so-called environmentally acceptable lubricants, are not biodegradable in extreme temperatures where there may be little sunlight and could irrevocably damage the sensitive ecology of these areas," he said. The high cost of biodegradable lubricants is also an issue for ship owners.

Scott Groves, Thordon Bearings Regional Manager – Americas.

Craig Carter, Thordon Bearings' Head of Marketing and Customer Service, said: "The Polar Code prohibits the discharge into Arctic waters of any oil, oily mixture and noxious substance, so any system that can negate their use completely without detriment to the performance of machinery has to be considered if shipowners are to comply.

"Our ThorPlas-Blue range of polymer bearings is capable of operating in temperatures down to –50°C in dry conditions and –10°C in water. There is no need for grease as they are completely self-lubricating so there is zero risk of grease polluting these ecologically sensitive areas.

"Aside from the environmental benefits, costs associated with the purchase, storage, application and disposal of this potential pollutant are reduced, as is any non-budgeted expenditure resulting from bearing seizure, such as replacing expensive rope or cables," continued Carter. Capable of operating pressures to 45MPa (6,527 psi), ThorPlas-Blue can be easily back-fit into virtually all applications where greased bronze is currently installed.

The International Code for Ships Operating in Polar Waters, entered into force on 1 January 2017 for ships built after that date and covers all safety and structural aspects relevant to navigation in waters surrounding the two poles — including pollution prevention. It will apply to all ships from January 2018.

About Thordon Bearings

A global leader in seawater-lubricated propeller shaft bearing systems with over 35 years' experience in this technology, Thordon Bearings designs and manufactures a complete range of non-metallic sleeve bearing solutions for marine, clean power generation, pump, offshore oil, and other industrial markets. The polymer bearings operate pollution free without oil or grease. Thordon Bearings is the only manufacturer of propeller shaft bearings to guarantee its award-winning COMPAC system for a 15 year wear life.

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Enhanced software facilitates IACS compliance

New features enable swift compliance evaluation for both current and upcoming CSR requirements. Common Structural Rules Software LLC, a joint venture company formed by ABS and Lloyd's Register (LR), has released a software upgrade that simplifies compliance with current and pending IACS Common Structural Rules (CSR).

"As requirements change, it is imperative for classification societies to provide services and solutions that keep pace," says ABS Chairman, President and CEO Christopher J. Wiernicki. "By updating this software, we ensure our tools are effective and provide the most help to end users."

Improvements to this leading software facilitate compliance to existing and future IACS Common Structural Rules, providing users with an easy way to evaluate designs. Developed from the technical strengths of LR and ABS, version 2.5 of the CSR Prescriptive Analysis and CSR Finite Element (FE) Analysis software allow assessment of whole vessel structures — including new bulk carrier and oil tanker designs — using compliance information for the current CSR, which entered into force on 1 July 2015, as well as for the rule changes that come into force on 1 July 2017. Both class societies will use these tools to evaluate new designs against the CSR.

The updated CSR Prescriptive Analysis software requires only that the user input the appropriate data. All of the outputs are clear, straightforward and easy to read. A summary report provides required and offered scantlings with graphic representation of any deficiencies. An intermediate report summarizes dominant criteria for each structure and a detailed report provides data for every parameter value. In conjunction with CSR FE Analysis, this complete tool makes verifying compliance with CSR possible with minimal effort.

The software, which was licensed to nearly 500 users prior to the production release, is now being employed by nearly 1,000 users. Regular updates for additional structural coverage and functionality will address ongoing CSR changes.

LR Marine and Offshore Director Nick Brown echoes ABS' views. "The Common Structural Rules provide the only industry route to compliance with IMO's Goal-Based Standards for tanker and bulk carrier structures," he says. "By working together, LR and ABS have provided fully up-to-date straightforward and accessible tools for the whole industry to use when applying CSR."

Detailed information on structural areas and functionality covered by this release can be found in the Release Notes and User Guide bundled with the software installation. The updated CSR Prescriptive Analysis and CSR FE Analysis is available for download from the Common Structural Rules Software LLC website.

About ABS

Founded in 1862, ABS is a leading international classification society 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.

About Lloyd's Register

Lloyd's Register (LR) is a global engineering, technical and business services organization wholly owned by the Lloyd's Register Foundation, a UK charity dedicated to research and education in science and engineering. Founded in 1760 as a marine classification society, LR now operates across many industry sectors, with over 8,000 employees in 78 countries.

About Common Structural Rules Software LLC (CSRS)

Common Structural Rules Software LLC (CSRS), a joint venture company established in 2011 by ABS and LR, provides industry with a validated and verified suite of software tools for CSR that meets industry concerns regarding the possibility of different interpretations of the CSR requirements.

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Yuzhny Port increases first quarter cargo throughput to 3mt

The state enterprise Sea Commercial Port Yuzhny in the Ukraine has increased its first quarter cargo throughput by 990,000 tonnes — 51% — to 2.943 million tonnes, in the period January–March 2017, compared to the same period last year.

Since the beginning of the year, the state enterprise has processed 41 vessels, that is 22% more than three months earlier. In addition, Sea Commercial Port Yuzhny has significantly increased income from towing operations, with growth of 30% over the previous quarter.

The volume of export cargo made up 75% of the total turnover (2.2mt); and import cargoes made up 19% (570,000 tonnes). Bulk cargoes amounted to 98.4% in total freight volume in the first quarter. Iron ore was the largest cargo item with a volume of 2.13mt (72%), and coal was the second one — 625,000 tonnes (21%); other and general cargoes made up 6%.

The Port of Yuzhny's largest cargo turnover (93%) was provided by SCM Group, owing to the export of iron ore and the import of coking coal, supplied from the US coal mines of Metinvest, a member of SCM Group.

"The company has been steadily increasing its cargo turnover since the beginning of 2017. The main task of the port for today is to boost competitiveness and further grow transshipment volumes. To that end, we will launch a terminal development project to transship import coal for power generation and coking, as well as to increase the volume of transshipment of iron ore during the current year," said Vitaly Zhukovsky, acting director of Sea Commercial Port Yuzhny.

The project includes the construction of a car dumper complex with defrosting devices for winter work, new belt conveyors, stackers and shiploaders. The enterprise, in compliance with the best world practices, intends to attract investors: operators with worldwide experience in managing port capacities and cargo owners to provide the terminal loading. The investments suggest amount of more than UAH 770 million.

"The development of the enterprise is aimed at supporting the policy of the Infrastructure Ministry towards partnership with top port operators for working in Ukrainian ports. Therefore, my actions, as the chairman of the state enterprise, are concentrated on attraction of the global operator for the realization of the joint project for modernization of technology and boost in cargo turnover. I hope, it will happen soon, and the terminal project will be very interesting for them," added Zhukovsky.

The chairman of SE Sea Commercial Port Yuzhny is confident that such an approach will ensure the stability of the enterprise, payment of wages and all obligations, as well as the development of the port.

The Port of Yuzhny is a universal non-freezing seaport in the Odessa region of Ukraine, and the deepest port in Azov–Black Sea basin. The state enterprise Sea Commercial Port Yuzhny specializes in handling bulk, general and package cargo. It operates one of the three largest domestic terminals for the transshipment of import thermal coal. Cargo turnover of coal amounted 2.08mt in 2016. The port's total cargo capacity is 16mt per year. SE Sea Commercial Port Yuzhny is able to fully load Capesize vessels up to 200,000dwt at the berth.

New dry bulk warehouse opens in Callao

In the Peruvian port of Callao, logistics operator Depsa has inaugurated a new specialist dry bulk warehouse, investing $2.5 million. The company, which belongs to the Romero Group, is effectively doubling its capacity within the port thanks to the new facility.

The warehouse, which is located close to the actual port of Callao, also benefits from four new 80-tonne weighbridges to speed up procedures. In addition, there are two extra-wide gates, allowing the simultaneous entry and exit of four HGVs in each direction.

Lighting systems mean that the warehouses can also be used around the clock.

In total, the new installations cover an area of 69,000m^2, where up to 130,000 tonnes of commodities can be stored, with an option to increase this to 155,000 tonnes.

"It is an important step for our business to be able to offer a specialist solution of this type, where grain and agribulk traders are direct beneficiaries. We expect to be 100% full by the end of 2017", noted Alex Kudzuma, Depsa MD.

Barry Cross

Iron ore bonanza in Indian ports

In the April-January period of the current fiscal year, India's 12 major ports reported handling 38.61mt (million tonnes) of iron ore, equivalent to an increase of 169%. This compares to 14.37mt in the same ten-month period of the previous fiscal year.

An aerial view of the Visakhapatnam (Vizag) Port.

Vedanta has already gone on record as saying that it believes the worst phase for the domestic iron ore industry is effectively now over, despite lower global demand and decreasing prices for this commodity.

Forecasts suggest that export growth in the next four years will push targeted production up to 185mt. Indeed, according to BMI Research, output is expected to increase from 136mt in 2017 to 195mt by 2021.

This contrasts to 2012–2016, when iron ore exports decreased by an average of 9.4% year-on-year.

All ports seem to be benefiting from the upward trend. Mormugao, for example, saw year-on year growth from 2.29mt to 11.18mt. It was a similar picture at Vizag, where exports went up from 4.39mt to 9.17mt. At Paradip, a total of 2.27mt last fiscal year has turned into 8.51mt this year.

BC

LDC moves into the Tapajós corridor

Louis Dreyfus Company is the last of the world's major agricultural commodities traders to commence operations in the so-called Tapajós corridor in Brazil. However, it recently announced that it had acquired land on Marajó island, in Pará. There, it is to build a port to handle grain produced in the Arco Norte area of the country.

The site has about 2,000 metres of berthing line in what is a calm water area close to Enseada do Malato. Barges will bring in export commodities for transshipment to ocean-going vessels. Up to nine million tonnes of capacity will be available.

In total LDC is investing $319 million in the Arco Norte.

Additionally, it will acquire its own fleet of barges and barge pushers as well as building a grain transshipment terminal at Santarenzinho, a few kilometres from Miritituba, where similar facilities built by rivals are already in place. Licences to allow construction to begin are expected to be issued by the end of this year, meaning operations should commence in mid-2019.

However, LDC has had several setbacks when planning its Pará facilities. For the past three years, it has been looking at the Cove of Malato, where draught can be anything between 15m and 35m.

Bunge, Cargill, ADM, Amaggi, Glencore and Hidrovias do Brasil already have operations based on barging grain down the Tapajós river. However, some of them have already become embroiled in land ownership disputes, something which LDC is keen to avoid.

There have also been problems on the Tapajós River, where last year Bunge was accused of annoying local commodities on a branch of the river.

BC

Maasvlakte to get new 'wall socket' for offshore wind power

- Maasvlakte will be gaining a cable link with North Sea wind farm in 2021.
- This will transmit enough clean electricity for 1.6 million households to shore
- Thanks to new technologies, surplus electricity can soon also be utilized sustainably

Over the next few years, the Netherlands' coastal region will be undergoing a transformation. The period until 2023 will bring the phased construction of a number of new wind farms near Borssele and the coastlines of Zuid-Holland and Noord-Holland. In the near future, these offshore turbines will generate enough electricity to power some five million Dutch households. The wind farms will be hooked up to the national grid via cables along the sea bed. "And four of these cables will soon be coming ashore at Maasvlakte," says Nathalie Kaarls of transmission system operator TenneT.

Long connection

These four cables are intended for the wind power area 'Hollandse Kust (zuid)', a future offshore wind farm that will be situated over 18.5km off the Dutch coast, running roughly from Zandvoort to The Hague. Once work on the farm is rounded off — probably in 2022 — the array will have a generating capacity of 1,400 megawatts, enough to supply some 1.6 million households with electric power. A number of route options were examined for the cables that will be transmitting power to shore. Factors that were taken into consideration included costs, technical aspects and impact on the environment and the surrounding area. Ultimately, the Minister of Economic Affairs decided to connect the cables to the grid at Maasvlakte — even though this is not the shortest route. "One of the key advantages of this route compared to shorter options is that it hardly crosses any protected nature areas," explains Kaarls.

Clean electricity

But there was another important consideration: the municipal administration and the Port of Rotterdam Authority are happy to help realize the connection. Both parties aim to contribute to the transition from fossil to sustainable sources of energy. "A huge amount of energy is consumed in the port area, so we thought: if you have to go ashore with these cables somewhere, it might as well be here in the port, where we can immediately put the clean electricity to use," says Michel Bresser of the Port Authority, who bears responsibility for the cables' integration in the port area.

Ideal testing ground

One problem with wind power is that supply and demand aren't always effectively aligned. Sometimes, there are heavy winds, but the demand for electricity is limited, and vice versa. This also has an impact on the price. That is why parties are working hard on the development of new methods to store surplus — i.e. inexpensive — power for later use. In the form of heat, hydrogen or chemicals, for example. Bresser: "The port is an ideal testing ground for technologies like these. We have a large energy and chemical cluster and room to expand. In addition, it is a case of simple necessity: we have to make the transition from fossil to sustainable energy. In that sense, you could say these power cables are only the beginning."

Host Terminals celebrates ten-year contract

Tradepoint Atlantic finalizes long-term licence agreement with Host Terminals to drive marine terminal development

On 6 April, Tradepoint Atlantic, a 3,100-acre multimodal global logistics centre in Baltimore, Maryland, that features an unmatched combination of access to deepwater berths, railroads, highways, and storage space, announced an exclusive, ten-year agreement with Host Terminals to oversee the vast majority of marine cargo operations.

As part of the announcement, $30 million in combined investment toward infrastructure improvements will also be made to the site. This will further Tradepoint Atlantic's ability to generate a projected 17,000 direct and indirect permanent jobs over the next decade as it enhances Baltimore's competitiveness as a key East Coast port for global trade.

"Tradepoint Atlantic is excited to welcome and partner with a leading expert in terminal operations," said Joe Greco, Vice President of Marine and Commercial Development. "We are in the process of expanding our marine capabilities as we invest and expand our infrastructure to attract new business to the Baltimore region with our partners. Host is a 94-year-old company that's been in Baltimore since 1986, and truly shares our overall vision for the future at Sparrows Point. They possess a unique understanding of the total supply chain, with an extensive track record of finding efficiencies and creating value."

"In my 40 years of experience in the industrial development business, Tradepoint Atlantic is one of the most exciting projects I have been part of," says Tradepoint Atlantic Chairman and interim CEO Michael Mullen. "It's the premier heavy industrial gateway of the United States, and we are eager for what the future brings as we further the growth and build-out of our port. I look forward to working with Host on maximizing the utility of this world class centre."

Host brings expertise in transportation of non-containerized cargoes, providing '*real* solutions' for the bulk and breakbulk industry. Host has a diverse range of experience in terminal operations, stevedoring, marine asset, and ship agency work, empowering out-of-the-box strategies that transform the industry.

"Since Host's founding in 1923, many of the fundamentals of moving bulk and breakbulk cargo haven't changed," says Host President and CEO Adam Anderson. "Tradepoint Atlantic offers a unique solution to create efficiencies in the supply chain by processing goods on-site and using rail to provide a lower delivered cost to our customers. Our goal is to add value,

CONNECTING THE WORLD

A TRANSFORMATIONAL VISION TO DRIVE EFFICIENCY

Host is proud to be the exclusive provider of marine terminal services at Tradepoint Atlantic, North America's 3,100-acre premier heavy industrial gateway and the largest maritime development in the United States.

Together, we're investing $30 million in infrastructure improvements to revolutionize the flow of commerce between the U.S. and global markets. With six berths, two Class I railroads, and over 100 miles of shortline rail on-site, we offer unmatched access to sea, rail, highways, and storage space.

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whether it's 50 acres for a factory on-site, a storage warehouse, or a tank. With Host's expertise and our partners at Tradepoint Atlantic, we can deliver those *real* solutions to the market place. It will not only service the market in Baltimore, but will shift the transportation paradigm for bulk and break bulk cargoes to the 21st century."

With four berths, over 1,000 acres dedicated to marine storage space, and connections to both CSX and Norfolk Southern, Tradepoint Atlantic is the largest maritime development in the United States. The site offers immediate access to the interstate and regional road network, and it has the largest private rail yard on the East Coast with over 100 miles of shortline rail on-site. It will be the first place in the country to push bulk cargo operations inland.

About Host

In business for over 90 years, and covering the US East and Gulf Coasts, Host has diverse experience providing total solutions for customers' terminal, stevedoring, marine asset, and agency needs. The company operates with a commercial focus, providing customers with innovative strategies to add value and increase efficiency.

About Tradepoint Atlantic

The 3,100-acre multimodal global logistics centre in Baltimore, Maryland, offers a gateway to markets around the United States and the world, featuring an unmatched combination of access to deep-water berths, rails and highways. Ground-breaking agreements signed with federal and state environmental regulators in 2014 to remediate the legacy from a century of steel-making, and the financial backing of investment firms Hilco Global and Redwood Capital Investments enable the redevelopment of the site with the potential to become one of North America's most strategic commercial gateways. DCi

Spain and Portugal bulk focus

Port of El Ferrol.

Barry Cross

Spanish ports post 4.36% fall in 2016 dry bulk traffic

In 2016, the 28 Spanish ports reporting to the national ports authority, Puertos del Estado, handled a combined 91.787mt (million tonnes), equivalent to a fall of 4.36%. Of those ports handling significant quantities of dry bulk, Alicante had the biggest increase, upping traffic by 53.09% from 1.244mt to 1.904mt. The biggest loser was Pasajes, which reported a 35.13% decrease to 1.099mt.

On 16 April 2016, Spain's leading dry bulk handling facility, the European Bulk Handling Installation (EBHI), which is located at the northern Port of Gijón, celebrated its 25th anniversary. The company had been constituted on 27 February 1991, commencing operations on 16 April of that year. Last year, it made a net profit of €2.2 million on a turnover of €31.8 million. During the year, the company invested €4.4 million.

In 2016, some 133 bulk carriers were handled by EBHI, which carried traffic of 12.3mt. However, this was not a good result. In 2015, for example, throughput of 15.4mt had been reported, compared to 12.4mt in 2014 and 11.7mt in 2013.

EBHI accommodates vessels alongside an 837-metre-long quay, where draught is 17.98 metres. Currently, two 200,000dwt vessels can be handled simultaneously. Discharge is undertaken by ship unloaders, which feed up to three independent conveyor systems, meaning that three separate commodities can be unloaded at the same time.

The terminal has a network of 14km of conveyors, connecting the quay to the stockpiles areas. There is also a direct connection with the adjacent facility run by the ArcelorMittal Group.

Both narrow and Spanish broad gauge rail sidings are also provided.

As of March 2017, the terminal was expanded by a further 15,000m^2 to 15ha. The additional space had been used by EBHI extensively over the past few years on temporary contracts, which required renewal. The new area boosts the operational space by 10%, where raw materials such as iron order and coal are stored for ArcelorMittal as well as coal for the EdP and other power stations.

In 2016, the northwestern Spanish port of El Ferrol handled 9.4mt of dry bulk at its installations in El Ferrol and San Cibrao, which represented a decrease of 4.4% when compared to 2015, although kept it as the country's second leading dry bulk port.

According to Alejandro Rey, Managing Director of the port authority, this slight fall is due to a reduction of around 300,000 tonnes of coal traffic at El Ferrol, while overall traffic at San Cibrao, which consists mostly of alumina, bauxite and coke, fell by 2%.

The recently developed dry bulk quay at the Port of Bilbao.

"The variation is considered minimal and is part of the natural cycle of handling dry bulk. Coal traffic, for example, depends heavily on meteorological conditions in any one year, so we do expect fluctuations from one year to the next," says Rey.

He cites the case of alumina traffic at San Cibrao, which began 2016 down on the previous year, but a buoyant market meant that production for the rest of the year resulted in little overall difference by the end of December.

The two harbours do handle quite distinct commodities. As previously noted, coal predominates at El Ferrol, followed by scrap, woodchip and pellets, magnetite, fertilizer and urea, while bauxite is San Cibrao's most important commodity, followed by alumina and coke.

"In the last few years, we have seen a downturn in woodchip and pellets, as well as a decrease in fertilizer, although we are only talking about traffic of about 29,000 tonnes annually in timber products and 16,000 tonnes in fertilizer," he says.

Inbound consignments of dry bulk at El Ferrol mostly travel to end users by road, while in San Cibrao there is an industrial conveyor belt system that takes alumina directly to an adjacent plant. As for outgoing consignments, these again favour road haulage in El Ferrol, whilst it is the conveyor system at San Cibrao that carries commodities to the port.

"The majority of dry bulk traffic at El Ferrol is handled in the outer harbour, where we expect construction of a rail link to commence later this year. Since there is no inland waterway connection, the terminals simply have to use road transport," explains Rey. He adds that the inner harbour is already rail connected, but currently trains mainly handle general cargo. This is because dry bulk shipments are small in number and mostly travel only short distances, hence rail is uncompetitive.

As for San Cibrao, virtually all dry bulk traffic flowing through there is linked to the adjacent Alcoa alumina and aluminium plants, so the dedicated conveyor system put in place by the company logically handles consignments going in either direction.

In terms of vessel size, this depends on commodity. The largest vessels are 180,000dwt Capesize bulk carriers shipping coal. San Cibrao hosts mainly Panamax Bauxite carriers of around 65,000dwt. Those carrying alumina commonly vary in size from 3,000dwt to 15,000dwt.

Seville opens new bulk warehouses

Seville Port Authority has given the go-ahead for Almacenes y Depósitos Portuarios to expand its operating area. The company, which is owned equally by Ership and Agencia Maritima Portillo, is to invest €1.2 million in a 5,000m² warehouse, which will accommodate both cereals and general cargo.

The installation is to be built on the Cuarto Dock alongside a similar warehouse built by the same concessionaire last year. Combined, the two facilities offered under cover protection over 10,000m². They will mainly serve the flour mills that work within the port and also producers in the Seville area.

Cereals traffic in the port amounted to 750,357 tonnes in 2016.

Currently, in addition to the flour mill and warehouses, the Cuarto area of the port is being developed to handle liquid bulk.

The port authority has also agreed a 12-year extension to the concession held by Carbón Puerto Operaciones Portuarias, which is on the lefthand side of the Alfonso XIII Dock. The company, which commenced operations in 1999, undertakes the handling of iron and steel materials, and is also seeking a further 20,000m² of operating area, where it wants to build six warehouses.

MAIN DRY BULK TONNAGE HANDLED BY PORT OF BILBAO IN 2016

Commodity	Loaded	Unloaded	Total	% difference
Soyabeans		949,132	949,132	-5
Cement/clinker	824,568		824,568	29
Coal/petcoke	570,595	118,991	689,586	17
Non-metallic minerals	489,011	109,190	598,201	59
Chemical products	421,617	5,000	426,617	0
Metal scrap	13,345	373,941	387,286	-44
Iron/steel products	3,851	158,968	162,819	-12
Feed/fodder	25,333	99,008	124,341	34
Other agribulk		49,905	49,905	7
Building materials	43,708	1,301	45,009	102

"Since transferring coal traffic from the inner to the outer harbour, El Ferrol has experienced an important growth in the size of vessels transporting consignments to the new Endesa terminal, with a switch from Panamax towards Capesize bulk carriers. However, there has been no notable growth in the size of other vessels handling different commodities," he says.

As for investment in infrastructure, this has already been made and the port authority has no short term plans to boost this further. Handling equipment is provided by private sector operators and these are planning new acquisitions, taking advantage of a beneficial legal situation that is currently very beneficial to them. This allows them to opt for extensions to their concession periods, if they exceed certain investment thresholds.

Quizzed about current capacity for dry bulk, Rey points out that the Endesa terminal in the outer harbour can accommodate up to 7mt of coal annually, giving it an amble margin to handle any additional traffic growth. Alcoa, meanwhile, handles around 4mt of bauxite and 1mt of alumina at its San Cibrao installations, which means that it is effectively operating close to its full capacity.

The Ferrol-San Cibrao port authority also maintains a policy that, together with that of the operators, aims at ongoing improvements in terms of handling dry bulk in the most environmentally friendly way possible. This has led to the establishment of a particle emission control network in El Ferrol and also to the adoption of specific measures in those parts of the supply chain where incidents could take place, hence the adoption of hoppers, conveyor systems and discharge tubes.

"All of this combined, plus the introduction of limits for loading and discharge depending on meteorological conditions helps us avoid major environmental problems," says Rey.

Value-added services are not a major factor in either El Ferrol or San Cibrao at the moment, although it is an area that some operators are looking into. However, some dry bulk is moved in the form of big bags or sacks.

Finally, asked about prospects for traffic in 2017, Rey says that the expectation is that around 9.7mt will be handled by the end of December, which represents a modest increase over 2016.

Tarragona came third overall in terms of dry bulk traffic, handling 9.065mt, which represented an increase of 8.04% on the 8.391mt reported for 2015.

In fourth place is Huelva, which had growth of 12.11% last year, handling 5.759mt. It was closely followed by Cartagena, with 5.323mt, although this was a decrease of 4.15%.

Of the top ten dry bulk port, Castellon de la Plana did best, boosting traffic by 11.12% to 5.198mt.

Almería, in seventh place, did worst of the top ten ports, losing18.53% of traffic, but still handling 4.695mt. La Coruña also did badly, losing 11.55% of traffic, although handling 4.345mt.

In ninth place, Barcelona had little to shout about, with a 0.13% increase to 4.431mt.

Finally, in tenth place, the Port of Bilbao handled 31.9mt of total traffic in 2016, down 1.39% on the previous year. As for dry bulk, this decreased by 3.67% from 4.528mt to 4.362mt.

The drop in activity at the ACB steelworks resulted in the loss of 324,000 tonnes of scrap metal and 310,000 tonnes of iron ore, although this was, to some extent, offset by increases in cement and clinker, which generated a further 209,000 tonnes on the year, equivalent to growth of 28.4% to 820,000 tonnes. Petcoke also performed well, going up by 121,000 tonnes.

Traffic moving in and out of the port by rail grew by 20% overall last year, with the dry bulk component rising by 19%.

In terms of new infrastructure, in 2016, work, which took four years, was completed on extending the Punta Sollana breakwater. This should help develop both dry and liquid bulk traffic, given that there is now 330 metres of available quayside, alongside which is draught of 20 metres. The back up area totals 20,000m^2. The EU provided €3.53 million of finance for the project out of a total cost of €40.11 million.

Private sector operator Croniment also completed construction in March of a plant to handle both non-combustible or dangerous dry bulk and residues. Investment was €1 million.

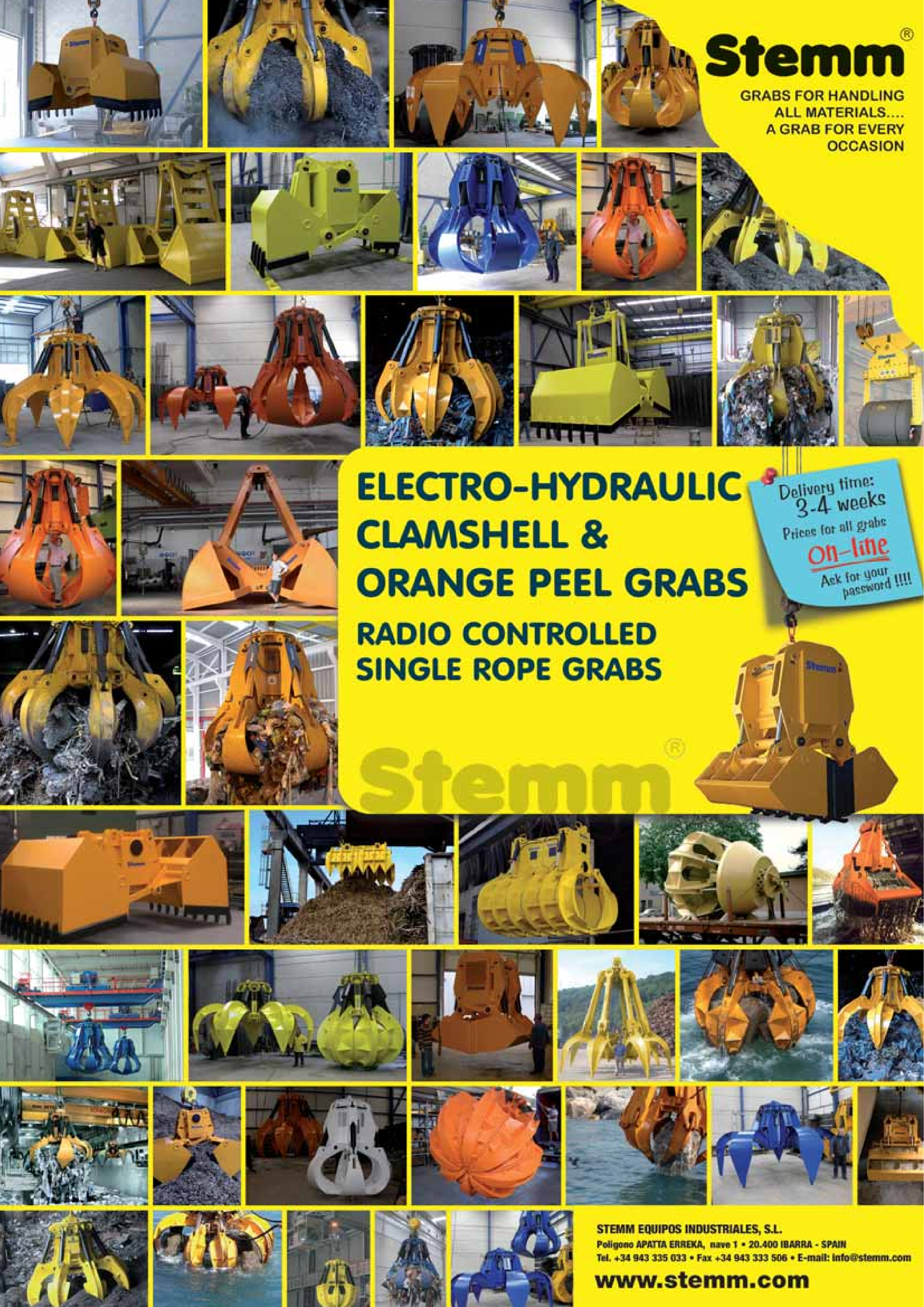
In addition, Consignaciones Toro y Betolaza spent €360,000 to expand its grain silos, with the work also completed last year.

Juan Miguel Bernat, director of the Port of Sagunto, which forms part of the Spanish Mediterranean Port Authority of Valencia (APV), notes that last year around 2.48mt of dry bulk were handled, which was a drop of 7.67% compared to 2016, putting Valencia in 13th place overall.

"This decrease was the result of changes to commodities

TOP TEN SPANISH DRY BULK PORTS IN 2016

	2015 (mt)	2016	% difference
Gijón	18.9	16.013	–15.3
El Ferrol	9.839	9.406	–4.41
Tarragona	8.391	9.065	+8.04
Huelva	5.137	5.759	+12.11
Cartagena	5.554	5.323	–4.15
Castellón	4.636	5.198	+12.12
Almería	5.762	4.695	–18.53
La Coruña	4.912	4.345	–11.55
Barcelona	4.426	4.431	+0.13
Bilbao	4.528	4.362	–3.67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Port of Sagunto.

such as cereals and flour, natural and artificial fertilizer, and of both cement and clinker," he says.

In terms of commodities, in 2016, cereals and flour amounted to 897,000 tonnes, which was a reduction of 9.66% compared to the previous year. Fertilizer traffic was also down, by around 3.94%, to 491,000 tonnes, while cement and clinker dropped by 34.64% to 472,000 tonnes.

DRY BULK TONNAGE HANDLED BY VALENCIA AND SAGUNTO PORTS

Commodity	2015	2016	% difference
Valencia			
Fertilizer	6.076	6,930	14
Cement/clinker	8,137	9,973	23
Cereals/flour	105,666	93,323	–12
Non-metallic minerals	8,406	9.391	12
Other minerals	32,818	0	–100
Feed/fodder	4,337	10,171	135
Potash	4,847	5,050	4
Chemical products	14,733	16,462	12
Other bulks	3,722	0	–100
Sagunto			
Fertilizer	6,945	5,792	–17
Coal/coke	6,909	23,181	236
Cement/clinker	8,309	9,425	13
Cereals/flour	8,390	12,783	52
Scrap metal	5,838	8,975	54
Wood/cork	7,621	8,460	11
Construction materials	4,252	32,767	671
Non-metallic minerals	10,491	9,939	–5
Other minerals	64,584	63,245	–2
Feed/fodder	6,673	20,796	212
Potash	14,434	0	–100
Chemical products	10,003	14,812	48
Other bulks	395	0	–100

"On the other hand, it's important to stress that other commodities did well. Construction materials, for example, shot up by 2,181.02% to 234,000 tonnes, while the 166,000 tonnes of non-metallic minerals we handled was equivalent to growth of 20.61%," he explains.

Of the 2.48mt of dry bulk handled last year, 1.08mt were exported and arrived at the port by either road or rail, since Valencia is not linked to any inland waterway network. The other 1.4mt were imported.

"In respect of how the port authority views prospects for dry bulk traffic this year, we expect volumes in 2017 to be broadly similar to those reported in 2016," he says.

As for vessel size, last year, in DWT terms, this rose by an average of 14%. In particular, Bernat highlights the growth in bulk carriers conveying either coal or coke, which were around 236% bigger than those calling at the port in 2015. Those carrying construction materials, similarly, shot up by 700%.

Quizzed as to infrastructure upgrades, she notes that the port authority is undertaking paving work on the North East Quay at Sagunto harbour, which handles the majority of dry bulk at that port.

"The APV has made a great commitment to increase dry bulk traffic at this port, since it has allowed Sagunto to overcome a traffic crisis. In this sense, in the space of five years, traffic there has increased from 287,000 tonnes to 1.2mt," he says.

Asked about environmental measures adopted by the APV, he points out that these vary from vessel call to vessel call in function of the type of commodity, berth and warehousing needs. Whatever measures are necessary are provided.

As for adding value, within Sagunto, there is a fertilizer factory that imports ammonia as a raw material, uses this to produce fertilizer and then either exports it as a bulk material back through the port, or sends it to domestic consumers by road in sack.

The Spanish Port of Motril reports handling 452,000 tonnes of dry bulk last year, which was broadly similar to 2015. It mainly handles minerals, fertilizer and cereals, with fertilizer being the most variable commodity currently in terms of volume.

The majority of the consignments arrive at the port either by sea or road, the latter being determined by the fact that clients are linked more naturally this way.

The port authority notes that the average vessel size tends to be 7,100 gross tonnes, although overall vessel sizes are growing over time.

The port authority and private operators report that they are investing in expanding existing installations, since the existing 80,000-tonne capacity for holding commodities at the port is currently insufficient.

Asked whether operations involving dry bulk handling at the port have had to be altered in recent times because of changes to environmental legislation, a spokesperson for the port authority said they had, although did not provide additional information as to how.

Adding value to the raw materials that enter the port is not currently a factor at the port, either.

Finally, when quizzed at to how dry bulk traffic could develop in 2017, the spokesperson suggested an increase by as much as 5%.

Dry bulk traffic broadly stable in Portugal

Lisbon-based ETE Group can trace its origins back to 1936. Despite international investment in the Portuguese ports industry in recent years, ETE is still 100% owned by national investors. The group now has 750 employees and has 42 companies, notably Aveiport, Manicargas and TCGL. In total, it operates across 5km of berthing line and holds eight port concessions.

Spokesperson Pedro Virtuoso notes that, in terms of dry bulk, the company has installations at the Portuguese ports of Lisbon, Leixões, Aveiro, Sines and Setúbal. He says that dry bulk traffic for both 2015 and 2016 was broadly similar, amounting to 13mt.

"Within the ETE Group, our various companies handled more than 50% of all the dry bulk handled within Portuguese ports for both years," he says.

Quizzed about commodities, he notes that these encompass coal, clinker, grain, sand/silica, wood pellets, sugar, cement and scrap and that, over time, the company is seeing a general increase in the region of 5–10% in volumes.

"In the Lisbon area, most of our dry bulk arrives along the Tagus river by pushed barges. However, at other ports, road haulage is preferred," he says.

A variety of vessel size is seen in the company's terminals, with bulk carriers varying between 4,000dwt and 150,000dwt. However, he stresses that there has been little change in recent times in the overall size.

As for investment, in 2016, the ETE Group invested in new grain warehouses in the Port of Aveiro, bringing into operation some 8,500 square metres of new, covered working area.

"We haven't had to make any changes to our operations recently because of environmental legislation, since we've been in compliance for many years now. Having said that, we are always making small changes and improvements on a ongoing basis," says Virtuoso.

He reports that some blending of coal is undertaken at the company's multi-purpose terminal in the Port of Sines, which is Portugal's largest bulk handling port.

"We are upbeat about traffic in 2017 and forecast a general increase in the region of 5–10%," he says.

In terms of grain handling, the main Portuguese company in this sector remains Silopor, which has loading and unloading facilities at Trafaria and Beato terminals in Lisbon and also at Santarém, in the centre of the country. In total, it offers capacity of 340,000 tonnes, with around 4mt brought into the country in small coasters from other European countries or in much larger vessels plying long distance routes from the Americas and Asia.

The company's Beato installations are located on the northern bank of the Tagus River in Lisbon, where grain storage of up to 120,000 tonnes is available, with rail sidings allowing the simultaneous discharge of up to eight trains per day.

Vessels of up to 200 metres in length can be accommodated, or two 90-metre long vessels, with grain discharge of up to 4,000 tonnes per day, using continuous ship unloaders or pneumatic unloaders.

The ability to receive and dispatch trains makes Beato the main distribution hub for cereals and other products received either directly from coasters or indirectly from Panamax vessels discharged at Trafaria, using the continuous self-propelled SILOPOR barge.

As for Trafaria, the company claims this is the most modern deep water terminal of its kind in the Mediterranean and Western Europe, allowing not only for domestic consignments to be handled, but also transshipment cargo bound for other countries.

The companies of the ETE Group handled over 50% of all the dry bulk traffic in Portuguese ports in 2015 and 2016.

CIMPOR despatches largest-ever consignment

In Portugal, CIMPOR, at its industrial unit in Alhandra, reports handling its largest ever export vessel. This was loaded with clinker, which arrived by push barges along the inland waterway system for a vessel docked at the Palha Sea. Operations were carried out by the ETE.

The vessel arrived at the Port of Lisbon in March, where it was loaded with 52,499 tonnes bound for two West African countries. In the last four years, the largest consignment handled by CIMPOR in Lisbon had been 35,405 tonnes.

Indeed, these facilities were designed not only to meet Portuguese import needs in terms of Panamax and Capesize ships, since the Trafaria Terminal has a maximum draught of 51 feet, but also to carry out high yield transhipment operations.

Large bulk carriers carrying grain can be discharged at a maximum speed of 25,000 tonnes/day, although it is also possible to simultaneously discharge three different types of products.

Trafaria Terminal can also weight cargo during transshipment operations. Discharge can be undertaken directly from vessel to vessel or, via silo, using either cabotage vessels or Handysize ships, drawing up to 39 feet of water.

At another pier, barges or smaller vessels requiring maximum draught of no more than 20 feet can be loaded at four piers, where rates of up to 500 tonnes per hour are claimed by Silopor.

In 2016, the Port of Leixões handled almost 2.4mt of dry bulk, which was a decrease of 7.3% over 2015. This was mainly due to the drop in imports of cereals (essentially corn) and scrap metal.

Port Sines.

The main dry bulk commodities handled by the dry bulk concessionaire at Leixões are cereals, scrap metal, woodchip,sugar and cobbled stones.

"Our Agri-Bulk Terminal recorded less activity last year due to the drop in imports of corn, which fell 31% over same period in 2015. On the other hand, imports of wheat increased 3% and it is now the main cereal handled at Leixões, amounting to almost half million tonnes last year. Imports of woodchips and sugar also increased, while export cobbled stones went down by almost 7%," notes Helena Gomes Fernandes, Head of the Commercial, Marketing and Cooperation Department.

Dry bulk consignments mainly arrive at the port by road. Leixões has an Internal Connection Road, which together with its Single Gateway enables an expedited and exclusive access for heavy vehicles directly from the national highway. The Single Gateway, notes Fernandes, is responsible for the automatic, strict and computerized control of the entry and exit of commodities to and from Leixões, encompassing new infrastructure that aims at simplifying all handling procedures.

The dry bulk terminals at Leixões are also connected to the national rail network and some dry bulk cargo such as iron and steel does arrive at Leixões by rail for export worldwide. Important investments are also being made in a new rail terminal, currently under construction. This is located at the new Logistics Platform, thereby boosting multimodality at the port.

"Another important investment recently made by the port authority was the acquisition of new truck weighing scales, installed at the Internal Connection Road of Leixões to ensure traffic flow," she notes.

There has been little change in vessel size in recent years; the largest carry consignments of woodchips can be in the region of 60,000dwt.

Leixões intends to invest in updating facilities at the Agri Bulk Terminal in order to increase the competitiveness and efficiency of foodstuffs unloading operations. The activity of receiving, handling, storage, shipping and transport by road of raw foodstuff and related products is undertaken by a private company operating a 25,000m^2 area in the port. Overall storage capacity reaches 100,000 tonnes in vertical silos and 20,000 tonnes of palletized products in standard warehouses.

"The new investment involves the possible acquisition of conveyors for the transport between terminal and silos, or the acquisition of a continuous ship unloader with higher unloading capacity. The expected impacts are a reduction in pollution levels and an increase in both productivity and handling capacity at the terminal," says Fernandes.

Asked about environmental measures, she notes that the Port of Leixões has been encouraging the mitigation of all environmental impact resulting from port activity. This has resulted in a commitment to implement systems to manage and oversee environmental impacts such as noise, air quality and waste collection; to promote cooperation with concessionaires in environmental management; to promote effective environmental enforcement activities with all economic agents involved in port operations; and to promote reduction of water and energy consumption.

"In collaboration with the University of Aveiro, the Port of Leixões performs very tight environmental monitoring due to its proximity to the local community. Air quality and noise caused by cargo handling and other port operations are priority issues for Leixões and managed 24 hours a day," she insists.

Asked about what we can expect for 2017, she says that the port authority is anticipating a new period of growth. Imports of raw foodstuff are expected to grow as well as the unloading of woodchips and other raw materials. Exports have been following a growth trend in recent years, with granite forecast to increase in importance.

Dino makes value-added logistics possible for RL TRANS

Mobile bulk truck loader efficient extra service for logistics service provider

The Finnish logistics service provider RL TRANS just like many other transport companies has been through a development in which the purchase of Van Beek's mobile bulk truck loader Dino is almost a given. As an extra service to its client, the company is now arranging the storage and transshipment of bulk goods and a Dino is a perfect solution for this. "We are very satisfied with the performance of our Dino," says Andreas Lindedahl, Market Manager at RL TRANS.

Last year RL TRANS completed a bulk terminal for the storage and transhipment of bulk goods. As soon as a client receives an order from the transport company, RL TRANS can load the client's packed bulk goods already present directly into trucks and drive them to the destination.

Bigger capacity in Finland

"We are increasingly being asked whether we can deliver bulk goods packed for example in big bags. This led us to look for a way of quickly loading big bags into our bulk trucks," explains Lindedahl.

The maximum weight for trucks is higher in Finland than in other EU States. A truck may in fact weigh 76 tonnes there. "We can therefore get 53 tonnes into a silo truck," says Lindedahl. "The transshipment then soon becomes a time-consuming and expensive job. We were therefore looking for a machine with a high capacity and a fast loading time."

Quick loading of bulk trucks and product changes possible

RL TRANS therefore chose the Dino DS400 with loading bellows and a capacity of 90m³/h. The DIno can be used to fill 53 tonnes into the extra-large bulk trucks within two hours.

Because of regular product changes the machine/loader had to be able to cope with different bulk products with different flow properties. The fact that the Dino is easy to clean so that it can quickly change between different bulk goods, was therefore a decisive factor here.

Helpful from start to finish, and afterwards

Lindedahl ended up with the Dino after an internet search and contacted Van Beek. "From the first inquiry the people at Van Beek were very professional and helpful and, since the sale, that is still the case."

"The pleasure was entirely mutual," says Roel Kneepkens, sales manager at Van Beek. "We think that good follow-up is very important because we like satisfied clients. Clients are entitled to a properly operating installation, and a satisfied client is the best 'ambassador' for Van Beek."

Mine conveyor in Brazil excels with its new Hägglunds direct drive

A Brazilian mine producing some 40 million metric tonnes of iron ore each year has for the first time equipped one of its belt conveyors with a Hägglunds hydraulic direct drive system. This installation has led to clear and substantial improvements in the conveyor's safety and reliability.

With their direct-mounted motors, infinitely variable speed and resistance to shock loads, hydraulic direct drive systems combine peace of mind with high productivity. This is why one Brazilian multinational producer of iron ore chose to install a Hägglunds direct drive from Bosch Rexroth on one of its conveyors.

The Hägglunds system replaced an electromechanical drive running at constant speed in combination with a fluid coupling. The new solution comprises two Hägglunds hydraulic motors of type Hägglunds CB, as well as a Hägglunds hydraulic drive unit including the control system. Tight integration between the mine team and Bosch Rexroth engineers in Brazil allowed the switch to be made in just three days.

An easy path to greater safety

The simplicity of changing to a hydraulic direct drive was clearly indicated in the mine's feasibility study. The modular Hägglunds solution could be installed in limited space and without alignment problems, thanks to flexible placement of the drive unit and the mounting of the motor directly on the pulley drive shaft.

For the mining company, however, conveyor safety was the strongest argument. Not only are the hydraulic motors insensitive to dust and grit, the drive system also protects the conveyor from high stresses, for example during starting. Together with the elimination of sensitive and open rotating couplings, this creates a system that is safer for the operator and more reliable for the mine.

More reliability, less maintenance and wear

As shown by the mine's records, the exchange of drive system has done away with a good deal of maintenance. Because the drive unit provides a variable hydraulic flow to the Hägglunds motors, in response to a control signal, the mine can now fully control the conveyor speed and adapt it to what is needed at any production rate.

The variable speed also enables precise control and positioning, for example when inching the belt for inspection. Perhaps most importantly, however, the excellent controllability allows the conveyor to be soft-started, which minimizes stresses on belts, other components and the machine structure.

Performing well and ready for more

Measurements show that the mine's conveyor moves around 2,700 tonnes per hour with the Hägglunds drive system, which is slightly more than with the original drive. With the system setup and electric motor power now installed, it is actually possible to substantially increase the speed or torque without affecting the service life of the drive.

"The diagnostic tests that have been carried out show that the drive system is in excellent condition, and that the mining company can increase its production volume significantly if needed," says Kjell Byström, Engineer at Bosch Rexroth. "The mining company is very satisfied, which has been our experience virtually every time a hydraulic direct drive has been installed on a conveyor. It's a pleasure to see."

Economical, precise, safe, and energy efficient

Drive and control technology from Bosch Rexroth moves machines and systems of any size. The company bundles global application experience in the market segments of Mobile Applications, Machinery Applications and Engineering, and Factory Automation to develop innovative components as well as tailored system solutions and services. Bosch Rexroth offers its customers hydraulics, electric drives and controls, gear technology, and linear motion and assembly technology all from one source. With locations in over 80 countries, more than 31.100 associates generated sales revenue of approximately €5.4 billion in 2015.

PEMA welcomes Bedeschi as member

In February this year, Bedeschi proudly announced that it is now officially part of PEMA (Port Equipment Manufacturer Association) as its newest member, for the global port equipment and technology sectors. Founded more than 100 years ago, Bedeschi has a products range that covers a wide variety of equipment for bulk materials handling, marine and container logistics and mining.

Bedeschi is able to support the client for the entire life of the project, offering feasibility studies and basic engineering to complete green field, turnkey installations operating in different sectors, port, terminals, cement, steel, power, fertilizer, ceramics, chemicals, grain and food. Its extensive experience means that Bedeschi Spa is able to produce a wide set of shiploaders for on-shore installations and also transshippers, for those cases where the loading/unloading process, due to the size/facilities of some ports has to be carried out away from the port.

Bedeschi Group manufactures and pre-assembles its equipment in its own workshop located near Venice in Italy. The 70,000m^2 modern, state-of-the-art facilities are equipped with the latest technology and tools.

In July 2016, Bedeschi acquired part of OMG-MGM Cranes, renowned for its expertise in port cranes engineering, manufacturing and material handling. OMG-MGM Cranes is one of the oldest worldwide established manufacturers of container port cranes, producing STS, RTG and RMG, plus accessories and services for the revamping, upgrading and overhauling of entire structures, total management of projects, electrical and mechanical design, costs planning and control, turn-key solutions, after sales service support, maintenance service (global service) revamping and refurbishment, technical consultancy and feasibility studies, last but not least, supply of spare parts.

OMG MGM CRANES will, from now on, build and test all the main key mechanical components of its cranes in the Italian Bedeschi workshop. The high success rate achieved in the main terminals worldwide with high volume traffic, confirms the high efficiency, reliability and standards of OMG.

The synergy between the two long-established companies played its part in strengthening Bedeschi's technical and commercial relationships worldwide and in the award of the role of PEMA Member.

Coal handling a major market for HENNLICH

HENNLICH Ltd. was established in 1991 in city of Litomerice, 60km from Prague, in the Czech Republic. Since then, it has followed the traditions established by its original company, which was founded in 1922. The company has become a major supplier to Czech industry.

Today, HENNLICH Ltd. has over 250 employees in the Czech Republic, and belongs to the HENNLICH GROUP, which can be found in 20 European countries.

HENNLICH ENGINEERING DIVISION manufactures a wide range of equipment for the bulk handling market, including: telescopic loading spouts for ships, stockpiles, trucks, railcars and tankers; dust collectors for silos, transfer points; and central dedusting, fog cannons for dust suppression for coal handling (stockpiles, shipyards etc.).

The company's equipment can handle all types of bulk solids, though it works mainly with coal, cement, clinker, coke, limestone, ore and grain.

HENNLICH ENGINEERING has some very major companies among its clients, including: BP Oil, ExxonMobile, Lhoist, Lafarge, Carmeuse, TotalOil, CEMEX and HeidelbergCement. To date, its principal markets have been in Spain, Germany, France, the United Kingdom, Russia, Poland, Austria, and Kazakhstan.

In order to remain competitive in the market, HENNLICH ENGINEERING strives to ensure that it offers extremely high quality equipment. It also provides excellent support for customers and partners. The company is continuously working to optimize and improve its products, and to offer unique solutions and tailor-made deliveries.

Coal handling is one of the major markets for HENNLICH products. Its telescopic loading spouts for stockpile loading load thousands of tonnes of coal every day throughout the world.

The old chutes, dismantled.

One of the most challenging projects in which HENNLICH ENGINEERING has taken part took place in Israel.

The country's biggest power plant decided to dismount the existing cascade spouts and purchased the three HENNLICH spouts instead.

HENNLICH ENGINEERING has been responsible for the detail engineering of loading chutes, manufacturing, assembly, packing and shipping and hot commissioning on site.

ATEX zones have been classified as ATEX 21 inside the equipment and ATEX 22 for the outside environment.

The coal is loaded at a capacity 3,500 tonnes per hour, so the inlet diameter of the chutes has been chosen as DN900.

The cascades definitely appeared not to be the best choice for coal loading from 19m high but the HENNLICH robust tubes have proven ideal for the job.

The integrated load cells control the working of chutes in order to avoid possible overloading.

A separate electric winch has been delivered to decrease the weight of the loading chutes. To make maintenance and service easier, HENNLICH ENGINEERING has provided the equipment with the maintenance platform for each spout.

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Certified safety for silo weighing

Accurately and safely measuring the contents of a silo by means of weighing, requires the right equipment.

Putting a silo, with a height and diameter of several metres on weighing modules is a job that must be taken seriously. Not only will these modules need to accurately measure the weight, they will also need to withstand significant wind, and sometimes even earthquake forces. It is vital to ensure that a silo does not fall over — the damage to people, buildings and equipment could be extensive. Safety remains a top priority.

Minebea Intec offers a complete range of accurate weighing modules that is certified to the highest safety standards, including EN 1090. During the last 70 years, the company has equipped thousands of silos with these modules, giving its customers peace of mind.

Other products in the company's portfolio include truck scale solutions, metal detectors and X-ray inspection systems for detecting and removing contamination from bulk materials and a wide range of general weighing equipment.

About Minebea Intec

Minebea Intec is part of the Sensing Device business unit at the MinebeaMitsumi Group, a leading global manufacturer of high-precision bearings and components and a supplier of innovative and high-quality precision and measuring technologies.

Minebea Intec is one of the market's leading industrial measuring technology companies for high-precision measurements and product inspections and can offer an extensive range of products, solutions and services for its customers' manufacturing processes — including for incoming and outgoing goods, platform scales and process vessels/silo scales, checkweighers and equipment for detecting foreign objects, as well as software solutions for statistical process control and formulation applications.

Big is beautiful: Mantsinen 300 is the largest hydraulic crane in the world

Mantsinen's new material handler takes dock work efficiency to a new level. Mantsinen is introducing the faster and more precise hydraulic Mantsinen 300 into the size class of traditional cable cranes. This enables the fastest work cycle on the market and the best productivity in its size class.

Mantsinen 300 is designed to meet the requirements of moving bulk cargo on Panamax-class ships, but it can also handle heavy general cargo and containers.

For example, the crane is able to move a full 40ft container about 48 metres without having to change position. Despite its massive size, Mantsinen 300 is just as agile and precise as smaller material handlers. Good controllability decreases the risks involved in handling heavy objects and increases work safety.

KEY FACTS: MANTSINEN 300

Weight:	320–400t
Maximum reach:	38m
Diesel engine:	565kW
Electric motor:	355kW
HybriLift® as standard:	400kW

Mantsinen has been a global forerunner in developing the energy efficiency of material handlers since 2006. A next-generation HybriLift® energy recovery system has been developed and patented for Mantsinen 300. The system improves energy efficiency further than ever before, even in large cranes.

Mantsinen 300 is available with either a diesel engine or an electric motor. The undercarriage can be chosen and optimized according to the client's needs. The options include undercarriages with tracks, rubber tyres, rails, or a fixed platform. Mantsinen designs and manufactures its own attachments, thus optimized attachments can be offered for all kinds of uses and for any machine type.

The first two Mantsinen 300 material handlers will be delivered in the summer of 2017 to the ports of Ghent and Antwerp in Belgium. Both handlers will move different kinds of bulk materials on Panamax class ships.

‘Dust management is too expensive!’

EcoCrust white on coal stockpiles.

Wuvio blows that theory out of the water

Wuvio Chemicals offers a range of products to combat dust, which are widely used in the waste and recycling industry, by energy producers and by mining and dry bulk companies. Wuvio believes dust suppression should be easy and can be done with a smaller ecological footprint. It is widely believed that fighting dust in an industrial environment is expensive, difficult and typically has an impact on operations — Wuvio’s daily mission is to prove this is not true.

All heavy industrial sites are constantly under the microscope. This is a fact we all know to be true. However, the surroundings and neighbours at any bulk handling site, as well as local government, can have a major influence on whether the operator’s licence continues.

Looking back at the title of the article ‘Dust management is too expensive’. What if that weren’t the case? A fundamental flaw is that many of us try to use a sledgehammer approach to resolve dust-containment issues — often using an over-scaled and usually costly solution.

But let’s assume the budget was approved and the operator and the contractor can now start the construction works. It will take a few weeks or maybe months before its completed and, most importantly, there is no guarantee it will actually work — it

EcoCrust end result on coal stockpile.

Application of EcoCrust with Wuvio Spraycannon.

is, after all, impossible to test a 20m-high wall, large ventilation system or enclosure until it is in place.

Keep the above in mind and let's look at how smart this approach really is based on an example out of our daily life. Let's say your heater at home is broken, it's not heating up your house anymore and your spouse and family are complaining about the cold. What would you do?

a) Go out and purchase better isolated windows;
b) Go out and buy a mobile heater which uses lots of power; or
c) Install a new heater or get the one you have repaired.

Well most of us would choose c), right? We look at the source of the problem and fix it — just because it's the logical choice and probably the cheapest.

The same goes for dust management in any industrial environment. To truly solve a dust problem you need to approach and attack it at the source, typically the processing and movement of the dry material. Applying additives is almost like non-invasive surgery; the procedure is quick, and has little impact on the patient. Similarly, calling the heater repair guy is less invasive than calling in window installers. In fact, thinking about it, it is even better than non-invasive surgery, because you can actually test the system before you buy it. It sounds almost too good to be true.

Wuvio offers a range of solutions for dust control, and none of these require operators to shut down operations before installation. There is no need to build large walls or enclosures and, on top of this, they allow for a reduction in water usage of up to 90%.

Products and solutions

Wuvio Freko-Crust and EcoCrust are additives that use biodegradable agents that form a thin crust on dust emitting goods in storage, such as: coal, petcokes, iron ore, sand, waste, phosphonate ore, woodchips. The crust lasts anywhere from one to 90 days, and is unaffected by harsh weather conditions.

Wuvio Freko-Foam is sprayed on the materials (for example on the conveyer belt, screens and/or transfer points belt), the foam will make the dust particles moist and sticky so they can coagulate with bigger particle sizes within the material flow. It prevents the dust from spreading and can be used on various materials including coal, biomass, wood and waste.

Freko-Humidifier is used in order to reduce the speed of the dust particles, so that they can no longer float around; it is necessary to make them heavier. This is achieved by adding Freko-Humidifier to the water that is sprayed, atomized or sprinkled. Adding a tension-active substance (specifically in the form of a 'dust' humidifier) is really the only solution to make dust absorb moisture.

Equipment

Wuvio's focus is to provide a fully integrated solution which is built rugged enough to withstand the harsh environments. The key is to have the equipment work for its clients, so typically its spraying solutions are integrated with system automation to work in conjunction with the production line.

About Wuvio

Wuvio is a centre of expertise for all industrial dust issues. As a company, it truly understands that large industry is constantly under the microscope, either from the direct neighbours or legislators.

From its offices in the Netherlands, China and Thailand, Wuvio works with its clients worldwide to enable a dust-free environment — whether in the workplace, place of business or residence.

It uses innovative proprietary additives, developed in-house, to combat dust and constantly improve its solutions. Wuvio maintains full control on all aspects of product lifecycles, production, logistics and enable ease of use by constant field testing and customer trials. DCi

Application of Freko-Humidifier integrated in customer's installation

BUTTIMER
Engineering

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Freedom of movement

portable bulk handling equipment

Louise Dodds-Ely

Hitachi machines prove their productivity and reliability at Italian steelworks

Gap Services, part of the Piantoni Group, has invested in ten Hitachi wheel loaders and medium excavators, ranging from –3, –5 to –6 machines, in the past two years. Three recent additions to its fleet are working in Cremona at the Arvedi steelworks, the largest in northern Italy.

The Hitachi ZW310-6 and ZW250-5 wheel loaders, and a ZX290LCN-5 medium excavator, have been supplied by Gap Services to Ageco2, which is responsible for maintaining a 44,000m^2 stockyard owned by Arvedi. They arrived on site between February and March 2016.

Two types of heavy and abrasive cast-iron materials are kept in stockpiles at the site. The first (Inertex) is sorted and crushed into three sizes (0–20, 20–40, 40–90mm), and is used for concrete, asphalt, sub-base and railway lines, filling material for construction and even ornamental fireplaces. The second product is recovered cast iron and white slag (Calcetek) and available in sizes 0–3 and 3–25mm.

At this site, 20–25 trucks per day deliver Inertex, and a

further ten trucks per day deliver Calcetek. The ZX290LCN-5 is used to move the materials and load the crusher. The two Hitachi wheel loaders move the materials into stockpiles of relevant sizes, and also keep the site tidy. They also load trucks transporting material to customers — 30% goes to private customers in the local area and 70% is used for public works projects.

Director Alberto Gallini says: "We are very happy with our investment in Hitachi machines, the machines are good and our operators are happy. The Hitachi name is a guarantee in itself of quality and reliability. I have seen how the machines have evolved from –3, –5 to –6 in terms of performance, hydraulics, electronics and stability. They are getting better with each generation.

"There are two advantages of the Hitachi machines: power and the hydraulic system — for which Hitachi is famous. The most important factor for us is the productivity of the machine. The wheel loaders are responsive, user-friendly, and offer good traction and breakout force."

Considering the abrasive nature of the materials at the stockyard, it's an advantage that all of Gap Services' Hitachi models are supplied with HELP (Hitachi Extended Life Program) — an extended warranty for 10,000 hours/five years. This is provided by the Assago branch of SCAI, the official Hitachi dealer in Italy.

Alberto adds: "We are very happy with the service we receive from SCAI, and the HELP and maintenance programme they provide for every machine is very important to us."

Hitachi extends new –6 range of construction machinery

Hitachi Construction Machinery (Europe) NV (HCME) has introduced the latest phase of Zaxis-6 excavators and ZW-6 wheel loaders. They have been designed and engineered using market-leading Hitachi technology in Japan to meet the demands of European customers.

The new models share high-quality design elements and materials, reliable and durable components, and have been designed to offer outstanding versatility. They have been launched under HCME's 'No compromise' marketing campaign — which emphasizes how owners can "demand more" from the new Hitachi –6 products, including the lowest possible cost of ownership.

ZW-6 wheel loader

The latest ZW-6 wheel loader to be presented is the ZW180-6 (pictured). It has been designed to provide exceptional all-round visibility, thanks to the repositioned exhaust pipe and air intake and curved engine hood, and with a standard rear-view camera and monitor. Easy to use and smooth to operate, it offers a high level of comfort and is one of the quietest on the market.

With substantial loading capacity, powerful digging force and impressive travel speeds, it is also extremely fuel efficient. Its Stage IV-compliant engine contains a high-volume, cooled exhaust gas recirculation (EGR) system, a common rail-type fuel injection system and a diesel oxidation catalyst (DOC). This helps to reduce fuel costs and maintenance requirements.

Zaxis-6 crawler excavators

The Zaxis-6 range of crawler excavators includes five new medium excavators, from the ZX130-6 to the ZX210LC-6, and two new large excavators, the ZX690LCH-6 and ZX890LCH-6. Also introduced are the new ZX240LCN-6 (a narrow undercarriage makes it easier to transport on smaller roads) and the short-tail swing models, ZX135US-6 and ZX225USLC/USRLC-6 (ideal for working in confined spaces).

These models incorporate more than 200 redesigned features and enhanced components. To comply with EU Stage IV regulations, they are highly efficient and have a smaller impact on the environment than previous versions. They are equipped with a unique Hitachi hydraulic system, which reduces total hydraulic loss and helps to lower fuel consumption by up to 12% (ZX190LC-6 in ECO mode).

They are also fitted with an after-treatment device that results in fewer emissions. Noise levels are also reduced by the device, which consists of a DOC, SCR system and silencer. The SCR system injects urea through a mixing pipe into the exhaust gas to reduce nitrous oxide.

Other updates include the in-cab console, made of highly durable AES-grade resin that resists damage from UV rays, durable connections on the hydraulic return pipes to reduce oil leaks, wide opening engine covers for easy access, and reinforced covers on the platform walkway for safety.

Zaxis-6 wheeled excavators

Hitachi has also launched four new Zaxis-6 wheeled excavators, including the new short-tail swing model, ZX145W-6. These machines have been designed with more than 100 updates, from tiny seals and O-rings to the reinforcement of the upper structure, boom and arm, and new Stage IV technology engines. These improvements combine to provide better performance and increased efficiency.

They share an improved hydraulic system that helps to lower fuel consumption and proven after-treatment technology to comply with the latest emission regulation requirements. They also offer the same exceptional versatility as Zaxis-6 crawler excavators with an attachment support system for the easy fitting of different attachments. The solid and reliable undercarriages, modular in design, also enhance their flexibility. For greater durability, the Zaxis-6 wheeled excavators have reinforced, larger cylinder covers, and high ground clearance to reduce damage from obstacles.

Burkhard Janssen, General Manager, Product Management & Engineering at HCME, says: "We are proud to introduce the latest phase of -6 machines to our customers. These models have been developed to perfection in Japan, using market-leading technology, to meet the needs of the European construction industry and offer the lowest possible cost of ownership."

TBMA develops mobile version of 'Galahad' bag-slitting machine

TBMA is an international engineering organization based in Holland and Belgium with sales representation and service facilities across Europe, Asia and Australia. The company specializes in dry solids handling and process engineering for the design, supply, installation and commissioning of components and automatic process plants to a variety of industries.

One of TBMA's popular items is its 'Galahad' bag-slitting machine, which has been in use for several decades. Recently, TBMA developed a mobile version of this product, which can be used for emptying 50kg woven polypropylene bags into bulk trucks.

The Galahad offers continuous and dust-free emptying of almost all single- and multi-ply bags. Paper, plastic, large, small, heavy or light in weight, the Galahad cuts and empties these bags without problem. A bag emptying capacity of 50 tonnes per hour can be achieved, depending on the flow characteristics of the product and the construction of the bags. The standard machine is capable of achieving an emptying capacity of 20 tonnes per hour.

The basic operating principle of the Galahad is surprisingly simple, and this ensures that the bags really are fully emptied (product retention levels of 0.01–0.5% for free-flowing products). With a correct design configuration the Galahad can be operated by only one person and offers an economic solution for its clients' bag emptying requirements.

Woven bags

The bag emptying method is simple in that the bags are cut open over their length by a rotating knife, thereby allowing the product to discharge. It is this aspect that enables the machine to also handle woven polyethylene, woven polypropylene and hessian sacks. The clean cut and minimal manipulation of the bag reduces the chance that fibres from the bags become detached during the bag-emptying operation; these fibres will contaminate the product and eventually cause maintenance and operating issues as they become entwined in the rotating parts of bag handling machines.

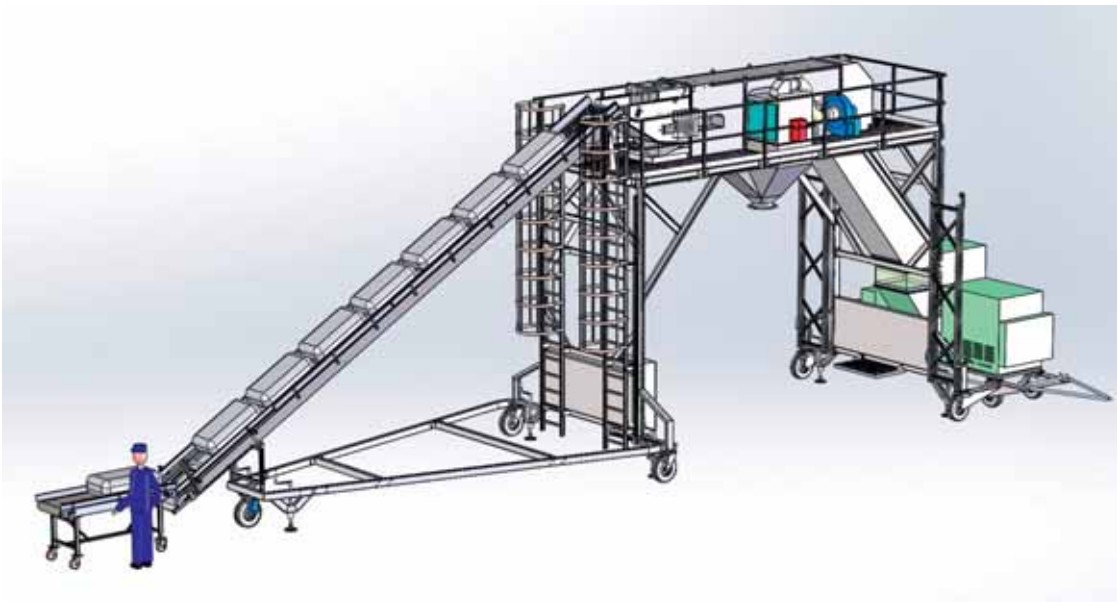
Hygienic emptying of bagged products

The bag emptying method of a simple rotating knife and a single clean cut over the bag length with minimal manipulation of the bag is a strong argument for making use of the Galahad in the food industry. The outside of the bags can be contaminated during storage and transport. It is therefore important that the product does not come into contact with the outside of the bag during the emptying process. The Galahad cutting and emptying principles certainly satisfy this requirement!

New developments

TBMA is constantly looking at ways to further develop the Galahad to satisfy its customers' requirements. The modifications to allow the emptying of woven polyethylene, polypropylene and hessian sacks is a good example of this development programme. This has led to the supply of Galahad bag-slitting and emptying machines for the handling of sugar (25kg to 50kg bags), wheat bran (50kg bags) and coffee beans (65kg bags).

The mobile version, which TBMA developed for one of its clients, can be used for emptying 50kg woven polypropylene bags into bulk trucks. The installation is built up from two sections: the Galahad, supported in a steel construction, and a mobile baling press to handle the emptied bags. Both sections are mounted on wheels and can be towed to the required location by fork lift truck. The installation is designed to handle 30,000kg per hour.



CASE G-Series wheel loaders lift operator comfort to new levels

Revolutionary windscreen design: improved comfort in quietest CASE wheel loader

On 20 March this year, CASE Construction Equipment launched its seven-model G-Series range of wheel loaders, delivering new levels of operator comfort, with proven CASE productivity and fuel efficiency.

All seven G-Series wheel loaders offer:

- superior visibility with best-in-class windscreen size;
- improved operator comfort with premium control interface, seat-mounted console and new joystick steering with speed proportional sensitivity;
- superior payload to weight ratio for maximum productivity;
- pressurized cab with HEPA and active carbon filtration options;
- password-protected start-up for increased security; and
- striking new CASE Construction Equipment livery.

CASE Construction Equipment has developed the quietest, most comfortable wheel loader cab, available across a new seven-model range of G-Series machines. The G-Series wheel loaders deliver the highest possible levels of visibility and control, providing operators with the perfect working environment to maximize productivity.

"Next year will mark the 60th anniversary of CASE Construction Equipment wheel loaders," said Alain de Nanteuil, CASE EMEA Wheel Loader Product Manager. "Through the years every generation has introduced new innovations and capabilities and this all-new G-Series generation of CASE Construction Equipment wheel loaders is the biggest leap forwards."

Revolutionary cab with panoramic windscreen

The cab is the wheel loader operator's home and their office, and it plays a major role in their everyday life. Drivers can spend many hours a day in the machine, making cab comfort and working environment an essential component of a productive machine. CASE Construction Equipment has a history of innovation, pioneered through many generations of wheel loaders, since 1958. The G-Series cab takes comfort and visibility to new heights, delivering a host of improvements.

This includes a full-width panoramic windscreen, a colourful Premium Control interface with 8" display, fully adjustable seat-mounted control console, the security of a password-protected ignition and the ease of automatic bucket functions adjustable from within the cab. The operator also benefits from smooth, low effort loader controls, an active suspension seat and the machine features hands-free mobile phone connectivity.

Building upon the popular CASE F-Series cab, which already

G-SERIES STATISTICS

G-SERIES	521G	621G	721G	821G	921G	1021G	1121G
Bucket payload	3.9t	4.7t	5.5t	6.4t	7.5t	9.5t	10.2t
Bucket volume	2.1m³	2.3m³	2.7m³	3.6m³	4.0m³	4.4m³	5.0m³
Power	142hp	172hp	195hp	230hp	255hp	320hp	347hp
Weight	12.2t	14.2t	16.2t	19.4t	21.7t	27.9t	30.0t

boasted a best-in-class windscreen size, the G-Series loaders have a one-piece curved front screen that provides an unparalleled view from side to side, from the ground to the sky. Along with a slim engine cover, heated rear window and multiple rear view mirrors, the G-Series wheel loaders deliver a level of front and rear visibility that has never been seen before.

Reduced noise and improved environment

In-cab noise levels are a full 2dB lower than the previous generation of machines. The 521G to 821G loaders boast just 68dB in the cab, while the 921G to 1121G have noise levels set at just 69dB, the lowest internal levels yet seen on a CASE loader. The cabs benefit from improved primary and recirculation air filtration, with longer filter replacement intervals. High effectiveness and active carbon filters can also be supplied for tough working conditions.

Breakthrough machine-operator interface

The operator control interface in the G-Series wheel loader cab is easy to use, contributing to improved controllability and productivity. A bright, full colour 8" display is easy to read regardless of external light conditions, delivering intuitive navigation through machine settings and information screens. The display also provides a wide view rear monitor when required.

There is a new control pad for automatic bucket functions to be set and adjusted from within the cab. The seat-mounted console is fully adjustable and features a wide armrest and ergonomic joystick that, combined with electro-hydraulic controls and the redesigned premium active suspension seat, delivers accurate control in all working conditions.

A joystick steering option provides two equally-sized joysticks with wide armrests on both sides of the seat, like CASE Construction Equipment excavators. Joystick steering features speed proportional sensitivity with three settings that allow the operator to perfectly match the machine to every operation and jobsite requirement.

New features include an integrated microphone that, combined with a Bluetooth connection and automatic answering function, allows operators to answer phone calls safely without taking their eyes of the working area or their hands off the controls. Operators will also welcome the convenience of multiple storage areas for documents and personal effects and a fridge box option that can keep food and drinks fresh and cool all day.

Proven driveline efficiency

All G-Series wheel loaders are powered by efficient EU Stage IV/Tier 4 Final diesel engines with no diesel particulate filter (DPF) or exhaust gas recirculation (EGR). FPT Industrial's Hi-eSCR after-treatment system uses fewer components to meet exhaust emissions standards, allowing for a compact engine compartment and reduced maintenance costs for customers. All major components are sourced and the machines are assembled in Europe.

The proven cooling cube, which puts the machine's radiators and coolers in the middle of the machine rather that at the rear, ensures that cooling cores are kept out of dusty working areas to provide maximum cooling effectiveness. Optimized weight distribution contributes to increased payload capability and machine stability.

The G Series machines drive through proven CASE transmissions that offer improved fuel efficiency and reduced cycle times. CASE heavy duty axles with wet, multi-disc brakes, have open differentials to reduce friction, with an optional 100% Auto-lock to deliver maximum tractive effort and reduced tyre wear.

Modern livery

The G-Series loaders feature the new CASE Construction Equipment livery, present in all product ranges, which reinforces the core values of the brand: "We have used trends that are being led by our automotive brands, with dark colours on the wheels and lower mechanical section of the machines and the upper bodywork in 'power tan' to enhance the feeling of strength," said David Wilkie, CNH Industrial Design Centre Director. "We have also done a lot of work on graphics, moving towards a very bold, clear, 2D graphic, that gives a feeling of clarity and with a reflective finish that can be seen at night.

CASE Construction Equipment sells and supports a full line of construction equipment around the world, including loader/backhoes, excavators, motor graders, wheel loaders, vibratory compaction rollers, crawler dozers, skid steers, compact track loaders and rough-terrain forklifts. Through CASE dealers, customers have access to a true professional partner with world-class equipment and aftermarket support, industry-leading warranties and flexible financing.

CASE Construction Equipment is a brand of CNH Industrial N.V.

The G-Series cab takes comfort and visibility to new heights

Stationary and mobile: Bühler's got it covered!

Bühler's bulk handling portfolio includes both stationary and mobile equipment. The company specializes in solutions for grain terminals, whether product intake, storing, conveying, cleaning, weighing, loading, or unloading. Bühler offers the complete package from initial project ideas up to turnkey solutions.

In the field of continuous unloaders, Bühler's Portalink unloaders are based on the tried-and-trusted mechanical conveying technology using high-capacity chain conveyors. The Portalink is designed for seagoing ships of up to 125,000dwt, and has an unloading capacity ranging from 300tph (tonnes per hour) to 1,500tph. It offers top-of-the-class operating costs, with low energy usage, low maintenance and easy operation.

On the other side of the equation, Bühler has two loading systems its the product portfolio which are available as both stationary and mobile models. These offer a capacity from 800tph up to 3,000tph per loading boom. Bühler's stationary Portaload is based on three to four loading towers and is designed to reach maximum performance and is designed for continuous, uninterrupted loading — the large supplying belts ensure continuous high capacity loading. The capacity per boom ranges from 800tph up to 3,000tph, reaching a total loading capacity of up to 6,000tph per installation!

Buhler has designed the Mobile Portaload with the key criteria of reducing the environmental footprint and increasing the competitiveness of its customers. One key change to reach

an environmentally sound loading installation is the complete avoidance of hydraulic systems on the loading installation. This makes it possible to significantly reduce the total power required by the loader and subsequently reduce the energy consumption per tonne.

Commodities handled

Bühler's mobile equipment handles all free-flowing food products and mealy products like soya meal. Its mechanical loaders and unloaders unloaders efficiently handle the delicate product characteristics of the products and offer a clear customer advantage in terms of lower operating costs and increased efficiency due to easy and auto sink-in and lower-out function. Actively adapting the product portfolios and setting new standards by introducing new technology, Buhler is keeping ahead of competition.

Among the best examples are Bühler's mechanical ship unloaders. At an early stage, Bühler identified that vertical mechanical conveying compared to, for example, pneumatic conveying is not only more efficient but also has significantly reduced product breakage through gentle product handling. Handling and processing grains can present specific problems, and doing so economically is an additional dimension that is integral to Bühler equipment.

Through its world-wide network of experts, Bühler ensures that customer problems are solved with greatest care and specified for each problem.

Major clients

Major clients of Bühler for mobile harbour equipment are the large trading and exporting facilities demanding reliable, high capacity, efficient loading and unloading equipment having low operating costs, as well as direct end-users such as millers, brewers, feed plants, etc. who are trusted and important customers for Bühler.

Staying competitive

Bühler is always looking for new developments, product improvements, and trying new materials. The company pays particular attention to its mechanical unloaders — such as the Portalink portfolio — which have market-setting standards for low energy consumption, high operating efficiency due to ease of handling for the operators, and high availability due to reduced maintenance time and low wear & tear. All these factors result in a short ROI (return on investment).

In the last year, Bühler has focused on a new operating and control system for its loading and unloading portfolio. The operating system is developed on direct customer feedback to simplify the basic functions and increase functionality for maintenance and traceability. The improved system reduces time needed to search for errors and train new staff to understand the equipment; this generates a higher ROI.

Recent contracts

- two large mobile Portalinks on rails with a nominal capacity of 1,200tph and capable of handling Panamax II class vessels;
- Bühler has received an order for a mobile Portalink mechanical unloader with the capacity of 800tph in the Middle East designed to handle Panamax-class vessels; and
- Bühler has successfully installed and taken into operation a Mobile Portalink on rails with a capacity of 600tph in Asia.

About Bühler

Every day, billions of people come into contact with Bühler technologies to cover their basic needs for foods and mobility. With its industrial process technologies and solutions, Bühler contributes significantly to feeding the world's population, setting the focus on food security and safety. The global production and processing of wheat, maize, rice, pasta, chocolate, and breakfast cereals relies strongly on Bühler. Furthermore, Bühler is a leading solution provider of die casting and surface coating technologies, with an emphasis on automotive and optics. As a leading technology group, Bühler invests every year up to 5% of its turnover in research and development. In 2015, its around 10,800 employees in over 140 countries generated a turnover of CHF 2.4 billion. The family-owned company Bühler is proud of its Swiss roots and feels particularly committed to sustainability.

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Liebherr offers a wide variety of custom-engineered machines for material handling applications. The latest generation of Liebherr handlers offers many valuable innovations for machine operators and owners and features a universal design concept. Specific power packs are used to comply with the different emission standards required by each country.

Liebherr Stage IV/ Tier 4f handlers use the Liebherr SCR technology (Selective Catalytic Reduction), which consists of a SCR catalyst system without other components such as an injector and AdBlue® solution. The system effectively reduces exhaust emissions without compromising performance.

Liebherr achieves the difficult balancing act between high productivity and excellent efficiency thanks to its own engine technology manufactured in-house and optimized to meet the requirements of controlled hydraulics. The company relies on state-of-the-art engine technology along with intelligent machine controls that optimize the interplay of the drive components in terms of efficiency. Liebherr-Power Efficiency (LPE) enables the machine to combine maximum performance with the lowest possible fuel consumption.

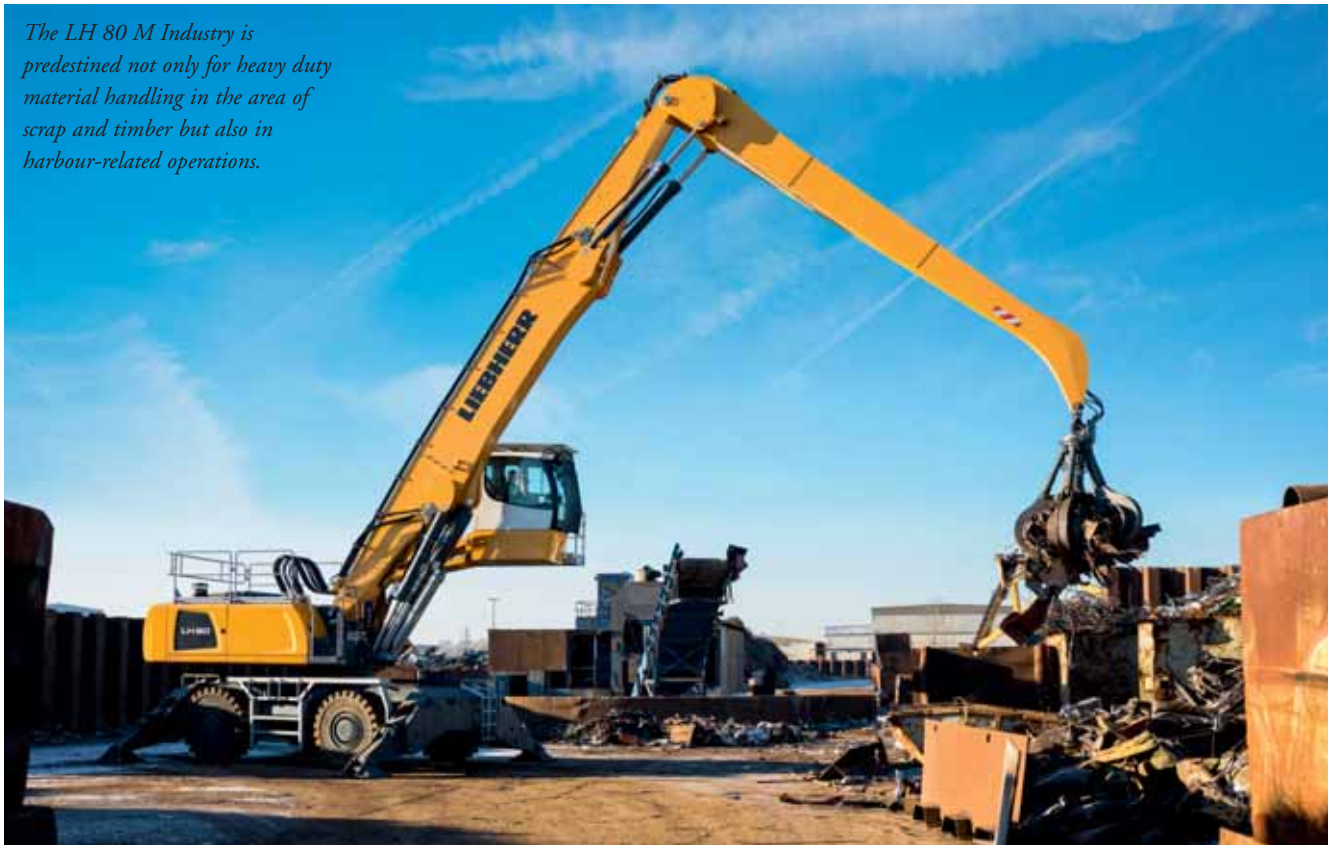
Another highlight of the new Liebherr material handlers is the redesigned cab for enhanced safety and comfort. The foldable left armrest is included in the standard equipment and a sliding door is available optionally. Both offer enhanced safety for the machine operator when getting in and out of the material handler. The standard operation of the machine support via the proportional control on the joystick levers offers greater comfort. When moving the machine, the operator does not need to change his grip and can complete levelling works comfortably and precisely. The joystick steering without steering column as standard for mobile material handlers improves the operating convenience, provides additional legroom and a clear view of the working area. To increase productivity and efficiency, an individual setting and adjustment of the parameters of machine control is possible. These individual operator profiles can be saved and accessed quickly and easily via the integrated driver recognition system.

The new two-circuit Liebherr Synchron Comfort system (LSC) with LUDV technology (flow distribution independent of load pressure), which is available for all machines up from LH 40, ensures faster working movements with up to 20% less fuel consumption in comparison to the predecessor models. All work functions of the machine are controlled electrically and the signals of the transmitters are only converted directly at the control block by hydraulic means. This technology enables end position damping of the attachment in order to protect the components and therefore extends their service life. Simple, individual setting and adjustment of the working speed of boom, stick and slewing mechanism allow the driver to adjust the machine to each application and fully utilize the machine's capacity.

All machines, starting with the LH 40, are equipped with the Liebherr-Energy Recovery Cylinder (ERC). This system gives the machine an enormous increase in performance with faster and more homogeneous operating cycles, a higher handling capacity, fuel savings of up to 30%, lower operating costs and reduces pollutant and noise emissions. In addition, Liebherr now offers its remanufacturing program also for ERC cylinders. This programme provides cost-effective reconditioning of components to the highest quality standards. Various reconditioning levels are available, such as replacement components, general overhaul or repair which means the customer receives components with original part quality at a reduced cost.

A separate hydraulic pump comes already installed on handlers from machine class LH 30 and above. The pump in the closed swing circuit only supplies hydraulic fluid to the swing mechanism. Therefore, the maximum delivery volume is available at any time for turning the upper carriage for fast and dynamic rotational movements. The closed swing circuit feeds the braking energy back into the system when the upper carriage stops.

Thanks to partial micro filtration of the hydraulic circuit, the new optional filter system for working tools protects the hydraulic components by minimizing wear and prevents damage caused by foreign particles in the hydraulic oil.



The LH 80 M Industry is predestined not only for heavy duty material handling in the area of scrap and timber but also in harbour-related operations.

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The Port range – material handling machines from Liebherr

- Specially developed machines for port handling applications
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LIEBHERR

New Zealand engineering company offers unique hopper/unloader solutions

New Zealand based engineering firm, Page Macrae Engineering, has just completed two major projects for discharge hoppers in Queensland, Australia and Lima, Peru. The company's ability to design and engineer unique solutions has enabled it to manufacture to customers' specific requirements.

The first project, built for Sun Metals in Townsville, was unique in that it was especially designed to facilitate the unloading of zinc concentrate for transport to their plant while also being capable of loading ships with zinc ferrite for export.

The project brought a number of challenges for the company: The hopper needed to eliminate dust emissions, the product itself was sensitive to compaction and did not flow well and an extremely tight delivery deadline was also required.

Awarded the project in January 2016, Page Macrae Engineering engaged the services of a specialist consultant to carry out flow testing on the zinc product and report on handling difficulties. The result of the findings determined that a radical new approach to the design was required. The design called for a larger than normal hopper opening to achieve flow and to transfer the product to the truck a unique batching process was required. The end result, filling of a triple trailer road train in under ten minutes.

In order to meet local dust suppression regulations, the unit was enclosed and fitted with a dust extractor and self-cleaning filter system. This enabled the hopper to maintain negative air pressure inside the enclosure preventing dust from escaping as well as dust suppression at the grizzly.

The 220-tonne unit was completed in October last year, and shipped to Townsville for installation.

The system has since been successfully tested and commissioned and has received and unloaded several shipments of zinc concentrate.

"We are very happy with the results achieved by our solution

Motor Driven Reels
- Monospiral and Level-Wind configurations
- Rugged and dependable magnetic coupler for dusty environments

Cable Festoon
- Corrosion-resistant, long-life rollers; precision sealed bearings
- Systems customized for the application
- Preassembled option, for easy installation

Cable Chain
- Rugged design for demanding environments
- Long operating life
- Custom-configured

Rugged Energy & Data Transmission Systems

Conductix-Wampfler has one critical mission: To keep your bulk material handling operations running 24 / 7 / 365. You need proven, worry-free energy solutions - and Conductix-Wampfler has them. Our systems provide reliable electric power and water to stacker/reclaimers, barge and ship loaders/unloaders, bulk conveyors, tripper systems, and gantry cranes. Conductix-Wampfler systems are rugged, low maintenance, and time-tested in tough, dusty environments. All products are backed by the largest sales and service network worldwide!

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CONDUCTIX wampfler

DELACHAUX GROUP

for Sun Metals and believe that it meets their requirements as well as allowing them to comply with the applicable dust suppression regulations," says Port Equipment Manager Bruce Ennis, "2016 was an exciting year for our company, with the challenges of the Sun Metals job followed closely by the contract for Peru."

The second project, three large dust control discharge hoppers destined for Port of Callao, Lima, Peru have just been shipped from Port of Tauranga. This export into the South American market is a first for the company.

Approached by a former Australian client now working in Peru, Page Macrae Engineering was awarded the contract for the hoppers in September 2016 and construction of three 41-tonne units, was recently completed. The company's standard design hoppers were customized to suit the lower than normal wharf load capacity.

The three hoppers were delivered to the Port of Tauranga in two sections and assembled as complete units on the wharf for transport on the deck of a specialist heavy-lift ship.

A client representative arrived in New Zealand to inspect the hoppers before they left on their three-week voyage to Peru. Two engineers from Page Macrae will travel to Lima to commission the hoppers and train the local operators on-site.

"We are very excited by the opportunity to export into this new market," says Ennis. "The hoppers are unique due to their lower than normal overall height and their wheel set system, which allows the client to tow them into place and have them up and running in a matter of minutes. Commissioning the project in Peru could bring its own set of challenges, such as the language barrier, which we will work through when we get there."

The customized hoppers are designed, developed and fabricated to be efficient, protect the environment from dust and spillage and meet the unique requirements of the client, load and port," says Ennis, "Our team of engineers and designers are excited by the experience and opportunities that may arise in the future."

Page Macrae Engineering has a reputation as one of New Zealand's premium engineering companies. Based in Tauranga in the Bay of Plenty, it is located close to New Zealand's

largest and busiest port. The company has extensive knowledge and experience in a wide range of medium- and large-scale projects in industries such as power generation, petrochemical, pulp and paper, food processing and bulk materials handling. It offers a wide range of engineering services from design, fabrication, on-site installation, maintenance and project management and prides itself on its ability to provide engineering solutions through innovation — locally and abroad.

‘Greening’ bulk loading & transport: movable shiploader technology from Bedeschi

In 1992, the UN introduced the concept of ‘sustainability’, defined as “Development that meets the needs of the present without compromising the ability of the future generations to meet their own needs.” Work for a sustainable development is required to operate on three different levels: economic, social and environmental. It is clear that ports have a responsibility towards the environment, and that port governance is necessary to take care of effective logistics and operations. While in the past, safeguarding the environment was not an issue, nowadays ports worldwide consider the prevention of pollution a first objective, especially with import/export of dry bulk cargo (coal, grain, iron ore, fertilizer, etc...). In this case, the risk of spillage and dust production is very critical. Problems can occur during loading or unloading operations, but they can also arise when it is necessary to store cargoes in the port area.

Standard flow sheet of a shiploader

A. *Longitudinal belt conveyor installed on the dock;* **B.** *tripper lifting the longitudinal belt conveyor installed on the dock;* **C.** *Connection belt conveyor between the tripper and the conveyor installed on the shiploader boom;* **D.** *Shiploader boom conveyor;* **E.** *Loading chute to distribute the material in the cargo hold, that could be telescopic, trimming, slewing and/or tilting.*

A first step to reducing emissions could be the use of eco-friendly bulk handling equipment. Bedeschi, thanks to its research and development in green technology, is able to design and produce machines, which incorporate sophisticated dust control measures, able to reach the highest environmental standards.

This article looks at some of the methods and devices that Bedeschi uses to reduce dust emissions during loading operations using its mobile equipment.

The graphic above includes a key of all the different sections.

For portion C:

- the positioning of the connection conveyor is in an enclosed gallery;
- the belt conveyor could be equipped also with closed canopy;
- the belt speed is kept low;
- if the conveyed material contains a high level of fine dust, instead of a connection rubber conveyor, a chain conveyor or a screw conveyor completely sealed can be used.

For portion D: the shiploader boom could be equipped with:

- belt conveyor closed into the gallery and rubber belt protected with canopy. Loading and discharge points could be dedusted with bag filters or water spry systems;
- the entire gallery could be maintained in light air depression, so as to prevent dust exiting; and
- alternatively, a completely sealed chain conveyor or screw conveyor could be used.

For portion E:

- the choice of the chute depends on the fragility of the cargo, especially for pelletized or briquetted types that are easily broken.
- Bedeschi has paid special attention and in-depth studies to the loading chutes, that can be collected as follows.

1. *Telescopic chute with tiltable hopper* to better control the flow. Very low environmental impact, suitable for dusty product. The telescopic chute is an ideal solution to prevent the problem of breaking particles and to minimize dust generation when loading bulk material. The design of the telescopic chute ensures that material particles are kept in mass flow form and at low velocity. In fact, the internal lining of the module cones minimize the liberation of dust particles without affecting loading rates. The extraction system, represented by the top boom filters, guarantees a perfect vacuum atmosphere into the vessel hold, preventing any dust emission. Due to the minimal free-fall and the low velocity that the material experiences, greatly reduced material degradation is evident when loading sized product.

2. *Spiral chute:* Loading spiral chute to allow the loading of the vessel avoiding material falling from too great a height.

Shiploader with screw conveyors.

This not only limits dust production, but is also keeps the chemical properties of the cargo unchanged. The loading speed is controlled by the diameter and inclination of the spiral chute.

3. *Trimming chute, slewing and tilting*, allows for very good filling of ship holds, minimum impact on the environment, depending on the type of product. Suitable for low density products. The final part of the chute, that can be oriented inside the cargo hold, allows for perfect filling of the vessel. The material is compacted inside the chute, ensuring a compact flow and avoiding the separation of the dusting part from the granular one.

Vassiliko shiploader.

The above describes, from a technical point of view, the different technologies used on the quay to reduce polluting emissions and to guarantee a reduced environmental impact, to meet the highest international standards. Follows, a case study where Bedeschi developed specific technologies to fulfil these requirements: a movable shiploader.

A new clinker export terminal for Vassiliko Cement

A specific project, based in Vassiliko (Greece), is an excellent example of alternative technology related to the information above, since it's a tyre-mounted shiploader. This project demonstrates Bedeschi's ability to understand the client's requirements and to offer high-level engineering solutions.

For Vassiliko Cement Plant, ten years ago Bedeschi developed a circular limestone storage facility. Recently, the company has been awarded a contract to develop a clinker export terminal. The system will be installed in the port terminal of the cement plant equipped with a shiploader on tyres and with surface feeder. The trucks arrive on the dock, discharge the material on to the surface feeder directly connected with belt conveyors to the shiploader. The complete system moves along the quay so as to optimize the loading of the vessel. The capacity is up to 550tph (tonnes per hour). It is possible that, in a future implementation, capacity will increase to 800tph.

In terms of respecting the port environment, Vassiliko has a receiving track surface feeder. The closing system has a closed cover and negative pressure. No dust is generated during unloading operations, and the speed of the belt remains low. The chute drop is not high. Unloading chute between surface and belt with negative pressure.

Conclusion

Eco-friendly and innovative equipment is essential for any modern port environment. Since land itself is expensive, Bedeschi is able to help the client by providing compact, functional, eco-friendly and mobile equipment, which prevents pollution and uses the latest technologies to ensure perfect filling of ships' cargo holds. DCi

Example of a mobile shiploader.

LAIDIG

Pioneering Reclaim Solutions

Pioneering Storage and Material Handling Since 1961

PIONEERING SPIRIT

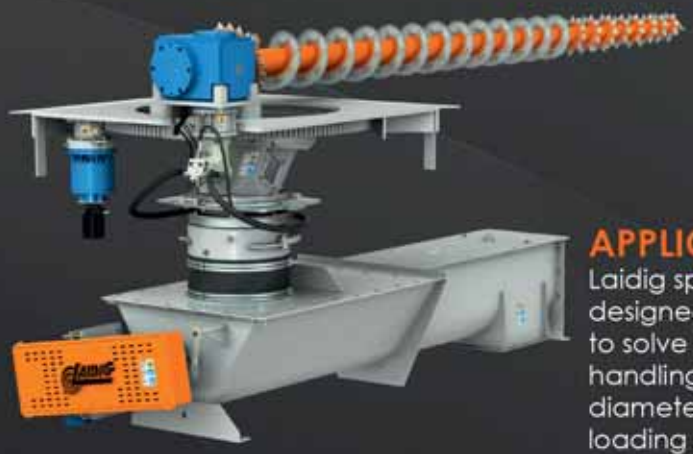
With over 50 years of pioneering innovations, Laidig is recognized world-wide as a leader in the bulk storage and material handling industry. Laidig is continually involved in cutting-edge development to offer customers the best solutions for their storage and reclaim needs.

EXPERTS IN

MATERIAL HANDLING SOLUTIONS

FULLY AUTOMATED TURNKEY SYSTEMS

Laidig's turnkey storage and reclaim systems offer superior material handling performance and dependability in the harshest environments.

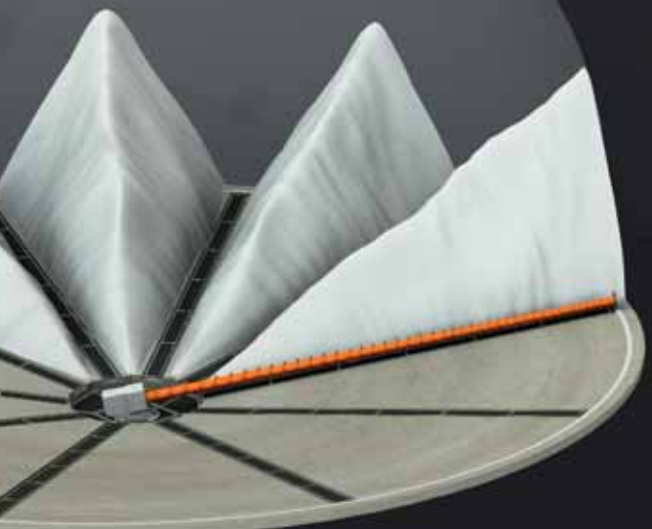


APPLICATION SPECIFIC

Laidig specializes in custom-designed and engineered systems to solve all of your material handling needs, including large diameter applications to assist in loading ships at port facilities.

EXCEPTIONAL ENGINEERING

Laidig's systems are engineered to provide **completely automated, near-total clean out,** while maintaining first-in-first-out (FIFO) material distribution.



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Stockyard systems in focus

Conductix-Wampfler: a guarantee of efficiency and availability

Efficiency in stockyard operations demands a lot from the installed equipment and high availability is top of the list. This means working correctly first time, every time, with maintenance only taking place at planned intervals.

Conductix-Wampfler has the products to guarantee high availability and performance. Whether offered to an OEM for a new machine, or as a retrofit to an end-user, its sales and engineering teams can call on wide-ranging references and long experience to select solutions that are suited to the application.

Offered solutions

"Bulk handling is in our DNA. For over 80 years we have been supplying high quality solutions for stockyard applications around the globe," says Iain Barton, Global Market Manager Mining & Bulk Handling at Conductix-Wampfler. The industry-standard control system for cable and hose reeling applications on heavy, slow moving bulk handling machinery, has been for many years the Conductix-Wampfler MAG Drive. Robust, reliable, cost effective and requiring minimal commissioning and maintenance of the factory-set magnetic coupler, the MAG Drive's modular approach ensures a close match with the requirements of the application. The high quality, rare earth-metal magnets ensure long lasting, trouble free operation and by using standard, freely available squirrel cage motors, the MAG Drive is the ideal choice for the harsh environment of the bulk stockyard. Available with a choice of spools; mono-spiral, level wind, 3-2-3 or semi-wide (random lay) to suit the application, the MAG Drive's robust, designed for purpose range of gearboxes and slip ring assemblies ideally suit this difficult environment.

Suitable for use on stackers and reclaimers of all types, along with mobile hoppers and tripper conveyors, the MAG Drive just keeps on going.

The Conductix-Wampfler fibre-optic rotary joint —the TFO — utilizes unique, patented magnetic tape technology in its design, enabling the TFO to provide a secure and accurate environment for the delicate fibres during rotation. Custom designed for reeling applications, and available for multi- or single-mode use and with a range of termination types, the TFO sets the benchmark for data transfer over a reeling systems.

Conductix-Wampfler also offer cable and hose reels with a range of other drives and controls. From variable frequency drive options, offering the customer the choice from systems which are fully integrated into the bulk machine control system, through simpler stand-alone units, which gives the precise

PHB

Weserhütte

Handling & Mining

Bulk marine terminals / Belt Conveyors / Ship and Barge Loaders / Ecological hoppers
Stacker units / Scraper-Reclaimer units / Bucket wheel stacker reclaimers / Pipe conveyors
Articulated boom Slewing cranes / Longitudinal stockyards and Blending beds
Circular stockyards and Blending beds

TSK

www.grupotsk.com

control of an electronic system without the frills, to torque motor reels for smaller machines.

"Of course we also cover a wide range of other applications, for example where multiple cables or hoses are required and our festoon and steel cable chain systems are well known in this market," Barton stated. With festoon trolleys which can be configured to fit either standard beam profiles or the customers specific requirements, Conductix-Wampfler I beam festoons are a market leader, where strong, reliable systems are required. Energy guiding chains come in a choice of materials, including galvanized and stainless steel, with certification to ATEX 22 available.

Slewing and rotating

When it comes to slewing and rotating applications, for example on bucketwheel reclaimers, Conductix-Wampfler hold all the cards. The range of products ensures coverage of all the requirements in this market. Each machine is always slightly different and custom designed slip rings are available with an astonishing range of ring types and designs; from high power, high current designs, through control and data transfer, to high pressure, mulitpass fluidic rotary joints, slip ring assemblies come in a choice of blind (solid) or hollow centres, allowing machine builders the opportunity to design in the flow of material through the center of their machine. Data transfer rings cater for a wide choice of high speed protocols to suit the customer requirements.

"As is the Conductix-Wampfler way, we can also offer alternatives for this application and our curved festoon systems are renowned for their simplicity of operation and installation, offering the advantage of visibility of the cables and hoses, enabling easy inspection and replacement during maintenance," Barton concludes.

Recent contracts

Installing new or replacement bulk handling equipment is a costly business, which is not without its risks. Customers need to trust their suppliers and Conductix-Wampfler continues to win that trust all over the world. Recent orders have included those for the supply of 26 cable and hose reeling drums on the stockyard and berths of a major Russian seaport, three cable reels, including two dual mono-spiral spools for the stockyard of a major cement works in Uzbekistan, ATEX zone 22 cable reels for portal reclaimers and tripper cars at a Chinese steel works, and VFD reels for stacker/reclaimers at a major port in China.

Conductix-Wampfler

Active on sites handling the broadest range of commodities, from iron ore and copper, through agribulk, coal, sulphur and bauxite, Conductix-Wampfler products are found around the world, from South America, through to Canada, across Europe and Africa and deep into Asia, including remote spots like New Caledonia. With sales and marketing organizations, service teams and manufacturing units spread around the globe, Conductix-Wampfler is never too far away to help its customers to move their cargoes.

AIready present in more than 60 countries, and growing










www.taimweser.com

TAIM WESER

Nuestro mundo es el mundo

TAIM WESER stockyard solutions can be found on all five continents

TAIM WESER petcoke bridge reclaimer.

TAIM WESER is able to provide high-quality stockyard equipment solutions to meet the needs of customers within all the industrial sectors — including power, ports, iron and steel, fertilizers, oil and gas, mining and cement industries, and covering a wide range of bulk materials including, petroleum coke, sulphur, phosphates, coal, cement, grain, fertilizers as well as other minerals.

The company provides all the necessary equipment for unloading, conveying, storage, handling and loading of bulk materials, having supplied equipment and turnkey plants for more than 100 years in more than 60 countries worldwide.

TAIM WESER works with the latest technology and — through its skilled engineering department, specialized workshops equipped with state of the art machinery and its erection, commissioning and after-sales teams — it is able to provide its clients with highly advanced and, at the same time, highly competitive solutions.

Today, in the preliminary stages of the projects, its customers appreciate its collaboration and expertise as a technological solutions provider. TAIM WESER assesses and suggests the best solution to achieve their needs in the most efficient way and, through its engineering equipment, it supports its customers with its extensive know-how enriched along decades. In this way, it is able to share with its customers a satisfactory, advantageous and state-of-the-art design at the earliest project stage.

TAIM WESER supplies either individual specialized stockyard equipment or complete installations, integrating key and auxiliary equipment to give its clients an optimal tailor-made solution for each individual case.

The company's range of products includes all types of reclaimers, fixed or travelling stackers, combined bucketwheel stacker reclaimers, circular and longitudinal stockyards, either open or covered, kidney stackers, both rail- and tyre-mounted environmentally friendly hoppers as well as belt conveyors systems, train and truck loading stations, shiploaders and ship-unloaders.

This wide range of products allow TAIM WESER to provide customized solutions according to clients' requirements, depending on the type of material to be handled, type of activity to be done and environmental conditions of the site where the project is located.

TAIM WESER's stockyard machineries are present in the five continents, at power plants, industrial areas, stockyards, refineries, mines, ports and even the dessert, with capacities of up to tens of thousands tonnes per hour.

At this moment, the company is working on some relevant stockyard equipment installations. In the Middle East, it is involved in several projects related to the iron ore pellets handling, which include the supply of four luffable and slewable stacker-reclaimer machines to be installed at several pelletizing plants.

Also in the Middle East, it is developing a project for a refinery consisting of the design, manufacture and supply of a belt conveying system and storage system in two circular stockpiles. The circular storage system includes two big aluminium circular storage domes, equipped each with a slewing/luffing boom stacker and a scraper reclaimer machine, cantilever type, and supported on a central column, around which they rotate. The equipment is contained inside a circular covered building.

Finally, in Egypt it is providing the complete petroleum coke handling system, including reception, conveying and truck loading station, for the Delayed coker (DCU) unit of a refinery plant.

TAIM WESER's broad and impressive track record on large international projects has helped strengthen and consolidate its presence in the stockyard equipment market at worldwide level, with several projects developed in the last few years in Europe, South America, Middle East and North Africa, and others currently under execution.

Stacker/reclaimer for iron ore.

Improving rail unloading with innovative solutions from Metso

Among the many diverse minerals processing products offered by Metso is a wide range of equipment for Rail Handling of bulk materials across many industries. Rapid unloading requires specialized equipment for the movement of railcars to and from the unloading point.

Whether a new system, or an upgrade of existing equipment, the experts at Metso can offer a range of products for rail unloading systems, including:

Railcar dumpers/tipplers — including the following models/variations

- O-ring rotary dumpers (single, tandem, triple, quadruple variations);
- Rotaside tipplers (single & tandem variations); and
- C-frame tipplers (single & tandem variations).

Train positioners (large capacity)

- rack & pinion positioner (up to 13 drive configuration);
- wire rope positioner;
- chain drive positioner; and
- Gemini positioner system.

Cr pullers (low capacity)

- engineered wire rope pullers;
- RCM (reversible chain-driven movers);
- Nolan HCM™ (hydraulic car movers); and
- SCAMP® railcar indexers.

Train holding devices

- **wheel grippers (high capacity);**
- wheel chocks;
- wheel stops;
- holding arms; and
- clicking stops.

Ancillary equipment

- railcar traversers;
- railcar ejectors; and
- railcar retarders.

Metso's railcar dumper, tippler and positioner systems are designed for fast, dependable train turnaround. These systems service random and unit train operations in any length or style. Its single, tandem, triple or quadruple rotary railcar dumpers service trains of any length or style, and are used in handling coal, coke, metallic ores, limestone, bauxite, phosphate, sulphur, wood chips, waste, and a variety of other bulk materials. Its Rotaside and C-Frame tippler systems are predominately used for random car operations in the coal, power and cement industries.

Metso's capabilities in design, supply, installation, and commissioning provide complete railcar unloading systems including: the dumper/tippler, train positioner, train holding devices, hoppers, feeders, and controls. For each individual application, the railcar unloading system is custom-configured and built with the site specifics and customer needs in mind. Its

Bulk Material handled by Experts

Tenova TAKRAF is a key supplier of individual machines and integrated systems for handling bulk materials in mine stockyards, ports, power stations and metallurgical plants. Each project is approached from the end-user's viewpoint in order to deliver optimized solutions that meet and exceed requirements and expectations.

Complex material handling operations starting from train unloading via stockyard handling and blending to ship loading are handled on the basis of extensive experience and know-how in bulk handling. Stackers, Reclaimers, Stacker/Reclaimers, Scrapers, Ship Loaders and Ship Unloaders are reliably in operation all over the world.

Total technology solutions for mining, bulk materials handling and minerals beneficiation.

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TAKRAF
TENOVA

Tenova is a worldwide supplier of advanced technologies, products and engineering services for the mining and metals industries.

railcar dumpers and tipplers are designed for long life and low maintenance, and when used with Metso railcar positioners, the customer operation can be even more efficient.

With hundreds of dumper/tippler and positioner systems worldwide, Metso also has the expertise to upgrade older units using the latest technology. It designs, supplies and installs retrofits to dumpers of its own supply, as well as its competitors. It handles dumper barrel replacements, plus design modifications for existing railcar dumpers/tipplers and positioners that improve customer production, reliability, maintainability, and safety.

Metso's core customer industries are in the mining sector. However, Metso equally serves other industries such as pulp, paper, recycling, grain, cement, chemical, power and fertilizer. Specific commodities handled or managed with Metso rail handling equipment includes: coal, iron ore, fertilizer, wood chips, food & grain, limestone, potash, phosphate, urea, industrial minerals, cement, recycling materials, scrap, etc.

Metso utilizes the latest technology in all designs, which are continually reviewed and updated.

Metso's dedication to continued R&D and new product development strengthens its global position with state-of-the-art innovations. Its recently optimized Rotaside tippler system is also standardized to provide the most cost-effective solution for its clients. The Rotaside tippler system includes a single or tandem tippler, rack & pinion positioner, holding devices, railcar traverser and railcar ejector. Developed to serve the coal and power industries in the Indian market, these systems are fully RDSO norm-compliant and can be used in many markets throughout the world.

Metso's most recent installations and /or contracts include:

- two rotary car dumpers at port facilities and one rotary car dumper at a power plant in the US;
- one rotary car dumper at an iron facility in Mexico; and
- one Rotaside tipper system for a cement facility in India.

About Metso

Metso is a major industrial company serving the mining, aggregates, recycling, oil, gas, pulp, paper and process industries. It helps its customers improve their operational efficiency, reduce risks and increase profitability by using its unique knowledge, experienced people and innovative solutions to build new, sustainable ways of growing together.

Metso's products range from mining and aggregates processing equipment and systems to industrial valves and controls. Its customers are supported by a broad scope of services and a global network of over 80 service centres and about 6,000 services professionals. Metso has an uncompromising attitude towards safety.

Metso is listed on the NASDAQ OMX Helsinki, Finland, and had sales of about €2.6 billion in 2016. Metso employs over 11,000 persons in more than 50 countries.

Kirow, Ardelt and Kocks: equipment for bulk handling in the port and stockyard

The Kranunion Group, a wholly privately owned company, has three specialized operators — Kirow, Kocks and Ardelt. Between them, these entities produce transport and cranage solutions for the steel-making, shipyard, port and railway industries. Their product ranges include a number of stockyard and port solutions.

Each of the product companies was founded over 100 years ago, giving the group a combined experience of more than 400 years. Notable developments include:

- first large grab ship-unloaders in 1930;
- patented the double-level luffing crane in 1936;
- built the first heavy-duty railway crane in 1954;
- designed the first Goliath crane in 1960;
- built the 7,000-tonne ship lift in 1961; and
- designed the first STS container crane in Europe in 1967.

Kranunion specializes in specific industry sectors, which allows a clear understanding of customer and market needs, tailoring products to give optimum performance and lifetime. These sectors are: steel mills; shipyards; bulk handling; track-laying; container handling; and general cargo handling. The German company has its head office in Leipzig, and its design and fabrication sites of the product companies are located at various locations throughout German, thereby maintaining the knowledge centres that have existed for decades.

Construction competence centres

Kranunion production facilities contain all the necessary expertise and are large enough to enable in-house production of all components with each site specializing to ensure efficiency.

Worldwide availability

To ensure close proximity to its customers, Kranunion has created regional sales and service centres, ensuring a better understanding of local requirements and a comprehensive local service support network.

Product range

Kocks and Ardelt have a very wide product range, including: gantry unloaders; compact, double-jib Kangaroo unloaders; single-jib slewing cranes; balanced jib material handlers; hydraulic material handlers; and compact ship unloaders.

Tukan K

This crane is ideal for bulk handling. With a capacity of up to 2,200tph (tonnes per hour), and a very low cost per tonne handled, it is a bulk handling pro, with an integrated hopper.

Short distances save time and money

The integrated hopper has a key advantage in bulk handling; it provides the shortest possible path between the vessel and the hopper. Short distances save time and money. That also applies, of course, to the onward transportation of goods after they have been moved from the quay.

The Tukan K's short load path, defined by its double-jib, and the hopper integrated into its high gantry combine perfectly for efficient bulk handling. The Tukan K picks up the goods in the vessel and transports them into its hopper mounted out front. This means that the Tukan K does not need to turn. This is much less tiring for the crane operator who can always see the grab perfectly. Because there is no more slewing movement, the stresses such movements generate are eliminated. This is good for the Tukan's lifespan.

The crane for operators

Its high gantry with hopper is ideal for an unrestricted logistical process on the quay. Mobile port cranes with outriggers, by comparison, block wharfage and tie up valuable space. The Tukan gantry crane with hopper provides uninhibited access for trains, trucks and similar traffic, which is hugely convenient when it comes to carrying away bulk goods by the shortest and quickest route.

As well as enjoying extremely fast handling and direct outwards transport, a terminal equipped with Tukan K cranes has the advantage that several Tukans can be lined up close to one another. as they do not have to turn. More Tukan K cranes can be used on a ship than comparable slewing or mobile cranes. As

One of two Tukan K units operating on a finger pier in Northern Germany.

a result, terminals with short quays can be upgraded into high-performance operations and, as with short distances, a short lay time saves a lot of money.

To reduce the time lost by changing grabs. Ardelt has developed a grab-filling optimization system. This ensures that the grab is always filled to the right level for the density of the bulk cargo involved. This prevents the crane shutting down due to overload and means you no longer have to switch between different sizes of grab.

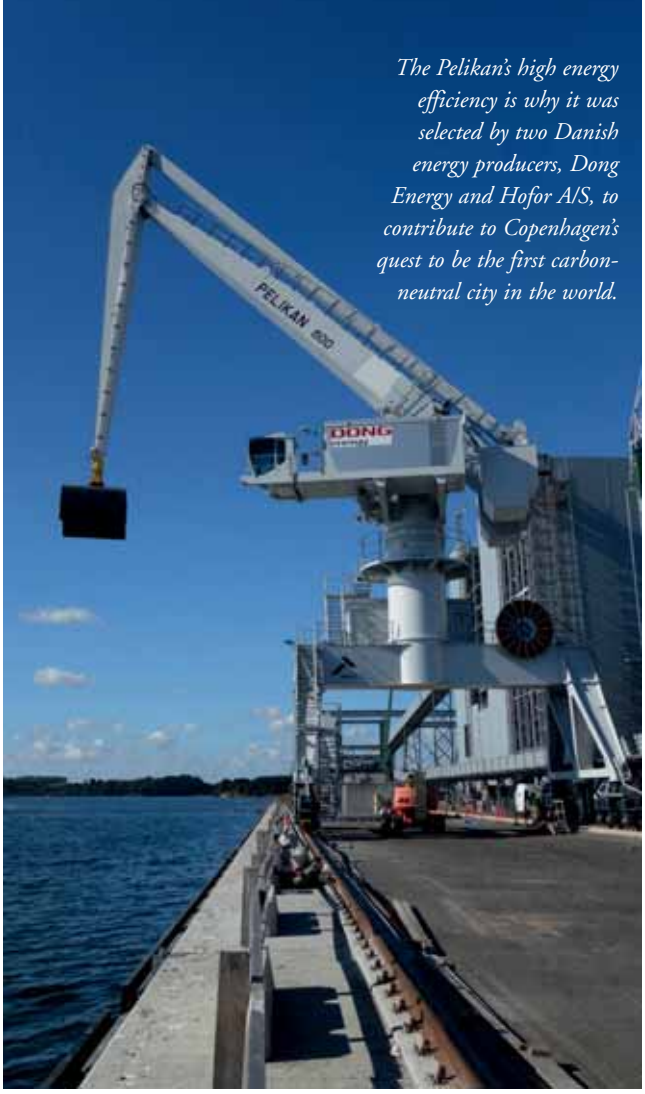
The Tukan K: equalling ship unloaders

With a handling rate of around 2,000tph, the Tukan K can easily keep up with ship-unloaders, yet its investment cost is only around 70% and its operating costs are also much lower.

The Tukan K offers the shortest possible load path combined with perfect landside logistics and ultimate performance within a small footprint.

Categorized as A8, the Tukan K is our premium model and is the senior member of Ardelt's Tukan product family.

Not every solution and not every kind of handling demands a cable crane. A handling device which can transmit force directly between the arm and load suspension device is especially useful if you need to squeeze or press goods.



The Pelikan's high energy efficiency is why it was selected by two Danish energy producers, Dong Energy and Hofor A/S, to contribute to Copenhagen's quest to be the first carbon-neutral city in the world.

is essential when it comes to handling goods such as scrap. The Pelikan can move more scrap per cycle than other cranes. It is also ideal for loading and unloading bulky logs. Logs can be positioned accurately with the Pelikan and narrow passages don't present a problem. An additional benefit of the Pelikan is extremely low noise emission compared to other handlers.

The Pelikan has a focus on high energy efficiency. That is why it was selected by two Danish energy producers, Dong Energy and Hofor A/S, to contribute to Copenhagen's quest to be the first carbon-neutral city in the world. Three of these machines are currently on order. "It is all about finding solutions, that are smarter, greener, healthier and more profitable. We will be able to call ourselves the world's first carbon neutral city," — *Copenhagen: Solutions for sustainable cities*; January 2014; 3rd edition; City of Copenhagen; City Hall.

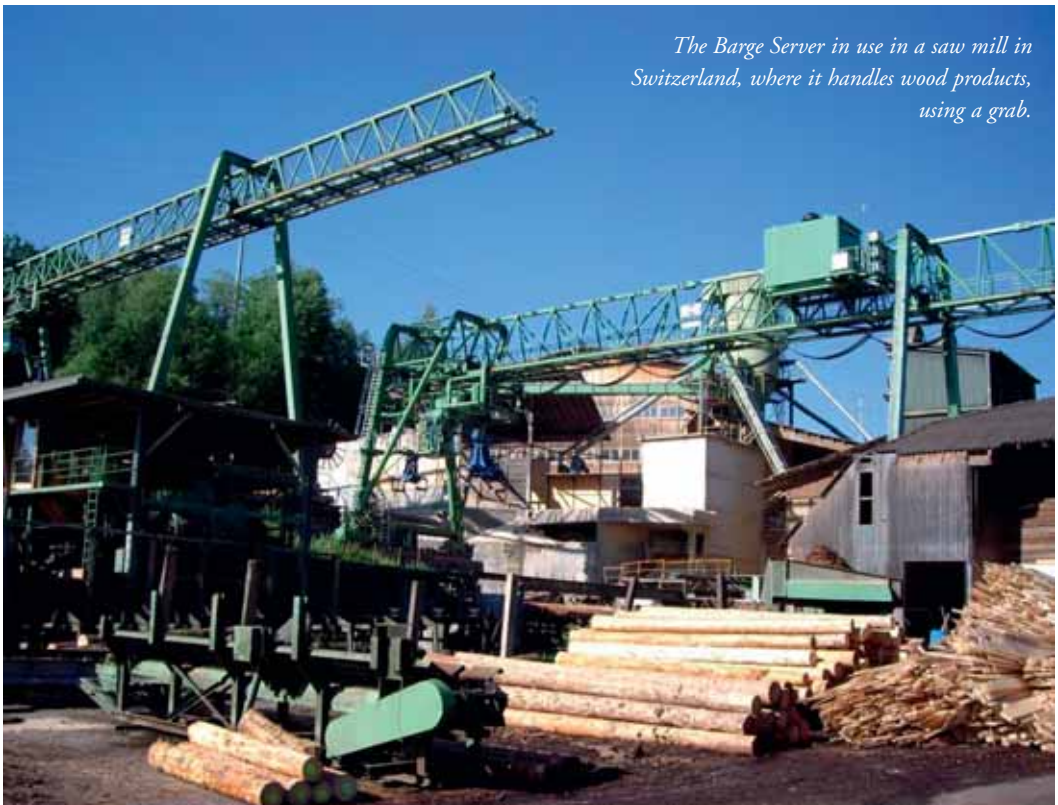
Save on balance

Ardelt utilizes a balancer principle for the Pelikan in which the jib's own mass is balanced by a mechanically coupled counterweight — entirely independently of the position of the boom tip. Energy is needed only for the movement itself — holding the boom system in place does not require any additional energy. This kind of balanced system requires less drive power and is an intelligent investment.

Pelikan: precision benefits

The Pelikan is a handling system for bulk goods that have to be compressed and for goods that have to be positioned quickly and very accurately. It is a balancer handling system that Ardelt offers for low to medium handling rates of 200 to 800tph and for unit handling weights of between 4 and 25 tonnes.

The great advantage of the Pelikan is the direct mechanical connection between the jib system and the grab. This means there is none of the swinging experienced with cable cranes, in addition the grab can be utilized to compress material. This



The Barge Server in use in a saw mill in Switzerland, where it handles wood products, using a grab.

The Pelikan has a mechanical hybrid system and an electro-hydraulic drive system. making it a highly efficient device. It uses electrical drive concepts, meaning that its systems are exhaust-free and quiet as well as eco-friendly.

Flexible and adaptable

The Pelikan is an outstanding multipurpose system which can be adapted to a wide range of requirements. not only in terms of the load-carrying devices it can use but also in the choice of gantry and base. The Pelikan benefits from the diverse range of modules available for Kranunion slewing cranes, as well as other devices made by the company. The Pelikan is available with caterpillar tracks, gantries, pedestals and other types of support.

The Barge Server

The Barge Server from Kocks is used widely to handle containers, but it also has bulk and breakbulk applications. It is in use in a saw mill in Switzerland, where it handles wood products, using a grab. It is also installed in a facility in Estonia, where it handles stockyard plates, using a telescopic magnetic traverse system. In Newport, and most recently Tilbury in the UK, it is being used to handle scrap in a hinterland port, using a grab — this unit has a waterside cantilever (boom) that can be raised.

Digger: partner for life

Dry bulk is still the largest traded global commodity and the requirements for any terminal are clear; the cargo must be offloaded as quickly as possible and the vessel turned around to sail again. The highest-capacity terminals work with a continuous system, where every element is part of a system and as important as each other. This is the natural domain of the Digger where performance and reliability are the key requirements.

The Digger delivers in bucket loads: the largest of Kranunion's bulk handling cranes, marketed by Kocks, can be utilized in the largest bulk handling terminals and works as an important element in a fully integrated process system.

History

Kocks has a history dating back almost 100 years for the design and fabrication of high capacity ship unloaders and this knowledge of the process requirements and materials to be handled is a major benefit in the continued development of the product.

A solid platform

A prerequisite for high speed bulk handling is a strong and stable platform from which to work. The robust box-section structural design accomplishes this by using the latest methods of stress analysis, proven by measurements from wind tunnel testing. The twin girder boom design gives added stability and allows the main and auxiliary trolleys to run between the girders for free passage of the ropes.

Rope system

The Digger uses a main and auxiliary trolley design with automatic rope tensioning device. The design maintains a constant grab height during trolley movement and eliminates slack rope, which means rope support trolleys are not needed. The significance of this design will result in lower operating costs by improving rope lifetime and it also has benefit to the driver by removing the need to constantly watch and adjust the grab height during long trolley movements. The driver cabin has the added advantage of running on an independent trolley, giving the crane operator the opportunity to position the cabin in the best position for visibility — further reducing fatigue during long shifts.

Exceeding expectations

When very high unloading rates are demanded and a lifetime of reliable operation is a must, the Digger is an ideal solution.

The Digger in operation at Hansaport, Germany.

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SENNEBOGEN material handlers used for moving logs at Russian yard

Three SENNEBOGEN 735 pick & carry material handlers in the log yard unload trucks and feed the barker.

New oriented strand board production plant in Russia's Torzhok: wood logistics with SENNEBOGEN material handlers

Once a waste product of the plywood industry, oriented strand boards have become a product of unparalleled success. In the city of Torzhok, Russia, the company Modern Lumber Technologies (MLT) LLC started one of the largest oriented strand board production plants in the country, with an annual output of around 600,000m³. And four SENNEBOGEN material handlers are in use in the log yard and production facility.

Oriented strand boards are used for structural panelling, interior wall and ceiling panelling, and sill plating. They are created by pressing strands arranged lengthwise and crosswise into boards under high pressure and temperature. Completed in June 2016, the entire system, started in 2014 by Dieffenbacher and HOLTEC next to an existing laminated veneer lumber machine, is one of the largest oriented strand board machines in the world.

A total of four SENNEBOGEN material handlers are used there to handle wood.

Inside the facility, HOLTEC constructed a conditioning and chipping system fed by an electric SENNEBOGEN 835 material handler.

SENNEBOGEN ELECTRIC MATERIAL HANDLER FEEDS CHIPPER LINE

The actual production process starts inside the facility. HOLTEC GmbH & Co KG from Hellenthal, Germany provided an entire system, complete with a stationary SENNEBOGEN 835 electric material handler that feeds the chipper to produce the strands. The material handler is driven by a 160kW electric motor and operates in shifts around the clock. The machine itself is positioned in an isolated cage above the chipper and feeds it with a 2m² grapple.

From the elevated, spacious Mastercab cab, the operator has an ideal view of the stalls, and also controls the system. The barked trunks are first thawed by two conditioning channels in order to chip the frozen wood in winter with the best results. After this conditioning, the trunks are taken from both channels by the electric material handler and placed into the hoppers of the chipper as needed. The chipper itself turns the logs into strands approx. 0.6 mm thick, which are then sifted, dried and glued into boards up to 40mm thick. The entire facility is designed for an annual production of 600,000m³ and produces oriented strand boards up to 2,800mm wide.

Once again, this product shows the successful collaboration between SENNEBOGEN and HOLTEC with the goal of offering customers the ideal solution for their individual challenges.

Together with KwintMadi, the SENNEBOGEN sales and service partner that looks after the machine, even routine servicing and the provision of spare parts are guaranteed.

THREE PICK & CARRY MATERIAL HANDLERS IN THE LOG YARD

The lumber, which is delivered to the Taleon Terra plant by truck from the heavily wooded area around Torzhok, is unloaded and sorted in the log yard by three SENNEBOGEN 735s. The mobile machines, with 3.2m² log grapples, then place logs on the feed table for the production facility. For those in charge at MLT, lead by Technical Director Vladimir Tsvetkov, the SENNEBOGEN material handlers are perfectly suited for this role: "Positive experience with our current SENNEBOGEN machines, high component quality and, not least, the reliability of the material handlers by SENNEBOGEN are what convinced us."

The 735s pick & carry concept gives the machine flexibility in the yard. It can unload an entire semitrailer in just four loads. The 360° slewing uppercarriage, with a range of 11 m, can load the double-chain barking line on the feed table from the side or from the end.

Mobile electric material handler combines efficiency and flexibility for indoor use

The advantages of an electric material handler are quickly explained: they are economical and efficient with a long service life and low maintenance costs. Only the question of mobility remains — after all, an electric cable cannot always be guided that easily. The fact that electromobility can also function beyond a cable drum and trailing cable is shown by a new SENNEBOGEN 825 Mobile that is supplied with current via a ceiling crane at the Nickelhütte Aue plant.

SENNEBOGEN area sales manager Ronald Haupt and Stefan Rißel from the dealer Tecklenborg explain, "This solution is unique and simultaneously easy to implement." They are talking about the new SENNEBOGEN 825 electric material handler that has recently started operation in scrap handling at Nickelhütte Aue and is provided with energy via an ingenious ceiling power supply. The supply cable is guided along with the machine with each movement via a ceiling crane. A rotary feedthrough on the uppercarriage ensures that the cable is securely connected with the machine. As a result, the electrical machine can be flexibly moved in the hall without any restriction, and the floor always remains free from cables for trucks that enter and exit.

FUTURE-ORIENTED TECHNOLOGY SAVES ENERGY AND PROTECTS THE ENVIRONMENT

"Committed to progress – connected to tradition" is the motto that the company, founded in 1635, has followed from the beginning. Progress not only means specialization in the export of chemicals, metallic salts, non-ferrous scrap metals, Cu alloy blocks, and concentrates to 45 countries worldwide but also the continuous improvement of the production conditions in the middle of the town of Aue in the Erzgebirge mountains. It is therefore no surprise that modern material handlers with an electric drive have been used at the nickel plant for several years. The machines, which sort, load, and move very different kinds of metal scrap in the halls, are especially economical and environmentally friendly even in continuous use. They easily achieve 50% savings in energy and operating costs compared to diesel machines. Especially when used indoors, the electric material handlers have the advantage of

working trouble-free with high dust exposure; no filter changing is necessary and exhaust gases are a thing of the past. Only overcoming long distances was previously a challenge, which can now be eliminated with a tailor-made solution.

Thanks to ceiling current supply, the SENNEBOGEN 825 electric material handler can be flexibly used indoors.

CURRENT SUPPLY FROM THE CEILING FOR MAXIMUM MOBILITY

The setup is extremely simple and could be integrated in the existing hall structure. The powerful 110kW electric motor of the SENNEBOGEN 825 Mobile is powered on the uppercarriage via a supply cable that hangs from above. The ceiling crane, which covers 25m, can also be moved safely and conveniently over the entire 146 m length of the hall. Regardless of the direction in which the machine moves, in which the uppercarriage is slewed, or in which the machine is turned, the ceiling crane with the crane trolley follows the machine without restriction and ensures maximum freedom of movement during indoor use. The ceiling crane is easily controlled via the deflection of the cable. If this is deflected in a particular direction, the crane bridge and crane trolley immediately follow, and the operator can concentrate completely on the loading work.

Henry Sobieraj, the managing director of the Nickelhütte, is enthusiastic about the implementation by the dealer Tecklenborg and SENNEBOGEN. "Electric drives are the future for us, not the least because we generate electricity ourselves at the plant and energy efficiency is an important issue for us. The good experience with the cable-supplied crawler machines and the good support from Tecklenborg were the decisive criteria for this project. I am very happy that we have found a genuine alternative to diesel drives for flexible indoor use."

Automated tensioner for conveyor belt cleaners

The system uses the moving conveyor to generate electricity, powering a compressor to maintain optimum blade pressure.

With its battery storage, the system can produce ample power to re-tension the cleaner as needed.

Reducing wear and maintenance

In another move towards 'smarter' material handling, a global conveyor technology innovator has introduced an automated pneumatic tensioning system for belt cleaners. The new offering from Martin Engineering delivers precise monitoring and tensioning throughout all stages of blade life, reducing the labour typically required to maintain optimum blade pressure and extending the service life of both the belt and the cleaner. Equipped with sensors to confirm that the belt is loaded and running, the system automatically backs the blade away during stoppages or when the conveyor is running empty, minimizing unnecessary wear to both the belt and cleaner. The result is consistently correct blade tension, with reduced power demand on start-up, all managed without operator intervention.

"Pneumatic tensioners have some advantages vs. mechanical construction," explained Product Development Engineer Andrew Timmerman. "Mechanical designs work well as long as they are properly adjusted, but in many cases this requires periodic attention from maintenance crews as the cleaning blade wears down," he said. "Also, some operators will loosen a mechanical tensioner to reduce drag at start-up, which reduces the cleaner's performance if not correctly re-tensioned afterward."

The Automated Blade System (ABS) can be supplied in two variations, for locations with or without an existing power source. On sites with available power, the company will offer a 120/240V AC version of the system to power the system's 24V compressor. In facilities able to supply power and also compressed air to the head pulley, Martin can design the system so that the panel simply handles the 'smart' portion of engaging and disengaging the cleaner blade.

Sensors detect whether the belt is loaded, automatically relieving tension when the conveyor is empty to help minimize wear.

For locations lacking convenient power access, the self-contained version uses the moving conveyor to generate its own electricity, which powers a small 24V DC air compressor to maintain optimum blade pressure at all times. Built around the patented Martin® Roll Generator™, the new self-powered version includes a proprietary storage system developed specifically for this application. With lead acid batteries to hold the energy, the system can produce ample power to drive the compressor, which maintains pressure in the reservoir to re-tension the cleaner as needed.

The generator can produce as much as 40 watts of power when running at maximum speed, which is sufficient to run components such as weigh scales, proximity switches, moisture sensors, solenoids and relays, as well as timers, lights and safety devices. Wireless communication can be used to transmit directly to a central controller, giving operators a cost-effective way to access data that has not been readily available in the past.

When designing the new unit, engineers knew they needed more power than 40W to achieve the desired function. "Although 40W is sufficient for low power devices like PLCs, sensors or LED lights, it falls short of powering high current draw devices like compressors or actuators," Timmerman continued. "So the batteries supply the extra energy to power the compressor, which only needs to run for a brief period to maintain pressure in the reservoir. The reservoir is then regulated to keep the cleaners at proper tension. The batteries re-charge during normal running of the belt, and they're quickly ready to cycle again as needed."

Both of the system's regulated outputs can be individually adjusted to the desired pressure to tension multiple cleaners, such as a single primary with as many as three secondaries. The required cleaning pressure in any given application would be determined by which specific cleaner is in use, and can be adjusted to suit a wide range of competitive designs and brands.

Founded in 1944, Martin Engineering is a major manufacturer making bulk materials handling cleaner, safer and more productive. The company supplies flow aids and conveyor products around the world for a wide variety of bulk material applications, including mining, aggregate, coal, cement, biomass and other materials. The firm is headquartered in Neponset, IL, offering manufacturing, sales and service from factory-owned business units in Brazil, China, France, Germany, India, Indonesia, Mexico, Peru, Russia, South Africa, Turkey and the UK, and under exclusive licence with ESS Australia.

Users benefit from consistently correct blade tension, with reduced power demand on start-up, all managed automatically.

Why choose low-speed hydraulics for apron and belt feeders?

The mining and materials handling industry has a keen focus on reliability, performance and productivity. This focus goes beyond machines to the drive systems that power them, such as the hydraulic drives that are increasingly found on apron and belt feeders.

Feeders control the gravity flow of bulk solids, which makes drive selection extremely important for their function. In key ways, low-speed, high-torque hydraulic drives differ from their electro-mechanical and medium-speed hydraulic counterparts.

A well-supported choice

Hydraulic drives, especially of the low-speed, high-torque type, are the choice for a growing number of apron and belt feeders.

While still less common than electro-mechanical drives, these systems can be found in specific installations around the world — and are frequently championed by their operators. Why the enthusiasm for low-speed hydraulics on apron and belt feeders? The reason is the same as for bucketwheel reclaimers, ship-unloaders, car dumper systems, kilns and more. Like all of these, apron and belt feeders operate in harsh environments, where they face both high starting torque and frequent load spikes.

Smarter handling of starting torque

When sizing feeder drives, a major factor is the necessary starting torque. High shear force increases starting torque compared to running torque, often by more than 100% on apron feeders and by at least 50–75% on belt feeders. If coarse ore and larger materials are involved, even more starting torque may be needed. The breakaway torque experienced at start-up can be as much as 200% of the running torque — and sometimes even more. However, hydraulic drives allow precise limiting of the

maximum torque, which protects the feeder belts and chains.

Direct hydraulic drives are best equipped to take care of high starting torque and torque peaks. The electrical motor always run at synchronous speed regardless of what speed the feeder works with. That means that it is possible to utilize the installed power in optimum way. No oversizing of these drives is necessary to cope with the tough feeder starts, as is the case with electro-mechanical drives.

Dealing with low speed and shocks

A further advantage of hydraulic drives is their handling of changes and differences in running speed. At most times feeders are paced for capacity, with small variations due to changes in material density or operating commands. However, major slowdowns can occur when adapting to changes in material flow, or whenever obstructions appear.

Hydraulic drives can run constantly at any speed, from minimum to maximum, without overheating the electric motor. Likewise, they provide built-in protection against shock loads, due to the hydraulic motor's low moment of inertia.

Easy access to performance

The simplicity of the hydraulic drive chain is also important for maintenance, since feeders are often installed where space is limited. While electro-mechanical drives cover most of one side of the feeder, hydraulic drives leave the drive side largely open, providing easy access for maintenance work. No foundations or physical alignments are required, and there is also less space needed in the axial direction when direct hydraulic drives are used.

Given the compactness of the design, it is even feasible to use two hydraulic motors, one on each side of the belt or chain pulley. This makes the load on the feeder structure more symmetrical, yet it still requires only one electric motor and one pump. In addition, it provides a certain redundancy that safeguards production. All this, combined with overall reliability and a long service life, makes hydraulic drives an excellent choice for apron and belt feeders. With their few components, minimal maintenance requirements and outstanding performance, hydraulic drives offer strong assurance of lasting, productive operation. DCi

Innovative modular bulk handling system

Cameron Hay

Overview

When you are mining valuable minerals in the high mountains of Peru and exporting it to the world; you need a flexible modular system.

Working with international mining consultants Ausenco, RAM Spreaders designed a world first innovative system that loads bulk ore into containers and uses standard trucks, trains and cranes to handle the material through the supply chain.

Trucks, trains and cranes — one package

The containerized bulk system seals the valuable material in the container at the mine and doesn't see daylight until emptied into the ship's hold.

The containers are filled with valuable ore at the mine and then the modular system is transferred simply through the supply chain with no double handling or material loss.

Simple, flexible and fast

Due to a number of constraints, the mining company wanted a flexible system to cater for contingencies in the project, such as delays in the infrastructure or equipment breakdown. This resulted in a system that is hugely flexible.

Transport

The truck chassis and rail wagons are standard, so are available at no extra cost in the open market. This means the mining

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company gets on with mining rather than having to deal with complicated logistics issues which it leaves to the transport and rail companies. If there is a problem with the project, the equipment can easily be re-deployed.

Port

The RAM Revolver® was designed to be flexible in application, so that it could be changed to handle a number of loading or container handling situations. The system can be interchange between reach stacker, bridge crane in the warehouse, or port crane for direct ship loading.

This flexibility allowed the system to work straight away in the 'ramp-up' phase of the project before all of the infrastructure was ready.

World best practice in dust emissions

Traditional bulk exporting routes have material losses at every point in the supply chain. From an uncovered truck, transfer points, wind and rain stockpile losses to dust generated from ship loaders; all of which add up to between a 1% or 2% material loss in the supply chain. This is money blowing in the wind, especially with copper valued at US$6,000 per tonne.

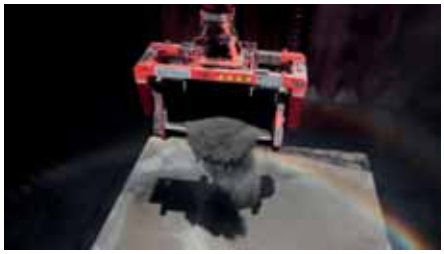
Interchangeable: spreader (top left), bridge crane (top right) and port crane.

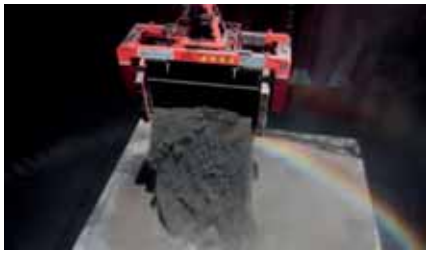
RAM Spreaders

RAM Spreaders has been manufacturing spreaders since 1972. Now a part of the PEINER SMAG Group, the company is a leading global lifting accessories supplier and a global market leader in both the bulk and container handling industries.

RAM Spreaders' corporate head quarters with design and development facilities are in Singapore, with a manufacturing plant in China and servicing facilities in Lancashire, England and Salzgitter, Germany.

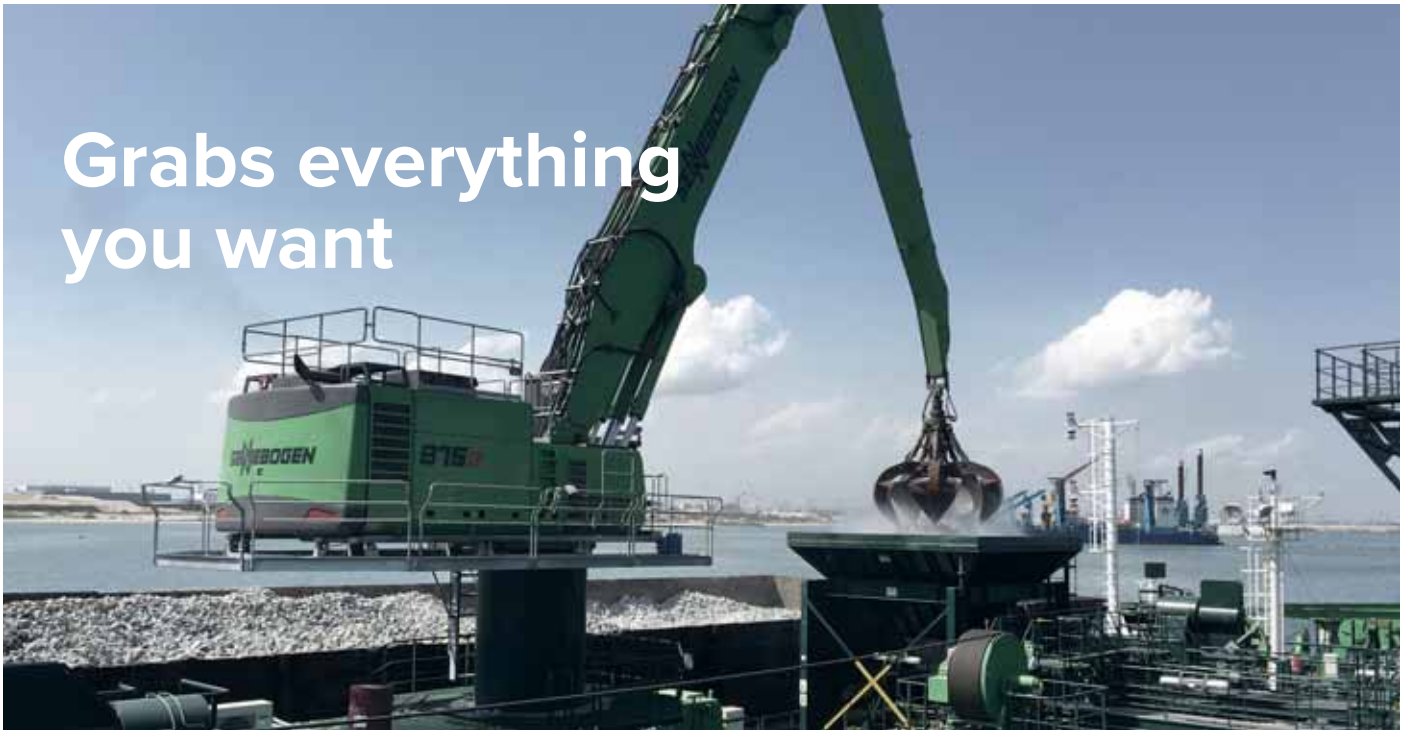
Recent developments include the new SingFlex TwinForty Headblock for single hoist ship-to-shore cranes. All-electric separating twinlift telescopic spreader and a telescopic spreader designed for mobile harbour cranes. These new innovative products join the existing RAM range of telescopic, fixed and separating twinlift spreaders, offering the finest choice for ship-to-shore cranes, RTGs/RMGs, mobile harbour cranes and mobile equipment. DCi





J&B Grabs

More than 70 years experience



Grabs everything you want

Our products

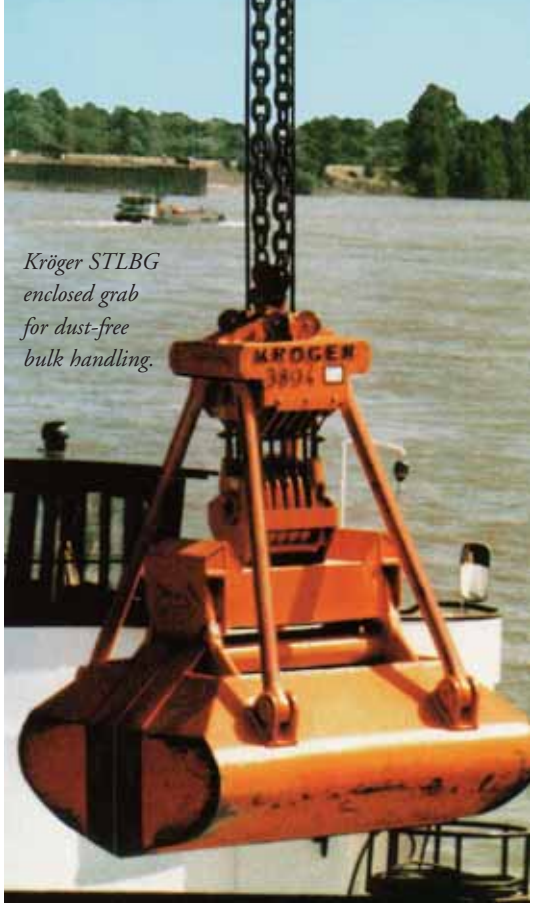
For all kinds of bulk handling

- Cactus Rope Grabs
- Clamshell Rope Grabs
- Hydraulic Cactus Grabs
- Hydraulic Clamshell Grabs
- Hydraulic Log Grabs
- Hydraulic Demolition & Sorting Grabs
- Quick Change System
- Multipurpose Spreader

All our grabs are custom made, designed and produced to our customers requirements.

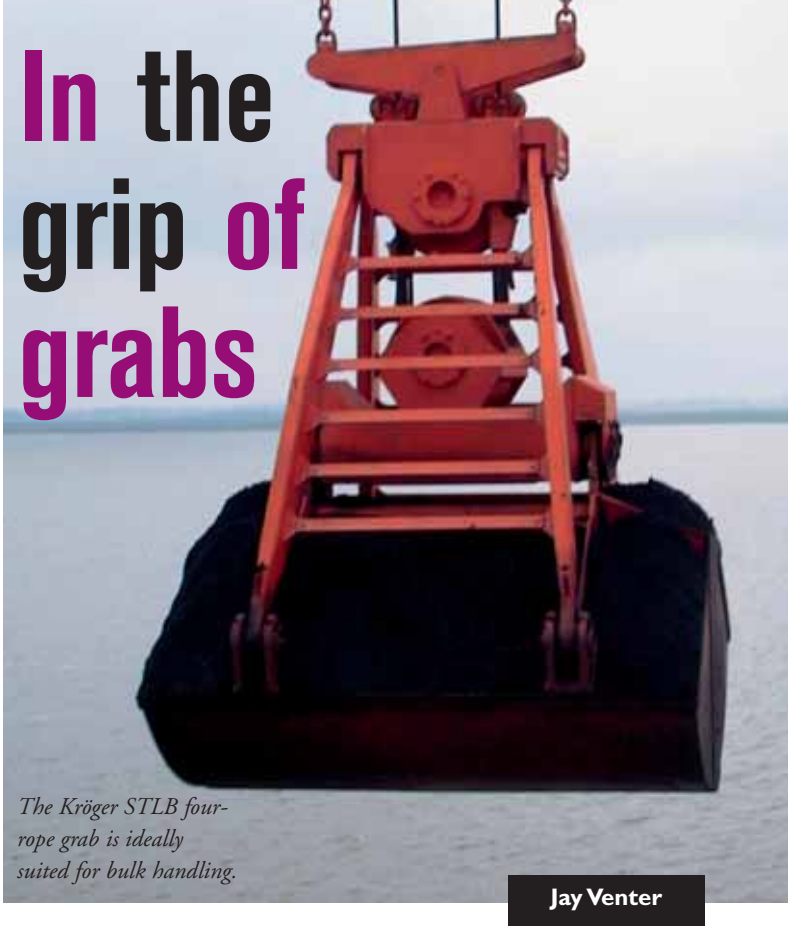
J&B Grabs are highly efficient for large volume and low deadweight handling.

We grab everything you want!



Kröger STLBG enclosed grab for dust-free bulk handling.

In the grip of grabs



The Kröger STLB four-rope grab is ideally suited for bulk handling.

Jay Venter

KRÖGER grabs meet economic and ecological requirements

Bulk handling demands light and environmentally friendly grabs

KRÖGER grabs have been in operation in almost all German ports and harbour for a long time, both on the coast, e.g. in Hamburg, Brunsbüttel and Bremen, or in inland harbours such as Duisburg, Düsseldorf, Cologne, Andernach and Ludwigshafen. Due to the technical benefits of the grabs, they are now spreading out throughout Europe and worldwide as a range of recent orders from Asia and South America show.

Above all, the weight-optimized configuration, which is achieved by means of special materials and an innovative design, provides an improved payload capacity of the grab in bulk handling, which enhances the productivity. Furthermore the KRÖGER grabs can be equipped with the KRÖGER ZERO-maintenance bearing system, which obviates the need for the time-consuming and annoying lubrication procedures, and thus additionally enhances the efficiency of the overall transshipment operation.

Port companies are subject to ever-more-stringent regulations in terms of emissions. The fact that many handling companies are situated in the vicinity of residential areas makes it all the more imperative to avoid environmental impacts such as dust formation and ground water pollution.

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

As a matter of fact, there are mainly three 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. Let us first consider the eco-friendly grab jaws. While open grabs were absolutely normal earlier, today increasingly closed loading grab types are found in port operation. Winds occurring on water and in the harbours compel handling companies to appropriately protect their conical piles. The grab jaws are raised above the angle of repose so that the often strong winds in harbours and ports are left with no opportunity to affect the conical piles and, consequently, the light, dust-forming bulk goods. An ideal solution to the problem of blowing-off of material dust.

Matters become more complicated during tight closing of the grab edges. This requires greater effort in terms of structure and design so that the grab jaws are able to operate tight even under extreme loads and continuous, long-term usage. In 90% of the goods handling operations, tight closing of grab jaws can be achieved by means of double Pantanax round-bar steels both on the bottom scrapers as well as the side blades. The jaws close tightly through the bedding in of both the linked round-bar steels until a watertight closure is reached.

Increasingly importance is also gaining 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. This is totally avoided by the use of the above-mentioned KRÖGER ZERO maintenance technology and therefore undesirable follow-up costs are eliminated.

"So," Büssing sums up, "KRÖGER shows that grabs can meet both, economic and ecological requirements in bulk 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.

Credeblug launches Industry 4.0 comprehensive solution for remote diagnosis and control of handling equipment

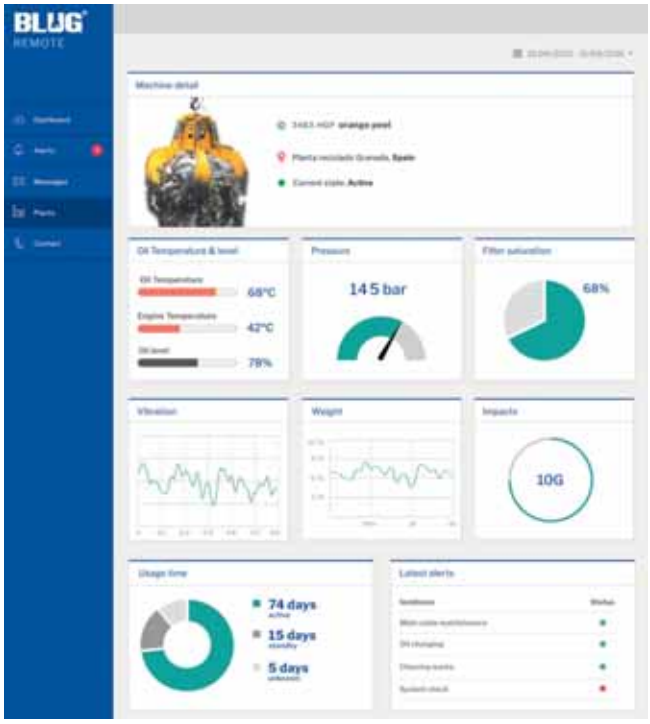
Credeblug product range

The handling equipment designer and manufacturer, Credeblug, has a track record of over 50 years in the market. The company boasts a catalogue that covers all the grab business demands, going from single-rope-operated basic grabs to the most technological handling solutions. As the market requires all kinds of operational profiles, especially in port application, Blug products offer a wide range of grabs — from 50-litre capacity to 45m³. In recent years, Credeblug has pursued an ambitious policy of commercial expansion and development of new technologies, enabling the company to achieve an export rate of 80% in 2016 and record revenue figures. In order to achieve this position, apart from expanding internationally, Credeblug has traced a line of constant development to improve efficiency and endow Blug equipment with an added value that has served to increase its prestige in the marketplace. GIITS (Grab Intelligent Interface and Transmission System) technology and Blug Remote platform are part of these development strategies and the concept of the Industrial Internet of Things (IIoT).

GIITS: wireless technology for precise and reliable control

The development process of GIITS technology began in 2013. The system establishes communication via radiofrequency between the handling unit (orange peel grab/clamshell grab/tongs) and the crane, enabling users to have real-time

GIITS technology establishes communication via radio-frequency between the handling unit (orange peel grab/clamshell grab/tongs) and the crane, enabling users to have real-time control of different operating modules



control of different operating modules, forewarning of possible breakdowns affecting uptime and a reduction in the number and cost of maintenance operations. The technology uses specifically developed electronics and can be installed in both new machinery as well as retrofitted machinery already in use and it has been validated in real conditions. "The GIITS system is the result of a new approach to crane/handling unit communication," says Asier Susaeta Diez de Baldeón, CEO of the Guipuzkoa-based company. "Apart from own electronics, we have developed specific sensors that centralize data reception and reduce the cost of data collection," he adds. The main benefit of GIITS technology is that makes handling unit automation simpler and more economical. The technology even opens the door for the modernization of equipment that does not have the necessary electrical wiring in the cable drum.

BLUG Remote: integrated data management and processing platform

GIITS technology is complemented by BLUG Remote platform, which enables users with the necessary permissions to have access to the different machines/plants under their control. Developed in cooperation with Tekniker technology centre and Hispavista Labs, this data storage and processing platform enables data to be centralized and treated in order to facilitate the anticipation of potential production incidents and preventative equipment maintenance. Both the user and expert Credeblug personnel have online access to the different reports and stored/processed data. The information can be divided into two modules:

- **Production:** loading level of ship is controlled depending on the type of operation, operator and time intervals. There is also an option to cross-correlate variables and optimize their management.
- **Safety and maintenance:** operation ranges and thresholds are set for the different variables (operating inclination, pressure, temperature…) and notifications and alerts are defined for the system. In this way, events are stored and communicated as they occur and the incidence of different variables can be interrelated. All this provides reliable,







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- pressure, temperature…) and notifications and alerts are defined for the system. In this way, events are stored and communicated as they occur and the incidence of different variables can be interrelated. All this provides reliable, representative information on the systems with the purpose of optimizing maintenance.

The implementation of the two technologies in tandem improves the energy efficiency and the productivity of the crane/handling unit combination. Moreover, the plug and play design facilitates easy installation and start-up. "Credeblug continues to differentiate itself from competitors by responding to market trends demanding greater system reliability, quality after-sales service and specific solutions for each market," points out Susaeta.

KNOW-HOW APPLIED TO BULK HANDLING

Blug equipment has been in the marketplace for many years and consolidation of the brand has provided the necessary background to enable these tools to feature the most appropriate functions for such a specific environment. The management of material loading and unloading is crucial because it determines and limits the capacities of the remaining processes. Therefore, enhancements to bulk handling operations influence the production capacity and performance of port activity as a whole. The current market trend towards automation now has a strong additional ally in the combination of GIITS technology and the BLUG Remote platform, which optimize crane/handling unit management, resulting in lower costs and enhanced energy efficiency. The installation of this technology has a positive influence on repeatability of cycles, scalability, and consolidation of production flows. Ultimately, it is a tool that will enable the sector to take a great step forward in the short term.

Blug 11m³ scrap handling grab.

a tool that will enable the sector to take a great step forward in the short term.crane/handling unit management, resulting in lower costs and enhanced energy efficiency. The installation of this technology has a positive influence on repeatability of cycles, scalability, and consolidation of production flows. Ultimately, it is a tool that will enable the sector to take a great step forward in the short term.

A Guven Grab for every product

Guven Kepce Makine Iç Ve Dis Tic. Ltd (Guven Grab) was founded in 1984 at K.Maltepe/Istanbul under the name of Guven Grab.

It manufactures grabs for the loading and unloading of different products, and exports these abroad. Production takes place at the company's plant in Cayirova, Kocaeli, Turkey which covers an area of 9,500m^2. Ninety per cent of sales are exported to foreign countries and for use on oceangoing vessels.

To date, Guven Grabs has exported its products to more than 60 countries, including Greece, China, Hong Kong, Spain, Germany, Denmark, Romania, Bulgaria, Georgia, Tunisia, Russia, Egypt, Tanzania, Ivory Coast, Ghana, Nigeria, Algeria, the UAE, Kuwait, Pakistan, Singapore, Bangladesh etc.

Its main activity is to supply grabs for bulk carrier vessels belonging to first class shipowners (Ultramax, Supramax, Handymax, Handysize vessels).

Along with shipowners, its main customers are stevedores, ports and steel factories. Guven's grabs can satisfy the requirements of customers, such as competitive price, European quality, less maintenance, fewer spare parts and reliability.

The majority of Guven's products are delivered to Chinese and Japanese shipyards for newbuild bulkers. By combining technology with the creativity and the unique skills of human beings, Guven is always one step closer to its goal of catering for the requests and expectations of its customers at higher levels.

Factory

There are four CNC milling machines, 11 CNC lathes and 28 cranes for various purposes and with differing capacities at Guven Grab's machining centres in its plant.

Products

Radio remote control grab

This grab operates with a cental cylinder and with its own gravity circulation of oil.

The grab is very popular for new generation bulkers, prefered instead of electro hydraulic grabs in order to avoid the cable drum system and grab stabilizer on the crane jib, without any additional electric supply and consumption of fuel by generators it operates with a battery and a remote control unit, without any motor, pump, electricity supply, cable drum, stabilizer and etc.

It does not require cable drum system, grab stabilizer on the crane jib. It can be attached on to the hook of any kind of crane and the handling of the load can be started. It can be controlled through remote control unit up a distance of 100 metres. It can be used for handling of every type of bulk load and it is the most efficient and economical digger type.

More than 1,800 units have been manufactured by Guven Grabs, and almost all of them have been exported. This type of grab constitutes 75% of the total production capacity of Guven Grab. It is produced in sizes ranging from 2m^3 up to 50m^3. The design and patent are registered to Guven Grab

Electro hydraulic clamshell grab

Can be used to handle all types of bulk. Electrically powered (380–440 Volts). It is produced in sizes from 1m^3 up to 50m^3.

Electro hydraulic orange peel grab

Used to handle scrap and for sea bed trawling. Electrically powered (380–440 Volts). Sizes range from 1m^3 up to 40m^3.

Mechanical single wired touch down grab

For all types of bulk, on single wire cranes. Opens by touching the bunker or the ground. Sizes range from 1m^3 up to 30m^3.

Mechanic double wired clamshell grab

For all types of bulk. The digger can only be used on cranes with double drums. Sizes range from 1m^3 up to 50m^3.

Mechanical single- and double-wired polip peel grab

It is used on single- and double-wire cranes, to handle and load materials like coal. Sizes range from 1m^3 up to 40m^3.

Mechanical log grab

It is manufactured according to single- and double-wire cranes. Used for loading and handling. Sizes range from 1m^3 up to 25m^3.

Mechanical clamshell roundnose grab for dredging

The 12m^3-capacity mechanical clamshell roundnose grab is made for Izmit Bay Bridge Construction, and has a tare of 35 tonnes.

Other grabs also manufactured by Guven Grab are mechanical single wired coal grabs, mechanical rock grabs, electro hydraulic orangepeel grabs, underwater dredging grabs, hydraulic orangepeel excavator grabs, mechanical double wired orangepeel grabs and mechanical hand-trip grabs.

SERVICES

Guven Grab provides 24-hour service facilities to its customers.

To save the transport cost to its customers, Guven Grab provides door to door service delivery and assembly on site.

GRAB CONNECT takes STEMM to the top

A REMOTE CONTROL SOLUTION, BASED ON IT, DEVELOPED BY STEMM, PLACES IT AT THE FOREFRONT OF HANDLING TECHNOLOGY

STEMM is a company from the Basque Country with global reach. It designs and manufactures a variety of grabs, grapples, clamshell grabs and tongs for multiple sectors: steel, marine, renewable energy, industry cranes, cement and waste processing plants. It aims to set a new benchmark for the world within its field with the modernization of its handling and lifting equipment.

The recent addition of its high-performance Information Technology (IT) concept guarantees fundamental advances in traditionally robust machines by now providing benefits in remote maintenance and support, which has been impossible thus far with a classic design.

This is why STEMM is the first and only company in the world today to offer this type of remote control technology on its equipment.

INSPIRED BY DARWIN

"L'évolution est inevitable. Survivent mieux et progressent plus ceux qui, dans un marché, apportent les meilleurs solutions."

Evolution is unstoppable. In an increasingly competitive market, one grows, develops and survives better by offering better adapted alternatives.

This is the starting point for all those like STEMM, who want to stand up, innovate, improve and contribute more to the sector. The company's goal is to not just 'have it working', but ensure that performance is at optimum levels. Robustness and communication now goes together by offering greater confidence.

Highly reliable equipment, such as grabs, working 24/7 during the whole year, require special monitoring and maintenance. Today this is a reality thanks to Phoenix Contact heavy duty industrial equipment, which is able to withstand high vibrations and highly variable ranges, subject to harsh handling, impacts and climate variations, while working outside. The new IT tools ensure close follow-up and proper preventive maintenance that may affect filters, gaskets, components, oil changes, real-time working hours warnings, incidents or critical performance reports for making appropriate decisions.

A DREAM COME TRUE

Now, from anywhere in the world, wherever there is internet or 3G telephone coverage, it is possible to interact with machines in real time.

This is the purpose of the GRAB CONNECT system, which allows start-up operations, remote diagnostics, technical support, check and complete control of the machine remotely and in real-time, including programming and basic settings, such as varying pressures, cycles, flow rates, etc,

Similarly, operations such as scratching, developed for automated processes in biomass handling and recycling facilities, are associated with the KIT 2012-a. This equipment includes the powerful industrial modem PSI-MODEM-3G-ROUTER associated with an ILC 131 ETH embedded controller among other elements.

Optionally, the system can be equipped with video camera and voice over IP. The power of offered peer-to-peer communication is such that both the user and STEMM can manage, via Scada Web services or email, all incidents and device statuses as desired. All this is in order to allow large companies to fulfill their manufacturing or continuous materials processing commitments. Perhaps this is just the first step.

Possibilities such as wireless direct writing SQL (or MySQL) data, security SIL3 or cybersecurity and others arrive in the near future. Global trends, such as Industry 4.0, seem to indicate some interesting technologies await us in the nearby future.

A SUCCESSFUL COLLABORATION

Equipping these big traditionally robust lifting and handling 'beasts' with unprecedented communicative capacity has not been easy.

A close and lengthy collaboration between STEMM, ABM REXEL and Phoenix Contact was required to make this dream come true.

STEMM aims to further increase the availability of these machines and their respective guarantees, in order to progress facilitating monitoring and prevention.

Having Phoenix Contact's support was critical to STEMM's success and helped the company in achieving continuous improvement.

Dust- and spill-free handling with Orts GmbH grabs

German manufacturer Orts GmbH produces a complete range of bulk-handling grabs for operators using mechanical-rope, electro-hydraulic and radio controlled diesel-hydraulic equipment in either orange-peel or two-clamshell designs.

The grabs from ORTS are mainly in operation on board of bulk carriers, but stevedore companies also favour the productivity and reliability of ORTS grabs, which are all 'Made in Germany'.

For the last 40 years ORTS has been known for its quality grabs. With their unique construction design they ensure a high closing force also in heavy bulk cargo and a good relation between grab dead weight and clamshell size.

ORTS was the first grab maker with the radio-controlled diesel-hydraulic grabs, which have been produced for more than 20 years. In 2016, the biggest radio controlled diesel-hydraulic orange-peel grab with 12m³ volume was delivered to a customer in Middle East.

EHS-B 20m³ electro-hydraulic grab.

Other diesel-hydraulic grabs were shipped recently to Australia, Africa, Japan, China and Great Britain.

The ORTS electro-hydraulic grabs are the best choice for bulk carriers to be competitive in discharge time and reliability. They cover a wide range of different dry bulk cargo types. Some shipping companies have had ORTS grabs on-board for as long as 30 years, and they are consistently returning to fit their newbuildings again with ORTS grabs.

"The reliability of the grab is important when discussing productivity. It is pointless to buy a cheap grab, if it then breaks

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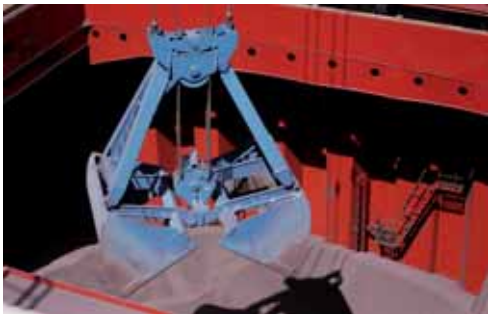

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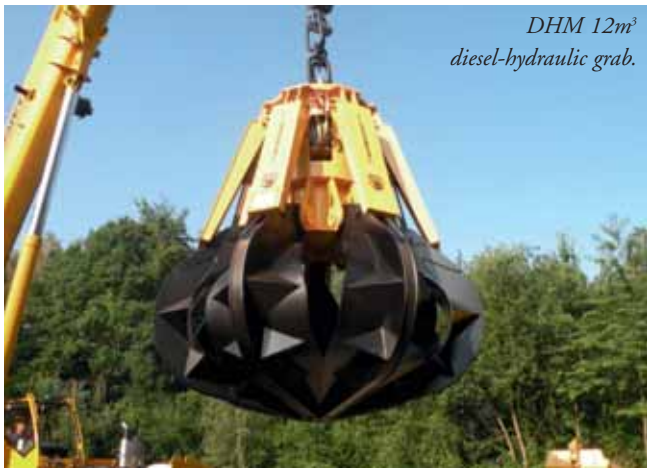
down during vessel handling, effectively prolonging the length of the port call. The grade of filling is also crucial; the better the grade of filling of the grab, the shorter the loading/discharge time," stresses Orts.

Challenged to define the exact role grabs play in the dry bulk industry, he points out that not all bulk materials can be handled with a vacuum, screw or belt unloader. Indeed, if the on-board load becomes compressed, as can happen during heavy seas, belt or vacuum unloaders can struggle to cope.

While other bulk discharge equipment manufacturers stress their ability to contain dust emissions, Orts GmbH developed a 100% covered grab already in the 1980s, specifically to address environmental concerns.

The most dust emissions are made when discharging dry bulk consignments into hoppers. ORTS has a partner which can provide and offer 'no dust' hoppers and is happy that a kind of package can be offered to customers that need grabs and hoppers without spillage and dust.



DHM 12m³ diesel-hydraulic grab.

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CFS Handling takes equipment testing phase seriously

CFS Handling has been building equipment for the material handling industry for years. With satisfied customers around the world, CFS Handling's machines have achieved great reliability constructively with the use of special steels, such as Hardox and Weldox.

CFS Handling's staff is highly specialized in both hydraulic and mechanical systems, flanked by the professionalism and experience of the design professionals who follow the various assembly operations and machining procedures.

Material loading and unloading requires committed staff and equipment breakdown is always a serious risk, potentially causing bottlenecks further down the handling chain. For that reason, CFS Handling cares about the different stages of processing and assembly and the best way to tell if the bucket or grab is working optimally is by testing it. This step is very important and the company devotes many hours to the testing of its machines.

The company's effort constantly gets repaid when customers place repeat orders and in doing so helps to further CFS Handling's name.

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Great Lakes

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photo: US Army Corps of Engineers, Detroit District

Louise Dodds-Ely

Iron ore trade kicks off 2017 Lakes shipping season

The 2017 Great Lakes shipping season began on 28 February, when the US-flag tug/barge unit *Dorothy Ann/Pathfinder* departed her winter lay-up berth in Erie, Pennsylvania, and sailed to Cleveland, Ohio, where she initiated the shuttle of iron ore from Cleveland Bulk Terminal to the ArcelorMittal steel mill at the end of the navigable portion of the Cuyahoga River. The vessel loaded approximately 15,000 tonnes that was mined from Minnesota's Mesabi Iron Range.

The next vessel to get under way was the cement carrier *Bradshaw Mckee/St. Marys Conquest* on 2 March. The vessel departed Charlevoix, Michigan, with 8,000 tonnes of cement for Milwaukee.

The iron ore trade out of Escanaba, Michigan (below the Soo Locks) started on 9 March when the tug/barge unit *Joyce Vanenkevort/Great Lakes Trader* loaded 40,000 tonnes of ore for delivery to Indiana Harbor, Indiana.

The western coal trade resumed on 22 March when the *Paul R. Tregurtha* loaded 62,000 tonnes at Superior Midwest Energy Terminal in Superior, Wisconsin, for delivery to the power plant in Silver Bay, Minnesota.

The locks at Sault Ste. Marie, Michigan, that connect Lake Superior to the lower four Great Lakes and the St. Lawrence Seaway reopened on 25 March. The Soo Locks typically handle more than 80mt (million tonnes) of cargo in a season, about 80% of which transits the Poe Lock, the largest chamber at "The Soo."

In 2016, US-flag Great Lakes freighters moved 83.3mt of cargo. Iron ore for steel production remained the fleet's primary cargo, 44.1mt. Limestone loads for construction and steel production totalled 21.2mt. Coal cargoes, most of which were for power generation, totalled 13mt. Other cargoes included cement, salt, sand and grain.

Cargo totals in 2017 will be determined by the state of the economy, but a number of issues will determine the industry's future. Regulation of ballast water is perhaps the most critical. Currently two federal agencies and 25 states regulate the discharge of ballast water, but legislation to end this patchwork approach has been introduced in the US Senate. S. 168, The Commercial Vessel Incidental Discharge Act (CVIDA) consolidates the fractured system currently in place into a single, nationwide, federal ballast water discharge standard that employs the most stringent standard currently available.

Reliance on a single Poe-sized lock at The Soo continues to threaten the US economy. More than 90% of the cargo US-flag lakers move through the Soo Locks transits the Poe Lock. A 2016 US Department of Homeland Security study forecasts that a six-month closure of the Poe Lock would bring steel production and heavy manufacturing to a virtual stop and leave

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US FLAG SHIPMENTS OF DRY BULK CARGOES ON THE GREAT LAKES

2011–2016 and five-year average (net tonnes)

Commodity	2011	2012	2013	2014	2015	2016	2011-2015
Iron ore							
Direct Shipments	44,443,975	42,700,840	41,218,215	41,924,590	37,397,501	41,094,539	41,537,024
Transshipments	2,780,768	2,488,187	2,633,826	3,699,617	3,467,452	2,980,293	3,013,970
Total — iron ore	47,224,743	45,189,027	43,852,041	45,624,207	40,864,953	44,074,832	44,550,994
Coal							
Lake Superior	12,954,188	11,947,617	12,216,668	11,325,509	12,867,046	9,609,901	12,262,206
Lake Michigan	3,166,372	2,654,506	2,314,161	1,870,773	1,093,993	526,568	2,219,961
Lake Erie	4,118,767	2,977,825	3,706,811	4,576,207	3,693,275	2,828,408	3,814,577
Total — coal	20,239,327	17,579,948	18,237,640	17,772,489	17,654,314	12,964,877	18,296,744
Limestone	21,434,839	21,794,394	22,111,494	21,459,429	23,142,584	21,193,845	21,988,548
Cement	2,817,846	3,183,388	3,129,748	3,248,033	3,451,989	3,246,471	3,166,201
Salt 1,452,134	1,020,157	1,004,837	1,400,068	1,411,169	1,259,409	1,257,673	
Sand 332,172	336,316	371,279	376,456	319,891	265,220	347,223	
Grain	283,200	371,406	447,653	256,461	356,268	249,999	343,598
TOTALS	**93,784,261**	**89,474,636**	**89,154,692**	**90,140,143**	**87,201,168**	**83,254,653**	**89,950,980**

nearly 11 million Americans standing in the unemployment line.

A second Poe-sized lock has been authorized at full federal expense, but a flawed analysis of the project's benefit/cost (b/c) ratio by the US Army Corps of Engineers (Corps) has stalled construction. The Corps has acknowledged the b/c ratio must be re-examined and a report is due by year's end. A US Department of Treasury report issued last month estimates a second Poe-sized lock could have a b/c ratio as high as 4.0, or nearly three times higher than the 0.73 estimated by the Corps.

Despite the mild winter of 2016/2017, the need for a second heavy icebreaker to bolster the US Coast Guard's aging fleet remains urgent. The cargoes that were delayed or cancelled by the massive ice formations during the winters of 2014 and 2015 cost the US more than $1 billion in economic activity. The damage the ice caused during the 2013/2014 winter cost US-flag vessel operators more than $6 million to repair. A number of vessels' sailings were delayed in the spring of 2015 to avoid further damage.

A second heavy icebreaker was approved in the Coast Guard Authorization Act of 2015. Lake Carriers' Association is now focusing its efforts on funding the $240 million icebreaker.

Although the last two Water Resources bills have increased funding for dredging Great Lakes ports and waterways, approximately 15 million cubic yards of sediment still need to be removed to allow for full loads. For example, if the Cuyahoga River were maintained to project dimensions, the *Dorothy Ann/Pathfinder* would have carried another 3,800 tonnes.

Lake Carriers' Association represents 13 American companies that operate 49 US-flag vessels on the Great Lakes and carry the raw materials that drive the nation's economy: iron ore and fluxstone for the steel industry, aggregate and cement for the construction industry, coal for power generation, as well as salt, sand and grain. Collectively, these vessels can transport more than 100mt of cargo per year.

"The Great Lakes St. Lawrence Seaway System is a tremendous asset that provides a safe and efficient means of moving cargo worldwide," said US Secretary of Transportation Elaine L. Chao. "As the 59th Seaway navigation season gets under way, we recognize the importance of commercial maritime navigation to our nation's economy."

Lake Carriers Association – 'State of the Lakes Report' for 2017

In this year's *State of the Lakes Report* from the Lake Carriers Association (LCA), the report notes that despite myriad challenges expected in 2017, "on balance, the winds are favorable and the seas are following."

Solution to dredging issues

One example of the report's optimistic tone is the situation regarding dredging. Even though 15 million cubic yards of excess sediment reduce vessel efficiencies, the Water Resources Development Act of 2016 (WRDA 2016) makes permanent the temporary allocation to the Great Lakes Navigation System (GLNS) of 10% of the increased funding for dredging mandated in 2014. WRDA 2016 also ensures that annual appropriations from the Harbor Maintenance Trust Fund (HMTF) will continue to incrementally increase until they reach 100% of annual receipts by 2025, even if HMTF revenue projections decrease, and directs the US Army Corps of Engineers (Corps) to:

- publish how it will operate and maintain the GLNS as a single, comprehensive system of interdependent projects;
- calculate the transportation rate savings of maintaining each navigation channel at its constructed dimensions; and
- report to the Congress on the estimated cost to repair and maintain each Federal breakwater and jetty.

This is a far cry from just a few years ago. The HMTF was spending less than half its tax receipts on their intended purpose — maintenance dredging — and instead was amassing a surplus. The GLNS dredging backlog topped 18 million cubic yards and was projected to grow to 21 million in just a few years. It took a lot of effort and commitment from Great Lakes Senators and Representatives to turn the tide, but the dredging crisis has been corralled and the way forward clearly marked.

Need for new lock remains urgent

The report also stressed that the need for a second Poe-sized lock at Sault Ste. Marie, Michigan, remains urgent, but much progress has been made.

The Department of Homeland Security report on the impacts of a six-month closure of the Poe Lock put a human face on the project, actually, nearly 11 million human faces. That's how many American workers would be unemployed if the Poe Lock goes out of service for that long. A January 2017 study commissioned by the US Treasury Department estimates a net economic benefit of as much as $1.7 billion from twinning the Poe Lock.

The need for a second Poe-sized lock at Sault Ste. Marie, Michigan, remains urgent.

Michigan Senators Debbie Stabenow and Gary Peters spurred the Corps to accelerate its economic reevaluation of the project. Michigan Governor Rick Snyder and the State's House and Senate made a second Poe-sized lock a State priority. The Ohio House of Representatives passed a resolution supporting the project, since Ohio steelmakers get virtually all of their iron ore from Lake Superior ports.

Milder winter

The winter of 2015/2016 was a bit of a respite from the previous ice seasons, so the US Coast Guard (USCG) was able to meet the needs of commerce with just one heavy icebreaker. Nonetheless, it would be improper to think the GLNS can function every winter with just one heavy icebreaker, especially given that Canada's icebreaking forces are woefully inadequate and will be for the foreseeable future. The Coast Guard Authorization Act of 2015 has laid the foundation for building another icebreaker of the MACKINAW's calibre. The challenge now is appropriating the $240 million the vessel will cost. Fortunately, Wisconsin Senators Tammy Baldwin and Ron Johnson are laser-focused on funding this much-needed icebreaker.

Ballast water

A uniform, national ballast water discharge standard was within reach in 2016, but the Vessel Incidental Discharge Act (VIDA) was not enacted. That's unfortunate, for ballast water continues to be regulated by two federal agencies and 25 states. VIDA would consolidate this fractured system into a single, nationwide, federal ballast water discharge standard, the most stringent standard currently achievable. On top of treatment, ocean-going vessels also would continue to be required to exchange their ballast water at sea prior to entering the GLNS. VIDA demands that the discharge standard become more stringent as technology advances. Under VIDA, the EPA and the states would assist the USCG in setting each future discharge standard, but to facilitate compliance, the Coast Guard would be the lead agency.

Disappointing year as cargo movements drop

The year 2016 was a disappointing one for LCA members, as total shipments were down 4.5%. Iron ore for steel production rebounded a bit. Low natural gas prices and the retirement of older, coal-fired power plants slashed coal loadings by a quarter. A sluggish construction market and lower capacity utilization rates at steel mills held down aggregate and fluxstone cargoes.

Nonetheless, LCA members remain committed to this industry, as is witnessed by the fact that during the winter of 2016/2017 they invested more than $80 million in maintaining and modernizing their vessels so they could meet the needs of commerce safely and efficiently. The fleet's carbon footprint grows smaller each year as steamships are converted to internal combustion and exhaust scrubbers are installed on other vessels. That's why members fight so hard for more dredging dollars, a second Poe-sized lock, another heavy icebreaker, and VIDA. Great Lakes shipping is great for the economy and great for the environment.

US-flag cargo movement on the Great Lakes down 4.5% in 2016

US-flag Great Lakes freighters (lakers) moved 83.3mt (million tonnes) of cargo in 2016, a decrease of 4.5% compared to 2015. The 2016 float was also 7.7% below the fleet's five-year average.

Iron ore cargoes totalled 44.1mt, an increase of 7.8%. However, all other commodities decreased. Coal was down 26.6%. Limestone (mostly aggregate and fluxstone) dipped by 8.4%. Cement decreased by 6%.

Salt cargoes were off by nearly 11%. Shipments of sand fell by 17.1% and grain decreased by almost 30%.

Lake Carriers' Association represents 13 American companies that operate 49 US-flag vessels on the Great Lakes and carry the raw materials that drive the nation's economy: iron ore and fluxstone for the steel industry, aggregate and cement for the construction industry, coal for power generation, as well as salt, sand and grain. Collectively, these vessels can transport more than 100mt of cargo per year.

SLSMC: finely tuned management of the Canadian side of the System

Canadian St. Lawrence Seaway Management Corporation (SLSMC)

The St. Lawrence Seaway Management Corporation is a not-for-profit corporation responsible for the safe and efficient movement of marine traffic through the Canadian Seaway facilities, which consist of 13 of the 15 locks between Montreal and Lake Erie. The Corporation plays a pivotal role in ensuring that the waterway remains a safe and well-managed system, which it shares with its American counterpart, the Saint Lawrence Seaway Development Corporation (SLSDC).

> "We serve our customers by passing ships through a safe, secure and reliable waterway system in a cost-effective, efficient, environmentally and socially responsible manner to deliver value to the North American economy."
>
> *SLSMC Mission Statement*

The Corporation's mandate promotes efficiency and responsiveness to the needs of shipping interests, ports, marine agencies, and provincial and state jurisdictions.

The two Seaway entities co-ordinate operational activities particularly with respect to rules and regulations, overall day-to-day operations, traffic management, navigation aids, safety, environmental programmes, operating dates, and trade development programmes. The unique bi-national nature of the System requires 24-hour, year-round coordination between the two Seaway entities.

Positive vibes from the SLSMC

Bruce Hodgson, Director of Market Development at the SLSMC, took the time to update *Dry Cargo International* about developments over the last year, and what we can expect from the 2017 season. He was upbeat about the future of the Seaway System, and anticipates a good year in 2017.

Cargo throughput

In terms of cargo throughput, overall Canadian grain volumes had a strong finish to the year, as did US grain which was up by 21%. Iron ore continues to be a challenge; not a lot of export ore has passed through the System. However, with the recent price increase, the SLSMC expects to see a return of export iron ore through the System.

Coal volumes have remained relatively consistent. Two years ago, export coal moved to Rotterdam in the Netherlands. However, that move ended last year, so coal volumes on the Great Lakes/St Lawrence Seaway System have returned to more normal levels. Last year, throughput of coal was 2.3mt (million tonnes), and that level is expected to remain steady, as most of the coal is for domestic consumption and for power generation. Export coal is no longer handled, something that is not going to change, as world coal prices are very low right now.

Keeping competitive — and incentivizing customers

The SLSMC has increased its tolls by just 2% this year, the same amount as the previous year. The SLSMC strives to keep its increases in line with inflation, in order to remain competitive in the marketplace.

The SLSMC has a range of incentives in place, to attract new

Traffic by class and type of vessel 2016

ST. LAWRENCE SEAWAY

CLASS AND TYPE OF VESSEL		VESSEL TRANSITS Loaded	Ballast	Total	GROSS REGISTERED TONNAGE	CARGO TONNES Bulk (1)	Coal	Grains	Govt. Aid	Containers	General Cargo	Steel Slabs	Total	%
UPBOUND:														
Ocean:	Cargo	280	74	354	5,768,033	1,221,356	10,529	45,912	-	13,815	2,048,652	222,357	3,562,621	10.2
	Barge	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tanker	107	12	119	1,288,499	1,097,635	-	-	-	-	-	-	1,097,635	3.1
	Total Ocean	387	86	473	7,056,532	2,318,991	10,529	45,912	-	13,815	2,048,652	222,357	4,660,256	13.3
Laker:	Cargo	288	429	717	12,772,911	5,745,326	-	67,414	-	5,607	-	-	5,818,347	16.6
	Barge	117	95	212	1,488,154	1,149,762	-	-	-	-	-	-	1,149,762	3.3
	Tanker	96	30	126	1,164,904	899,046	-	-	-	-	-	-	899,046	2.6
	Total Laker	501	554	1,055	15,425,969	7,794,134	-	67,414	-	5,607	-	-	7,867,155	22.5
Non-Cargo		-	327	327	155,437	-	-	-	-	-	-	-	-	-
Passenger		35	5	40	58,646	-	-	-	-	-	-	-	-	-
Total Upbound		923	972	1,895	22,696,584	10,113,125	10,529	113,326	-	19,422	2,048,652	222,357	12,527,411	35.8
DOWNBOUND:														
Ocean:	Cargo	310	35	345	5,626,564	317,547	-	4,707,111	-	7,896	6,125	-	5,038,679	14.4
	Barge	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tanker	56	60	116	1,250,234	491,121	-	-	-	-	-	-	491,121	1.4
	Total Ocean	366	95	461	6,876,798	808,668	-	4,707,111	-	7,896	6,125	-	5,529,800	15.8
Laker:	Cargo	640	73	713	12,681,566	7,035,859	2,237,594	6,350,312	-	31,635	-	-	15,655,400	44.7
	Barge	122	92	214	1,499,704	794,847	-	95,107	-	-	-	-	889,954	2.5
	Tanker	46	81	127	1,182,950	407,394	-	-	-	-	-	-	407,394	1.2
	Total Laker	808	246	1,054	15,364,220	8,238,100	2,237,594	6,445,419	-	31,635	-	-	16,952,748	48.4
Non-Cargo		-	325	325	158,177	-	-	-	-	-	-	-	-	-
Passenger		34	5	39	57,817	-	-	-	-	-	-	-	-	-
Total Downbound		1,208	671	1,879	22,457,012	9,046,768	2,237,594	11,152,530	-	39,531	6,125	-	22,482,548	64.2
TOTALS:														
Ocean:	Cargo	590	109	699	11,394,597	1,538,903	10,529	4,753,023	-	21,711	2,054,777	222,357	8,601,300	24.6
	Barge	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tanker	163	72	235	2,538,733	1,588,756	-	-	-	-	-	-	1,588,756	4.5
	Total Ocean	753	181	934	13,933,330	3,127,659	10,529	4,753,023	-	21,711	2,054,777	222,357	10,190,056	29.1
Laker:	Cargo	928	502	1,430	25,454,477	12,781,185	2,237,594	6,417,726	-	37,242	-	-	21,473,747	61.3
	Barge	239	187	426	2,987,858	1,944,609	-	95,107	-	-	-	-	2,039,716	5.8
	Tanker	142	111	253	2,347,854	1,306,440	-	-	-	-	-	-	1,306,440	3.7
	Total Laker	1,309	800	2,109	30,790,189	16,032,234	2,237,594	6,512,833	-	37,242	-	-	24,819,903	70.9
Non-Cargo		-	652	652	313,614	-	-	-	-	-	-	-	-	-
Passenger		69	10	79	116,463	-	-	-	-	-	-	-	-	-
GRAND TOTAL		2,131	1,643	3,774	45,153,596	19,159,893	2,248,123	11,266,856	-	58,953	2,054,777	222,357	35,009,959	100.0

(1) Bulk, as per previous years, includes domestic general and domestic steel slabs, as per the definition of domestic in the Tariff of Tolls.

business to the System. These include the New Business Incentive; Service Incentive; and the Volume Incentive. One initiative, the Gateway Incentive, was put into place last year, and is proving particularly popular. Under this, shippers are encouraged to move their cargoes from other gateways. Shippers that can commit to certain levels of tonnage can benefit from deep discounts. In 2016, the New Business Incentive generated C$2.8 million, representing a tonnage volume of 1.3mt. Since its inception nine years ago, it has generated C$32.9m (20mt of cargo). The SLSMC is very pleased with the success of this incentive, and plans to keep it in place for the foreseeable future.

Continued diversification of the cargo mix is helping the SLSMC to make the most of the available cargoes. This year, it will target US grain volumes, which it sees as a growth opportunity. It is also setting its sights on petroleum coke for export — there is a surplus of the commodity on the North American market, so there is great potential for export volumes.

Breakbulk is another important market. The SLSMC works closely with shippers and carriers to develop breakbulk volumes further, including wind turbines and other project cargo. Volumes were up 17% last year, showing excellent headway.

The SLSMC continues to market its services actively, and it is seeing tangible dividends as a result of this effort.

Traffic by classification and type of cargo 2016

ST. LAWRENCE SEAWAY

COMMODITY	CARGO TONNES								% of Total
	Bulk (1)	Coal	Grains	Govt. Aid	Containers	General Cargo	Steel Slabs	Total	
Wheat	-	-	5,954,961	-	-	-	-	5,954,961	17.0
Corn	-	-	1,108,586	-	-	-	-	1,108,586	3.2
Rye	-	-	-	-	-	-	-	-	-
Oats	-	-	12,500	-	-	-	-	12,500	0.0
Barley	-	-	16,499	-	-	-	-	16,499	0.0
Canola (Rapeseed)	-	-	1,301,836	-	-	-	-	1,301,836	3.7
Canola Meal, Pellets	-	-	17,727	-	-	-	-	17,727	0.1
Flour, Wheat & Other Edible	-	-	-	-	-	-	-	-	-
Soybeans	-	-	2,234,906	-	-	-	-	2,234,906	6.4
Soybean Oil Cake, Meal, Pellets	-	-	123,236	-	-	-	-	123,236	0.4
Beans and Peas	-	-	227,005	-	-	-	-	227,005	0.6
Flaxseed	-	-	84,409	-	-	-	-	84,409	0.2
Sunflower Seeds	-	-	-	-	-	-	-	-	-
Other Agricultural Products	-	-	184,191	-	-	-	-	184,191	0.5
Total Agricultural Products	-	-	11,265,856	-	-	-	-	11,265,856	32.2
Packing House Products, Edible	-	-	-	-	-	-	-	-	-
Hides, Skins, Pelts, Wool	-	-	-	-	-	-	-	-	-
Other Animal Products	-	-	-	-	-	-	-	-	-
Total Animal Products	-	-	-	-	-	-	-	-	-
Bituminous Coal	-	2,248,123	-	-	-	-	-	2,248,123	6.4
Coke	1,227,059	-	-	-	-	-	-	1,227,059	3.5
Iron Ore	6,232,825	-	-	-	-	-	-	6,232,825	17.8
Aluminum Ore and Concentrates	76,441	-	-	-	-	-	-	76,441	0.2
Clay and Bentonite	62,058	-	-	-	-	-	-	62,058	0.2
Gravel and Sand	135,485	-	-	-	27	-	-	135,512	0.4
Stone	385,771	-	-	-	-	-	-	385,771	1.1
Salt	2,531,186	-	-	-	-	-	-	2,531,186	7.2
Potash (2)	232,743	-	-	-	-	-	-	232,743	0.7
Gypsum	455,547	-	-	-	-	-	-	455,547	1.3
Asphalt	274,612	-	-	-	-	-	-	274,612	0.8
Other Mine Products	113,933	-	-	-	2,109	-	-	116,042	0.3
Total Mine Products	11,727,660	2,248,123	-	-	2,136	-	-	13,977,919	39.9
Lumber	1	-	-	-	-	-	-	1	0.0
Other Forest Products	8,030	-	-	-	500	119	-	8,649	0.0
Total Forest Products	8,031	-	-	-	500	119	-	8,650	0.0
Gasoline	1,164,717	-	-	-	-	-	-	1,164,717	3.3
Fuel Oil	817,090	-	-	-	-	-	-	817,090	2.3
Other Petroleum Products	400,855	-	-	-	-	-	-	400,855	1.1
Chemicals (2)	938,235	-	-	-	3,986	532	-	942,753	2.7
Sodium Products	9,108	-	-	-	-	-	-	9,108	0.0
Tar, Pitch and Creosote	109,151	-	-	-	-	-	-	109,151	0.3
Pig Iron	44,378	-	-	-	-	-	-	44,378	0.1
Iron and Steel	4,502	-	-	-	1,139	1,966,445	-	1,972,086	5.6
Steel Slabs	-	-	-	-	-	-	222,357	222,357	0.6
Machinery and Machines (4)	1,959	-	-	-	5,878	38,710	-	46,547	0.1
Cement	849,156	-	-	-	-	-	-	849,156	2.4
Cement Clinkers	739,033	-	-	-	-	-	-	739,033	2.1
Woodpulp	8,000	-	-	-	-	-	-	8,000	0.0
Newsprint and Paper Products	-	-	-	-	-	-	-	-	-
Syrup and Molasses	-	-	-	-	-	-	-	-	-
Sugar	581,095	-	-	-	-	-	-	581,095	1.7
Food Products	-	-	-	-	52	-	-	52	0.0
Furnace Slags	817,305	-	-	-	-	-	-	817,305	2.3
Scrap Iron and Steel	129,196	-	-	-	39	-	-	129,235	0.4
Other Manufactures and Misc. (3) (4)	810,422	-	-	-	45,223	48,971	-	904,616	2.6
Total Manufactures and Misc.	7,424,202	-	-	-	56,317	2,054,658	222,357	9,757,534	27.9
GRAND TOTAL	19,159,893	2,248,123	11,265,856	-	58,953	2,054,777	222,357	35,009,959	100.0

(1) Bulk, as per previous years, includes domestic general and domestic steel slabs, as per the definition of domestic in the Tariff of Tolls.
(2) Please note that the commodity "muriate of potash", which was historically filed under chemicals products, has been regrouped with "potash" starting in 2016.
(3) Includes unclassified cargoes.
(4) Please note that the commodity "machinery parts", which was historically filed under manufactured products, has been regrouped with "machinery & machines" starting in 2016.

Highway H_2O: visibility is key

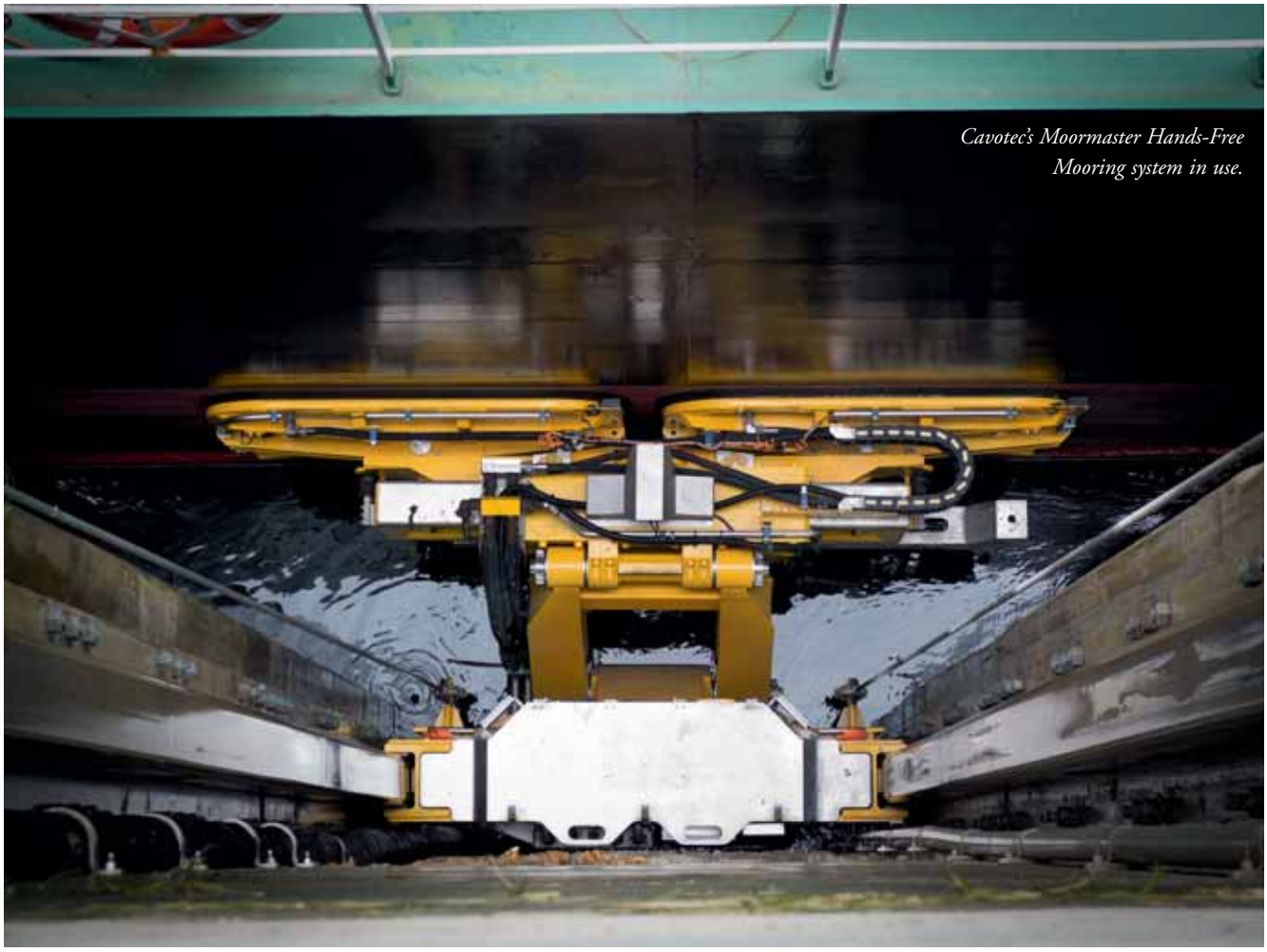
The Highway H_2O programme is doing very well, in terms of the brand, explained Hodgson. Research that has been carried out has shown excellent brand awareness, especially in the European market, which is very positive. To increase exposure further, a new website was launched last year. This site is more user-friendly, and includes the 'Shipping Centre', which has specific sections including: Toll Calculator; Route Calculator; Toll Incentives; and Water Levels. The hits on this website increase every month, showing excellent results. Membership of Highway H_2O has now risen to 57, with a broad base of membership, from carriers to terminals to shippers and importers. Highway H_2O is represented in Europe with London-based Alan Taylor, who continues to develop excellent working relationships with European customers.

Draft Information System

The DIS is continuing to work well, and is well received by customers. Every additional inch of draft made available represents 150 tonnes of cargo, so it is in everyone's interests to ensure that draft is maximized — it is also very important from a safety standpoint. The DIS is well-positioned, and is very successful.

Hands-free mooring

Great progress has already been made on equipping the whole Seaway System with hands-free mooring systems. By the time



Cavotec's Moormaster Hands-Free Mooring system in use.

the 2018 season opens for business, the entire navigation system will be hands-free. The work is being carried out, with supplier Cavotec, on time and on budget. The first step in moving positions from the locks into the control centres is going very well. Hands-free mooring is very popular among employees; it is a huge step in improving safety standards, and it also leads to much improved working conditions.

The hands-free mooring system has been adapted by Cavotec, to suit the particular requirements of the Great Lakes/St Lawrence Seaway. In other applications around the globe, the mooring system only has to cope with tidal differences of five feet or so. With the locks on the Great Lakes, the tidal shift can be up to 47ft in the lock chamber.

Green Marine Initiative

The SLSMC is an active participant in Green Marine, an environmental certification programme for the North American marine industry. Its US counterpart, the SLSDC (St Lawrence Seaway Development Corporation) is also a part of Green Marine. Green Marine is a voluntary, transparent and inclusive initiative that addresses key environmental issues through its 12 performance indicators. Participants are shipowners, ports, terminals, Seaway corporations and shipyards. The cornerstone of the Green Marine initiative is its far-reaching environmental programme, which makes it possible for any marine company operating in Canada or the US to reduce its environmental footprint by undertaking concrete and measurable actions.

The SLSMC's greenhouse gas emissions continue to fall every year, and its environmental impact is also improving — from equipment, to spills, and more — ratings are very strong, and ever-improving. The SLSMC is always looking for ways to decrease its carbon footprint, which it sees as integral to the success of the Great Lakes.

Welland Canal tie-up walls

The five-year programme to replace the tie-up walls in the Welland Canal was completed, on budget and on schedule, in March this year. The cost of the project was C$280m, and represented about 280 jobs per year. The new walls are of a very high quality, and are expected to last many years.

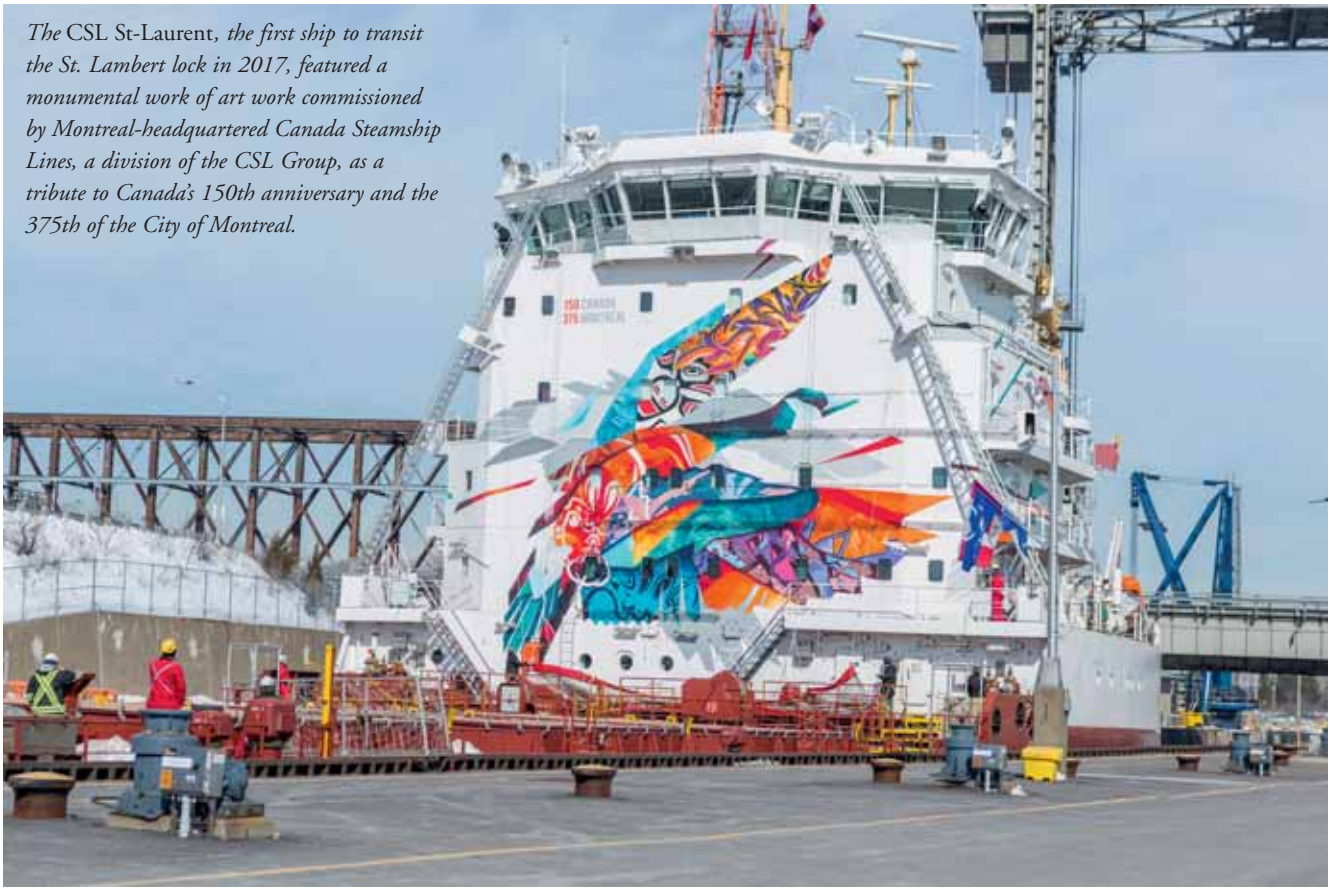
Bright future ahead

Despite tonnage having remained relatively flat over the past year, Bruce Hodgson explains that there are many positives at the SLSMC. He anticipates a good year in 2017 moving forward, with increases in tonnages and cargo flows. He views the cargo flows in the Great Lakes as a bellweather of the economy, and notes that the improving situation in Europe and positives in the US economy means that the future will continue to improve.

Minister Marc Garneau points to Seaway's pivotal role as 59th season begins

The St. Lawrence Seaway Management Corporation marked the opening of its 59th navigation season on 20 March with a special tribute to marine shipping's substantial contribution to Canada's economic development and quality of life. The *CSL St-Laurent*, the first ship to transit the St. Lambert lock in 2017, featured a monumental work of art work commissioned by Montreal-headquartered Canada Steamship Lines, a division of the CSL Group, as a tribute to Canada's 150th anniversary and the 375th of the City of Montreal.

The Honourable Marc Garneau, Minister of Transport, and



The CSL St-Laurent, *the first ship to transit the St. Lambert lock in 2017, featured a monumental work of art work commissioned by Montreal-headquartered Canada Steamship Lines, a division of the CSL Group, as a tribute to Canada's 150th anniversary and the 375th of the City of Montreal.*

the Honourable Jean D'Amour, Minister for Maritime Affairs for the Province of Québec, were among a number of dignitaries that shared their convictions as to the important role played by marine transportation in supporting Canada's ascendance as a trading nation, and the City of Montreal's rich history as a key trading hub.

"The St. Lawrence Seaway has a distinguished past, a dynamic and vital present and will continue to play a pivotal role in Canada's economy in the future," said Minister Garneau. "It is gratifying to see that the Seaway and its partners continue to modernize their operations, to make them more efficient as well as environmentally sustainable. On behalf of the Government of Canada, I wish you a safe and successful navigation season."

The *CSL St-Laurent* sailed to Thunder Bay to pick up grain. Terence Bowles, President and CEO of The St. Lawrence Seaway Management Corporation, noted that a strong carry over of grain from the 2016 harvest should help the waterway record an increase in cargo levels this season. Bowles remarked on the fundamental role that the St. Lawrence Seaway has played in facilitating trade between Canada and the United States, and with over 50 other countries across the globe. "Given the advances that we are making with our modernization programme, I am confident that the St. Lawrence Seaway is ready for the future. As a crucial linchpin connecting the heartland of North America to the world, we enable shippers to move goods safely and efficiently," he said.

Deputy Administrator of the US Saint Lawrence Seaway Development Corporation, Craig H. Middlebrook, said: "The ability of the Seaway to accommodate and encourage increases in maritime cargo rests first and foremost on its ability to move ships safely and reliably. By that standard, the Seaway's record is remarkable as evidenced by a sharp reduction in vessel incidents over the last 20 years. Last year was one of the safest navigation seasons on record. Combined with a lock availability rate of nearly 100% over the last ten years, the safety, reliability, and performance record of the Seaway System is second to none and gives our customers the confidence to know that we can meet their transportation needs."

The multi-billion dollar fleet renewal programme undertaken by Canadian shipowners underlines the industry's strong degree of confidence in the future of the Seaway, and the opportunities

The SLSMC enjoys a healthy throughput of breakbulk and project cargo, including wind turbines.

for marine transportation to play a key role as an enabler of sustainable economic development and trade.

CSL Group President and CEO Louis Martel said: "For over 150 years, Canada Steamship Lines ships have proudly plied the Great Lakes St. Lawrence Seaway System to help build our cities and our country. We chose *CSL St-Laurent* to host our tribute to Montreal and Canada because her name honours the St. Lawrence River, and her state-of-the-art technology and seamanship represent the new generation of high-performing, environmentally-responsible cargo vessels. CSL's fleet renewal investment represents gains in shipping efficiencies, customer excellence, environmental sustainability, and hundreds of high-paying sailing jobs."

The mural entitled 'The Sea Keeper' is an original work of art conceived by Montreal urban artist Bryan Beyung and created by Beyung with artists FONKi, Ankh One and Benny Wilding of the Ashop art collective. The mural depicts a Canada goose in flight, a common sight along the St. Lawrence River, and represents the vessel sailing in harmony with the environment. Painting an original work of art of this magnitude on a cargo vessel is a first for these artists, and is the first of its kind to be displayed on a Canadian commercial bulker.

Seaway ties record for longest navigation season

After opening the 2016 season on 21 March, the St. Lawrence Seaway closed on 31 December, enjoying a navigation season of 286 days. This performance ties the record first established in 2008 and matched in 2013 for the longest navigation season.

The St. Lawrence Seaway Management Corporation recorded a total of 35mt of cargo transiting the Seaway's locks in 2016. Grain movements posted a strong performance for a third consecutive season, contributing 11mt of the total and continuing to track well above the five-year average.

The Port of Thunder Bay, the principal point of entry for grain into the Great Lakes St. Lawrence Seaway System, reported a late-season surge in grain activity, as loadings in December trumped all previous December activity since 1995. Grain activity was also strong in the US as the total volume originating from ports such as Duluth/Superior and Toledo increased by 21% during 2016.

"The Seaway System is able to respond to unpredictable surges in cargo movements from a broad number of sectors" noted the SLMC's Bowles. "We take it all in stride," he said.

The SLSDC's Betty Sutton, Former Administrator for the SLSDC said, "The final tonnage statistics for the 2016 Seaway navigation season are a validation of the importance of the Great Lakes St. Lawrence Seaway System to the economy of North America's 'Opportunity Belt'. Cargo shipments this past year supported manufacturing, construction, energy, agriculture, and other industries throughout the Great Lakes region. In particular, the movement of containers with high value project cargo is an area where we foresee continued growth in the future. We are pleased to see our marketing efforts generating new opportunities in the global marketplace as businesses realize the value of utilizing our System."

Serving as a vital trade artery, the Great Lakes St. Lawrence Seaway System enables cargo to move between North America and more than 50 countries across the globe. "Without a doubt, agricultural commodities have become increasingly important, and it's rewarding to see the pace of new investment by grain companies in ports along our waterway," said Bowles. "What we need to keep in mind is that while grain movements may be the key player this year, we have the capacity and the adaptability to service any number of diverse clients and their cargo requirements. In a world economy characterized by volatility and unpredictable swings in trade patterns, the Seaway System provides a resilient transportation network that keeps all types of goods moving".

For the 2016 navigation season, the last vessel to transit the Seaway's Montreal/Lake Ontario section was the *G3 Marquis* which cleared the Iroquois Lock on 29 December at 6:18pm, heading for Lake Ontario. The last vessel to transit the Seaway's Welland Canal was the *Algolake*, which departed Lock 8 (Port Colborne) at 8:03pm on 30 December heading for Lake Erie.

Port of Milwaukee: important link in the Great Lakes cargo chain

The Port of Milwaukee is a diverse transportation hub in the centre of North America, a valuable component of the Great Lakes economic engine. It serves the Midwest region of the United States with 'laker' traffic delivering bulk products, ocean-going 'salties' exchanging commerce with Europe and Africa, and barges transiting through the Inland River System to the Gulf of Mexico.

The port's 14 miles of railroad tracks connect directly to both the Canadian Pacific and the Union Pacific. These Class 1 railroads serve the Port daily, making Milwaukee an attractive water/rail transload centre for both inbound vessel loads and export cargo. Complementing rail, the Port of Milwaukee connects to the heartland of the United States via the direct truck access it has to the United States Interstate Highway System.

Internationally, Montreal-based ship line Fednav makes Milwaukee a scheduled port of call for its Falline Liner Service from Europe with vessels transiting through the St. Lawrence Seaway several times each month. Other carriers making port calls loaded with steel, heavy equipment, and project cargo include Polsteam, BBC Shipping, Hansa Heavy Lift, Wagenborg, and Spliethoff.

International vessels carrying these cargos into the Port in 2016 were extremely successful loading out Wisconsin agricultural products including grain, wheat, and soybeans making it one of the strongest export years this century. As the mining industry rebounds the port expects to see more equipment outbound from Milwaukee's two major manufacturers in that sector, Caterpillar Global Mining and Joy Global.

The commercial vessel traffic of lakers, salties and barges, make about 300 port calls each year. The lakers are both US and Canadian flag ships that carry bulk commodities including grain, limestone, cement, scrap metal, and salt.

In 2016's tonnage totals, salt is the largest bulk commodity

delivered to Milwaukee. Laker port calls increased as cement deliveries fed growing construction demand in the region.

The year 2016 was the first one in over two decades with no coal tonnage recorded through the port as the result of two Milwaukee power plant conversions to natural gas. As a landlord Port, Milwaukee is seeking a new tenant for the Port's 13.5 acre coal site situated along a Seaway draught dock and adjacent to the Union Pacific Railroad's track.

Liquid bulk transportation through the port will be enhanced in 2017 when the refurbishment of the port's liquid cargo pier is completed, increasing transit of products such as ethanol by water. Port tenants U.S. Oil and South Harbor, LLC are the Port's liquid bulk operators.

Other port tenants include Seaway vessel stevedore Federal Marine Terminals, bulk handling operator Kinder-Morgan, cement distributor LaFargeHolcim Corporation, St. Mary's Cement, and salt companies Morton, Cargill, and Compass Minerals.

Milwaukee has significant year round activity. In winter months the delivery of road salt to local municipalities, the distribution of steel to the manufacturing sector, and the bagging and shipping operations of both salt and fertilizer continue. The port generates revenue through the use of port-owned and operated cranes for maintenance work on the 'winter fleet' of vessels that arrive in mid-January when the Soo Locks close. This winter saw the port's brand new crane, a 300-tonne Manitowoc crawler, make its debut.

And as an inland river port, Milwaukee is the northern most transit point on Lake Michigan for inland river barges travelling to and from the Inland River System. River barges carry steel, manufactured goods, scrap metal, asphalt, and agricultural products between Milwaukee and the Gulf of Mexico.

A typical transit time between Milwaukee and the Gulf ports of Houston, TX or New Orleans, LA is 30 days via the Mississippi River.

With its heavy lift crane capacity, diverse tenant services, and multi-faceted transportation connectivity, Milwaukee is well positioned to serve the Midwest region's transportation and distribution needs including bulk commodities, general cargo, liquid bulk, and project cargo.

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Port of Indiana-Burns Harbor handles 2.6 million tonnes in 2016

The Port of Indiana-Burns Harbor handled nearly 2.6mt (million tonnes) of cargo in 2016, completing the highest three-year total in the port's history. Over 8.6mt have been handled at the port since 2014. Other 2016 highlights included a major expansion by Ratner Steel, a significant increase in heavy-lift cargoes and the investment of $2.5 million in port infrastructure improvements.

Loading grain: grain shipments were up 57% in 2016 over 2015 levels at the Port of Indiana-Burns Harbor.

The 2016 shipping total was the port's third-highest tonnage in the last ten years. Major cargoes included steel, limestone, carbon products, grain and iron ore. Grain shipments were up 57% from 2015 levels while coal was up 11%. Mineral and oil shipments increased 19%.

"Fourth quarter shipments were especially strong for us and included two export ships of Indiana grain, raw materials for the steel industry as well as several large-dimensional cargoes," said Port Director Rick Heimann. "Watching the Ratner Steel expansion take shape is especially encouraging because it further demonstrates that by using the port's strategic location and multimodal capabilities, a company can gain a competitive advantage and grow its business."

Ratner Steel, a producer of carbon sheet steel for service centers and the manufacturing of agricultural and transportation products, announced a major expansion at the port in 2016. The Minnesota-based company is adding 100,000 more square feet to load and unload steel shipments. The $8 million investment is expected to be completed by March 2017.

The port's established ability to handle heavy-lift cargoes continues to attract project cargoes from world markets. Shipments of large-dimensional cargoes were up nearly 25% in 2016. Shipments included multiple large cranes and containers of crane components from Europe for intermodal yards around the Midwest, storage tanks destined for manufacturers and wind tower components and blades.

Nearly $2.5 million was invested in port infrastructure in 2016 including dredging and adding stabilization stones to two berths increasing the number of docks capable of handling full Seaway draught vessels. To improve multimodal connections, the port also replaced 2,000 feet of rail track and rehabilitated three rail turnouts.

Maritime operations at the Port of Indiana-Burns Harbor generate nearly $4.9 billion per year in economic activity and support more than 39,000 total jobs. The port currently has 110 acres available for development.

About the Port of Indiana-Burns Harbor

The Port of Indiana-Burns Harbor opened in 1970 and is operated by Ports of Indiana, a statewide port authority operating three ports on the Ohio River and Lake Michigan. Established in 1961, the Ports of Indiana is a self-funded enterprise dedicated to growing Indiana's economy by developing and maintaining a world-class port system.

Major cargoes at the Port of Indiana-Burns Harbor include iron, steel, grain, chemicals, fertilizers, limestone, coal, coke, salt and heavy lift cargo.

Logistec to operate terminal at Cleveland, and enters JV with GCBE

Logistec appointed as new terminal operator at Cleveland Bulk Terminal

New ten-year agreement brings international cargo handling company to Cleveland Harbor

Logistec USA Inc., a subsidiary of Logistec Corporation, has signed a ten-year agreement with the Cleveland-Cuyahoga County Port Authority to operate the Cleveland Bulk Terminal as of April 2017.

"Cleveland Bulk Terminal will become a significant part of our network along the Great Lakes and St. Lawrence Seaway. Logistec and the Port of Cleveland have similar values, and our customer-focused approach will be a key part of both the transition plan for our current clients and future business development projects," said Madeleine Paquin, President and CEO of Logistec. "Logistec also shares the Cleveland-Cuyahoga County Port Authority's commitment to environmental responsibility."

Cleveland Bulk Terminal handles dry bulk commodities, principally iron ore pellets destined for steel production on the Cuyahoga River Ship Channel and limestone destined for Ohio power plants. The 45-acre facility began operating in 1997 and is located on the outer harbour of the Port of Cleveland, west of the mouth of the Cuyahoga River. The terminal is directly serviced by Norfolk Southern railroad.

"The Port of Cleveland is looking forward to working with Logistec to support our commercial goals, increase bulk volumes and diversify our cargo base. We were looking for an experienced partner whose primary business is cargo handling," said William D. Friedman, President and CEO of the Cleveland-Cuyahoga County Port Authority. "Logistec also has a strong financial record and a reputation within the industry for providing value-added services to bulk customers."

Logistec has been operating in the United States for more than 20 years and handles dry cargo at ten ports and terminals along the East Coast. These activities include: containers, steel, steel scrap and project cargo in Port Manatee, Florida; steel, lumber and salt in New London, Connecticut; and various bulk products (notably biomass) in Brunswick, Georgia. Through its subsidiaries, Logistec also handles forest products in Baltimore, Maryland (BalTerm) and operates port logistics facilities adjacent to the Port of Virginia (CrossGlobe).

The Port of Cleveland

The Port of Cleveland is a key to Northeast Ohio's global competitiveness, providing the quickest route

between North American's Heartland and Northern Europe and linking the region to the world. An economic engine for Northeast Ohio, the Port brings over 13 million tonnes of cargo through the Cleveland Harbor, resulting in $3.5 billion in annual economic activity and more than 20,000 jobs. As a Green Port on a Great Lake, the Port of Cleveland plays a leading role in the environmental restoration and revitalization of Lake Erie and the Cuyahoga River, and helps to create vibrant, accessible waterfronts for all.

Logistec forms new joint venture with Gulf Coast Bulk Equipment

Logistec USA Inc. has signed a definitive agreement with Gulf Coast Bulk Equipment, Inc. (GCBE). Under the terms of the agreement, the companies have formed a new joint venture, Logistec Gulf Coast LLC, to consolidate and expand their bulk cargo handling services in the U.S. Southeast and Gulf region.

"GCBE and Logistec both provide efficient, customized logistics solutions. Joining together will allow us to increase our market coverage and operational resources to better serve our customers throughout Florida and the US Gulf," said Madeleine Paquin. "Logistec and GCBE will provide a seamless transition for clients and partners at all American ports at which we operate, including Port Manatee and the Port Redwing facility at Port Tampa Bay."

Logistec Gulf Coast LLC will handle bulk cargo at various locations in Florida, Louisiana, and along the Mississippi River.

"This new joint venture is a great opportunity for us and our customers will be the first ones to benefit from our partnership with Logistec," said Richard D. Tager, President of GCBE. "We are both committed to delivering quality services, building a strong network, and growing our business in the US Southeast and Gulf region."

Logistec has been operating in the United States for more than 20 years and has been handling containers and breakbulk cargo in Port Manatee since 2003. GCBE was established in 2008 and handles bulk products in Port Manatee, Tampa Bay, and other regional ports.

Logistec

Logistec Corporation is based in Montréal (Québec) and provides specialized services to the marine community and industrial companies. It offers bulk, breakbulk and container cargo handling in some 30 ports and 40 terminals located in eastern North America. In addition, Logistec offers marine transportation and cargo services geared principally to the Arctic coastal trade, short-line rail transportation services, as well as marine agency services to foreign ship owners and operators serving the Canadian market.

Logistec also operates in the environmental sector where it provides services to industrial, municipal and governmental customers for the trenchless structural rehabilitation of underground water mains, regulated materials management, site remediation, risk assessment, and manufacturing of woven hoses.

A public company since 1969, Logistec's shares are listed on the Toronto Stock Exchange.

Port of Bécancour: industrial park handles vast majority of cargoes

APPROXIMATE ANNUAL CARGO THROUGHPUT

	(metric tonnes)
Alumina:	900,000
Calcined petcoke:	115,000
Salt:	225,000 (chemical grade)
	110,000 (de-icing grade)
Grain:	250,000

The Port of Bécancour (Société du parc industriel et portuaire de Bécancour — SPIPB), which can trace its origins back to the 1960s, handles approximately 1.9mt (million tonnes) of cargo each year, with dry bulk representing about 84% of that volume. The forecast for the coming year suggests that around 20% of cargo throughput will come from the Great Lakes (mostly grain and salt).

The mission of the SPIPB is to promote the economic development of the province of Quebec by developing and operating a self-financed industrial park and port facilities. The SPIPB is mandated by the Quebec government and the Ministère de l'Économie, des Sciences et de l'Innovation to be in charge of the enforcement of its incorporating Act. It aims to promote the establishment of new companies and to provide the infrastructure needed to the implementation of significant scope companies.

It is therefore important to note that the great majority of the cargoes discharged at the port is consigned to industries

located in the industrial park and that all the liquid cargo loaded in the port is transformed and shipped by industries located in the industrial park.

Port facilities of the SPIPB are situated at Bécancour, on the South shore of the Saint-Lawrence River between Montreal and Quebec City. They are situated in freshwater, and comprise five berths and a ro/ro ramp. The following facilities are available:

- a bulk liquid terminal located less than a kilometre from the port facilities and linked to berth B-1 by a network of pipes allowing the transfer liquids directly from ships to tanks;
- a railway line linking the port facilities to the CN railway network;
- a merchandise handling and storage land that covers 61 hectares (151 acres) of which 14 hectares (35 acres) are paved, lighted and located close to the berths;
- two pneumatic ship-unloaders belonging to the Aluminerie de Bécancour Inc.; and
- a gatehouse to control access to the port and a scale to weigh handled goods.

Transportation networks

Maritime

The Port of Bécancour is accessible and functional year round. It can be accessed by ship requiring 35ft (10.67m) of water depth. In addition to its jetty, divided into five berths for a total of 1,130m including a ro/ro ramp, port facilities provide 61 hectares (151 acres) of available storage space. Many other maritime services are available like unloading, towing, customs, marine agency, potable water, electricity and communications.

Roads

The SPIPB builds and maintains its own road network. It is built to meet the special heavy transportation standards. Moreover, highway 30 passes through the Industrial Park and junctions with highways 20, 40 and 55 thus linking Montreal and Quebec City. These multi lane highways provide access to the whole North American road network.

Railway

The SPIPB is serviced daily by the Canadien National (CN) railway network. It allows crossing the continent from east to west and from north to south. It gives access to ports on the Atlantic Coast as well as the Pacific Coast. It is also linked to the Kansas City Southern (KCS) provides access to Mexico.

Safety and contingency measures

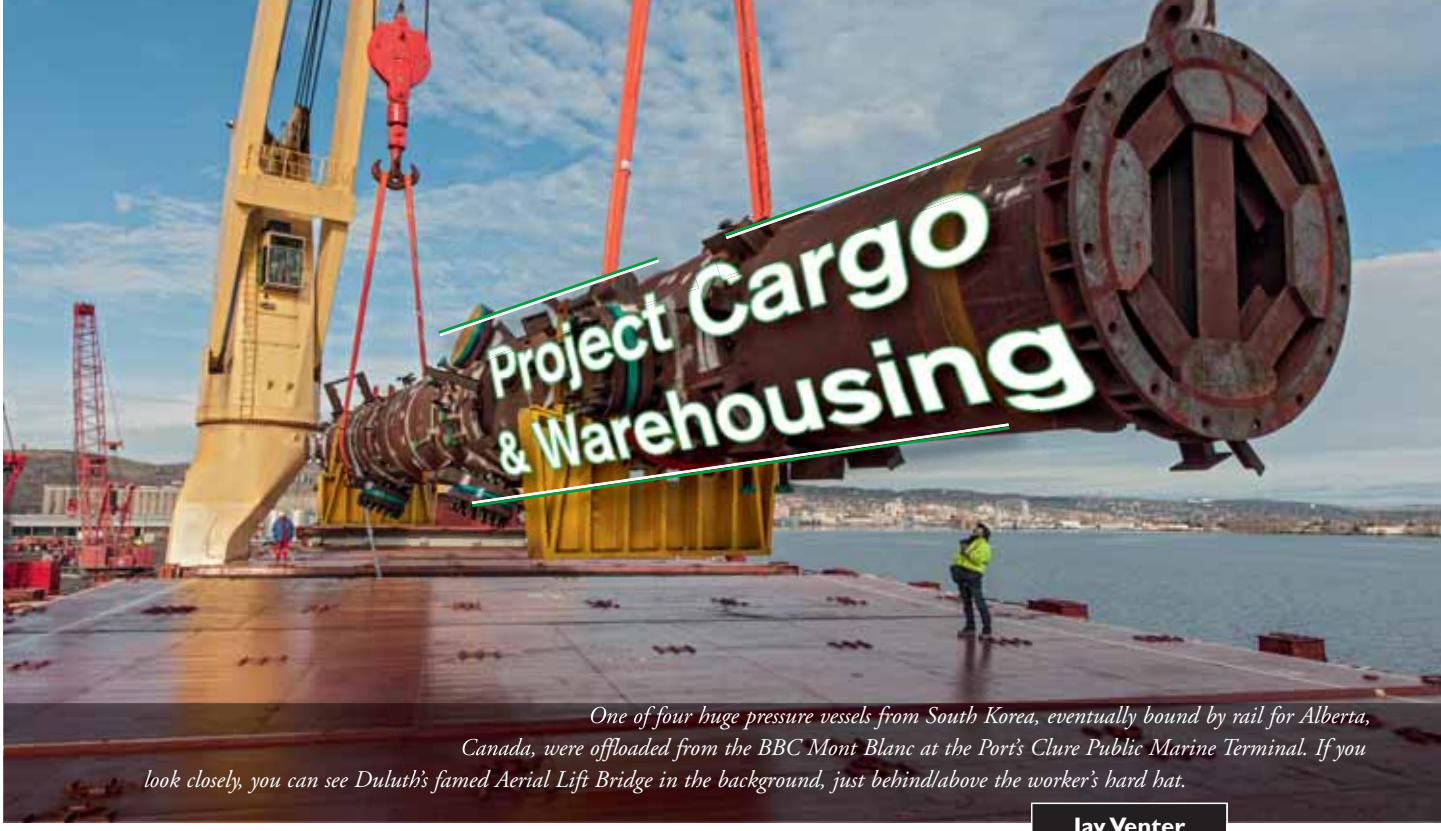
The safe management of industrial activities is a priority at Bécancour. The city manages safety measures within the industrial park and port and ensures the provision of emergency services of superior quality and efficiency.

To ensure the safety of companies and population, the City manages:

- the co-ordination of emergency measures by a mixed municipal/industrial committee including citizens and government organizations;
- a state-of-the-art fire station situated at the entrance of the industrial park;
- a firefighter team trained to act in situations specific to the industries;
- a water rescue service ready to act at any time and in any conditions; and
- an emergency radio service with a dedicated frequency for the SPIPB.

In addition, each plant and each projects in development:

- provides its emergency measures plan and their list of hazardous materials;
- participates in the development of emergency measures by being active in the mixed municipal/industrial committee;
- implements an internal emergency measures management team as well as a fire brigade when required; and
- maintains a safety management system including external verification and a citizen committee when applicable.



Project Cargo & Warehousing

One of four huge pressure vessels from South Korea, eventually bound by rail for Alberta, Canada, were offloaded from the BBC Mont Blanc at the Port's Clure Public Marine Terminal. If you look closely, you can see Duluth's famed Aerial Lift Bridge in the background, just behind/above the worker's hard hat.

Jay Venter

DULUTH CARGO CONNECT: right connections to/from North America's heartland

DULUTH CARGO CONNECT is in the business of moving cargo — huge, heavy and often unwieldy pieces of equipment and packaged freight — to meet the needs of the mining, manufacturing, construction, agriculture, pulp/paper, wind energy, oil and gas production, and power generation industries. When it comes to handling breakbulk cargo, the Port of Duluth links the heartland of North America to markets around the world.

The Duluth Seaway Port Authority owns the only general cargo/breakbulk terminal in the Port of Duluth-Superior: the 120-acre Clure Public Marine Terminal. And, with the completion of its recent $18 million dock rehab project, they've put an adjacent, 26-acre facility back into maritime service.

Timing of this expansion was crucial as business at the Clure Terminal continues to grow. "Our ten best years in terms of cargo volume and value have been our most recent decade of operations," said Vanta Coda, Port Authority executive director. "In addition to maritime traffic, we've also been handling nearly 4,500 railcars and 25,000 trucks each year across this terminal and expect intermodal business to double that traffic within the next five years."

Construction on the $18 million Clure Terminal expansion was completed in October 2016. A new rail spur was built, lighting and security fencing was installed, the deck was resurfaced, a new ro/ro dock and reinforced heavy lift dock constructed, new bollards installed, and the slip was dredged to 29 feet. Completion of the project immediately tripled the outdoor storage capacity of the Clure Terminal and doubled its heavy-lift cargo handling capabilities.

"DULUTH CARGO CONNECT reflects the new branding initiative we've created to identify the working partnership of the Port Authority and our agent, Lake Superior Warehousing," added Coda. "LSW has successfully operated our Clure Terminal and its warehouses for over 25 years," added Coda.

Enhanced capacity & connectivity

The Port of Duluth-Superior anchors the western terminus of the Great Lakes-St. Lawrence Seaway system. It also is served by four Class I railroads and direct access to interstate highways and major freight corridors. With some of the best road and rail clearances in all of North America, and having a breakbulk terminal engineered for large capacity jobs and multimodal connectivity, this port has been able to specialize in full-service

Aerial view looking toward the Clure Public Marine Terminal (in foreground on left) and the newly completed $18 million 26-acre expansion to the right of the slip.

Overhead view of the newly completed 26-acre Clure Terminal Expansion, in the Port of Duluth.

dimensional and heavy-lift project cargo handling.

"By focusing on our connectivity, not only can we serve regional industries more efficiently," said Jonathan Lamb, LSW president, "but we also are expanding our growth potential in overseas markets."

The phrase DULUTH CARGO CONNECT truly says it all. "We are the Heartland's cargo hub for global trade," noted Coda. "With this nexus of road, rail and marine modes of transportation, our customers have a direct connect to compete successfully in the global marketplace."

In addition to Port Authority facilities, there are 20 privately owned/operated bulk cargo docks in the harbour. Collectively, the Port of Duluth-Superior moves some 35 million tonnes of iron ore, coal, limestone, salt, cement, grain and project cargo across the Great Lakes-St. Lawrence Seaway each year — cargo valued at over $2.3 billion last year alone.

Pressure Vessels

A 95-metric ton SUG sour water concentrator arrived at the Clure Public Marine Terminal from Italy aboard the BBC Fuji for final delivery via specialized tractor-trailer to Alberta, Canada.

Two of four pressure vessels arrived from Italy in April 2016 and were offloaded at the Clure Public Marine Terminal in the Port of Duluth. The newly renovated heavy-lift dock on the 26-acre terminal expansion is visible across the slip.

Steel Pipes & Coils

Steel coils from Sault Ste. Marie, Ont., arrived via tug/barge at the Clure Public Marine Terminal in the Port of Duluth, having been fabricated from iron ore initially mined in northeastern Minnesota and shipped out through the Port to that Canadian steel mill.

Over 13,000 sections of steel pipe arrived in the Port of Duluth from Greece in 2015 in shipments aboard two oceangoing vessels. A fleet of trucks running six days a week had all stacks moved to North Dakota in just 10 weeks.

Wind Turbine Components

Shipments of wind turbine components still dominate project cargo activity in the Port of Duluth. Bound for a wind farm installation in Iowa, 30 wind blades from China were discharged from the BBC Kurt Paul at the port's Clure Terminal last May.

Forty tower sections for the same wind project arrived in the Port of Duluth from South Korea aboard the BBC Sjard. Multiple units were stored on the Clure Terminal and later staged for final delivery to Iowa.

Doppelmayr ropeway transports pallets between two factory buildings

WITRON Logistik + Informatik GmbH has recently added a new factory to its premises at Parkstein, Germany. The expansion comes in reply to a growing demand for WITRON's products and consequently for the components manufactured by WITRON's subsidiary FAS. With this new factory No. IV, the size of the premises of the manufacturer of mechanical components for WITRON's own logistics solutions increases to more than 48,000m².

Just like factory No. III, the new building also contains a fully automated pallets and small parts storage area for production purposes. Not all items are always on stock at both storage areas, and a distance of 135.96m, a difference in elevation of just below 15m, as well as access roads and a roof-covered pedestrian gallery separate the two buildings. An automated link between the two storage areas therefore became necessary. WITRON wanted a straight-forward means of transport that would take the pallets to their place of destination without interfering with the rest of the production process. A solution involving a ropeway was being discussed, and WITRON approached Doppelmayr, the world's leading manufacturer of ropeways, for a proposal.

Doppelmayr suggested, and was eventually awarded the contract for, a single-track reversible system with two track ropes and one haul rope loop. One closed cabin with a payload of 1,000 kilograms travels back and forth between the two stations at a speed of 3.5m/s and transports the pallets from one building to the other high above the ground. Up to 20 trips per hour per direction are possible. In order to achieve the necessary clearance between the ropeway and the access roads on the ground, a tower structure with a height of 16m was built. The station equipment for the loading and unloading point is directly attached to the buildings (factories III and IV.)

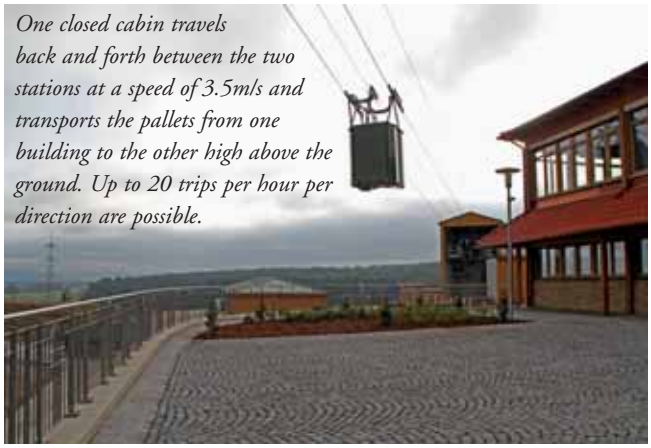
Station entry of the cabin, the loading and unloading procedure, and the conveying equipment in the workshops which delivers and collects the pallets to respectively from the ropeway, have all been fine-tuned to mesh perfectly, thus allowing for a maximum frequency of trips. This reduces the time required for loading and unloading to an absolute minimum. The ropeway controls have been integrated in the controls of the conveying equipment. If, for example, an order to move stock from factory III to factory IV is booked, controls will check the actual position of the ropeway cabin. If the cabin isn't already in the station at factory III, it will be summoned by controls and dispatched there. Upon entry of the cabin into the station, the cabin doors open automatically. At the same time, a gate to the factory opens. A telescopic fork lifts the pallet into the cabin. Once the pallet is in its correct position, both the cabin doors and the gate to the factory close, while the cabin already takes off for the other station. Once there, the pallet is unloaded automatically and placed onto the conveying equipment in the factory.

With the ropeway transporting the pallets between the two factories, no additional interface is required to track the internal orders (inbound or outbound). The installation links the conveying systems of the two factories to form one overall transport solution so that there is no need to clear the pallets from one factory store and post them to the other. The result is a straight-forward procedure that clearly sets the ropeway apart from the other solution that WITRON looked into in greater detail and which involved transporting the pallets on lorries.

A very tight timeframe and the scheduled opening of the new factory made it necessary to implement the new transport solution as quickly as possible. The order was placed in March 2013, and the acceptance procedure for the ropeway was completed by the end of September in the same year. The ropeway has been operating as a fully automated and perfectly integrated sub-system of the factory's internal pallet transport solution ever since.

TECHNICAL DETAILS:

Length	135.96m
Difference in elevation	14.46m
Capacity	20 trips per hour and direction
Payload	1,000kg
Speed	3.5m/s
Number of towers	1
Motor rating	37kW



One closed cabin travels back and forth between the two stations at a speed of 3.5m/s and transports the pallets from one building to the other high above the ground. Up to 20 trips per hour per direction are possible.

Grindrod Intermodal expansion with acquisition of port in Nacala, Mozambique

As part of an on-going strategy to expand its footprint in Southern Africa, Grindrod Intermodal (GIM) has acquired a dry port in Nacala, Mozambique. This acquisition, which came into effect on 1 November, provides a base enabling Grindrod to develop further intermodal operations to include integrated cross-docking and freight packing station services.

The Nacala Intermodal Terminal (NIT) is a partnership with Terminals de Norte (TDN). NIT is currently contracted to the Port of Nacala for the provision of empty container handling and storage services as a result of the limited container capacity in the port.

NIT is situated five kilometres from the port, it covers an area of 40,000m², has two container handlers and a full staff complement. The container facility has a capacity of 3,000 TEU.

There are many exciting opportunities linked to the acquisition of this business. GIM will offer full container handling and storage services as well as specialized reefer and container repair services. Warehousing services will be added to this portfolio in the near future.

About Grindrod Intermodal

A division of Grindrod SA (Pty) Ltd. Grindrod Intermodal provides a complete solution for containerized cargo.

Complex warehousing and distribution solutions including cross-dock and bonded warehousing, full service countrywide and cross-border transportation of containerized cargo by road and rail, comprehensive empty and full container depot services, and container sales and leasing.

Röhlig-Grindrod: New contract logistics facility

Röhlig-Grindrod is building a state of the art, fit-to-purpose multi-principle distribution operation which focuses on delivering:

- Flexibility
- Simplicity
- Efficiency
- Best practice flows & processes

The newest product in Röhlig-Grindrod's integrated logistics offering, is its Contract Logistics facility in Johannesburg. This brand new facility features 21,000m² of floor space and has capacity for 27,300 pallets.

Located 2km's from the N3 highway at 2 Price Road, Meadowview, it provides easy access to OR Tambo airport and main routes to all major cities in the country.

The facility is managed using a state-of-the-art Warehouse Management System that enables customers to effectively manage their inventory through stock level visibility, e-documentation and an online portal through which to communicate warehouse instructions and requests.

Röhlig-Grindrod believes in providing customized solutions tailored to its clients' specific requirements and needs. Support and help will never be far away as the company's qualified and experienced staff is eager to assist and share their logistics expertise, adding value to the client's supply chain.

About Röhlig-Grindrod

Röhlig-Grindrod, a leading freight forwarder and logistics provider in South Africa is owned by Röhlig & Co Internationale, Grindrod Limited and Calulo Investments. Röhlig-Grindrod has an impressive, reputable and solid customer base across all industries.

The integrated service offering at Röhlig-Grindrod consists of freight forwarding, customs brokerage, contract logistics and related logistics solutions.

The company is represented in all major trading centres across five continents through Röhlig & Co. This is further enhanced by the Grindrod network and facilities present throughout southern and sub-Saharan Africa.

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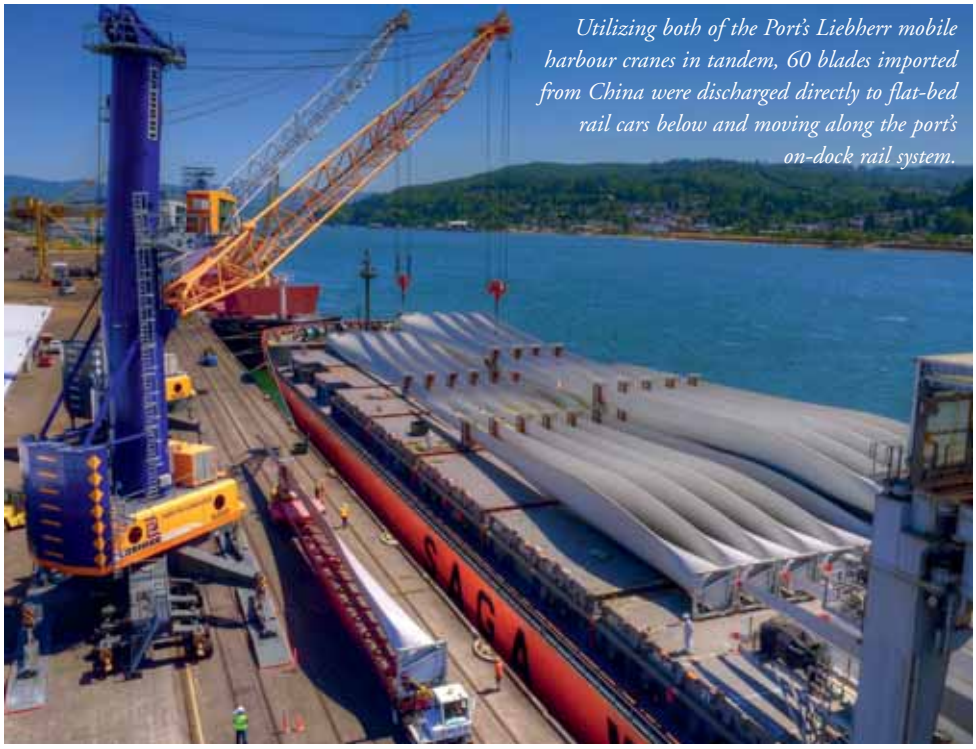
Innovative handling at the Port of Longview gets wind cargo on the right track



Utilizing both of the Port's Liebherr mobile harbour cranes in tandem, 60 blades imported from China were discharged directly to flat-bed rail cars below and moving along the port's on-dock rail system.

When it comes to heavy lift cargo, the Port of Longview has it handled. The perfect combination of location, equipment, infrastructure and experienced labor put Longview on the map as the first port in the Pacific Northwest to discharge oversized wind energy blades direct to rail.

In the summer of 2016, Port of Longview worked side by side with Vestas to execute an oversized, yet delicate, operation. Utilizing both of the Port's Liebherr mobile harbour cranes in tandem, sixty blades imported from China were discharged directly to flat-bed rail cars below and moving along the Port's on-dock rail system.

Because of their significant length, each of the 160 foot blades was affixed to two rail cars to ensure rail curves were accommodated without damage to the cargo. Once the blades were lowered to the cars below, ILWU millwrights secured the blades to a swivelling base by pinning them into place with cam locks, ensuring the blades were locked into place but still had the ability to rotate with each turn. The blades then continued their journey to reach wind farms in Illinois and North Dakota.

Once the vessel was fully discharged and all blades were loaded, rail cars were assembled into a unit train along the Port's dedicated Industrial Rail Corridor. The corridor, which is dual served by both the BNSF and UP railroads, connects to the mainline without any at-grade crossings or interruption to traffic.

Overall growing rail needs, including increased demand for direct to rail operations, is spurring major investment in expanding the Port's Industrial Rail Corridor. Expansion plans include adding additional through tracks and sidings to accommodate long term growth, efficient movement of cargo and growing unit train lengths.

The port is headed into another strong year with heavy lift operations already on the books. With at least three direct-to-rail wind blade operations planned for the near future, the Port stands ready to solidify its position as the West Coast heavy lift leader.

Ports America successfully handles log shipments in Eureka, California

Last year, Ports America, the largest independent terminal operator and stevedore in the United States, secured a new logging contract in Eureka, Calif., to load logs from the northern part of the state's redwood forests. Logs include pine, oak, fir, cedar, redwood and alder. Eureka is a desirable loading port due to the 42-foot draught channel and bay, which enables large vessels to transit.

Ports America recently handled a 6,800,000-board-feet log shipment in Eureka, California. This mostly fir log shipment destined for China was loaded during the course of 11 days.

Additionally, Ports America managed the handling and loading of approximately 34,000 logs, ranging in length from 20 to 40 feet. This successfully completed vessel operation spanned eleven days and required 22 gang shifts.

Ports America's breakbulk and project cargo operational expertise and excellence ensures operations run smoothly and incident free. Management and local labour work in tandem to achieve a safe, efficient and productive operation, even in the most demanding time requirements.

New pier-side fabrication facility for project cargoes at Port Saint John

In 2016, Port Saint John constructed a pier-side modular fabrication facility, offering a one-stop-shop solution for manufacturing and maintaining large scale project cargoes. This new-build facility adds to the port's existing offerings to shippers and receivers and was completed on the eve of the Port's $205 million terminal modernization project.

The modular fabrication facility is 80ft × 300ft (24.4m × 91.4m), providing ample space for a diversity of projects. The facility is fitted with a 20-tonne overhead crane, a 68ft x 48ft (20.7m × 14.6m) mega door opening and a floor load designed for 48 KPA surcharge load; creating a work environment fully optimized to meet the needs of its operators. The modular fabrication facility is connected by a recently constructed breezeway to a large 300ft × 400ft (91.4m × 121.9m) warehouse and manufacturing facility (Shed D) with a 35ft ceiling (10.7m).

Shed D has recently been renovated with new LED lighting, insulation, metal sheet siding, a sprinkler system and a 1,500ft^2 (0.0344 acre) office space. Shed D and the modular fabrication building offer operators the space and capabilities for manufacturing, maintaining and warehousing a variety of cargoes.

Shed D and the modular fabrication building are ideally situated for easy and efficient access by road, rail and sea. Positioned adjacent to the port's major highway linkages and rail to major US North-East and Mid-west markets, and by sea on its global container connection.

Recent cargoes handled at the new modular fabrication facility have been marine renewable project components destined for the tidal energy sector in the Bay of Fundy.

Leading marine terminal operators, DP World recently began a 30-year partnership with the Port at the flex cargo terminal where both the modular fabrication building and Shed D are located. DP World Saint John offers both terminal operations and stevedoring services for containers, bulk and breakbulk cargoes.

Port Saint John is Canada's third-largest port by tonnage and has experience handling a diverse cargo base.

Legacy Building Solutions receives DBIA-Upper Midwest Region Merit Award

The storage building, designed and built by Legacy Building Solutions, measures 63,010ft^2 and is located along the banks of the Mississippi River in East Dubuque, Ill.

When IEI Barge Services needed a building capable of storing and loading fertilizer, it turned to Legacy Building Solutions to design and build a custom fabric structure. That building has been awarded the Merit Award by the Design-Build Association-Upper Midwest Region (DBIA-UMR).

The award-winning building, which measures 63,010ft^2, is located along the banks of the Mississippi River in East Dubuque, Ill. — where poor soil conditions made other building options prohibitively expensive.

Legacy Building Solutions partnered with IEI Barge Services, a division of Alliant Energy, to design the building around current and future operational needs. Custom features include multiple lean-tos for circulation, pre-cast concrete storage bays to contain product for separate customers, and an overhead conveyor for loading. The building receives fertilizer via barge, rail car and truck and has complete product turnover at least three times per year.

Like all Legacy buildings, the fabric structure was custom designed on a rigid steel frame. The frame was hot-dip galvanized to prevent the fertilizer from causing corrosion.

The Merit Award was given for following the principles of design-build construction and finding innovative solutions for project challenges. The fertilizer storage building won the award in the category of Industrial and Office Buildings. A video tour of the building is available on Legacy's website.

"Design-build is a natural fit for this type of project," said Ben Fox, president and CEO of Legacy Building Solutions. "We work with the customer to fit the building to their needs, and then our team takes those plans and turns them into reality. The customer saves time and money in the end."

Representatives from Legacy Building Solutions received the award at the 9th Annual DBIA-UMR awards ceremony, which was held on 15 March in St. Paul, Minn. The building will also be featured in the National Design-Build Project Database.

About Legacy Building Solutions

Legacy Building Solutions designs, manufactures, engineers, and installs large-scale custom fabric structures on a rigid steel frame for a wide range of industries, including the aviation, recreational, military and agricultural sectors. The company was founded in 2010 after creating a now-patented fabric attachment system. Headquartered in South Haven, Minnesota, Legacy Building Solutions provides services worldwide. Committed to sustainability and best management practices, the firm has achieved ISO 9001:2008 and CSA A660-10 certifications.

Port of Tyne continues to expand handling facilities

Major infrastructure developments taking place at the Port of Tyne.

The Port of Tyne in North East England has been leading developments in wood pellet handling in the UK since 2009 when the port constructed a wood pellet handling and storage facility for Drax Power, in itself an investment of over £26 million.

The port has developed a strong reputation within the industry for investing in innovative technology during a decade of development — the Port of Tyne has invested over £120 million in diversifying its operations to handle a growing range of bulk commodities. In 2015 the Port of Tyne handled 1.4 million tonnes of wood pellet, grain volumes increased fourfold to in excess of 230k tonnes and in 2016 new bulk volumes were handled in shipments of aggregates.

In 2017 the port will complete the major £25 million project to extend its main multifunctional berth, Riverside Quay. In total some 300 metres of quay was upgraded, including the construction of a brand new 125 metre quay extension with a load capacity of ten tonnes per square metre.

Upgrading Riverside Quay was critical to winning further wood pellet business from Lynemouth Power and increased the Port of Tyne's berthing capacity by almost 20% enabling up to four large cargo ships to berth simultaneously.

While the project to convert Lynemouth Power from coal-fired energy production to wood pellet continues, one of the largest civil engineering projects in the UK is taking shape at the Port of Tyne.

It incorporates the construction of three storage silos with a total capacity of 75,000 tonnes, along with 1,364 metres of enclosed connecting conveyors and dedicated rail infrastructure.

As part of this major infrastructure development the Port of Tyne is also investing a combined £4.5 million in two new eco-hoppers, expected to arrive at the Port in May, taking its total number of wood pellet hoppers up to five.

Andrew Moffat, Chief Executive Officer of Port of Tyne, said: "We have been innovating processes and systems for the handling, storage and transportation of wood pellets since 2009, when we commissioned our first wood pellet facility, and this continues, with new research and design for the specialist hoppers required for Lynemouth Power's new systems."

The port expects to commission the new wood pellet facility later this year and expects it to be in operation by the end of 2017.

New bulk warehouse for ABP

ABP's Port of King's Lynn on the UK east coast has invested more than US$4 million (£3.3 million) into constructing a new bulk warehouse and new hydraulic crane, providing customers with access to upgraded facilities and equipment.

A new bulk warehouse over 3,400m^2 in size and capable of storing a wide range of commodities is now under construction at the port and due for completion in July.

ABP has also taken delivery of a new 120 metre Mantsinen hydraulic crane worth US$1.35 million (£1.1 million).

The crane's multi-purpose capabilities enhances the port's ability to handle vessels with beams over 20 metres.

ABP's East Anglia ports handle more than 3 million tonnes of cargo every year, with the company the UK's leading ports operator with 21 ports and other transport related businesses creating a unique national network capable of handling a vast array of cargo.

ABP's Ports of East Anglia, King's Lynn, Lowestoft and Ipswich contribute US$417 million (£340 million) to the UK economy every year and support 3,577 jobs in the region and 5,000 jobs nationally.

Andrew Harston, Short Sea Ports Director, said: "ABP's investment into the Port of King's Lynn is part of the company's broader £1bn commitment to investment across the 21 ports.

"The construction of the new bulk warehouse and the purchase of the Mantsinen crane is intended to support our customers by providing new facilities and equipment, supporting their growth by investing in the future of ABP King's Lynn."

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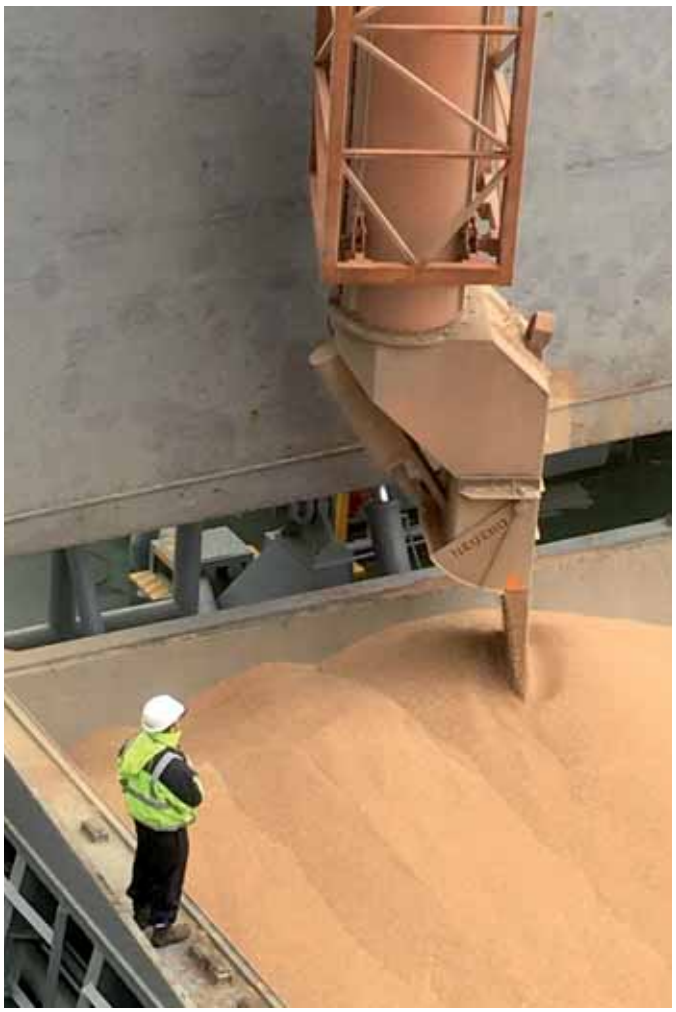





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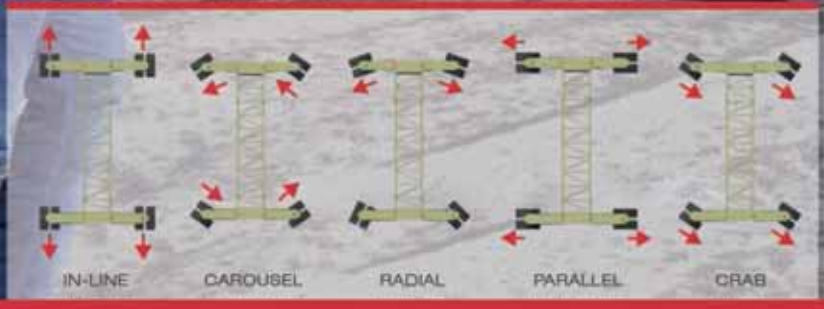

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