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FEATURES

- American Coal Trades
- Netherlands Focus
- Coal Handling
- Shiploading Technology
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A new SENNEBOGEN 880 Classic material handler is working for the Russian transport and logistics group Logoprom. The machine is currently unloading vessels with crushed stone material. The 880 Classic therefore is equipped with a powerful 570kW Diesel engine and an elevating cab.

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JUNE 2015 issue

featuring...

Brisk iron ore trade growth envisaged

Expectations for some commodity imports into a number of countries have become more cautious. Positive signs are still prominent but adverse factors and uncertainties are more visible. Reflecting these perceptions, it now seems likely that overall seaborne dry bulk trade growth in 2015 will be modest.

Underlining a cautionary view, economic growth within the OECD area awaits a sizeable spending boost from much lower oil prices. During this year's first quarter the area's GDP grew by only 0.3% (compared with the previous three months), well down from 0.5% growth in the preceding period. However, a pick up is foreseen. Also, China's economy continues to decelerate, slowing to a 7% increase in the first quarter.

Iron ore

Recent steel production patterns among the main raw materials importing countries further emphasize a fairly subdued picture. In the first four months of 2015, reductions were widespread. Compared with last year's same period, China's crude steel output was 1% lower at 270mt (million tonnes), Japan saw a 4% decline to 35.1mt, South Korea was 6% down at 22.7mt while EU production was flat at 58.1mt.

Over the remainder of this year, EU steel output may improve amid a reviving economy, with advantages for iron ore import demand. Also, China's iron ore imports this year could grow robustly, as low-priced international supplies continue displacing high-cost material from Chinese mines (table 1). In the first four months of 2015, however, China's ore imports rose by only 1% at 307mt.

Coal

Could global seaborne coal trade decline this year? Growth prospects have faded, mainly due to further evidence of China's moderating requirements. An overall reduction seems to be avoidable, because prospects for sustained upwards trends in many importing countries are solid.

Nevertheless, signs point to limited potential for additional world movements in 2015 as a whole. The highest profile expanding market is India, where coal imports increased rapidly again last year to an estimated total of over 220mt, and which could see another rise of 20-30mt this year, according to some forecasters. Elsewhere indications suggest a more mixed evolution.

Grain

Global grain trade predictions for the twelve months ahead are still subject to great uncertainty. Upcoming domestic harvests of wheat and coarse grains in the importing areas of Europe, North Africa, the Middle East and China will have a huge influence on their foreign purchases. These domestic crops remain dependent upon unpredictable weather. Currently there are no signs of any unusually large crop shortfalls, but conditions may change.

An early, tentative forecast by the International Grains Council suggests that world grain trade could decrease slightly in 2015/16 starting July. After a small 2% increase during the year now ending, raising the total to 317mt, a 3% reduction to 311mt is envisaged. Lower imports into the Middle East is the main negative element foreseen, down by 8% at 55mt, accompanied by some limited changes elsewhere.

Minor bulks

Forest products trade is one of the principal elements of the minor bulk sector, consisting of logs, sawnwoods, wood chips and pulp and many other items. Last year, world seaborne forest products trade appears to have grown solidly by about 4% reaching around 195mt. Additional volumes into key countries in Asia and Europe could enable trade to increase similarly in 2015.

Bulk carrier fleet

The world bulk carrier fleet's growth, as a whole, is expected to continue slowing this year. But in one part, the Handymax (40–64,999dwt) size group, expansion may accelerate. Table 2 shows this fleet's progress. During 2015 higher newbuilding deliveries are likely compared with last year, although scrapping could rise as well. Resulting deadweight growth in the Handymax fleet seems likely to be around 8%, a markedly stronger rate than seen in the previous twelve months.

TABLE 1: KEY IRON ORE IMPORTERS (MILLION TONNES)

	2010	2011	2012	2013	2014	2015*
China	619.1	687.0	745.5	820.3	933.2	975.0
Japan	134.3	128.4	131.1	135.8	136.4	137.0
EU-15	106.4	102.0	99.0	103.0	106.0	109.0
South Korea	56.3	64.9	66.0	63.4	72.0	73.0
Taiwan	18.9	20.5	18.5	20.5	21.0	22.0
Total of above	**935.0**	**1002.8**	**1060.1**	**1143.0**	**1268.6**	**1316.0**

source: BREE, Bulk Shipping Analysis **BSA forecast*

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

	2010	2011	2012	2013	2014	2015*
Newbuilding deliveries	19.0	22.0	20.9	14.6	11.1	16.5
Scrapping (sales)	0.4	2.2	4.7	3.5	3.0	3.5
Losses	0.2	0.1	0.1	0.2	0.0	0.0
Plus/minus adjustments	–0.2	0.1	–0.1	0.0	0.0	0.0
Fleet at end of year	**111.1**	**130.9**	**146.9**	**157.8**	**165.9**	**178.9**
% change from previous year-end	+19.7	+17.8	+12.2	+7.4	+5.1	+7.8

source: Clarksons (historical data) & BSA 2015 forecasts **forecast*

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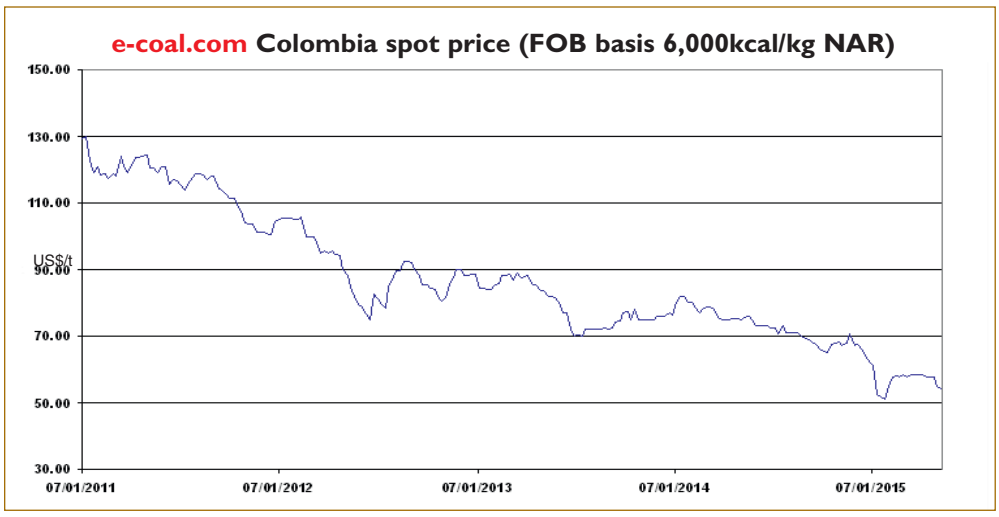
American coal trades

Dr Tim Jones, e-coal.com

While the coal markets continue to see weak prices around the world, and many American players face serious challenges, the latest indications suggest overall thermal coal trade in the Americas will continue its modest recovery seen over the past couple of years. Total thermal coal imports across the continents are forecast to reach about 40mt (million tonnes) this year, which is 2–3mt more than in 2014. The main growth is expected to be in Brazil, with Chile and some central American importers also taking more material. Chile is forecast to be the largest thermal coal importer in the Americas this year with around 10mt required. The USA is expected to be second with about 9.5mt so these two countries account for half the thermal coal import demand in the Americas. Brazil and Mexico take about another third between them. Guatemala is noteworthy as a growing, if smaller market, and the country has a programme of coal-fired power projects which will increase demand in the coming years. In 2015, Guatemala is forecast to import about 1.5mt of thermal coal which is a tripling over the past five years.

On the thermal coal export side, US volume decreased substantially last year compared with 2013 after its recent peak in 2012 at about 47.5mt. Exports were about half that in 2014. US producers have been looking at domestic markets as the international market makes it more and more difficult for them to sell at anywhere near a profit. The US was known as the swing supplier, coming into the Atlantic thermal coal market when prices are strong, and leaving when they weakened. That is the current situation. The exporters have not been looking to renew export contracts amid current prices and some did not do so last year, or this year when some expired.

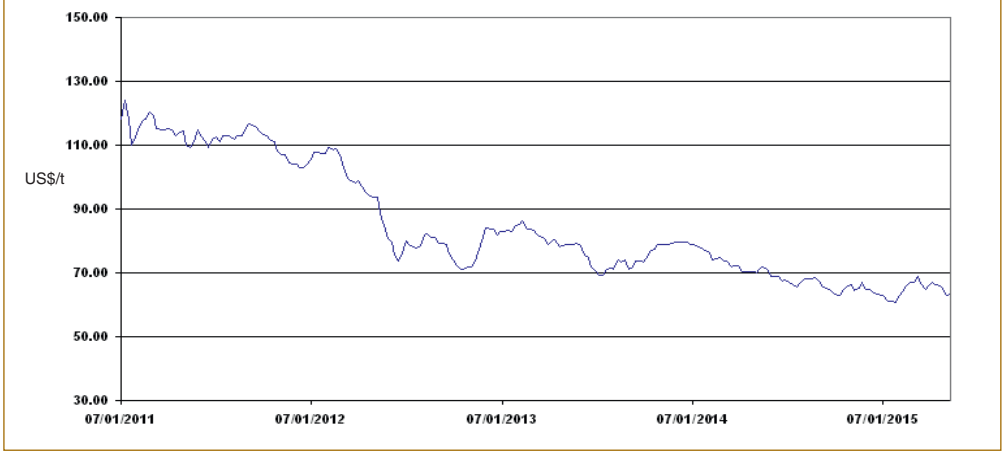
Colombia remains the largest exporter of thermal coal in the Americas with about 75mt shipped in 2014. This was an



improvement on 2013 despite the country being impacted by the market challenges last year. These included the new coal loading regulations which affected some exporters who were unable to comply by the government deadline. The Colombian shippers were able to make up lost ground amid the difficult market over the course of the year, and the trend in exports can be seen in the accompanying charts. Atlantic business proved to be better than expected, and this was helped by the tightening of US supply and competition elsewhere. Russia emerged as more of a competitor to the Colombians as the US dollar exchange rate moved in the Russians' favour in Europe, but the South Americans still sold more tonnage to Turkey and their major buyers in Spain. Closer to home, there was growth in exports to Brazil.

e-coal.com Newcastle Spot Price (FOB basis 6,700kcal/kg GAD)

e-coal.com Mahakam River Spot Price (FOB barge basis 6,700kcal/kg GAD)



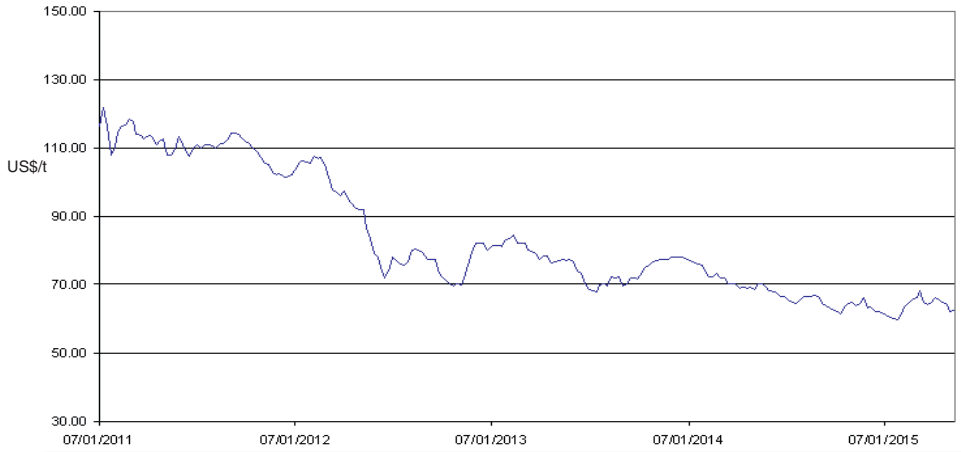
The Canadian thermal coal exporters saw a flat year in 2014 with just over 3mt shipped. They managed to exploit new demand for their product in Taiwan, however, with 0.5mt sent there. Canada's coal users have been importing around 2mtpa (million tonnes per annum) and this is expected to remain steady this year with supplies coming from the USA and Colombia. Transpacific markets have been thin for other American shippers including Colombia, and Venezuela's coal industry continues to stagnate after years of difficulty. That country only shipped about 2mt last year.

On the demand side, Brazil has needed more imported thermal coal to cope with demand at some of its 3.9GW of coal-fired power station capacity amid lower hydro capability. Higher imported gas prices have helped coal compete in that market as well. While the USA has been the largest coal supplier to Brazil, the importers have been increasing their purchases from Australia, Canada, and Colombia. Thermal coal imports have been forecast to increase this year, and possibly in 2016, but this is heavily dependent on rainfall which obviously controls the hydro capability in Brazil.

Chile is the main importer of thermal coal in South America, with around 10mt taken in 2014. Most of this is shipped from Colombia but the US exporters managed to take some market share from them last year. Almost 75% has been supplied by Colombia with most of the remainder coming from

e-coal.com China spot price (FOB basis 6,700kcal/kg GAD)

e-coal.com Banjarmasin spot price (FOB barge basis 6,700kcal/kg GAD)



the USA. Australian thermal coal exporters sent around 0.5mt in 2014 and there was a small quantity supplied by Canada. The closure of the Bocamina II power station has impacted thermal coal demand in Chile, and coal-fired power projects have been facing more opposition from environmental organizations. A couple of new plants are due to be commissioned over the next 18 months and those will require some imported coal. Chile's domestic coal production, however, is growing with Mina Invierno producing enough to export some product to buyers in India, The Netherlands, Spain, and Poland last year. The product is mainly lower quality sub-bituminous coal so the country is expected to need imported material in the coming years. Output is around 4.5mtpa. Hydropower availability has been slowing coal import demand and this year is not currently expected to see much of an expansion of thermal coal imports as one new power plant comes online.

The small Central American countries taking imported coal include Dominican Republic, Guatemala, Honduras, and Panama. Dominican Republic imports are currently just over 1mtpa with most coming from Colombia. This is expected to more than double within three years when the 752MW Santa Catalina power station comes online. A Panamax coal terminal is also under construction to facilitate the project.

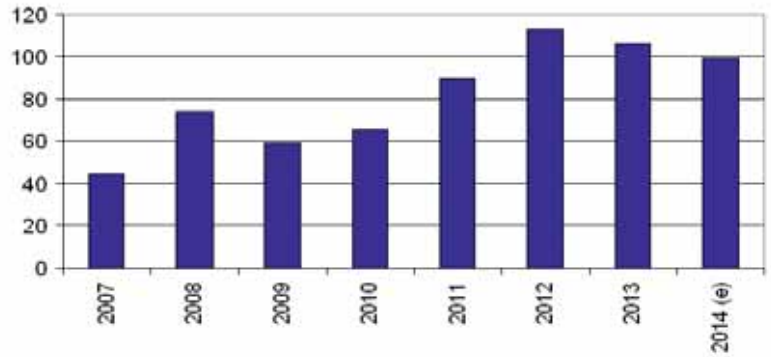
Guatemala has seen increased demand for thermal coal due to its new 330MW AEI Jaguar Energy power plant. This station is expected to need around 0.7mtpa of coal when operating at full capacity and this is likely to be supplied by Colombia. The country imported about 1mt in 2014 and this is forecast to increase to around 1.5mt this year. Honduran demand is small at about 50ktpa with a couple of power plants requiring imported material mainly for the sugar industry. Panama's cement industry accounts for its demand for imported coal, with some 0.45mt being required each year. Colombia is the supplier to these buyers.

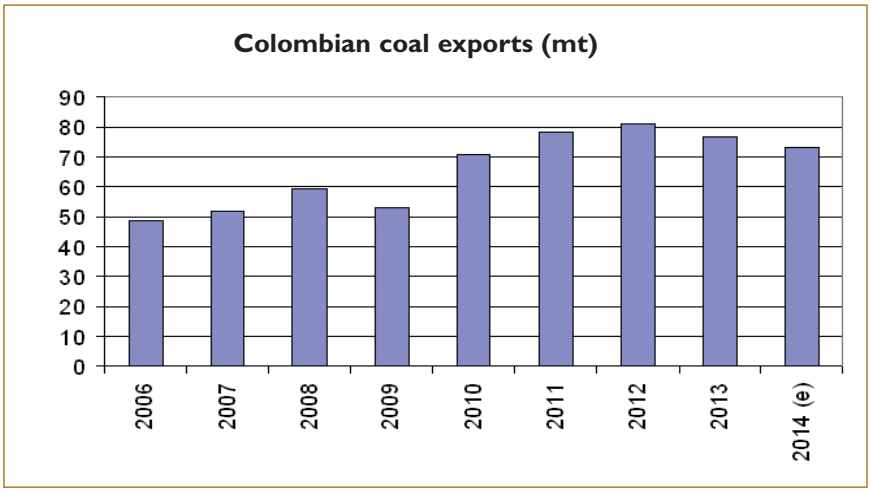
e-coal.com South Africa spot price (FOB basis 6,000kcal/kg NAR)

Mexico increased its output from coal-fired power units last year and imported about 6–6.1mt of coal in 2014. The forecast is for an improvement on this during 2015 and possibly next year as well in order to satisfy increasing demand for electricity. The economy is understood to be in reasonably good health at present compared to previous years. Comision Federal de Electricidad (CFE) has been issuing tenders for imported coal to supply its Carbon II and Petacalco power stations. Major traders have been successful in these tenders over the years sourcing suitable coal from a number of supplier countries.

Peru has been importing a few cargoes of coal in recent years, but there was a decrease in tonnage last year to around 0.46mt compared with about 0.8mt in 2013. Competition from gas-fired units contributed to this decrease. The country's cement industry also contracted and therefore used more domestic anthracite in 2014, but an earlier build up in national coal

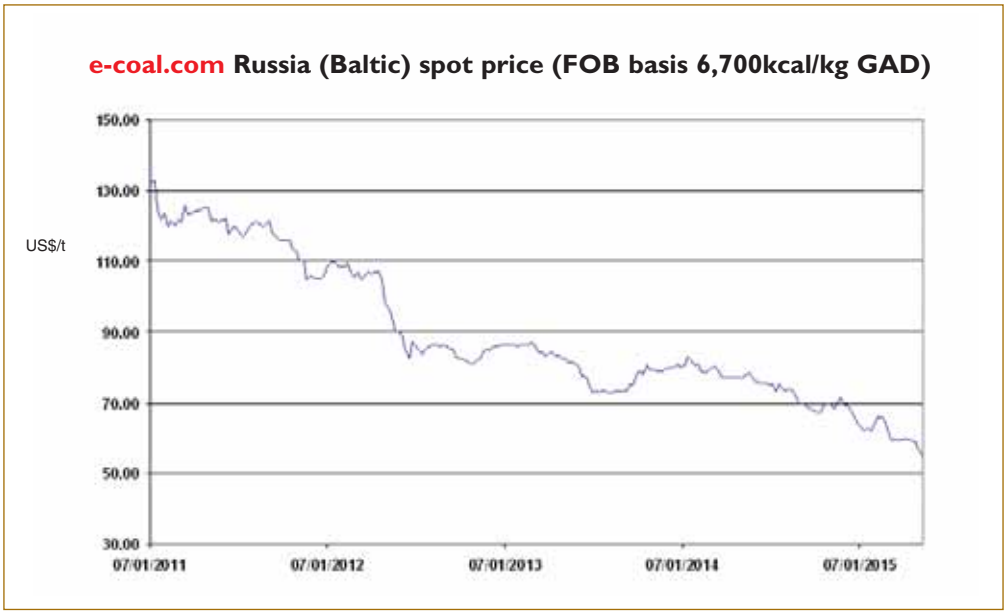
US total coal exports (mt)





stocks in anticipation of a high import tax led to plentiful supplies on the pads last year. Power generator Enersur is understood to have had high coal stocks. Venezuela has been the main supplier to Peru recently, with other tonnage being purchased from the Colombian shippers as well as a small amount from the USA. Peru is expected to import about 0.5mt of coal this year, but if the import tax is introduced then imports are likely to be lower after that.

In recent corporate news, Canada's Atrum Coal signed a Memorandum of Understanding with a Korean anthracite trading company over the proposed Groundhog mine in British Columbia. The mine is planned to produce 5.4mtpa when fully operational and the non-binding offtake agreement has helped move the project forward. In addition, Atrum signed a finance agreement with China Coal Technology and Engineering Group for equipment needed for the mine. Production could start by the end of this year. The initial finance package is for US$100m to be repaid over four years, and a further US$250m is required later as the project ramps up to full capacity. Other offtake agreements are being sought by Atrum.

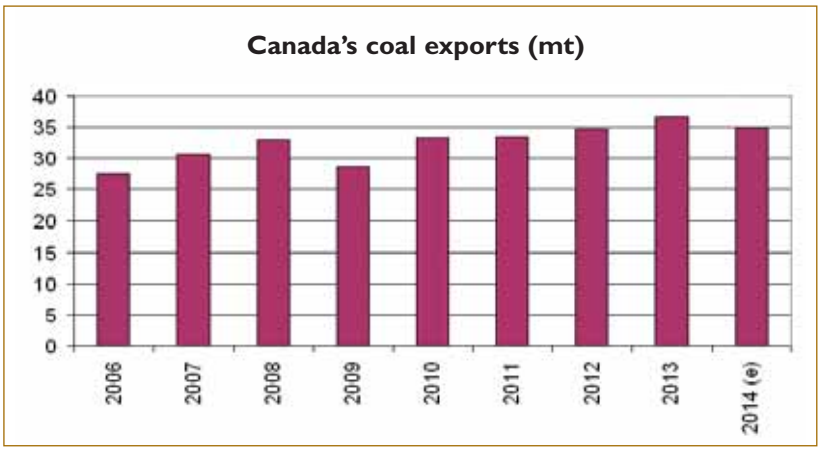


Elsewhere in Canada, the government of British Columbia is to pay Fortune Minerals and an affiliate of Korea's POSCO US$15.1m for 61 coal mining licences held by the companies. Progress has been slow in deciding how to proceed with the mining in indigenous Tahltan land which the companies plan to include a 3mtpa anthracite opencut operation. The companies could buy back the licences within ten years if agreement is reached between all parties concerned, and could result in a 25-year mine in the Mount Klappan area.

In Colombia, there was a threat of strike action over an increase in road haulage rates in May. The rates were expected to increase from around US$40–50/t to around US$60–70/t which would make exporters of coking coal and metallurgical coke uncompetitive in the international market. The National Federation of Coal Producers expressed concern over the approval of the increase by the Ministry of Transportation. It is estimated that up to 100,000 people could be affected by adverse impacts on coal producers in the departments of Cundinamarca and Boyacá. If the Colombian peso strengthens against the US dollar, the impact could be even more serious.

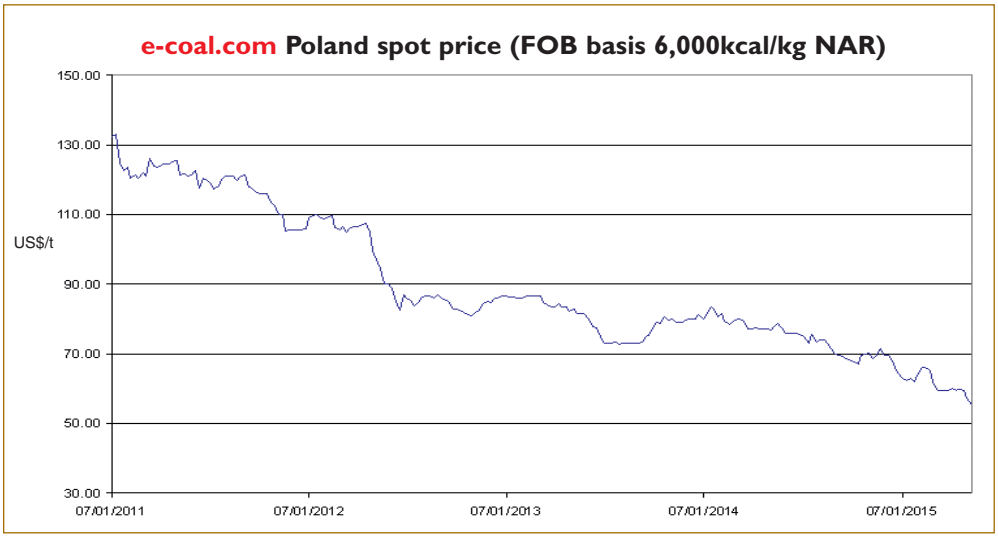
Meanwhile, coking coal and metallurgical coke producers in Boyacá and Cundinamarca may begin railing material to the Caribbean ports on the revamped Central Rail System late this year. Work being done on the line between Bogotá and Belencito and between La Dorada and Chiriguaná is on target for completion by Q4 2015 and this will link up with the Fenoco line at Chiriguaná. The mining areas further inland will benefit from the improvements, and costs are likely to be about a third lower than for road haulage. If road haulage rates increase, the savings would be even more.

The Fenoco rail line managers have their own problems on environmental issues following a court order to reduce noise in Bosconia. A

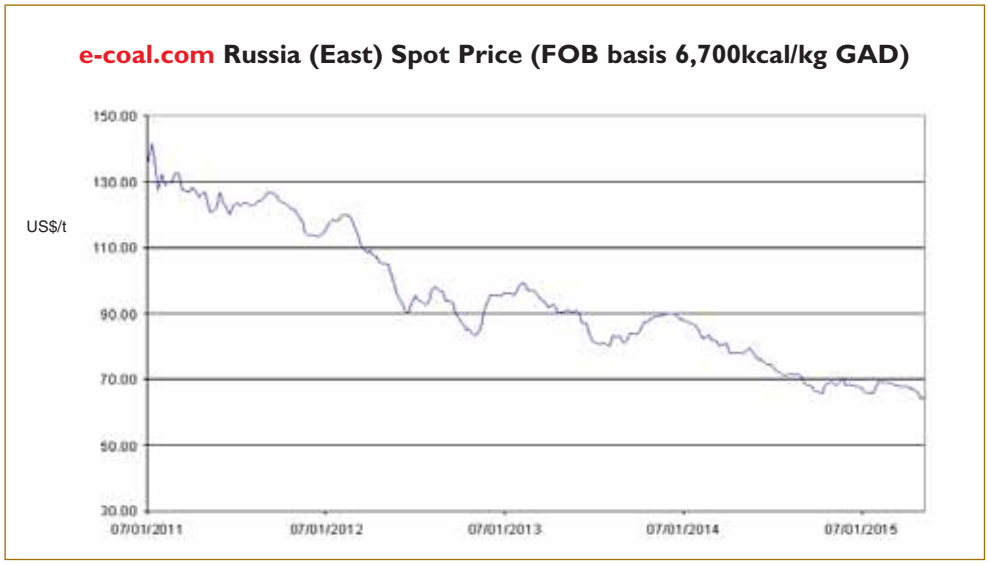


method of alleviating the noise involving the construction of a 2.5km wall on each side of the rail line is facing opposition from residents there. Longer trains may also be necessary to cope with haulage demand and to avoid railing during restricted hours during the night.

Coal stocks at Glencore's Puerto Nuevo have been some 200kt below the average of 0.9mt and Drummond has had stock levels around 50% of the average of 0.8mt. Coal railing restrictions at night, lower demand from customers, cargo deferrals, and other reasons have been mooted as possible causes.



In the USA this year there have been further declines in the export market in some regions. In the US Gulf during the first quarter this year the operators in Mobile and New Orleans recorded lower exports compared to the same period in 2014.

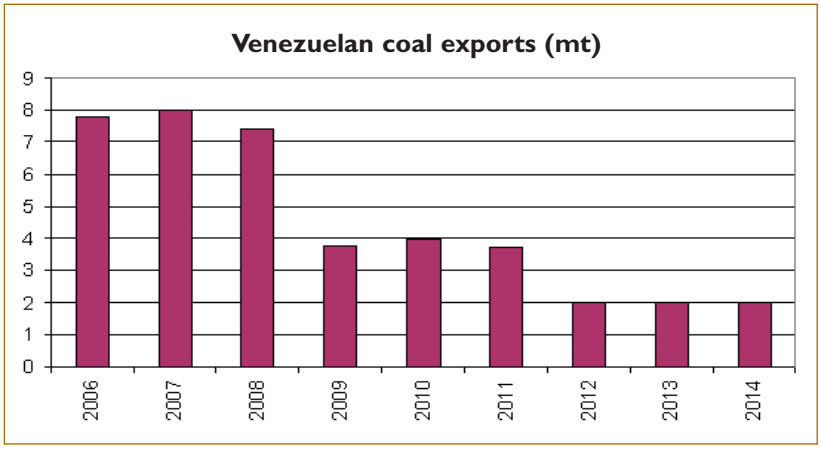


There was a decrease of some 25% at 5.58mst (million short tonnes) compared to 7.48mst in Q1 last year. Coking coal shipments from Mobile amounted to 2.89mst in Q1 2015 compared to 3.47mst in Q1 2014, but thermal coal exports were higher than last year at 0.59mst compared to 0.12mst. Thermal coal exports from New Orleans reached only 1.89mst compared to 3.18mst a year earlier, and coking coal shipments reached only 0.19mst compared to 0.7mst during Q1 2014.

Sub-bituminous coal exports through the northern ports increased during the first quarter of 2015 to reach 1.35mst compared to 1.05mst in the same period last year. Total coal exports increased as a result with 2.84mst recorded compared to 2.7mst a year earlier. Thermal coal shipments declined, however, from 1.14mst last year to just 1.09mst this quarter. There was also a decrease in coking coal exports from 0.48mst to only 0.38mst. Meanwhile, in the Canadian port business, there has been a change in plans for shipping coal on the Fraser River which affects US producers in the west looking to export their product to Asia. Vancouver company Fraser Surrey Docks is developing a 4mtpa coal transfer terminal which was to rail coal on BNSF rolling stock direct to the terminal for loading onto barges. These would transfer coal to Capesize vessels at Texada Island for shipping to Asia and elsewhere. Current market conditions have resulted in a more cost-effective option of direct loading from the trains onto Panamax ships at the terminal.

On the US east coast, falls in coal exports were also recorded during the first four months of 2015 compared with last year. The total at Hampton Roads was 10.0mt which was a decrease of some 32% compared to 14.7mt recorded in the same period last year. Recent months have been weaker as well, suggesting the total for 2015 could be 20–30% lower than that recorded in 2014 which was 37.3mt.

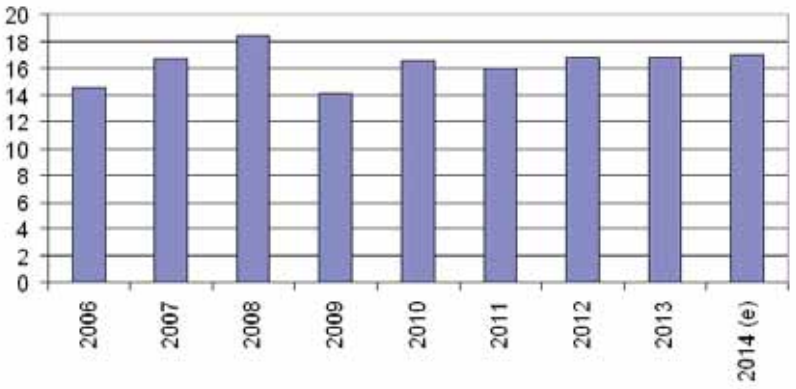
There has been speculation that more US coal miners have been in financial difficulty amid the ongoing adverse market conditions. One recent one was Walter Energy, but the



e-coal.com Venezuela spot price (FOB basis 6,000kcal/kg NAR)

company has allayed fears by meeting interest payments on senior debt on schedule. The coking coal producer had been expanding a few years ago before the weakness in world markets took hold, and had acquired operations as far away as South Wales. Bankruptcy was considered an option in recent assessments, but this has been avoided and the company is negotiating with its creditors on future business.

Brazil's coking coal imports (mt)



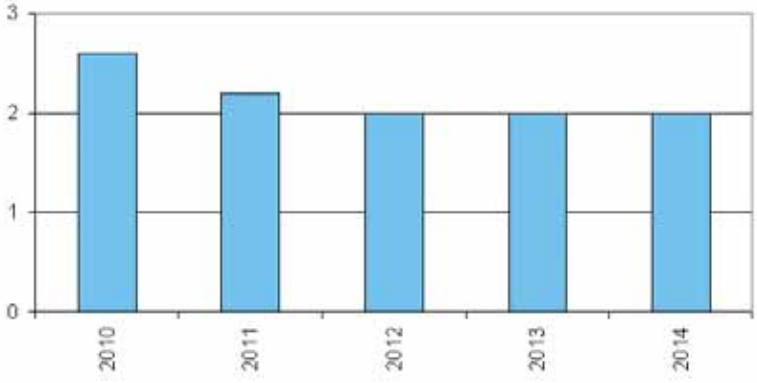
In Brazil, there have been signs of improved coal imports during the first four months of this year. Up to 30 April, total coal imports reached 8.1mt which was an increase of some 16% compared to the 7.02mt recorded in the same period in 2014. The USA was the main supplier, just ahead of Colombia, with a total of 2.33mt but this was lower than the 2.68mt reported a year earlier. Colombia supplied 2.29mt which was an increase of 26.6% compared to 1.81mt in the first four months last year. The Brazilian consumers took around 55% more Australian coal during the period this year, with 2mt recorded compared to 1.29mt last year. More Russian coal was also imported this time, with an increase of some 108% at 0.45mt which was 0.23mt more than that a year earlier. Imports from Canada totalled 0.69mt which was a decrease of 24% from 0.91mt in the January to April 2014 period. Market share of the main three supplier countries during the period this year was 29%, 28, and 25% for the USA, Colombia, and Australia respectively.

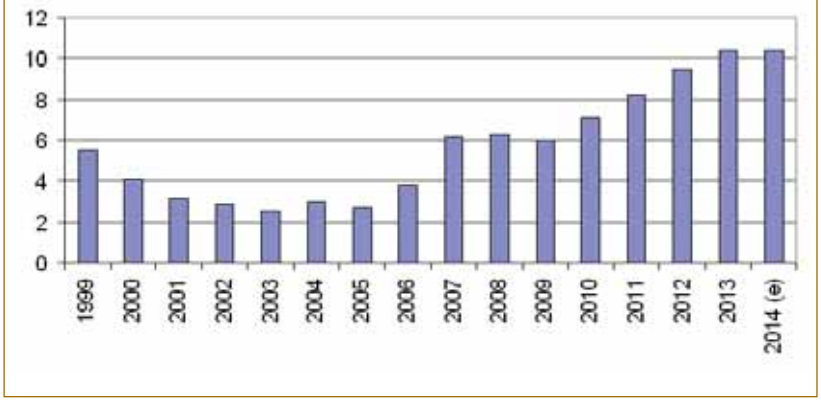
The Brazilian metallurgical coke market was firmer during the first four months of this year and imports rose by 6.6% to 0.71mt compared to 0.67mt during the same period last year. China had the largest share with 0.43mt reported, overtaking Colombia compared to a year earlier. The Colombian coke suppliers shipped 0.28mt this time which was the same as last year. The Brazilians have taken less anthracite this year, with South African tonnage amounting to 0.21mt of a total 0.34mt. Russia shipped 0.086mt. The total was down 44% from 0.61mt in the first four months last year.

In the USA, the sale of the Kodiak coking coal project in Alabama has been delayed again. Attila Resources is aiming to sell its asset to Magni Resources for some US$55m and the deal was expected to be completed by the end of March. Talks between the parties continue and may extend into June according to recent reports which also indicate that the company needs to sell the asset in order to have sufficient funding to continue in business. While mergers and acquisitions are proceeding in this market, it does present much more challenging issues for those involved, and the delays are indicative of such issues.

Meanwhile in Colombia, Goldman Sachs is understood to be selling its thermal coal assets operated by Colombia Natural

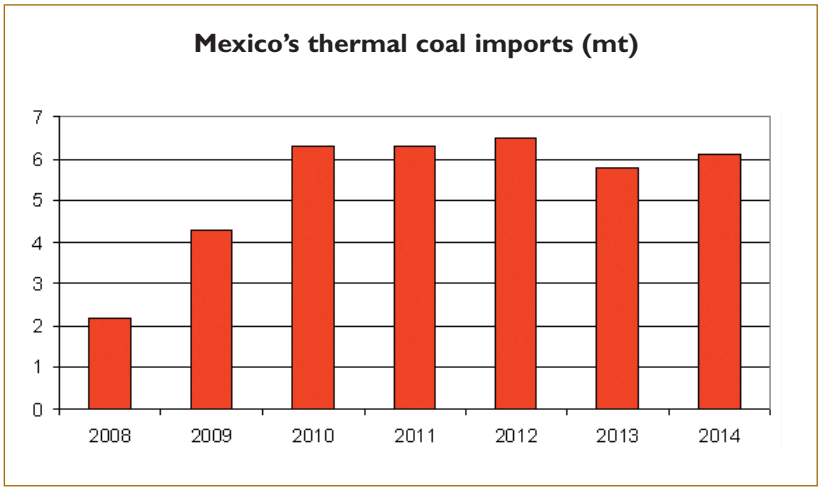
Canada's coal imports (mt)

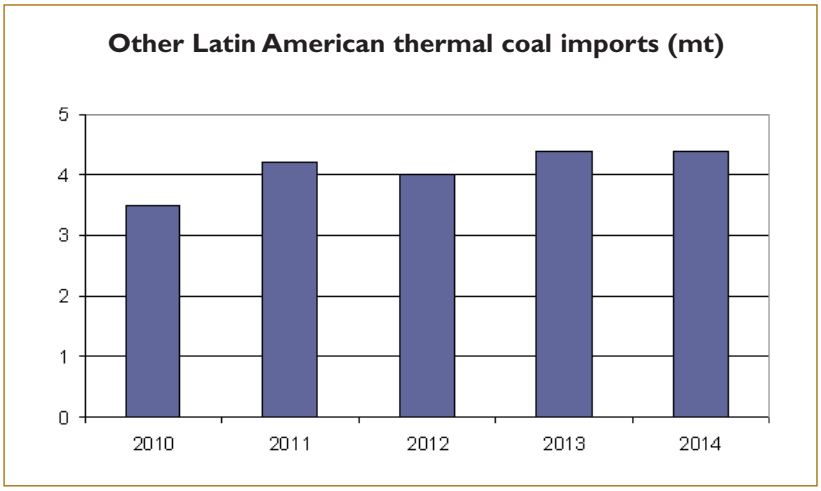




coal export market has contracted to such an extent as to be almost negligible outside the continent, but still useful for local markets like Peru. In that country, however, government tax policy is an issue of concern to the coal importers who might otherwise benefit from increasing coal purchases amid the weak international markets. The transpacific thermal coal market that had emerged a few years ago, particularly for Colombia, has diminished from those levels and is unlikely to improve in the foreseeable future. European and Mediterranean markets will be the main focus for the exporters in the near future, and until prices firm substantially, the lower US activity in the Atlantic markets will remain. A boost to trade in Brazil and Chile is, however, expected to help make this a slightly better year for coal overall across the Americas compared to 2014. This year will continue to be a challenge for coal trade in the Americas, with mixed fortunes for the players depending on individual circumstances. DCi

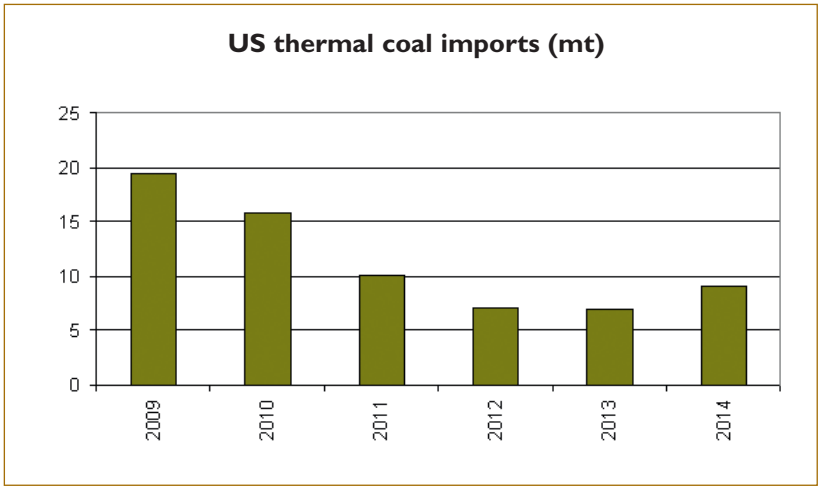
Resources due to the challenging market. The assets include the La Francia and El Hatillo mines in Cesar department, the port of Río Córdoba, plus a 16.8% stake in the Fenoco railway. The country is also believed to be a difficult one for the company to operate in and this has added to the reasons for deciding to sell. Industrial disputes have been a problem and output has decreased in recent years. The government had ordered a direct loading system to be installed at Rio Córdoba by January last year, but coal exports were stopped when the deadline was missed. Geological issues have also been affecting coal production. The mines produced 0.87mt of coal in 2014 which compared with 3.27mt in 2013. Exports reached only 0.12mt in 2014 compared to 2.8mt in the previous year.





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.*

So it is clear that there are mixed situations across the coal industry in the Americas at present. While major trading players like the USA and Colombia are seeing some bigger challenges, some of the smaller players such as Guatemala and Dominican Republic are enjoying a boost. The accompanying charts show the trade trend in some of the main countries, but it is clear that prices remain weak this year. This has been a challenge for producers for a number of years now and there is little sign of an improvement for them. Political issues are also a problem for operators in Venezuela where the



'Make in India'

government programme could spell good news for India's steel industry

Kunal Bose

Much good will befall the Indian steel industry, which has been given a capacity growth target of 300mt (million tonnes) by 2025, if prime minister Narendra Modi's 'Make in India' programme is pursued with vigour backed by local and foreign direct investments. In his first year in office, Modi had made quite a few trips abroad in the west and in the east. While our prime minister has been eminently successful in raising the profile of the country in the world, a common theme in all his foreign itineraries was to create excitement about the potential of manufacturing sector in India. The challenge is now in converting that excitement into foreign direct investment. This has started happening earlier than expected. Of all manufacturing sectors, automobiles are so far faring the best in attracting FDI (foreign direct investment), creating big potential demand for steel and aluminium.

A high point of Modi's visit to South Korea was announcement by Hyundai Motor chairman Chung Mong Koo that his company was in contemplation of building a third automotive plant in India. Success in manufacturing and marketing cars from small to medium to premium ranges over nearly a decade and a half and the positives of India becoming a more and more important automobile hub are the reasons for Hyundai to think of a third plant here. Keen to expand Hyundai's profile beyond automobile, Chung said "we hope to further expand in India in areas such as shipbuilding, construction and railway." All the proposed ventures will boil down to using large quantities of flat and long steel products as they will create large numbers of direct and indirect employment requiring various skill sets. No doubt global interest in India has revived in a significant way with Modi's accession to power on 26 May last year. What in particular is helping to win the confidence of foreign investors is New Delhi's promise of a "stable, predictable and transparent taxation system" and fast tracking of major project approvals.

Hyundai's third plant proposal and prior to that major investment decisions by Maruti Suzuki, Ford and Honda are all expression of faith in the new India story. In a remarkable feat, the Indian automobile industry raised exports of vehicles by 15% to 3.5 million units during 2014/15 defying flat demand in many markets. In a few months, the country will be ready with the automobile mission plan for the period 2016–26 under the 'Make in India' umbrella. But a consensus is already there in government and industry circles that India's car market has the potential to grow to six million plus units by 2020. Assuming

that on average a car weighs 1,300kg and in India steel mostly finds use in its making unlike in the US and Europe where aluminium, composites and plastics are making steady inroads as replacement materials, the automobile sector here will continue to flourish as a major steel consumption point.

Naturally, Steel Authority of India Limited (SAIL) chairman Chandra Shekhar Verma is pinning high hopes on the whole transport sector, including automobile industry for steel demand generation. Ahead of his signing memorandum of understanding with ArcelorMittal for producing high quality automotive steel in India in a joint venture, Verma told this *DCI* correspondent "in auto grade steel local producers are required to do a lot more on quality and innovation fronts. This is leading SAIL to explore the possibility of tie-ups with an automotive steel leader. What is the point in developing the technology that already exists somewhere else." The technology that India needs in automotive steel as car makers become more and more demanding are globally available with only a few like ArcelorMittal, Nippon Steel & Sumitomo Metal Corporation and Posco. SAIL tie-up with ArcelorMittal will prove highly beneficial for both. Earlier Tata Steel made a tie-up with Nippon Steel and JSW Steel with JFE Steel Corporation.

As steelmakers in the public sector are arming themselves with more capacity and enlarging their value added products portfolio, the government at this stage is required to sufficiently raise steel import duties and also initiate anti-dumping measures on some products, particularly stainless steel so that arrivals of foreign origin steel in large quantities are discouraged. Sharp corrections in steel prices in the country in the last few months had got much to do with imports surge, especially from China, Japan and South Korea. Arguably, it is time New Delhi brought to bear upon Japan and South Korea that steel needed to be taken out of the comprehensive economic partnership agreements (CEPA) that India had signed with them. CEPA provides for yearly reduction in Indian duties on steel imports from the two Far Eastern countries till these become nil by 2016/17. This is a concession which India is no longer in a position to extend. The reason is that the country is investing heavily in creating new steel capacity, while demand growth for the metal has remained low. (World Steel Association found Indian steel demand growing 1.8% in 2013 and then 3.4% in the following year.)

SAIL alone is in the final stages of completing investment of Rs72,000 crore to lift hot metal capacity from 14.4mt to 23.5mt. Moreover, the blueprint for further expansion of SAIL capacity to 50mt by 2025 is being made ready. Like SAIL, Vizag Steel in the public sector and several leading steelmakers in the private sector are engaged in creating new capacity in most cases using best technologies and plant and machinery available anywhere in the world. But domestic capacity growth in times of subdued economic activity and demand restraining steel imports are inflicting injuries on Indian steel industry. In this country's bilateral trade with China of $70.59 billion in 2014, recording a year-on-year rise of 7.9%, India had a trade deficit of $37.8 billion. During his recent visit to China, prime minister Modi told his Chinese counterpart Li Keqiang that the trade deficit issue needed to be addressed. China reining back on steel exports to India could mark the beginning of correcting trade imbalance.

Modi has given a call to investors from all over the world to "come, make in India; come, manufacture in India. Sell in any country of the world, but manufacture here." What holds promise for the country's manufacturing industry and steel and other metals in the upstream is that Modi's 'Make in India' campaign has struck the right chord among investors abroad. Much benefits will befall the local steel industry if railway minister Suresh Prabhu manages to mobilize funds to give shape to the proposal to raise track length by 20% from 114,000km to 138,000km, annual freight carrying capacity to 1.5 billion tonnes (bt) from 1bt and daily passenger carrying capacity by 9 million to 30 million over the next five years. As the world's second-largest railway network found in India expands, demand will be made primarily on Bhilai Steel to supply increasingly large quantities of extra long rails allowing safe movement of wagons and coaches running at higher speeds and with bigger loads.

In the nation's drive to have a high degree of self-reliance in defence, the steel industry is rightly seeing a window of opportunity. During a recent visit to Rourkela Steel Plant where a newly commissioned mill is making 4.3m- wide plates, Modi said stepped up local defence production, including tanks and warships would "generate good demand for plates and other steel products." India is the world's largest buyer of weapons accounting for about 15% of global arms imports. It cannot be otherwise since the country is nearly 70% import dependent for defence wares. India has a programme to spend over $130 billion over the next seven years to equip the army with modern weapons.

In its pursuit to reduce import dependence on defence procurement, New Delhi as part of the 'offset policy' requiring at least 30% local procurement of value of defence contracts is pushing potential suppliers of military hardware to manufacture parts and components here in partnership with Indian companies. Such JVs are expected to make defence components for domestic and world markets. A steel ministry official says, "unlike sectors like infrastructure and construction, defence procurement generally remains immune to GDP growth. So local steelmakers will be assured of steady demand from military hardware manufacturers for a wide range of products and also in large quantities." The steel industry globally is going through hard times in spite of major falls in iron ore and metallurgical coal prices. India is no exception. But the future of the industry here is bright since for many years, the country will have to invest heavily to build urban and rural infrastructure and expand the manufacturing sector to become a major supplier of a wide range of products to the world. In all such endeavours steel will be much in demand. DCi

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Liverpool in 'Motorways of the Sea' fast lane

City region to host international logistics conference which will shape EU policy

The UK city of Liverpool has hosted a major international conference concerning logistics infrastructure and the European Commission's £1+billion Motorways of the Sea initiative. 'Motorways of the Sea' is designed to streamline and promote new intermodal maritime-based logistics chains across Europe.

The city was selected to host the event thanks to both its historic prominence as one of the world's great ports, plus the opportunities being opened up by the current £1 billion Superport-related investments in logistics facilities across the city region.

The conference took place in late May, and attracted hundreds of delegates from ports and shipping bodies across Europe, Commission policy makers, plus UK businesses and academics keen to get the latest information on EU funding and policy developments relating to the Motorways of the Sea programme, plus forge new international links.

The keynote addresses included former Deputy Prime Minister and Ship's Steward, Lord Prescott. Technical sessions showcased learning and solutions from 20 EU-funded projects, and highlighted key issues to be addressed via future EU policy and funding. Lord Prescott said: "Like me, Liverpool has the sea in its blood and I am very pleased to be involved in this event. I applaud the city's renaissance linked to this vitally important sector, and look forward to sharing my own vision for enhanced multimodal connectivity along the corridor from Liverpool–Hull as critical gateways to markets in Ireland, Northern Europe and beyond, with the economic benefits this will bring."

The conference is further evidence of the growing stature of Liverpool in the fiercely competitive logistics market as a key driver of international trade.

Superport

Liverpool is an integrated cluster of multi-modal logistics assets and expertise that will deliver faster, cheaper, greener post-Panamax global market access for trade to and from the northern UK and Ireland, with the potential to create up to 20,000 jobs over the next ten years.

Superport Liverpool provides rapid reach to a market of 35 million people within a 150-mile radius, stretching from the Port of Liverpool along the Manchester Ship Canal and the extensive northern UK road and rail network, encompassing two airports, Britain's manufacturing heartland, three Enterprise Zones, and the highest density of warehousing in the UK.

Superport Liverpool is already undergoing £1+ billion intermodal infrastructure investment, and from 2016 the new deep-water Liverpool2 terminal will be able to service 95% of the world's largest ships, opening up faster supply chain transit for at least 50% of the existing UK container market.

The Liverpool City Region is home to some of the world's leading maritime, logistics, energy, retail and manufacturing operations — ACL, Bibby Group, Cammell Laird, Cargill, CMA CGM, Dong Energy, General Motors, Iberdrola, Ineos, Jaguar Land Rover, Maersk, NSG Pilkington, QVC, Stobart, TJ Morris, Unipart, Unilever — which continue to invest here, providing optimal commercial opportunities, expertise and skilled workforce in terms of efficient, low-cost, international freight distribution.

The little but tough Princesse Chloe Floating Crane, able to handle more than 800,000 tonnes of coal in one month thanks to Logmarin design, Liebherr and Bedeschi cargo handling equipment

Ship buyer asks EC to reconsider beaching as recycling option

European Commission's decision on beaching needs to be based upon up to date information warns GMS

Major ship buyer GMS has called upon the European Commission to think carefully before banning beaching as an option for recycling European ships following the very positive study visits by a Japanese delegation and representatives from the Danish Shipping Association (DSA) to shipyards in Alang.

The improvements made by some of the yards have led to a rise in standards to ensure compliance with the forthcoming Hong Kong Convention. The DSA is on record as saying in an article on its website that: "We consequently saw, among other things, workers wearing safety equipment and undergoing six-monthly routine medical check-ups. We also noted that the shipyards were engaged in operations such as asbestos handling, and regularly compiled reports from water and soil pollution tests etc. Finally, we were able to personally observe that three of the shipyards had laid a concrete base beneath the beach to stop seepage of harmful substances."

A beaching ban by the European Commission will be counterproductive as it would discourage improvements in the ship recycling industries of South Asia.

Firstly, it will mean that EU-flagged ships will be able to be recycled only in Turkey and China. The Turkish recycling market has a finite capacity with only 20 small yards and China's demand for steel from recycled ships varies greatly year to year. Currently there is little demand in China for scrap steel and there has not been for about a year-and-a-half. This situation will undoubtedly lead to some EU-flagged ships changing flag to register with states where no such ban is imposed to allow them a realistic choice of recycling destinations.

Secondly, prices will also be severely affected as EU-registered ships forced to deal with only Turkish yards could face a collapse in value. Traditionally, southern Asian prices have been higher by about 40–60% than in Turkey and China due to the higher demand and value for ship steel, machinery, equipment, spares and ancillary items. Incidentally, most of these items are re-used; a more environmentally friendly option.

Banning beaching will only discourage other yards in the region from raising standards, thereby destroying the current 'virtuous circle' of improvements among shipyard owners in Alang.

If all yards in India are excluded from European approval, regardless of the improvements they have made in their infrastructure and work procedures, they will have no interest whatsoever to support their government's ratification of the Hong Kong Convention.

Finally, and perhaps most importantly, for the European Commission to base its decision on beaching on secondary data (instead of primary investigation) is illogical. There is no reasonable justification for the European Commission to punish its own members without thorough analysis.

So for these reasons GMS urges the Commission to see for itself the improvements that have been made by some of the shipyards in Alang and has extended an open invitation to officials from the Commission, and to officials from EU member states responsible for ship recycling. "The last visit by officials from the EU was back in 2009 and much has changed for the better since then. It would be a travesty of justice now that yard owners in Alang are making huge improvements to working conditions for the EU to make a decision without seeing for themselves the positive changes made in the region. GMS would be happy to organize such a visit," said Dr Anil Sharma founder and CEO of GMS.

GMS

Established in 1992, GMS is the world's largest buyer of ships, having concluded into the Indian sub-continent during 2014, more vessels and lightweight ships than the next four competitors combined and buying more ships on an 'as is, where is' basis than any other cash buyer in the world.

It is the world's FIRST ISO 9001 certified cash buyer with a proven track record spanning over two decades, and with more than 3,000 deals under its belt, it has grown to become the leader of the ship recycling industry.

Many of the world's largest ship owners sell their vessels exclusively to GMS. In 2012 alone the company recycled over 16.5 million DWT (i.e. roughly 300 ships) or nearly one third of the world's fleet sold for recycling.

Over the years GMS has succeeded in helping to modernize the ship recycling industry and, through its efforts, has done much to strengthen the credibility and transparency of the ship recycling sector. It has invested considerable resources into green recycling and continues to support ship recycling yards around the world in both an advisory and financial capacity. To date it has been responsible for 65% of the vessels which were offered for responsible ship recycling in India. Recently, with technical assistance of GMS, four ship recycling yards in Bangladesh were able to obtain Certification for ISO 9001, 14001, 18001 and 30,000.

GMS is also the first and only cash buyer to develop a Green Ship Recycling Program (GSRP) together with Germanischer Lloyd (GL) to meet the highest standards of Corporate Social Responsibility (CSR) in the ship recycling industry. GMS continues to lead the ship recycling industry with innovative and practical solutions. It participated in the deliberations leading up to IMO's Hong Kong Convention (HKC) on Safe & Responsible Ship Recycling and over the years has become the acknowledged 'voice' of the recycling industry in international fora.

GMS is the only cash buyer in the world with multiple offices in the USA, Germany, Dubai, China, Singapore, and Japan as well as exclusive representatives in all five of the major recycling markets including India, Pakistan, Bangladesh, China and Turkey.

The GMS Weekly newsletter is the most quoted and longest running report in the Ship Recycling Industry.

Time for a new palette?

slowing global trade growth could adversely affect trade of paints and coatings

Capesize charter rates have fallen dramatically.

What has world trade got to do with demand behaviour of marine paints and coatings? *asks Kunal Bose.* A lot, since it boils down to at what rates ships for dry bulk and liquid cargoes and containers will be hired. This, in turn, has a decisive bearing on shipping capacity available at a given point and orders for new vessels placed with shipyards in different countries. With daily charter rates for Capesize vessels down from a peak of over $100,000 per day in 2008 to less than $10,000 now, shipping companies hardly able to recover costs, including servicing of mountains of debts have expectedly become highly circumspect in placing new orders for vessels. Two consumption points of marine paints are shipyards and ship repairing dockyards, both getting more and more concentrated in Asia, particularly in China and South Korea.

It's no music to the ears of marine paints manufacturers that Adam Slater, economist at Oxford Economics is forecasting that world trade will "expand by just 2.6% this year, down from 4% in 2014 and by only around half of its long-term average pace. Indeed, the projected pace of world trade growth looks more akin to that seen in world recessions than periods of recovery." Slowdown in world trade growth will be largely on account of China, which has started losing its voracious appetite for commodities as its manufacturing imports have started to come off a cliff. In the meantime, a Goldman Sachs report says a sharp deceleration in dry bulk trade in a situation of shipping market oversupplied with vessels will continue to put downward pressure on the dry bulk freight market at least until 2020.

Goldman report says "the size of the fleet [Capesize and Panamax vessels] doubled between 2008 and 2015, and the current order books will ensure that shipping capacity continues to grow until 2017, when vessel retirements will finally outweigh new deliveries." Such rapid growth in shipping tonnage in turn spelt good times for marine coatings and paints manufacturers. The prospect marine paints manufacturers dread the most is fall in order for new ships. Their margins sufficiently squeezed, ship owners are also prone to postponing vessel repairing and maintenance work without of course breaching safety regulations. And all this is exactly what is happening. Despite the travails of shipbuilding enterprises in all continents and mounting pressure on them to offer discounts in order to secure new vessel orders, a new research report says the global marine coatings market at $7.65bn in 2013 will expand at a compound annual growth rate (CAGR) of 6.5 between 2014 and 2020 to reach $11.88bn.

The report '*Marine Coatings Market – Global Industry Analysis, Size, Share, Growth, Trends and Forecast, 2014-2020*' is authored by the US headquartered Transparency Market Research. Reacting to the 2020 market size forecast, an Indian official of a multinational paints company says the report authors seem not to have factored in the shipping industry caught in a rough weather, which is unlikely to go away anytime soon. Where, however, the report is absolutely on target is its saying the phenomenon of "Asia Pacific dominating marine coatings and paints demand over the past many years in line with migration of shipbuilding capacity from the West to the East is to continue till the decade end."

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Since a tiny section of the world population will ever indulge in extreme luxuries irrespective of how well or badly the economy fares, leisure boats or yachts tending to be bigger and bigger in size are "projected to be one of the fastest growing applications for marine coatings and paints during the forecast period," says the report. Ships plying coastal routes have remained the largest application segment for coatings and paints over the past few years. Coastal shipping found to be cost effective in an environment friendly way by many countries with long coastline like India is seeing steady expansion. India has a coastline of 7,517km.

The report observes that rapid growth of shipbuilding and repairing dockyards in some Far Eastern countries and more recently in south-east Asia too, is the key factor for "growth of marine coatings industry in Asia Pacific." Based on ships gross tonnage completion in 2014, China (22.682mt [million tonnes]) topped the list followed by South Korea (22.455mt), Japan (13.421mt), the Philippines (18.78mt) and Taiwan (600,000 tonnes). Germany comes next with completed tonnage of 519,000. A fall in new ship orders in the last few years impacted sales of marine coatings and paints. But this was compensated to some extent by growth in offshore sales. This became possible as major shipyards in South Korea and China instead of idling capacity and manpower started focussing on offshore structure construction like drill ships, jack-up rigs, semi-submersible rigs, and floating production, storage and offloading units and offshore platforms.

Economic logic and logistics considerations demand that marine coatings and paints should be made in countries hosting large shipyards. All this besides, as the Norwegian multinational paints manufacturer Jotun realized quite early that making a breakthrough in a market like South Korea is difficult unless it has a tie-up with a local paints group and even better a manufacturing base in the host country. In the beginning in the late 1970s, Jotun managed to get some orders from South Korean shipyards because of recommendations from European customers. But once Jotun joined hands with Chokwang Paint, Korean business started making rapid progress resulting in acquisition of a local paints manufacturing unit followed by commissioning of a factory with capacity of 40m litres in 2009. A leading manufacturer with many technology breakthroughs in marine paints, Jotun has "60 companies in 39 countries to serve a wide range of customers wherever they are."

Every other major paint manufacturer based in Europe, the US and Japan has followed an identical route of securing 'local presence' in Asian countries. Announcements of adding capacity to existing plants and building of new factories in various Asian centres are made by the likes of AkzoNobel of the Netherlands and Nippon Paint Marine Coatings of Japan at regular intervals. AkzoNobel will be creating a new manufacturing facility with initial capacity of 45,000 tonnes in Thailand's Hemaraj Eastern Seaboard Industrial Estate to "support regional growth of its performance coating business." The plant will be ready for commissioning in the third quarter of 2016. Similarly, the company is expanding its manufacturing footprint in Indonesia, Singapore and Australia. For most paints MNCs, business in Asia has experienced double digit growth in last five years. "In future too when the world leaves behind economic uncertainties a legacy of crippling global recession of 2008 and order books of shipyards become fuller, the Asia Pacific region will deliver the most in terms of demand growth of marine coatings and paints," says the official.

The die has been cast as to how industry leaders will manage their business in future. While research and development work focussing on making marine paints more and more environment friendly and also allowing ships to move faster at lower fuel consumption will be done at centres in Europe, the US and Japan, MNCs remain committed to expanding production base in places where shipbuilding and repairing operations are concentrated. During his recent visit to Japan and South Korea, Indian prime minister Narendra Modi said he wanted shipbuilding to become an important strand of the 'Make in India' campaign. Similarly, Vietnam remains committed to expanding its shipbuilding industry. No wonder, both India and Vietnam figure prominently in market development strategies of paints leaders.

R&D came in the forefront in the 1990s and has since continued to claim higher and higher industry budget in response to significant expansion of legislative activities covering ban in use of tributyltin (TBT) anti-fouling paint, prevention of air pollution and vessel energy efficiency (here paints have a role to play) and growing vigilance by NGOs. Now in a highly competitive environment, paints groups are offering varieties of tin-free anti-fouling paints which not only give protection to underwater hull but also protects marine environment. How companies are responding to competition will become clear from Jotun launching "a unique hull performance solution (HPS), which combines premium anti-fouling backed by technical service and reliable tools to measure hull performance over time with money back guarantee to ship owners and operators in case performance does not match with what is promised."

Gaining cost efficiency and compliance through eco efficiency technology

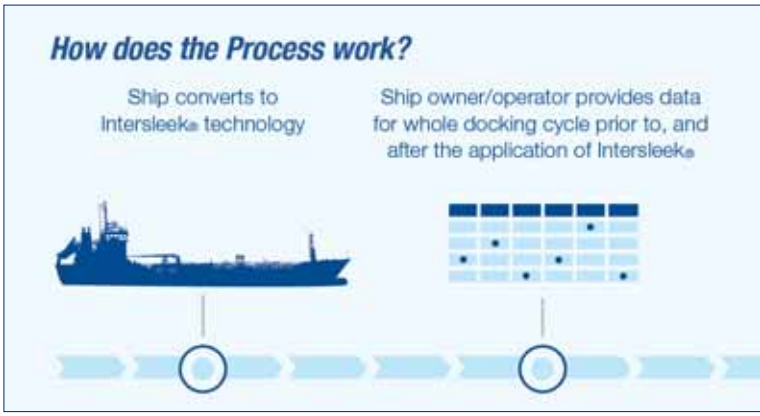
GAINING COST EFFICIENCY AND COMPLIANCE THROUGH ECO EFFICIENCY TECHNOLOGY

Despite the recent drop in bunker prices it is still vital for dry bulk ship owners and operators to seize all opportunities to introduce measures that unlock heightened levels of operational and environmental efficiency. A combination of environmental legislation and significant over-capacity driven by a continued decline in coal and iron ore trade in China means maximizing profitability through energy efficiency is now board level priority. Put simply by the president of one US-listed bulker firm: "Environmental benefits are good for everyone. But fuel savings are good for the companies and shareholders."

This statement rings true across all shipping markets where eco efficient vessels are becoming more marketable on the back of reduced bunker bills and emissions output, increasing their competitiveness in the eyes of the charterers. However for the dry bulk sector this combination of savings could be fundamental to the market's survival; with some analysts predicting that freight rates will not reach breakeven levels until 2017. Therefore ship owners who are unable to implement strategies that drive greater efficiency, risk not only a dip in profitability but also business continuity in worse-case scenarios.

These far-reaching consequences mean the dry bulk sector is united with other areas of the shipping market that are turning to eco efficiency technologies to drive greater operational and environmental efficiency. And the inherent need for all vessels to be protected is one of the key reasons many ship owners and operators prioritize hull coatings as their clean technology of choice. Indeed many industry leaders are choosing advanced biocide-free foul release coatings such as Intersleek1100SR®, the latest product in the Intersleek® range offered by AkzoNobel's Marine Coatings brand, International®.

Intersleek® technology has been proven to increase a vessel's efficiency and reduce CO_2 emissions and associated fuel costs by an average of 9%. Intersleek1100SR® is the coatings industry's first biocide free, fluoropolymer technology that tackles the market's age-old "slime challenge". Slime is a complex, varied and dynamic organism that begins to colonize surfaces as soon as they enter the water, and has been proven to have an adverse effect on the efficiency of all vessel types. Indeed, every year it can cost the shipping industry 44 million extra tonnes of bunker fuel and an extra 134 million tonnes of CO_2 emissions. In addition to Intersleek1100SR®'s slime busting capabilities, from a wider environmental perspective the coating has higher volume



solids and lower applied film thicknesses than other fouling control systems. This typically results in a 40% reduction in paint volume and 60% reduction in VOC emissions for first time application. At future dockings it can reduce paint usage by around 75%, VOC emissions by over 80% and waste packaging by over 60%.

The benefits of Intersleek®1100SR in reducing fuel consumption and associated emissions can also create additional bottom line benefits for dry bulk ship owners and operators who enrol their vessels into International®'s carbon credits scheme. This is the first methodology of its kind developed for the shipping industry in conjunction with The Gold Standard Foundation, which enables users to reap additional financial benefits on top of the operational, environmental and energy efficiencies achieved using Intersleek® by claiming carbon credits based on the CO_2 savings that are generated. Based on the 100 eligible ships already converted from a biocidal antifouling to Intersleek®, there is an estimated total of $2.8m worth of carbon credits potentially available to ship owners and operators. The first carbon credits claims, worth a combined total of almost $500,000, will be imminently awarded to two ship owners that enrolled 17 vessels into the programme.

While hull coatings are the most widely used eco efficiency technology in the shipping industry there are still barriers that are preventing the widespread uptake of clean technologies in general. One of the core challenges to be addressed is the understandable requirement from ship owners and operators to see a tangible rate of return on investment prior to the installation of hull coatings or indeed any other eco efficiency technology.

International® recognizes this and is working to address the issue through its latest research into a new methodology that assesses the impact of hull roughness on a vessel's efficiency both at dry dock and after a coating application, as well as during

the subsequent dry docking cycle. The research builds on the landmark work of Dr Bob Townsin, the first researcher and academic to establish the important link between hull roughness and ship powering in the 1980s. While Townsin's methodology is upheld by the shipping industry today, trends in hull coatings, ship yard practices, environmental changes and regulations, as well as vessel design and operation have altered considerably over the past 30 years. Consequently, International® aims through its research to develop an updated model that accurately reflects the changing dynamics of the shipping industry.

In the wake of depressed freight rates and an uncertain future largely dependent on dwindling coal and iron ore trade in China, the dry bulk sector is rightly targeting more efficient operations in order to maintain healthy profit margins. By converting vessels from a biocidal antifouling to International®'s Intersleek® range, dry bulk ship owners and operators can fulfill the inherent requirement to coat their vessels while benefiting from fuel savings and reduced CO_2 emissions that can be converted into carbon credits to boost income further.

However, before adoption of eco efficiency technologies can become widespread, ship owners and operators must first be satisfied that in exchange for their investment, the benefits promised to them by technology providers can be delivered. This is particularly important in the dry bulk sector that operates within razor thin margins and must spend every dollar wisely. There is still work to be done by technology providers to build the proof and trust that the dry bulk sector rightly demands before investing in eco efficiency technologies. Developments such as the carbon credits scheme, which financially rewards investment, as well as International®'s average hull roughness methodology offer an important tool through which greater confidence can be fostered, driving further update and supporting the long term sustainability and financial stability of the dry bulk sector.

PPG Protective & Marine Coatings' SIGMASHIELD™ applied to new hopper dredger

Case Study: SIGMASHIELD™ System

SIGMASHIELD™ System: Highly resilient protective system for high-impact and abrasive cargo operations works for Boskalis

Baggermaatschappij Boskalis B.V. (Boskalis) is a leading global maritime services company operating in the dredging, offshore energy and inland infrastructure sectors, *writes Sijmen Visser, Global Marketing Manager Marine, PPG Protective and Marine Coatings*. The organization operates in over 75 countries across six continents, with a versatile fleet of over 1,100 vessels and equipment.

Boskalis is active in the energy, ports and infrastructure markets, with a wide range of clients including oil companies, port operators, governments, shipping companies, international project developers, insurance companies, and mining companies.

The challenge

The *Causeway*, the company's new hopper dredger handles large amounts of highly abrasive, heavy materials. The challenge was to find a coating that would withstand the persistent abrasion to the steel surfaces due to the constant loading and discharging of sand and stones.

The solution

Following two years of extensive testing, PPG Protective & Marine Coatings (PPG) worked with Boskalis to provide the SIGMASHIELD System.

PPG applied a system comprising the SIGMASHIELD 1090 product as an under layer with the SIGMASHIELD 1200 coating as a finish layer on top to the Causeway at the Shipyard Boer, Sliedrecht, The Netherlands.

The SIGMASHIELD 1090 product is a two-component, solvent-free polyamine-cured epoxy compound. After blasting the total area, one layer of SIGMASHIELD 1090 was applied.

Following this, to obtain a very smooth surface, the SIGMASHIELD 1200 coating was applied on top of the SIGMASHIELD 1090 product. The SIGMASHIELD 1200 product is a two-component, abrasion-resistant, solvent-free, phenolic epoxy coating that gives the system additional abrasion- and impact resistance. As a result of its smooth finished surface, the sand and mud will discharge faster and therefore less cargo will remain in the hopper.

The benefits

The combination of the SIGMASHIELD 1090 and SIGMASHIELD 1200 coatings produces a hard-wearing, smooth surface ideally suited to areas that are subject to heavy impact and abrasion from a variety of damaging cargoes.

The key benefit for the owner on this vessel is that abrasion of the steel will be reduced and the steel thickness will therefore remain intact for a prolonged period, which is a significant financial benefit as steel renewal is a costly investment for the owner.

SIGMASHIELD 1200

- excellent resistance to heavy impact and abrasion;
- smooth surface reduces damage from cargo handling;
- solvent-free technology – no VOC emissions;
- reduced explosion risk and fire hazard;
- can be applied by heavy duty, single-feed airless equipment;
- suitable for new-build, and maintenance and repair SIGMASHIELD 1090;
- exceptional protection against heavy impact and abrasion;
- seamless, water-impermeable layer with excellent anticorrosive properties;
- can be exposed to water after 30 minutes;
- excellent adhesion under wet- or dry exposure;
- solvent-free technology – no VOC emissions; and
- suitable for decks exposed to heavy impact and abrasion.

The result

Outstanding protection of the steel due to the excellent resistance against abrasion and impact.

Following the success of the project, Boskalis awarded PPG the task of applying the same coating system for the *Strandway*, a further hopper dredger.

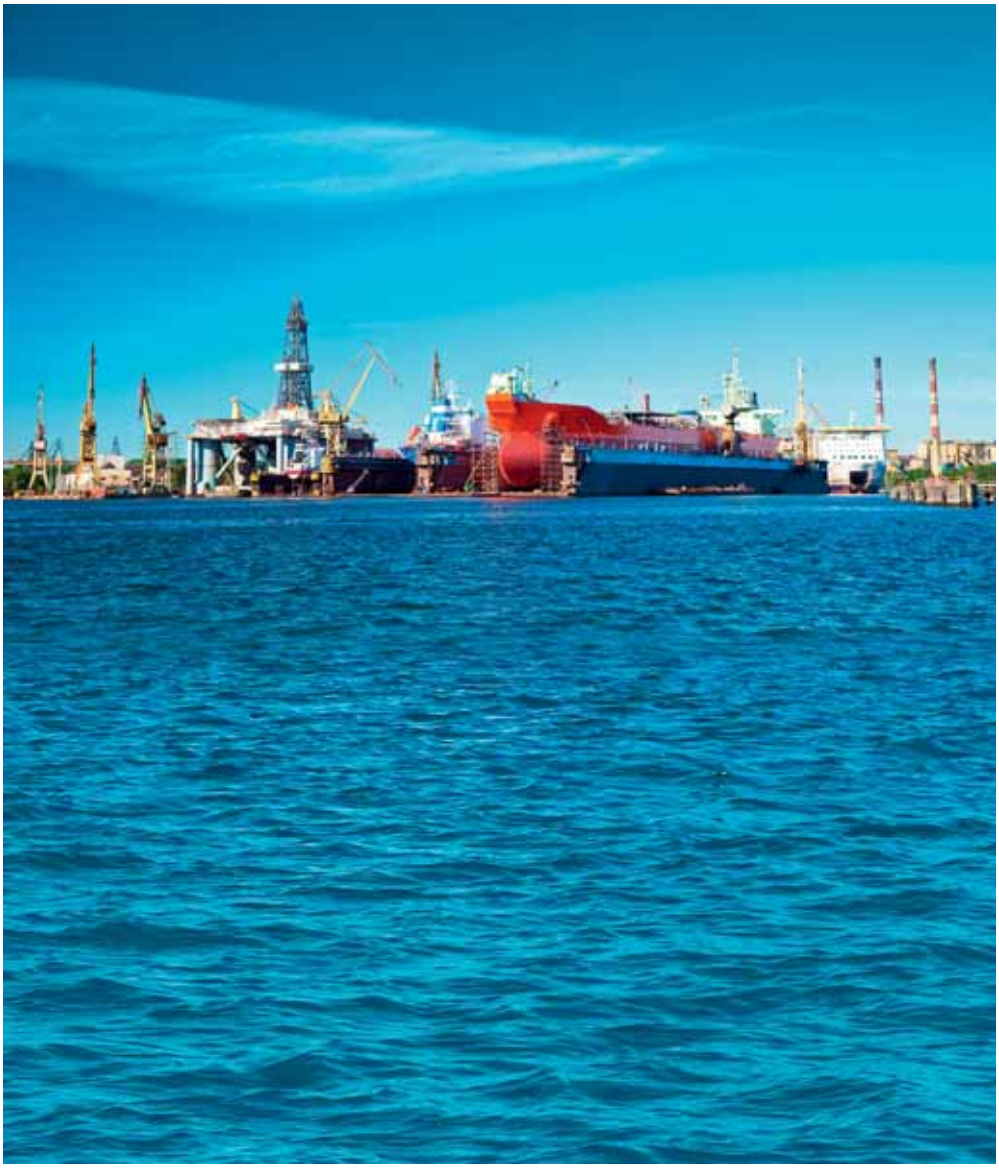
PPG will monitor this vessel with the owner to record and quantify the long-term benefits and cost reduction resulting from the application of the SIGMASHIELD products.

PPG: Bringing Innovation to the Surface™

PPG Industries' vision is to be the world's leading coatings company by consistently delivering high-quality, innovative and sustainable solutions that customers trust to protect and beautify their products and surroundings. Through leadership in innovation, sustainability and colour, PPG provides added value to customers in construction, consumer products, industrial and transportation markets and aftermarkets to enhance more surfaces in more ways than does any other company. Founded in 1883, PPG has global headquarters in Pittsburgh and operates in nearly 70 countries around the world. Reported net sales in 2014 were $15.4 billion. PPG shares are traded on the New York Stock Exchange.

Bringing innovation to the surface is a trademark of PPG Industries Ohio, Inc.

News from major coatings manufacturer Hempel



Hempel launches a new high-performance range of pure epoxy PSPC compliant coatings for the marine new-buildings market

Maintaining its strong position in the market, in March this year the world-wide coatings manufacturer Hempel launched HEMPADUR QUATTRO XO — a high-performance range of pure epoxy PSPC-compliant coatings for marine new-buildings.

Although specifically developed for ballast water tanks in new vessels, the new coating can also be used as a uni-primer for most vessel areas — above and below the waterline — providing high-quality performance and peace of mind for customers.

IMO requires the use of a PSPC certified coating for water ballast tanks and the launch, today, of a new range of pure epoxy coatings represents the latest state-of-the-art in pure epoxy technology which delivers optimized performance based on customer requirements.

HEMPADUR QUATTRO XO offers:

- state of the art high-quality pure epoxy technology;
- high efficiency for yards due to fast drying and year around applications from –10°C to +40°C; and
- the option to upgrade with aluminium pigmentation and proprietary fibre reinforcement technology to enhance anti-corrosion properties and long-term durability with reduced maintenance expectations.

Developed specifically with customer requirements in mind, HEMPADUR QUATTRO XO consists of a range of high-quality pure epoxy coatings to suit the different yard working methods and VOC requirements. Longer re-coat intervals are required in Korea and Europe whereas shorter intervals have been adopted in China and the Americas. Similarly, Korea and the US prefer 80% volume solids whilst China mainly works with 60–70%.

For the shipowner, charterer or ship-management company, the high quality and robustness of QUATTRO XO gives peace of mind and reduced maintenance costs.

Speaking at the launch in March, product manager Roger Chen commented: "This new product range has been in development for three years and builds on the wide success of our existing HEMPADUR QUATTRO family of epoxy coatings. Making use of the state-of-the-art pure epoxy technology and providing opportunity to reinforce performance with aluminium pigmentation and proprietary micro-fibre reinforcement technology ensures exceptionally high protection at a reasonable price. We have listened carefully to our customers and produced the new XO coating to tie in with their specific requirements."

Two innovative pure epoxy coatings launched by Hempel

In January, anticipating industry changes and responding to customer demands, Hempel announced the launch of two new pure epoxy coatings.

HEMPADUR 15600 – changing the game for newbuild tank coatings

A much-awaited addition to the HEMPADUR range, HEMPADUR 15600 is a ground-breaking IMO PSPC cargo oil tank compliant, pure epoxy tank coating resistant to continuous immersion in a range of chemicals, including crude oil up to 80°C/176°F. It delivers significant benefits not seen before in a single pure epoxy product:

- a two coat system which reduces expensive application times.
- more flexibility and savings to the yards — unlike most tank coatings that require a minimum ambient temperature of

HEMPAGUARD®

First industry satisfaction guarantee on hull coatings

Based on patented ActiGuard® technology, HEMPAGUARD® is a Fouling Defence coating utilizing a unique combination of hydrogel and high-performing biocide. It is recommended for any type of vessel with any trading pattern as well as during extended idle periods.

Hempel is the first hull coating manufacturer to offer a satisfaction guarantee. We believe that nothing compares with the HEMPAGUARD® Fouling Defence System. If you are not satisfied with the performance of our top-of-the-range HEMPAGUARD® X7 coating, we will pay for conversion back to a conventional antifouling*.

Find out more at hempaguard.hempel.com

NEW
ActiGuard®
Technology

*Conditions apply. For more information contact your local sales office. Use biocides safely. Always read the label and product information before use.

around +10°C/50°F, HEMPADUR 15600 can be applied at temperatures as low as –5°C/23°F.

- fast drying and recoating time — surface dry after two hours and re-coatable after only four hours at 20°C/68°F, is substantially faster than current available tank coatings in the market.

In addition, this new pure epoxy coating incorporates high cross-link density technology on level with a phenolic epoxy coating, which gives added chemical and corrosion resistance and a hard, smooth and glossy surface for easy cleaning.

Global product manager Michael Aamodt says: "IMO requires liquid cargo tanks to be coated with a type approved compliant product and our customers want a coating that delivers greater protection, more flexibility and at a reasonable price. HEMPADUR 15600 is the only product that can deliver that winning combination in a single coating"

HEMPADUR 15600 is also suitable for grey and black water tanks, mud and brine tanks, refrigerated seawater fish tanks and other vessel tanks.

HEMPADUR EASY 47700 – the all-rounder for vessels in dry-dock

HEMPADUR EASY 47700, also launched in January, is a brand new pure epoxy 'all seasons' primer designed for the marine maintenance market. It was developed in response to demands for a reliable, user friendly and flexible coating for use in dry-dock under all climate conditions. This new coating can be used on almost all vessel surfaces (above and below the waterline) and delivers:

- high surface tolerance — as this is a repair product, surfaces to be painted might not be in the best of conditions. HEMPADUR EASY 47700 can be applied to a variety of surfaces.
- reliability across the temperature scale — HEMPADUR EASY 47700 can be applied at temperatures as low as –10°C/50°F and up to +40°C/104°F which allows it to be used in most dry docks and at most times of the year.

Commenting on the new coating, Aamodt says: "The coating requires minimal expensive surface preparation and its fast drying and recoating time means that the vessel spends less time in dock. This saves money for the owner. On top of that, its wide application and all season use both for cold and hot humid climates are why we've called it EASY".

Hempel's new fouling defence system wins Shipping Efficiency 2014 award

Late last year, HEMPAGUARD®, a ground-breaking hull coating concept from Danish coatings manufacturer Hempel, won Shipping Efficiency's prestigious Environmental Technology award. Presented in October 2014, the award is an endorsement of a technology that "makes a significant contribution to environmental impact reduction or prevention to ships."

Judges on the panel included ABS Director of Energy Efficiency, Jan Otto de Kat; and the Secretary General of the International Chamber of Shipping & International Shipping Federation, Peter Hinchliffe.

Hempel's HEMPAGUARD® was launched in 2013 and has shown an outstanding resistance to fouling during idle periods, significant fuel savings and is providing shipowners with trading flexibility. The coating was over five years in development and was introduced to the shipping industry against a backdrop of rising bunkering costs, tightening environmental regulations and the introduction of mandatory Ship Energy Efficiency Management Plans (SEEMP).

HEMPAGUARD® is based on Hempel's patented ActiGuard® technology. ActiGuard® integrates silicone-hydrogel and full diffusion control of biocides in a single coating. Surface retention of the biocide activates the hydrogel, which effectively holds fouling organisms at bay, cutting friction to a minimum while utilizing a minimum amount of biocide. It also has the long-term stability and mechanical properties required of a durable solution.

Claes Skat-Rørdam, Fouling Control Manager, says: "We are proud and delighted that HEMPAGUARD® has been recognized by the expert judges on the Shipping Efficiency Award panel as an environmental leader. HEMPAGUARD® is a completely new technology that combines the best of both worlds: the smooth, fuel-efficient surface from silicone coatings and the durable protection against fouling known from antifoulings."

He added: "However, what is most remarkable about HEMPAGUARD® is that it releases 95% less biocide than traditional antifoulings and yet, it still has a significantly better performance. HEMPAGUARD® enables our customers

Hempel unveils new antifouling products

Building on the industry proven GLOBIC and DYNAMIC range of antifouling systems, Hempel has launched two new antifouling products for dry-dockings and new buildings which deliver fuel savings of up to 3% and provide added flexibility to shipowners and yards.

GLOBIC 8000 is a brand new hydrolysing self-polishing antifouling product that fits neatly between the existing GLOBIC 6000 and GLOBIC 9000 antifouling systems. It builds on proven GLOBIC technology to deliver premium performance at a reasonable price. It incorporates Hempel's nano acrylate technology which delivers a fine polishing control mechanism to bring the integral biocides to the surface at a stable rate ensuring a clean hull.

GLOBIC 8000 can be used on all vessels at all speeds but its nano acrylate technology binder makes it particularly effective for slow-steaming operations because of its instant activation of polishing and biocide leaching.

DYNAMIC 8000, also launched today, extends the current DYNAMIC range utilizing silylated acrylate technology to deliver an outstanding antifouling service at higher speeds.

Announcing the launch, Andreas Glud, Hempel's Group Product Manager said: "These two new products offer a wider choice for owners and yards and deliver exceptional value-for-money. They comprise 58% volume solids and can be specified up to 90 months dry docking interval. This, together with a 3% fuel saving, means that these antifouling systems offer an unparalleled return on investment"

He added: "Our GLOBIC technology has been widely accepted and well-tested by the market and our 6000 and 9000 products are in demand for all vessel types. GLOBIC 8000 provides an added dimension to this technology and offers a great alternative for those seeking a top-tier antifouling at an industry leading price".

Completing the suite of new products is BASIC which is Hempel's most economic antifouling suitable for up to a 36 month drydocking interval. It comes with 60% volume solids and a sufficient biocide package to deliver an optimal price/performance match.

All three new products also make use of Hempel's innovative micro-fibre reinforcement technology that enhances the mechanical strength of the coating to reduce cracking and peeling.

to improve their efficiency at sea, while reducing the impact on the environment. Apart from the fuel efficiency benefits of using HEMPAGUARD, it also allows operators up to 120 days idle."

Award organizer Fathom's Director of Strategy, Catherine Austin said: "We are absolutely delighted with the response the Ship Efficiency Awards has received from the maritime community, who have enthusiastically taken it on board — this is proven through the breadth and depth of nominations we received from the world over. It's truly fantastic to be a part of it."

HEMPAGUARD® shows excellent fouling resistance for up to 120 days during idle periods and fuel savings of 6% on average over a full docking interval.

Hempel offers a performance satisfaction guarantee contract for vessels complying with a full HEMPAGUARD® X7 specification (one of the two products in the HEMPAGUARD® series).

HEMPAGUARD® is also extremely flexible, covering all combinations of sailing routes and trading patterns. Unlike regular hull coatings that, in general, are specified according to the vessel's speed and activity level, HEMPAGUARD® retains its effectiveness when switching between slow and fast steaming.

Facts

HEMPAGUARD® releases 95% less biocide than a standard SPC (self-polishing co-polymer antifouling). Moreover, the biocide is retained on the surface, thus eliminating the need for polishing, as well as requiring only one coat compared to the two or three that are normally necessary for antifouling. The surface has the same smoothness as conventional biocide-free silicone-based fouling release coatings. Trials at sea and idle period tests over five years have demonstrated very high level of fouling prevention compared to standard SPC antifouling products.

HEMPAGUARD® is available in two formulations for docking intervals of 36 and 90 months and is recommended for all ship types whose owners wish to benefit from flexible trading, fuel savings and fouling defence at any speed or during idle periods.

Hempel continues to develop new products based on the ActiGuard® technology.

HEMPAGUARD® X5 offers sustained fouling defence for up to 36 months for any type of vessel with any trading pattern as well as for extended idle time.

- efficient fouling prevention during the entire service interval;
- based on Hempel's patented ActiGuard® low-friction fusion technology;
- combines the best from the hydrogel silicone and biocidal antifoulings;
- documented performance and a long track record; and
- guaranteed fouling resistance for up to 60 idle days.

HEMPAGUARD® X7 offers up to 90 months of extremely efficient fouling defence for any type of vessel with any trading pattern as well as for extended idle time.

- efficient fouling prevention during the entire service interval;
- based on Hempel's patented ActiGuard® low-friction fusion technology;
- combines the best from the hydrogel silicone and biocidal antifoulings;
- documented performance and a long track record; and
- guaranteed fouling resistance for up to 120 idle days.

About Hempel

Hempel is a renowned coatings supplier for the decorative, protective, marine, container and yacht markets. From wind turbines and bridges to hospitals, ships, power stations and homes, Hempel's coatings protect man-made structures from the corrosive forces of nature. Hempel owns, among other companies, Crown Paints. With a focus on R&D, advanced production techniques and professional coatings advice, Hempel works around the globe to help keep its customers' investments safe and attractive for a long time.

Damen Shipyards Group pilot: Thorn-D® outperforms traditional antifouling

Thorn-D® antifouling outperforms conventional antifouling coatings and is environmentally friendly. A pilot project which started one-and-a-half years ago, has proven that this new thin film coating performs better than traditional antifoulings. A real ecological and cost-efficient breakthrough for shipping companies and shipyards.

Thorn-D® pilot: economically friendly fibre versus smooth conventional coating

Dutch innovation and award-winning company, Micanti, in co-operation with Damen Shipyards, launched a pilot project in the Port of Amsterdam in February 2013.

Two virtually identical sister ships were treated with two different coatings. The *Castor,* a Damen Stan Tug 1907, was treated with a well-known conventional antifouling coating. The *Pollux*, also a Stan Tug 1907, was treated with the new foil, Thorn-D®. Both vessels operated at low speed in the Port of Amsterdam, under the same conditions and in the same waters.

Nylon fibres prevent marine growth on ships

"When I met Micanti's staff for the first time, I was sceptical about using fibres to prevent marine growth. And due to Thorn-D®'s textured surface as opposed to a smooth conventional coating, I expected an increase in drag and fuel consumption," remarks Willem Spoelstra, Manager Environment and Safety Nautical Department of the Port of Amsterdam. "But surprisingly enough, that was not the case. Thorn-D® lives up to its promise — it prevents marine growth without increasing drag."

Conventional antifouling coatings need movement to keep marine growth from adhering to the vessel. Thorn-D®, a fibre which acts as a physical barrier, does not require movement, and even works when a ship is moored. "We have measured the speed against its sister vessel Castor (built at Damen at the same time) on delivery. We have seen no differences at all. At present, fuel consumption is still at the level as it was at delivery. On top of this, Thorn-D® is 100% environmentally friendly, essential in reaching sustainability targets," says Spoelstra.

Non-conventional vessel coating reduces fuel consumption

Regular antifouling coatings fail earlier. The conventional coating is no longer effective once most or all of the toxins have leached into the water. Dr Rik Breur, founder of Micanti, explains: "Since Thorn-D® acts as a physical barrier against marine growth, it has a longer expected lifetime (guaranteed five years) than traditional antifouling coatings that already start degrading after six months."

More foul leads to an increase in drag and higher fuel consumption. The drag on Thorn-D has been tested at (Dutch) research institutes (TNO, Delft University of Technology and

MARIN) as well as in practice on operating vessels. The general conclusion is that Thorn-D® fibres do not increase drag due to a change in the hydrodynamic flow structure.

"Not only have our pilot project and research results proven Thorn-D®'s outstanding performance, our clients from the Middle East, for example, are also positive about our new product," adds Rik. "And these clients are constantly battling marine growth."

About Micanti

Dutch innovation and award-winning company, Micanti, founded in 2006, develops products for effective non-toxic fouling defence technology. Micanti strives to be the market leader for non-toxic antifouling through a patented technology by applying fibre thorns as a fouling repellent.

For years, the patented product Thorn-D has been tested and continuously improved in various environments.

About Port of Amsterdam

Port of Amsterdam manages, operates and develops the port. It ensures a safe, swift and environmentally responsible management of shipping traffic within its working area. The exploitation is aimed at port sites (rental and leasing), quays and water. In the entire Amsterdam port region a yearly amount of over 94 million tonnes of goods are being transshipped.

About Damen Shipyards Group

Damen Shipyards Group operates 32 ship- and repair yards, employing 9,000 people worldwide. Damen has delivered more than 5,000 vessels in more than 100 countries and delivers approximately 160 vessels annually to customers worldwide. Based on its unique, standardized ship design concept Damen is able to guarantee consistent quality.

Damen's focus on standardization, modular construction and keeping vessels in stock leads to short delivery times, low 'total cost of ownership', high resale value and reliable performance. Furthermore, Damen vessels are based on thorough R&D and proven technology.

Damen offers a wide range of products, including: tugs, workboats, naval and patrol vessels, high-speed craft, cargo vessels, dredgers, vessels for the offshore industry, ferries, pontoons and super yachts.

For nearly all vessel types Damen offers a broad range of services, such as maintenance, spare parts delivery, training and transfer of (shipbuilding) know-how. Finally, Damen offers a variety of marine components, especially nozzles, (flap-type) rudders, steering gear, anchors, anchor chains and steel works.

Damen Shiprepair & Conversion

In addition to ship design and shipbuilding, Damen Shiprepair & Conversion offers a network of 16 repair and conversion yards worldwide, with dry docks ranging up to 420 x 80 metres. Conversion projects range from adapting vessels to meet today's requirements and regulations to the complete conversion of large offshore structures. DS&C handles 1,500 repair and maintenance jobs annually. DCi

Self-unloading vessels

getting the lowdown

The dACC Tirreno: *d'Amico Coeclerici Group's Supramax vessel, delivered in March 2015.*

Jay Venter

Coeclerici Group celebrates 120th anniversary

Coeclerici Logistics, the logistics division of Coeclerici Group, bulk material transshipment company, has a history of more than 40 years in this specific field. The year 2015 will mark an important goal for the whole Coeclerici Group which will celebrate its 120th anniversary, over a century of success in various business industries, from trading to shipping, from mining to logistics, *writes Capt. Giordano Scotto d'Aniello, Head of Commercial Department.*

Even during this tough period for dry bulk commodities market, Coeclerici Logistics Division (CC) has been able to maintain and grow its position in the transshipper industry, ensuring for its clients reliable service and performance.

In order to maintain its brand-new fleet, CC decided in 2014 to sell one of its older Floating Storage & Transfer Stations, *Bulk Wayuù*, operating from 1998 in Maracaibo Lake, Venezuela, loading coal from barges to ocean-going vessels (OGVs).

During her long career, *BulkWayuù* handled more than 71mt (million tonnes), loading about 1,600 vessels at an average rate of 50,000 metric tonnes per day.

In early 2015, CC also sold the *FTS Bulk Kremi 1*, employed since 2000 in Black Sea to support the logistic of various steel mills and shippers operators, and the self-propelled *FTS Bulk Irony*, in operation since 2002, that handled more than 5.5mt of coal and iron ore in lightening operations in Italy.

Indonesia is confirmed to be one of the most important countries for the Coeclerici logistics business, where five Floating Transfer Stations are working in the Kalimantan area, receiving coal from barges and loading OGVs with best net loading rates – over 50,000 metric tonnes per day. During 2014, all of them handled a total of 17mt of coal.

Another important demonstration of the success of Coeclerici Logistics' operations in the country, is the achievement of the 50mt handled with its *Bulk Pioneer*, working for Kaltima Prima Coal from September 2005.

In order to improve the range of services to its customers, CC, with the support of its internal technical department, improved the loading equipment on board *FTS Bulk Celebes* to be able to perform blending operations, which permit to mix homogeneously two different grades of material up to 20–80%.

Blending is highly requested from the main players of the Indonesia coal market, giving to them a price advantage due to the possibility to offer a better and more specific product to the final users.

Last year Coeclerici achieved great results in Mozambique as well, where the two TUs (transshipment units) *Bulk Zambesi* and *Bulk Limpopo* are continuing their operations in Beira port, employed for offshore coal loading operations. Thanks to the great performances of the two units, Vale has been able to reach the target output of over 3.6mt of coal during 2014. Each of the sisters vessels are able to reach over 5,000 tonnes per hour as peak rate during loading OGVs.

The aim of Coeclerici for the near future is to strengthen its position in the transshipment market continuously creating innovative solution, engineering and promoting the use of 'floating terminals' throughout the world designing and developing different types of floating transshipment stations capable of lighterage /top-off operations, cargo transfer and self-unloading of many different dry bulk materials. These carry out all the same functions as a port terminal but with far smaller investments, lower management costs and less environmental impact.

The year 2015 also marks the return of Coeclerici to the dry bulk shipping market. The *dACC Tirreno* was delivered on the 26 March at the Oshima Shipyard in Nagasaki, Japan. She is the first of the four Supramax vessels belonging to the dACC Maritime Limited fleet, the joint venture established by the d'Amico group and Coeclerici in June 2013.

With a deadweight tonnage of 60,000dwt and measuring 200 metres long and 32.26 metres wide, the design of the *dACC Tirreno* stands out on the international shipbuilding market and meets the highest requirements in terms of safety, environmental protection, quality and efficiency.

The vessel is unique due to its innovation and safety, and is equipped with important technological 'upgrades' compared with the base model, which make it highly special.

In terms of energy savings and consumption, the vessel is equipped with a latest generation Man/B&W ME engine, electronic controlled with low rpm, which, combined with other innovative solutions regarding the hull and the propeller, will allow it to reach a cruising speed of around 14.5 knots with a daily fuel consumption of approximately 25 tonnes translated into savings of around 6/7 tonnes of fuel compared to similar modern vessels that are currently operational.

As further confirmation of the attention dedicated to the environment by d'Amico and Coeclerici, with regard to both possible marine contamination and harmful emissions, the ship is equipped with compartments dedicated to the recovery and treatment of water used to wash the cargo holds.

Additionally the vessels all have construction features complying to ENVIRO (certification of double plated oil and fuel deposits) and GP (certificate indicating the lack of harmful materials for the environment or contaminants in construction) certificate.

The delivery of the second sister ship is expected in September, while the third and fourth will be delivered in the second half of 2016.

EMS-Tech Inc. – new orders and deliveries

EMS-Tech Inc. Inc. successfully delivers transshipment system for Oldendorff Carriers' new 94,000dwt Post-Panamax bulk carrier

The *Alfred Oldendorff*, the latest addition to the Oldendorff fleet, was successfully delivered to her owners by New Yangzijiang Shipyard on 16 March this year. The *Alfred Oldendorff* arrived in Abu Dhabi, UAE on 7 April 2015, where she teamed up with the *E. Oldendorff*, a 77,000dwt transshipper with an EMS-Tech Inc. system delivered in 2008, to handle iron ore for use in steel mills in UAE and other Middle East countries.

The new Oldendorff vessel is an eco-type 94,000dwt Post-Panamax self-unloading and transshipping bulk carrier that features an innovative EMS-Tech Inc. system. The EMS-Tech Inc. self-unloading system is rated for discharge of iron ore at 3,500tph (metric tonnes per hour), and features 5 stationary receiving hoppers with EMS-Tech Inc. patented Feeder Gates, a deck mounted conveyor system, and 2 specialized boom conveyors.

The *Alfred Oldendorff* will be joined by her sister vessel, the *Antonie Oldendorff*, later this month. Both newbuilds will be engaged in long term transshipment contracts with various clients in the Middle East.

EMS-Tech Inc. looks forward to working with both Jiangsu Hantong Shipyard and Vulica Shipping on the successful delivery of these newbuilds.

The M/V Alfred Oldendorff, *the latest addition to the Oldendorff fleet.*

EMS-Tech Inc. Inc. secures self-unloading order for two 68,000dwt Panamax Newbuilds at Jiangsu Hantong Shipyard.

On 4 February 2015, EMS-Tech Inc. secured an order with Chinese shipyard Jiangsu Hantong Ship Heavy Industry, for the design and supply of two high-capacity gravity self-unloading systems. Vessel owner, Vulica Shipping, is renewing its Panamax fleet and expects to take delivery of its newbuild vessels in 2017. The self-unloading system will be designed to discharge aggregate at 4,500tph (tonnes per hour) and will be comprised of two tunnel conveyors fitted with EMS-Tech Inc. patented Feeder Gates, a 27 metre lift 'C' Loop conveyor, and an 80-metre-long discharge boom. When the vessels enter service, more than 2,500 EMS-Tech Inc. patented Feeder Gates will then be in operation around the world aboard self-unloading ships, platforms, transshippers and landside reclaim systems.

World self-unloading fleet update – May 2015

As written in past *DCi* editions, there is little sand gathering under the feet of self-unloader owners around the planet, *writes Walter Mitchell, Mitchell Consulting Group, Inc.* Since our last update in 2013, a number of changes have occurred notably the number of vessels that have been removed from fleet, those that have newly splashed, and the entry to market of ever-new transshippers/reloaders.

The innovation in minerals handling that is represented by high speed belt-conveyor vessels, hybrid crane-to hopper-to boom vessels, and vessels that are referred to as transshippers, reloaders, transloaders, and floating transfer stations — pick your preference — has not gone unnoticed by commodity shippers. Major minerals producers and shippers have lined up to take advantage of the productivity and economic efficiency of these vessels in order to enhance their supply and distribution chains.

On the demand side, new entrants to the sector in recent years are primarily iron ore shippers. Vale brought self-unloading and transshipping into its iron ore distribution chain in 2012 in response to its challenges with port entry in China of its new Valemax iron ore carriers. Ultrapetrol, the Argentina-based riverine dry cargo shipper, commenced transloading iron ore on the Parana. In India, several iron ore transshippers are newly on station at Goa and Mormugao. West Africa has become a new location for deployment. These operations supplement clever high-speed transshipment operations at Spencer Gulf in Australia, Gulf of Paria off Venezuela, and periodic operations at Eastern Canada.

South and Southeast Asia, where access to and from many ports is constrained by draft, has seen the most increase in demand over the years for innovative loading and discharging solutions. Just in Indonesia alone, there are now 25 some coal loading sites where transloading (or reloading as one may

HIGH SPEED SELF-UNLOADING VESSELS — DEDICATED OPERATIONS

Vessel	Flag	Dwt	Built/ Convert	Ultimate Ownership	Recent Employment
ADHIGUNA TARAHAN	Indonesia	11,096	1985	Indonesia	Dedicated to Merak Power Station coal, Sunda Strait shuttle (Indonesia)
ALGOMA INTEGRITY	Canada	47,761	2009	Canada	Dedicated to Port Cartier iron ore to Contrecoeur
BELTNES	AntiguaBarbuda	33,173	2009	Germany	Dedicated to Mibau limestone at Jesla, Norway to North Europe
BERNARDO QUINTANA A.	Bahamas	67,044	1984/92	Bahamas	Dedicated to Vulcan/ICA joint venture; limestone from Punta Venado to US Gulf
BULKNES	AntiguaBarbuda	33,100	2009	Germany	Dedicated to Mibau quarried products in the Baltic and North Europe
CHL INNOVATOR	Singapore	26,931	1976/85	Singapore	Dedicated to refined sugar trades in North Europe/Med/MEG
CHL PROGRESSOR	Singapore	48,251	1985/92	Singapore	Dedicated to refined sugar trades in North Europe/Med
CSL TECUMSEH	Bahamas	71,319	2013	Canada	Dedicated to Polaris Minerals limestone COA British Colombia/California
ENERGIA CENTAURUS	Japan	105,752	2001	Japan	Dedicated to Chugoku Electric Power coal imports from Australia and Indonesia
ENERGY ENTERPRISE	USA	38,848	1983	USA	Dedicated to US coastwise coal: USG for Tampa Electric and USEC for Dominion
FITNES	AntiguaBarbuda	33,174	2010	Germany	Dedicated to Mibau limestone at Jesla, Norway to North Europe
GEM OF ENNORE	India	73,789	2000	India	Dedicated to TNEB coal Paradip to Ennore, 10-year T/C to Poompuhar Shipping
H.A. SKLENAR	Bahamas	78,571	1981/07	Bahamas	Dedicated to Vulcan/ICA joint venture; limestone from Punta Venado to US Gulf
HELENE	Faeroe I	7,958	1980	Germany	Trading mostly in Mibau quarried products in North Europe
KIMITETSU MARU	Japan	17,000	1991	Japan	Dedicated to inter-island limestone cargoes within Japan
KIMITSU MARU	Japan	17,000	1991	Japan	Dedicated to inter-island limestone cargoes within Japan
ORISSA	India	81,783	1979	India	Dedicated to India iron ore transshipment at Goa and Panaji
PIONEER	Australia	21,900	1996	Australia	Dedicated to refined sugar trades in and around Australia
RIO CARONI	Venezuela	88,151	1983/93	Venezuela	Dedicated to CVG Ferrominera iron ore shuttle on the Orinoco River (lay-up since 2011)
RIO ORINOCO	Venezuela	86,864	1979/91	Venezuela	Dedicated to CVG Ferrominera iron ore shuttle on the Orinoco River (lay-up since 2011)
SAGE SAGITTARIUS	Panama	105,708	2001	Japan	Dedicated to Chugoku Electric Power coal imports from Australia and Indonesia
SANDNES	AntiguaBarbuda	26,100	2001	Germany	Dedicated to Mibau quarried products in the Baltic and North Europe
SARTIKA BARUNA	Indonesia	13,601	2000	Indonesia	Usually dedicated to coal transport in and around Indonesia
SINCERE PISCES	Panama	105,716	2001	Japan	Dedicated to Chugoku Electric Power coal imports from Australia and Indonesia
SPLITTNES	Panama	18,964	1994/06	Germany	Dedicated to Mibau limestone at Jesla, Norway to North Europe
STONES	AntiguaBarbuda	28,000	2001	Germany	Dedicated to Mibau limestone at Jesla, Norway to North Europe
TRANS BAY	Marshall Is	70,120	1996	Abu Dhabi, UAE	Dedicated to Gulf Industrial Investment Corp iron ore pellets, MEG
TRANS EMIRATES	Marshall Is	70,546	1993/99	Abu Dhabi, UAE	Dedicated to Gulf Industrial Investment Corp iron ore pellets, MEG
W.H. BLOUNT	Bahamas	65,402	1984/91	Bahamas	Dedicated to Vulcan/ICA joint venture; limestone from Punta Venado to US Gulf
WESER STAHL	Cyprus	47,257	1999	Canada	Dedicated to Stahlwerke Bremen, iron ore voyages Narvik-Bremen/Rotterdam
YEOMAN BANK	Liberia	43,728	1982/90	Switzerland/UK	Usually dedicated to aggregates transport from Glensanda, Scotland to North Europe
YEOMAN BONTRUP	Bahamas	96,772	1991	Switzerland/UK	Usually dedicated to aggregates transport from Glensanda, Scotland to North Europe
YEOMAN BRIDGE	Bahamas	96,772	1991	Switzerland/UK	Usually dedicated to aggregates transport from Glensanda, Scotland to North Europe

HIGH SPEED SELF-UNLOADING VESSELS — INDEPENDENT OPERATIONS

Vessel	Flag	Dwt	Built/ Convert	Ultimate Ownership	Recent Employment
ALICE OLDENDORFF	Portugal (Madeira)	50,259	2000	Germany	Western Atlantic/Caribs
BAHAMA SPIRIT	Vanuatu	46,606	1995/99	Canada	Western Atlantic/Caribs now Turkey
BALCHEN	Marshall I	71,405	2013	Norway	USWC
BALDER	Marshall I	48,184	2002	Norway	Western Atlantic/Caribs
BALDOCK	Marshall I	75,569	1981/2006	Norway	Western Atlantic/Caribs
BALTO	Marshall I	71,476	2013	Norway	Western Atlantic/Caribs
BARKALD	Marshall I	49,463	2002	Norway	Western Atlantic/Coal at Bridgeport
BERNHARD OLDENDORFF	Portugal (Madeira)	77,548	1991	Germany	Western Atlantic/Trans-Atlantic
CAROLINE OLDENDORFF	Portugal (Madeira)	77,548	1991	Germany	Anchored Panama Canal, Atlantic side
CSL ACADIAN	Bahamas	74,517	/2006	Canada	Western Atlantic/Caribs
CSL ARGOSY	Bahamas	74,423	/2006	Canada	Scandinavia-North Europe minerals
CSL BRISBANE	Bahamas	45,630	1999/	Canada	Coastwise Australia
CSL CLYDE	Malta	7,182	1996	Canada	Scandinavia-North Europe minerals
CSL ELBE	Malta	10,110	1982	Canada	Scandinavia-North Europe minerals
CSL FRONTIER	Bermuda	49,270	2001	Canada	Purchased in April 2015, at anchor at Las Palmas
CSL METIS	Bahamas	69,305	1981/07	Canada	Western Atlantic/Caribs
CSL PACIFIC	Bahamas	31,921	1977/85	Canada	Coastwise Australia, candidate for demolition
CSL RHINE	Malta	10,110	1983	Canada	Scandinavia-North Europe minerals
CSL SPIRIT	Canada	70,018	2000	Canada	Atlantic Canada
CSL TACOMA	Bahamas	71,405	2013	Canada	USEC
CSL THAMES	Malta	29,982	2009	Canada	Western Atlantic/North Europe
CSL THEVENARD	Australia	40,867	1981/08	Canada	Australia gypsum coastwise Townsville-Thevenard
CSL TRIMNES	Malta	17,309	1990	Canada	Scandinavia-North Europe minerals
EASTERN POWER	Vanuatu	69,809	1989/98	Canada	T/C to Oldendorff, recently in MEG
EOS	Portugal (Madeira)	6,198	1976/85	Sweden	Baltic/Med aggregates
GDYNIA	Mexico	64,375	1981/05	Mexico	West Coast Mexico
HAI WANG XING	PRC	37,944	1995	PRC	PRC coastwise
HARMEN OLDENDORFF	Portugal (Madeira)	66,188	2005	Germany	Western Atlantic/Caribs
HONOURABLE HENRY JACKMAN	Bahamas	75,597	1981/07	Canada	Western Atlantic/Caribs
IRON CHIEFTAIN	Australia	50,587	1993	Australia	Australia coastwise coal, iron ore
JOHANNA OLDENDORFF	Liberia	67,546	1998	Germany	Middle East Gulf
KALKVIK	Faeroe I.	9,402	2007	Sweden	Baltic area aggregates
KRAKOW	Bahamas	70,912	1982/07	Poland	Western Atlantic/Brazil
MALMNES	Madeira	9,891	1993	Sweden	North Europe
MORNES	Faeroe I.	9,125	1991	Sweden	North Europe cement
NAZLIKIZ	Turkey	8,139	1978	Turkey	Eastern Med cargoes
NELVANA	Bermuda	74,973	1983	Canada	Last seen at Gibraltar
NORDANHAV	Faeroe I.	9,891	1992	Sweden	North Europe
OSTANHAV	Faeroe I.	5,800	1983/87	Sweden	Baltic cement
PREVENTER	Panama	69,995	1990	India	Worldwide trading
RT.HON. PAUL E. MARTIN	Bahamas	71,405	2012	Canada	Caribbean/WC Central America
SHEILA ANN	Bahamas	70,037	2000	Canada	East/West Coast NA
SMT BONTRUP	Bahamas	44,016	1979/	Poland	North Europe most recently Glensanda aggregates
SOPHIE OLDENDORFF	Portugal (Madeira)	70,034	2000	Germany	East/West Coast NA
SUNNANHAV	Faeroe I.	9,400	2006	Sweden	Baltic cement
TAMIM	Sudan	25,439	1982	Sudan	Recently at Dubai
TIAN LONG XING	PRC	37,532	1995	PRC	PRC coastwise
VENCEREMOS	Bahamas	63,671	1984/05	Poland	Western Atlantic coal
VIGHNRAJ	India	70,912	1982/07	India	Hooghly River, India

prefer) is now taking place. Coeclerici Logistics continues its growth in this sector at Kalimantan with several new and existing installations there. Rocktree Logistics, formerly Scorpio Logistics, operates its coal transshipment operation there using a converted Panamax OBO as a floating storage unit. Refer to the fleet listing for details on the fleet.

Changing commodity markets, notably in iron ore, have resulted in changes in vessel deployment. The surge in iron ore prices in the early part of this decade created opportunity for new iron ore production in several regions, West Africa being one. London Mining and Arcelor Mittal hosted high-speed transshipment operations at Freetown, Sierra Leone and Buchanan, Liberia, respectively. However, a combination of a severe decline in pricing starting in 2014 and the challenges containing the outbreak of Ebola have impacted these operations. London Mining's iron ore production in Sierra Leone went into administration resulting in redundancy of two long-boom self-unloaders and a floating transfer platform. Arcelor Mittal's Liberian mining operation continues, having achieved targeted production in the current quarter. CSL Group has been active as transshipper at the Port of Buchanan.

Our 2013 roster included over 120 vessels in three categories: those dedicated to specific cargo projects, those trading independently, and the relatively new transloaders. The current roster — shown elsewhere in this edition of *DCi* — is approximately the same size but with considerable differences in scope. In the dedicated and independent segments, we count 24 vessels that have been scrapped due to obsolescence, and a downsizing of a small fleet based in Europe. A dozen or so vessels have been reclassified as not self-unloading vessels and have been removed from the roster. Seven newbuildings have entered the fleet with Klaveness, CSL Group, CoeClerici, and Oldendorff represented.

Other changes in the roster are the sale this quarter of the high-speed belt conveyor vessels owned by Gypsum Transportation, one to Algoma and one to CSL Group. The

TRANSSHIPMENT/RELOADER VESSELS

Vessel	Flag	Dwt	Built/ Convert	Operation	Recent Employment
AJKWA	Indonesia	15,000	1998	Indonesia	Dedicated to PT Freeport copper concentrates, Glasberg mine at Irian Jaya
ALFRED OLDENDORFF	Liberia	93,682	2015	Abu Dhabi, UAE	Delivered 2015 - iron ore transshipment of inbound iron ore for Emirates Steel, ME Gulf
ALIANZA G2	Argentina	37,532	1981	Argentina	Dedicated to grain loading/top-off at San Lorenzo-San Martin
ANTONIE OLDENDORFF ME	Liberia	94,000	2015	Abu Dhabi, UAE	Delivering 2015 - iron ore transshipment of inbound iron ore for Emirates Steel, Gulf
ANTWERPEN	Uruguay	41,100	1979/99	Uruguay	Dedicated to transshipment of multiple commodities on Rio Uruguay
BARNGARLA	Australia	12,910	2006	Australia	Dedicated to iron ore transshipment to ocean vessels, Gulf of Spencer for Arrium (OneSteel)
BOCA GRANDE II	Bahamas	135,160	1982/06	Venezuela	Dedicated to iron ore shuttle/transfer of CVG Ferrominera iron ore on the Orinoco River, Venezuela
BULK BORNEO	Indonesia	11,805		Indonesia	Dedicated to coal transfer to ocean vessels at Muara Pintai anchorage, Kalimantan for PT Berau Coal
BULK CELEBES	Indonesia	11,471		Indonesia	Dedicated to coal transfer to ocean vessels at Muara Pintai anchorage, Kalimantan for PT Berau Coal
BULK IRONY	Italy	13,579	2003	Italy	Dedicated to iron ore lightering at Piombino, Italy
BULK JAVA	Indonesia	11,839		Indonesia	Dedicated to coal transfer to ocean vessels at Muara Pintai anchorage, Kalimantan for PT Berau Coal
BULK KREMI I	Russia	14,312	1975/00	Bulgaria	Dedicated to iron ore/coal/sulphur lightering at Bourgas
BULK LIMPOPO	Italy	53,776	2012	Mozambique	Dedicated to loading coal offshore Mozambique for Vale's Moatize coal project
BULK PIONEER	Indonesia	5,974		Indonesia	Dedicated to transshipping coal offshore Kalimantan
BULK PROSPERITY	India	10,500	2007	India	West coast India minerals transshipment
BULK SUMATRA	Indonesia	11,805	2013	Indonesia	Dedicated to coal transfer to ocean vessels at Muara Pintai anchorage, Kalimantan for PT Berau Coal
BULK TRIESTE *		122,000			Was dedicated to coal transfer to barges at Trieste for ENEL. *Unable to verify if still operating.*
BULK WAYUÙ	Venezuela	64,400	1978/98	Venezuela	Permanent mooring in Lake Maracaibo dedicated to coal transfer/loading for Carbones del Guasare
BULK ZAMBESI	Italy	53,776	2011	Mozambique	Dedicated to loading coal offshore Mozambique for Vale's Moatize coal project
CSL ATLAS	Liberia	67,308	1990	Liberia	Has been dedicated to iron ore transshipment at Buchanan, Liberia for Arcelor Mittal, recently at berth at Rotterdam
CSL WHYALLA	Australia	13,732	1987/08	Australia	Dedicated to iron ore transshipment to ocean vessels, Gulf of Spencer for Arrium (OneSteel)
E. OLDENDORFF	Liberia	78,488	1982	Abu Dhabi, UAE	Dedicated to transshipment of inbound iron ore pellets for Emirates Steel
EAGLE	Liberia	12,000	2008	Abu Dhabi, UAE	Dedicated to transshipment of inbound iron ore pellets for Emirates Steel
FALCON	Liberia	12,000	2008	Abu Dhabi, UAE	Dedicated to transshipment of inbound iron ore pellets for Emirates Steel
FOTB SPENCER GULF	Australia	--	2006	Australia	Dedicated to iron ore transshipment to ocean vessels, Gulf of Spencer for Arrium (OneSteel)
FOTP DERAWAN	Bahamas	1,526	2009	Indonesia	Dedicated to transloading coal offshore Kalimantan for PT Berau Coal
FOTP PRIDE OF MARAMPA	Liberia			Sierra Leone	Dedicated to transshipping iron ore at Freetown, Sierra Leone. On bareboat charter to London Mining
HAWK	Liberia	12,000	2009	Abu Dhabi, UAE	Dedicated to transshipment of inbound iron ore pellets for Emirates Steel
ISKEN - TSV			2002	Turkey	Dedicated to coal transshipment at Iskenderun for Isken Sugözü Power Plant
MARA	Indonesia	64,850	1989/2010	Indonesia	Dedicated to Indonesia coal floating storage and transfer at Kalimantan for Rocktree Logistics (Singapore)
MIDDLEBACK	Australia	12,000	2006	Australia	Dedicated to iron ore transshipment to ocean vessels, Gulf of Spencer for Arrium (OneSteel)
ORE FABRICA	Cook Islands	284,480	1993/	Philippines	Dedicated to floating storage and transshipment of Vale iron ore at Subic Bay anchorage, Philippines
ORE SOSSEGO	Cook Islands	256,147	1991	Philippines	Dedicated to floating storage and transshipment of Vale iron ore at Subic Bay anchorage, Philippines
PARANA IRON	Argentina	43,164	1982/2013	Argentina	Dedicated to transshipping Hidrovia-sourced Vale iron ore into ocean going vessels at Rosario Roads
PRINCESSE CHLOE	Indonesia	up to 12,000		Indonesia	Dedicated to coal transfer to ocean vessels at Muara Pintai anchorage, Kalimantan
ROYAL SESA	India	3,519	2012	India	Dedicated to iron ore transfer to ocean vessels at Mormugao, India
SHATIXA	India	13,068	2002	India	Dedicated to transshipping iron ore into ocean going vessels at Goa, India
SST BERAU	Indonesia	--	2000	Singapore	Dedicated to coal transfer to ocean vessels at Muara Pintai anchorage, Kalimantan for PT Berau Coal
ZEUS	Indonesia	500	2009	Indonesia	Dedicated to Indonesia coal transfer at Kalimantan for Rocktree Logistics (Singapore)

continued growth of the CoeClerici Group, which has been described in many prior editions of *DCi* as a significant force in transloading, has brought new levels of innovation to bulk shipping projects that are constrained by draught, have high volume throughput requirements, and involve cargo handling specificity. Our roster does not include non self-propelled floating cranes that transfer cargo from one vessel to another. There are several such operations underway with Oldendorff being a key participant in this sector.

For detailed information on these vessels and cargo activities they support, we welcome enquiries to Mitchell Consulting Group, Inc. at Brooklandville, USA.

Shanghai Zhenhua Port Machinery (ZPMC) to intensify activities in Hamburg

The Shanghai Zhenhua Port Machinery (ZPMC) will be creating up to 100 new jobs in Hamburg by setting up its European Purchase Center in the Elbe metropolis. ZPMC is the world's largest manufacturer of steel structures and container bridges, with the latter holding a global market share of 75%. Out of the company's annual sales of US$ 1bn, 60% is generated in Europe. Its products are being used in all major German ports, including Hamburg. In addition, the group has been expanding its business activities to offshore facilities, specialized shipbuilding, and related services.

In the year 2014, the HWF Hamburg Business Development Corporation successfully brought a first sales office of ZMPC to Hamburg. There, 12 employees are currently working, i.e. ten Hamburg locals and two Chinese staff. ZMPC's expansion will be accompanied by the Hamburg Liaison Office in Shanghai and HWF. Hamburg's First Mayor Olaf Scholz will be among the guests speakers at the official inauguration of the European Purchase Center of the Shanghai Zhenhua Port Machinery (ZPMC).

Lu Jianzhong, President of ZPMC, says: "Hamburg is not only one of Europe's most important ports and the starting point for the offshore wind energy activities in North Sea and Baltic Sea. The Port of Hamburg is also a very important customer of our company. We generate 60% of our sales in Europe. The expansion of our activities in Europe was thus an obvious step. We chose Hamburg because the majority of our partners are active here."

Dr. Rolf Strittmatter, managing director of HWF, adds: "China is one of the major source markets for international companies setting up a business in Hamburg. Last year alone, 58 companies from China and Hong Kong have been newly entered in the commercial register. Many Chinese companies are currently expanding their presence in Hamburg and create jobs for the citizens of Hamburg. Once again, the strategic role of Hamburg as a base for construction and expansion of the European business of Chinese companies has been confirmed."

By setting up the European Purchase Center, the company strives to reduce its procurement cost of some double digit-millions in the long-term. ZPMC also has a strategic partnership with China Shipping, one of the Port of Hamburg's main trade partners. The China Shipping Container Line is one of the leading container shipping companies worldwide and currently placed on sixth position in the Top 100 of operating shipping companies. China Shipping is transporting containers to the Far East, Australia, the US, Mexico, South America, North Africa, the Middle East, the Red Sea region, and the Indian subcontinent.

With HHLA, ZPMC has been maintaining business relations since 1999, which are to be further expanded and strengthened in future. A contract for the delivery of three more gantry cranes will be signed next week in Hamburg. The Hamburg section of Siemens and ZPMC are also co-operating. Both ZPMC and its parent company, the China Communications Construction Company (CCCC), are closely linked to Hamburg. Chen Fenjian, CEO of CCCC, and Lu Jianzhong, president of ZPMC, for example, were speakers at the 'Hamburg Summit' hosted by the Hamburg Chamber of Commerce.

About ZPMC

Shanghai Zhenhua Heavy Industries Company Limited (ZPMC), formerly known as Shanghai Zhenhua Port Machinery Company Limited, is a Chinese company headquartered in Shanghai. Founded in the year 2000, the state holding is listed on the SSE 50 index of the Shanghai Stock Exchange.

The company is a global market leader in the production of container bridges, with their heavy-duty cranes being used by 120 ports in the world. Eighty-four per cent of sales are generated abroad, 60% in Europe alone. The company's growth rate in the years 2004 to 2006 was 310%. Today, the company is a subsidiary of the China Communications Construction Company (CCCC).

About CCCC

CCCC is a Chinese company based in Beijing and listed at the Hong Kong Stock Exchange. Founded in 2006, CCCC is principally engaged in construction. Chairman of CCCC is Liu Qitao.

At the 2006 IPO, part of the shares were acquired by the billionaires Li Ka Shing, Lee Shau Kee, Joseph Lau, Robert Kuok, and al-Walid ibn Talal . Strategic shareholders include the tow companies China Life Insurance Group, Chow Tai Fook Group and Government of Singapore Investment Corporation.

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New GAC base opens to drive UK renewable energy sector

As part of its continuing strategy to focus on growing business sectors in the UK, GAC has opened a new quayside office in Great Yarmouth to meet the needs of the renewable energy sector in the Southern North Sea for integrated shipping and logistics services.

Offshore energy

Great Yarmouth, along with neighbouring Lowestoft, has supported offshore energy companies for over 45 years. The two ports constitute England's largest concentration of offshore energy businesses and have been involved with many Round 2 projects. Round 3 includes three of the world's largest offshore wind farms which represent over 60% of the UK's Round 3 developments. Adrian Henry, GAC UK's Offshore Manager, says Great Yarmouth has been identified as being one of the key locations for development and notes that the new facility there reinforces GAC's national network with an office ideally situated to meet the needs of oil and gas customers working in the Southern North Sea.

The area is also home to some of the UK's largest renewable energy projects, including offshore wind farms at Gunfleet Sands and Thanet. The United Kingdom ranks as the world's sixth largest producer of wind power. In January 2015, the country had 5,968 wind turbines with a total installed capacity of just under 12 gigawatts, one-third of which is generated by offshore wind farms.

Prime location

GAC's efforts to meet the growing demand of the renewable energy sector for support, including the transportation of large project cargoes like turbines, is now being spearheaded by the Great Yarmouth team led by Jeanette Shoebridge.

"GAC's presence in Great Yarmouth brings our unique single-source combination of shipping and logistics services to a wide range of energy clients," says Shoebridge, who has worked on major installations at London Array, Walney 1 & 2, West of Duddon Sands over the past four years. "Our prime location means we can offer all renewable clients an integrated support package tailored to their needs, including a quay for their support vessels, ship agency, project logistics, warehousing and other related services."

"Combined with the local expertise, workforce, deep water facilities and hinterland, this enables us to provide unrivalled response, flexibility and — ultimately — cost savings. GAC's global expertise and commitment to delivering our customers' strategies will be a significant factor in the successful completion of Round 2 in the Southern North Sea, through Round 3, and beyond."

Port of Gdansk basin logistics FMCG

On 17 February 2015 the Supervisory Board of the PGA SA approved the decision of the Management Board of PGA SA to close the tender for the lease of the real estate located behind the container terminal DCT Gdansk. Following this, on 21 May this year, The Treasury agreed to the conclusion of the lease contract.

The company that won the tender is PAGO Sp. z o.o. — a specialist in the comprehensive logistics of frozen products, which over the course of several years has consistently pursued a strategy to expand national distribution networks.

The development of this area of over 4 hectares located in close proximity to the largest Baltic container terminal DCT Gdansk is a considered solution. PAGO is in fact a company serving both domestic producers of frozen products and international trade networks.

The company offers a comprehensive range of services from the storage of frozen goods, their packaging and then their transportation to the final recipient. At present PAGO owns a network of modern cold-storage units located near Warsaw, Poznan, Katowice as well as in Northern Poland around 70km from Gdansk — in Lebork.

Soon PAGO will own a second unit in the north of our country designed for handling frozen cargo — a new cold-storage unit located in the area of the Port of Gdansk. Such an enterprise is an ideal match for the port's development strategy aimed at the transformation of the Port of Gdansk as an important link in global supply chains, with a special emphasis on the creation of so-called the added value based on handling-processing capacity.

Thus, at the Port of Gdansk, in addition to the North Atlantic Producers Organisation's cold-storage unit already functioning in the WOC, there will be another modern warehouse facility designed for the professional storage of frozen goods, providing comprehensive FMCG logistics services. This project will be an ideal complement to the concept of transforming the Port of Gdansk into one of the most important logistics hubs and a key distribution centre on the Baltic.

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Sugar vessels form queue for Brazilian ports

At the end of March, it was reported that a total of 34 vessels were awaiting at anchor prior to berthing to take on consignments of export sugar from Brazilian ports. These were due to carry 1.1 million tonnes. Of this, 73% would be generated by the port of Santos, 19% by Maceió, 6% by Paranaguá and 1% each by Recife and Suape. *Barry Cross*

Solid fuel concession for Tarragona

The Spanish port of Tarragona has awarded García-Munté Energía a 30-year concession to handle solid fuel on Muelle Cataluña. The concession, which covers an area of 24,420m², began on 1 April. *BC*

Indian ports stuck with low grade ore

High export taxes and plunging prices have resulted in 12mt (million tonnes) of low-grade iron ore effectively stuck in Indian ports, given that higher grade ore is now proving more attractive to buyers. Worse still, the Indian domestic steel production market is unable to make use of low-grade ore, which has traditionally been exported to China.

Indian producers are also reeling from the 30% duty that is charged on all iron ore exports.

In 2010, major curbs were placed on the mining of Indian iron ore as a means of stamping out illegal production. However, this had the unintended effect of sucking in 8mt of imports.

In the first two months of this year, the number of consignments shipped to India fell to its lowest since May 2009.

One report suggests that around 4mt of low-grade iron ore has been trapped at eastern ports since April, while ports in Goa have been stuck with around 8mt. *BC*

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Bulk terminal opens at Kandla

Adani Ports and Special Economic Zone has taken delivery of a new 20mt (million tonne) annual capacity dry bulk terminal at Tuna Tekra in Kandla port in India. The facility was built in 24 months.

The group has also announced it is to invest $3.2 billion in expanding capacity at ports it operates in Gujarat to handle 100mt per annum by 2020. Currently, the group operates six ports, with Kandla, Mundra, Hazira and Dahej being in Gujarat. Combined, they currently have capacity of 112.8mt. *BC*

New Russian port on border with China and North Korea

Construction is set to begin in Russia's Primorye region of the new Severniy port, which is on the border of China and North Korea and opposite Japan. It will have an annual capacity to handle 20mt (million tonnes) of coal, which will be shipped to the Asia-Pacific region. It will have four berths along a 900-metre long quayside. Construction will take three years.

Initially, capacity will be around 6mt, rising to 20mt by 2025.

The state is investing $340 million, with a further $190 million to be stumped up by the private sector, which will include contributions from Summa and the China Development Bank. *BC*

China gives thumbs up to Valemax ships

China has modified regulations concerning the size of vessel that can access its ports. This, in future, will allow boats up to 400,000dwt to be accommodated, thereby allowing the so called Valemax vessels owned by the Brazilian mining Corporation Vale to be handled. Once deployed on routes between Brazil and Asia, freight rates could drop by between four dollars and six dollars per tonne. *BC*

Rio Grande exporting soya in boxes

In February, Rio Grande container terminal, in partnership with Gomes Marques and Serra Morena, began exporting soya bean meal in containers. Consignments of 100 containers will be sent on a weekly basis to a user in Germany.

Gomes Marques is responsible for receiving, storing and stuffing containers with the grain, having a capacity of up to 30 containers a day. Once loaded, boxes are then transported to the container terminal. Serra Morena, for its part, is responsible for the marketing and sales.

In addition to soya and wheat, other cereals could also be containerized. By using containers, it becomes possible for smaller consignments to be shipped at a reduced cost. *BC*

Almeria invests in Carboneras

The Spanish port of Carboneras, which is administered by Almeria authority, is to receive investment of €4.4 million to fund infrastructure upgrades.

In 2014, traffic at the port grew by 5.54%, above all in crushed marble, cement and coal. The public terminal also registered growth, of 5.81%, with a 57% hike in general cargo recorded, being principally in the form of ash and crushed marble. *BC*

Riga handles 2 million tons of fertilizer

Uralchem's Riga Fertilizer Terminal has announced that it has handled 2mt (million tonnes) of fertilizer in a 12-month period up to February 2014. It first started operations in December 2013, since which time it has handled 106 vessels.

In 2014, the terminal, in which more than €60 million has been invested, was responsible for 1.7mt overall. *BC*

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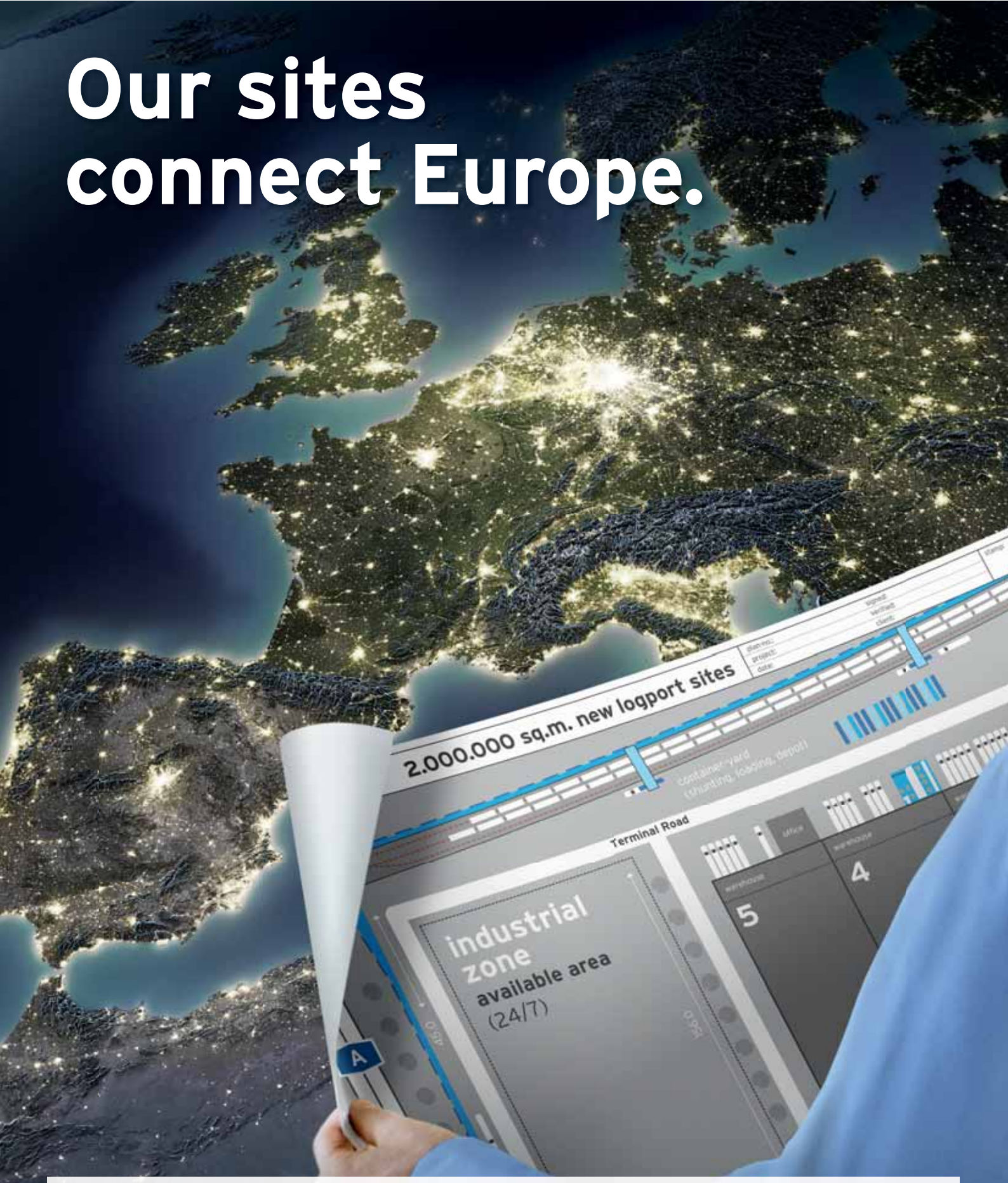

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Higher first quarter throughput at Hamburg

The Port of Hamburg handled total throughput of 35.6mt (million tonnes), up by 0.1%, in the first quarter of 2015. Bulk cargoes at 11.7mt (up by 12.3%) and container transport on railways between the port and its hinterland at 602,000 TEU (up by 11.1%) were the strongest contributors to throughput growth.

"We can be satisfied overall with the first-quarter trend in seaborne cargo throughput. Even if a slight 4.9% downturn in general cargo throughput at 23.9mt slightly dampens our satisfaction, this remains the best-ever first quarter in the port's history," stressed Port of Hamburg Marketing's Executive Board Member Axel Mattern at the marketing association's quarterly press conference.

Throughput of bulk cargoes was up in all the three segments, for suction cargoes by 19.4% at 2.7mt, grab cargoes by 17.2% at 5.5mt and liquid cargoes by 1.3% at 3.5mt. The trend was especially notable on coal imports that at 1.8mt increased by 64.1%. On the export side, the main contribution to this excellent result came from wheat, where volume handled rose by 44.0% to 1.62mt.

Container throughput for the first three months of the year at 2.3 million TEU (20-ft standard containers) remained below the previous year's strong result, which had been unusually satisfactory, representing an advance of no less than 8.0%. There was a slight, 2.3% downturn here. This was primarily attributable to a fall in container traffic with Russia. In the first quarter a total of 109,000 TEU were transported between Hamburg and Russian ports on the Baltic. That represented a 34.8% fall by comparison with the same quarter of the previous year. In Mattern's view, it may be assumed that should sanctions be lifted and a recovery occur in the Russian economy, seaborne foreign trade via Hamburg will climb once again. His Executive Board colleague Ingo Egloff pointed out that the Port of Hamburg is the leading hub in Northern Europe for container services with the Baltic region and that Port of Hamburg Marketing is devoting increased attention to Baltic markets. The recent accession of the ports of Gothenburg and Bronka to the marketing association also underlines its excellent links with the region.

Above-average growth in hinterland transport

Container hinterland transport by rail, truck and inland waterway craft made above-average progress and at 1.5 million TEU attained growth of 7.3%. "That we are Europe's leading rail port is no coincidence. With our intelligent transport schemes, bottlenecks should be avoided in the Port of Hamburg's incoming and outgoing traffic. This can be achieved, for example, by greater utilization of rail for seaport-hinterland transport," explained Egloff. In the first three months of 2015 cargoes totalling 11.4mt, or an increase of 8.3%, were transported on the Hamburg Port Railway network. At 602,000 TEU, container transport by rail grew by no less than 11.1%. In future, even more efficient use will be made of the port's rail infrastructure. Neutral, overriding control, or 'Rail Operations Management', will take over co-ordination of rail services and further optimize operating processes. Together, terminal operators, the port administration and German rail network — DB Netze — aim to continually increase the quality and efficiency of the Port of Hamburg as a supply chain element. "Along with the other North German states, in Berlin we shall be urging that seaport-hinterland traffic routes should be properly catered for in the new Federal Transport Infrastructure Plan. Only a high-performing and intact infrastructure will guarantee incoming and outgoing access for seaports in the interests of the entire national economy. We are also therefore hoping for a positive decision this year by the Federal Administrative Court in Leipzig on the implementation of the dredging of the navigation channel on the Lower and Outer Elbe," emphasized Egloff.

Both the dredging of the channel plus the expansion and modernization of transport infrastructure are of great importance for Hamburg's future development as Germany's leading port and logistics centre. Efficient transport links constitute the essential arteries for global foreign trade. The intelligent interchange and utilization of transport and logistics data, launched in Hamburg with smartPORT, will simplify efficient control of multimodal transport chains. Improved utilization of the existing transport infrastructure will as a result permit the acceptance and transport of additional cargo volumes.

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The EMO terminal in Rotterdam is fully equipped to meet customer expectations.

Jay Venter

EMO: gateway to the European hinterland

The EMO terminal in the Rotterdam Port has been a major hub in transporting coal and iron ore from all over the world to the European hinterland. EMO has always been a reliable partner for its customers in helping to control these flows of goods by combining daily processes with a clear vision for the future.

EMO is able to accommodate the world's largest dry bulk vessels, and yet it never ceases to look to the future and plan ahead — now more than ever! EMO has strongly increased its storage and transshipment capacity and efficiency. This will ensure that it is fully equipped to enhance its safety, efficiency and sustainability

The EMO terminal in Rotterdam has a draught up to 23 metres.

EMO FIGURES	
Unloading	34mt
Throughput	61mt
Storage capacity	7mt
Train loading	22 trains daily

performance, and to continue to serve its customers as a reliable partner in dry bulk transshipment in the coming decades.

EMO can load 22 trains daily.

Equipment:

- 5 unloaders, 3 x 85 tons, 2 x 50 tonnes lifting capacity;
- 1 floating crane, 36 tonnes lifting capacity;
- 7 fully automated stacker reclaimers;
- 3 barge loaders;
- 1 sea ship loader;
- 3 fully automated coal wagon loaders, 2 for coal, 1 for iron ore;
- 160 ha stockyard; and
- high-tech operations centre.

EMO operates 24 hours a day, seven days a week. Its discharge capacity is 47mt (million tonnes) and its throughput capacity is more than 70mt.

EMO is a partner that its customers can rely on. The company stays on top of the latest developments in the market. EMO continually analyses customers' needs, the quality of its services and its terminal's performance. In anticipation of market trends and customer needs, it is continuously geared towards offering a more efficient, cleaner and safer terminal, one designed to meet all expectations.

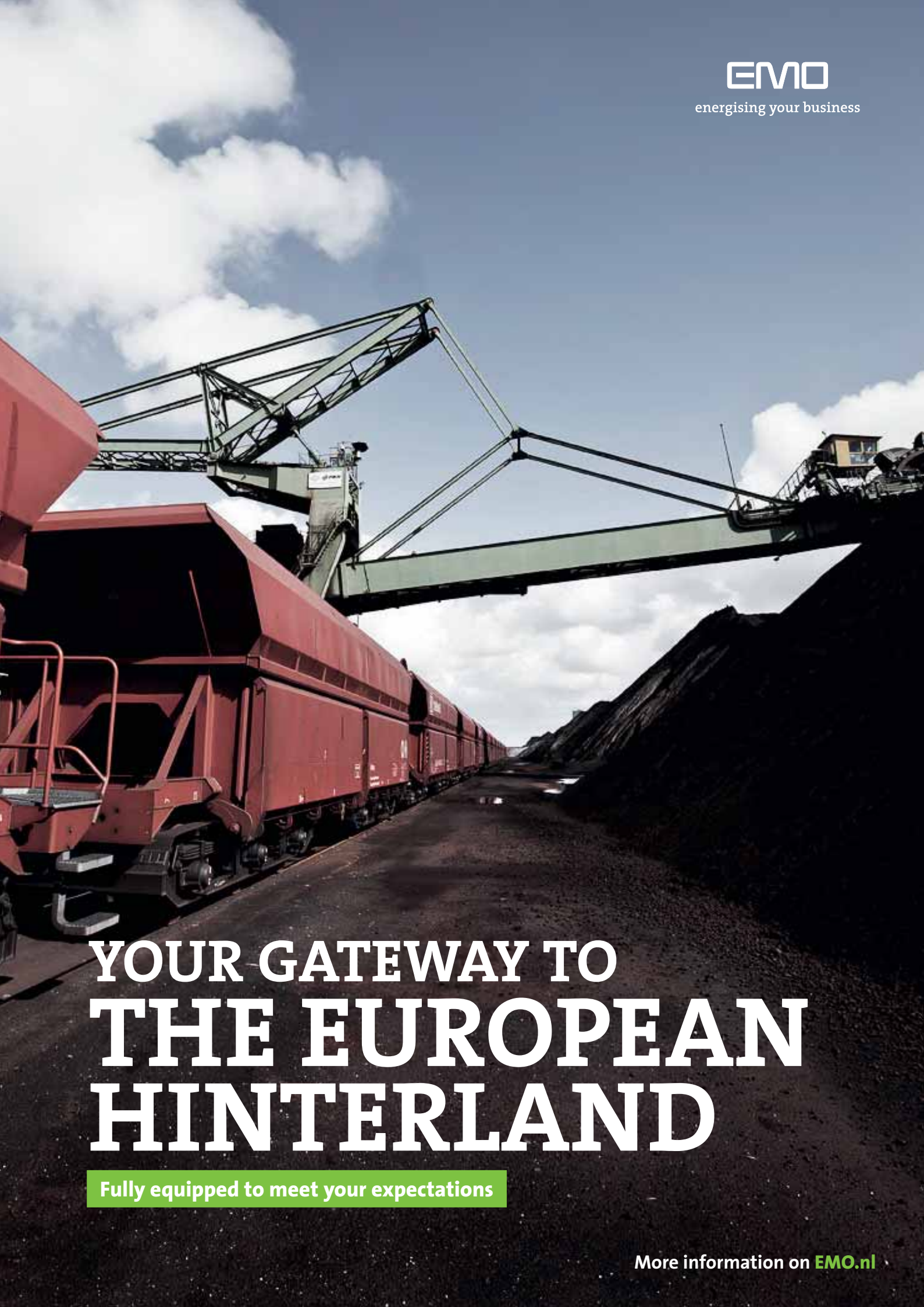
Skilled employees working with innovative technology guarantees a high quality service for its customers.

Meeting market demands

On its 160-hectare stockyard, EMO is able to stock 7mt of storage. EMO is ideally located on a 23m-deep waterway connected directly to the North Sea. The Rotterdam port has excellent rail and waterway connections to the rest of Europe.

New plants E.ON en GDF Suez in Rotterdam

A new 1,070MWe coal/biomass-fired power station built by E.ON on a neighbouring site is currently in the test phase. The same applies to the 800MWe coal/biomass-fired power station built by GDF Suez on the eastern section of the EMO site. Both of these ultramodern power stations will be supplied by EMO.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Unlocking Amsterdam's future

Construction of new sea locks at IJmuiden has now been given the all clear, enabling Amsterdam to receive far larger bulk carriers in the future, writes Michael King.

Managers at Port of Amsterdam are confident of maintaining their leading position in the bulk carrier trades, now that a project to build a large new sea lock in IJmuiden has finally been given the green light.

Lex de Ridder, Cluster Manager Energy at Port of Amsterdam, told *DCI* that the signing of a new administrative agreement by the Dutch Ministry of Infrastructure and the Environment, the Province of North Holland and the City of Amsterdam at the end of last year would accelerate construction of the lock by allowing bigger vessels to use the port's slew of bulk terminals. The new locks will be 500 metres long, at least 65 metres wide and 18 metres deep.

"It's fantastic that this is now definite," he said. "I think the work will start in the second half of this year, so it's a big boost for us."

Although some of the exact technical details on how the extra capacity will translate into ship dimensions are still being calculated, the new locks are expected to allow ships of around 53 metres beam to enter the North Sea Canal to Amsterdam. This compares to the current beam of 45 metres. The new locks will also offer 17 metres of draught, up from 13.7 metres at the existing locks which were built in 1929.

"The extra beam means we will be able to take much bigger Capesize ships," said De Ridder. "We won't be limited on draught which means less lightering as well."

Under the administrative agreement, the three parties have agreed maximum financial contributions they will make to the project. An application will also be made for a subsidy under the European Union's European Transport Network (TEN-T) programme, which subsidized the plan elaboration phase of the project. The tendering process for the construction of the new locks is already underway and they are due to be open for shipping in 2019.

After intense negotiations with shareholders, lightering restrictions at the existing IJmuiden locks have also been eased. "This happened in December and it means we can now lighter up to 4.5mt [million tonnes] of cargo each year, instead of 2mt," said De Ridder. "In return we're improving the cranes in terms of environmental aspects and working on other ways to reduce noise and dust emissions during lightering operations."

According to De Ridder, the port now has everything in place to generate new growth in the years ahead. "Before we only lightered coal and sometimes agribulk, but now we can lighter other, heavier, products like granite, because more kinds of products are included in the permit," he said. "We already have quite a big import terminal for granite which comes in from Scotland and northern Scandinavia and is used in road building. In future these ships can be fully loaded, which will reduce the freight cost by around 15%, which should drive volume growth."

Port of Amsterdam is also looking to construct a new North Sea harbour outside the dock to help the lightering operation and further boost volumes. "We are investigating the possibility of co-creating a new energy port before the locks, including the creation of land/terminals space," said De Ridder. "We're in talks with a consortium of parties, including Tata Steel and the port of IJmuiden, and we're speaking to the Ministry of Infrastructure and the Environment.

"We hope we can get this, at least the first phase, built before the new locks open in 2019. We'll use it for dry and in a later stage liquid bulk and it will support our transshipment and lightering operations. We want to add 15 hectares of terminal space for wind, oil and gas offshore handling. The idea is that this will become a maritime cluster around the locks which will then accelerate maritime activity in Amsterdam and IJmuiden."

Last year total seagoing traffic handled in the Amsterdam North Sea Canal Area totalled 97.8m tonnes, up from 95.8m tonnes a year earlier. Of this total some 48.3mt was dry bulk cargoes, up from 46.1mt in 2013.

Coal volumes led the way, reaching 19.5mt excluding volumes handled by Tata Steel, which amounted to around 4–5mt, followed by ores (10.1mt) and various agribulk cargoes.

However, the coal import market in Europe looks less promising for 2015. "For coal the last two years have been extremely good and even above what we expected, with up to 10% growth each year and this explains the jump from 18.9mt in 2012," said De Ridder. "In the Northern Range there was a consolidation of coal imports to Rotterdam and Amsterdam and less went to Antwerp.

"At this moment in 2015, we're a little bit down. German

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consumption is lower due to more use of wind and solar energy, but it was impossible to keep seeing the growth we had. There was some oversupply, but this has mostly been drawn down now.

"This year we think we'll still handle about 18.5–19mt at the port, so a bit less than 2014 or about the same, but still on a very high level. If we managed zero growth, we'd be happy this year."

Plans are also in place to boost handling of agribulk cargoes in tandem with Cargill. "We have a mutual plan to create new quays and a warehouse for agribulk storage, which will open next year," explained De Ridder. "This is being developed now and the idea is to build this next to Cargill's IGMA terminal. As well as handling imports for their own businesses here, which amounts to around 3mt per annum, they also import a further 5mt, which is then distributed around Europe. They want to expand by creating extra quay capacity and flat warehousing next to IGMA for storage of agribulk. They are investing in more flexibility and capacity and more room to compete and grow." Last year Cargill moved her European head office to Schiphol in the Amsterdam area.

The port's fertilizer and chemical business also received a major fillip in January when Israel Chemicals Ltd. (ICL) opened its new European head office in Amsterdam on 29 January 2015. ICL has a long-standing relationship with the city and has been operating a fertilizer plant in the Amsterdam port area since the 1980s. The new ICL head office is expected to have 300 employees who will fulfil positions in a range of corporate support for its minerals, food and agriculture business services, including finance, procurement and human resources. ICL is happy to establish a second headquarters in the Amsterdam area.

Port of Amsterdam CEO Dertje Meijer said the fact that ICL already had activities in the port of Amsterdam meant it was well acquainted with Amsterdam's strengths as a logistics hot spot. "There are very short lines of communications and this creates the optimum conditions for collaboration," she added.

As reported by *DCI* last year, efforts to get more cargo through Amsterdam Container Terminal continued unabated. Launched in 2000, ACT was originally intended to offer a unique handling experience to container shipping lines by offloading containers with cranes located on both sides of the vessel. However, ACT couldn't secure business on a large scale with lines, despite a series of ownership changes.

Now operated by Holland Container Terminal, a subsidiary of the TMA Group, a broad logistics group, it is seeking out a wider range of cargoes. Although this still includes boxes, HCT is also being positioned as a multipurpose terminal offering breakbulk, roll on roll off and project cargo handling services. "The new operators have been developing the business in the last few months and are handling a major offshore wind industry project," said De Ridder. "It needs some time, but they are quite active and the inland shipping of containers is also going well."

Last year the port also handled 1.1mt of scrap at its three independently operated terminals. "The turnover in scrap is going through the roof, it's more than doubled in two years time," he said. "Scrap is very interesting for us. These days it's more and more a recycling business rather than an old metal dirty business."

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Gans Cargo Operations Netherlands for dry bulk logistics in Rotterdam Port area

Gans Cargo Operations Netherland B.V. was established in 1907 and is a typical shipping and forwarding company situated in the Rotterdam Port area. The is specialized in dry bulk logistics (a.o. petroleum coke, coal, agri, fertilizer and biomass), and offers tailor-made solutions for transporting customers' products on a door-to-door basis. Gans Cargo operations ensures timely delivery of cargoes at competitive rates, terms and conditions including the ability to offer owned and/or long-term leased covered and non-covered storage capacity in the Rotterdam port area, alongside the river Rhine, the German canals and France (Supply Chain Concept).

The company's head office is located in Rhoon (Rotterdam Port area) and it has subsidiaries in Ghent, Antwerp, Flushing, Terneuzen, Amsterdam, Hamburg, Bremen and since 1 March

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2015 an office in Alexandria, Egypt (JV with a local, strong partner).

Gans is member of the Hudig & Veder Group, a traditional, family owned company existing since 1795 through which all other transport modalities can be offered as well (containers, RO/RO, Reefer, Expo, bulk minerals), including a fleet of ten coastal vessels (box-shaped) between 2,000 and 8,000 tonne and the same number of breakbulk/project coastal vessels.

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About BMair

BMAir is a Dutch Company and the European market leader in the field of production and development of filter pressurization systems. Filter pressurization aystems be applied to construction machinery used in demolition, remediation, waste disposal, composting and in case of a polluted environment.

The total package is very diverse, partly because BMAir has close co-operation with all kinds of clients, so it knows what to produce and assemble. This makes it possible for it to be flexible and anticipate the wishes of its client and the market. The development, engineering and manufacture of all BMAir products conform to the latest trends in the market.

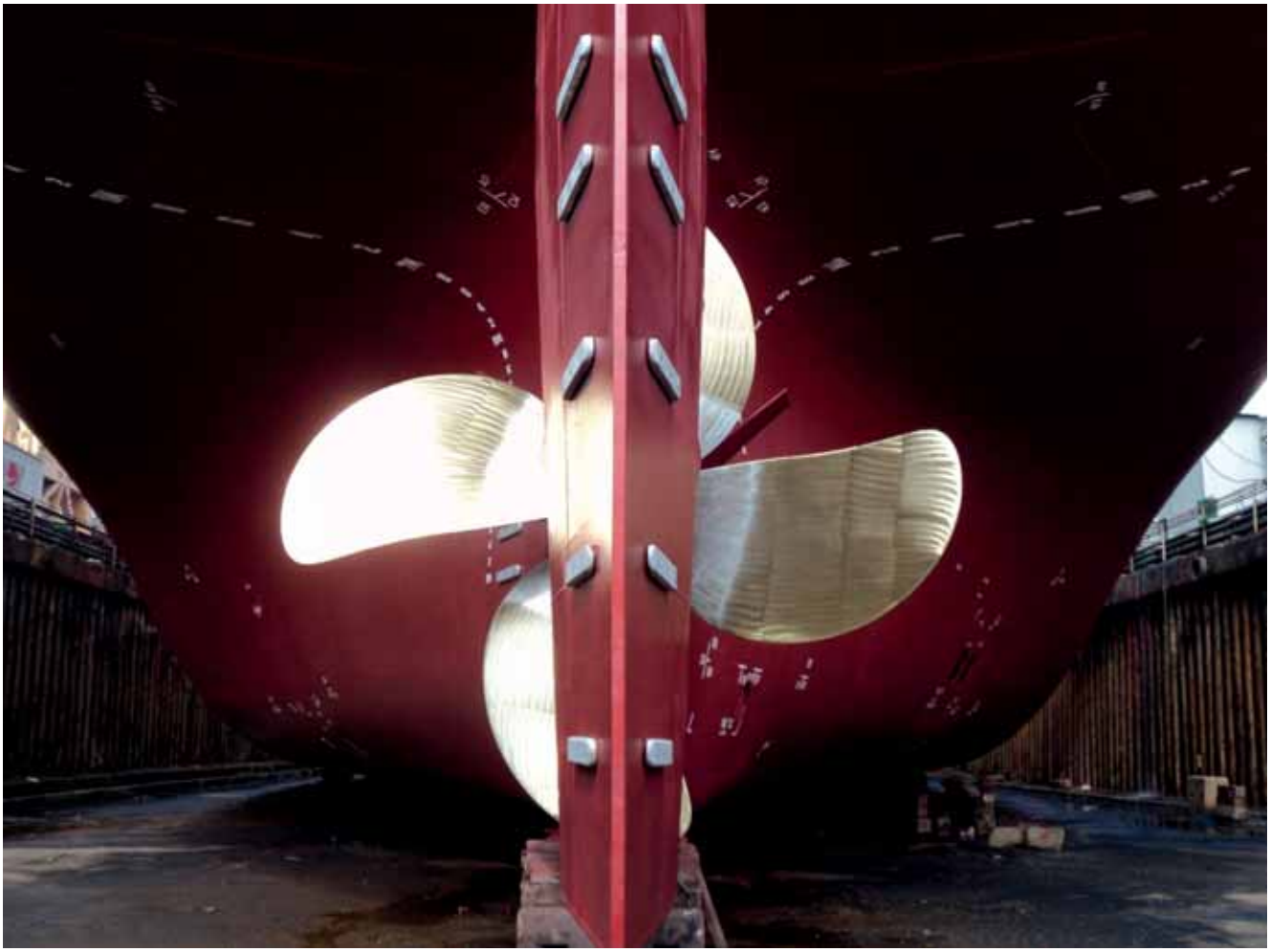
Misuga – precision management – the demands of today's bulk carrier market

With the dry bulk freight market at close to all-time lows, vessel owners need precision management to ensure that there is minimal value destruction. In an operating environment subject to the forces of nature, such as shipping is, less-than-

favourable surprises do happen from time to time. Ship owners need to be comfortable in the knowledge that operating standards and quality management are in place. This will ensure that situations are anticipated and preventative action is taken so as to keep the financial implications of such events manageable.

The attractiveness of Misuga Ship management to ship owners is that Misuga is a dry bulk vessel specialist. Of the top ten world-wide ship managers (by number of vessels under technical management), Misuga has the largest percentage of dry bulk vessels. Besides dry bulk vessels and specialized dry bulk ships such as wood chip carriers, Misuga manages container carriers and PCTCs.

The Netherlands is not really known in industry circles as a home to ship owners and ship managers. On the other hand, the market is well aware of the surfeit of ship managers that flooded the German market in the boom days of the KG scheme. While Germany will always remain a shipping powerhouse, the Dutch presence is on the increase. This is in part due to the large pool of maritime talent that exists because of the rich Dutch



maritime heritage and the country's vibrant large ports.

Misuga Holland has capitalized on the talent in The Netherlands to establish a formidable ship management operation in Rotterdam in 2009. With the majority of Misuga's 21 owned ships under charter to European interests, being in the same time zone as them, timely communication is easy.

The newest addition to the Misuga fleet is the 61,000dwt *Star Maine* which was delivered in April this year by Iwagi Zosen, Japan. This yard will deliver another vessel to Misuga in the coming year.

The Misuga Holland parent company headquartered in Japan, brings its wide range of resources across ship building and the shipping industry to give its clients an edge. The company's offices in Manila and Hong Kong enable it to serve ship owners in that region. In Manila Misuga runs its own crew training department and manning facilities.

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Maja Stuwadoors' new Damen Spill Pontoon demonstrates brilliance in simplicity

Non-complex innovation

In its first contract with Damen Shipyards Group, Netherlands-based Maja Stuwadoors took delivery of a Damen Spill Pontoon 2116. The new pontoon, called *Maja 5*, will catch bulk products that are spilled during the transshipment process.

In the Dutch ports of Amsterdam and Rotterdam, Maja Stuwadoors has several floating harbour cranes used for the transhipment of bulk goods for the agricultural, energy and metal sectors. These cranes are typically positioned between the quay and the bulk carrier. During the unloading process, it is a common occurrence that some of the load is lost from the crane's grabber and thus falls into the water.

"This new pontoon can be seen as an extension of the crane pontoon," comments Damen's Benelux Sales Manager Roel van Eijle highlighting the spill pontoon's principle function. "If bulk goods are dropped, they fall onto this spill pontoon instead of in the water." As well as reduced loss of product, operators using spill pontoons will comply with European port regulations concerning water quality in harbour areas.

As the first Damen pontoon to be constructed for this specific purpose, the *Maja 5* demonstrates that high-tech specifications are not a prerequisite for innovation. Essentially a very simple concept, the spill pontoon has a large closed deck with a raised 8cm edge to prevent further product loss in addition to mooring bollards in each corner. Damen also outfitted the spill pontoon with two tanks with special closable deck dowels in order to collect polluted water.

Constructed within eight weeks at one of Damen's Chinese partner yards, the Spill Pontoon 2116 was transported to the Netherlands on Damen's latest shipment of pre-purchased and built-for-stock vessels from local Chinese partner yards. The shipment arrived just a few months after the order — matching Maja Stuwadoors' requirements concerning short delivery time.

"This is the first time that we have worked with Maja Stuwadoors," says Van Eijle. "Looking at what work they perform and what equipment they have, we certainly look forward to working with them again in the future."

Orher News

New Damen Transshipment Crane Barge 6324 enters market

Two yard numbers have been sold, one to South America, one to Vladivostok. It is a smart designed product: main function is to load up to new-Panamax size bulk vessels. It can also be used for unloading large bulk vessels, lightering on a river, vessel to quay operations and temporary store cargo on deck. Besides grab operation the crane can be used for containers and in hook operation for project cargo; a versatile vessel which provides a flexible transshipments solution for ports or remote locations.

Damen is also in the process of designing a range of standardized hopper barges and in the future will also start with a range of split hoppers.

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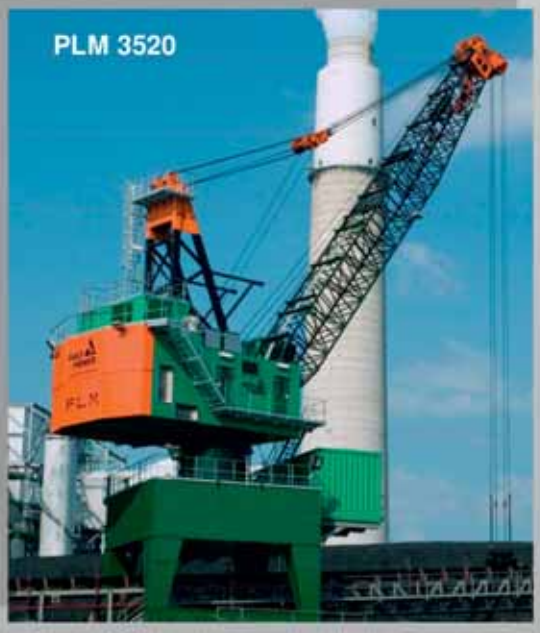

Purpose-built bulk handling, dredging and hoisting cranes.

Dinnissen introduces new Pick-Up Device for vacuum conveying during Achema in Frankfurt and Victam in Köln

Constant inflow of powders, particles, and granulates in vacuum conveying

Dinnissen Process Technology has developed a new pneumatic Pick-Up Device for providing a constant inflow of powders, particles, and granulates in vacuum conveying systems. The Pick-Up works completely automatically on the basis of the transport pressure that has been set.

Mechanical dosage devices such as sluice valves or screws are superfluous. Dinnissen's new Pick-Up plays a crucial role in its innovative Slow Flow Conveying systems which can be used to pneumatically transport even the most fragile, sticky, and soft products quickly, easily and effectively.

Problem-free transport of fragile, sticky, and soft products

Slow Flow Conveying is the pneumatic conveying system developed by Dinnissen especially for the transport of fragile, sticky, and soft products.

Slow Flow Conveying works according to the principle of underpressure or overpressure transport. Powders, particles, or granulates are transported from one or more inflow points to a single compact receiving unit with the help of a controlled flow of air or gas. In Slow Flow Conveying, it's crucial to minimize the friction between the product particles in order to ensure that fragile, sticky, or soft products are transported as efficiently and gently as possible. To realize this, the transport speed is minimized, and the ratio between the amount of product being transported and the amount of transport air or gas used is relatively high. In order to carefully and gently transport fragile ingredients, it's also crucial to ensure a constant supply of product to the conveying system. After all, a constant supply rate results in a proper loading factor, a smooth production process, and an optimum end product quality.

Minimizing product damage and mechanical maintenance

Dinnissen has developed a new Pick-Up for vacuum conveying systems to ensure that, regardless of the product in question, the product can be transported through the system at exactly the proper loading factor and speed. Dinnissen's new Pick-Up plays an important role in its innovative Slow Flow Conveying system.

The Pick-Up is fitted with an automatically regulated air supply for the inflow of products. This ensures that an optimum amount of transport air or gas is used for each product. Via the automatic valve, the precise capacity for one or more inflow products can be chosen on the basis of transport pressure. This means that the proper ratio between transport speed and loading factor can always be realized even for products with very different characteristics. This makes it possible to transport even the most fragile, sticky, or soft products easily and quickly and without the use of mechanical dosage devices, sluices, or screw transporters. The new pneumatic Pick-Up Device makes it possible to reduce product damage and mechanical maintenance to an absolute minimum.

More information

Dinnissen Process Technology is presenting the new Pick-Up and its Slow Flow Conveying systems at the Achema exhibition in Frankfurt in June and at the Victam in Köln, also in June. Slow Flow Conveying is one of the conveying systems in the range of products supplied by Dinnissen. In the area of bulk transport, Dinnissen also specializes in dense phase and traditional air transport. Besides conveying systems, Dinnissen supplies technologies and solutions for handling, weighing, mixing, grinding, sieving, and packaging bulk goods.

Dinnissen Process Technology presents its latest Pandora End of Line Mixing

Cost-efficient mixing without concessions to quality

At the Achema in Frankfurt and Victam in Köln, Dinnissen Process Technology is presenting its latest Pandora End of Line Mixing concept for high-quality applications in the chemical, pharmaceutical, feed and food sectors that require fast, gentle, and cost-efficient mixing solutions. The Pandora End of Line Mixing concept is especially suited for situations in which costs have to be carefully managed without making any concessions in terms of quality. The new concept is suitable for mixing a maximum of 10 (micro) components and has a capacity of 50 kg up to 100 tons per hour.

Compact design mixes quickly, gently, and very homogeneously

Pandora End of Line Mixing works according to the principle of continuous mixing, whereby raw materials are continually added and removed from a compact mixer. The concept is based on a combination of several accurate gravimetric feeders and the well-known Pegasus® mixer supplied by Dinnissen Process Technology. The special feeders accurately measure the supply of ingredients to the Pegasus® mixer, which can consist of micro-ingredients (0.01–2% per batch weight) and even extremely high percentages (30–220% per batch weight).

The Pegasus® paddle mixer gently suspends raw materials during the mixing process in order to obtain a very homogeneous result extremely quickly. The mixer can gently mix fragile products in 6 to 8 seconds and sticky and difficult to mix powders and liquids within 30 to 50 seconds. Pandora End of Line Mixing has a throughput capacity of 50kg up to 100 tonnes per hour. Dinnissen also succeeded in designing the

Pegasus® mixer to be very compact, and it is this compact design that is responsible for ensuring that the overall mixing concept provides significant cost savings.

Cost-friendly mixing concept in purchase and use

The compact design of the Pandora End of Line Mixing solution makes it possible to mix ingredients much more quickly and therefore also maximizes production capacity and minimizes energy consumption. The quick response time of the gravimetric feeders in combination with the special Batch Startup integrated into the new mixing concept minimizes startup and switchover times for the production process and therefore minimizes the loss of finished product. The compact design also makes the mixer easier and quicker to clean, which also helps minimize production downtime. The mixing concept is therefore especially interesting in situations that require frequent switches between recipes. The compact design of the Pandora End of Line Mixing concept means that less space is needed to install it in a new environment or to integrate it into an existing production line. Pandora End of Line Mixing can therefore be integrated into the production line just before the packaging process, thereby minimizing the risk of product segregation.

As a stand-alone module or as a complete process

The Pandora End of Line Mixing solution can be supplied as a stand-alone module to be built into new or existing production processes or as a complete production process. The Pandora End of Line Mixing solution will be showcased at Dinnissen Process Technology's stand at the Achema show in Frankfurt and at Victam in Köln, also in June. Dinnissen also supplies an extensive range of batch-based mixers.

RC Inspection – experienced global inspection partner in dry bulk activities

In order to live up to the high standards of the global dry bulk market, RC Inspection understands the international value chain from A to Z as no other. Offering team members with more than 40 years of experience and know-how, the company is able to grant the clients the highest quality to be found in the field of inspection, sampling and analytical services.

RC Inspection provides a broad spectrum of services on all types of solid fuels and biomass commodities. The inspections, sampling and sample preparations are performed under the ISO norm 18283 and the analyses are performed according to Global COAL SCoTA. The specialists have also developed specially designed internal procedures to inspect and sample the complex heterogeneous cargoes which are the basis and crucial part of the quality process. The company offers great expertise as well for services such as deep temperature control, infrared temperature control, size distribution and stockpile/terminal inspections.

RCI Analytical Services provides chemical analysis for RC Inspection Group companies and their related customers, as well as analysis on commodities such as gold and silver in copper- and lead-concentrates Photos: © Huijskes Fotografie.

RC Inspection provides its services also on other dry bulk commodities such as metals, minerals, non-ferrous ores/concentrates, noble alloys, bulk alloys, high purity-, base-, precious and rare earth metals.

The controlling operating offices of RC Inspection are strategically based around the globe, operating worldwide and represented in each important, active economic centre. This gives the advantage of being able to perform the services at short notice and guarantee unbeaten turnaround times for reporting and analytical results. All global services are co-ordinated from the head-office in Rotterdam where a permanent team of specialists in dry bulk commodities is based.

Except for its skills, the company places high value in a personal relationship with the customer. By adding a personal touch in the communication and services, RC Inspections aims to make a difference in providing the customer's needs. The core business philosophy is to provide independent, fast and reliable services with a direct people to people approach as befits a modern inspection company.

As RC Inspection aspires independent, fast and reliable services for the analytical results, the company keeps the analysis in-house conducted by its extended sister company RCI Analytical Services. The laboratories are strategically located in The Netherlands, Ukraine and Mongolia and equipped with the most modern and advanced instruments to drive accelerated turnaround times and up-to-the-minute reporting through a service driven approach and innovative use of technology.

RCI Analytical Services provides chemical analysis for RC Inspection Group companies and its related customers. The analyses are performed using all relevant modern analytical techniques such as ICP-OES (Inductively Coupled Plasma-Optical Emission Spectroscopy), X-ray Fluorescence, Instrumental Gas Analysis for all relevant gases, X-ray Diffraction (XRD) Analysis.

Additionally RCI Analytical Services

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www.verbruggeinternational.com

performs analysis on commodities such as gold and silver in copper- and lead-concentrates by dissolution of the samples and analysis by GF (Graphite Furnace) and F-AAS (Flame Atomic Absorption Spectroscopy) and high concentrations are determined accurately using precision titration. With future prospects under the loop, RCI Analytical Services is working on getting all the laboratories accredited under ISO/IEC 17025.

Besides rendering analytical services, the company also offers the supply of analytical equipment, auditing of laboratory management systems and implement/manage laboratories as outsourcing to the industry.

As the global dry cargo market is rapidly developing, RC Inspection is adapting to all necessary requirements to deliver only guaranteed high quality services. Since 2009, RC Inspection has been certified according to the ISO 9001:2008 Quality Management System Standard. In January 2015, the company has strongly expanded the scope of services and have been granted a new official certificate of approval.

As of April 2015, the company is proud to announce it is now accredited as by ISO/IEC 17020:2012 compliant organizations with registration number: I 308.

RC Inspection underwent an evaluation process that included quality management system development, management system documentation review, pre-audit, initial assessment and clearance of non-conformances, all of which work to identify corrective actions that eliminate non-conformance to the quality management standard.

The accreditation of compliance with ISO 17020:2012 recognizes that the policies, practices and procedures of the company can be ensured with consistent quality and excellent expertise in the knowledge of the products and the provided services.

With this accreditation, the clients can be ensured that RC Inspection is dedicated to maintaining the highest efficiency and responsiveness in achieving its ultimate goal – guaranteed client satisfaction.

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Volker Stevin International designs new quay for Port of Rotterdam

Volker Stevin International, together with its sister companies Van Hattum en Blankevoort, Volker InfraDesign and Volker Staal en Funderingen, invented an innovative design for the construction of a new quay wall in the Port of Rotterdam. Follows, the case study of the design and building of the new quay:

The frontside The New Dutch Quay in Rotterdam.

Country: The Netherlands
Client: Port of Rotterdam
Period: April 2011 – May 2012

The Port of Rotterdam was looking for an innovative and sustainable design for the construction of a 495m quay for a dry bulk goods and transhipment company that could withstand the impact of the barges and loading platforms that are used for the transportation of bulk goods like coal and ore. The new quay would be an extension of quay four and had to be suitable for a crane track with a maximum load of 600kN/m1 (60 tonne/m1) over a length of about 430m.

The other challenging aspect of the project was that during the construction stages, the client still needed to use the operational systems (corner towers and conveyor belts) and as such, they could not be affected. Volker Stevin International's sister company Volker InfraDesign answered the challenge with a winning quay design so unique that a patent was requested!

Innovation

They opted for a solution with a focus on sustainability and opportunities for innovation. The engineers integrated the quay with the fender and replaced the traditional steel fender design with a protective shell of steel fibre-reinforced high strength concrete. The concrete mixture has a very high resistance against peak loads and is very hard to penetrate. Steel fibre-reinforced high strength concrete is also not vulnerable to wear and tear and this combination made it the ideal product to make the quay barge proof. To avoid possible damage to moored sea vessels UHMW-PE strips were bolted to the concrete at a 10m interval. The substructure consisted of a more traditional solution with a combi-wall. At the rear vibro piles and SG-anchors were used.

Advantages

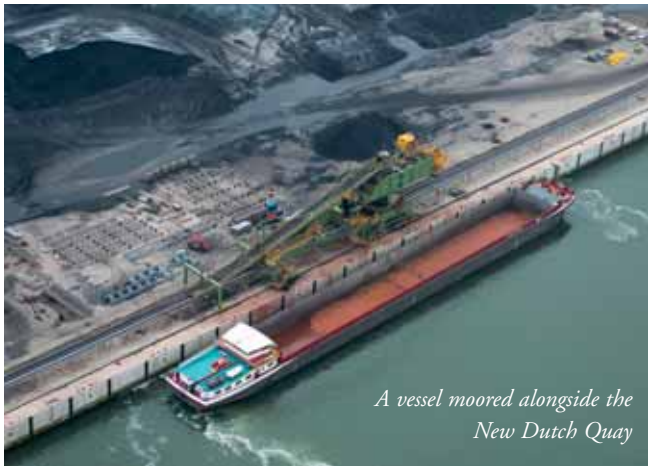
The solution avoids high maintenance costs of the fenders. In addition, the distance between the ship and the quay is reduced, resulting in less waste loads in the water. Less waste means less spillage, less dredging, and more profit!

Virtual build

By using virtual building software and simulating every important step for the construction of the quay, the client and the engineers were able to follow the project developments at any moment and from any location. This tool was extremely valuable as business continued as usual in the harbour. Also, the project was located in a bird nesting area and special precautions were needed to avoid interrupting the breeding process. The tool made it possible to make quick adjustments.

Proven concept

The Port of Rotterdam has been using the quay and the fender system since the summer of 2012. The quay has been used by barges, inland vessels and sea going vessels. Up to now no damage has been seen on the wall. Captains are deterred by the concrete wall and moor their ships extra carefully. All parties involved are pleased with the result.



A vessel moored alongside the New Dutch Quay

It's in our character

The port is our life. Hands-on mentality, hard work and accessible people, that's our character. Anyone who gets to know Zeeland Seaports becomes acquainted with professionals who are proud of their ports. We understand that your interests are also our interests. Clients come first. Always. We know what's important to your company. That's all in our character, and one of our many strengths:

- **location on open sea**
- **draft of 16.5 metres**
- **congestion-free connections with the hinterland**
- **no nine-to-five mentality**
- **accessible ports and people**
- **dedicated terminals for a broad range of cargo**
- **you can reach us 24/7 at +31 115 647400**



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Precision, high-speed bulk material bagging systems from Premier Tech Chronos

PTC's versatile PTR-1030 Series Open-Mouth Bagger.

Building on years of experience, Premier Tech Chronos (PTC) is recognized worldwide for its innovative and customized weighing, bagging, palletizing and load securing solutions for various process industries. It has been providing manual, semi-automatic and fully automated solutions for bagging a wide range of materials since 1881.

Premier Tech Chronos has developed a comprehensive range of equipment to meet the specific needs of handling a variety of dry bulk materials found in dockside locations. This includes several innovative open mouth bagging systems to accurately handle most free-flowing materials precisely and at the speeds required by the dry-bulk material sector.

As the European Business Unit of Premier Tech's Industrial Equipment Group (IEG), PTC is an integral part of the number one worldwide supplier of Industrial Flexible Packaging solutions. The company has a global presence both in terms of countries, and market segments served. PTC is also recognized worldwide for its innovative and customized solutions based on deep technological knowledge and expertise. Details follow about some of the latest products.

OML-1080 Compact Open-Mouth Bagger

The OML-1080 is a compact open-mouth bagging unit that has a packing rate of up to 800 bags/hour. Built with stainless steel contact parts this machine is suitable for bagging free-flowing materials into open-mouth bags. OML-1080 can handle bag sizes 5 to 50kg; and is suitable for products such as grains, flaked materials and some powders.

An innovative part of the OML-1080 is an automatic bag spout adjustment facility that enables a wide range of bag sizes to be accommodated. It has a compact design for installation in sites with restricted space, in-built dust control features for clean operation and all through the filling process control of the bag top is retained. The OML-1080 is easy to clean and maintain and can be supplied with integrated nett or gross weighing systems matched to the output requirements of the installation.

Different types of bag material can be handled on the OML-1080 and all common types of bag closing system can be integrated into the packer; as can bag turning systems. Closed bag 'push-off' can be either top or bottom first. The OML-1080 is PLC controlled and is supplied with a user-friendly HMI (human machine interface). The in-built diagnostic display provides instructions to the operator for trouble shooting of the various operating functions.

OML 1140 High-Speed Open-Mouth Bagger

The OML 1140 offers high-speed bagging at rates of up to 25 bags/minute (1,500 bags/hour) and features a modular design for optimum versatility and maximum output, whatever the product being bagged. Typically it operates for bag sizes in the range of 5 to 50kg.

This innovative and versatile bagging system can be easily used for any application that uses pre-made open-mouth (pillow or gusseted) bags made of paper, plastic or woven polypropylene. The result is a highly effective system for bulk material bagging of sugar, salt, fertilizer, nylon resins, animal feed, grain as well as materials from the chemical and construction industries.

OML 1140 uses field-proven technologies for continuous reliable bag transfer and it retains total bag control throughout the entire packing process. This ensures high speeds are maintained without compromising the quality and efficiency of the bag closing process.

OML 1140 also features a unique bag separating system that

can accommodate all types of bag and is designed for quick change-over in less than five minutes.

Proven in many different installations since it was originally introduced to the North-American market in autumn 2006, the OML 1140 has now been adapted to the European and Asian markets and is now available worldwide. Specific features include: fully automatic operation; total bag top control; high speed bagging; empty bag handling for all bag types; advanced control software; easy to clean; simple to adjust.

PTR-1030 Series – Robotic Bagger

The versatile PTR-1030 Series Open-Mouth Bagger (patent applied for) for European sales was launched in 2014. The innovative open-mouth bagging system can pack dry free-flowing materials at rates of up to 1,000 bags/hour and is suitable for use with a range of bag types and sizes. An upgrade option is also available that allows the PTR-1030 to successfully handle porous woven polypropylene bags.

PTC has used its well-proven experience as a certified FANUC Robotics integrator to carefully incorporate two robotic arms into the PTR-1030. One robotic arm handles empty bags to accurately position them on the filling spout; while the second robotic arm removes the filled bag for transfer to the closing system.

By separating out these basic operating functions to different robotic arms has enabled PTC to enhance the speed of the PTR-1030, which has also benefited from the proven reliability of the FANUC Robotics, which is an international leader in the manufacturing of intelligent robotic solutions.

PTR-1030 is the most versatile robotic open-mouth bagging system available to industry. This versatility is achieved by its ability to handle a wide range of bag types and sizes. This includes: gusseted or pillow type open-mouth bags; made from either paper, polyethylene; laminated woven polypropylene; and porous woven polypropylene bags. Bag widths in the range 279 to 610mm; and bag lengths of 457 to 1,016mm can be successfully handled.

The way the robotic arms are programmed allows the PTR-1030 to provide optimum bag changeover times, when changing to a different packing schedule, a different product or a different type and, or size. The empty bag handling robot can also be upgraded with a vision system, which realigns the top of the bag during the empty bag placing motion, thereby optimizing the bag shape for subsequent bag closing process.

All machine contact parts are made of 304 stainless steel and the filled bag transfer robot has been designed for compatibility with all types of bag mouth closing systems. To help ensure a clean filling process the PTR-1030 incorporates a bag-on-spout detection system to avoid any product spillage.

The compact design and footprint of the PTR-1030 allows its easy incorporation into sites with limited space and restricted heights. Its robotic operation means it requires less maintenance than conventional baggers and it 'learns' to make its own optimization adjustments. The use of smart wiring technology enables simple and speedy on-site installation/commissioning.

PTC is able to offer the right bagging solution to meet individual customer requirements. This can be achieved by installing standard equipment, or by working with them to design a customized equipment solution to meet their specific site requirements.

About PTC

Over the last 15 years, in order to offer the most reliable line of packaging and palletizing equipment on the market, Premier Tech's Industrial Equipment Group (IEG) has developed a strategic partnership with component supplier FANUC Robotics, an international leader in the manufacturing of intelligent robotic solutions. In addition to being a certified FANUC Robotics integrator, IEG is the number one manufacturer of robotic palletizing cells in North America. Thanks to its superior robot technology, customer service, and process expertise, IEG is a good choice for companies looking to gain a competitive edge.

Successes in dust treatment at dry bulk storage in Spain

Wuvio Chemicals International BV, a Dutch supplier of dust treatment products with subsidiaries in France and China, was asked by one of Europe's biggest bulk handling installations to help them in combating their dust problems, *writes ing. J.P. Lange, Manager Development & Production, Wuvio Chemicals International BV.*

This terminal has a surface of 340,000m² and can store 800,000 metric tonnes. The lump sum length of conveyor belts adds up to 12km. Annual throughput is around 15 million tonnes. The materials that are handled are mainly iron ore and several types of coal.

Dust suppression is needed at every point that the dry bulk is moved and/or subject to wind, so at unloading from vessels, internal transport via conveyor belts, reclaiming via transfer points and conveyor belts, storage and loading into trucks.

Conventionally, dust suppression is often carried out by the use of abundant water, which is bad for the environment, involves extra cost and can influence the quality of the coal and iron ore.

Since every terminal has its own installation, a site survey is one of the essential keys to success.

Next to installing the appropriate nozzles at the right place, combined with a PLC-controlled dust suppression system that activates the dosing units, the addition of a synergetic mixture of surfactants is required.

When configuring the optimum, the total amount of water required can be reduced by at least 80% by choosing the proper type of additions and equipment.

Dust suppression at unloading by grabbing

To reduce the amount of dust (breathable and alveolar dust emitted at each treatment point and in winds of less than 4 Beaufort) with at least 75%, not more than just 2.5 litre Dust Repressing Liquid per tonne of dry bulk (coal, iron ore) is necessary. This Dust Repressing Liquid is a mixture of 0.50 litre Freko Humidifier per m³ water.

Based on an average unloading speed of 2,000 tonnes per hour, an amount of only 2.5 litres of Freko Humidifier per hour is needed.

Bulk Terminal Amsterdam

Your partner for dry bulk cargoes into the main European Markets

- **Main Terminal:** quay length 1.2 km with two berths/separate belt system for simultaneous discharge of two large coal vessels (up to Capesize) at a high capacity to the various stacking installations (3250 and 3850tph)
- ACP Terminal: quay length 350 meters / one berth for up to Capesize vessels
- **Terminal North:** quay length 350 meters / one berth for up to Capesize vessels
- Max vessel size: 17.80 meters draft SWEK, max beam 45 meters
- 4 gantry cranes (1 x 60 tons/1 x 50 tons/2 x 30 tons)
- Floating crane (50 tons)
- Coal storage capacity 3mio tons on 700,000m²
- Railcar loading facility; 25,000 tpd
- Two large ship (spout)loaders: 60,000 tpd at the Sonthaven for (push)barge combinations and seagoing vessels.
- Grab loading into barge/seagoing vessel at Main Terminal and Terminal North
- In ttl 10 heavy duty magnetic separators installed in all inward and outward bound conveyor belt routes, including the railcar loader. Board/board into barge barge/coaster also possible via the magnetic separators.
- Homogenising of various grades of coal whilst loading via the conveyor belt incl. weight assessment per quality
- Screening/crushing/mixing
- Covered storage capacity at Main Terminal in 5 sheds directly under reach of the grabs; ttl. 25,000m² for biomass, agribulk and minerals.

OBA Bulk Terminal Amsterdam

Westhavenweg 70, 1042 AL Amsterdam,
Managing Director: Harm Winkeler (harm.winkeler@oba-bulk.nl) +31 20 5873701
Commercial Director: Hans Mattheyer; (hans.mattheyer@oba-bulk.nl) +31 20 5873750
Website: www.oba-bulk.nl

Dust suppression at reclaiming via transfer points and conveyor belts

When reclaiming, an average speed of 1,200 tonne coal per hour can be achieved. This cargo is transported via very long conveyor belts. To prevent dust emission, spraying nozzles are to be installed at the first Transfer Point.

Using a pre-dilution of 10% Freko Foam, a dosage of 0.4% Freko Foam at the nozzle should be dosed in an amount of approximately 6m³ of pre-dilution per hour. This equals an amount of only 20 gram Freko Foam per tonne of coal.

Dust suppression by treatment of stock piles

By treating stockpiles with a synergetic mixture of polymers, a hard layer will be formed on the stock piles, giving wind no chance.

Spraying of Freko Crust with fogging unit.

Coal treated with Freko Crust.

Spraying on a stockpile of approximately 20m high.

Detail of the stockpile that was created at 20g/m².

Application of approximately 20 gram Freko Crust per m² is sufficient to create a protective layer that will last up to one to three months, depending on the weather conditions. This product can be applied easily with the use of a spraying canon, using a tank containing the premix. Best result is reached when approximately two litres of premix per m² are applied. Several high stockpiles (approximately 20m) have been treated with 20g/m² Freko Crust by means of a transportable fogging unit with a water capacity of 2,000 litre. The fogging unit can handle a maximum flow of 14,000 litres per hour at a pressure of 6 bar (coming from the tractor). It was easy to reach the top of the stockpiles.

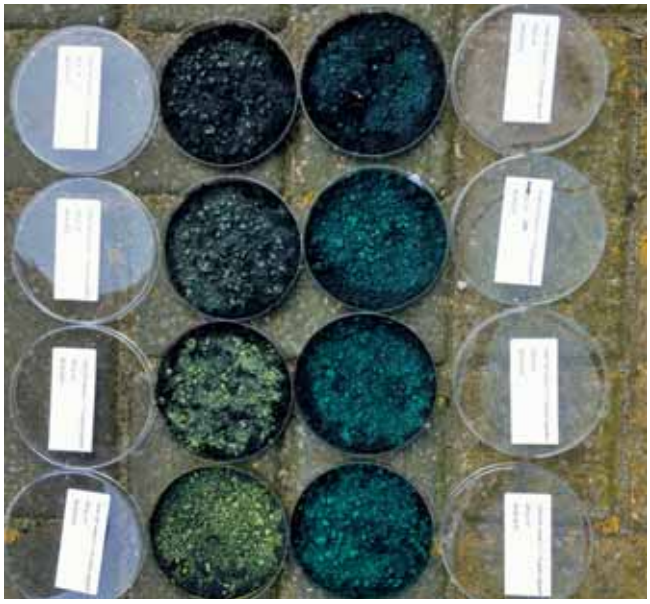
Future developments

To increase visibility on coal and petcokes, a natural pigment will be added. After application, a green or yellow layer will be formed (instead of transparent). This development will be ready for introduction around Autumn 2015.

A green variety for the treatment of sand is ready for production.

Non treated coal.

Coal treated with approximately 20 gram Freko Foam A per tonne.



Development , colouring treated petcoke.

Ready for production, colouring treated sand.

OVET B.V.

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Quality in bulk

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Contact: Mr. Bram Peters
Mr. Sander van der Veeke

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- Terminals in Terneuzen and Vlissingen
- Train loading station
- Draught 16.50 m SW

OVET Dry Bulk Terminal – quality in bulk

OVET B.V. offers a wide range of stevedoring services in the Netherlands. It can handle commodities including: coal, coke, petcoke, ores, minerals and scrap. The main activities of OVET are lightening, discharging, storing and distribution and screening of solid fuels, ores, other bulk cargoes and scrap.

OVET operates at two deepwater terminals with all hardened and paved stockyards: Terneuzen (Panamax) with a capacity of 160,000m² – 600,000 tonnes; and Vlissingen (Capesize) with a capacity of 315,000m² – 2,000,000 tonnes

Using four floating cranes (3 x 25 tonnes and 1 x 36 tonnes lifting capacity) with a total capacity of 80,000 tonnes per day, OVET also has the flexibility to operate at anchorages both in Terneuzen and in Vlissingen. The draught in Terneuzen is set to 12.50 metres freshwater, making the terminal suitable for Panamax vessels. In Vlissingen, the draught is 16.50 metres saltwater. Vlissingen has two Capesize berthing facilities plus one Panamax berth.

Terneuzen and Flushing offer excellent connections (inland waterways, rail and road) to the European hinterland and UK, Ireland and Scandinavia as well.

The terminal in Vlissingen disposes of a mobile 'Multidocker' quay crane which can handle sea vessels, coasters and barges.

The river Westerscheldt (which ends up into the North Sea) disposes of two anchorages, Terneuzen Roads and Vlissingen Everingen. Terneuzen Roads is suitable for the lightering up to Panamax vessels and Vlissingen Everingen is accessible to Capesize vessels.

At the Vlissingen terminal OVET operates a warehouse of 6,000m² for the covered storage of all kinds of dry bulk products. The warehouse contains six separate cells and each cell measures 7,500m² and can be fully ventilated.

The philosophy of OVET is Quality and Flexibility. To ensure its quality, OVET is certified with ISO 9001, ISO 14001, GMP+ and AEO.

OVET Holding holds 50% of the shares of OBA, the bulk stevedore of Amsterdam, which means more service and flexibility for the customers of both OVET and OBA. OVET itself is owned by Oxbow for 50.1% and HES International for 49.9%.

Affiliated to OVET is the Shipping Agency OVET Shipping which offers a reliable 24-hour service throughout the River Scheldt area. This guarantees an efficient and effective handling of customers' vessels.

Another affiliate of OVET is OVET Screening, a company which is specialized in screening, crushing and blending activities. At both terminals OVET operates (mobile) screening and crushing installations. The Vlissingen terminal owns two mobile screening installations (Lywell). With these machines OVET is able to screen dry bulk material up to five sizes with a maximum input capacity of 400tph (metric tonnes per hour).

Because of its flexible layout and mobile equipment OVET is capable of making 100% homogeneous blends. By means of mobile stackers and conveyor belts, weight determination, etc. the blending operation is executed with the greatest care. Since 2014, OVET has had a new grinding installation to grind or pulverize wet/sticky material, also known as schlamm. After pulverizing the product can be blended with 'dry' material.

At the end of 2014, a new coal washing plant was constructed at the Flushing terminal. OVET's customer operates and runs the plant.

In 2014 OVET further developed its new state-of-the art train loading station available at its terminal in Vlissingen/ Flushing. This new piece of equipment will allow OVET to receive 44 wagon trains in one length. A 24-hour round-trip to e.g. different locations in the German Ruhr area has proven to be successful.

OVET operates at two deepwater terminals: Terneuzen with a capacity of 160,000m²; and Vlissingen 315,000m².

The station has a maximum loading capacity of 1,500tph and is equipped with an automatic weighing system. OVET already runs trains on a daily basis with a load factor of 100%. With the new installation OVET is able to load the weight up to kilogram accuracy.

The train-loading facility has a glycol installation and a de-ironing magnet at its disposal.

Over 1,250 metres of rail track is available at the terminal of which 675 metres is double track. The new infrastructure enables Ovet to have access to the European hinterland by rail.

In March this year Ovet also launched its new website.

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TBA highlight simulation-based tools for dry bulk terminal operators

TBA, the Dutch-based consultancy and software provider, believes that dry bulk terminal operators are turning increasingly to simulation-based tools to assist them in their decision making.

As demand for raw materials and products grow, facilities with outdated infrastructure are in need of expansion, redesign, or refurbishing end of life equipment. The quantum leap in technology and equipment has also given terminal operators a wide range of options to choose from. For terminal operators it is critical to make any investment plan with an analytical and dynamic approach. Simulation-based tools assist operators in choosing where to invest and determine the potential profitability during every step of their respective investment and development plans.

TBA's approach

Bulk handling terminal design

TBA uses a structured and proven approach in terminal planning and design. The main focus of its approach is to arrive at a design that balances storage and handling capacity, OPEX and CAPEX. TBA uses specifically designed modelling templates and advanced proprietary simulation models to validate the final conceptual design. With this approach, it can determine the operational performance of the overall facility, identify potential bottlenecks in the system, determine service levels on waterside and landside, and equipment utilization. These quantitative analysis tools are applied for other services more rigorously, assisting in decision making towards finalizing terminal design and/or capital investments.

Capacity analysis

Based on the terminal's objectives, design criteria, collected input and assumptions, TBA (pre-) calculate the annualized throughput capacity of berth, storage, transport system, gate and rail facility. The company uses static models as well as its dynamic simulation model TRAFALQUAR Bulk. The aim here is to balance storage vs handling capacity of the various components.

Process improvement

TBA uses its experts and logistics background to analyse all aspects of operations including IT control. TBA can then identify bottlenecks and propose solutions to improve operations. This approach is aligned with the Six Sigma principles.

Assessment of system alternatives

With its simulation models, TBA assess for the most promising alternatives whether they achieve the required performance levels, and what it takes to achieve the performance targets e.g. in terms of equipment performance, operational procedures, TOS' characteristics.

Bulk material handling for a wide range of bulk products

TBA has extensive experience in specific bulk handling systems; taking into account the characteristics, equipment capabilities and operational requirements for each material. Its bulk experts have done projects in a wide range of materials at various locations in the world, including large-scale major bulk, smaller multi-products agri-bulk, biomass and breakbulk terminals.

About TBA

TBA has been involved in various bulk projects, extending its vast expertise in consulting terminal operators in strategic, tactical and operational studies. TBA's project methodology, with its proven approach, has been applied to various bulk terminals in the world.

TBA's services have been proven to add value to existing terminals by improving operational efficiency, helping existing terminals plan for future expansion and validating design for Greenfield terminals. TBA's project portfolio covers terminals handling agri-bulk, coal, iron ore, sulphur, sugar and more; having worked for major bulk operators including Cargill, Louis Dreyfus, Vale, Impala terminals and Petronas.

Headquartered in The Netherlands, TBA is a leading international provider of consultancy services and software with 20 years of industry experience. Its vision is to improve the cost efficiency and productivity of container and bulk/break bulk cargo terminals worldwide through the application of expert consultancy and innovative software. TBA's difference is clear: it deploys state-of-the-art simulation and emulation software solutions for clients that include all major global container terminal operators as well as many local port operators. DCi

TBA provides consultancy services and software on a global scale.




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Railway wagons and tall containers easy to fill with new Dino XXL

Goods can now be screened at the last moment before transfer

Two new versions of the Dino® bulk truck loader now make it easier to load taller (square) storage silos such as railway wagons and containers. These XL and XXL Dinos from Van Beek were initially developed at the request of two customers. They do, however, seem to be the solution that so many customers were looking for that the Dinos have been added to the standard range.

The XL and XXL Dinos are an extended version of the Dino that Van Beek has been producing for some time already. The standard Dino has a delivery height of 4.2 metres, but the XL can reach up to 5 metres and the XXL even to 6 metres. It is now also possible to screen a product after passing the outlet side. Because of the extra height obtained there is in fact also room to fit a vibrating screen or rotary screen.

Filling tall square silos an interesting challenge

The new Dinos were developed to meet two customer requests. A site of Katoen Natie in the US needed a mobile loader of this type to load plastic granule pellets into railway wagons. The cube shape of the wagons meant that the frame of the inclined feed screw of the normal Dino would collide with the upper edges of the wagon. For this reason a higher outlet of the Dino was needed. The parent company, Katoen Natie in Antwerp, has had good contact with Van Beek for many years and asked if it could come up with a solution.

This was an interesting job for Van Beek. "Dinos were already used for loading for example square containers, but never in this specific application, which requires a greater delivery height," explains Roel Kneepkens, sales engineer at Van Beek. The XL Dino ensures that the wagons can now be loaded without problems. This Dino is also suitable for loading other taller tanks or silos.

The different power grid in the US was not a challenge for Van Beek. The company has already supplied hundreds of Dinos worldwide and so knows what it is doing when it comes to making adjustments for a different power grid. The XL Dino is supplied with a gear motor that is suitable for the American power grid (575V 60Hz).

As for the XXL Dino, the extra height is achieved by extending the screw. The frame with the wheels on which the construction stands can as a result remain low on the ground, so these Dinos are just as accessible, easy to clean and easy to maintain as their smaller brothers.

High, higher, highest

The XXL Dino was developed for Nuttens Services in France, a service provider in the area of packaging, processing and transporting food in powder form. Nuttens wanted a screen with several screen layers, a vibrating screen, to use on the outlet side. By suspending a screen under the Dino the ultimate discharge point is lowered. To keep the discharge point at the same height, the Dino therefore had to be raised.

"By fitting this screen as late as possible in the loading process you know for sure that no foreign bodies can get into the bulk wagon", explains Kneepkens. The XXL Dino is used to load gluten and the screen must remove any impurities that do not belong there. "This may be anything from nails and pieces of wood to cigarettes."

Because the Dino would fall over due to the weight of the screen, a separate bridge-shaped platform has been developed for the screen that is connected to the Dino. The whole assembly is still mobile and the operator can also stand on this platform to check the top of the bulk wagon and open manholes.

Big loading capacity and easy to clean

Both machines have a loading capacity of 40 m³ per hour and are made from SS304. If required the seals and sealing rings can be FDA approved. The Dinos then meet the requirements of the food industry. A cover on the top of the screw makes inspection and cleaning of the inside very easy. Extension rims enable a big bag to be placed on it directly so that the fork lift truck driver can immediately go off to fetch a new big bag.

Warm welcome for new Dinos

Van Beek expects the new members of the Dino family to get a warm welcome. "Anyone who wants a screen on the outlet side is best to use an XL or XXL", says Kneepkens. "That also applies for users who are not loading round bulk wagons but containers or railway wagons. They are nice reliable machines for transferring loads from big bag, bagged goods or shovel (bulk) to bulk wagons or containers."

River Consulting continues 8-year run in ENR's 'Top 500 Design Firms'

River Consulting has been ranked as one of the 'Top 500 Design Firms' in the country by *Engineering News-Record* (*ENR*) for the eighth consecutive year. Published annually, the 'ENR Top 500' recognizes top-performing architectural and engineering firms. River Consulting took the 390th spot in the 11 May 2015 *Engineering News-Record* issue, moving up the list from last year. The ranking is based upon 2014 revenue.

"Being recognized by the engineering community as a top design firm eight years in a row is a great honour. Our continual ranking over this period is testament to our ability to consistently meet the needs of our clients," stated Gregory DiFrank, P.E., president. "The past eight years has witnessed a remarkable shift in client and industry needs, as companies respond to the changing economic, regulatory, and energy supply landscape. Our ability to flex our services to meet these changing demands has allowed us to continue delivering solutions that help our clients achieve their project goals." DiFrank's more than 25-year tenure at River Consulting includes sponsorship of national and international multi-million dollar projects, team leadership, and the development of strategic business endeavours that contribute to company growth and sustainability.

River Consulting is a renowned mid-major A/E to global energy, food, process and industrial clients, delivering multi-discipline engineering and project management solutions for major capital projects and facility and process expansions. As part of the Houston Interests family of companies, River Consulting along with its sister companies provides solutions for clients worldwide.

River Consulting has extensive expertise in bulk terminals. The company provides complete, customized terminal solutions for virtually every type of bulk material commodity. It develops robust, reliable material handling systems for increased throughput, greater uptime and equipment reliability, and lower maintenance and operational costs. River Consulting works with independent bulk terminal operators and industrial producers and consumers across the full spectrum of bulk material commodities to deliver complete facility solutions.

Through combined and diverse expertise, the Houston Interests group brings more than three decades of global experience to a vast array of industries, delivering flexibility for all phases of a project. The firm's office locations include Columbus, Oh; New Orleans, La.; Pittsburgh, Pa; and Tulsa, Ok.

Flexco names new manager

Flexco names Aaron Rosso Senior Product Manager, Heavy-Duty Mechanical Belt Fasteners

Aaron Rosso recently joined Flexco as Senior Product Manager, Heavy-Duty Mechanical Belt Fasteners. In this role, Rosso is responsible for managing the global Heavy-Duty Mechanical Belt Fastener programme for Flexco, including the programme vision and strategy, product development plan, product line portfolio, promotion, PR and communications, pricing, and profitability.

"I am confident that Aaron will be instrumental in successfully managing the many products within the HD MBF product offering and continue to grow this important area of Flexco business," Chip Winiarski, Director of Marketing – Heavy Duty, said. "His hands-on approach and enthusiasm will be a welcomed addition to Flexco and the marketing team."

Rosso brings with him years of experience in product management, product development, and marketing strategy. He is hoping to apply his diverse background and unique perspective in his role at Flexco, while getting to know all the people who have made Flexco what it is today.

"The people who work at Flexco undoubtedly have a shared passion and excitement for their work," Rosso said. "I look forward to working in an environment that is continually looking for opportunities to improve and grow."

Flexco provides the world's belt conveyors with efficient, safe products, services, and solutions for mechanical splicing, belt cleaning, belt tracking, spillage, and slippage. The company is based in Downers Grove, Illinois and operates subsidiaries in Australia, Chile, China, England, Germany, India, Mexico, Singapore, and South Africa. Flexco markets its broad line of products through a worldwide network of distributors, under the Flexco®, Mineline®, and Tasman Warajay Technology™ brand names.

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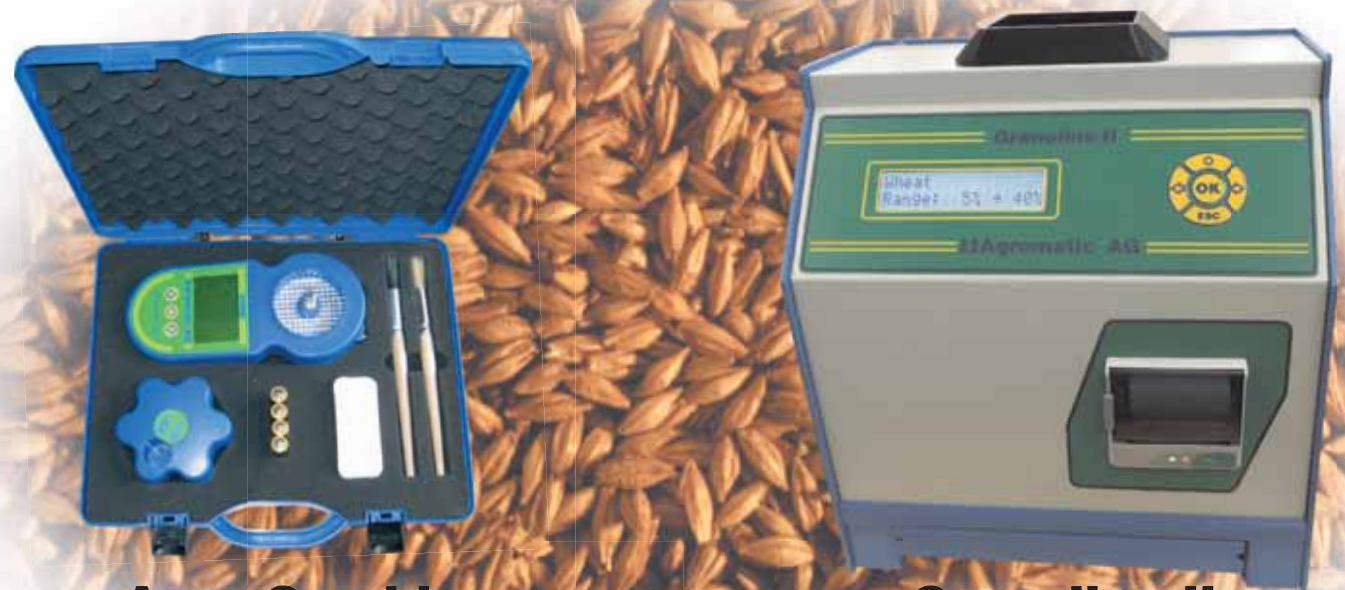

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TTS recent work includes major fertilizer and bulk terminals

TTS (Transportation Technology Systems) is a manufacturing company with more than 20 years of experience in engineering and manufacturing of non-standard material handling systems and large-scale steel structures. The company's main markets are Western Europe, Scandinavia and the Baltics.

TTS is a part of LNK Industries, one of the largest industrial holding companies in the Baltics. Together with its affiliated companies, TTS recently completed four major marine terminals in Latvia and Lithuania, with a scope of work ranging from facility and equipment design and manufacture to offshore works and terminal construction. One of them is Riga Fertilizer Terminal (RFT) — the most modern terminal for transloading and short-term storage of mineral fertilizers in Northern Europe. The terminal was designed to warehouse up to six different fertilizers at a time in dome-shaped storage. The handling system allows for loading of two vessels up to PANAMAX size from various domes and from rail cars simultaneously. Another major terminal that TTS built is Riga Bulk Terminal. The main challenge was to design a dust-free system to handle different materials from alumina and fertilizers, to soya bean meal and raw sugar on a very limited plot of land in city environment.

Riga Fertilizer Terminal.

Coal storage facility.

In addition to building turnkey bulk terminals and equipment the company manufactures speciality machines such as stackers, reclaimers, conveyor systems, ship, railcar and truck loading systems complete with automation, as well as non-standard storage equipment. The list of partners includes FLSmidth, Samson (Aumund Group), Metso, Sandvik, Andritz, FAM, BMH, Dieffenbacher and others.

Riga Bulk Terminal.

TTS production facilities include two workshops with a total area of over 20,000m^2. The workshops are equipped with heavy cranes and large painting and shot-blasting chambers. The company employs 250 people including 50 engineers, 100 certified welders, and has a wide range of modern production machines. In its heavy artillery is a large horizontal boring mill to precision-machine 15m long and 4.5m high steel structures. The company is conveniently located close to Riga seaport, which allows for fast and cost efficient delivery to most locations in Europe or CIS by sea and rail.

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Hitachi launches the ZX26U-5 mini excavator

Hitachi Construction Machinery (Europe) NV (HCME) unveiled the new ZX26U-5 mini excavator as part of its impressive new line-up at the Intermat exhibition which took place in Paris in late April this year. Designed to be user-friendly, offering high levels of performance, comfort and easy maintenance, the Zaxis-5 model can be easily transported between job sites with two additional buckets on a 3.5-tonne trailer. It is ideal for working in narrow or confined spaces, and is suitable for utilities, foundation work, landscaping and indoor demolition or construction projects.

Outstanding performance

The ZX26U-5 is more productive than previous Hitachi mini excavators of this size, with a quicker cycle time and better fuel consumption. Due to greater hydraulic efficiency, the new Hitachi mini excavator is capable of higher levels of productivity than previous Zaxis models, using the same amount of fuel.

The extra piping and 1–2 way selector valve highlight the machine's versatility, allowing for the quick replacement of attachments. The ZX26U-5 also has the smallest front swing radius (at fully offset) in its class, making it ideal for working in narrow job sites.

Exceptional comfort

Operator comfort was a key factor in the design of the cab. It features a wide adjustable sliding suspension seat, which is surrounded by user-friendly controls within easy reach. Hydraulic pilot levers are used to operate the front, boom swing, travel and blade.

Noise levels are lower than previous Zaxis models and competitors' machines, allowing operators to work more comfortably. The enlarged front window has enhanced visibility of the job site and the entrance step has been lowered to provide easier access.

Greater durability

Several new and improved features have been incorporated into the ZX26U-5 to enhance its durability. For example, the front of the machine is fitted with a boom cylinder guard and has a new V-shaped boom cylinder cover with two bolts for added durability. Double clamps on the piping increases the reliability of the piping connection and minimizes oil leaks.

Easy to maintain

Convenient maintenance features are an integral part of the user-friendly design of the new ZX26U-5. The engine and radiator covers have been redesigned to allow easy access. The tank cover has also been redesigned and more space around the fuel tank opening makes the new mini excavator easier to refuel.

It is also easier to clean than previous models — the dozer blade has been designed with openings to minimize the build-up of dirt and make it quicker to remove. The battery has been repositioned to the same side as the radiator for easy maintenance.

Joep van den Maagdenberg, product specialist at HCME, says: "The design of the new Zaxis-5 mini excavators is based on the concept of user-friendliness, so we believe they are ideal for first-time users of the machine, such as in the rental market, for example.

"The ZX26U-5 will be an invaluable addition to any fleet, thanks to its versatility for working on a variety of job sites with different attachments, and its impressive performance levels."

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Production chain that runs like clockwork

At harvest time, everything must go quickly, which is why sugar beets are unloaded, washed, and processed non-stop, 24 hours a day, when the season arrives. To ensure that the production chain keeps going irrespective of the product delivered by truck, a safety buffer has been built in whereby freight carriages also bring the sweet fruit to the facilities. Another benefit of the rail delivery schedule is that product can arrive in the night, when trucks are not allowed to be on the road due to noise control laws. Two tracks lead up to the drop-off point, where a water jet is then used to wash the beets out of the carriages — a challenge for the shunting system. Before the Vollert system was put into action, freight wagons were handled by a rope conveyor. Years of stress induced by the water, however, combined with the ever increasing number of carriages and payloads, eventually took their toll on the stationary system, which could no longer cope effectively.

Fully Automatic Shunting

The answer came in the form of a Vollert-designed shunting robot, which has been unloading sugar beets since September 2014. The DER 50, as it is known, is the venerable classic among the many models available and has a rated tractive force of 50kN and an operating weight of 35 tonnes. Equipped with an automatic shunting coupling, workers no longer have to be bothered with manually coupling and uncoupling the carriages in the drenched unloading area. The operator simply lets the robot perform all activities fully automatically or can assume manual operation via the remote control facility in the control cabin at the unloading station, where the water jet is also guided. Robust mechanicals allow the DER 50 to be operated in almost any weather imaginable, including high temperatures, low temperatures down to minus 60°C, as well as snowy and icy conditions. The shunting robot is also used by the agricultural industry to load corn and bioethanol.

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Three SENNEBOGEN 830 Mobiles: Metaal Recycling Twente invests in new equipment

Metal recycling company MRT in Enschede is committed to investing in the future. The scrapyard has been expanded, a new building constructed, now all that is missing is the right material handler. In April, three SENNEBOGEN 830s left Straubing on their way to Holland.

This is something that Zacharias Ince and Martin Titsing of Metaal Recycling Twente wanted to see with their own eyes. The two men from Enschede travelled to Straubing, in Lower Bavaria, to receive their new machines, retrieve the keys and tour the factory. Managing director Erich Sennebogen, together with sales representative Paul Helmink, handed over the symbolic green key and ensured that, with this purchase, everything right had been done to be equipped for the future. For MRT managing director Titsing and operations manager Ince, the good reliability and low operating costs were ultimately the deciding factors. With Kuiken as their full service provider, every need will be met and top consultation provided in advance, the two stated.

Metaal Recycling Twente makes versatile use of the three new material handlers on the premises — from sorting scrap metal to loading ships.

From the factory to the field — optimally equipped with SENNEBOGEN grapples

With the key handed over, the machines were ready for their one-way trip across Germany on the back of a truck — around 700km to the premises in Enschede.

A few days later, back in Holland, the arrival of the three SENNEBOGEN 830s was being eagerly awaited. The machines will be used to move around 80,000 tonnes of scrap metal, sort electrical cables, supply the shredder, or load barges at the port. This is why the mobile material handlers were equipped with a 2.7m extendable cab in order to always have an ideal view of the work area. The 17m-long equipment, together with the mobile undercarriage and a powerful 168kW diesel engine, ensure top flexibility. As the three flatbed trucks finally rolled into the yard, they also had three SENNEBOGEN grapples in tow. The five-part multi-shell grab capable of hauling 600 litres are perfectly calibrated to the handling machines at the factory and will soon be installed by the service technicians at Kuiken NV.

"The new place is now fully equipped and work can begin," Ince rejoiced. And also Kuiken sales representative Helmink was excited to have won over a satisfied customer with plenty of development potential.

The three new SENNEBOGEN 830 Mobiles travelled 700km on the back of flatbed trucks across Germany to customer MRT in Enschede.

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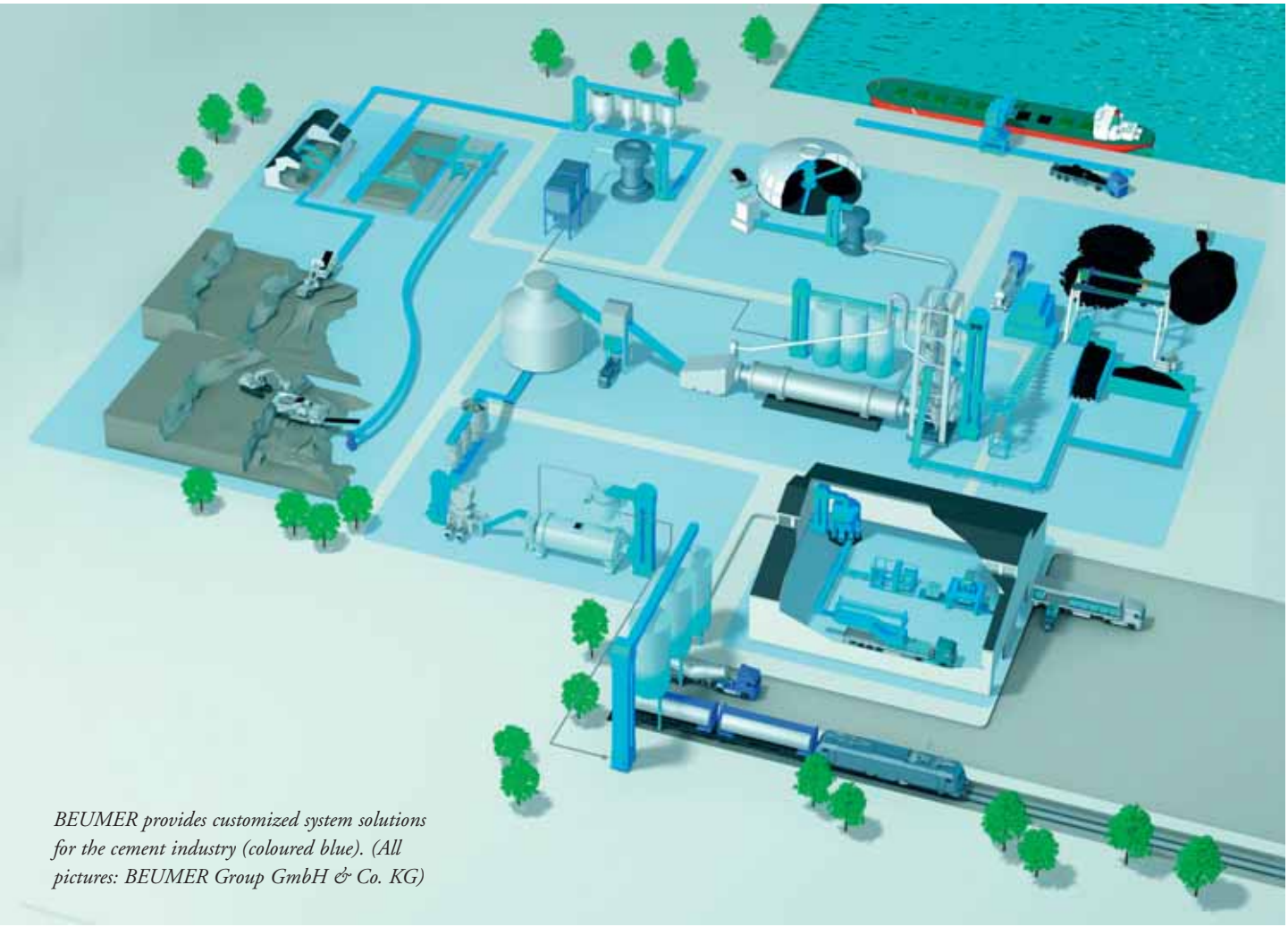

BEUMER provides customized system solutions for the cement industry (coloured blue). (All pictures: BEUMER Group GmbH & Co. KG)

Relying on regularity

In many industrial processes — as for example in the cement industry — the regularity of the raw materials used plays an important role in the manufacture of products. This uniform consistency is ensured through blending beds located within the storage yard. As a system supplier, BEUMER Group develops stackers and bridge scrapers, the essential components of blending beds, which stack bulk material reliably and guarantee a maximum blending effect. Thus, operators can homogenize large quantities of various bulk materials dependably and efficiently. BEUMER employees can perform the complete engineering of the blending bed systems.

Be it houses, bridges or tunnels: cement is the material that holds everything together. However, a bag of this material has already come a long way before it arrives at the building site. When the component raw materials are mined and transformed into cement at the cement plant, they pass through many different stages. The most important raw materials for cement production are limestone, clay and marl. Workers break them out of quarries or extract them with heavy tools. Wheel loaders and dump trucks transport the raw materials to the crushing facilities. There, the rocks are crushed to the approximate size of road gravel. These rocks then arrive at the cement works via miles long belt conveyors.

A consistent quality must be ensured so that the producers can further process the material to high-quality cement – fluctuations in the material characteristics must not occur. Therefore, a belt conveyor transports the individual raw materials to the blending beds. These storage location systems mix and homogenize the raw materials.

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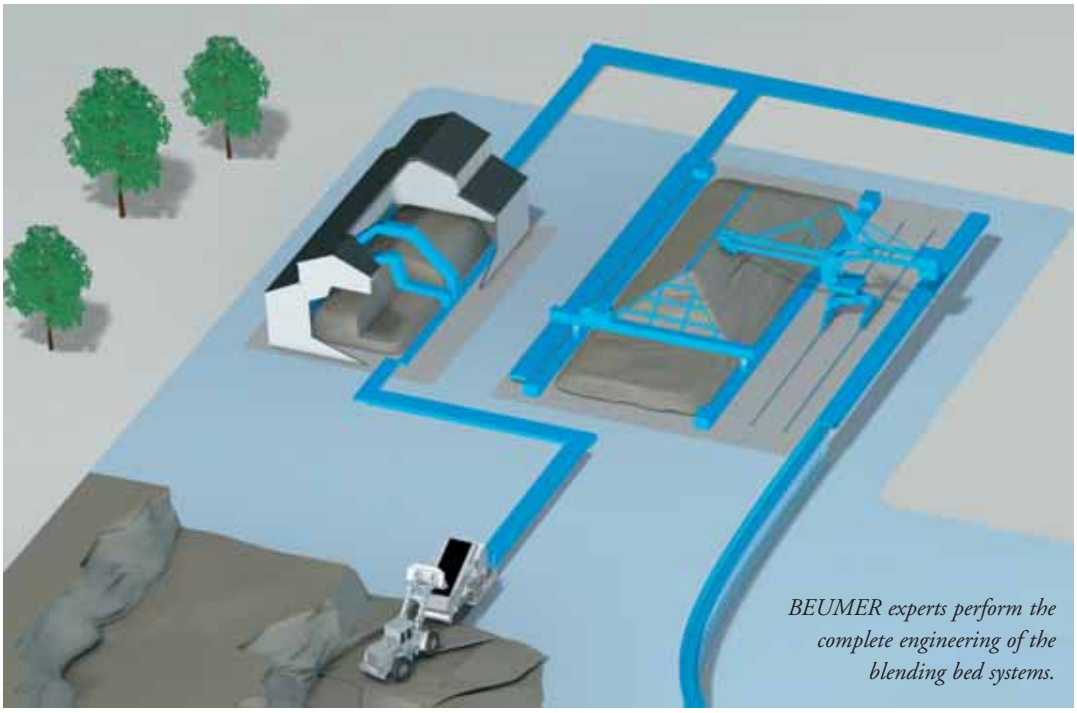
Experts at work

For almost 80 years, BEUMER has been developing tailor-made system solutions in conveying technology for the stone and quarry industry, power plant industry, mining (ores and coal) as well as the logistics industry (harbours and transshipment terminals). Furthermore, the specialists have comprehensive expertise in engineering of blending beds and stockpiles. Through structural analysis of the associated storage depots and calculation of dimensions, BEUMER is able to provide a design. The blending beds are customized according to their requirements. BEUMER proposes either longitudinal or circular stockpile designs. The recommended design shape results from the spatial conditions and the amount of the material to be stored. Depending on the field of application, BEUMER designed blending beds can be used at extreme ambient temperatures, for very high entry conveying capacities, as well as for the highest degree of homogenization required. Additionally, BEUMER provides material-specific detailed solutions with robust and low-wear equipment. The environmental impacts are also very low as minimal noise and dust occurs during operation. Blending beds can be set up both outdoors and indoors.



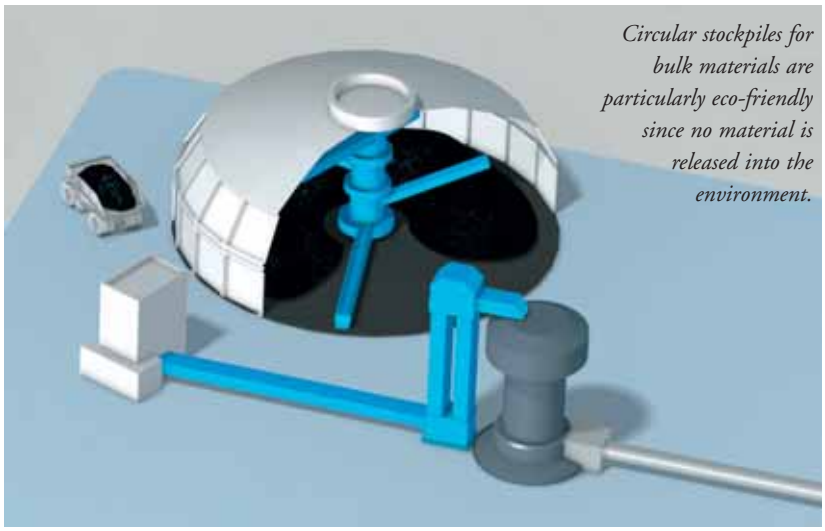
BEUMER experts perform the complete engineering of the blending bed systems.

Compiled and extracted in layers

The stacker and the bridge scraper are the basis for a blending bed. If they are perfectly designed, the user will obtain an optimum blending effect. BEUMER offers stackers that stack the bulk material efficiently and effectively. In the end, the stockpile has been raised so reliably that its cross-section shows as many layers of equal material as possible. The stackers can be of fixed or mobile types, depending on the requirement. In case of circular stockpiles, the stackers are mounted onto a column and with a longitudinal blending bed, they are mounted on rails. The stackers are designed as fixed, raisable and pivotable booms with conveying capacities of up to 4,000tph (tonnes per hour). The choice of the right system depends on different factors, as for example, the shape and size of the stockpile, the material, the throughput and the desired mobility.

Lastly, the bridge scraper homogenizes the material. It has a mobile rake on each side. The material is removed in layers by stroking the face of the stockpile with the rake. The scraper blades move the bulk material towards the belt conveyor which runs parallel to the stockpile. BEUMER bridge scrapers are not only robust, but they also transport the bulk material so that the product is handled gently. This makes them suitable for a variety of bulk materials. Their continuous and comparably simple working motions allow for a fully automated operation and ensure a constant and steady flow of the bulk material.

In the past, the new BEUMER team has completed remarkable projects in this field. One such example is an installation of a bridge scraper in Russia, which works at an ambient temperature as low as –40°C. The rail width is 34 metres and this bridge scraper is designed for a conveying capacity of 500tph. Furthermore, BEUMER has developed a stacker for coal mining, which is operated at ambient temperatures of –20°C. This boom has a length of 41 metres and the belt width measures 1.6 metres. It transports 2,250 tonnes of bulk material per hour. BEUMER also engineered a bridge scraper with a rail width of 55 metres that conveys 1,100 tonnes of coal per hour.



Circular stockpiles for bulk materials are particularly eco-friendly since no material is released into the environment.

BEUMER Group is an international manufacturer in the fields of conveying, loading, palletizing, packaging, sortation and distribution technology. Together with Crisplant a/s and Enexco Teknologies India Limited, the BEUMER Group employed some 3,700 people in 2013. The group generated an annual turnover of approximately €627 million. With its subsidiaries and sales agencies, BEUMER Group is present in many industries worldwide. DCi

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Argentinean revolution in grain loading

Argentinean Terminal Puerto Rosario (TPR) has revolutionized the world of grain loading and storage after becoming the first terminal in the world to utilize containerized bulk handling (CBH) to export grain.

TPR, located along the banks of the Parana River and 300km away from Buenos Aires, is a strategic multi-purpose terminal serving the region's growing commerce. The terminal is a key gateway hub, handling all types of import and export cargo.

TPR loads, transports and stores its grain product in specially designed food grade containers. Once delivered to the marine terminal, the commodities in the containers are stored at the port awaiting vessel shipment; replacing the need for expensive silos. Once the vessel arrives, the containers of grain are handled like normal containers until they are tipped into the hatch of a ship using a revolver.

The old way

One of the most important exports of Argentina is grain. Prior to the use of CBH, TPR's system included the use of dump trucks and shiploaders in operations similar to many other terminals.

The problem with these conventional systems is that they resulted in material losses, clean-up costs, and in some cases, contamination of the grain by unwanted rodents. All this was in addition to expensive silos and sheds used to store materials.

The innovative management at TPR quickly determined that they needed to find a method to improve productivity and accommodate the growing business of exporting grain. In addition, they wanted to simplify the operation with minimal investment by using much of TPR's current equipment and infrastructure. Large capital expenditure and set-up time for new warehousing and equipment was not a viable option. While researching a number of best possible solutions, TPR discovered the CBH system.

CBH is a complete system that includes the containerization of bulk products such as grain, at the inland depots or farms, before moving it directly to the port's yard. The loading process is completed by using a specialized rotating spreader, the revolver, manufactured by RAM Spreaders, and the purpose-built containers have been manufactured specifically for handling food grade products.

The revolution

At TPR, the CBH system involves loading agri-bulk at a storage location or from a barge into specialized TEU containers with a payload capacity of around 30 tonnes. The sealed containers are then transported to the terminal yard and stored ready for loading. Once a vessel is alongside, the containers are handled as they would be in conventional container operations and are delivered to the quay side by truck.

Loading is performed by on-board ship cranes or by mobile harbour cranes fitted with a revolver. A lid is lifted off automatically and material is poured into the hatch during a 360° rotation.

Environmentally friendly

As the grain is sealed in the container at the farm and only opened at the bottom of a vessel's hatch, there is no material loss or contamination. The revolver process differs from normal bulk loading in that it is very gentle and adds very little energy to the material. The revolver lowers the container almost to the bottom of the hatch and tips it gently. The result is a reduction

in dust, and with less dust in the air, workers can then breathe a lot easier.

To comply with environmental protection policies, high costs are encountered and the loading process becomes slow. With the CBH process, loading rates can be as high as 25 cycles per hour with 27 tonnes of grain in a box. With two cranes, over 1,000 tonnes can be loaded per hour. The RAM development team is now working on a system to load at twice this rate.

"With two cranes they load at 1,000tph [tonnes per hour]."

The container as silo

The most innovative aspect of this new operation is the use of the container as a silo as well as a method of transport. Traditionally grain exporters needed expensive silos, costing over US$20 million, which prevented a number of ports from exporting grain.

With containers acting as both storage and transport, product is sealed directly after filling. The only way to access the grain or commodity is via a special food grade sampling port fitted within a container. To overcome the high capital set up costs the managers at TPR leased the containers, reducing the capital that would be otherwise tied up in a silo that would remain empty for long periods throughout the year.

Growing business flexibly

By using the CBH system the terminal has been able to grow its business to handle more grain and meet the needs of the growing South American agri-bulk sector, without the need for

expensive capital investment in silos and bulk loaders. The result is a more profitable port.

Juan Carlos Cruzat, Head of Container Terminal at TPR stated "We are very pleased with the containerized grain system as it allows a much cleaner operation. The flexibility of the system with no silos or conveyors on berth is a big plus for the port."

To acquire and set up a traditional bulk grain operation can take years. In contrast, a CBH operation can take no more than six months, allowing for a much faster and efficient way to get bulk commodities into the market. Putting in conveyors and bulk storage makes the system dedicated, however, this is not the case at TPR, as they can load conventional containers on Monday, grain on Tuesday with the revolver, and back to containers on Wednesday with no clean-up required.

An additional benefit of the CBH system is mobility. The CBH system, which includes the RAM revolver and containers, can be

moved to another terminal if required. The investment is transferrable.

Global potential

With demand for food products growing globally, the system provides opportunities in other locations to use existing port infrastructure. The project has been used as a case study by several port and logistics consultants.

Ray Lee, principal of Portside Solutions in Dubai, has reviewed the system and commented. "I see particular application in developing countries without traditional bulk loading infrastructure. This solution will allow grain traders to get their product to market simply with existing port facilities," Lee went on to comment. "The scope for implementation in South America, Eastern Europe and other parts of the world is huge; Portside Solutions is currently working on a feasibility study for a major terminal operator considering adopting the system at their terminals on three continents."

A close study has been made of the system by South Australia-based Gray Bulk Concepts. Principle Daryl Gray notes "a containerized bulk system for grain presents major opportunities for grain traders to bypass congested monopoly owned bulk loading infrastructure." Gray also commented "containerizing the grain in small 25-tonne parcels reduces the risk of contamination and product rejection delaying vessel loading. A single transport and storage vessel from the farm into the hatch of the ship reduces handling which reduces cost and potential of contamination ... it has a lot of potential"

A new route to market

The use of container terminals gives grain exporters and traders another route to market. Often during peak harvest time, the bulk loaders get congested and their customers cannot export the product when and how they want. By using the flexible CBH system it is now possible to get the grain to market. What started as a small change in Argentina is set to grow into a revolution in grain loading globally, with a new flexible low capital solution to export agri-bulk.

The CBH system is already in full operation in Chile, Australia and Africa in the mining industry for products such as copper, coal and iron concentrates where throughputs well over 1,000tph per crane are achieved. The RAM revolver can be

designed to operate with any type of port equipment such as reach stackers, ship to shore cranes, mobile cranes and ship's gear cranes.

About the organization

RAM Spreaders has been manufacturing spreaders since 1972. Now as part of the PEINER SMAG Group, the company is a major lifting accessories supplier and boasts a strong reputation within both bulk and container handling industries.

RAM Spreaders' corporate headquarters, 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.





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Domes of Asia

Geometrica makes its mark

The stockpile remains operational during dome construction at Kampot Cement in Cambodia.

Geometrica domes have changed the landscape in Asia with storage solutions for bulk stockpiles, *writes Melanie Saxton of Geometrica*. These rugged domes, vaults and space frames, known as Freedomes®, take advantage of 3-dimensional structural behaviour to withstand brutal snow loads, typhoon-force winds, torturous slopes and corrosive saltwater environments.

All-terrain technology

Geodesic domes are an obvious choice to cover stockpiles, yet traditional construction systems for these domes may not translate to a low-cost solution. Manufacturing and construction complexities can offset material savings.

Geometrica has reversed this problem by creating Freedomes that are:

- designed and prefabricated by computers to withstand brutal snow loads, hurricane force winds, punishing slopes and corrosive saltwater environments;
- bar-coded, packaged and shipped in small units that can be manually unloaded in remote locations;
- assembled by local labour without special equipment or welding;
- assembled over a stockpile while the pile remains in operation — no downtime; and
- custom-designed for irregular or sprawling stockpiles and uneven terrain.

Domes of Asia

Freedomes are especially suited for established facilities that need to contain an existing open air stockpile. Siam Cement hired Geometrica in the late 1990s to build a dome in Surat Thani, Thailand — an initial project that segued into a project in Cambodia.

Kampot Cement: Cambodia is home to Kampot Cement Co. Ltd., the largest cement producer in the country. It was established as a joint venture between Geometrica's prior client, Siam Cement, and Cambodia's top construction and engineering firm, the Khaou Chuly Group. Geometrica is known for its expertise in the enclosure of limestone blending beds and environmentally friendly design, sparing the surrounding landscape from dust and loss of material during the rainy season.

The plant's pre-blending bed was planned in a circular configuration to hold 25,000 tonnes of limestone (equivalent to ten days of production for the new plant). Domes help maintain the consistent chemical composition of the quarried raw material before it is fed into the kiln. Design and installation of

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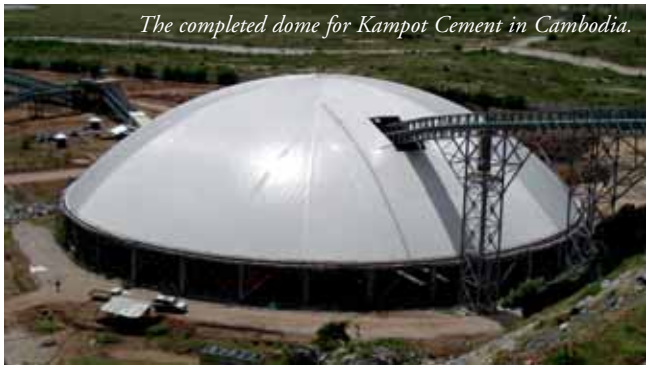


The completed dome for Kampot Cement in Cambodia.

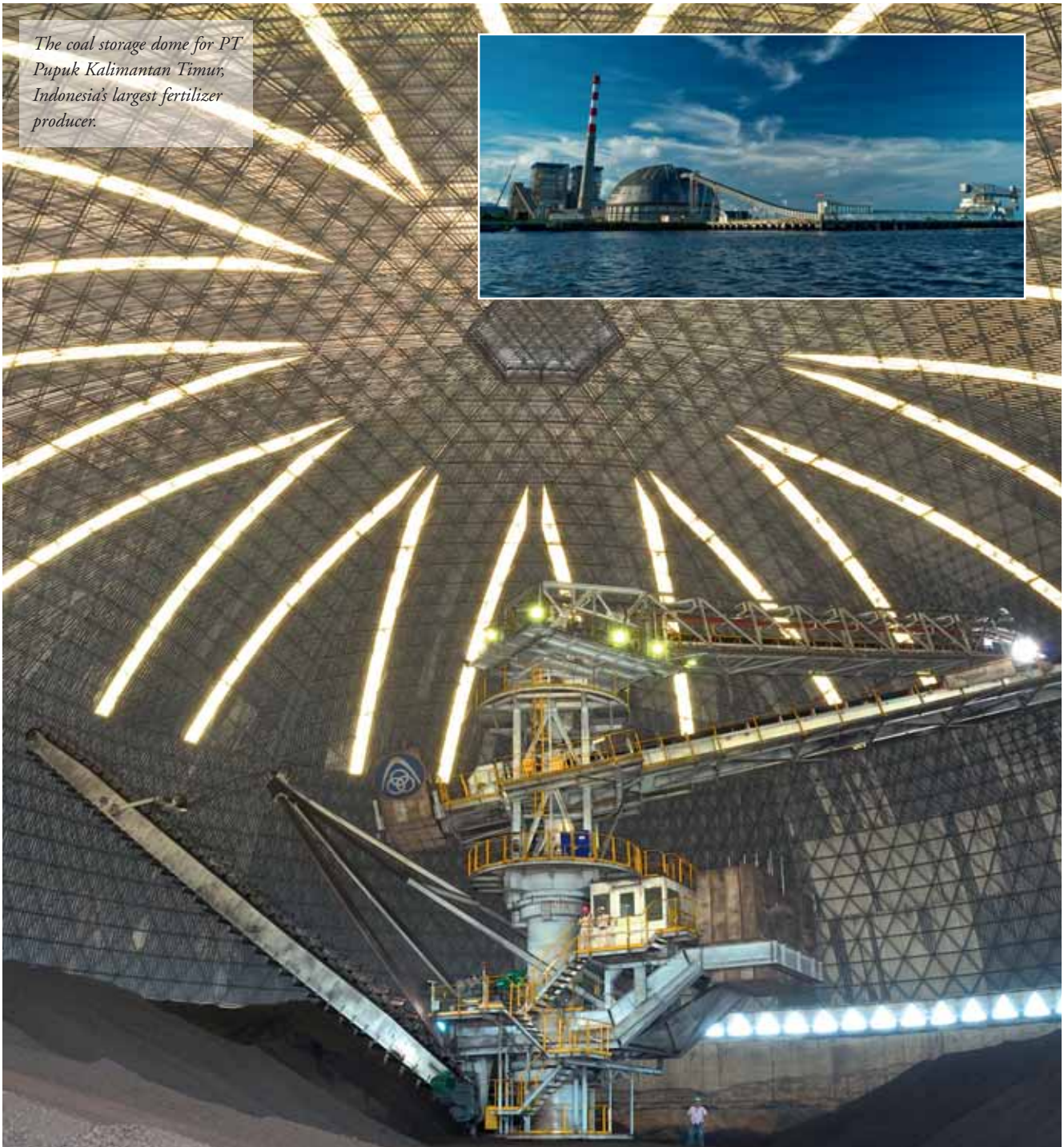
the Kampot Cement dome was conducted in three languages: English, Thai and Cambodian.

Freedomes provide the most efficient shape for a stockpile enclosure because they are lightweight and can span large areas without intermediate supports. The most common dome shape is a segment of a sphere, but it is more economical to use varying radii of curvature for the meridian of the dome. The goal is to have the dome 'hug' the clearance line of the stacker-reclaimer. This results in a smaller dome surface area and better clearance for vehicles around the perimeter. With this in mind, Geometrica designed and installed a circular dome for Kampot Cement spanning 86m that now helps facilitate the production capacity of 950,000 tonnes of cement per year.

Lucky Cement: Lucky Cement Corporation in Taipei, Taiwan manufactures and sells Portland, ground granulated blast-furnace slag, fly ash, and blast-furnace slag cement. The company needed two domes to cover its bulk materials. One required a highly irregular design to accommodate a sprawling stockpile, while the other required a long span of 104m to cover more than 35,000 tonnes. Both domes were built while the stockpile was in operation — no downtime.

Fertilizer industry

After carefully considering the fluctuations of the natural-gas market in recent years, PT Pupuk Kalimantan Timur (Pupuk-Kaltim), Indonesia's largest fertilizer producer, in Bontang, East Kalimantan, launched a project to diversify its fuel with a coal boiler in 2009. In addition to adhering to government policies that encourage the use of coal as a substitute for natural gas, Pupuk-Kaltim executives noted substantial economic benefits.



The coal storage dome for PT Pupuk Kalimantan Timur, Indonesia's largest fertilizer producer.

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Storage domes for Taiwan's state-owned energy company Tai Power.

Geometrica was selected to design and construct a coal storage dome for Pupuk-Kaltim based on the ability to meet very specific logistical and environmental needs.

Power industry

Any visitor to Kaohsiung Hsien will notice four massive solid fuel silos. When Taiwan's state-owned Energy Company, Tai Power, decided to expand and cover its raw material stockpiles, it relied on Geometrica's design expertise. The challenge was to design silos that could resist corrosive saltwater spray and typhoon winds. Gibsin Engineers LTD, a specialist company hired by TaiPower, determined that four long span concrete silos with metal dome covers would be required.

Geometrica designed and installed the domes with a 'perimeter-in' method of construction: the first nodes and tubes were laid on the supporting concrete wall. Each three to five tubes were joined to one node forming a 'spider'. Each spider was then raised to the work front and tapped into place, creating rings around the base that grew one on top of the other until the whole skeleton was formed. Co-ordination with other suppliers was easy, as the area under the dome was free of obstacles. Neither scaffolding nor other special equipment were required, and the project was completed with a perfect safety record.

Revolutionary technology

Freedomes are built of lightweight and strong galvanized steel or aluminium, comprised of prefabricated tubes using Geometrica's computer-based manufacturing system. The tubes are bar-coded, packaged and shipped to the job site. They are connected on site with patented aluminium hubs comprised of an extruded aluminium cylinder with several threaded slots. Each tube is flattened at the ends into a pattern that slides into a hub's slot. The connection of tubes and hub is compact, simple and very efficient — no welding required. When all tubes for a hub have been assembled, the joint is finished with washers and a single bolt. When completed, Geometrica's patented hub connection is stronger than the tubes themselves.

The Tai Power domes during construction.

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Coal handling equipment in the spotlight

SCHADE wagon tippler.

Louise Dodds-Ely

AUMUND machines used everywhere to move coal

Hardly a site of the energy or steel industry can be found, where no machines of the AUMUND Group are in use for the handling of coal or other bulk materials. They provide not only for a timely and efficient transport. AUMUND machines are also perfectly suited to bring the use of coal in power generation and steel production into alignment with environmental protection rules by unloading trains, ships and trucks almost dust-free.

Coal is delivered in large volumes by ship or rail and stockpiled in power stations in tips, bunkers or large-capacity silos. A wide range of AUMUND equipment is employed for stockpiling and transport within the yard. The situation on site is decisive for the selection of the machine. The SAMSON Eco Hopper is the prime selection for unloading ships. Besides receiving the material, it is crucial for environmentally friendly dust control during the unloading process. The unloading of rail-borne wagons is by SCHADE wagon tippler (see picture above). Its high unloading capacity is adaptable to the conditions on site. With a rotary, crescent or side tipping layout, these tipplers can empty up to 25 rail wagons per hour.

In many cases, coal stockyards feature blending bed technology to be able to homogenize the raw material before being inserted into the production process. The necessary technology is provided by SCHADE Lagertechnik in form of bridge-type reclaimers, portal and semi-portal reclaimers and other high-performance machines. With coal stored in bunkers, AUMUND discharge conveyors or SCHADE wagon unloading systems are ready to move the material around at high capacity after discharge. For feeding of the bunker, inclined conveyors (such as deep drawn pan conveyors or bucket apron conveyors) as well as AUMUND bucket elevators can be employed. AUMUND weight feeders ensure precisely dosed mill feeding.

Towards the end of the production process, AUMUND Fördertechnik machines are used in ash removal and in handling gypsum generated during the desulphurization process. Coal,

The SAMSON Eco Hopper is ideal for use when unloading coal from vessels.

gypsum and ash are lifted and vertically transported by bucket elevators in coal-burning power plants. Horizontal transport is by conveyor systems.

Also discharge devices are provided by AUMUND Fördertechnik. Besides the above-mentioned wagon unloading systems, CENTREX® devices or AUMUND conveyor systems are standard equipment for power stations.

Steel industry relies upon AUMUND Group machines

Another major industry depending on coal is the steel industry. Similar to power plants, coal has to be received, stored, homogenized and inserted into the production process in steel mills. Among worldwide orders, two semi-portal scrapers have recently been delivered by SCHADE Lagertechnik GmbH to Baosteel in China. In September 2015, the two machines will be assembled at the Shanghai Baosteel Group Corporation, the second-largest Chinese iron and steel conglomerate.

Due to new emission control regulations in China, Baosteel is obliged to canopy all stockpiles. For the storage yard, SCHADE sold two semi-portal scrapers with a reclaiming performance of 1,500tph maximum and a rail track of 31.5 metres. "Almost all steel mills in Asia look to Baosteel, since Baosteel is considered to be one of the best steel providers and the trendsetter for new technologies. Therefore this order was strategically very important for our business in Asia," explains Andreas Markiewicz, SCHADE Sales Director for Asia.

Meanwhile, SCHADE has more than a dozen references from the Chinese steel industry and is gaining an increasingly large share of the market there. The exterior roller chain, a specialized design and an especially energy saving layout, as well as the environmental protection factor, have been significant arguments during competition with local providers.

However, machines for moving bulk material are not only used to handle coal or lignite. In the same industry, solutions from the AUMUND Group are used for other materials, such as iron ore for example. In October 2012, SCHADE received an order from Jiangyin City DADI Machine Make Co. Ltd. to deliver six semi-portal scrapers for iron ore to the state-owned Inner Mongolia BaoTou Steel Union in Baotou City, Mongolia. The company is a subsidiary of the Baotou Iron & Steel Group, the largest industrial enterprise of Inner Mongolia. The order volume for SCHADE Lagertechnik covered six semi-portal scrapers (rail

SCHADE portal scraper reclaimer.

SAMSON mobile boom feeder.

track: 31.5 metres) with an extraction performance of 1,650tph each. The start of operation was in 2013.

At the end of 2014, SAMSON Materials Handling was also able to register orders by Baosteel to deliver two of the largest boom feeders ever. The SAMSON mobile boom feeders are designed for continuous operations during the maintenance period and occasional usage for stockpiling. The boom feeders have a capacity of 1,200tph (tonnes per hour) for iron ore and 500tph for coals each. Weighing at around 80 tonnes, the boom feeders are mounted on oversize tracks to spread the load and remain within the client's ground pressure limitations. These units will create a stockpile height of 8 metres, fitted with 15-metre radial boom. The design can be expected to extend to a 30-metre boom with stacking height to 15 metres or even beyond. In April/May 2015 the testing phase is running successfully.

Engineering expertise solves challenges for conversions

Engineers of the AUMUND Group develop state-of-the-art machines for handling bulk material. However, they are also experts in conversions and retrofits of machines built by both AUMUND companies, competitors or suppliers that are no longer in the market. The prime aim of these projects is to increase the capacity or to improve the reliability of the machine at reasonable capital cost. Conversions are based on a thorough analysis of the existing situation. Improvement is usually achieved by replacing major equipment components and lifting the performance level of the installations to AUMUND standards. The expertise necessary to solve these challenges has been gained from a multi-year experience with more than 1,000 conversion and retrofit projects in the last ten years.

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

Siwertell receives a repeat Philippine coal unloader order

This Siwertell ship-unloader in Brazil is similar to the one ordered by Hyundai to the Philippines (© Siwertell).

Siwertell, part of Cargotec, has received an order from Hyundai Engineering Co Ltd for a rail-travelling Siwertell type ST 790-D unloader for installation at the Therma Visayas power plant in Toledo, Cebu, Philippines.

The fully enclosed, screw-type unloader will be used to discharge coal from vessels of up to 92,500dwt at a rated capacity of 1,500tph (tonnes per hour).

This is Siwertell's third recent contract for Philippine coal-fired power plants says Ola Jeppsson, Sales Manager, Siwertell. "It follows unloader contracts for the Pagbilao and Therma South power plants. In all cases the customers needed a high-efficiency, environment-friendly unloader. They chose Siwertell because we are the world's leading supplier of unloaders meeting these important requirements.

"Siwertell hopes to build on this success in the important Philippine market where several projects are in progress to build new coal-fired plants and to expand existing facilities."

The unloader will be constructed at Siwertell's sub-contractor's premises in Nantong, China. Delivery of the fully constructed machine by heavy lift vessel is anticipated for mid December 2016. Final commissioning and performance tests will then be carried out at the power plant.

Siwertell coal unloaders offer an ideal solution for power plants and other industrial applications that need a dependable, high capacity, efficient and clean fuel supply. In addition to high rated capacities, they deliver high through-the-ship capacities by virtue of their continuous operation. Their low weight minimizes loads on the jetty, saving money in civil engineering works.

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

Martin Engineering External Wear Liner offers safer installation & maintenance

Martin Engineering has redesigned an integral conveyor transfer point component to eliminate worker entry into the chute box for safer replacement, easier maintenance and reduced downtime. This system can be used with a variety of commodities, including coal.

Conventional wear liners have historically been installed inside the chute, but the EVO® External Wear Liner from Martin Engineering is placed on the outside, improving skirtboard sealing and preventing spillage. The result is excellent performance with fewer labour hours and a lower cost of ownership.

"The wear liner is essentially considered a sacrificial layer," explained Daniel Marshall, product engineer at Martin Engineering. "Removal and replacement used to be a gruelling job that could require multiple workers and days of scheduled downtime. Our goals with this design were to significantly cut the installation and service time, while reducing risk and improving safety."

The Light Bulb Moment

Previous designs securely welded the wear liner to the inside of

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the chute, with only the skirt seal located on the outside. The logic behind the conventional design is for the wear liner to protect the skirtboard, which is typically ¼-inch sheet metal and not strong enough to withstand the sustained force and abrasion from bulk material.

Instead, Martin Engineering designers came up with the idea of raising the chute work about 4" above the belt, out of the way of the material, then putting the wear liner on the outside. Using this approach, the material still hits the liner and doesn't damage the chute. "It was a real light bulb moment," Marshall said. "We were surprised that no one had tried it before, as it has some obvious benefits."

After elevating the chute box above the material flow, a 3/8" or 1/2" (0.95 cm or 1.27 cm) thick abrasion-resistant liner plate (AR 400 or 500) is mounted on the outside of the chute, followed by the skirt seal. Mounting brackets with jackscrews provide a tight hold, with precision adjustment of the wear liner to reduce spillage. This system closes the gap between the liner and the sealer, thus eliminating abrasion from trapped material without interfering with existing supports. When accompanied by Martin® Double Sided ApronSeal™ skirting and clamps, the

The new wear liner is bolted outside the chute wall, eliminating confined space entry for maintenance.

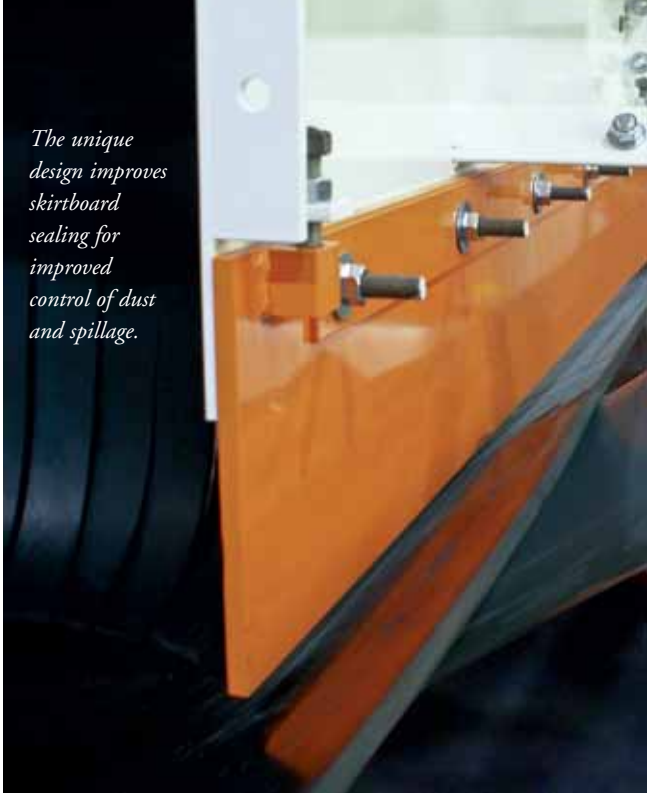
system forms a tight belt seal, delivering outstanding fugitive material control.

Safer replacement and maintenance

When a conventional wear liner loses its edge, the replacement procedure is what operators consistently describe as an undesirable maintenance assignment. Moreover, the Occupational Safety & Health Administration (OSHA) considers most transfer chutes to be 'permit-requiring confined spaces', mandating that an 'authorized entrant' perform the work inside the chute. An attendant must also stand outside monitoring the safety of the person inside, while assisting in the removal of material from the chute. In some cases, a supervisor further oversees this procedure.

The authorized entrant would go into the chute with a grinder to remove the welds and take off the sacrificial liner, which may have required a torch to cut away the existing material. This can be extremely dangerous, for two reasons. First, the liner can weigh several hundred pounds, and when a worker cuts it loose, it can fall and endanger the personnel inside the confined space of the chute. Second, nearly any dust can be explosive under the right conditions, and having to grind or torch-cut the old liner introduces a spark or open flame.

Some companies thoroughly wash out the chute prior to entry to avoid any chance of combustible particulates, making the job even more time-consuming. Once the old liner had been removed, the new wear liner was positioned to keep it as close to the belt as possible and welded into place.



The unique design improves skirtboard sealing for improved control of dust and spillage.

An external liner can be installed and adjusted faster and easier, without the need for a grinder or torch, through the use of special mounting tabs. Clips for bolting the liner are initially welded in place, but do not require removal when the liner wears out. Since the work is done from the outside, without any grinding sparks or torch flame, the hazard of explosive dust from tool usage is greatly reduced. Replacement liners come in a standard length of 72 inches (1,829mm), and Martin Engineering uses laser cutting technology to create the complex geometries necessary for a custom fit.

"After decades of using the traditional system, the old procedure just became accepted as the cost of doing business,

Compared to an internal welded liner, the external bolt-on approach reduces replacement time and risk.

but we felt there had to be a better way," Marshall pointed out. "External placement has eliminated many of the safety and maintenance issues surrounding previous designs."

The new liner is easily retrofitted onto existing equipment using the EVO® External Wear Liner Retrofit Kit. Installers simply cut back the chute wall on existing chute boxes to accommodate the external wear liner. On new installations, the chute is easily engineered to work with the new liner design, as well as other Martin Engineering components such as dust curtains, track-mounted idlers and cradles.

"A recent customer reported that their retrofitted wear liner was installed in a single shift without an extended outage," Marshall concluded. "This marks a change in thinking about bulk handling technology. It really is a game-changer."

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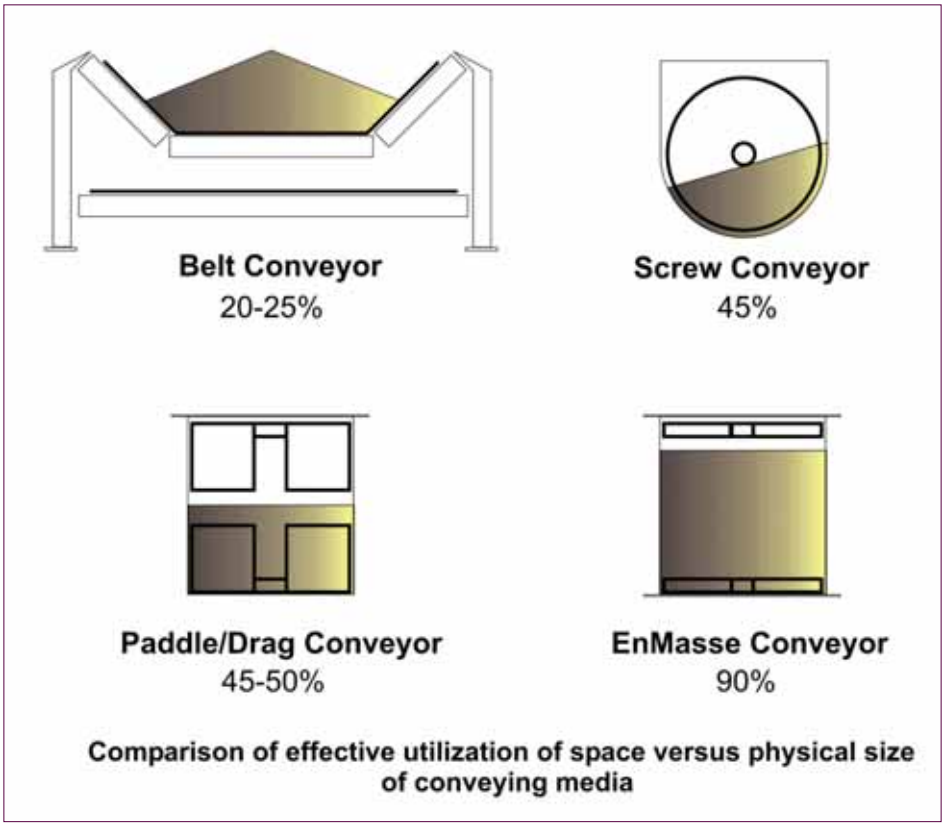
CDM Systems: advantages of en-masse conveying for moving coal

En-masse drag chain conveying technology offers advantages over some other conveying types for coal handling due to the effective utilization of space, totally enclosed housing, and the ability to operate effectively horizontally or vertically.

Move more with less space

Coal suppliers understand the importance of effectively moving material off ship and rail to distribution and in-plant processing. The en-masse conveying technology is designed to handle high volumes of aggressive materials, such as coal, in a relatively small footprint due to the effective utilization of space. The figure (right) represents the use of conveying space in common conveyor types.

The en-masse drag chain conveyor has the capability to move in excess of 1,000tph (tonnes per hour) in a single conveyor with a much smaller drive and overall footprint compared to other conveyor types because the drag chain is moving material using the en-masse principle, harnessing 90% of available conveying space.



Comparison of effective utilization of space versus physical size of conveying media

Convey Horizontally or Vertically

The en-masse drag chain conveyor can effectively move material vertically as well as horizontally. In a vertical application the

conveyor is engineered to be a mobile ship unloader. The technology is superior to bucket elevators because the effective utilization of space and unique flight selection on the chain virtually eliminates slippage and carryover.

- the mobile ship unloader minimized vessel shifting when compared to tower stationary units;
- capacities ranging from 150–700tph; and
- provides even draw-down of the vessel which means better hourly unloading averages than larger single stationary units.

Engineered conveyor design for coal handling

CDM Systems, Inc. engineers each conveyor to order, selecting the chain and flight assembly, the layout that best suits the application and capacity requirements, and the necessary corrosion resistance and accessories for 24/7 operation and ease of maintenance. No matter the coal type or bulk material the en-masse technology can be engineered to optimize commodity bulk distribution and processing. Commodities handled include: bituminous coal; anthracite coal; lignite; culm (gob); sub-bituminous coal; bagasse; wood; oil; RDP; tyres; mixed fuels; and coke.

About CDM Systems

For the last 45 years, CDM Systems has provided high-quality en-masse conveyors and conveying systems that set the industry benchmark for quality, dependability, and operational efficiency. The company uses its material handling experience and industry knowledge to solve the most difficult bulk transportation challenges. Its conveying systems are specifically designed for reliable 24/7 operation in aggressive and high-temperature applications. Whether unloading trucks, railcars, or vessels, or moving commodities within a process facility, CDM Systems can provide the technical support and the right equipment designed specifically for its customers' needs.

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ITALGRU cranes: suitable for range of cargoes, including coal

Italian company ITALGRU S.r.l. started operations in 1954 and, since that time, has become a major manufacturer of equipment for the cargo handling industry. The company's equipment can be used to handle a wide variety of commodities, including coal.

In the last 20 years, ITALGRU has become a specialist in the construction of mobile harbour cranes for ports, off-shore cranes for oil rigs, FPSOs (floating production storage and offloading units) and FSOs (floating, storage and offloading units), cranes for shipyards, special cranes for the steel sector and other industries that require high lifting capacities and special design features. ITALGRU manufactures mobile harbour cranes equipped with electro-hydraulic or mechanical grabs.

ITALGRU has a strong market position in:

- mobile harbour cranes;
- oil rigs, cargo vessels, FPSO, FSO and barge cranes;
- special, heavy-duty hoists and systems; and
- refurbishment and upgrading of existing cranes.

The ITALGRU mobile harbour crane range starts with the IMHC320 with a maximum capacity of 25 tonnes and extends to the IMHC3160 with a maximum capacity of 160 tonnes. Capacities go up to 1,500tph (tonnes per hour), using mechanical or electro-hydraulic grabs. The company's offshore cranes can be installed on offshore oil or hydrocarbon drilling rigs, cargo vessels, FPSOs, and FSO barges with lifting capacities ranging from a minimum of 2 tonnes to a maximum of 350 tonnes and beyond. Cranes designed for other sectors come equipped with lifting capacities that range from 7 tonnes to 350 tonnes.

Dust emissions are kept to a minimum with the use of anti-dust covers on all grabs.

In terms of geographical coverage, ITALGRU is able to offer its products to all the major areas in Europe, Africa, the Middle East and South East Asia.

The company's major customers are port authorities and stevedoring companies, as well as logistics companies as port operators.

Most ITALGRU cranes are delivered fully assembled.

ITALGRU's cranes are very high quality, and available at economical prices. This, combined with excellent after-sales service — carried out by supporting companies for scheduled maintenance — enables the company to remain highly competitive in the market.

Keeping coal clean with de-dusting solutions from Den Bakker Dustcrusting

Den Bakker Dustcrusting technology b.v., (DBD Global), has a long history in dust control and prevention. The company originally started in 1948 and has now expanded into several companies, each with a different type of specialization. DBD's solutions are widely used in the coal handling industry to keep dust emissions to an absolute minimum, protecting personnel and the environment.

Major clients

Dry bulk terminals, power plants and emergency services are the major clients at the moment.

DBD Global specializes in the control of dust, not only by cleaning areas that are already dusty, but also — and most importantly — working to ensure that dust in any form, does not become a problem in the first place.

Ever-more-stringent environmental legislation regarding dust control is creating difficulties for many companies.

Being heavily involved in this matter as a contractor for some 30 years, the company has developed a range of solutions to help with dust control, including a range of specially designed water spraying vehicles each having particular capacities and performances to suit the needs of a specific site or condition. The constant desire to improve led to the development of a very effective method to control dust on most of the sites where it is needed: the Dustcruster® technology.

Competitors

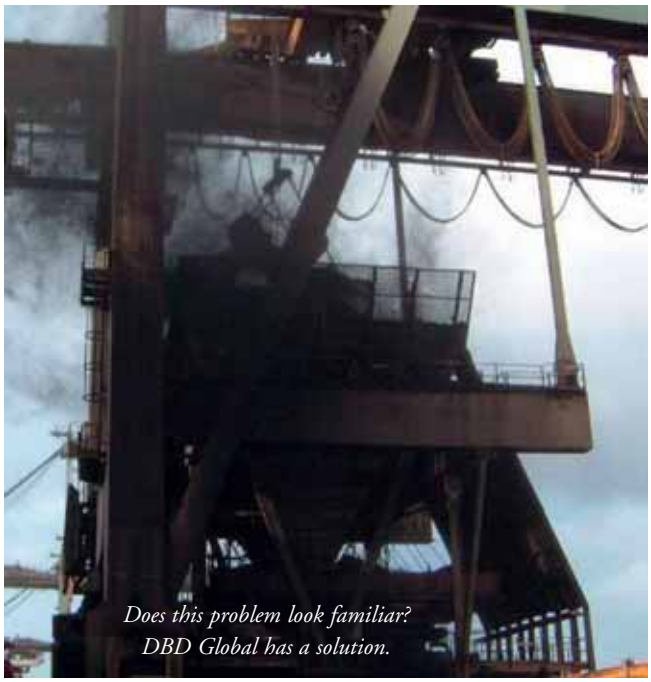
Although there is not a product that has the same equation, at the moment the products that are the most comparable with Dustcruster liquid® or Dustcruster dry® are the chemical products such as latex. DBD Global has a lot of clients that used the polymer products before they discovered the many advantages of the Dustcruster® technology and started using only the Dustcruster® technology. The big differences and advantages in comparison with the polymer products are; the long endurance of the product, the price that is more attractive and the fact that it is environmentally friendly.

Dustcruster liquid®

Dustcruster liquid® is an inexpensive and environmentally friendly (natural) product. After spraying onto coal and iron ore stacks, it forms a real 'crust'. Rain barely affects its effectiveness.

Only after digging into stockpiles is it necessary to repair the crust by spraying on a new layer at the disrupted area. Dustcruster liquid® has also proven to be a very effective means to settle large sand areas around infrastructural projects and has successfully been used to prevent the escape of dangerous fumes during soil cleaning operations.

Dustcruster liquid® is mixed in a special installation. It has proven to be highly effective because of its longer setting time. Dustcruster liquid® can be transported to most locations all over Europe where it is then transferred into large containers, equipped with stirrers and sometimes even with heaters to allow work at near zero conditions. The company sells and rents the containers. For the spraying of Dustcruster liquid® the specific spraying trucks are required, mostly agri-tractor towed.



Does this problem look familiar? DBD Global has a solution.

Dustcruster dry®

In order to reduce transport charges and to allow the use of the technology on a world scale, DBD Global has created Dustcruster dry®. Dustcruster dry® is a mixture of different fibres which are crushed into pellets and are transported in FIBCs or containers. On location, the Dustcruster dry® pellets are dropped in a special mixing tank with clean water where they transform into a liquid suspension, Dustcruster liquid®, ready for use.

Stockpile before treatment with FOAM DBD FO 312®.







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Here also, the special spraying trucks are required to successfully cover the coal/iron ore stock piles creating a tough and long-lasting crust.

Stockpile after treatment with FOAM DBD FO 312®.

Controlling dust with foam DBD FO 312®

Den Bakker Dustcrusting has created a system where only a small amount of water is needed to create a large amount of foam. Dust control when handling/crushing wood and stone is particularly problematic, as using water can cause humidity problems. This larger foam surface is an excellent dust collector, and results in a better dust-free working environment.

Recent technologies

In consultation with a client DBD Global is developing an automatic spraying system for Dustcruster liquid® to apply on a coal wagon loader. The installation could be interesting for more coal terminals. This spring the installation will be ready; *Dry Cargo International* looks forward to reporting on this project in greater detail in the near future.

Wide experience

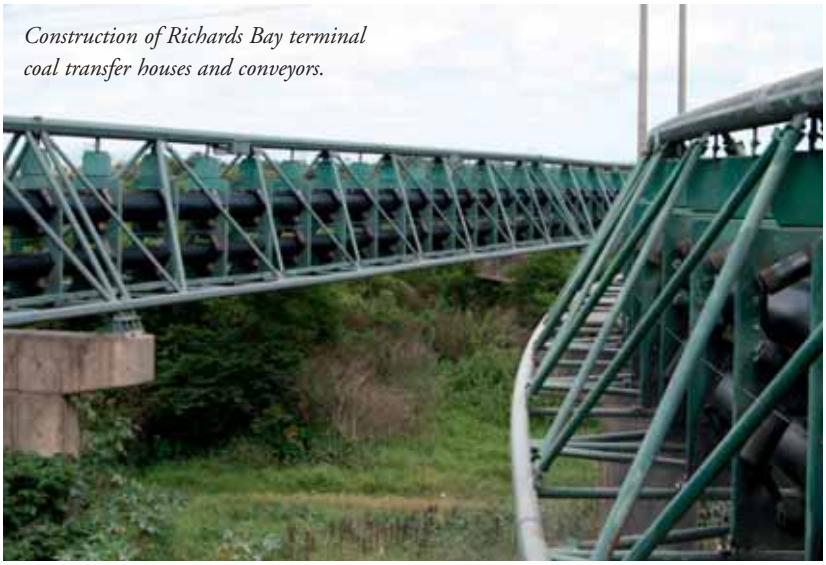
Den Bakker Dustcrusting technology has gained vast experience internationally in the control of outdoor dust and uses very advanced systems, stationary as well as mobile, with natural fibre and/or with polymers or other products, and which can operate under the most severe conditions, such as frost and strong wind.

The DBD Global demo team is ready to go to any site in the world in order to analyse specific conditions and offer a valuable solution.

DemcoTECH Engineering: applying state-of-the-art design tools to coal handling systems

"Handling coal presents numerous challenges requiring both complex and equipment-intensive processes that involve a number of operations from offloading trains, to coal storage, to in-plant and overland conveyor systems," *says DemcoTECH Engineering General Manager, Paul van de Vyver*.

"For an operation to be profitable, the entire coal handling system needs to be optimized and reliable, minimizing handling problems and plant downtime that are related to material flow throughout the entire system," adds van de Vyver. "In addition to having access to the latest technologies, advanced testing, flow modelling and system simulation tools are also critical in designing efficient handling systems. The design of these systems must be based upon a thorough understanding of the properties of the coal, particularly for the worst flow conditions that are expected to occur in practice with wet coal. Critical elements include determining the bin, stockpile, feeder or chute geometry, predicting accurate material flow patterns, ensuring that reclaim systems are reliable and predictable, and thorough design analysis and detailing of the entire plant.



Construction of Richards Bay terminal coal transfer houses and conveyors.

Environmentally friendly coal handling at Richards Bay multi-product terminal — from trains to stockpile to pipe conveyor.

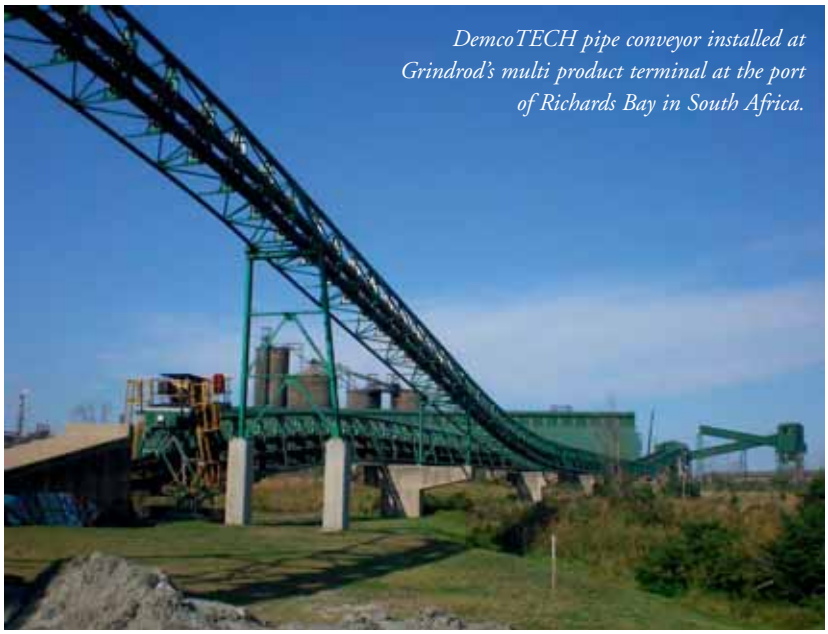
"Much of our success has therefore been due to the fact that our materials handling design expertise, together with our finite element analysis skills for large stockyard and port machines, are supported by our in-house design capabilities and experience working with international standards such as ISO, FEM and CEMA," says van de Vyver.

"In addition, dust is generated at any point where coal is handled and transported. Effective dust control systems are therefore also a critical element in coal handling, particularly in view of the increasing legislative and social pressure to reduce the impact on the environment and the non-negotiable objective of safety at any operation to ensure zero harm to the workforce."

DemcoTECH has an extensive track record in the supply of effective dust suppression and dust extraction systems, as well as in utilizing its in-house pipe conveyor design capabilities to contain, reduce and eliminate dust and environmental issues when conveying materials.

Despite the ongoing slow market conditions characterizing the coal sector worldwide, Johannesburg-based DemcoTECH Engineering continues to see the award of new projects from various coal industry players, such as power plant and port operators.

Recent project awards include the review and upgrade of the coal feed system to a 4,000MW power station which included the review and



DemcoTECH pipe conveyor installed at Grindrod's multi product terminal at the port of Richards Bay in South Africa.

evaluation of the train wagon tippler system. The work included both the concept and basic design of the system, including the development of a simulation model with the railroad engineers.

At the end of 2014, DemcoTECH was appointed to provide the detailed design for an import terminal at a Croatia Port.

"The import terminal will be a multi-product terminal offloading and handling both iron ore and coal, with the latter being the main commodity passing through the facility," notes van de Vyver. "The project award is not only indicative of the growing demand for our services from the international market, but also from the ports and terminals sector, following the successful conclusion of the import/export iron ore terminal project we concluded for Vale in Malaysia last year."

The latest project scope includes the entire materials handling system, handling the coal fed from the ship-unloaders through to the coal stockyards, including the train rapid rail load-out system. The system will initially offload 2,000tph (tonnes per hour) of both coal and iron ore from Capesize ships and is due to be operational towards the end of 2016.

"The system is, however, designed for future expansion up to 4,000tph," adds van de Vyver.

The ships will be offloaded using grab type ship-unloaders and the stockpiling and reclamation will be performed using a rail-mounted bucketwheel stacker-reclaimer.

In addition, DemcoTECH is responsible for the design of the standby stockpile facility. This will utilize mobile plant feeding into mobile hoppers, which discharge onto the yard conveyor using dual vibratory feeders. The mobile hoppers can be positioned along the entire length of the new yard conveyor.

"The project presents challenges due to the fact that the system has to handle both coal and iron ore," says van de Vyver. "This has implications for the design of both the chutes and the rail load-out system."

The Port of Ploce is one of the main ports of Croatia and is considered a strategic port by the Croatian Government. It is located on the Adriatic coast at mid-distance from Split and Dubrovnik and is the gateway to the major north-south European corridor that connects the central part of the continent with the Adriatic sea. The reconstruction of this Dalmatian port was announced in 2006 to enable the largest seagoing vessels to be able to enter the harbour.

Expansion to Grindrod's multi product terminal at the port of Richards Bay in South Africa.

Previous coal handling projects include the appointment of DemcoTECH by Grindrod as EPCM contractor responsible for design, engineering, procurement and construction management for the materials handling portion of the expansion to Grindrod's multi product terminal at the port of Richards Bay in South Africa. The scope of the contract was to provide the materials handling system conveying various materials, but mainly coal and rock phosphate from the three Richards Bay terminal sites: Navitrade, Kusasa and Valley.

The plant includes a tippler discharge onto three belt conveyors, one of which feeds an open stockpile or the DemcoTECH designed and supplied pipe conveyor. The pipe conveyor feeds to a transfer point at which the material is distributed to the existing export line or to a warehouse.

The 2,000tph materials handling system at the Valley terminal site was an extension to plant supplied by DemcoTECH some three years previously to convey material from terminal conveyors to feed a single warehouse. The expansion extended the lead conveyor to feed a choice of two other warehouses.

"As this was a brownfields site, the interfacing of new equipment into the existing equipment had to be carried out around planned shutdowns in order to minimize disruptions to operations," concludes van de Vyver.

DemcoTECH Engineering is a specialist bulk materials handling and niche process plant company, offering services from concept design through to project completion to the power generation, cement, mining, metallurgical, manufacturing and port handling industries. Services include conceptual design, feasibility studies, design, engineering, procurement, expediting, construction and commissioning. Plant supplied by DemcoTECH includes troughed conveyors, air-supported conveyors, pipe conveyors, rail-mounted slewing boom stackers, pivot boom conveyors and mobile conveyors.

After-sales services include spares, maintenance, refurbishments and operational readiness packages covering procedures, systems and workplace tools required to successfully operate and maintain a new or upgraded plant.

Tripper car at Richards Bay multi-product terminal.

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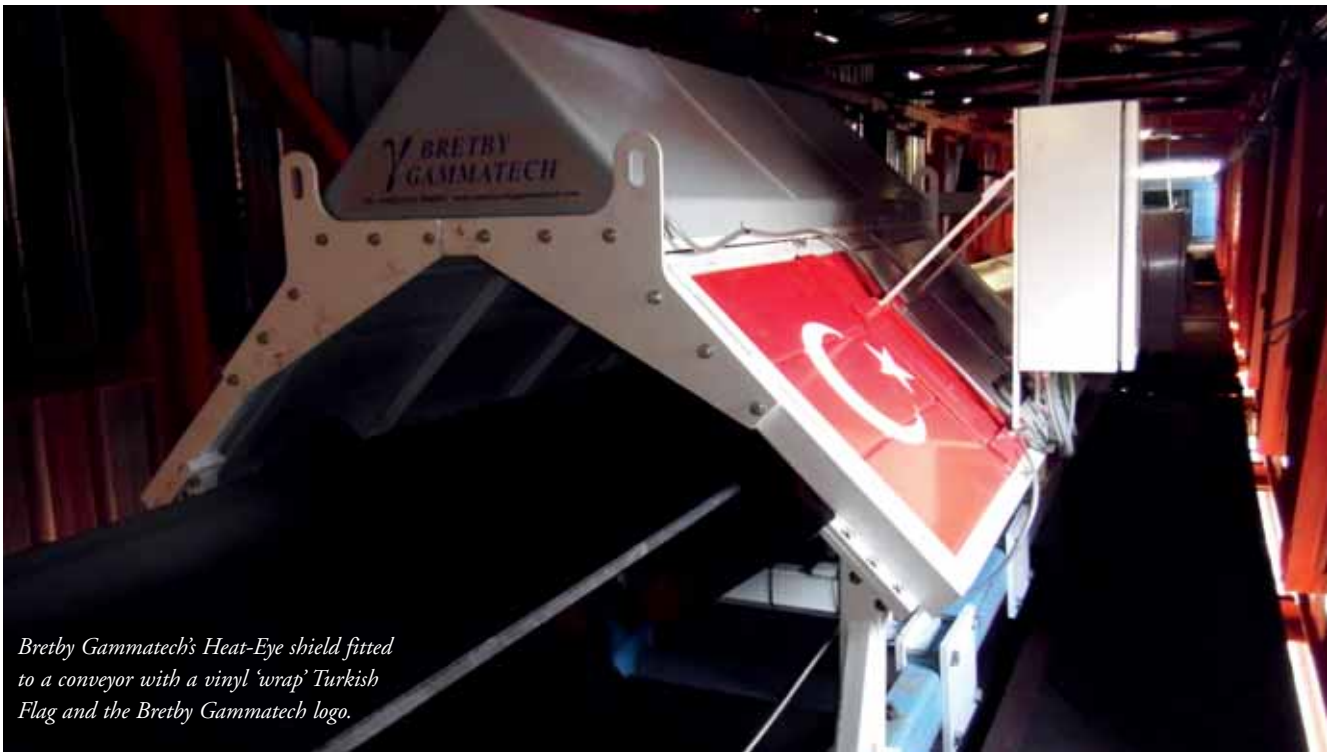

Bretby Gammatech's Heat-Eye shield fitted to a conveyor with a vinyl 'wrap' Turkish Flag and the Bretby Gammatech logo.

Bretby Gammatech is a leading designer and manufacturer of coal and ash monitoring equipment, based in the UK. The company was founded by former British Coal staff back in 1994, who developed an Ash Probe that could effectively monitor the ash content of coal, without the need to use potentially harmful radiation techniques. Over the last 20 years, the company's innovative technology has become renowned across the world, helping international mining companies to increase productivity and reduce costs.

Bretby Gammatech has developed a number of different products over the years, allowing coal quality to be tested either while it is stockpiled, in the laboratory or when it is being transferred on a conveyor belt. Each product gives a fast reading about the quality of the coal before it leaves the mine and, as all the product range uses natural radiation, no specialist equipment is required and no additional health and safety issues are involved.

Because Bretby Gammatech's products are widely used in harsh environments down to –50°C and up to +40°C according to different climates, all of the company's equipment is designed to maintain product quality and performance against extreme temperature changes.

The company's five key products are:

Ash-Eye

The Ash-Eye is a coal monitoring system that attaches to conveyor belts to monitor the coal as it is moved from the mine to the stockpile or conveyor transportation, providing real time results of coal quality to the customer. The Ash-Eye can lead to a more consistent blend of coal, can eliminate the requirement for hourly control samples and can provide advanced warning of problems, such as changes in gravity levels and blocked chutes.

Heat-Eye

The Heat-Eye system is also able to determine the ash and calorific value of the coal, including moisture and the energy content which is an essential measurement in the usage of coal. The Heat-Eye provides a second be second measurement period, which is vital for decision making, allowing a mine to quickly adjust to meet the demands of customers requiring different Nett Calorific Value (Nett CV) specifications.

Ash-Probe

Ash-Probe is a portable device that allows instantaneous readings of coal quality. It is widely used by customers to check the quality of incoming coal supply specifications against suppliers' claims and by suppliers to verify the quality of their coal. The Ash-Probe was the first portable product to be developed by Bretby Gammatech.

Lab-Ash

The Lab-Ash system is a laboratory-based version of the Ash-Probe, which allows 10kg samples of crushed coal to be taken from the field and placed in the test chamber for fast analysis. This product has proven popular in small private mines where workers cannot access laboratory testing facilities easily, with use of Lab-Ash making the whole process much quicker and easier.

Gamma Eye

Bretby Gammatech has developed two Gamma Eye instruments for measuring large bulk gamma emissions from, for example, material contaminated with NORM (Naturally Occurring Radioactive Material) scales. The instruments are designed for sites where significant quantities of gamma contaminated material need to be assayed and segregated within a short time frame.

Whilst some of Bretby Gammatech's main competitors' products use a radiation source to detect impurities in coal, the company's product range uses natural gamma radiation, which means it has no health and safety issues. Its innovative products are safe, cost effective, have no specialist decommissioning procedures and are able to measure impurities with 99% accuracy.

In order to remain ahead of its competition, the company became part of President Engineering Group in 2012. With the

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backing of this larger group, Bretby Gammatech has been able to focus on improving its products' user experience and how its equipment interfaces with its users, leading to the development of a remote monitoring software application.

The EyeGraffix software for the Ash-Eye and Heat-Eye monitoring equipment provides a more user friendly system which alerts the customer to any issues or changes in coal quality, using audible alerts, graphical icons or emails. Featuring a multi-language support and enabling customers to connect up to 25 Ash-Eye / Heat-Eye systems simultaneously, EyeGraffix allows remote viewing and setting of the equipment's parameters and sensor status. A new multi-lingual HD colour touch screen display unit, AshGraffix, has also been developed for use with the Ash-Probe. This product development makes the controller lighter and easier to use for the customer.

A demonstration of the AshGraffix controller to customers in Mao Khe, Vietnam, using their existing Ash Probe.

Partnering with President Engineering Group has also enabled the company to further exploit opportunities internationally. In the past 12 months, Bretby Gammatech has secured significant orders in new markets such as Turkey, Kazakhstan, Russia, Macedonia, Vietnam and Indonesia, with these orders building on the company's previous success in exporting its products to other major markets worldwide.

Bretby Gammatech's innovative products, technology and approach to international markets demonstrate the company's commitment to serving its customers. The company truly understands its market and its customers, and has the technical expertise and understanding to be able to demonstrate how its products can give mining companies a competitive edge.

Liebherr: offering innovative equipment for innovative customers

In 2013, two LPS 600s started operation in Port Polnocny, Poland.

New product developments and innovative technologies take current trends in the maritime sector into account. Manufacturers have to adapt their product ranges to meet the requirements of their customers — including customers who will be using Liebherr cranes to move coal. Also the mobile harbour crane sector is driven by innovation. New technologies are introduced to the market in frequent intervals. Liebherr Maritime Cranes is one of the most important pioneers in the development of new maritime innovations. In 40 years of business experience and more than 1,250 delivered mobile harbour cranes, innovative technologies always played an important role.

The business year 2014 was an outstanding one for Liebherr's maritime division, achieving a historical record in the mobile harbour department with 112 units supplied across the globe. Moreover, the introduction of new products, like the new mobile harbour crane LHM 800, and technologies set the course for future growth.

Liebherr's most important maritime technology launched last year was the intelligent grabbing system SmartGrip. This unique technology for highly efficient bulk handling operates as a clever system which optimizes grab filling rates in a self-learning manner. SmartGrip provides a number of valuable advantages, including higher performance and zero overloads.

Intelligent grabbing technology — SmartGrip®

A full grab is crucial for high turnover in bulk handling. The aim in the development of SmartGrip was to further develop the bulk handling sector. The unique feature of Smart Grip is having recourse to data collected on the grab closing process. For the data collection different cranes, grabs, materials and the performance of diverse-skilled crane operators were considered.

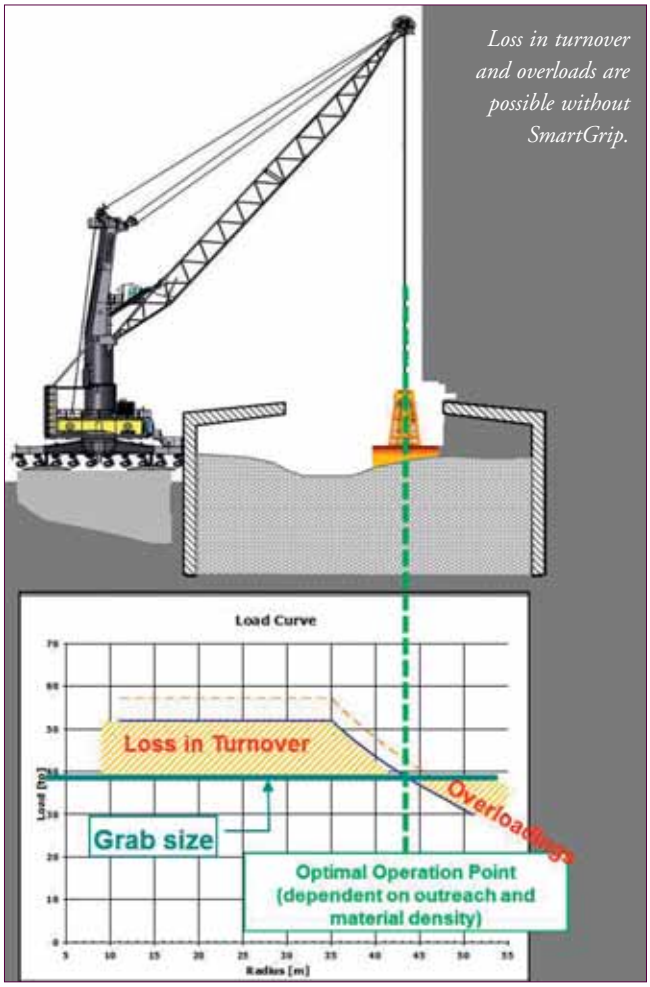
Data mining

By means of the gathered information, a model was developed using data mining processes through which the filling volume of grabs can be optimized during the work process.

Based on the gained turnover analyses from various ports around the world, the data showed that, on average, only 70% of the grab capacity is used. Moreover the utilization of the cranes is even worse due to unsuitable grabs. This was affirmed with a test arranged at Eren Port in Turkey with an optimal suited grab leading to an increase in turnover from 1,200tph (tonnes per hour) to 1,800tph (+40%). Those results made clear that the biggest leverage for turnover is associated with the grab and its proper filling. The analysis also showed that even a proper selected grab is just a compromise for a minor set of conditions.

Those conditions are:

- different ship sizes;
- different materials;
- different material densities;
- material density changes (up to 20% per ship due to compression);
- grab geometry;
- grab hit angle; and
- skills of crane driver.



Loss in turnover and overloads are possible without SmartGrip.

Suboptimal conditions can lead to two possible situations:

1.) The selected grab is too small which entails poor turnover results.

2.) The selected grab is too big which results in overloads that harm the crane structure. Moreover overloads are causing security stops on the crane that are highly time-consuming.

As a result, ports are faced with lower turnover (tonnes per hour) than expected.

Mode of operation

The developed SmartGrip algorithm learns the machine settings and material properties autonomously. The remarkable thing is that this is a self-learning model. It adapts continuously. By using various parameters the system adapts to the given reality and to the respective crane operator. It will take the type of bulk material, such as density, compression and granularity, as well as current conditions, such as material penetration or type of grab into account. The crane requires no additional equipment like specific sensors or cameras. Furthermore, existing cranes can be easily retrofitted with the appropriate software.

Using SmartGrip, the driver just controls the closing of the grab. The system controls the filling of the grab to the optimum or a manually set load. This enables optimal crane utilization and avoids overloads. Right from the second load cycle, SmartGrip ensures that the grab filling rate is above the average of 70%. Within a maximum of seven cycles the full capacity of the grab is utilized.

Valuable benefits

SmartGrip controls the filling of the grab to suit the load curve of the crane. This leads to perfect crane utilization without overloading, which results in an extended lifetime of the crane, saving fuel and time.

Moreover, when SmartGrip is activated, the operator can completely rely on the system for an accurate determination of the material density and optimal grabbing angle in a very short time. The automatic and optimized grab filling means less stress for the crane operator who can then focus more on other important issues like safety.

In view of the average grab filling rate of 70%, SmartGrip offers the potential to fill the grab constantly to the optimum. Additionally, turnover variance is significantly reduced, leading to more efficiency in operation. Field studies showed that even up to 40% turnover increase are realistic if the grab filling rate is below average. Additionally, SmartGrip partly closes the gap between high-skilled and less-skilled drivers, as some important parts of bulk handling are automatically optimized by the system.

Another striking feature offered by SmartGrip is the possibility to manually set target loads. If a crane operator needs to load a 40-tonne-capacity truck, for instance, he can advise SmartGrip to fill the grab with 40 tonnes. This feature eases the operation of the crane operator.

Case study 1

Liebherr mobile harbour crane LHM 550 equipped with SmartGrip® at Saqr Port, United Arab Emirates

Situation

Saqr Port is located at the northern tip of the United Arab Emirates, with access to the Arabian Gulf, and is the Middle East's major port for bulk cargoes, aggregates, pipes, cement, coal and other raw materials imported for the local industries. With its unique geographic position and superior intermodal connections, Saqr Port is also well-known for highly efficient material handling and premium infrastructure. The port's expertise has attracted additional business which has led to increased cargo volumes, over the past five years.

Task

Saqr Port handles several materials with densities up to 2t/m³ and loads on average around five ships per day. The most common material is limestone, which is characterized by small rocks. When the grab is closed, some of these rocks are compressed which results in intense shaking and stress for the crane structure, due to strong dynamic forces. Thus, in order to minimize forces acting on the crane structure a smaller grab (22m³) was used which naturally reduces turnover.

Solution

Saqr Port decided to install SmartGrip on its newest mobile harbour crane, type LHM 550, to cope better with limestone. This innovative system optimizes grab filling rates in a self-learning process which results in more turnover, zero overloads and less stress for crane and operator. For the new LHM 550, the SmartGrip parameters (e.g. closing speed, slack rope values) have been specifically adapted for the rocky limestone material.

Performance

Thanks to the installation of SmartGrip, Saqr Port has been able to use the bigger grab (32m³) without additional stress for the crane structure and the average limestone load has increased by more than 30%, leading to significantly more turnover. It also has additional benefits, time-consuming overloads have been completely eliminated and due to very smooth force effects,

In 2013, two LPS 600s started operation in Port Polnocny, Poland.

shaking has dramatically decreased, leading to more driver comfort and extended life span of the crane.

Case study II

Liebherr Portal Slewing crane LPS 600 equipped with SmartGrip® at Port Polnocny, Poland

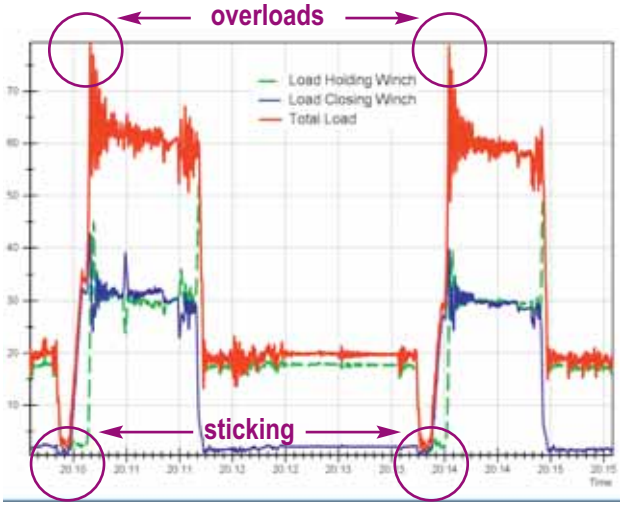
Situation

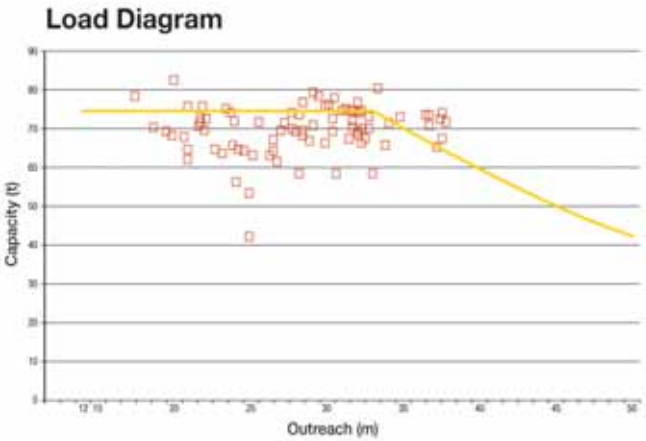
In 2013, two LPS 600s started operation in Port Polnocny, Poland. Both machines are equipped with the unique Pactronic hybrid power booster. This cutting-edge hydraulic hybrid drive for cranes leads to an increase of up to 30% turnover capacity. Like others, Port Polnocny is constantly looking for new ways to enhance productivity. The launch of SmartGrip offered a new possibility to increase the port's efficiency.

Task

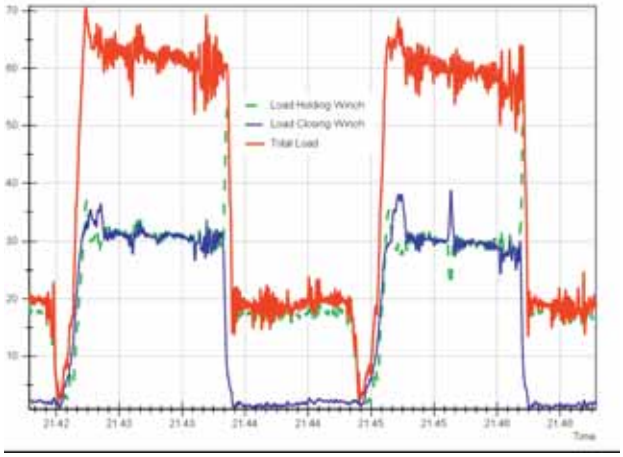
Port Polnocny is mostly unloading coal which is wet in the majority of cases. The customer reported overloads in serving wet coal with a density of approximately 1.0t/m³. The main problem: after closing the grab, the weight of the load plus the deadweight of the grab presses on the underlying coal. This circumstance leads to adhesive forces between the grab and the rest of the coal in the hedge. The grab sticks in the material. By pulling out the grab the crane behaves like a fishing rod, which means: as long as the grab is sticking, the crane is stretched. In the moment when the grab breaks out of the material large dynamic forces between 10 and 20 tonnes act upon the crane. This effect is responsible for the overloads Port Polnocny reported.

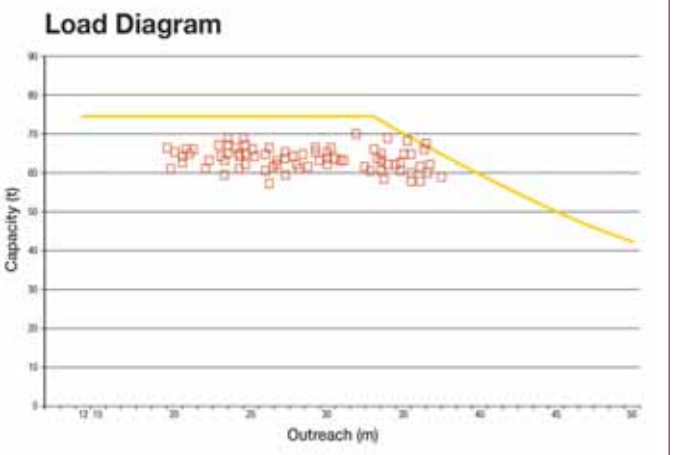
First test run: without SmartGrip





Second test run: with SmartGrip





Solution

Liebherr conducted on-site research at Port Polnocny in Gdansk. In the first test run both cranes were tested without SmartGrip. The test results revealed the moments of the load cycle when the sticking grab breaks out of the wet coal.

In the second test run, SmartGrip was installed and activated. The results were unmistakable. Both Liebherr Portal Slewing cranes LPS 600 had no overloads and there was no sticking of the grab. Additionally the grab filling rates were above average.

SmartGrip works as follows: the system automatically controls and synchronizes both winches of the crane. While one winch is closing the grab, SmartGrip steadily adjusts the holding winch to the weight of grab including load. This adaptation avoids the development of adhesive forces between the grab and the rest of the coal in the hedge. The grab does not get stuck in the material and can be pulled out of the coal more gently, which avoids overloads.

Performance

After the installation of the SmartGrip system, the first cycles have already demonstrated the capability of the intelligent grabbing technology.

"In our efforts to increase productivity, the installation of SmartGrip was a logical decision. Our crane drivers are delighted with the new system, which ensures that we do not waste turnover caused by bad or volatile grab filling rates. Moreover, overloads are eliminated which means a longer crane life-time," said Adam Luczak, Port Polnocny's Bulk Terminal Manager.

This technology marks an evolutionary step. SmartGrip is the first self-learning system in the bulk handling industry using data mining to power the machine control. In other words, based on experience the crane handles bulk in an intelligent way.

LHM 800 – WORLD'S LARGEST MOBILE HARBOUR CRANE

Liebherr launched the new flagship mobile harbour crane LHM 800 in March 2015. The dimensions and capabilities of the LHM 800 are unique, outperforming all existing mobile harbour crane models in the market. The LHM 800 provides a lifting capacity of 308 tonnes, exceeding the maximum capacity of the so far strongest mobile harbour crane, type LHM 600, by 100 tonnes. Equipped with Liebherr's Pactronic hybrid drive the giant masters up to 2,300 tonnes per hour which is an absolute bulk handling record in the mobile harbour crane world. The intelligent grabbing technology SmartGrip is also available for the LHM 800.

OUTLOOK

Recently introduced products and technologies are expected to open up new markets. In combination with well filled order books, Liebherr Maritime Cranes is optimistic that 2015 will be another successful year. DCi

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- TRAMCO has been involved in the design, application, engineering and manufacturing of the world's most extensive line of chain conveyors, enclosed belt conveyors, specially designed conveyors and conveyor conversions since 1967.

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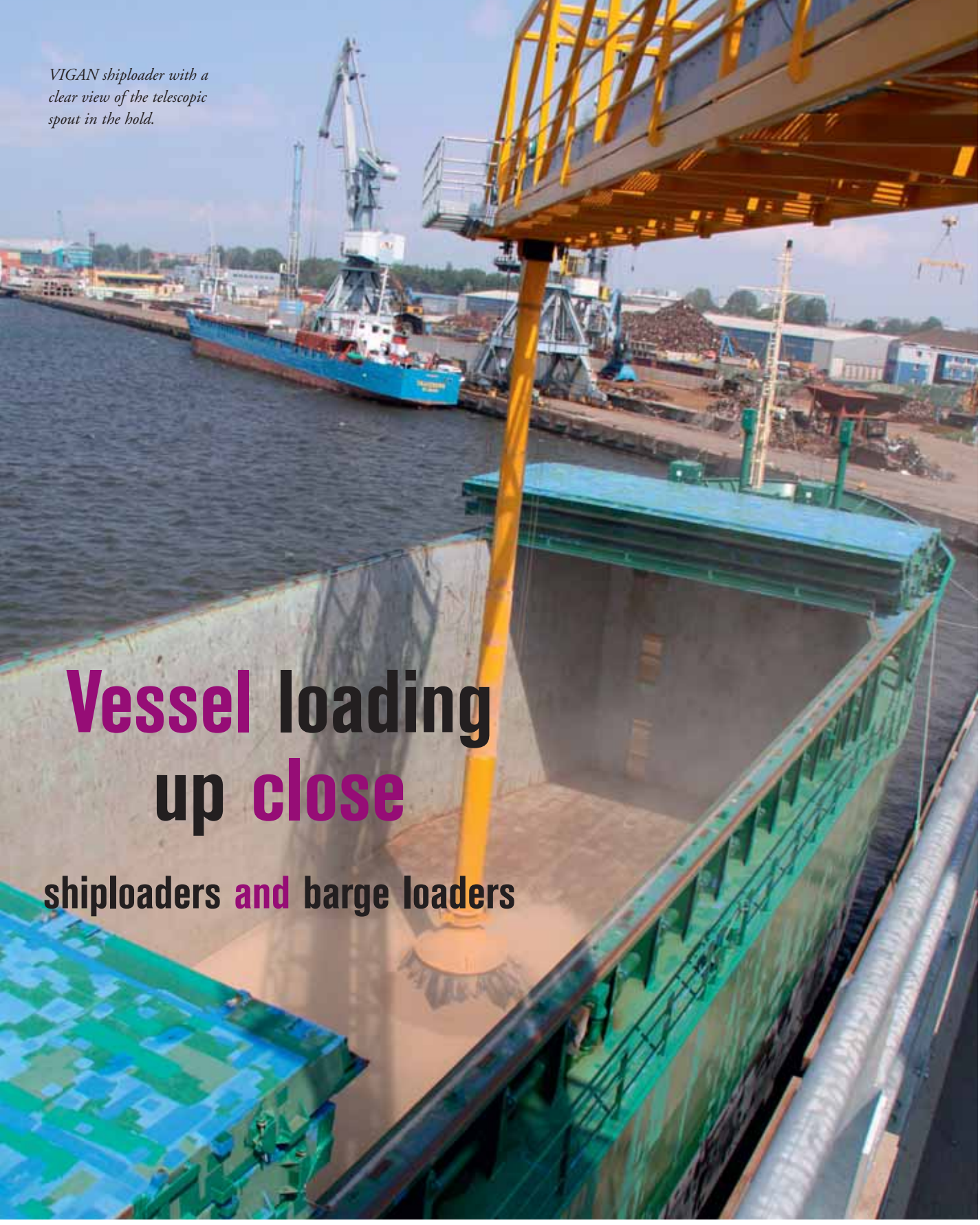


VIGAN shiploader with a clear view of the telescopic spout in the hold.

Vessel loading up close

shiploaders and barge loaders

VIGAN: an experienced partner for successful shiploading

VIGAN specializes in the design and manufacturing of port equipment for dry bulk handling, mostly agri-bulk. The company offers a range of bulk handling equipment, and has significant expertise in shiploaders and ship-unloaders.

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

VIGAN manufactures continuous shiploaders, used for the uninterrupted loading of product, rather than discontinuous shiploaders fed by trucks.

The loading is carried out mechanically: for instance, the cargo can be transported into the loading boom by an integrated belt or chain conveyor and discharged by gravity into the ship's hold thanks to a telescopic loading chute. The loading boom is

Slewable loading powered thrower.

usually mounted on a slewing ring and can reach up to 40 metres to ensure optimal hatch coverage. The combination of telescopic and rotating movements allows continuous and uniform loading operations of the ship holds.

Customized solutions

The whole loading structure can be mounted on a self-propelled gantry on rails usually with cable reels; on a self-propelled gantry on rubber wheels, with diesel generator or cable reels; or on a fixed structure.

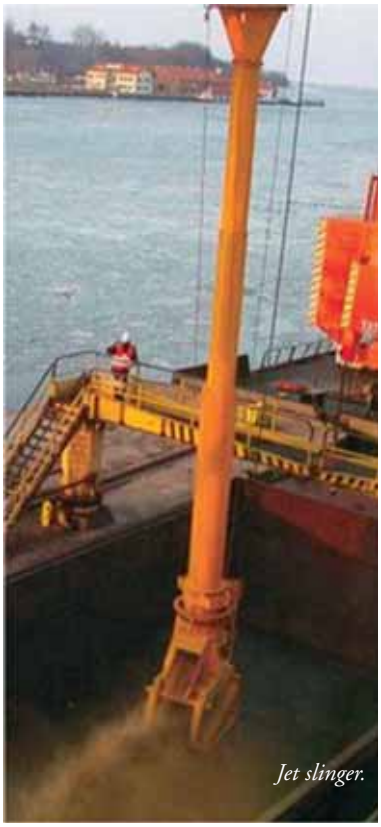
VIGAN loading machines work with an electrically-driven motor or with a diesel power unit, and guarantee a capacity of up to 1,500tph (metric tonnes per hour).

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

Options include a slewable loading powered thrower that makes it possible to direct the bulk cargo flow sideways in any direction; or a jet slinger which can be mounted at the bottom of the telescopic loading pipe, also allowing for a fairly uniform spreading of the cargoes in the holds.

VIGAN mechanical loaders are suitable for many applications. As each case is different, and each customer has specific requirements, VIGAN prepares special designs according to each specific bulk handling operation.

VIGAN shiploaders are fully customized and specially manufactured.


Jet slinger.

Dust control

In most ports, controlling dust emissions is not only a major


Telescopic spout with large dust skirt at outlet.

1,000tph VIGAN shiploader in operation at Liepaja port in Latvia (Baltic Sea).

concern but also a main objective.

VIGAN loaders fulfill these requirements thanks to:

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

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

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

Projects under way

VIGAN is currently installing a 1,500tph shiploader in Russia, for the loading of granulated fertilizer with bulk density of 0.96t/m³ into vessels up to 80,000dwt (Panamax).

1,500tph shiploader being installed in UST LUGA port in Russia.

1,500tph shiploader being installed in UST LUGA port in Russia.

The gantry is mounted on self-propelled rails.

One 34m belt conveyor fixed on the gantry transfers the cargo from the quay side belt conveyor to the top of the loading cabin. The conveyor is covered over full length with removable covers for protection from wind and precipitation.

The loading boom has an integrated belt conveyor of 27.5m.

The top of the integrated conveyor is equipped with a de-dusting system consisting of:

- one automatic self-cleaning filter: the dust content at the outlet of the filter system will be less than 10mg/m³, in accordance with the most strict dust pollution regulations; and
- a fan sucking the dusty air through the filter sleeves.

The end of the loading boom is equipped with a telescopic loading spout with a large dust skirt at the outlet.

During recent years, VIGAN has sold shiploaders in Kazakhstan, Poland, France, Latvia, Russia and Belgium, with capacities varying from 350tph to 1,500tph.

Several other shiploading projects are also under way.

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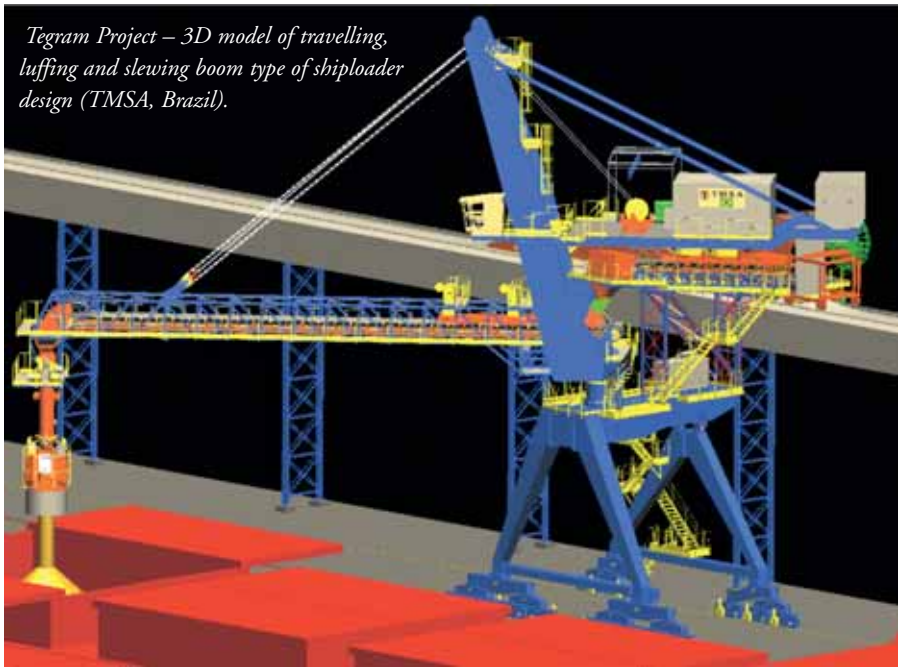
Coaltrans Japan™ will connect international suppliers with Japan's coal buyers for two days of discussion, debate and insight into the opportunities available in this growing market.

TMSA: bulk material handling specialist in South America

TMSA Tecnologia em Movimentação S/A, is one of the largest suppliers in South American market for bulk solids material handling, especially in port terminals, heavy duty and long distance conveyors. The company offers great expertise in the shiploading of bulk commodities. It is estimated that about a third of Brazilian exports of grains, meals and sugar pass through TMSA equipment.

TMSA has supplied conveyors with capacities up to 20,000tph (tonnes per hour) and shiploaders for sugar, iron ore, coal, alumina and other heavy-duty commodities up to 4,000tph.

Based in Brazil, the head office is in Porto Alegre, Rio Grande do Sul State, where TMSA has a major 35,000m^2 manufacturing facility, housed within a land area of 80,000m^2. This manufacturing facility has highly integrated engineering capabilities, with in house mechanical, structural, electrical, automation and de-dusting specialists; all under ISO 9001 certification.



Tegram Project – 3D model of travelling, luffing and slewing boom type of shiploader design (TMSA, Brazil).

Belt conveyors at Itaqui Port, conveying material from the warehouse to the pier (TMSA, Brazil).

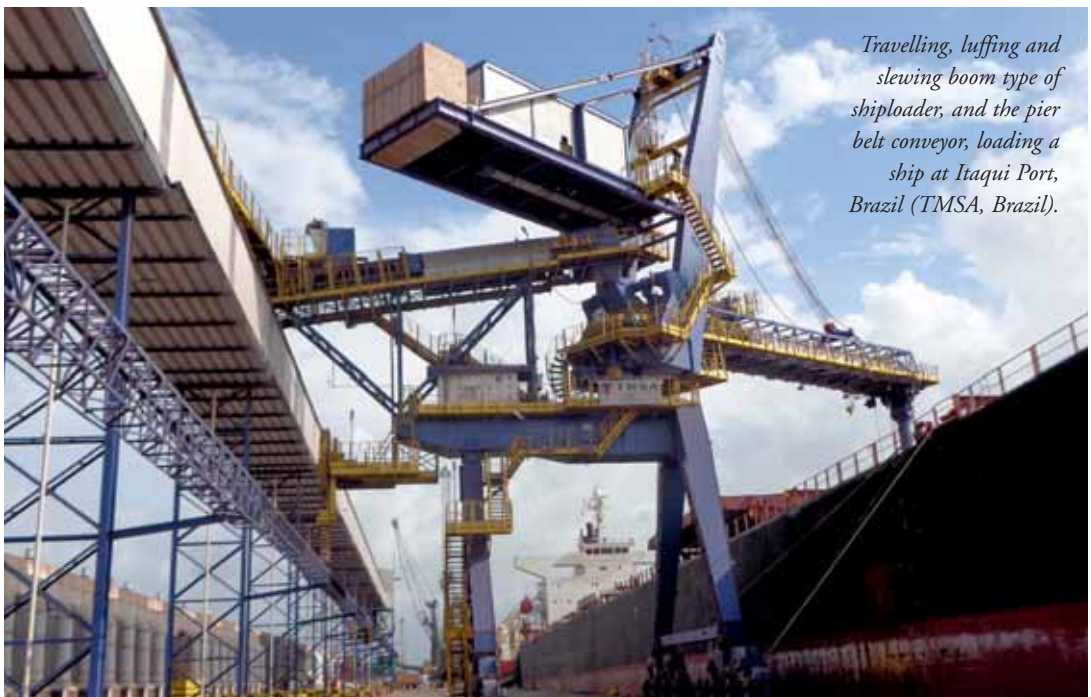
The working team is of about 700 people, including branch offices in Belo Horizonte at TMSA Minas and in Buenos Aires, at Bulktech Argentina SA. Roughly, about 100 employees work in the engineering department.

In terms of recent port terminal applications, TMSA has sold, manufactured and delivered:

- four travelling, luffing boom and shuttle loading spout type shiploaders for 2,000tph handling grains, based on soybean (0.75t/m^3), for APPA Port in Paranaguá, Paraná State, Brazil; and
- one travelling, luffing and slewing boom type shiploader for 2,500tph of grains, based on soybean for Tegram/Itaqui Port in São Luiz, Maranhão State, Brazil.

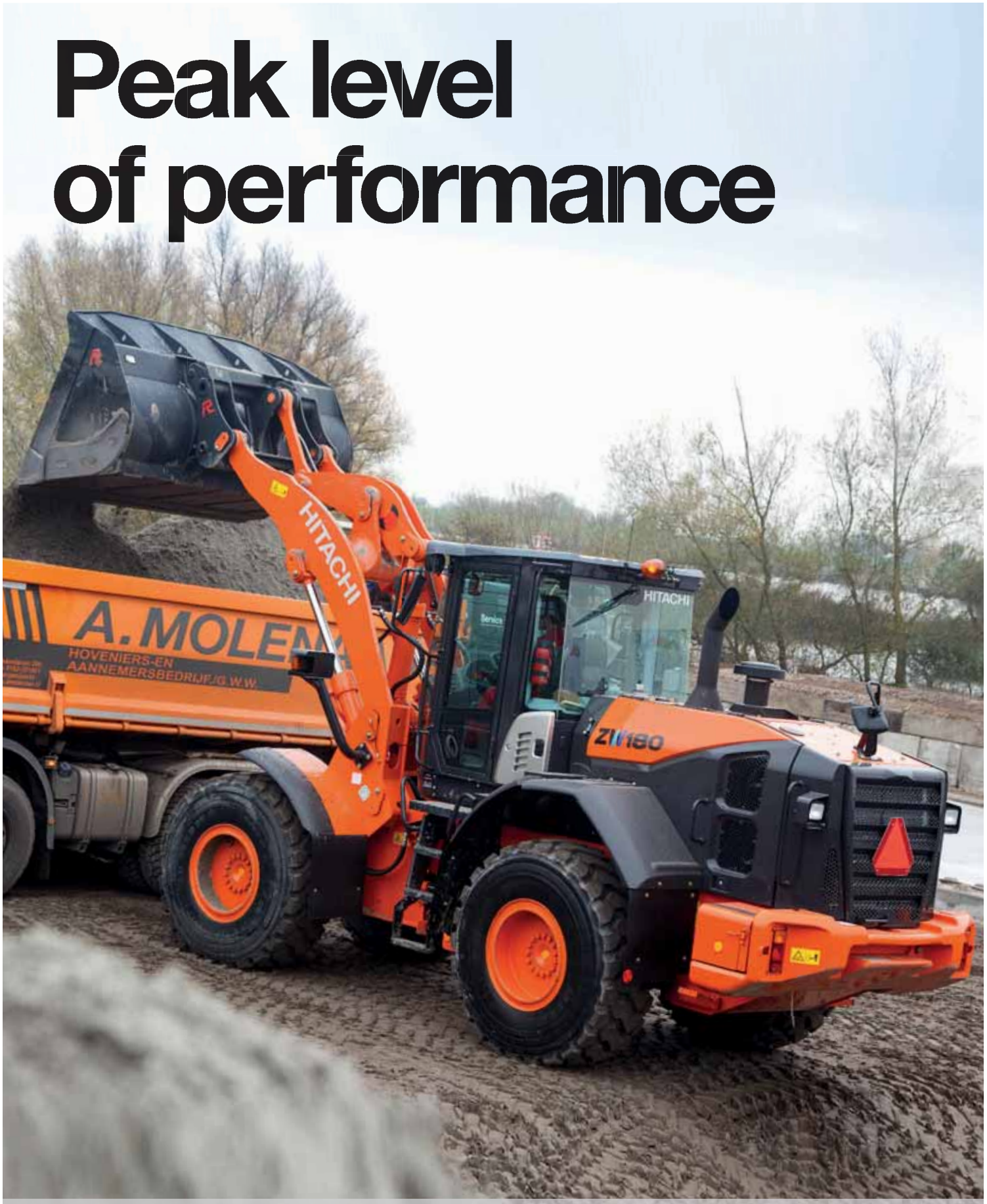
These two projects were entirely designed by the TMSA engineering team, under a turnkey contract.

The Tegram project includes railcar and truck reception and all



Travelling, luffing and slewing boom type of shiploader, and the pier belt conveyor, loading a ship at Itaqui Port, Brazil (TMSA, Brazil).

Peak level of performance



The power of advanced technology has developed a new high-quality range of Hitachi construction machinery. ZW-5 wheel loaders offer a peak level of performance, reinforcing their leading reputation for reliability and durability. Designed for the most challenging material handling environments in ports and harbours, the Hitachi ZW180-5 delivers increased productivity at a lower cost of ownership.

HITACHI

Reliable solutions

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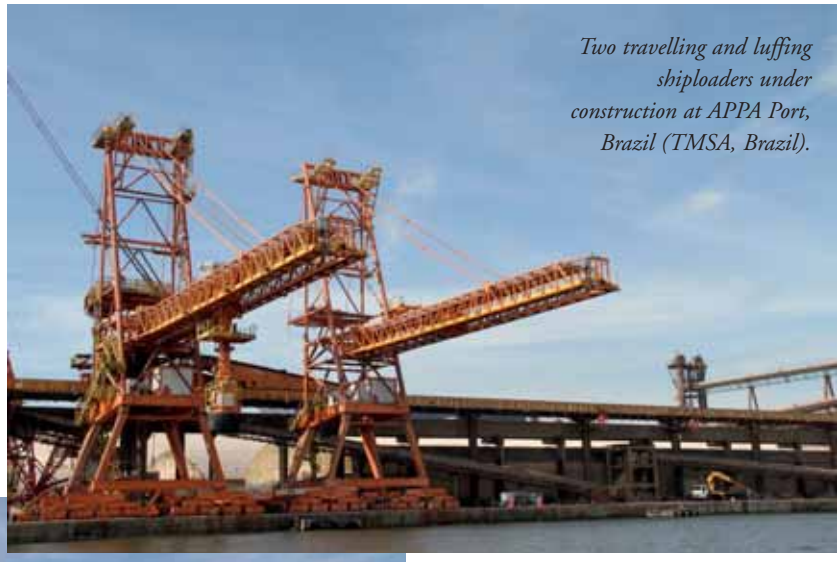
belt conveyors that convey product from the warehouse to the shiploaders that are capable of loading ocean-going vessels of up to Capesize 125,000dwt.

The APPA port is replacing four of its 1,500tph shiploaders which have been in service for decades at the port facility, with new TMSA equipment. The new equipment offers an increased belt conveyor speed of up to 2,000tph, and an extended boom to load big ships, up to Capesize 125,000dwt.

The loading spouts for the APPA and Tegram



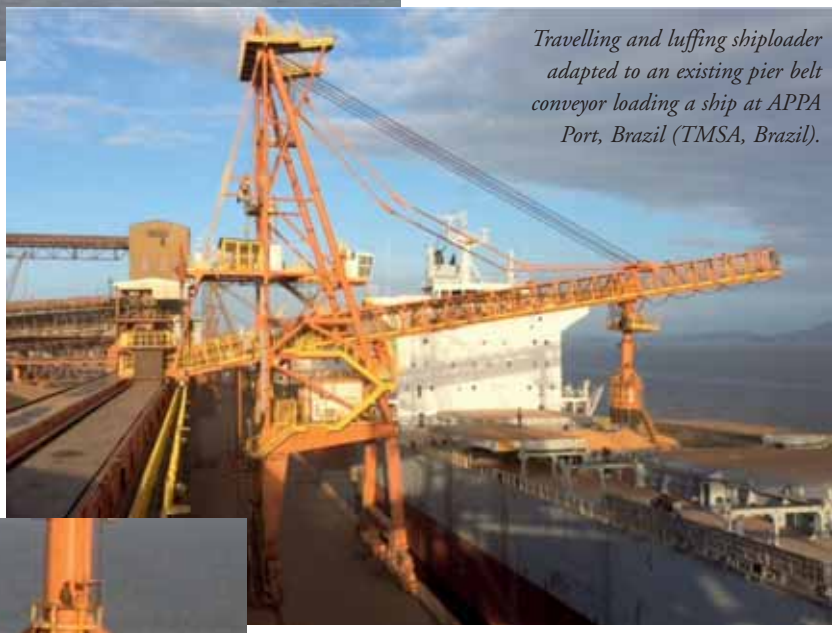
Two travelling and luffing shiploaders under construction at APPA Port, Brazil (TMSA, Brazil).

Two travelling and luffing shiploaders under construction at APPA Port, Brazil (TMSA, Brazil).

projects were entirely designed by the TMSA engineering team; they allow the operator to load the hatch with dust aspiration, in order to guarantee low dust emissions for the environment. The same loading spout is capable of trimming the bulk material by using an in-built, pneumatically-driven spoon, to finalize every hatch loading operation.

TMSA is investing heavily in qualified labour and integrated management software (Microsoft Dynamics ERP). The ability to provide innovative solutions is what the company sees as its biggest differential — not to mention a necessity for its survival on the global stage. Aware of this need to remain in the technological vanguard, the company continuously seeks outs partnerships with world-renowned companies. In today's global market, one of the most important characteristics is sustainability. Consequently, the company invests a lot in solutions that attempt to resolve three major problems: noise, particle emission and energy consumption.

In recent years, TMSA has developed a very special technological portfolio for the bulk solids material handling and conveying, which includes overland conveyors and the RopeCon system, from Doppelmayr in Austria, which makes it possible to choose the best solution for each bulk-handling project, by becoming a solution partner with local integration for key worldwide technological leaders.



Travelling and luffing shiploader adapted to an existing pier belt conveyor loading a ship at APPA Port, Brazil (TMSA, Brazil).

Operator standing in the hatch cover, using remote control to finish the loading process at APPA Port, Brazil (TMSA, Brazil).

TMSA has the knowledge and experience for the proper selection of a conveying system, which has to be done by a proper analysis on a case-by-case basis, involving much more than only prices concerned on mechanical/structural technical aspects of the project. They must also consider operational costs, environmental and social issues, civil works and land access.

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Barge-loading systems from SMB: efficiency and flexibility

Water as a lifeline — handling under difficult circumstances

Trade means exchange. This exchange still involves the transport of goods from one place to another, despite the effects of digitalization. Transport by river going vessels is one of the major traffic modes in many countries. In the South Asian state of Bangladesh, for example, more than 700 rivers and tributaries form one of the largest inland waterway networks in the world. This densely populated country depends on its waterways; they connect the major cities and thus the most important trade locations with each other. Rivers have therefore grown into a cost-efficient and effective alternative to an otherwise insufficient infrastructure. A precondition for the use of natural facilities is the availability of flexible loading systems that can also be used to support harbours at remote inland locations. They must be able to load barges that are suitable for widely branched rivers and make optimal use of the available storage space. This is essential for bringing goods to their destinations in an economically efficient way and without transshipping.

Saving time provides an edge

The German company SMB International GmbH is a specialist in loading systems, transport technology and material handling and has been developing individual shiploading and barge-loading systems for more than 20 years. The company has implemented more than 80 loading systems for customers in Asia, Africa, South America and Europe and is therefore well aware that short vessel docking times are essential for an efficient exchange of goods. The faster a vessel is loaded with goods such as grain, slag or cement bags, the shorter the docking times and the more efficient transport becomes. SMB therefore uses a two-step production method: loading systems are first designed directly at the Quickborn site near Hamburg. Here, all mechanical and electronic modules are individually developed and produced according to the requirements. They form the basis for custom-made implementation of projects and their subsequent installation on site. SMB can also draw on many years of experience regarding restructuring or capacity extension of old facilities.

Requirements differ significantly

The design of shiploaders is adapted to their future requirements and tasks. The range extends from systems for ships of 5,000dwt up to 90,000dwt, providing a loading capacity of up to 2,500tph (tonnes per hour). The systems are designed for stationary or mobile use on rail, depending on the requirements. Three versions have evolved with regard to the various types of loads. The first version is intended for bulk goods: it uses cascade-type chutes to optimize their flow speed. This leaves the grains generally undamaged while encapsulated dust extraction minimizes dust emission at the same time. The risk of degradation is strongly reduced by using contoured chutes. A further version is bag loading. A cantilever beam combined with a conveyor belt swivels over the ship. The bags slide along a spiral chute into the loading bay. A rotary plate that can be turned by 180° is attached to the end of the spiral chute. The plate carries a telescopic conveyor belt with two extension options. This allows positioning of the bags in the furthest corner of the loading bay with an accuracy range of centimetres. This system may be optionally equipped with a central rotating

plate for even alignment, a telescopic loading head or even a telescoping spiral chute. The third version includes a spiral chute and cascaded chutes mounted on the same cantilever beam for combined loading of bags and bulk goods. The loading type can be optionally chosen according to the characteristics of the bulk goods.

Customers benefit from high-performance solutions

"We base each of our systems on the specific requirements of the customer to create an individual solution," explains Andreas Heckel, Managing Director of SMB International GmbH. "Many systems handle up to 1,500tph — but much higher throughput is possible." Quickborn shiploading systems have proven their performance strength over many years of service. Long-term economic efficiency is another, obvious goal for the designers. Lower insurance and transport costs, in addition to the shorter docking times, allow customers to make optimal use of waterways. "Systems must adapt to the circumstances, not the other way around, particularly when the infrastructure conditions are not optimal," explains Heckel. This company philosophy distinguishes the German company from its competitors. Its success has encouraged SMB to continue along this route. "We have deliberately chosen a high vertical manufacturing range at our own site. This allows us to ensure excellent quality and guarantee reliability. Naturally, we want to do this to comply with customer requirements. However, our internal demands also act as a continuous incentive," Heckel sums up the situation.

SMB International and MBA instruments: two brands — one idea

The two companies SMB and MBA focus upon the material handling segment. The planning, development, manufacture, global distribution and servicing of highly complex, automated loading systems, filling systems, measurement technology for fill levels and conductivity, palletizers and shiploaders form the comprehensive product portfolio. The SMB Group has consciously opted for a high degree of in-house manufacturing at its site in Quickborn. This enables customers' requests to be implemented in a spontaneous, targeted and rapid manner, whilst retaining the same high quality. A high-end mechanical and electrical manufacturing facility coupled with the focus on pre-assembly allows the assurance of qualitative and delivery reliability. Highly qualified installation and service teams work on domestic and global projects. The distribution network, which has operations worldwide, ensures swift and effective information-sharing and co-ordination.

Using cascade-type chutes enables SMB to optimize the flow speed of its shiploaders.

Dusting down: making shiploading cleaner and safer with WeatherSolve

Stockpile – enclosing dust control fencing.

Shiploading and unloading yards have many unique challenges with the wind blowing constantly and kicking up dust. WeatherSolve Structures is able to provide 100% custom-designed dust control solutions with its clients' requirements in mind.

Solutions from WeatherSolve Structures are ideal in terms of:

- **size:** the smallest control systems are simply wind fence extensions to the sides of a hopper, or a cage around a transfer point. The next size up is a few tens of meters long and block off key wind (and dust) acceleration zones. The largest are kilometers long and completely surround troublesome stockpiles. The poles are able to be 30m (100ft) apart and over 30m high.
- **reliability:** functional in extreme weather conditions with minimal maintenance. Over 35 years of experience and engineering development have gone in to the design and components. They stand up and WeatherSolve Structures stands behind the capabilities of the system. The structures have proven successful in a wide range of extreme environments — from marine, to northern cold to Middle Eastern deserts.
- **flexibility:** able to accommodate a wide range of equipment access requirements. All of the company's fences are custom-designed to suite the individual needs of the customer. Because the poles can be widely spaced, WeatherSolve Structures is able to accommodate conveyors or any other equipment, doorways for people or vehicles, gates and it also offers retractable systems for areas requiring access.
- **convenience:** can be constructed with minimal operational

32m-high port stockpile fence.

Breathable cladding on a barge unloader.

disruption. This is achieved because WeatherSolve Structures' systems have few poles or other obstructions. They can also easily be built over conveyors and small buildings without affecting those structures.

- **portability:** for sites such as temporary storage or shifting of small stockpiles with portable conveyors, WeatherSolve Structures has a range of portable (towable) wind fences typically from 12–30ft high.
- **adaptability:** can be adapted to suit available construction materials and equipment. The fences are custom-designed to match customers' requirements, both structurally and aerodynamically.
- **economics:** installing a wind fence is good for the environment, but it's good for the bottom line too. For example, ore dust assays many times higher than ROM material so it makes economic sense to keep it on the pile.
- **working well with others:** WeatherSolve Structures is able to optimize agglomeration systems such as fog. It does this by lowering the wind speeds allowing time for the agglomeration agent to bind with the dust (and not get blown away) and settle back down.

Specific examples

- **hoppers:** material that is being dropped or tipped from a height creates a rush of dusty wind because of displaced air. This air can then be caught up by regular winds around the site which spread the dust even further. A WeatherSolve

Portable fencing.

Hoppers with wind fence additions to the sides (photos: The Raring Corp)

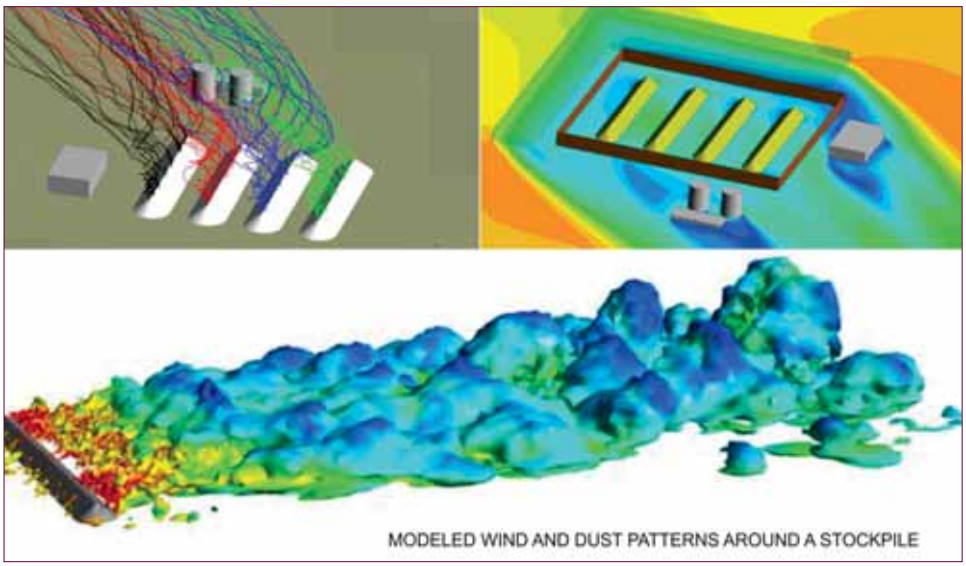
Unloading hopper dust control.

Unloading hopper dust control.

Structures wind fence around the discharge area (i.e. the hopper) can help by protecting the discharge area from the natural wind as well as containing the dust plume that is created by the displaced air and allowing time for the dust to settle again.

- **transfer structures:** there is a wide variety of transfer structures. All of them could benefit from having breathable cladding. The cladding will keep dust inside, keep wind out and provide a measure of moisture control. The cladding can be arranged so that the sections can slide away allowing for access or maintenance
- **shiploading/unloading conveyors:** these are typically in windy situations. WeatherSolve Structures is able to provide breathable cladding on the side of the walkway around the conveyor. In addition to dust control, this has the added benefit of improving the safety of people using the walkway.

WeatherSolve Structures designs are optimized by considering turbulent wind flows and dust particle tracking results obtained from detailed large-scale virtual models. The models are solved using computational fluid dynamics run on high-performance computers that can take as long as 24 hours to run a single set of computations! The modelling work is performed by Midwest Research Institute Global, a not-for-profit, independent research organization internationally recognized as an expert in the field of fugitive dust emissions. Outputs from some of their work are shown below. The inputs to the models include data from laboratory and full scale studies analysing WeatherSolve systems.

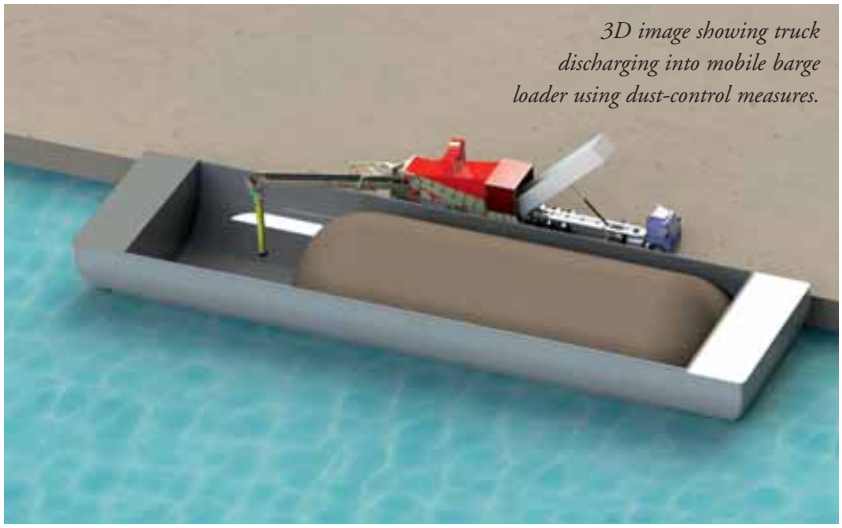


MODELED WIND AND DUST PATTERNS AROUND A STOCKPILE

New Telestack direct truck to barge loader allows Barranquilla to introduce cost-effective grain handling operations

In Colombia, the Sociedad Portuaria Regional de Barranquilla (SPRB), which operates the Port of Barranquilla, has acquired a new barge-loader from Telestack.

Carl Donnelly, the sales manager overseeing the contract, notes that, at the port, imported grain is brought in by Handymax vessels, with consignments initially unloaded directly into hoppers and then stored in warehouses on the quayside. For onward transport, the grain is again loaded onto trucks, which is loaded on 'Impala' barges for transport up the Magdalena river to end users further inland.



3D image showing truck discharging into mobile barge loader using dust-control measures.

"The mobile barge-loader that Telestack has sold to the SPRB forms an integral part of this logistics chain, since it is used to move the grain efficiently from 'truck to barge', thereby minimizing double handling, contamination and dust emissions often inherent when differing types of grains are being handled," says Donnelly.

The original order for Telestack's TU 515R barge-loader was placed in 2014. Following the full design, manufacture, assembly and testing of the equipment at Telestack's state-of-the-art facility in the UK before it dispatched, it was installed and became operational in early 2015.

Quizzed as to why the SPRB had chosen Telestack to supply the equipment, Donnelly explains that Telestack has extensive experience in this area, with many proven designs already delivered to blue chip companies globally, including to many reference sites in South America to date.

"Telestack is already a world leader in the supply of mobile bulk material handling equipment for use in ports. In addition — and unlike many rivals — we are able to customize every aspect of the equipment to meet the specific needs of the application. However, as with every contract, in order to get things just right, we have had long discussions with our customer's engineering and technical teams over a period of time to ensure all aspects of the project was fit for purpose," he says.

A unique solution

No Telestack competitor, Donnelly adds, could meet the flexibility and mobility inherent in the truck-to-barge design provided by the company to SPRB.

"It's a unique solution," he stresses. "Nobody could match our customer-driven designs, competitive pricing and lead time, something of which we are extremely proud."

Unlike in many other contracts, Telestack equipment in Colombia is not replacing an incumbent handling system; the deployment of the TU 515R to Barranquilla was done specifically to enable the port to commence an entirely new barge-loading operation. However, the port company did not look at barge-loaders in isolation; it also considered a possible mobile harbour crane (MHC) operation.

According to Donnelly, there were several reasons why, ultimately, a Telestack solution was preferred.

First and foremost, there was a lower capital investment required, which is always a key point in any sale.

But it was not simply the financial aspect that persuaded the SPRB to buy the Telestack machine, as Donnelly explains: "The use of an MHC increases double handling of material, since trucks conveying consignments would have to offload them on the quayside, leading to both potential contamination of the material and increased dust emissions. In contrast, the TU 515R barge-loader ensures direct loading from truck to barge, thereby eliminating double-handling bottlenecks, and improving operational efficiencies."

Grain discharging into barge.

He also emphasizes that Telestack could also offer a faster lead time from order date to installation.

Also no dedicated, trained operator is required to use the Telestack barge-loader, either, since it is a very simple and easy to use piece of equipment. Contrast this to a mobile harbour crane, which needs a highly experienced operator, thereby generating additional labour costs.

"And, at the end of the day, all of these factors mean an overall reduction in the cost-per-tonne handled," stresses Donnelly.

In terms of how the unit deployed in Colombia has been designed, it was based on a proven standard developed by Telestack, then customized to meet the specific needs of the application.

The tipping point, for example, has been custom designed for the customer's trucks to ensure that no spillage occurs during loading and that there is continuous feeding, resulting in a regular truck cycle time.

Truck discharging into mobile barge loader.

Energy efficiency

The SPRB unit also incorporates a dual power electric supply, which means operating costs can be kept low. Under normal circumstances, the barge-loader is driven around the site and operated via the integrated CAT 96.4KW diesel hydraulic engine. However, to minimize fuel consumption, an integrated electric system allows the conveyor belts to be driven electrically from an on-shore power supply.

Telestack's engineers have also made sure the unit has been optimized to handle grain in the most efficient manner possible. So, chevron belts have been fitted to ensure the free-flowing of material. In respect of environmental protection, the unit offers integrated dust enclosure around the tipping area, as well as dust covers on the incline conveyor and a fully enclosed discharge chute to direct the material into the barge.

"Understandably, the harsh marine environment of Barranquilla Port was of concern to the customer. However, we have applied a 250 Micron (marine grade) paint finish with integrated zinc primer to the finish of the barge-loader, thereby ensuring maximum protection," says Donnelly.

Enhanced mobility

He points out that Barranquilla is very much a multi-purpose port, handling both dry bulk and containers, so the mobility of the barge-loader was critical, since the operator has to be able to move the unit off-site when needed and easily transport it from site to site as ro/ro (roll-on/roll-off) cargo load, if required.

Rather than fit conventional wheels to the barge-loader, the customer opted for tracks, which incorporate rubber pads. This has been done to ensure that no damage is inflicted on the asphalt or concrete surface of the quayside on which it operates, but allows easy movement of the equipment.

The use of the all-function radio remote control also allows the operator maximum flexibility when moving and operating the unit, especially when trimming out the barge. For example, the unit can be positioned at many different angles, depending on the size of the barge and discharge point of the trucks/wheel loaders.

Based on the use of 25-tonne trucks, this specific barge-loader has a loading capacity of 300–400tph (tonnes per hour) when handling grains at 0.7 tonnes per cubic metre.

Finally, in respect of Telestack's after sales support, Donnelly, points out that the TU 515R barge-loader is being supported and maintained by a local representative on this project, Gestión y Gerencia de Proyectos Consultorias (GGPC), which is based in Barranquilla.

"This company is vastly experienced in this industry, currently supporting other, similar brands, such as Terex Gottwald and Kirow, in Colombia. Going forward, the equipment will be continually supported locally in terms of maintenance, operation and spares provision to ensure the effective long-term success of the project," says Donnelly.

Telestack's range of equipment is working in a variety of applications including coal, iron ore, aggregates, fertilizers and grain. They have reference sites across the globe in mines, ports, quarries, power plants, steel mills and cement plants and a team of specialists to support all projects.

Telestack

Telestack specializes in the complete design, manufacture, installation and commissioning of mobile, bulk material handling systems.

Telestack have a global proven record in a range of applications including the coal, mining and quarry industries, stockyard management, ports and inland terminals, power stations, rail yards, steel mills, cement kilns and many other bulk material handling industries.

The company's mobile solutions offer significant operating cost savings compared with traditional methods of material handling (wheel loaders, haul trucks, static conveyors), as well as providing environmental, health and safety and other benefits. Other significant benefits include not requiring planning permission due to product mobility and flexibility to move Telestack products to work on other projects. DCi

TU515R barge loading.

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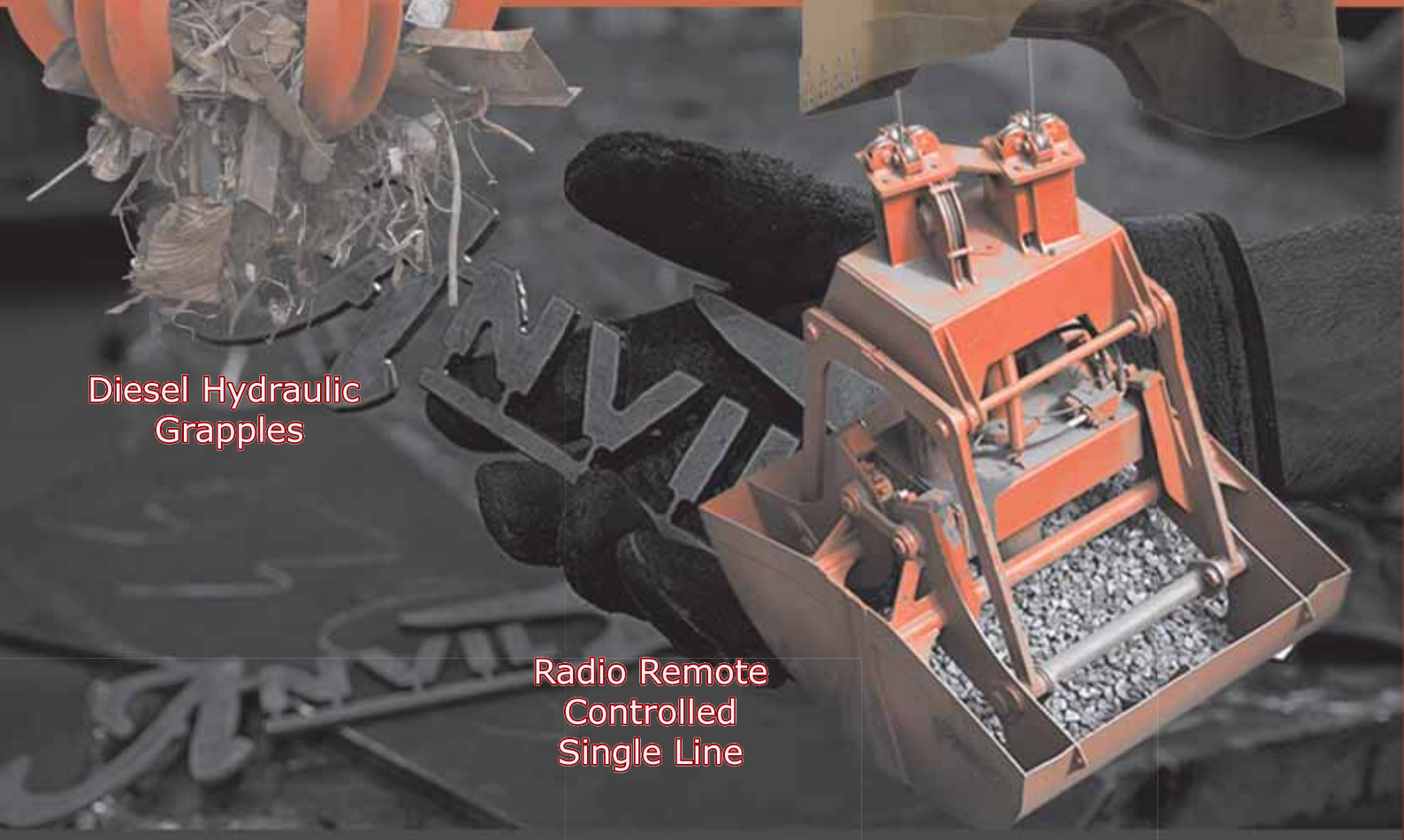

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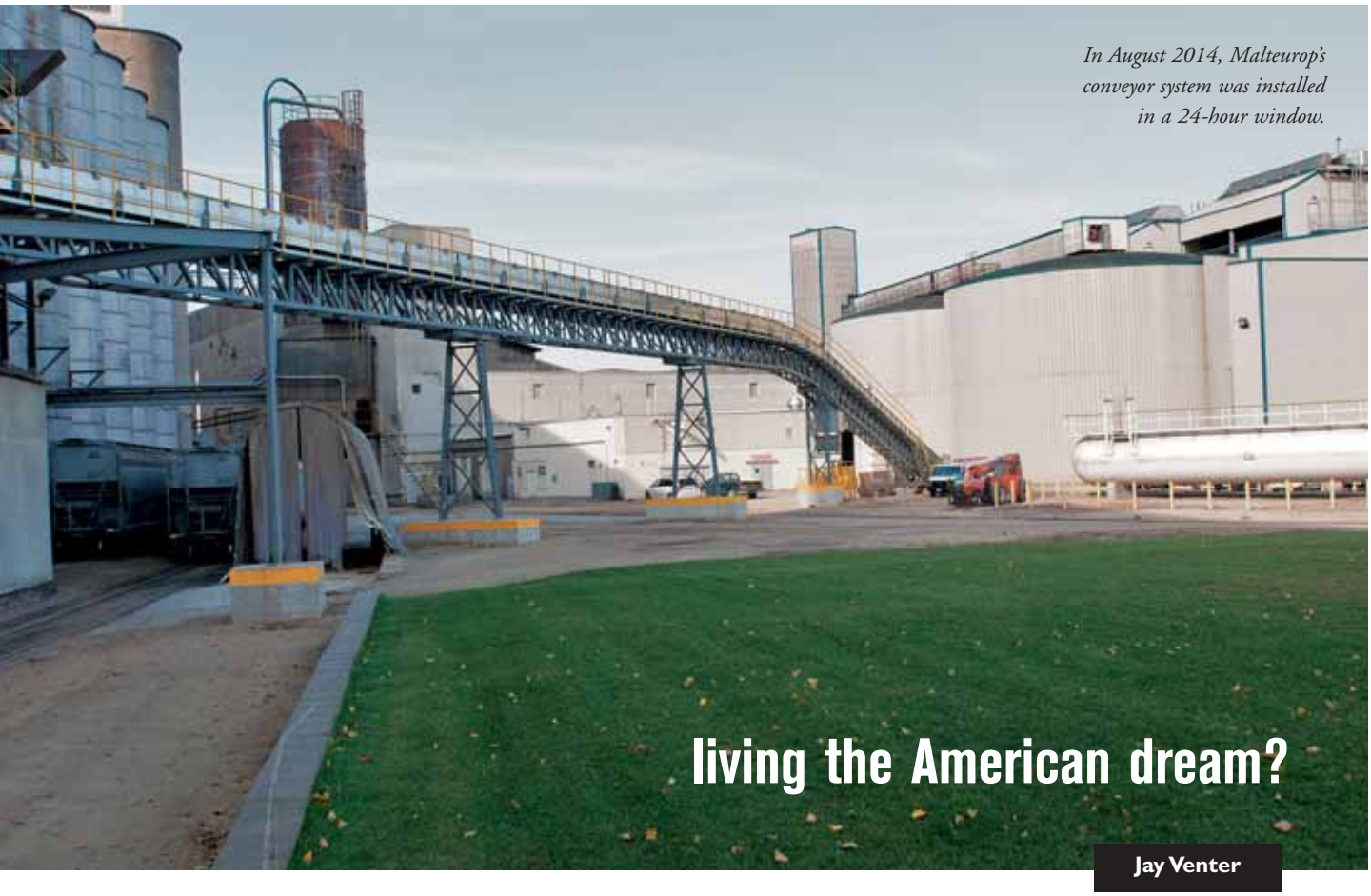


In August 2014, Malteurop's conveyor system was installed in a 24-hour window.

living the American dream?

Jay Venter

Krech Ojard Engineers delivers Malteurop North America conveyor system

Krech Ojard Engineers recently worked with Malteurop North America at its Winona, Minnesota processing and storage facility on a project involving transfer of malted barley by belt conveyor across a rail courtyard to greatly simplify their material transfer requirements.

Integrated Services

For over 30 years, Krech Ojard & Associates, Inc. has specialized in commercial and industrial projects in bulk material storage and handling, transshipment facilities, manufacturing, mining, pipelines, ports, and railroad facilities across the globe. Krech Ojard Engineers specialize in civil, structural, mechanical, electrical, rail, and marine engineering that are brought together to offer requisite integrated engineering solutions for their clients' specific requirements.

Malteurop Conveyor Project

At this facility, Malteurop North America produces batches of malted barley for the beverage and food market on a continuous basis. Each batch of malted barley is the culmination of a precisely timed malting process that takes seven days from start to finish. The zenith of each batch involves the periodic transfer of malted barley from their kilns every eight hours, 365 days a year.

Prior to this project, material transfer out of the kilns to the grain elevators for rail loadout involved nine different drag conveyors and bucket elevators. Some of the legs of the transfer route were requiring extensive maintenance and were at the end of their service life. The unique requirements of this project included a need to feasibly tie in the new conveyance system with extremely tight constraints at the two ends coupled with constraints along the conveyor route traversing the courtyard above three active rail spurs.

Krech Ojard's involvement began in 2011 while teaming with conveyor manufacturer, RAPAT, to assist with the feasibility of a general layout requiring new helical pile foundations, structural reinforcement, and equipment for the project. This feasibility work assisted Malteurop in its cost estimation and capital planning.

Because of the tight constraints with the angles and elevation changes, Krech Ojard chose to utilize 3D scanning of the conveyor route and was able to conduct scans while trains and mechanical systems were running. Site scanning greatly enhanced the precision of the design between the two tie-in points, supplemented field measurements and the existing drawings, and replaced the need for a traditional survey for dimensional control.

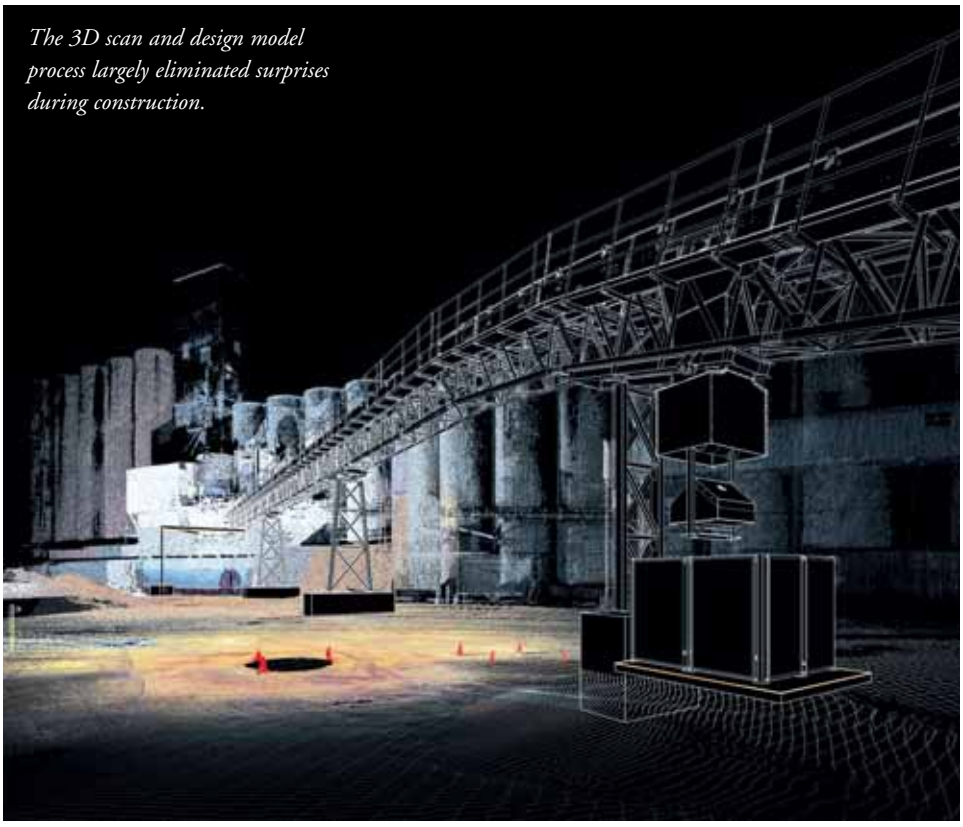
Modelling of the conveyor span was performed in multiple

software packages and combined in AutoCAD Revit which created a traversable digital environment of the facility with the new models. Incorporating RAPAT's preliminary conveyor model allowed a precise review to check for interferences requiring design adjustments before the design packages were final.

This 3D scan and design model process largely eliminated surprises during construction. Multiple clearances of less than one inch were predicted and met when construction was complete.

Krech Ojard's integrated engineering services involved structural design of conveyor and equipment structures, mechanical experience for dust collection and review of explosion venting panels, and civil expertise with class I mainline rail carriers that serve the facility. All three service groups were involved in the collection or processing of 3D scan data of Malteurop's facility.

In August 2014, Malteurop's conveyor system was installed in a 24-hour window skipping just three batches of malted barley. Start-up at the end of this 24-hour construction window was critical because barley had to be transferred out of the kilns from a malting process that was started seven days beforehand. Dust collection and access platforms have been installed between batches with the final aspects of construction this past fall. Since installation, Malteurop reports that breakage of barley is noticeably reduced because of the new belt conveyor which will help expedite the payback of the new transfer system.



The 3D scan and design model process largely eliminated surprises during construction.

Malteurop expects to be well on its way to many years until their next shutdown and Krech Ojard's belief in the benefit and effectiveness of 3D facility scanning continues to grow.

About Krech Ojard & Associates, Inc.

Krech Ojard & Associates, Inc. is a progressive firm offering professional, high quality engineering and architectural design services for private clients, commercial, industrial, and municipal agencies. Based in the United States and working globally, Krech Ojard professionals work in intermodal, mining, pipeline, manufacturing, agriculture, and bulk material storage and transload related to taconite, coal, minerals, grain and food products, and pulp.

A next-level spiral

Challenge

A synthetic polymer producer was looking for unique technology that could work in its new production line. This line was going to run custom polymers and compounds. What was needed was one unit that could handle various materials and production rates.

In addition, the customer previously had a competitor's brute force spiral and was familiar with basic brute force technology, but unfamiliar with the capabilities of General Kinematics' (GK) Two-Mass design.

Approach

GK worked with the customer to help educate them on the advantages of two-mass drive technology. Two-Mass would enable closer interface with adjacent transfer equipment, thus reducing overall height requirements by eliminating the transient response associated with brute force drive technology. This spiral would therefore meet the low head room requirements needed in the new production line. Secondly, GK's Variable Force (VF) wheel technology would allow for instantaneous stroke adjustment from maximum to near zero without changing the motor speed, eliminating the requirements for plug stops or DC brakes. Without such devices, brute force drives produce very pronounced transient displacements during starting and stopping. Interface clearances, and resulting overall height, with brute force drives must be increased significantly to avoid contact with adjacent equipment during a power loss coast down.

Solution

General Kinematics was chosen to supply a vibratory spiral conveyor incorporating a 'Multi-Stage Process Air Supply' for the new production line. This unique GK capability enables the customer to rapidly adjust process air flow and temperature at each spiral process stage to optimize production conditions for the multiple polymer formulations to be produced. The GK two-mass natural frequency variable force feature enables quick adjustments in conveying rates for optimization of bed depth and residence time in the process stages. Also, the GK Two-Mass natural frequency technology minimizes the motor starting torque demand resulting in much lower motor power requirements.

Controls, incorporated as an integral part of the spiral operations, alert operators of upset conditions where significant adhesion of the polymer being produced may abruptly occur. The controls automatically maintain the set point peak to peak displacement while issuing a warning to operators to alert them of sticking of the polymer to the spiral flight. This upset notification allows time for the operators to address polymer sticking while the spiral remains in operation at the set point conditions. Once the issue is addressed, the controls reset and operation continues under normal satisfactory conditions.

Results

Installed Spring 2015, the GK vibratory spiral conveyor has lived up to the customer's expectations. The two-mass drive, in combination with the advanced control system, offers significant process control improvement over the previous brute force spiral. The maintenance department was thrilled to learn that bearing L10 life is typically several hundred thousand hours, extending bearing life considerably. All lubrication is grease, remotely applied during operation, eliminating the maintenance associated with static oil splash. They are putting this to the test now.

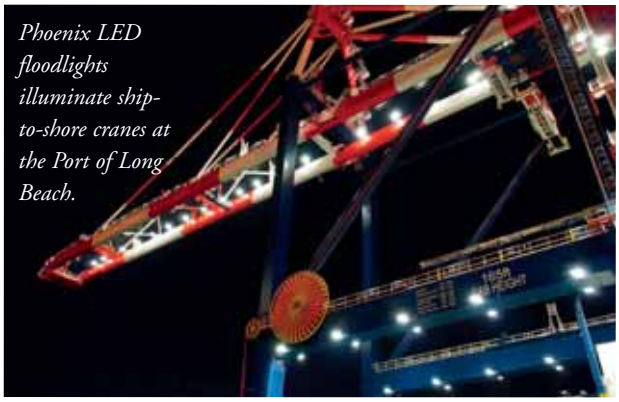
About General Kinematics

General Kinematics Corporation, incorporated in 1960, was established to market, design, and custom fabricate innovative vibratory material handling and processing equipment. Today the company is one of the world's largest suppliers of vibratory processing equipment, holding hundreds of worldwide patents, and acknowledged as a major contributor to the technical advancement of vibrating equipment design and application. Over 50,000 General Kinematics units have been installed in virtually all of the world's industrialized countries.

Phoenix expands terminal lighting expertise to form Phoenix Terminal Solutions

Phoenix Products Company Inc. has built a solid reputation with its durable lighting solutions for bulk handling equipment.

Phoenix introduced LED technology to the industry in 2011. In collaboration with customers, the company remains at the forefront of LED fixture design and has optimized lighting at countless terminals worldwide. In response to the industry's desire to integrate cutting-edge technologies while simplifying sales channels, Phoenix is introducing a new company - Phoenix Terminal Solutions.



Phoenix LED floodlights illuminate ship-to-shore cranes at the Port of Long Beach.

Phoenix Terminal Solutions is the industry's first and only global sales agency exclusively serving container, intermodal and bulk terminals. It represents a select number of trusted brands that all share a common goal - offering modern technologies that deliver safety, operational and environmental benefits to terminals.

Phoenix Terminal Solution's global sales network enables the immediate service and response that terminals require while streamlining the sales and procurement channel to deliver maximum value to customers.

In addition to providing Phoenix's LED options for equipment, Phoenix Terminal Solutions offers premium Light Emitting Plasma (LEP) fixtures designed by Bright Light Systems. Just as LED technology has become the standard for terminal equipment, LEP fixtures have proven to be ideal for tower, yard, warehouse and area lighting.

The two lighting companies share similar ideals and objectives. "We are pleased to be working with our new partners at Phoenix Terminal Solutions," said Brad Lurie, President and CEO of Bright Light Systems. "Our experience and success with LEP high-mast lighting in port and bulk terminal applications is a perfect fit. Together we can offer customers enhanced lighting choices and the latest technology. Both BLS and Phoenix Lighting have demonstrated a track record of quality and innovation. Our combined strength will address market demands and be beneficial for all parties."

Phoenix Terminal Solutions isn't stopping with lighting options. It has teamed up with LASE — a major supplier for laser measurement systems. LASE has led the industry with their anti-collision systems and bulk volume measurement systems for stackers, reclaimers, shiploaders and GSU systems. Lars Ambrosy, CEO of the Germany-based manufacturer says, "We are gladly looking forward to our new partnership with Phoenix Terminal Solutions. LASE strengthens its presence by this partnership in the North and Central American regions. Phoenix stands for quality as well as high-value products and services, which also reflects the philosophy of LASE." Phoenix Terminal Solutions aims to build on the recent LASE bulk terminal successes with heap volume measurement systems and automated solutions for wagon car tipplers.

Terminals worldwide should expect to feel immediate benefits of this company. Marc Desmons, Manager of Engineering Services for Terminal Investment Limited (TiL) expresses his excitement for the offering from Phoenix Terminal Solutions. "TIL is very happy to learn that Phoenix is now present in the yard lighting technology and has now become a complete container terminal lighting system supplier. Phoenix is TiL's preferred and only LED supplier for our container handling equipment and can now offer complete solutions."

Phoenix Terminal Solutions has promised more than industry leading products. The new sales structure enables a new level of service:

- engineering support and customized solutions, including illumination calculations and laser-based system solutions;
- a global sales team to deliver an immediate response;
- collaboration directly with terminals as well as the world's largest terminal operators at the headquarter level; and
- a broad network of service partners to support local markets.

Scott Fredrick, CEO of Phoenix, looks to the future with enthusiasm. "We are pleased to offer terminal operators such a unique option. The synergy of these industry leaders will provide unmatched expertise, service and results."

TIVAR® 88-2 Polymer Liners for improving the flow of FGD gypsum

On the left: FGD gypsum discharge chute fabricated from TIVAR 88- 2 material, complete with flanges and stiffeners. On the right: The steel chute which had to be replaced.

Flue Gas Desulphurization gypsum (FGD gypsum) is a bulk material capable of developing a negative angle of repose. FGD gypsum can be characterized as an extremely cohesive bulk material that can adhere to vertical surfaces, building-up on small ledges, box corners, shallow angle plate work and minor surface protrusions or interruptions.

As a result of its cohesive strength FDG can plug-off transfer points and chutes within seconds, making the conveyance of this bulk material extremely challenging. The geometric construction of transfer chutes and hoppers that convey FGD gypsum is an important element of effective design.

Geometry that incorporates shallow wall angles, box corners, valley angles, square and rectangular shapes with high friction surfaces materials is a major contributor to issues such as plugging, bridging, arching and loss flow.

TIVAR® 88-2 liners are excellent choice for addressing the flow problems associated with conveying FGD gypsum. TIVAR® 88-2 liners offer a low coefficient of friction non-stick surface which significantly reduces the ability of FGD gypsum to stick and build-up on the interior surfaces of hoppers, flop gates, diverters, transfer housings, chutes, belt cleaners, and return idlers.

By taking advantage of the flexibility of TIVAR® 88-2 liners Lawrence Industries offers pre- fabricated liner kits, fabricated drop-in inserts or complete polymer chutes and hoppers. These design options serve to improve the reliable flow and discharge of FGD gypsum by using round and radius surfaces with welded seams and minimal surfaces penetrations.

Lawrence Industries, Inc. has been in business for thirteen years providing solutions for a variety of industries. Headquartered in Fort Wayne Indiana its staff has over 30 years of bulk material handling experience. The company is a privately held company that believes in working with each customer to provide the best solution possible based on application specific needs. Lawrence Industries, Inc. is focused on providing solutions to problems associated with bulk material flow, wear and corrosion. Its solutions include a variety of material technologies offered in products, fabricated parts, machined parts, lining systems and installation services.

FGD gypsum discharge chute fabricated from TIVAR 88-2 material with radius corners and steel mounting flange.

Engineering solutions for powder & bulk solids handling

Established in 1966, Jenike & Johanson is an international technology company for bulk solids handling, processing and storage.

Key services include:

- Pre-engineering & engineering
- Bulk material (powder & bulk solids) flow testing
- Custom process and flow test equipment
- Discrete element modelling of particle flows
- Physical modelling of processes
- Structural engineering
- Consulting and root cause investigations
- Training on solids flow and pneumatic transport

Problems solved in existing facilities and avoided in new facilities include:

- No, poor, or erratic flow from bins, reclaim hoppers, and silos
- Pluggages in chutes (ex. wet ores, concentrates, coals, limestone, bauxite)
- Limited flow rate, flooding, and dusting of fine powders (ex. dry ore concentrates, coals, fertilizer, cement, alumina, chemicals, agricultural)
- Unstable bulk cargoes
- Particle breakage and segregation in products (for example, grains, coals, fertilizers, chemicals) that are size sensitive in terms of quality and price
- Premature wear of material contact surfaces
- Solids handling equipment failure investigations

Jenike & Johanson has extensive laboratory facilities located around the world for characterizing the flow properties of bulk solids under representative environmental conditions.

Skilled engineers provide detailed structural and mechanical design of solids handling equipment, and routinely design stockpile and gravity reclaim systems, silos, feeders, loading and transfer chutes, blending systems, and custom equipment (e.g., purge/drying/conditioning vessels, large slide gates, etc.).

Jenike & Johanson can also manufacture and supply custom equipment, from small one-of-a-kind items to complete systems, providing a complete solution with single source responsibility and a performance warranty.

Why choose Jenike & Johanson

Bulk solids handling problems are often the major cause of costly downtime and demurrage charges for many facilities, especially during startup. These same flow problems continue plaguing on-going operations by limiting throughput, impacting product quality, and creating safety and health risks, as well as reducing equipment life, increasing maintenance costs and causing premature equipment failure.

To address these costly problems, Jenike & Johanson has developed proven ways to design handling equipment to promote the smooth, unrestricted flow of bulk solids safely and reliably. Jenike & Johanson doesn't guess at material properties, they measure them. For nearly 50 years, Jenike & Johanson has focused on developing first principle theories on bulk solids flow and conveying behaviour. Its research focuses on providing its customers with tools for solving real world bulk solids handling problems.

The company's engineers' practical experience is also critical to project success. They combine test results and real world project experience, which yields the best solution in terms of reliability and cost-effectiveness.

Every step of their work is centred on a bulk material's handling characteristics, whether it involves testing, engineering, detailed design or equipment supply. This proven sound approach continually produces outstanding results for the company's customers.

LAIDIG
Pioneering Reclaim Solutions

Pioneering Storage and Material Handling
Since 1961

PIONEERING SPIRIT

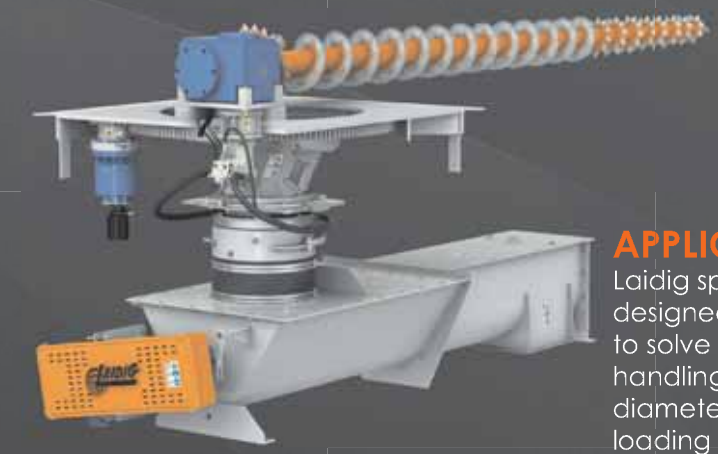
With over 50 years of pioneering innovations, Laidig is recognized world-wide as a leader in the bulk storage and material handling industry. Laidig is continually involved in cutting-edge development to offer customers the best solutions for their storage and reclaim needs.

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.

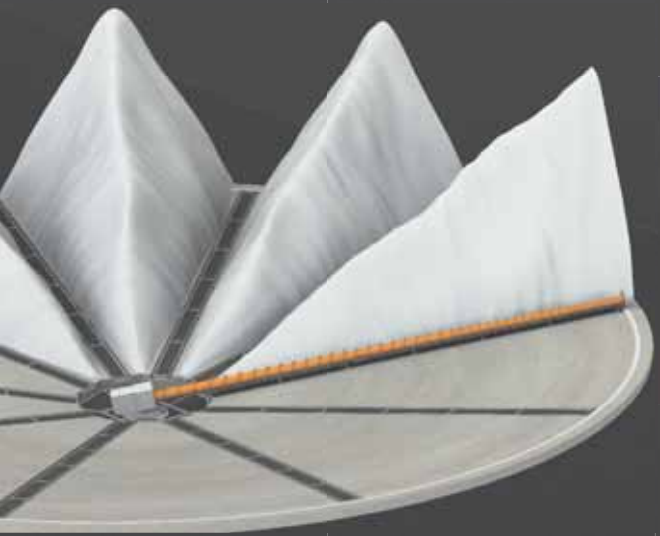


APPLICATION SPECIFIC

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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