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FEATURES

- Americas Coal Trades
- Coal Handling
- US Engineering
- Bulker Management
- Focus on Bulk Handling in the Netherlands

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DCi

PLM Cranes B.V. recently delivered a rail mounted, bucketwheel ship-unloader with a capacity of up to 4,000tph for unloading sand & gravel or coal from ships. The electrichydraulic machine is equipped with a belt system to feed a longitudinal ship conveyor belt. The bucketwheel, with 12 buckets of 2,000 litres, has a diameter of 10 metres for ship holds with depths of up to 10 metres.

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Mixed outlook for iron ore trade

Signs of growth in global dry bulk commodity trade are still clearly visible, but more doubts have emerged about prospects over the remainder of 2012 and into next year. Among these concerns, prospects for China's import demand, a huge element of the world total, are less certain. Ongoing financial problems and economic weakness within Europe are also overshadowing the picture.

The latest (end-May) update by the OECD suggests that "global economic conditions are now improving moderately" although the recovery remains slow and fragile. Within the group of advanced economies (mainly USA, EU, Japan and Korea) GDP growth is forecast to decelerate further, averaging only 1.6% this year, before slightly strengthening to 2.2% in 2013.

Iron ore

Continued iron ore trade expansion during the current year still seems likely. However, optimism is largely based on expectations of higher imports into China, as shown in table 1. There are no firm indications of substantial extra volumes in other key importing countries.

In the first four months of 2012, China's iron ore imports totalled 244.9mt (million tonnes), a 7% increase compared with the same months of last year. Several forecasts point to a similar percentage growth rate for the entire current year. The positive outlook assumes that changes in steel production, iron ore stocks and output from domestic iron ore mines will remain supportive overall. How much impact the slowing Chinese economy will have remains unclear.

Coal

Higher coal imports into a number of Asian and various other countries are foreseeable this year, resulting in quite strong growth of global seaborne coal trade. The most favourable prospects for large increases appear to be in India, China and Japan.

Also, additional volumes into South Korea, Taiwan and perhaps Europe as well could be seen.

India's imports of steam and coking coal have become a much greater focus of attention. After reaching an estimated 126mt in 2011, a 16% rise, the total may grow by another 10–15% this year, according to some calculations, raising India to fourth place among importers. Although domestic coal output is massive, it is not growing quickly enough to satisfy expanding usage, and higher-grade foreign supplies are often preferred.

Grain

Initial forecasts of world grain movements in crop year 2012/13 starting next month suggest a flat total. The International Grains Council's first detailed prediction shows an almost unchanged 265mt volume for wheat and coarse grains trade, following a very strong 9% estimated increase in the 2011/12 year now ending.

Early estimates of grain trade are often revised greatly as domestic harvest results in importing countries are clarified. The current year's outlook started with expectations of little change, eventually becoming more positive when abundant feedwheat supplies encouraged many importers to raise purchases. This summer's harvests in northern hemisphere importing countries, which cannot be estimated reliably yet, will have a large impact on 2012/13 trade.

Minor bulks

A large part of the minor bulk trades sector is comprised of forest products, including logs, sawnwoods and woodchips. Trade in this wide range of items seems to have grown by 4–5% last year, totalling about 180mt. Growth may continue over the next twelve months, amid extra demand from construction and manufacturing industries in Japan, China and elsewhere.

Bulk carrier fleet

Among bulk carrier size groups experiencing decelerating but still very fast growth, this year, is the Handymax 40–59,999dwt group. Following a 16% expansion in 2011, to 126.8m dwt (2,475 ships), the current year's advance may slacken to about 11%, as shown by table 2. Lower newbuilding deliveries, accompanied by sharply higher scrapping are envisaged. However, both key influences are very difficult to forecast accurately.

TABLE 1: KEY IRON ORE IMPORTERS (MILLION TONNES)

	2007	2008	2009	2010	2011	2012
China	383.1	444.0	629.8	618.6	686.7	730.0
Japan	138.9	140.4	105.5	134.3	128.5	131.0
EU-15	133.1	132.2	74.9	106.4	101.0	100.0
South Korea	46.2	49.5	42.1	56.3	67.0	69.0
Taiwan	16.0	15.6	11.9	18.9	21.5	21.0
Total of above	**717.3**	**781.7**	**864.2**	**934.5**	**1004.7**	**1051.0**

source: UNCTAD (historical data) & BSA 2012 estimates **forecast*

TABLE 2: HANDYMAX (40-59,999 DWT) BULK CARRIER FLEET (MILLION DEADWEIGHT TONNES)

	2007	2008	2009	2010	2011	2012
Newbuilding deliveries	5.3	6.4	10.3	17.8	19.9	17.0
Scrapping (sales)	0.1	0.5	1.4	0.4	2.1	3.5
Losses	0.0	0.0	0.0	0.2	0.1	0.0
Plus/minus adjustments	-0.1	0.2	0.0	0.1	0.0	0.0
Fleet at end of year	76.8	82.9	91.8	109.1	126.8	140.3
% change from previous year-end	+7.4	+7.9	+10.8	+18.8	+16.3	10.6

source: Clarksons (historical data) & BSA 2012 forecasts **forecast*

by Richard Scott, Bulk Shipping Analysis, Tel: +44 (0)12 7722 5784; Fax: +44 (0)12 7722 5784; e-mail: bulkshipan@aol.com

CONFERENCE SCHEDULE

25–26 June
5th Coaltrans Brazil
Rio de Janeiro, Brazil
18th Coaltrans Asia
Bali, Indonesia
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W: www.coaltrans.com

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18th International Iron Ore Symposium
Amsterdam, The Netherlands
Metal Bulletin
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W: www.metalbulletin.com

25–27 June
7th Asian Stainless Steel
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7–8 August
Breakbulk Africa Congress 2012
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W: http://breakbulkevents.com

20–21 August
8th Coaltrans Australia
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4–5 September
China Coal Import and Export Forum
Beijing, China
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F: +44 (0)1730 260044
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W: http://conf.mccloskeycoal.com

4–5 September
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11–12 September
3rd Coaltrans Colombia
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Grim warning from outgoing

The Canadian coal industry is on the verge of being 'tobaccofied' warns the outgoing Chairman of the Canadian Coal Association, Bob Stan.

He told 250 delegates at the 2012 Canadian Coal Conference in downtown Vancouver early in June that if environmental critics of the coal industry had their way they would "tobaccofy our industry and turn us into the villains." He added that the tobacco industry has been turned into a borderline criminal activity in North America and warned that he didn't want to see that happen to coal.

Stan, who completed his term as Chairman at the conference, says the anti-coal environmentalists and activists have an agenda that is "substantially different from most people in the world."

People realize that it's not an argument that has much to do with climate change, but more about reasonably-priced energy, especially in emerging nations, he added. Abundantly available coal also does more to relieve electricity poverty throughout the world than any other fuel, he told delegates in a similar conference last year.

Before a recent change, Stan was president & CEO of the Alberta-based Grande Cache Coal. He told the conference he has chosen to move on after a recent friendly takeover by Winsway Coking Coal Holdings of Hong Kong and Marubeni Corporation of Japan.

Stan warmed the delegates with a comment: "What a wonderful time to be in the coal business. Yes, times are sometimes uncertain, but the future of the Canadian coal industry is very strong."

He reminded them that coal had been the basis of development of most industrialized nations in the past several decades.

"I have never seen so many new companies registered with new mines and transition projects in west and northern Canada and other parts of the world," he told delegates. "I find it extraordinarily exciting."

But, he also took the opportunity presented by one of his last

official speeches to encourage delegates that they should be proud to be in the coal business, "it's a great, great industry to be in.

"I don't think those who would hijack and tobaccofy our industry or the tar sands industry . . . these people don't stand up strong for the economy here in Canada."

Stan used his final address as outgoing Chairman closing the conference to urge delegates to be "upbeat about the future of

Canadian coal chief

the coal industry" and told them "there is so much opportunity right now."

Another who shares in the excitement for the Canadian industry is global coal expert Gerard McCloskey, who was moderator for all conference sessions. McCloskey, who is senior advisor of Global Coal Sector for the McCloskey Group, told the conference Canada has "endless capacity."

Calling the steelmaking coal sector "extraordinarily robust" he said "all metallurgical coal roads lead to Canada" and not to the uncertainty of developing countries and others such as Queensland, which was prone to once-in-a-100-year floods . . . every few years."

McCloskey told the global audience the resurgence in the Canadian coal industry is for real.

"It's different this time, it's convincing this time and extremely exciting."


Bob Stan.


Gerard McCloskey.

And a senior official of Teck Resources Limited — Canada's leading coal export company and the largest producer of steelmaking coal in North America — told the conference the Canadian coal industry had for years been described as "disappointing."

"That has all changed," says Robert Bell, Teck's vice president and chief commercial officer. Canada has over 100 years of coal (about 1 billion tonnes of proven reserves) it can deliver to the market and 90% of that is high quality, premium coking coal (steelmaking coal).

He predicted "very significant growth" over the next 20 years with a doubling of exports on the seaborne market. China, which was moving to larger and larger blast furnaces in its steel production would need the higher quality coking coal available from Canada.

Bell believes Canada will be exporting about 50mt (million tonnes) of steelmaking coal by 2023 and that will mean a jump of 20mt.

Currently the conference was told, Canada has about six major coal mine ventures about to start mining, in their feasibility stage, or amid the approvals process. Most are in the northeast fields of British Columbia, but there's at least two in central west Alberta; one in southern BC; another in south central BC, one on Vancouver Island, and even one reopening in Nova Scotia on the east coast.

One the west coast, the three major coal export terminals — Westshore Terminals and Neptune Bulk Terminals in Port Metro Vancouver and Ridley Terminals in the Port of Prince Rupert — are currently amid expansion and upgrade projects which will add at least 20mt capacity by 2015.

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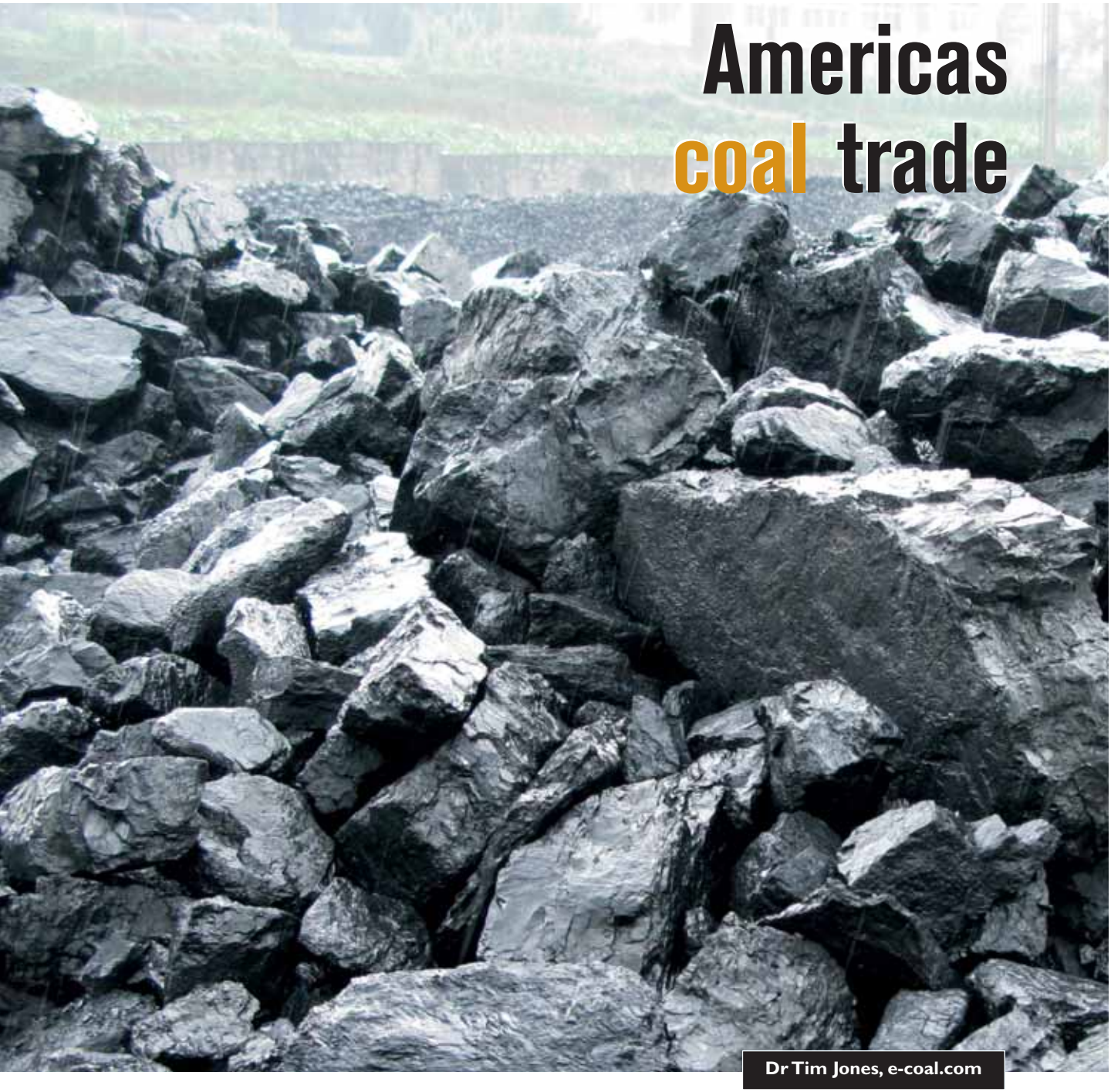
Americas coal trade



Dr Tim Jones, e-coal.com

Coal producers in the Americas have been turning their eyes to the Asian markets again this year as the Atlantic trade continues to be a challenge. Although substantial sales are being made in the traditional markets in Europe and the Mediterranean, as well as further east to Ukraine, the major coal consumers in Asia including Japan, Korea, Taiwan, China, and India have all seen the attention of coal exporters in the USA, Canada, Colombia, and to some extent Venezuela.

After the first few weeks of 2012, coking coal suppliers were taking some encouragement from comments in the USA that a recovery was now more likely for the market, with north America and Asia leading the improvement. Several meetings

OCEAN SPOT FREIGHT RATES (US$/T) 2011

Route	Tonnage	27 May	20 May	% change
USG/ARA	65,000t	21.00	19.70	6.60
Roberts Bank/ARA	55,000t	26.10	26.05	0.19
HR+RB/Japan 16m	120,000t	25.00	23.45	6.61
HR/Rotterdam	110,000t	11.65	11.10	4.95
Bolivar/Rotterdam	130,000t	10.75	10.00	7.50
Queensland/R'dam	130,000t	16.85	15.95	5.64
Rich'ds Bay/R'dam	130,000t	10.25	10.00	2.50

Source: e-coal.com

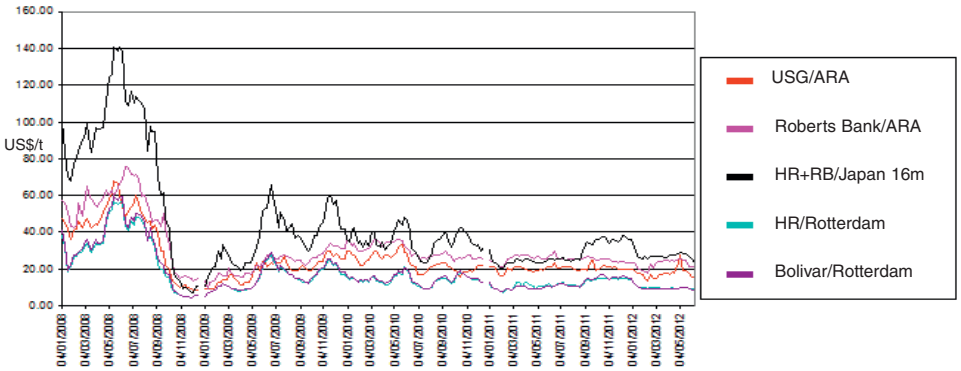
OCEAN SPOT FREIGHT RATES (US$/T) 2012

Route	Tonnage	25 May	18 May	% change
USG/ARA	65,000t	17.95	18.80	6.60
Roberts Bank/ARA	55,000t	21.90	24.60	0.19
HR+RB/Japan 16m	120,000t	27.00	28.50	6.61
HR/Rotterdam	110,000t	9.05	9.95	4.95
Bolivar/Rotterdam	130,000t	8.75	10.25	7.50
Queensland/R'dam	130,000t	13.00	13.80	5.64
Rich'ds Bay/R'dam	130,000t	7.50	8.25	2.50

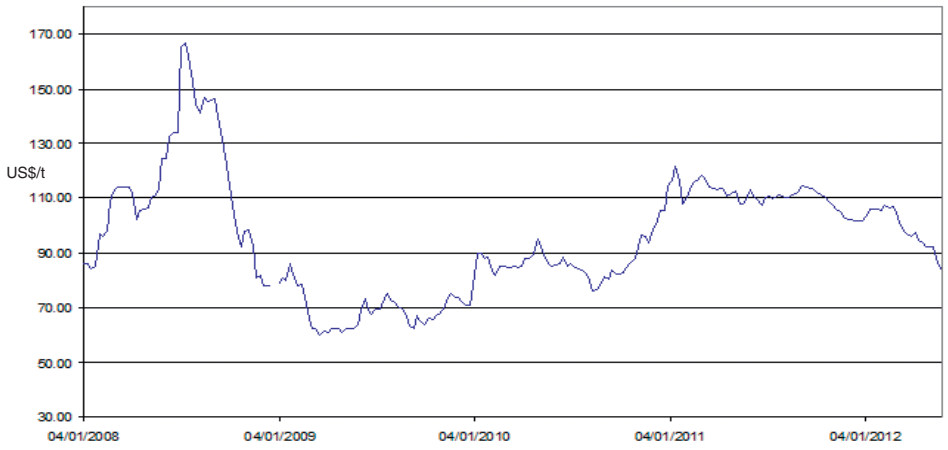
Source: e-coal.com

between domestic US producers and consumers were understood to have resulted in little immediate new business, but as the first half of 2012 developed, a number of coal industry participants believed there could be more activity. Xcoal was rumoured to have sold a cargo of hard coking coal to a European steel maker in the spot market in late January. The price of the mid vol material was believed to be around US$220/t FOB (free on board) which suggested a small premium to the then current spot market level. Spot prices of hard coking coal had, however, firmed by about 1–2% over the previous couple of weeks. Some predictions suggested the quarterly contract price for the April quarter would be US$225/t FOB for the reference brand.

e-coal.com Americas Spot Freight Rates



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



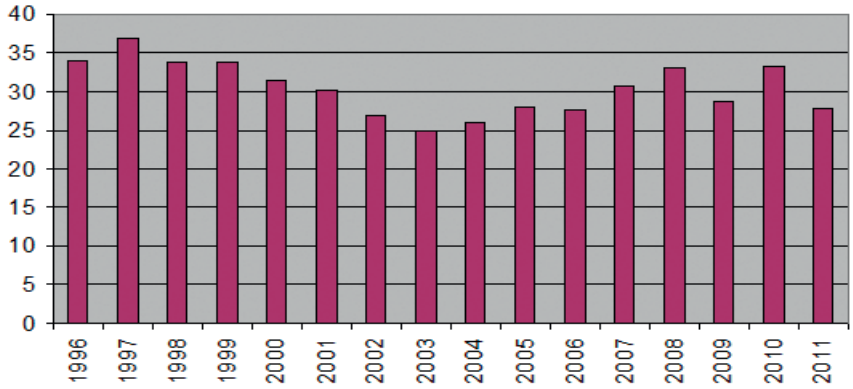
Coal industry participants at Coaltrans USA early in the year suggested that the opportunities for export of coking coal in the coming years need to be exploited in order to survive. Market and environmental conditions, as well as competition from natural gas were being seen as a major threat to the survival of many thermal coal operations. One commentator felt that up to 75mt (million tonnes) of thermal coal could be lost due to mine closures in Central Appalachia. Some believed the US shippers were unlikely to be able to compete on price in the thermal coal export markets in Europe and Asia. According to reports from the conference, Arch Coal believed there could be a shortfall of 300mt of coal in the seaborne market in 2015. Around 180mt of that would be coking coal. Rising costs were, however, forecast to put the US coal industry at a significant disadvantage in international trade.

Colombia's coal exports to Asia have been increasing once more this year, with market share approaching 9% of the total recorded in March, and then 1.525mt or 22% of the 6.93mt recorded in April. Of this, 0.818mt or 53.6% of the total was shipped to China. The latest data indicated that the European market accounted for only 54% of Colombian coal exports in April — about 3.74mt. At the beginning of 2012, Drummond was reported to have set a production target of 29mt of coal this year. Construction of the company's direct loading port was a major project for this year, with the company hoping it would be completed by late 2013 with a capacity of 40mtpa (million tonnes per annum).

Colombia's coal industry is not without its problems. FARC terrorists had bombed Cerrejon's rail line on 18 December 2011, and also targeted a coal train, derailing 11 wagons. Deliveries to the port were disrupted for two days. Thankfully this year has, however, been relatively free of terrorism.

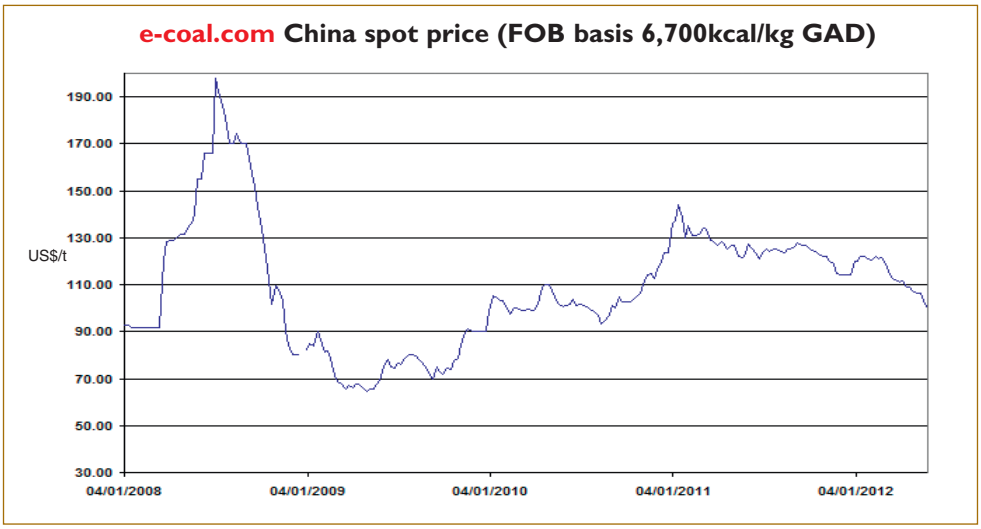
In the USA, coal exports through Hampton Roads reached

Canada's coal exports (mt)



15.8mt during the first four months of 2012. This was an increase of 1.7mt or 12% compared to the same period in 2011. The Asian market is forecast to continue to grow this year, and for the USA overall, some 12mt has been forecast to be taken by China. Coking coal would account for 8mt of that amount.

As the American coal exporters are now more engaged in the international markets, the thermal coal and coking coal spot markets in all regions are of importance to them, and they have been tracking movements more keenly this year in such places as Indonesia and China. The accompanying charts show the thermal coal spot price decline in all areas during the course of this year, as monitored by e-coal.com.

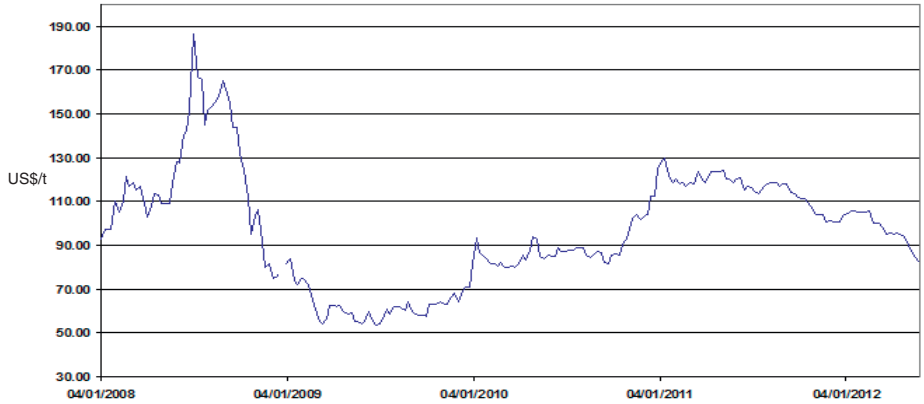


The hard coking coal shippers have also seen a challenging first half of 2012, but at the time of writing there has been an improvement in the price of hard coking coal as a result of steady demand and tightening supply mainly out of Australia where a long running industrial dispute between BHP Billiton Mitsubishi Alliance and the unions has resulted in numerous work stoppages at the mines in Queensland's Bowen Basin. This has had a knock-on effect on coking coal exporters in the Americas. The threat of industrial action on the rail lines in Canada, however, resulted in the government recently legislating to prevent such action which was deemed potentially harmful to the Canadian economy as a whole. A tightening of coal supply to the Canadian ports has therefore just been avoided, but that would have had a further impact on the price of coking coal.

In recent market news, US exporters have been encouraged by the recent reference price of US$225/t FOB agreed for hard coking coal contracts for delivery in the July quarter in the Asian markets. The Atlantic market remains more of a challenge, however, and buyers in Europe are not keen to pay the higher price. With freight rates putting the US shippers at a disadvantage in the Asian market, the European steel makers and other buyers are arguing that the price of US material should be lower for them as the US shippers have no price advantage in selling to Asia as an alternative. The indicator price of low vol

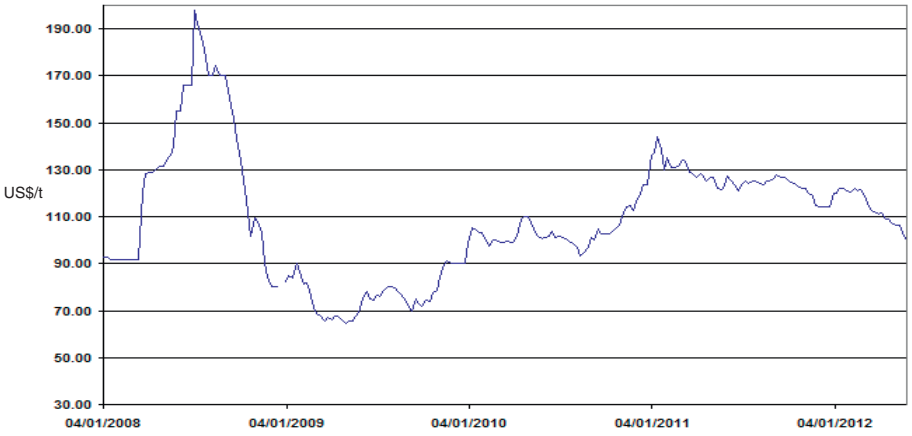
hard coking coal at the US east coast ports remains at US$210/t FOB with high vol material achieving around US$17.50/t less. A few weeks ago, high vol hard coking coal was priced at just over US$190/t FOB in the spot market, and the indicator price was US$191/t FOB in mid-May. US traders suggested there was some activity, but the supply/demand situation remains unchanged. Some lower quality coking coal may have been sold into the domestic thermal coal market at weak prices, which may distort the price being reported for coking coal if the market is not properly analysed.

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



The disruption to coking coal supply in Queensland due to the long-running industrial dispute at the BMA mines was being exacerbated by heavy rainfall in early April. Buyers in Asia appeared to be getting more anxious about supply in the light of the *force majeure* declarations that had impacted the markets, and there had been reports from Canada that the coking coal shippers there were seeing more and more enquiries from the Asian steel makers. There were reports that the spot price for premium grade hard coking coal in Canada had increased by up to US$10/t FOB following the *force majeure* declaration by BHP Billiton Mitsubishi Alliance.

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

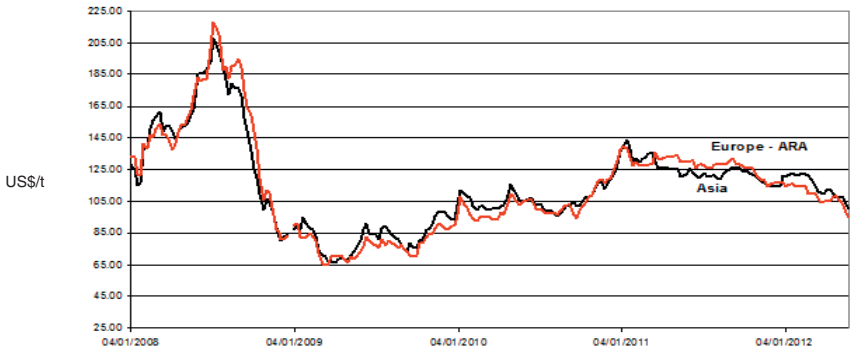


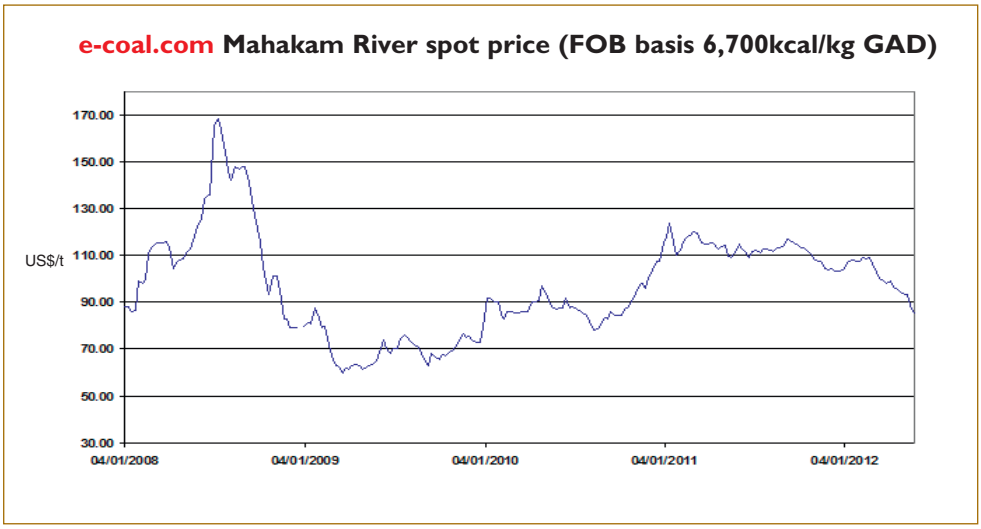
Back in April, US shippers were reported to have settled the quarterly contract price of low vol hard coking coal with some European customers at US$210/t FOB in line with earlier settlements in Asia. That was for deliveries in the April quarter. In a rising market, other buyers were expected to follow in the coming weeks and are understood to have done so, after hoping for a price of around US$205/t FOB. In early March, there had been reports suggesting Teck had sold a trial cargo of hard coking coal to a new customer in China for about US$175/t FOB. There had also been reports that the producer has excess tonnage on the pads at the ports. Teck was understood to have settled the quarterly contract price of hard coking coal for the April quarter with Korea's Posco at US$206/t FOB. The price was close to market expectations over the previous couple of weeks as the shipper was believed to have been offering at US$210/t FOB while Posco was aiming for close to US$200/t FOB. The price represented a decrease from the previous level of US$235/t FOB amid a softening market since the start of 2012. Some observers believed this new price could set the floor for the hard coking coal quarterly contract price this year, with some optimism that Asian steel demand would improve in the second half. US exporters had also been signalling their expectation of an improvement later in the year.

There was more news of low priced US thermal coal in the middle of May. Although the specifications are unclear, there were reports of a 75kt cargo of US thermal coal being sold to a European customer for US$87.00/t CIF (cost, insurance, freight) with delivery in June. Assuming this is a Panamax deal, this could net back to a coal price of well under US$70/t FOB.

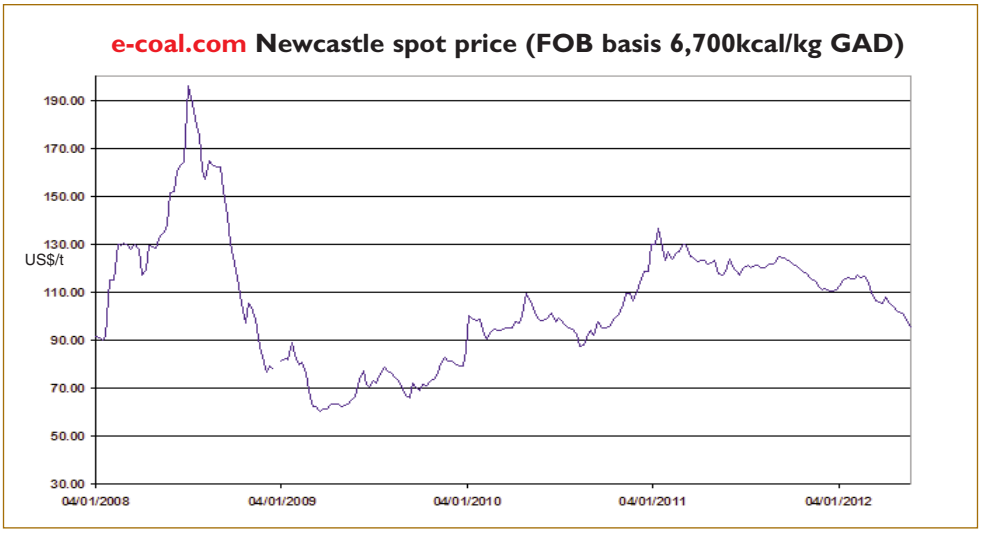
In the thermal coal market, Pacific Coal is reported to have

e-coal.com Indicator prices (CIF basis 6,700kcal/kg GAD)



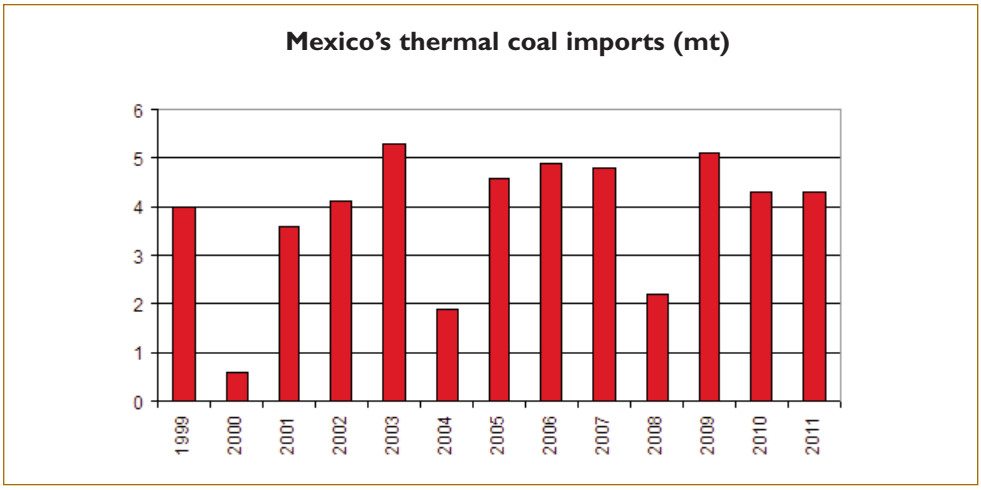


sold 257kt of coal from its La Caypa and Cerro Largo mines in Colombia during Q1 2012 at an average price of US$103.27/t FOB. This compares with 381kt sold in the same period last year, at an average price of US$96.92/t FOB. Meanwhile, Canada's Nova Scotia Power has been in the market seeking up to 1mt of coal. Colombian shippers are understood to see this as a welcome opportunity amid a challenging north Atlantic market in recent months. In April, US thermal coal was believed to have been purchased by Enel in the previous weeks, with delivery to Italy during the next six months. The price has not been confirmed. Around that time, Chinese buyers were understood to have been offered higher sulphur coal from the USA at prices around US$100/t FOB basis 6,000 kcal/kg GAR (gross air dried). Availability might have been an attraction as the situation in Australia was less certain for the Asian consumers in early April.



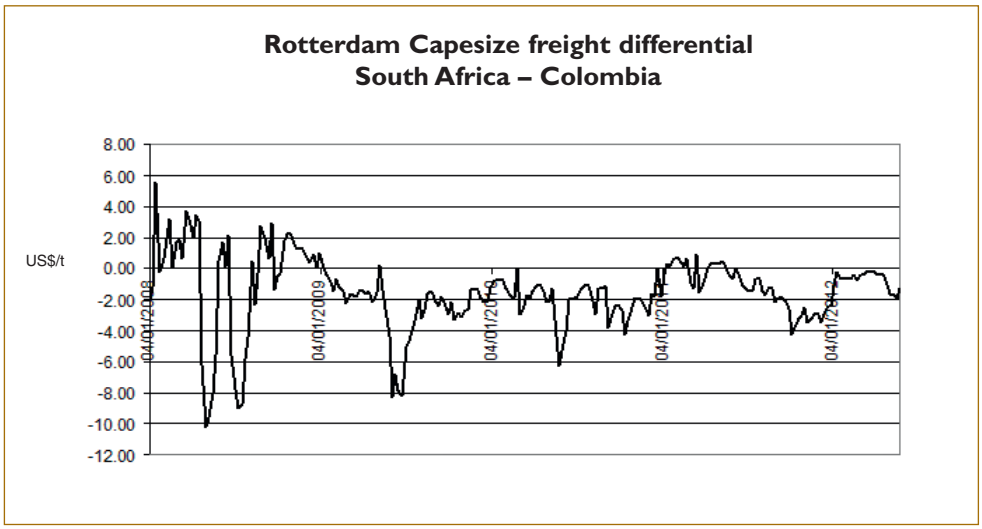
As 2012 got under way, the Colombian exporters appeared to be winning favour in Asia once again, with Kowepo reported to have awarded 160kt of the business to the Colombians following its tender in February seeking 170kt of coal. The coal specifications included ash 20% (max) adb, and CV 5,600 kcal/kg NAR (net as received) (min). Rumours of Colombian coal being sold for around US$89/t FOB as early as that in 2012 may have been linked to renewed Asian activity, and some observers believed that could result in some misleading price reporting if the coal quality was not recognized, as happened a couple of years ago in some coal industry media sources. Higher ash material with poorer qualities would not be typical of the established markets in Europe and the Mediterranean, but with ongoing weak demand there, the Asian deals were expected to dominate for a while again this year. At the start of January, Colombian shippers were reported to have been discussing supplies with consumers in the eastern Mediterranean. At that time, buyers were believed to have been bidding around US$100/t FOB basis 6,000 kcal/kg NAR while the exporters were asking a little over that figure for deliveries during Q1 2012.

Despite the activity in Asia this year, the American coal operations have been aware of a serious issue. The international coal market appears to be facing a serious problem, with China having gained a reputation for not honouring contracts amid a softening market in recent months. That country could import around 215mt this year, so the harm to the market caused by uncertainty about deals could be significant. A number of market players now expect traders and utility customers to cancel coal shipments at short notice if a more favourable deal is available. This is not healthy for stable coal business, and the number of legal actions is increasing. The attraction of the Chinese market to suppliers further afield in the



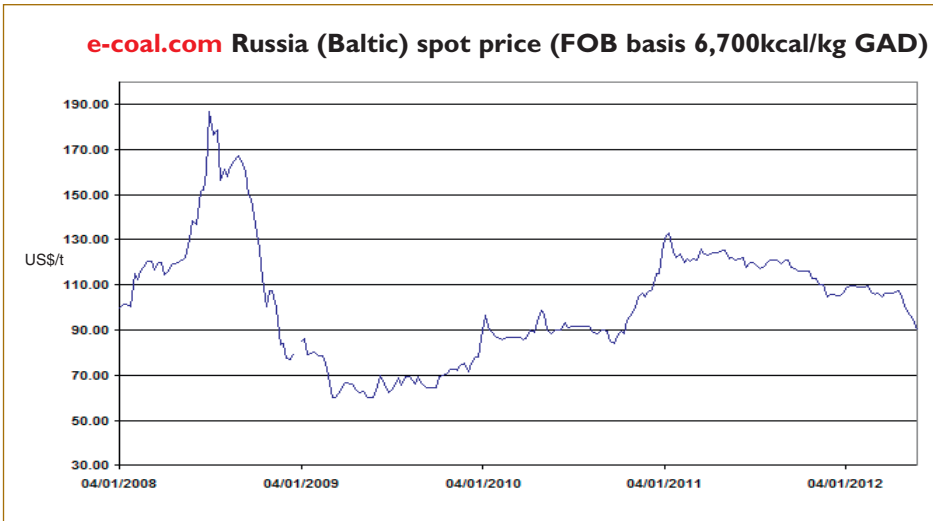
they claim are flooding into the country. The strong currency in Brazil is a disadvantage, and in the case of steel, what is considered by some to be an undervalued Chinese currency makes the situation worse. Brazilian steel maker USIMINAS reported a loss of US$19.7m for the first quarter of 2012 which was attributed to increased production costs as well as the competition from China and the currency situation. The long-term trend for steel production continues to be positive, however, and levels are almost back to where they were before the crash of October 2008. The Brazilian steel makers are understood to have been purchasing Colombian metallurgical coke in the past month or so for about US$355/t FOB. For the Colombians, the Brazilians remain the most important market for coking coal with a market share of 62% of their exports and the buyers are understood to be investing in the Colombian industry with finance for infrastructure development.

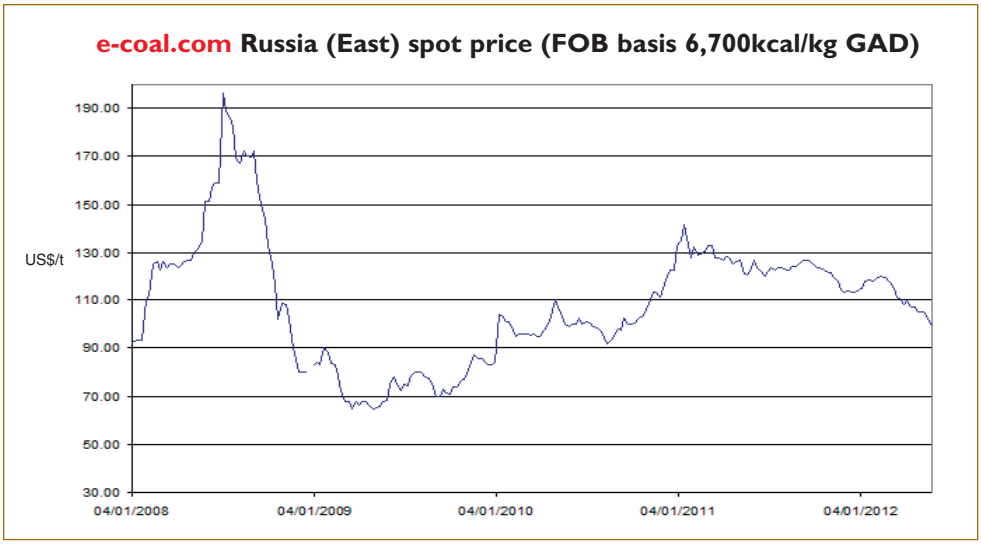
USA and Colombia for example, is beginning to fade due to these practices. In some cases, Chinese traders have gained a reputation in the international market that a contract means nothing to them. Some market players expect the situation to get worse in the coming weeks. The latest forecasts suggest that the slowdown in Chinese manufacturing will reduce coal consumption in the near term, and coal stockpiles are reported to have increased at the main ports amid the slowdown. Meanwhile, the European thermal coal market continues to be well supplied. Coal burn has, however, been increasing there recently, and in the USA there are reports that coal burn has also been increasing as the price of natural gas has been rising.



The latest data regarding Brazil's steel industry which is of interest to the coking coal and metallurgical coke shippers in the north and elsewhere around the world, indicated that 3.1mt of crude steel was produced in March. This was an increase of 2.2% compared to the same period in 2011 amid challenging times for the Brazilians who have reported that they are facing strong competition from cheap Chinese steel imports which

In other parts of the Americas, the government in Argentina is planning to increase coal-fired power generation capacity from 0.5% of the country's mix to 4% by 2025. At present, the plans are to use domestic coal which is generally of lignite quality, so this is of limited significance to the international market now. In Chile, MPX Energia is facing challenges over the proposed Castilla coal-fired power station after an environmental permit for Goldcorp's El Morro copper and gold project was recently suspended by the Supreme Court. A court ruling earlier this year required the resolution of various environmental issues at MPX Energia's US$5bn



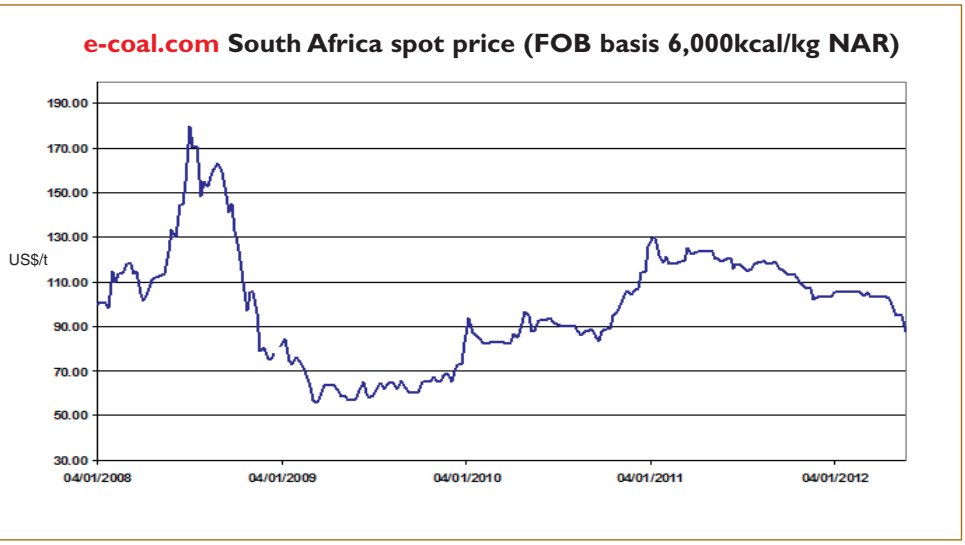


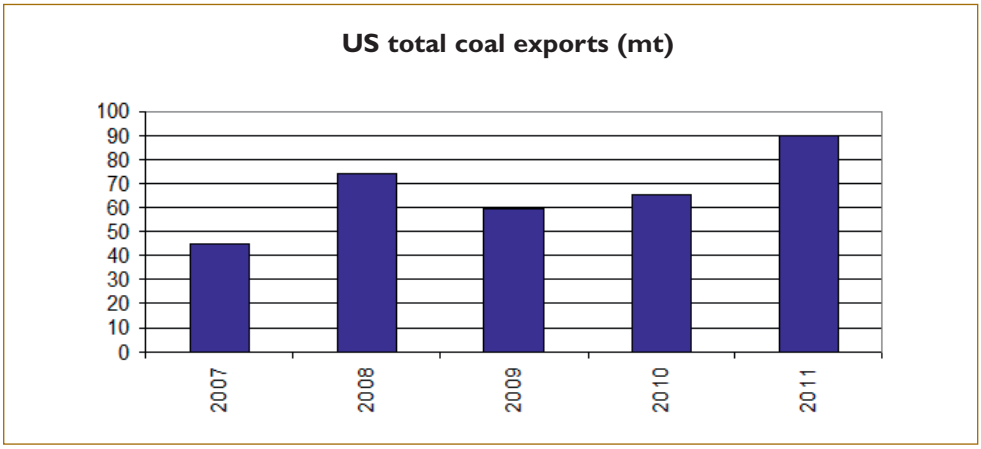
project, and the appeals process looks likely to be complicated by the Goldcorp ruling.

With regard to coal projects, Continental Coal is looking to develop a large export mine in the Powder River Basin of the USA. An operation with a capacity of 5mtpa and resource of 1bnt could result if the project succeeds. Meanwhile, Korea's Keystone Global is rumoured to be close to purchasing coking coal assets in Central Appalachia. The company is rumoured to have US$480m to invest in around 100mt of coal reserves in Kentucky or West Virginia. Elsewhere, Vale is selling its coal assets in Colombia to Colombian Natural Resources (CNR) for US$407m. The buyer is part of the Goldman Sachs Group, and had been the expected purchaser for some time. The deal includes the 5.4mtpa El Hatillo mine, the Cerro Largo deposit with estimated reserves of 500mt, Sociedad Portuaria Rio Cordoba Capesize port in Cienaga, and 8.43% of the Fenoco rail line linking the mine and port facilities, with a 3.5mtpa allocation. CNR will now have its own port facilities, and twice the rail capacity it had previously. Further development of the port will be a priority. Rumours this year suggest Anglo has a strategy to expand in Canada in the coming years through the acquisition of Walter Resources' Western Coal followed by a merger with Teck Resources.

In March, it was announced that the Colombian government is to auction coal concessions under a system that is designed to ensure the winning bidders have the necessary funds to proceed with development. The country's coking coal resources are expected to benefit from the new plans. In the past, coal projects were not developed in the timeframe expected, with speculators playing the market as well as the more serious resource developers. The government appears to be putting a stop to that practice by removing the opportunities for the speculators.

American coal producers operating elsewhere have been in the news recently. Peabody Energy has gained approval from 80% of its workers for the new three-year enterprise bargaining agreement at its mines in New South Wales. Peabody recently also achieved approval of the new agreement at the North Goonyella mine in Queensland. Meanwhile, BHP Billiton Mitsubishi Alliance appears to be no closer to reaching agreement with its workers in their long running dispute.

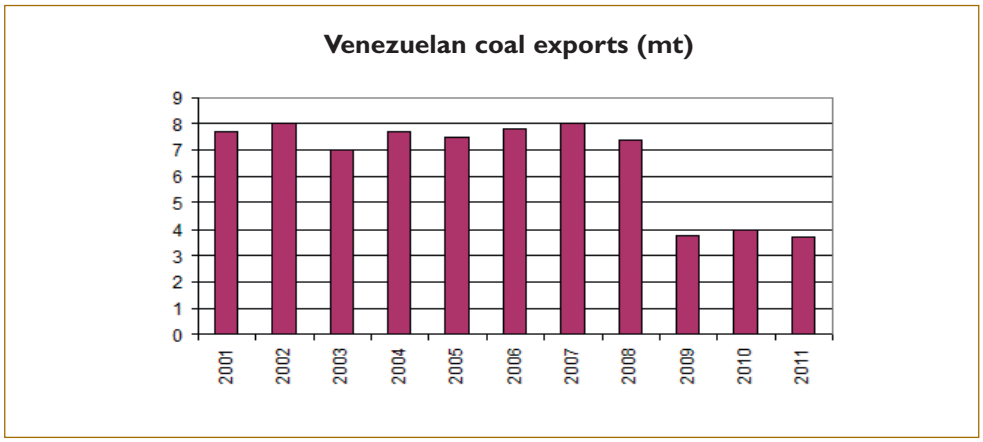


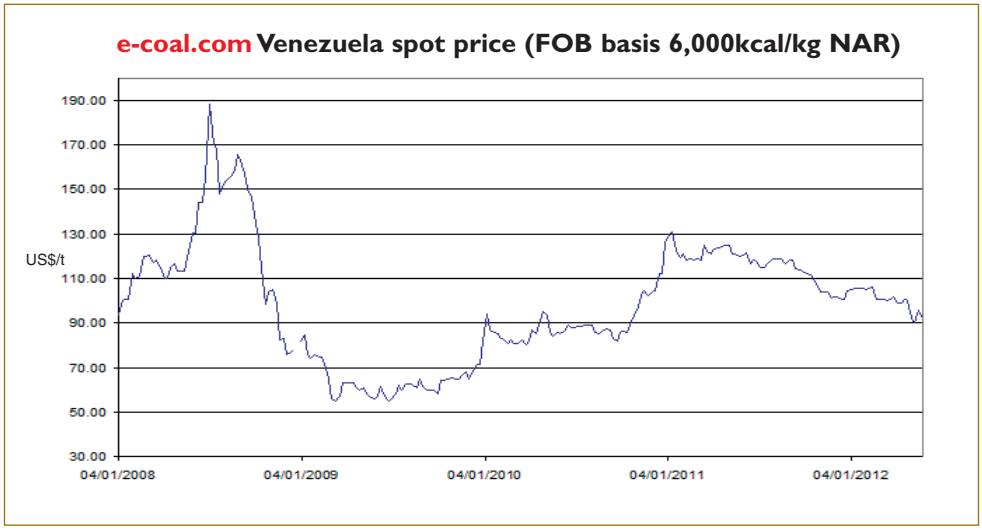


On the infrastructure development topic, in Colombia, Ferrovial Agroman is to build a second coal loading jetty for Cerrejon at Puerto Bolivar. The US$37.9m project will increase capacity from 32mtpa to 40mtpa. Elsewhere, the Panama Canal Authority is planning to increase tolls by 15% but shipping companies have objected due to the economic recession. Reports indicate that the International Chamber of Shipping has written to the

Authority stating the increase is not acceptable in the current economic climate. In early February it was reported that Canada's Grande Cache Coal is to be acquired by a joint venture including Marubeni Corp and Hong Kong's Winsway Coking Coal. The price was rumoured to be around US$350m.

While thermal coal spot markets are seeing a weak period in all regions, the hard coking coal and metallurgical coke markets appear to be holding up a little better. The renewed problems in the Eurozone are not helping global sentiment, and the commodities sector has been affected during the past months. Until some positive news emerges, and the financial markets become less volatile, the markets look set to remain uncertain and weaker. Asia remains the more attractive market for coal shippers around the globe, with US exporters still looking more to the east rather than across the north Atlantic. Reports suggest, however, that availability of US thermal coal for Europe is high, and when required can be readily shipped. The weakening spot prices in Europe have been attributed to this ready supply of US coal at present. Production in Colombia has been higher in recent months as well, due to improvements in the weather compared to recent years. Exports for the four months to 30 April 2012 reached 27.1mt. For the time being, the European thermal coal market looks well supplied and there may be no significant upward change before Coaltrans in Istanbul in October suggesting a rather lacklustre market for the next few months.





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.*

Coal transshipment activities being carried out by Associated Terminals, using its new Gottwald floating crane.

Correction

On p19 of the March issue of *Dry Cargo International* (article 'Bulk Carrier Safety'), we used a photograph of a bulk vessel berthed at the Port of Amsterdam (pictured again below).

Unfortunately, we failed to attribute this stunning picture to its copyright owner, for which we would like to apologize. The photograph belongs to the Port of Amsterdam in the Netherlands. More details on this major bulk handling port can be found on p47 of this issue.

photo: The Port of Amsterdam.

ICS elects new chairman

At its Annual General Meeting in Port Douglas, Queensland, today on 25 May, the International Chamber of Shipping (ICS) elected a new Chairman, Mr Masamichi Morooka (Japan).

ICS is the principal international trade association for shipowners, with a membership comprising national shipowners' associations from 36 countries representing all sectors and trades and over 80% of the world merchant fleet.

With immediate effect, Morooka has been elected to succeed Spyros M Polemis (Greece) who has decided to stand down after six years in office. Being at the helm of the industry's most influential international trade association, Morooka will serve as a leading representative of the global shipping industry, overseeing its liaison with international regulators such as the International Maritime Organization and the International Labour Organization.

Speaking after his unanimous election, Morooka remarked: "I am very honoured to have been elected by the ICS member national shipowners' associations. Being chairman is a big responsibility and my primary task will be to ensure that ICS continues to represent the considered views of the entire industry. This means reflecting and reconciling the opinions of different ship types and trades, different national viewpoints, and the interests of shipping companies big and small.

"Within ICS there are perhaps three big challenges on which we will need to focus this year: the elimination of piracy; the challenge of reducing CO_2 emissions, and our response to proposals that must be expected from governments following the *Costa Concordia* cruise ship tragedy."

Panama Canal toll rises unacceptable, say shipowners

Plans to increase toll charges for the Panama Canal are 'rushed, excessive and likely to cause further problems for shipping companies' given the fragile state of economic recovery, say shipowners.

The International Chamber of Shipping has sent a strongly worded letter to the Panama Canal Authority (ACP) describing plans to increase tolls by up to 15% as 'simply unacceptable'.

ICS calls for the plans to be withdrawn and for future increases to be given with at least six months' notice to enable shipping companies to plan properly and fully assess the impact of the proposed changes.

The International Chamber of Shipping (ICS) is the principal international trade association for shipowners, with member national associations from 36 countries representing all sectors and trades and over 80% of the world merchant fleet.

The ACP published plans to increase its tolls in April, despite assuring industry clients in January there would only be one small adjustment to tolls before completion of the expansion project in 2014. Toll increases could come into effect as early as 1 July if agreed at a forthcoming public hearing.

ICS Secretary General, Peter Hinchliffe, said there was 'no pressing need' for the increases given that 'canal revenues are currently very healthy'.

Hinchliffe pointed out that while the Panama Canal is an important national asset to Panama, it also remains an essential part of international public infrastructure crucial to the smooth operation of the global supply chain and should 'take this important public role into account when setting tolls'.

"While the ACP proposal analyses the impact of the toll rises on the competitiveness of commodity trades, no account is taken of the impact on shipping companies themselves… many of whom are still forced to run ships at a loss in order to remain in the market," he said.

"We therefore request that the ACP rescind the current plans for increases in the next two years and concentrate on developing a toll structure that can be to the benefit of all parties to be introduced in late 2014."

ClassNK marks historic world milestone

Renowned classification society ClassNK officially announced that its register had surged past the 200 million gross tonne mark on 28 May 2012. ClassNK Chairman and President Noboru Ueda announced the historic achievement at a party celebrating the 50th anniversary of the establishment of the London office, which was attended by many of the leaders of the maritime community, including IMO Secretary General Koji Sekimizu and IMIF Chairman Jim Davis CBE. This unprecedented achievement makes ClassNK the world's first class society in history to have more than 200 million gross tonnes on its register.

Speaking during the party, ClassNK Chairman and President Noboru Ueda recognized the role of the greater maritime industry, as well expressed his thanks to ClassNK's clients and partners around the world, saying: "This achievement highlights the incredible growth of the world maritime industry over the past decade, as well as the undeniable importance of the shipping and shipbuilding industries to the continued growth and development of the global economy, and we could not have achieved this historic milestone without the deep trust and continuing support of the global maritime community."

Ueda also tied the society's ongoing success to its increasing internationalization and growth around the world, noting: "Fifty years ago, ClassNK opened our very first office outside of Japan here in London, and this year we will celebrate the opening of our 100th office outside of Japan. Our unprecedented achievement of having 200 million gross tonnes under class is a testament to our growing presence around the globe, and we will strive to provide even better service to our clients and partners around the world in the years to come."

Founded in 1899, the growth of ClassNK's register has steadily accelerated over the years. ClassNK broke the 100 million gross tonne mark in 1997, before becoming the world's largest classification society in 1999. Just ten years later, ClassNK became the first class society to exceed 150 million gross tonnes on its register in 2007. As of 31 May 2012, the ClassNK register accounts for 7,847 ships totalling 200,804,781 gross tonnes. As ClassNK's register surpassed more than 190 million gross tonnes at the end of September 2011, some 10 million gross tonnes have joined the Tokyo-based class society's register in just the past eight months.

According to Ueda, the achievement of the 200 million gross tonne milestone represents the accomplishment of one of ClassNK's main strategic goals: "In order to better chart our development and better respond to the needs of a changing maritime industry, ClassNK established 'Global Approach 200', our first medium-term business plan in 2011, with the goal of breaking 200 million gross tonnes by the end of this year."

"We are truly honoured to have accomplished this goal within such a short period of time, and this success reflects our tremendous dedication and efforts to meet the evolving needs of the maritime industry, and ensuring safer and greener seas".

Despite the importance of this achievement, Ueda emphasized that ClassNK would not rest, adding: "Roughly 20% of the world's commercial tonnage relies on ClassNK and our services, and we are committed to exceeding the expectations of the maritime industry. We will continue to dedicate ourselves to serving the industry as a whole, and providing the very best classification services, technical support and timely advice possible."

GL tops Port State performance lists again

The United States Coast Guard (USCG) has published its Annual Port State Control (PSC) Report and Annual Class Performance List for 2011. Germanischer Lloyd (GL) is again in the top performing group with a detention ratio of 0%. In over 1,500 distinct vessel arrivals there was no determination of class responsibility in any USCG detention of a GL-classed vessel. In May the Toyko MOU's Annual Report on Port State Control in the Asia-Pacific Region was also released. The class performance rankings list for 2009-2011 once again saw GL placed among the top performing ROs, with a performance level of 'high'.

Port State Control (PSC) is an instrument for the inspection of foreign ships in national ports to verify that the condition of the ship and its equipment complies with the requirements of international regulations and that the ship is manned and operated in compliance with these rules. To effectively develop and maintain the PSC system, coastal countries in various areas of the world have established regional agreements on Port State Control: Memoranda of Understanding or MoUs. These regional agreements now cover most of the world's oceans, with each administration having their own data base of information. This system is essential for maintaining ship safety, environmental protection and operating systems.

The USGC statistics show that overall arrivals of GL classed vessels were up from 2009 and 2010, with 1,174 and 1,112 arrivals respectively, to 1,561 distinct vessel arrivals. GL is one of only two Recognized Organizations (ROs), with more than 1,000 distinct arrivals in each of the last three years, to have no class related detentions assessed.

The USCG noted in their PSC Annual Report noted that even in the face of increased vessel arrivals and examinations that detentions related to environmental protection and safety had decreased. Flag State Administration performance was also improved, with fewer detentions for safety and a decrease in the security Control Action Ratio (CAR).

Germanischer Lloyd (GL) offers classification services, plan approval, inspection and certification of materials and components as well as technical assessments for newbuildings and ships in service. GL is dedicated to providing high quality services, which ensure the safety of life and property at sea, and minimize impacts on the marine environment.

As a classification society GL is particularly strong in the classification of container ships, multi-purpose vessels, tankers, bulk carriers, high-speed ferries, cruise ships, mega yachts and sports boats. GL's fleet in service now surpasses 103 million GT.

Liberian Registry uses advance vessel screening to cut detention rates

The Liberian Registry has introduced a sophisticated programme to screen advance notice of ship arrivals as part of a detention prevention plan to help maintain its independent ranking among the safest and most efficient ship registries in the world. The overall objective is to maintain and strengthen the already excellent safety record of the Liberian flag, and to further reduce detention rates, especially in Australia, China, the EU and the United States.

Liberia's Advanced Notices of Arrival and Zone Notification schemes build on the mandatory IMO Long-Range Identification and Tracking (LRIT) system introduced in 2009, under which all flag states are required to ensure their flagged vessels transmit their location.

The objective is to be proactive in terms of preventing a vessel detention by Port State Control (PSC) or by other inspection bodies. The schemes are designed to increase awareness on the part of shipowners and operators with a view to ensuring compliance with international requirements governing safety, security and environmental protection.

All Liberian vessels calling at US, EU, Australian and Chinese ports must provide an Advanced Notice of Arrival (ANOA), which can be used by the Liberian administration to assess the probability of a PSC boarding. Thereafter, appropriate steps can be taken if necessary to prevent a detention. Under Liberia's Zone Notification programme, meanwhile, if the Liberian administration has not received an ANOA from vessels entering LRIT zones which Liberia has established around the US, China, Australia and the Paris MoU countries, it can use their LRIT notification system to assess the probability of a PSC boarding, and take appropriate steps where necessary.

Scott Bergeron, CEO of the Liberian International Ship & Corporate Registry (LISCR), the US-based manager of the Liberian Registry, says, "In the interests of both safety and commercial expediency, we are committed to minimizing the number of Liberian-flag ships placed under detention. We are proactive at all times, with the intention of preventing deficiencies and detentions rather than responding to them. In addition to our ANOA and Zone Notifications programmes, we inform shipowners and operators of PSC Concentrated Inspection Campaigns (CICs) and recommend action where necessary. Ship masters are very busy when preparing to enter port. The point is to provide the master and the shore staff with timely and relevant information to help ensure compliance with regulations during periods of increased onboard activity. Based on feedback from the various MoUs, Liberian-flagged ships have performed very well during the CICs.

"We also contact PSC directly when there is an issue or a misunderstanding, and appeal detentions where they are considered unwarranted. We conduct ongoing initiatives designed to decrease detention rates, and to increase awareness of what is required in order to comply with international requirements.

"Prior to arrival for every vessel, we use an innovative risk analysis tool that we have developed to calculate whether a particular vessel may be a high target for PSC boarding. Subjective risk criteria cover both the ship and the company, drawing on PSC deficiency and detention histories. If we have concerns that a vessel may not be in compliance, we have several proactive support services that will be implemented.

"Our goal is to ensure that Liberian-flag ships are in compliance with all applicable international regulations covering safety, security and the environment. Our objective is to continually improve and strengthen the excellent safety record enjoyed by the Liberian flag."

Bureau Veritas launches e-learning for MLC training

Major international classification society Bureau Veritas has launched a web-based training programme to help companies in the shipping industry train their personnel for implementation of the Maritime Labour Convention.

As the deadline for implementation of the Maritime Labour Convention (MLC) 2006 draws nearer, companies in the shipping industry are becoming increasingly aware of the need to make sure that they are properly prepared, and that their personnel are correctly trained. That is why Bureau Veritas has launched its e-learning Introduction to Maritime Labour Convention 2006 training, which facilitates the concurrent training of large numbers of personnel without interrupting their normal working activities, in the process reducing the time and cost encountered when using other, traditional learning courses.

Introduction to Maritime Labour Convention 2006 training has been designed as a first step in MLC-related education. It is aimed both at seafarers and shore-based personnel, as well as those involved in MLC-related issues at a general level. It is also a valuable source of information and guidance for anyone involved in the development of MLC-related documentation as well as to those persons responsible for implementation of MLC systems and procedures on board ships and in the company offices ashore.

Training is divided into eight modules covering the background, concept and requirements of the convention. Each module is interactive, thus helping participants to understand the content by combining various learning methods. Attached internal documents and links to external documents provide a more detailed and comprehensive overview of each subject. Each module includes a self-test and case study, helping participants to acquire the knowledge necessary to undertake the final test and global case study, following which Bureau Veritas attestation is issued.

Claude Maillot, ships in service director, Bureau Veritas says, "Well-trained people are one of the pillars of any successful business, and especially so in such a fast-changing environment as the maritime industry. Responsible companies are continually looking to improve personnel knowledge and understanding of key issues. BV's Introduction to Maritime Labour Convention 2006 training has been designed with the particular needs of the modern maritime industry — and the time and geographical constraints on those personnel who will typically need to undergo MLC training — in mind.

Ship management

Michael King

Piracy and risky operating procedures remain prime crew safety issues

Pirates and unsafe operational procedures continue to undermine the safety of crew working onboard bulkers, according to Captain Kuba Szymanski, Intermanager Secretary General.

He said there was no political will to solve the piracy issue and the shipping industry had been forced to take on the challenge of its own accord at huge expense in terms of prevention and insurance. "It's also huge work for the crew to make the vessel ready for ten days in a war zone," he added. "This means that about two weeks every month or so are spent on a vessel that is effectively a warship. And that means two weeks of non-regular operations with maintenance postponements etc."

He said that not only had piracy in the Indian Ocean not been reduced, but the success of pirates there was now encouraging others. "That's definitely the case in West Africa, where action by Nigeria has just displaced the hijack problem to Benin," he added. "Asia is slightly different but people are not stupid — if it works elsewhere, people adopt best practice.

"Somalia gets all the headlines, but problems in the Malacca Strait never disappeared, and the same is true of the South China Sea and now we have West Africa. The situation is not good."

Captain Szymanski said the upsurge in lives lost at sea on bulk carriers was not linked to pressure on shipping rates, arguing instead that this was more likely to increase safety. "Cost cutting doesn't mean less safety because as soon as commercial pressure relaxed, vessels became safer," he said. "The prime pressure point is commercial pressure, the pressure to get there quickly with no stops for maintenance. With slow steaming, you can drop anchor and do the maintenance so in general we're shipping is much safer."

Instead, he said, the problems linked to bulk carriers were specific to certain cargoes or poor procedures. "There have

North P&I Club supports bid to cut liquefaction losses

The 'A' rated, 170 million GT North P&I club is playing a major role in continuing international efforts to prevent further loss of life caused by nickel ore cargoes that liquefy at sea. The latest developments in the campaign are reported in the club's loss-prevention newsletter Signals.

Most recently, North's loss-prevention manager Andrew Glen attended the editorial and technical group of the International Maritime Organization's subcommittee on dangerous goods, solid cargoes and containers (IMO DSC) meeting on 19–23 March as a representative of the International Group of P&I Clubs. A number of proposals to improve the safe transport of solid bulk cargoes were discussed which will lead to amendments to the International Maritime Solid Bulk Cargoes (IMSBC) Code.

French representatives submitted a proposed new code schedule for nickel ore based on research in the French territory of New Caledonia in the Pacific, which has a quarter of the world's nickel ore deposits. According to Glen, "The schedule references a new test developed by the French government to assess the suitability of New Caledonia nickel ore for carriage by sea. It is a revised version of the penetration table test described in the IMSBC Code." If adopted at the IMO DSC meeting in September 2012, the new schedule will be mandatory from 1 January 2015.

Glen was also recently part of a delegation to Indonesia from the International Group and Intercargo to discuss the shipping industry's concerns. Five ships carrying Indonesian nickel ore have been lost in the past 18 months along with the lives of 66 seafarers. "The purpose of the visit was to establish a dialogue with local authorities, which in turn will lead to a range of measures to address recent casualties and reduce the likelihood of further accidents associated with nickel ore liquefaction in this region,' says Glen.

North is also working with the International Group, Intercargo, the International Chamber of Shipping and the International Union of Marine Insurance to introduce additional safety measures designed to reduce the likelihood of further casualties in nickel ore trade. "This includes engaging with administrations to identify aspects of compliance that could be improved, and locating suitable resources to enhance oversight by the competent authority and adoption of IMSBC Code requirements," says Glen.

North is a leading marine mutual liability insurer providing P&I, FD&D, war risks and ancillary insurance to 125 million GT of owned tonnage and 45 million GT of chartered tonnage, with 4,000 ships entered by 400 members. It is based in Newcastle upon Tyne, UK with regional offices in Hong Kong, Piraeus, Singapore and Tokyo. It is a leading member of the International Group, with over 13% of the group's owned tonnage. The 13 group clubs provide liability cover for approximately 90% of the world's ocean-going tonnage and, as a member of the group, North protects and promotes the interests of the international shipping industry.

been many incidents to do with cargo liquefaction or nickel ore and iron ore fines," he said. "We also see forklifts in holds they are not designed to be in. There is no IMO Code and it can cause punctures in ballast tanks and the forks can be too heavy."

He also said there were other issues such as the loading of steel coils, hold ventilation and grain stability calculations which were cause for concern and needed to be analysed more fully.

He also admitted that Intermanager's pioneering work on Key Performance Indicators in shipping has not, so far, put bulk carrier management systems in a good light so far. "It's too early to show the results, but unfortunately we have to say that if you compare bulkers to tankers then they are two worlds apart," explained Captain Szymanski. "Tankers are used to vetting, self-assessment, they are used to all sorts of safety regimes etc. Because of that tanker operators are used to KPIs and use them for best practice. Lots of bulk operators don't measure performance, they think they are safe, but in fact they don't know what safety is. Their performance shows they are three to five times less safe than tankers."

"The safety culture onboard is totally different. On tankers there are lots of risk assessments established, but in the bulk fleet this is not common. There are very good operators, give them their due, but generally speaking bulk carriers are not using the same safety standards you see on tankers. It's a casual approach to safety."

Safety in the tanker industry, he said, had been driven by the oil majors and a similar trend could also emerge in the bulk carrier sector driven by commodities majors. "We would welcome this," he added. "If the commercial guys don't know or care about safety then competitors will drive things to the lowest standard. But if they see the commercial guys taking interest, then that can make a difference.

"Rightship is doing good things on vetting, but the International Safety Management (ISM) Code is being interpreted differently by bulker operators than tanker operators."

Third-party ship managers face growing number of claims

Owners facing difficult financial times are increasingly making claims against third-party ship managers, according to the International Transport Intermediaries Club (ITIC).

In its latest Claims Review, ITIC warned that cash-strapped owners were cutting back on maintenance regimes and also refusing to pay managers that had disbursed fees on their behalf.

"When ship managers try to collect the funds due, they are faced with a claim for negligence in the management of the ship," said the Club. "In ITIC's experience, once shipowners fail to put managers in funds the situation rarely improves, and usually deteriorates. The resulting claims are time-consuming and costly to defend." The Club warned managers maintain clear records of correspondence with owners to avoid damaging and lengthy legal claims by dishonest owners.

Industry faces 'people challenge' says BSM

Attracting the right calibre of person to work in shipping is the key challenge now facing third party managers, but commodities majors are helping push up operational standards within the bulk carrier fleet, according to Bernhard Schulte Shipmanagement (BSM).

BSM was created in 2008 by combining four ship management organizations already owned by the Schulte Group — Hanseatic Shipping, Dorchester Atlantic Marine, Eurasia Group and VBS. The integrated maritime services company boasts service and crew delivery centres in 25 countries and some 17,000 employees.

David Furnival, chief operating officer at BSM, said the biggest challenge facing anyone operating ships in the current environment was finding people with the relevant skills, both to work at sea and ashore.

"The average calibre of person at sea is lower than 10 or 20 years ago," he explained. "It's not such an attractive working environment as it was in the past. Keeping them motivated onboard is a challenge and that's because the shipping industry is in a difficult environment. It's not just the economic situation, it's piracy, restrictions on shore leave etc. They have a negative impact on the working environment so it's not such an enjoyable place to work. Keeping people motivated and ensuring they have the right attitude is the big challenge."

He said BSM was fortunately working with quality bulk carrier owners not interested in exerting downward pressure on costs at the expense of safety, a trend that has been reported elsewhere with the bulk carrier sector. "We don't face those scenarios where we're asked to cut corners or compromise safety," he said. "If we can delay or extend routine maintenance and achieve cost reductions by simply optimizing our planning to utilize idle time then we do so. We also have good agreements with suppliers, so we get the best lube oil rates, which helps cut costs. We don't compromise safety through lack of funds. We have owners who are aligned with us on this issue."

BSM currently boasts a dry fleet of some 314 ships of which 133 are under full technical management our of a total fleet of all types of around 650 vessels. The bulker fleet consists of over 70 ships under technical and crew management including nine 250,000+ dwt Very Large Ore Carriers, some of them owned by Brazilian mining giant Vale.

"MOL and Matco are also clients and we also have our own ships," said Furnival. "Most of the undesirable ships have gone now so the fleet is mainly higher end because we're after a quality fleet."

He said commodities majors were taking more of an interest in how their cargoes were moved, or in how their own ships were managed. "Vale want the highest standards and modern techniques," he said. "They expect us to cope with that level of management. They are progressing the bulk market industry. MOL is another owner that has impeccable safety expectations. They expect us to match their in-house teams.

Low rates a challenge to managers

Rising costs in a low a rates environment are putting growing pressure on ship managers with a sizeable presence in the bulk carrier sector, claims V.Ships.

"The low freight market is putting a lot of pressure on bulk carrier owners to minimize their operating costs, with a significant chunk of these due to crewing expenses, such as wages," said V.Ships' crew director Andy Cook

"One of the reasons freight rates are low is because an increase in vessels is coupled with a drop in cargoes, but these vessels still have to be crewed. Therefore, there is an upward pressure on crew salaries at a time when owners cannot afford increases."

V.Ships currently provides full technical or crew management services to approximately 140 bulk carriers. These range in size from mini-bulkers employed on coastal trades through to Capesize largest vessels of 250,000dwt. The fleet covers both geared and gearless vessels.

"We manage a large fleet of Handy bulkers — including loggers — and Panamax bulkers and have particular expertise in the management of self-unloaders, in fact our largest client is CSL," said a spokesman.

Cook said V.Ships was now increasing its efforts to assist owners with managing crew costs using the company's size and presence in the global crew market, including its network of in-house manning offices, as leverage.

"Our offices allow us to manage a dedicated pool of seafarers," he explained. "There are upward pressures on wages, but they can be managed through working closely with our seafarers. By doing this, we aim to make V.Ships a preferred place to work, where people can develop their careers and make the most of a multitude of long-term career opportunities.

"We also continually monitor the labour market, and if there are perceived benefits in opening new manning operations in different countries, then we will give each project serious consideration."

However, he added, the spectre of piracy was putting many potential recruits off a life at sea.

"Piracy is having an effect on the entire shipping industry and makes seafarer recruitment a greater challenge, particularly in the Indian sub-continent and South East Asia.

"We have a policy that all vessels must adopt the preventative measures contained in the industry adopted 'Best Management Practice' (BNP4), but we also spend a considerable amount of time assessing the risk for each vessel, as well as utilizing armed

guards on those vessels exposed to a high risk of boarding."

Lead times for taking over management of a bulker are between two and three weeks. From a crewing perspective, Cooke said this meant only a short period of time was usually available within which to source crew ensure that have undergone the required in-house training so they are not only familiar with the requirements of V.Ships, but also understand the latest industry-wide challenges.

"However, the main focus of the training programme is to create cohesive deck and engine teams on-board the vessels, which is achieved through our advanced Crew Resource Management courses," he added.

Thome sets up a devoted bulk ship management division

Thome Ship Management plans to bring tanker operating standards to the bulk sector after dividing its dry and wet business in February.

The strategic rethink came when Carsten Brix Ostenfeldt was appointed as managing director last October, after previously working for two years as the company's technical director. He decided the way forward would see emphasis placed on the dry sector and embarked on an internal restructuring of the Singapore-based group.

As part of this process, in February Thome appointed Steffen Tunge as director and new chief operating officer of its Tanker Fleet, and promoted senior manager Yatin Gangla to chief operating officer of Thome Bulk Division.

"We're now fine-tuning the changes," said Ostenfeldt. "We made the split between wet and dry so we can put sufficient resources into running bulk carriers which is not the walk in the park some believe it to be.

"Tanker guys used to think if you can manage a tanker then bulkers were easy, but in small ports you need to know your cargoes, and even if you're loading the biggest ships, you need to ensure the planning is done properly. There is a lots of specialization even within the bulk carrier fleet."

Carsten Brix Ostenfeldt.

Thome current has 155 ships under technical management including 50 bulk carriers covering every size range up to but not including Very Large Ore Carriers (VLOC). The vast majority of the vessels are owned by European and Asian clients.

Ostenfeldt said Thome was gradually shaking off its reputation as primarily a tanker operator, and this had helped it increase the number of its bulk carriers from a handful back in 2008/09 to the current half century.

Asked if he expected to attract more bulk carriers, Ostenfeldt was adamant: "I think so, yes. The world is uncertain, but unless the world flips then we will. I would like to think we'll grow to around 100 bulk carriers in the future, but how many years it will take I'm not sure. If we deliver good performance then we will get ships by making it a natural choice for owners."

Key to this will be infusing the same standards Thome is known for in the tanker sector into Thome Bulk Division. "Shippers like Vale and Rio Tinto whose cargoes we handle sometimes are looking for higher standards and they don't want delays," said Ostenfeldt. "We also have vigorous Port State Control and other regulatory bodies overseeing bulk operations, so ships can't stay below the radar."

Thome plans to differentiate its services for bulk carrier owners by demonstrating its ability to develop specific management programmes tailored to each bulker. This is what Ostenfeldt calls applying "a tanker specific way of working" to bulkers and it is a strategy that takes in individually designed maintenance programmes covering health, safety, security and environment quality.

"We're bringing our tanker standards and procedures to bulk carrier management," he added. "We have experienced people who have sailed on bulk carriers and know their way around these ships, and this will be overlaid by our internal systems across dry and wet divisions."

Painting a picture

good quality marine paints and coatings vital to keep bulk vessels safe and efficient

Corrosion: what can happen if vessel holds are poorly maintained and not properly coated.

Kunal Bose

The shipping industry, and everything associated with it — from steel plates which go into the making of hull, to marine paints — is affected by the performance of the world economy. Before the industry could recover well from the scorcher of global recession of 2008/09, it has now to contend with dark clouds gathering over Eurozone, slowdown of growth rate in BRIC (Brazil, Russia, India and China) countries (most worryingly in China and India) and the US economy still lacking the bounce. No wonder then, the number of new global orders for ships fell by half even while in terms of value the drop was about 10%. This is because vessels at the top end of value addition like CNG (compressed natural gas) carriers, very large container ships and marine engineering equipment carriers had a big share in the total order book. India's largest shipping group SCI, which has 25 vessels worth $1.1bn on order, is not to place any further orders this financial because of losses it suffered for the first time in 28 years in 2011/12. This is also true of shipping companies elsewhere. Not at all an inspiring scene for marine paints manufacturers.

"If shipbuilders are facing chilly headwinds and ship owners are under pressure to stretch the service life of their vessels to the maximum before sending them to repairing yards, then the fallout for suppliers of marine paints is easily understandable," says an official of a Mumbai-based trading house engaged in imports of marine paints for use by Indian shipyards and ship repairing yards. "It's kind of double whammy for marine paints manufacturers. Their margins are coming under increasing pressure because of rising raw materials costs and the inability to pass on incremental manufacturing costs to marine paints users. I have never seen it in the past the ferocity with which buyers are driving price bargain," he says. Paints manufacturers are trying to negotiate out of the crisis by improving "efficiencies from production processes to logistics management. Then there is the challenge to offer a portfolio of products which will translate into longer life for vessels effectively reducing the cost on paints and coatings account," he adds.

As if this is not all, paint manufacturers remain under pressure from national governments, the International Maritime

Organization and environment protection groups to ensure that coatings and anti-fouling paints do not have any harmful chemicals and metallics in them. The progressive tightening of anti-fouling standards has demanded of marine paints and coatings manufacturers to invest heavily in research and development programmes and come up with products that will meet the twin objectives of keeping sea waters clean for marine life to do well and offer some extra life to vessels. Undeniably, some robust R&D pursuits in recent periods have helped marine paints manufacturers to contain costs in an environment of inflation and demand fall as they promoted the marine profile of the shipping industry. International Paint, part of AkzoNobel group, Hempel of Denmark, Jotun of Norway a, Nippon Paints and Chugoku Marine of Japan and PPG Industries of the US have remained at the forefront of product innovation and in a way active participants in the campaign to protect sea waters from fouling by boat movements.

Fleet owners and paints manufacturers were put on alert on the adoption of international convention on the control of harmful anti-fouling systems on ships in October 2001 and its entry into force in September 2008. Tributylin moiety, the most commonly used biocide and anti-fouling agent toxic to both micro-organisms and larger aquatic organisms, in the days preceding the convention coming into force, has been comprehensively phased out. Copper compounds are used effectively in metal sheeting. No doubt coatings of copper based paints give protection to hulls from plagues of barnacles and other hitchhikers that can cause damage to vessels. What is no less bad is when such plagues get collected around vessels, the engines have to work harder to run ships using extra fuel. So there is so much more emission of carbon dioxide (CO_2). The debate as to whether the balance of advantage is in favour of copper based paints in the context of fears being expressed as to their leeching into the water disturbing marine life is not over.

Paints and coatings manufacturers as they come up with new variants of anti-fouling marine paints are under pressure that their application improves efficiency of ship operation thereby reducing CO_2 emissions. Shipbuilders and repairers will be ready to pay a premium price for paints if these are found highly environment friendly besides giving protection to vessels over longer periods of time under trying offshore conditions. Even while marine paints are of much significance for vessel life and cleanliness of sea waters, in the total cost of vessels their share is hardly 3%. The global marine coatings market of around $5bn will return to its normal rate of growth once the doubts about the future of world economy have cleared. The ballpark estimate is that shipbuilding and repairing account for 82% use of marine coatings; pleasure craft, the making of which is largely based in Europe, 10%; and offshore applications (oil rigs and platforms), 8%.

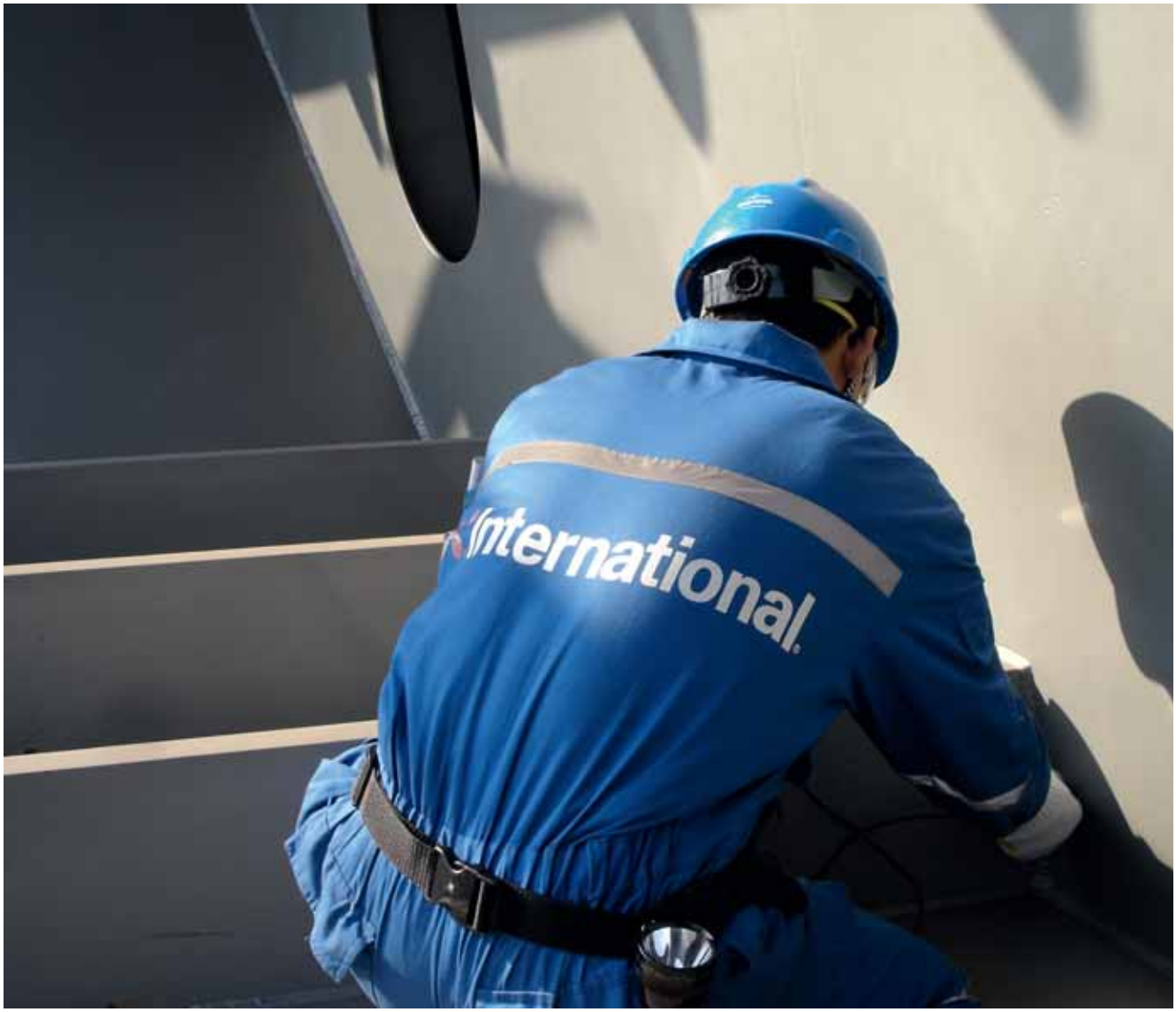
Over the years, the focus of all leading paints manufacturers has shifted to Asia, the Far East in particular with China, South Korea and Japan leading the brigade of shipbuilding nations. While China has raced past others in terms of tonnage building capacity, South Korea and Japan have retained the lead in technology. India, which has a coastline of over 7,500km with many deep sea water ports is emerging as the next big centre for shipbuilding and repairing. While India's major shipbuilders like ABG and Bharati are to go for major capacity expansion both at existing sites and also build yards at new locations, shipping companies such as Apeejay and Mercator and engineering group Larsen & Toubro have decided to build shipyards. Not surprisingly then, the Norwegian Jotun group, which has been active in India for over two decades and has been running a paints manufacturing plant in Pune since April 2008, has decided to have a second unit. Jotun spokespersons have said on many occasions that India is next big emerging market for marine and industrial paints. India's steady emergence as a shipbuilding centre is resting on its engineering excellence and low labour costs *vis-à-vis* China, not to speak of Japan and South Korea.

Building manufacturing plants here are also on the radar of other leading marine paints makers. What they have decided to do in the meantime is to reinforce their distribution network. "You want to know why are the foreign marine paints groups not interested in building plants here in partnership with Indian parties. The basic reason is marine paints requires application of very high levels of technology which then has to be continuously refined and upgraded. This is particularly in evidence since the beginning of the new millennium. Foreign groups are not too keen to share technologies with outsiders or join hands with the locals in joint ventures. Building a speciality unit like marine paints is not a capital intensive proposition for multi-national corporations with turnover in billions of dollar. What is to be accepted is that there is not much that the locals can bring to the table," says an industry observer. Even without local manufacturing facilities, the industry leaders continue to do well in India, registering double digit sales growth. The margins are, however, under pressure. The same is the case with Saudi Arabia where on the back of an emerging shipbuilding and repairing industry, the market for marine paints and coatings is growing.

The importance of R&D and assessment of performance of a product in actual operation is underpinned by International Paint joining hands with maritime consultancy BMT Argoss to establish how the Swedish company's highest performance fouling control coatings Intersmooth SPC (self polishing copolymer) anti-fouling and Intersleek foul release coating are contributing to vessel performance, fuel savings and reduction in CO_2 emissions. Jotun, which has to its credit quite a few breakthroughs in production of tin free paints and coatings, has on offer a bouquet of products, each endowed with properties to effectively prevent corrosion and fouling of any vessel. The company claims that each of its product is the result of intensive R&D and practical experience. Besides product quality, the performance of a paints company depends on how well it involves itself with shipbuilders from the planning stage of new constructions through the entire life of vessels. This is one sure way of offering most cost-effective coating protection to vessels for their entire life.

Indian manufacturing units mostly make primers. But they do not have the technology to come with a product like universal primer from the stable of International Paint that reduces the complexity of coating operations. "There, however, is a market for everything. Our primer is okay for barges and boats on inland water transport service," says a local primer maker. For the world industry leaders the search continues for new raw materials like mineral fibres with potential to improve the performance of coatings.

Stunning performance from an industry legend



International Paint Ltd. has proudly announced it has achieved full type approval and proven in-service performance for its outstanding anticorrosive coating Intershield®300.

Intershield®300 was recently awarded the first Lloyd's Register IMO PSPC Type Approval Certificate for Cargo Oil Tanks. Barry Robison, worldwide marine market manager, International Paint said, "Type approval in cargo oil tanks is a very important achievement for us. We recognize the importance of the IMO PSPC [International Maritime Organization Performance Standard for Protective Coatings] in extending the reliability and lifetime of cargo oil tanks in crude oil tankers and have been working hard to ensure our coating systems are compliant.

We're particularly pleased that the first Lloyd's Register Certificate has been awarded to our premium anticorrosive, Intershield®300 and are confident that with an existing, proven track record, this product will continue to provide very high levels of newbuilding productivity and in service performance."

Series of firsts

Type approval certification for Intershield®300 is yet further affirmation of its corrosion prevention capabilities. The certification is just the latest in a series of 'firsts' for Intershield®300 which includes not only regulatory approvals but also proven 15 year in-service performance.

In 2008 Intershield®300 was the first anticorrosive coating to be awarded Lloyd's Register type approval, under the IMO's PSPC regulations for seawater ballast tanks. In 2010 the high performance and durability of Intershield®300 was proven in service at the third special survey of the 73,222dwt Panamax bulk carrier *Eleranta*, when a Lloyd's Register surveyor confirmed the double bottom tanks of the vessel to be in "good condition". The 15-year-old bulk carrier, built at Samsung in 1995, had Intershield®300 applied to her ballast tanks when she was built.

In March 2012, impressive 15-year cargo oil tank protection became evident on board the 301,653dwt crude oil tanker, *Samco Raven*, which underwent her third special survey at Yiu Lian Dockyard (Shekhou) in China. "After 15 years, the coating is in very good condition, in fact better than good," said Francois Rascle, the V Ships France SAS Superintendent who oversaw the tanker's drydocking. "The tanktops are in excellent condition with very few areas of breakdown," he commented.

With a track record on over 12,000 vessels since 1988, the legendary Intershield®300 sets an industry benchmark in proven anticorrosive performance. This unique, abrasion resistant, (>9%) aluminium pure epoxy coating, offers long term asset protection, control of through life maintenance costs, excellent application properties and low temperature workability.

Complete Fouling Release Concept Flexible proven performance: a case story

After almost 60 months in service, the VLCC (very large crude carrier) *Marjan* — managed by Mideast Shipmanagement — came back to dock for survey and the necessary hull treatment. In the following, Hempel's Torben Rasmussen, group product manager explains the challenges, but also the technical solutions for maintenance of a VLCC like *Marjan*.

While in service, a critical requirement is to arrive on time. Loss of speed due to hull fouling can result in delayed arrival times, increased engine wear and fuel consumption, with consequently elevated emissions. It is therefore crucial that the fouling control coating during operation show high fouling prevention capacity even during idle periods.

Modern fouling control coatings are an integral part of today's ship operation and, since *Marjan* was built ten years ago, the world has moved from first-generation fouling release coatings (FRCs) to third-generation FRCs, based on low-friction hydrogel technology.

With IMO's SEEMP (Ship Energy Efficiency Management Plan) becoming mandatory from 1 January 2013, many shipowners and operators have already now set their own environmental targets in order to operate more energy efficient and reduce their CO_2 emissions. Finding effective ways and solutions to meet these targets can though be a challenge. And that's where Hempel's complete fouling release concept can help.

Invisible hull coating with high fuel saving potential

A leading supplier of marine and industrial paints, Denmark-based Hempel has developed a highly effective fouling release coating system. Based on pioneering hydrogel technology, Hempasil X3 fools fouling organisms (from biological slime and seaweed to barnacles) into thinking a ship's hull is liquid, essentially rendering the hull invisible so the organisms don't attach. The result — a clean hull that sails smoothly through the water — means less fuel is needed to propel the vessel because there is less friction.

In fact, Hempel is so confident in Hempasil X3's antifouling performance that it guarantees fuel consumption will decrease. And reduced fuel consumption means less CO_2 is emitted, which of course results in a smaller carbon footprint. Furthermore, Hempasil X3's biocide-free composition and minimal VOC level strengthen its environmental credentials and also ensure that solvent emissions are kept to an absolute minimum.

The longer the vessel is slime-free, the better its performance and operating budget. Now in its third generation, the proven Hempasil X3 formula provides a good return on investment and typically saves vessel operators between 4% and 8% in fuel costs within the first year of application.

Potential for massive CO_2 reduction

To back up Hempel's fuel savings guarantee, the Hempasil X3 package also includes SeaTrend® software from Force Technology. An onboard reporting tool, SeaTrend® helps operators monitor Hempasil X3's fuel saving effects for themselves.

Rasmussen believes that "this complete package has been key to gaining market recognition. The bundling of 1) the coating system, 2) fuel monitoring and 3) a fuel consumption guarantee is also a reflection of our own confidence in the coating systems performance."

Hempasil X3 has been applied to more than 150 vessels: several container vessels, bulk carriers, tankers, VLCCs, navy vessels, fast ferries, cruise ships and now also to large LNG's.

How to make a non-stick coating stick ?

When it first came to market, the Hempasil X3 package included the Nexus (standard) tiecoat for fully blasted hulls. Hempel has since introduced two new tiecoats to the Nexus range.

Streamlined drydock process

For the *Marjan,* to the vertical bottom of which was applied a FRC silicone system five years ago, Nexus X-Tend is the solution developed as a tiecoat specifically for repair and touch-up of an existing fouling release coating before overcoating with HEMPASIL X3. Hempasil Nexus X-Tend increases drydock efficiency by reducing the number of steps a vessel goes through in the dock.

"Nexus X-Tend makes using Hempasil X3 almost as simple as using a conventional antifouling coating," says Rasmussen. "In the past, spot repair was time-consuming and complex and often led to substandard results, such as poor adhesion between coats. But Nexus X-Tend reduces the number of steps in the repair and touch-up process of damaged areas, making it easier to paint over an old fouling release coating and thereby speed up the drydock process."

One coat solution

On the flatbottom, *Marjan* previously had a conventional SPC antifouling. By using the patented Nexus X-Seal tiecoat the need for full-blasting was eliminated as Nexus X-Seal makes it possible to seal existing conventional biocidal antifoulings before the upgrade to Hempasil X3. Nexus X-seal is intended for situations where the anticorrosive system is still intact, such as *Marjan* docking for the first or second time after newbuilding. This solution can save shipowners between 40–45% compared with the cost of full-blasting and applying Hempasil X3 from scratch.

Unlike most other solutions on the market, Nexus X-Seal is a one coat solution. Not only does this significantly reduce the time and costs involved in drydocking, it also makes the conversion from a conventional antifouling system to a fouling release system very smooth. "You can say that our R&D team has succeeded in combining a linkcoat and a tiecoat into one single coat, which means big savings on application costs," adds Torben Rasmussen.

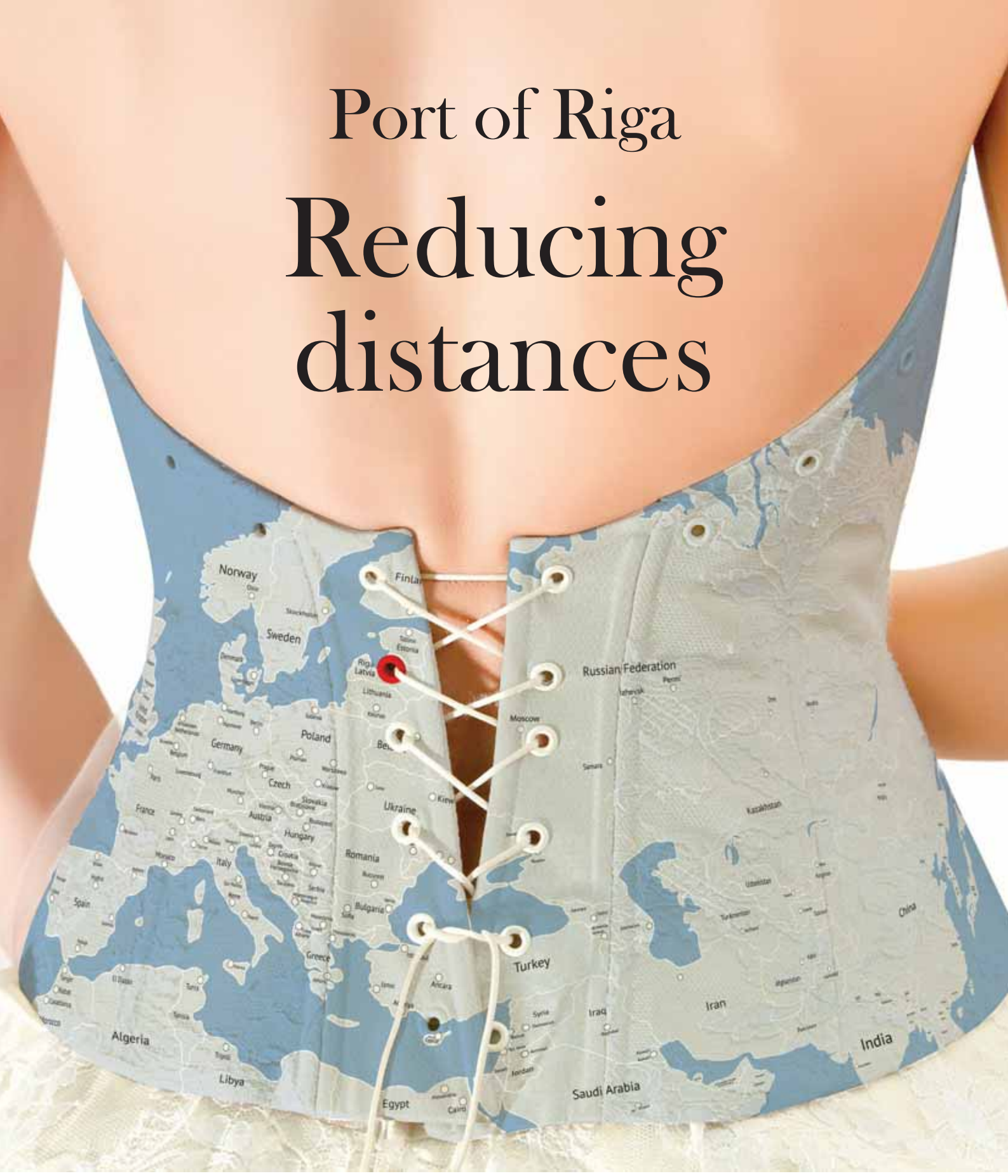
Awards acknowledge HEMPEL's reputation

To date, Hempasil X3 has picked up five product awards including the internationally recognized Seatrade Award for the Protection of the Marine and Atmospheric Environment, the Ingeniørens Product Award, given by the Danish Society of Engineers' magazine, the Frost & Sullivan Award for Product Differentiation Innovation of the Year and the Eurocoat Golden Coat Award for the best technical communication of a product. And in late 2010, Hempasil X3 won Lloyd's List DCN Environmental Transport award.

The flexible and proven performance of the Hempasil X3 package offers an effective way of meeting increasingly stringent environmental regulations and reducing a vessel's environmental footprint by minimizing fuel waste. Besides the Nexus' tiecoats efficiency and high productivity during the maintenance work in dock also avoid wasting time. DCi

Port of Riga

Reducing distances



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Impressive cement terminal at the port of Malmö, Sweden

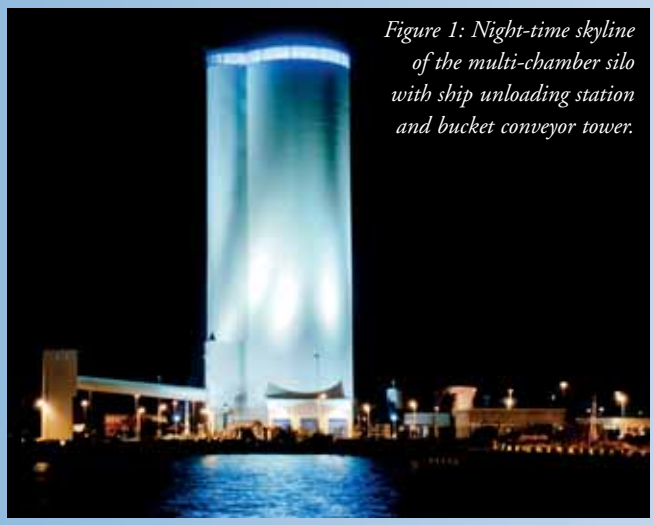

Figure 1: Night-time skyline of the multi-chamber silo with ship unloading station and bucket conveyor tower.

As a general contractor, HAVER & BOECKER's subsidiary company IBAU HAMBURG led the construction of a cement terminal for CEMENTA HeidelbergCement Group at the port of Malmö, Sweden (please see 'IBAU HAMBURG hands over cement terminal' on p58 of the May issue of *DCI*). When approaching the Copenhagen, Denmark airport at night, it is possible to see the distinct skyline of the multi-chamber silo, which is fed by a mechanical-pneumatic ship unloading system, is 100 metres tall, has a diameter of 26 metres and contains 30,000 tonnes of cement. Automatic loading of tanker trucks and wagons is done 365 days a year. *(Fig. 1)*

HAVER & BOECKER supplied the complete electrical system and automation for this cement plant. The systems include the following components:

- CS7 process control system with CEMAT, as to HeidelbergCement standard;
- gas-isolated medium voltage switchgear, 11kV;
- dry-type transformer 1,600kVA;
- low voltage main distributor with compensation;
- switching and control cabinet with S7-400/ET 200M, as to HeidelbergCement standard;
- electrical grounding and lightning protection;
- cable and installation material;
- IT network and infrastructure;
- video-monitoring of the loading stations as well as the entrances and exits;
- interior and exterior lighting; and
- engineering and complete electrical installation and start-up.

During the planning phase, IBAU worked in close co-operation with Heidelberger Technology Center in Brussels and it was decided that the control room in the multi-chamber silo would be moved to Level 1. This offered the advantage of considerably reduced cable paths through silo walls. Because space for the switching and control cabinets, energy distribution and transformers was limited, HAVER & BOECKER opted for maintenance-free, gas-isolated medium switchgear. *(Fig. 2)*

The electrical installation involved a number of demanding challenges for the personnel. Installation of the cable works and laying the cable in the bucket conveyor tower - from Level 0 to 100 metres – required special cranes and had to be carried out by workers who weren't afraid of heights. *(Fig. 3)*

One challenge for the automation systems supplied by HAVER & BOECKER was adapting the PCS7 process control system to the silo processes so that clear and well-arranged process groups resulted and thus allowed easy operation and rapid fault detection.*(Fig. 4)*. The tanker trucks and wagons are automatically loaded according to the shipping orders thanks to the data exchange between the process control unit and the shipping system provided by CEMENTA AB. By co-operating closely with Heidelberger Technology Center Brussels, the processes were optimized so that the terminal could be operated without operating personnel.

Figure 2: Switching room with MS gas-isolated switchgear.

After the start-up of the facility, the terminal was successfully handed over to CEMENTA AB in March, 2012, after almost two years of planning and construction work.

HAVER & BOECKER is grateful to Heidelberger Technology Center Brussels, CEMENTA AB, the terminal operator, IBAU and all subcontractors for the excellent co-operation. Without such a performance such a short time would not have been possible.

Figure 3: Electrical installation in the bucket conveyor tower.

Figure 4: PCS 7 process control system.

Newcastle to build new grain terminal

The Australian port of Newcastle is to build a new $28 million export terminal capable of handling 1.5 million tonnes of grain annually. The project, which is to be taken forward by Newcastle Agri Terminal (NAT), has been approved by Newcastle Port Corporation.

The new facility will be built at Carrington's Dyke 2 berth, where two 20,000-tonne silos will be located, alongside three smaller storage silos capable of handling 60,000 tonnes of grain. In addition to processing facilities for the grain, overhead and ground level conveyors will be installed. There will also be a rail retrieval facility.

Operation will be 24/7, with at least three block trains a day bringing in grain. The terminal is expected to receive calls from at least 50 vessels annually. *Barry Cross*

CSN interested in Itaguai port project

Companhia Siderurgica Nacional (CSN), Brazil's third-largest steel group, has indicated an interest in the proposed iron ore export port at Itaguai, in Rio de Janeiro state. At a press conference, the company declared, "We are preparing ourselves to take part in this deal."

A tender for the project is expected to be issued later this year and is of particular interest to CSN given that the company already operates Tecar port close to the proposed site, where it exports iron ore and imports coal. *BC*

Suape to have sugar terminal

The North Western Brazilian port of Suape is to have a brand-new sugar terminal. This will require investment of $54 million, of which $21 million will be for infrastructure and the balance for equipment. The concession is held by a consortium consisting of the UK trading company ED&F Man and Agrovia.

The terminal will be built in stages, although operation is due to commence within 24 months in time for the 2014/15 harvest. It will cover an area of 72,500m² and occupy an area behind Quay 5, served by a single berth of 324m. Storage capacity will be in the region of 160,000 tonnes of sugar.

Forecast suggests that in 2015, the facility will handle 540,000 tonnes of sugar. *BC*

Guyamas to handle new Mexico coal

Over the next 18 months, the Mexican port of Guaymas will increase iron ore traffic exported from the US state of New Mexico to Australia by 800,000 tonnes. Consignments of around 60,000 tonnes will be brought in by rail in wagons operated by Union Pacific and Ferromex. This is part of a long-term agreement with Glencore international, which notes that Guaymas offers better economies of scale and more attractive costs than alternative outlets in the US, none of which offers the same deep draught facilities. *BC*

Chile's Ventanas increases volumes

The head of the Chilean company Puerto Ventanas has revealed that first quarter volumes grew by 13%, while tonne-kilometres handled by its rail subsidiary, Fepasa, went up by 10%. For 2012, investment will be in the region of $20–25 million, of which the majority will be spent at Fepasa, which received $18 million also in 2011 to enable it to transport cargo for Anglo American.

For Ventanas Port itself, investment will be in the region of $5 million-$10 million. Overall, the port is forecast to handle up to 30% more traffic than it did last year. *BC*

Aktau to handle cereals for Iran

The Caspian Sea port of Aktau in Kazakhstan has been loading consignments of wheat and barley bound for Iran. International sanctions have made procuring cereals quite difficult for Iran, which instead has turned to the Soviet Republic has an alternative source. Kazakhstan forecasts shipping at least 500,000 tonnes of grain to Iran this season, claims the government, there being an equal split between wheat and barley. *BC*

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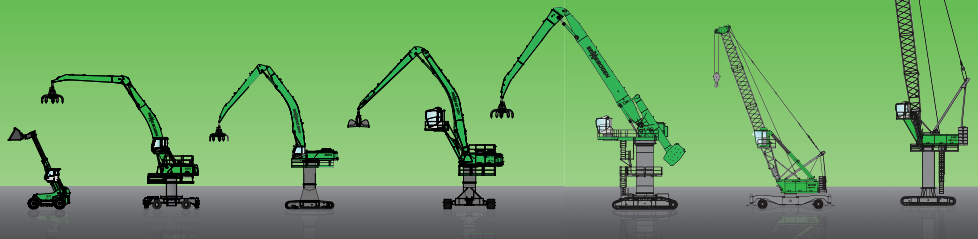

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Dreyfus commences Cangrejales operations

Dreyfus has begun operations at Cangrejales, in the Argentinian port of Bahía Blanca, where it has its own production facility. The first ship loaded 28,500 t of soya beans bound for China.

However, the company has had to wait six months to receive permission to commence operations, having initially undertaken trials in August last year. Official permission from the customs authorities will only be finalized in October, with provisional operations allowed in the meantime.

The new facility, which has draught of a 13.7m, can accommodate vessels of up to 270m in length. The production plant covers an area of 240,000m² and the whole area has been wrapped up in a 30-year concession granted to the company. Storage is in the region of 93,000 tonnes, divided between eight silos of 11,250 tonnes each and a further three of 1,200 tonnes each. Possibilities exist to expand capacity and also handle other products, such as bio diesel.

Japan, Malaysia and China will be the main import countries. *BC*

Chilean ports to handle Argentinian dry bulk?

The Farkas group has put forward a project to load Argentinian grain in Chilean ports, which includes the possible construction of an entirely new port. This would allow grain to reach new destinations in Southeast Asia. The port of Tucumán, which currently handles only iron ore shipments, would be used to forward Argentinian products to a new port in Chile's Atacama region. This would be able to handle vessels of up to 250,000dwt and have a capacity 25,000,000 tonnes annually. Investment will be in the order of $150 million and operations should commence as of March 2014. *BC*

Arica to handle more minerals

The environmental impact assessment undertaken at the Chilean port of Arica will allow the number of minerals handled there to increase. These will be handled at Berth 1, which is already equipped with a mechanical loading system to handle exports from Bolivia, such as copper, zinc and lead.

The upgrade required will need a covered conveyor handling systems to be incorporated, as well as dust suppression systems on equipment used to load vessels. Inbound trucks will also have to unload in a negatively pressurized warehouse.

Given this new approval, the port may also now receive iron ore, lithium, manganese, magnesium, antimony, tungsten, sulphur, boron, rock phosphate nickel, and tin. However neither uranium or tantalum will be allowed. *BC*

Ventspils coal traffic up by nearly 50%

The Baltic Coal Terminal at the port of Ventspils reported a 47.4% increase in tonnage shipped in the first quarter compared with the corresponding period in 2011. For the three months, 1.18 million tonnes of coal were shipped, with 450,000 tonnes handled in March alone. Most of the consignments are exported to the UK, Belgium, Spain and Morocco. *BC*

Cartagena grants scrap licence

Cartagena port authority has granted permission to the Hermanos Inglés company to set up business at Muelle Sur on the Escombreras extension, where it will handle scrap metal. A year ago, the same company was given permission to occupy a 3,000m² area on the same quay for one year, where it would warehouse scrap derived from Spanish and French sources. Here, it classifies the metal and exports it, mostly to the Spanish Basque Country, but also to other destinations in the Mediterranean.

Given the success of its operation, the company went back to the port authority to extend both the operating period and also the available space. As a result, it's been given a three-year operating concession on what is now a 4,000m² area, where it is expected traffic of a hundred thousand tonnes per year will be handled. *BC*

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Netherlands focus

Dutch bulk handling in the spotlight

Extended quay and other planned improvements increase OVET's marketability

OVET will officially launch its new extended quay in the Kaloothaven area of Vlissingen port at Zeeland Ports on 21 June but the capacity addition has already received its first bulk carriers including Capesize ships.

The 400-metre extension allows the stevedore to accommodate two Capesize vessels and one Panamax simultaneously, using current crane and yard equipment capacity. "The capacity of the present crane park is enough to cope with another few million tonnes extra," said Jan Agten, head of commercial affairs at OVET.

OVET will also install a new train loading system in the early months of 2013, which will enable loading a 2,500-tonne train within three hours, while two new state-of-the-art dry screening facilities are also planned for installation at Vlissingen in August and October, respectively. "The two mobile screening plants can work 'in series'," explained Agten.

OVET saw tonnage over its dry bulk terminals at Vlissingen and Terneuzen and its fleet of floating cranes which ply the entire Western Scheldt area make substantial gains last year.

Agten said the stevedore handled 11.4mt (million tonnes) in 2011 compared with 10mt in 2010. "About 75% was solid fuels, and 20% minerals/ores," he added.

OVET is forecasting a slight decrease in tonnage to 10mt this year. However, Agten expects demand for power generation in Germany to drive coal demand in the years ahead which is why the company has been investing so heavily in capacity and the latest handling gear in recent years.

"Basically the only growth in the region will come from Germany," he said. "We see a decrease in met coal in Western Europe and steam coal growth in the Netherlands will be linked to the geographic position of new power plants at Rotterdam and Eemshaven. The volume growth will all be in Germany."

The increase in tonnage at OVET in 2011 helped Zeeland Ports out-perform expectations with total throughput surpassing 35mt, an 8% gain year-on-year compared to forecast growth of six percent and a new record for the port.

However, Zeeland Port Authority was cautious about the business environment for 2012 given Europe's economic problems. "It has really become clear that while Zeeland is not one of the biggest ports in the region, it is indeed one of the fastest-growing where sea transfer is concerned," said Zeeland Ports Authority. "Given the uncertain economic situation, the port authority cannot risk making a prediction for 2012."

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The port of Rotterdam continues to build for the future

Unloading by CSU at the EECV terminal at the Port of Rotterdam.

The Port of Rotterdam saw total throughput of dry bulk cargoes contract 7% to 19mt (million tonnes) in the first quarter of 2012, wiping out some of the gains made last year when over 87mt was handled by its stevedores, a year-on-year gain of 3.2%.

Indeed, the first quarter of this year was in some ways the exact opposite of 2011, with agribulk, iron ore and scrap and 'other dry bulks' both contracting after big gains in 2011. The port attributed the fall in the loading and unloading of the latter sub-division, consisting mostly of building materials and minerals, was the result of a stagnant construction sector and declining industrial production.

Karel Peters, Senior Business Manager Dry Bulk in the Port of Rotterdam's Industry & Bulk Department, said the port's agribulk gain of 17.7% last year which pushed volumes close to 10mt was primarily down to the opening of a new bioethanol plant at the port by Abengoa Bioenergia.

"That was a big part of the increase last year," he said. "We also gained some volume by a strong growth of the cargo handled by a parcel operator that uses one of our stevedores."

In 2011 the port also benefited in the first half of the year from higher imports from the US and South America because of weak harvests in France and Germany and export bans and quota systems introduced in the Ukraine and Russia, also due to poor harvests, a trend that has been reversed this year as bans have been lifted and grain prices in the second half of this year will go down, predicted Peters.

The constants for the port have been growing coal imports and declining iron ore demand, the latter being the product of Europe's weak economy which has seen steel demand contract prompting production at many Dutch and German blast furnaces to be scaled back or halted, a trend expected to persist throughout 2012. "Blast furnaces in Belgium and north east France has been shut down," confirmed Peters.

The 1mt (16.7%) gain in coal throughput in the first quarter of 2012 followed on from a 10.9% increase last year when coal volumes totalled 26.7mt.

"One of the reasons for the increase this year was German coal imports, driven by fear for energy shortage in the winter time," he said. "Also prices of coal are low — in Rotterdam they are lower than in Richards Bay, so that's a factor," said Peters.

The supply side of the coal equation is very different now than some years ago, with most steam coal now coming into Europe across the Atlantic from Colombia and the US, or from Russia, instead of from South Africa, Australia or Indonesia, which are now mainly supplying buyers in Asia.

Nuclear closedowns and the gradual reduction in Germany's own coal mining output will boost imports via Dutch ports but to a lesser extent than originally anticipated because renewable energy is now playing a major part of the energy mix in Germany. This has left coal-fired energy as something of a swing supplier in Germany — only fully employed when energy demand surges.

"Germany's policy is that sustainable energy is the first source drawn upon to meet energy demand, followed by gas and lignite-fired capacity," said Peters. "Five years ago plants were burning at 100%, now it is lower, down to sometimes 60% of capacity. That's the reason why coal imports are lower than we expected 3–4 years ago.

"But in future I think they will still need more coal at certain times when energy demand is high."

Peters expects coal imports at Rotterdam to grow further in 2013/2014 with some 4.2mt per annum extra needed to feed two new power plants in the port due to come on stream operated by GDF and E.on, respectively.

Looking further forward, the outlook for Rotterdam's bulk cargo business is at the mercy of the European economy. "It depends on the economic crisis, because when industrial production is lower, the industry is also asking less energy from power plants and there is less construction, and less demand for steel and therefore iron ore and coking coal," said Peters.

But even with the doubt surrounding the European economy, Rotterdam's leading stevedores are investing in new equipment and capacity. EMO recently installed a second coal wagon loader while this year a seventh stacker-reclaimer, a fifth unloader and a new seagoing vessel loader are also to be installed.

EECV, meanwhile, is extending its coking coal facility, which already covers some 35 hectares, by a further 50%, while EBS has just completed the extension of its coal stock area by five hectares and renewed its conveyer belt system.

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EMO operates 24 hours a day, seven days a week. It handles large bulk shipments; its discharge capacity is 42mt (million tonnes) and its throughput capacity is 60mt. EMO approaches all of its work and planning with the greatest care. It ensures that its terminal is state-of-the-art, and is continually improving its facilities so that its customers are served in the best possible way. EMO's highly skilled trained personnel work closely together. Skilled employees working with innovative technology guarantee customers the quality, efficiency and sustainability they seek.

Meeting market demands

EMO provides handling facilities that the world's largest bulk carriers require. Its terminal is a major hub in transporting coal and iron ore from all over the world to the large European hinterland. EMO's 160-hectare area can currently hold 7mt of storage. The terminal is ideally located on a 23m-deep waterway connected directly to the North Sea. Rotterdam harbour has excellent rail and waterway connections to the rest of Europe.

EMO prides itself on being a reliable and trustworthy partner. It remains on top of the latest developments in the market, and continually analyses its customers' needs, the quality of its services and its terminal's performance. In anticipation of market trends and customer needs, it is always geared towards offering a more efficient, cleaner and safer terminal, one designed

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As a major player in the European market, EMO does everything to keep its terminal in tip-top condition so that it can serve its customers well. The EMO terminal was commissioned in 1973 and, ever since, it has continually adapted its services to meet new market demands. The result: tip-top products and services that match customers' needs. Recent projects and projects under construction are:

Second coal wagon loader with access to European rail network

EMO's second fully automated coal wagon loader, which started operating in July 2011, means that altogether it can load 16 coal trains a day. The extensive preparations for this enormous project began in 2010 and construction took place in November 2010. The infrastructure had to be adapted as well since EMO required new transport conveyor belts and railtrack. A

dedicated rail cargo line — the Betuwelijn — connects EMO directly to the European rail network offering fast, clean and cost-efficient access to the hinterland. Both coal and iron ore reach inland Europe by rail.

Fifth unloader

The new 85-tonne fifth unloader increases overall loading capacity. An additional unloader means more capacity and more reliability and flexibility. Manufactured in Europe, the unloader will be operational in the third quarter of 2012 .The five unloaders situated on EMO's deep sea quay running along its waterway (23m deep) have an average unloading capacity of up to 200,000 tonnes a day. Throughout the year, the five unloaders are constantly unloading Capesize ships (bulk carriers). The whole terminal is connected by an internal conveyor belt system.

Seventh stacker reclaimer

Preparations for building the seventh stacker reclaimer started in 2010. This stacker reclaimer is, amongst its other duties, responsible for supplying the coal and biomass-fired GDF Suez Energy power plant. As the stacker reclaimer becomes operational as from this summer, EMO will have seven separate cargo flows served by automated stacker-reclaimers.

New loading berth for sea-going vessels

The Amazone harbour is being widened for the latest-generation vessels of the adjacent ECT terminal. The area where the current sea-going vessel loader is located will be widened and EMO has built a new loader along the Mississippi harbour, east of the unloaders. This sea-going vessel loader in the Mississippi harbour loads coal and iron ore fast and efficiently. This ship loader has a capacity of 5,000 tonnes an hour.

The Rotterdam Port Authority built a new quay, equipped with the most sustainable technology and creating an innovative solution by integrating the berthing structure with the fender structure. A characteristic of the new structure is that it uses a thin layer of high-performance concrete to line the outside of the quay, instead of a traditional fender structure.

Integrated terminal with conveyor belt system and operations centre

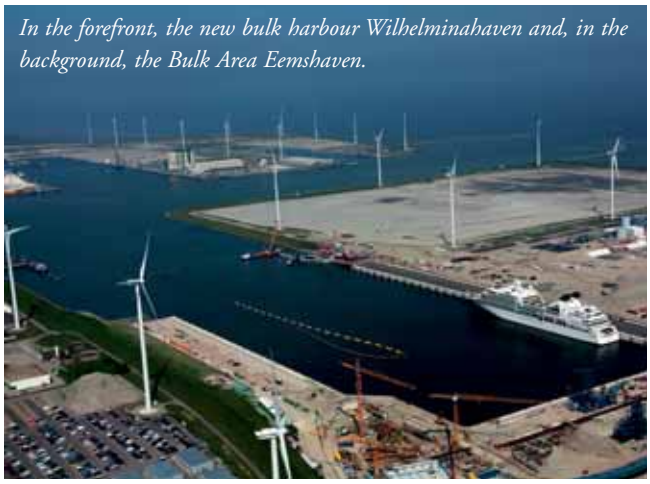
All coal and iron ore is transported by EMO's conveyor belt system. This 47km system connects all discharge, storage and loading equipment within the EMO terminal into one flexible machine. The conveyor belt system is together with the complete terminal and its machinery supervised by EMO's new operations centre. The new operations centre is ready for tomorrow's challenges. To meet present and future developments, it is important that the supervisory role of the operations centre, the nerve centre of the terminal, can grow. When EMO was modernizing the operations centre, it took both existing processes and anticipated future developments into consideration. The smooth transition to the modernized operations centre took place in October 2011. While the new operations centre was being built, the old one remained fully operational and processes continued to work properly. Once the new facility was set up and tested, it replaced the old operations centre.

Hartel strip

By relocating to the Hartel strip, EMO will go on being able to grow and offer a highly efficient service. This deep sea location can be used for specific needs of customers. Biomass used in firing power plants, such as wood pellets, also requires extra space.

The new terminal along the Hartel strip will compensate for land lost due to the widening of the Amazone harbour and for land lost to Electrabel's new plant. This strip lies across the existing EMO terminal and was created by filling in part of the Hartel canal.

New bulk harbour ready in Dutch Eemshaven



In the forefront, the new bulk harbour Wilhelminahaven and, in the background, the Bulk Area Eemshaven.

The new bulk harbour Wilhelminahaven.

Groningen Seaports invested over €70 million in bulk facilities in Eemshaven, in the northern part of the Netherlands.

Ports

Groningen Seaports is the port authority for the port of Delfzijl, Eemshaven and the adjoining industrial sites. The organization provides the complete package of port services to its industrial and commercial clients, from logistics and infrastructure services to the issue and maintenance of the sites in both port regions.

Groningen Seaports has a market-driven approach. It is a service provider and puts what the client wants first. It offers good facilities, short lines of communication and has a rock-solid multimodal infrastructure.

Sites

As well as the two excellently equipped ports, Groningen Seaports manages the industrial sites around the ports and at other areas in the Eems Delta. Various clustered business sites are located on the sites, including a chlorine-related chemicals cluster with Akzo Nobel and its alliance partners as important players. Also, a large part of Eemshaven has been earmarked for the development of energy-related industry: Energy Park Eemshaven. Large energy producers such as GDF SUEZ Energie Nederland, Norned, Nuon/Vattenfall, TenneT, RWE/Essent and Eemsmond Energie have since settled at this location.

Wilhelminahaven ready to receive coals and biomass

The Wilhelminahaven in Eemshaven is extended with 520 metres and around this new harbour about 1,250 metres of heavy bulk quay has been constructed to receive huge bulk carriers containing coals and biomass. At the moment two power plants are being built by Nuon/Vattenfall and RWE/Essent on Energy Park Eemshaven. Nuon is constructing a multi-fuel (natural gas, coal, biomass) power plant of 1,200MWe. RWE, a German energy supplier, constructs a pulverized coal power plant (together with the possibility to use biomass) with a capacity of 1,600MWe. When operational Nuon and RWE together need 5mt (million tonnes) of coal and 1mt of biomass, which will be transshipped in huge bulk carriers to the Eemshaven. Therefore Groningen Seaports constructed this new bulk harbour, a major investment of about €55 million.

Bulk Area Eemshaven

Next to the new bulk harbour Wilhelminahaven, Eemshaven also

The building sites of RWE/Essent (left) and Nuon/Vattenfall (right) at Energy Park Eemshaven.

has a modern public bulk wharf with a terminal for the storage and transshipment of dry bulk. This bulk area is located on the northern side of Julianahaven in the Eemshaven. With a depth of 15m NAP alongside the quay and a quay height of +4.40m NAP, it can handle vessels with operational draughts of up to 11m (14m in the near future) under normal HW conditions (Panamax size — 35,000 tonnes maximum). The overall length of the bulk wharf is now 1,100 metres and is a public facility.

Project cargoes & short-term storage

The northern part of the existing bulk quay storage area has been asphalted and features walled-in and drained storage boxes (wall height: 2.5m). These boxes are ideal for project cargoes and short-term storage of dry bulk. Part of the asphalted area is also used for the assembly of large offshore constructions. Storage boxes can be leased.

Availability of land

Sites for permanent use can be bought or leased. In Eemshaven there are still 180 hectares available.

Overview Eemshaven.

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Amsterdam unlocked: looking forward to a very successful year

(photo: The Port of Amsterdam)

The future of the Port of Amsterdam may change later this year, when City officials decide whether to proceed with corporatizing the port. This move, managers insist, would give them more freedom to meet market demands. If agreed, this will see the port, which is currently registered as a municipal company and owned by the City of Amsterdam, become a governmental limited liability company.

The proposed change, said Lex de Ridder, Commercial Unit Manager for bulk cargoes at the port, would enable managers to embark on more entrepreneurial relationships both locally, nationally and internationally. All shares would be retained by the City. However, the mooted new structure would enable the port to enter more commercial arrangements with port companies and attract investors without loading risk on to the City. It would also link the ports of Amsterdam and its North Sea neighbours of Beverwijk, IJmuiden and Zaanstad under one management structure.

"It would boost competitiveness and helps us win more cargo currently being moved via other Northern Range ports," said de Ridder. "A decision is expected to be made this summer and, if we get the green light, a new structure will be in place from 2013. This will enable us to participate in regional port facilities in the city and on both sides of the locks, which will help our position in the market."

Last year Amsterdam ports — including Amsterdam, Beverwijk, IJmuiden and Zaanstad — handled some 93mt (million tonnes) of cargo in 2011, over 2mt more than a year earlier. Dry bulk was steady at 46.6mt, with coal tonnage increasing 6.4% to almost 20mt. Ores went up 5.9% to 10.2mt, but cattle feed — the ports' third largest dry bulk cargo by volume — contracted 3.4% to 5.8mt.

De Ridder expects demand across all cargoes to push past 120mt by 2020. Crucial to handling the extra cargo will be the construction of a new lock system at IJmuiden. This will enable direct port access for Capesize vessels with beams up to 70 metres, length of 500 metres and draught of 17 metres. The €700 million project is now due to start in 2017 if full clearance is obtained from city officials. "We want bigger ships with a bigger beam in the port or we will be stuck with our present

(photo: The Port of Amsterdam)

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(photo: Jan Hoogland)

volumes and will not be able to grow and add capacity," said de Ridder.

Capacity will also receive a boost in 2015 when a new lightering facility is scheduled to come on stream at IJmuiden. This valuable investment, costing around €100 million, will enable two Capesize bulk carriers to be handled simultaneously, doubling present capacity.

"The dry bulk fleet is upscaling, so we have to lighten more and more ships so we have to improve our lightering facilities," said de Ridder. "There is a similar trend for liquid bulk vessels and this will also help us handle them."

Coal volumes handled at Amsterdam ports picked up in the first quarter of 2012 compared with a year earlier. In part, this was due to higher demand from Germany which is phasing out its nuclear electricity generating capacity. De Ridder says year-on-year growth was also boosted by the disruption suffered in the early months of 2011, when the Baltic Sea froze over and was intermittently closed to shipping.

"Over the first four months of this year, coal volumes have completely recovered so we're very happy with that," he added. "We had good growth last year and it is increasing again this year. We're serving the energy market with steam coal, rather than providing met coal to the steel industry which is not performing so well. We still feel we have potential to grow even more."

In 2012, he said agribulk had been "robust" and Amsterdam was now viewed as a market leader in the ARA range of ports. This position will be further enhanced later this year when a new terminal, operated by MAJA Stuwadoors in tandem with Cargill, comes on steam adding more storage capacity for agribulk and biomass.

"The Port of Amsterdam is beginning to do very well in biomass markets this year, and we think if Nuon/Vattenfall one of the biggest energy companies in Europe, opts to start co-burning biomass and coal at its Amsterdam power station, then we'll get a big boost," he said. "They will decide later this year."

De Ridder also said another area for optimism was industrial minerals with volumes now approaching 7mt per annum. DEME will soon open a new terminal in the Australiahaven on a pier not used by the previous tenant. This will attract an extra 1mt per annum of materials mined from the sea floor to the port.

"Overall, 2012 is shaping up to be really good for Amsterdam," said de Ridder. "I am hopeful that by the end of the year we will have a new corporate structure in place and clearance for a new lock system. Then we'll be able to accelerate our growth plans."


(photo: Jeroen Post)

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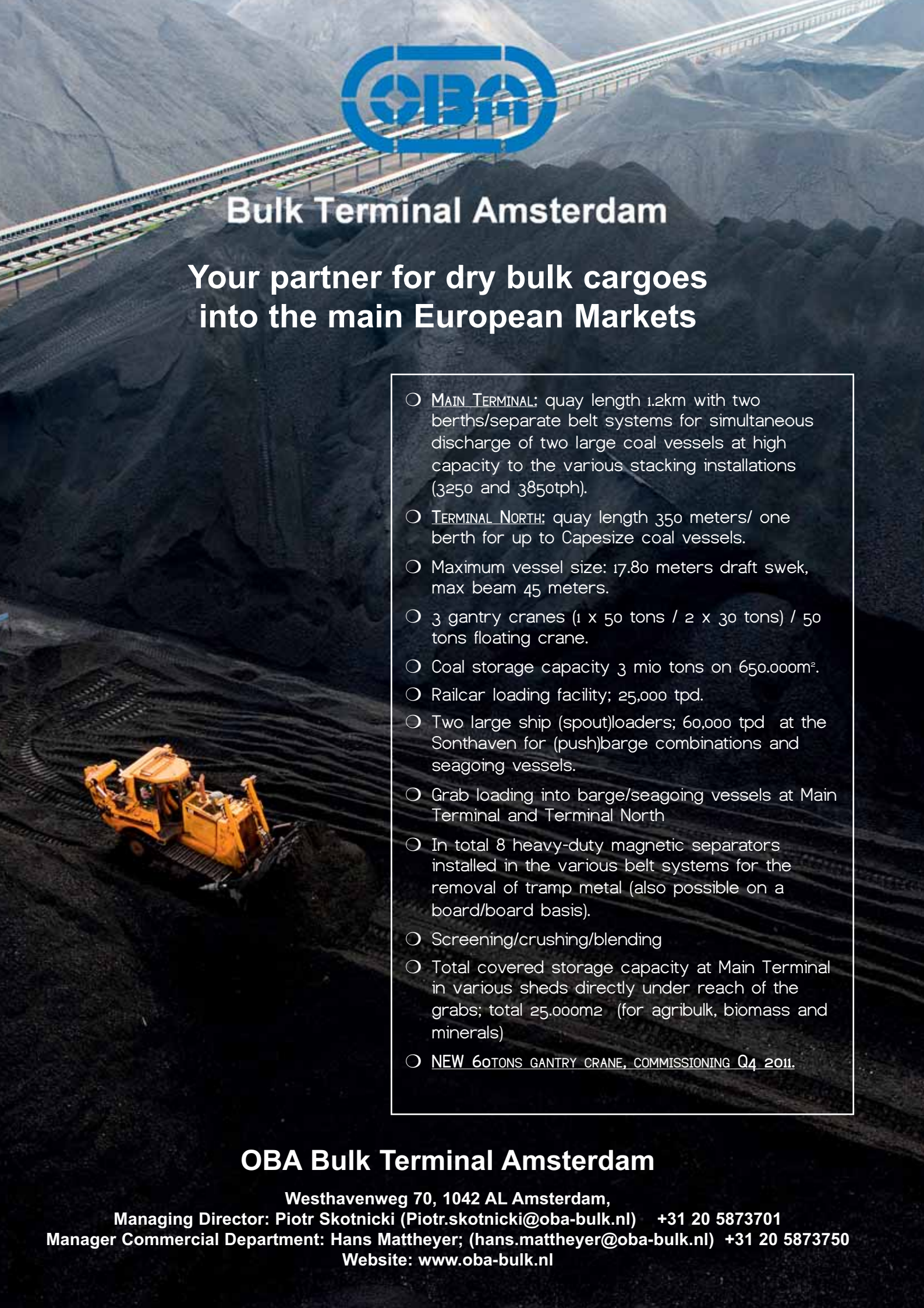

- Main Terminal: quay length 1.2km with two berths/separate belt systems for simultaneous discharge of two large coal vessels at high capacity to the various stacking installations (3250 and 3850tph).
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OBA handles Amsterdam's first major load of biomass

Amsterdam stevedore OBA made a major splash in May when it handled the port's first large-scale load of biomass.

OBA successfully unloaded the *Egret Bulker* at its deep draught Main Terminal in the Westerhaven area of Amsterdam port. The stevedore, which also operates a second facility called North Terminal at the port, discharged the 47,000 tonnes of wood pellets exported from Vancouver direct from the ship into covered storage alongside the berth using a gantry crane fitted with grabs.

Most of the cargo will be supplied to RWE Supply and Trading, which operates a power station at Geertruidenberg but some will be re-loaded onto smaller vessels for shipment to power stations in the UK, where RWE has a plant at Tilbury, over the next weeks and months, according to Hans Mattheyer, commercial manager at OBA.

"This is the first substantial cargo of this type that Amsterdam has attracted," he said. "For OBA it's a scoop and shows we can serve co-fired power stations in the Netherlands just as well as other ports."

Mattheyer said OBA would continue to target the biomass market and hoped to win more such cargoes using its direct unloading system, which avoids the need for conveyors and offers ample covered storage. "It depends how the market develops, but we hope this is the first cargo of many to come," he said.

"We are trying to take a position in the biomass sector. We have covered storage alongside a deep draught, we have five sheds in total and we have the beauty of not needing conveyor belts to move cargo to the shed, we just use a grab, so it's a perfectly adequate position to be in for this market."

OBA handled just over 19mt (million tonnes) of bulk cargo last year, up from 18.6mt a year earlier.

"Agribulk was good," said Mattheyer. "It's not a growing market, but there was a shift in one importer's supply chain concept and how they view their shipping and logistics which enabled us to do more volume in the animal feed stuff market as they decided to use us more instead of other continental ports. The cargo still went to the same destination, it just came via Amsterdam so our volumes went up."

He said the coal business was relatively stable last year, with a slight increase. Long-term demand prospects were, he admitted, hard to determine with any exactitude.

"The largest market is Germany but coal has a bad image so it is now a swing supplier that steps in when there is a power generation gap, when there is limited energy being generated by wind or other renewable, for example," he said. "Germany already has lots of windmills and more are being installed, so it makes coal import demand predictions very difficult for our customers and us.

"But in the next few years I expect coal will remain a substantial part of Germany's fuel mix, but whether that means substantial increases in tonnage is difficult to tell. I think there will be an increase because they are phasing out nuclear output and domestic coal usage, but how big that increase will be I'm not sure, it's hard to predict."

OBA has invested heavily in its terminals at Amsterdam over the last three years and a fifth gantry crane was commissioned in October. Supplied by Chinese manufacturer ZPMC, it offers lifting capacity of 60 tonnes, coal handling capacity of 3,500 tonnes per hour and an outreach of 40 metres over water. A Nemag grab has been fitted with 38m^3 capacity.

This outlay followed the addition of a new shiploader, the refit of a rail car loader and the installation of a second conveyor system. This year a new CAT 385 machine with a 10m^3 grab has also been added which has been deployed to handle barges and to stockpile coal.

"We're always looking to increase capacity and we're now examining how to boost storage capacity at Main Terminal — it's a continuous process," said Mattheyer.

"We're making these investments to position ourselves for the next few years. All the new additions could give us a huge theoretical capacity — these investments add up to about 3–4mt per annum of extra capacity – but we're limited by storage space and the length of time parcels stay here. So our throughput capacity for discharge is huge, we can do about 70,000 tonnes per day, but after discharge it comes down to storage and logistics so that limits us because the coal needs to hit the market at the right time."

Terminal extension proves its worth

The extension of the deep-sea quay in the Kaloothaven in Vlissingen is finished. Zeeland Seaports started the work last year by preparing the terminal for the simultaneous handling of two large ocean-going vessels by the transshipment company OVET. Even before the official commissioning by the terminal operator, the extension is already proving its worth, judging by the photograph, which was taken recently.

The photograph shows the Teh May *(Capesize, foreground) and the* Artvin *(Panamax, background) from which bulk cargoes being are unloaded simultaneously.*

Flexible loading and storage solutions in a volatile market

Mobile shiploaders export sulphur from the Emirates.

Thanks to its many deep water ports, including Rotterdam (Europort) one of the largest bulk ports in the world, the Netherlands is extremely well placed to act, as it does, as a major transshipment hub for Western Europe, *writes Barry Woodbine, AUMUND Group*. Able to handle the largest ore carriers, including the recently launched *Berge Stahl* at 365,000dwt which, as its name suggests, transports iron ore from Brazil to Europe for distribution to the blast furnaces of Germany. In addition both steam and metallurgical coals represents an extensive tonnage destined mainly for the steel works and power plants of the Ruhr valley.

Extensive import and bulk storage facilities are provided in many locations along with outloading equipment to inland waterway barges and rail wagons for movement inland direct to clients but also to inland distribution centres such as Neuss

Mobile Samson surface feeder receives sulphur direct from road trucks.

(Dusseldorf) where Rheine barges are transshipped to bulk trains for final delivery to the customer. Nowadays coal is not the only solid fuel transhipped in the area as biomass, mainly in the form of wood pellets, is now being shipped in from Africa and from the USA where B&W Mechanical Handling Ltd. has already supplied two major shiploading systems with a third unit recently ordered. Wood pellet is shipped in large vessels to Panamax size, or even Post-Panamax, and therefore the deep water of the Netherlands major bulk terminals is imperative and many are now gearing up for this new commodity.

The expansion of these many coastal and inland discharge, storage and reloading facilities has provided a fertile base for the development of many technology providers and consultants specializing in the design of bulk terminals, expertise that is exported worldwide to large and small ports handling a variety of cargoes. Materials Handling Consultants (MHC) of Rotterdam is such a company with a long-term connection to B&W Mechanical Handling of England, famous for its mobile shiploader and stacking solutions, going back to year 2000 for the delivery of mobile shiploader and link conveyor systems for the Port of El Sokhna in Egypt handling fertilizers for export in Handysize vessels. More recent contracts for similar equipment have been delivered to Ras Al Khaimah in the Emirates and to Orascom for Sorfert Algerie handling sulphur and urea (nitrogen for fertilizer) respectively and incorporating mobile Samson™ feeding solutions enabling direct export from truck to ship without local storage or double handling. In addition, in the Emirates B&W has supplied Stormajor™ stacking equipment, comprising an integral Samson™ surface feeder with radial stacking boom, for the storage of sulphur granules at Dolphin Energy in a new 220,000-tonne dry bulk store linked to the liquid material granulation process.

Throughout history, the Netherlands has had close links to many territories. Even today it remains closely connected to many of these, such as the Dutch Antilles, only dissolved officially in 2010, including Curacao where there is a substantial oil refinery operated by Refineria ISLA Curacao BV that produces sulphur as a by-product of the refining process. Here again B&W is supplying another mobile shiploader to load the sulphur.

Mobile Stormajor stacker for sulphur granules.

Wood pellet exports from the Port of Panama City in Florida USA, delivered to the shiploader from local on-port covered storage by a radial and telescopic link conveyor.

However, this time, the contract includes a mobile link conveyor forming a flexible bridge between on-port storage and the mobile loader offering maximum flexibility without obstructing the general purpose berth with any permanent loading equipment.

Of course sulphur is the core component of sulphuric acid that is fundamental to fertilizer manufacture and, for example in the USA, sulphur from the oil and gas industry has now displaced all other forms in fertilizer production.

The key linkage here to the Netherlands specifically starts with the development of expertise; this know-how benefits the development of smaller ports and bulk terminals internationally, particularly in this case for the fertilizer industry which is a key component in food and biofuels production. Biofuels and biomass usage (wood chip and wood pellet in this case) are driven by both the cost of fossil fuels and government sustainability obligations for the reduction of carbon dioxide

Electrabel Suez Polaniec installation with Samson surface feeders arranged in pairs with each pair discharging to a separate collecting conveyor/elevator for 100% redundancy.

emissions, generally and particularly from power generation.

It is projected by the European Union that, even by conservative estimates, over 60mt (million tonnes) of wood pellets will be imported into Europe for burning in both dedicated power and CHP (combined heat and power) plants plus as top-up for existing coal fired plant. Whilst the bulk of this material will arrive in deep sea vessels and be transshipped in the same manner as coal it is rare to find new biomass power plants that are rail or inland waterway connected. In this situation the final leg of the biomass logistics chain is inevitably by road. For this purpose, B&W is supplying Samson™ surface feeder equipment to intake the material to the power plant. Recent orders in Poland (Electrabel Suez Polaniec power plant) and in the UK at Tullis Russell (CHP for Paper Plant) are typical, comprising in each a set of four units for the intake of locally produced biomass and for imported wood chip or pellet.

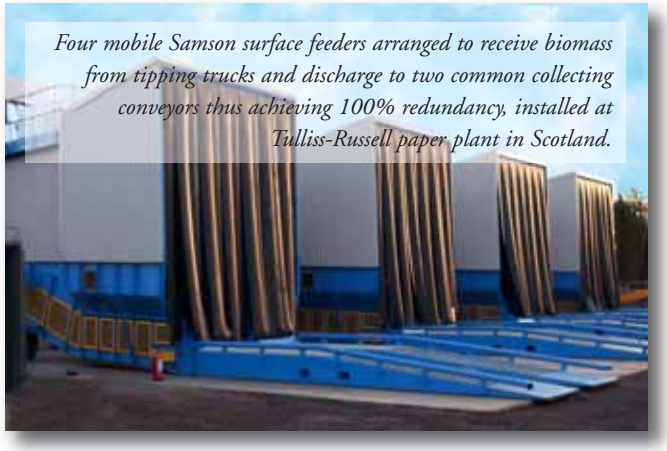
The key feature of all these machines is flexibility, enabling any suitable berth to be utilized for bulk exports using a B&W mobile shiploader or any suitable storage building to be converted for bulk storage using a B&W Stormajor™. Similarly the Samson™ surface feeder receives biomass without expensive deep excavations thus even in a fixed plant, such as a power station, these solutions retain inherent flexibility in location and easy relocation. In an extremely volatile market flexibility and economy are vital to minimize investment risk and take maximum advantage of short-term market positions.

Of course in any market local representation is a key factor. MATEC massagoed techniek, based in Amersfoort, has provided dedicated local support to B&W and others in the materials handling industry for 20 years, delivering a quality of service that is critical to B&W's customers.

Two of four Samson surface feeders for the intake of biomass to an existing Electrabel-Suez power plant in Polaniec, Poland.

About the AUMUND Group

The AUMUND Group is long-established and well-respected in continuous process industries delivering world-class materials handling and storage solutions at every stage in the raw material and fuel logistics chain and within the process plant. B&W Mechanical Handling Ltd of the UK was established back in 1966 to serve the shipping and storage sectors with particularly mobile and surface mounted highly flexible solutions that cross many industry sectors. AUMUND Fördertechnik GmbH, SCHADE Lagertechnik GmbH and B&W Mechanical Handling Ltd. are consolidated under the umbrella of the AUMUND Group along with AUMUND Logistik GmbH. In conjunction with the headquarters of the manufacturing companies, the global business is supported in eight locations in Asia, Europe, North and South America by own subsidiaries plus worldwide by an extensive network of agents covering four continents with equipment operating in over 100 countries.



Four mobile Samson surface feeders arranged to receive biomass from tipping trucks and discharge to two common collecting conveyors thus achieving 100% redundancy, installed at Tulliss-Russell paper plant in Scotland.

Belting good news from Dunlop

Dunlop's new factory site extension, depicted in red.

Despite the gloomy world economic situation, Netherlands-based Dunlop Conveyor Belting (part of the Fenner Dunlop Group) is enjoying unprecedented success. With an order book at record levels, they are forging ahead with a €6.4 million factory expansion programme.

The first objective is to install a new, 12-metre long 'double daylight' press, which is urgently needed to increase production. The press is due for delivery during June with the intention to be up and running by mid-August. The next stage is to install a steelcord production line for the first time ever in their Drachten production plant.

Although actual production of steelcord is not expected before January 2013, news of Dunlop's expansion is certainly raising eyebrows within the industry. "Many traders and end-users believe that we are far too expensive and that there is very little demand for high quality belts," says sales and marketing director Andries Smilda. "The fact that we are increasing our capacity because our order books are so full is hopefully making them realize that there are still a lot of companies out there who do actually want quality and are prepared to pay for it."

Focusing on quality

Apart from servicing an existing base of customers located in more than 150 countries worldwide, Dunlop employs a range of strategies in order to maintain growth. The historical cornerstone of competing on quality and lowest lifetime cost rather than price continues to be its primary weapon in seeking new customers.

"We focus a great deal on companies that have demanding applications such as premature wear or who are experiencing problems such as belt surface cracking due to ozone exposure," explains general sales manager, Les Williams. "Supplying belts that are resistant to the effects of ozone is particularly relevant to coastal based operations, where ground level ozone is more concentrated. The cracking causes pollution (spillage) leading to premature replacement even though the covers are not completely worn. We find that if we can impress customers by solving tough problems then they will more likely try our more 'standard' belts. The difficult part is to get the first order. After that, winning more orders is usually quite easy because they will have seen the advantages of Dunlop quality at first hand".

According to Williams, it is not just the quality of the product that helps to gain and maintain custom. "Our customers also get the very best technical advice and support. If we can save them money by using a different specification then we will. Many companies use belts that are 'over dimensioned' and especially covers that are thicker than they should really need because the belts they are using wear out too fast. I would say that many end-users do not always fully understand conveyor belt technology so for that reason, they do not realize that you may pay a higher price per metre initially but save a lot of money by not having to replace the belt two or three times in the same period."

The growing emphasis on safety, such as genuinely fire-resistant or anti-static belts, and rubber compounds which do not contain chemicals and substances that could potentially be harmful to people or livestock also appears to be working in Dunlop's favour.

Smelling the difference

Dunlop claim to be the first manufacturer to achieve full compliance with REACH (Registration, Evaluation and Authorization of Chemical substances) regulation EC 1907/2006. Although not commonly known by consumers, all European manufacturers (not just those who make conveyor belts) are legally obliged to comply with the regulations including the registration of potentially hazardous raw material elements listed within the regulations with ECHA (European Chemical Agency) headquarters in Helsinki. Perhaps unsurprisingly, many manufacturers have chosen to ignore this legal requirement, either completely or at least partially because of the impact on production costs.

A wide variety of chemicals are used in conveyor belt manufacturing such as accelerators used in the vulcanization process. One of the biggest concerns involves the use of short-chain chlorinated paraffin's (SCCP's) . Because of their category 3 carcinogenic classifications and their threat to the environment, REACH regulations stipulate that SCCP's should either not be used at all or only used on a strictly controlled basis. The unpleasant smell given off by some rubber products can be a strong indicator that chlorinated paraffin's have been used within the rubber compound.

Manufacturers outside of the EU, such as Asia for example, are not, of course, legally subject to the regulations and are therefore free to use unregulated raw materials and chemicals, even though they may be regarded as extremely hazardous within the European community.

A Dunlop lab technician testing chemicals.

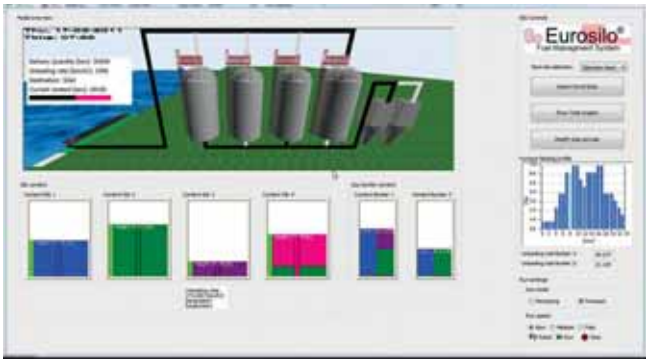
At your service

Dunlop is also expanding its network of Dunlop Service centres, having successfully established centres in Holland, Spain, two in Poland, two in Italy, Morocco and, most recently, the Canary Islands.

Eurosilo coal storage for Trianel power plant

First coal to be stored in the 100,000m³ Eurosilos

The Trianel coal-fired power plant will start up later this year, and received its first load of in May. The barges will be unloaded by two grab cranes and the coal transported to the silos by fully enclosed belt conveyors at a design capacity of 1,800 tonnes per hour.

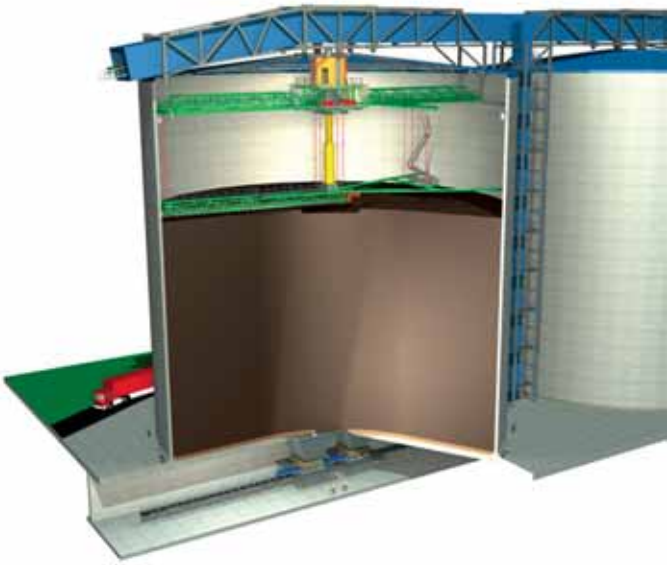


Key features of the Eurosilo® system

- ❖ no pollution or loss of calorific value;
- ❖ minimal footprint for large-scale storage;
- ❖ safest storage method on the market;
- ❖ maximum logistic control and flexibility;
- ❖ minimal operating and maintenance costs; and
- ❖ high availability due to minimal downtime.

Storage with a minimal footprint

As with many other resources, space is often a restraint for expansion. Open-air storage of coal also adds costly environmental drawbacks, as well as loss of energetic value. Enclosed storage in highly automated silos solves all these problems with the smallest possible footprint. The Eurosilo® system offers massive storage capacities — to date, up to 100,000m³. The coal is fed at the top of the silo into a telescopic chute through which it reaches the auger frame on the coal surface. Two main parallel screw conveyors distribute the material over the entire area of the silo, layer by layer, while the auger frame rotates. Reclaiming is done by withdrawing coal from the bottom and by inducing central gravity flow. The screw conveyors than rotate in reverse to feed coal into the formed core-flow.



Fuel management to maximize revenue

Most power plants can only operate at the highest efficiency rate by burning a designated coal blend. To prepare the right

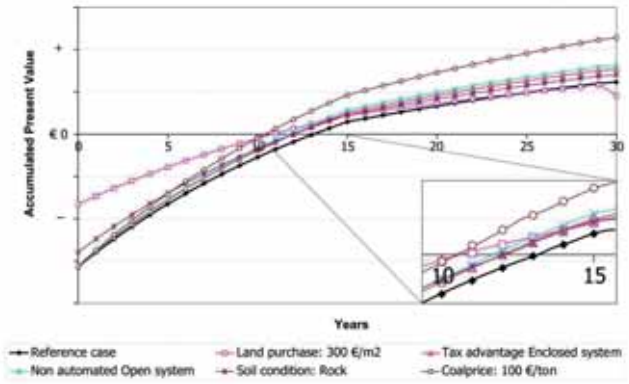


TABLE I

Eurosilo compared to alternatives

Criteria	Eurosilo	Dome (circular) storage	A-frame
Footprint	The most compact system	2 x larger footprint	3 x larger footprint
Filling	Homogenized by the equalizing auger system	Segregated due to the central loading spot	Segregated due to the central loading spot
Operation	Fully automated	Partly automated	Partly automated
Oxygen access	Only from the top surface	Severe, from all sides	Severe from all sides
Nitrogen purging	Possible through piping system in the bottom	Not possible	Not possible
Structure	Simple slip formed concrete silo	Complex concrete wall	Wide span shed
Coal oxidation monitoring	Continuous monitoring by CO scanning	Only by infrared	Only by infrared
Fuel Management	Fully automated	Partly automated	Partly automated
Dust emission	NO	NO	NO
Percolation pollution	NO	NO	NO

blends at the right time, ESI Eurosilo's Fuel Management System can be of great help. This software visualizes the different grades of coal in multiple silos and enables the operators to plan the coal blending in the optimal way. The boiler requirements and the coal characteristics are the input data of the Fuel Management System as well as the actual storage levels. By reclaiming the respective coal grades from each silo in a controlled and adjustable rate, the optimal coal blend can be prepared.

Lifecycle assessment

To ensure long-term competitiveness, it is vital to achieve cost-effective compliance with environmental regulations and self-imposed policies. Environmental Management Accounting (EMA) integrates environmental, operational and maintenance issues into the financial analysis. An integrated lifecycle assessment, as recognized by the European Community, offers a complete evaluation. Following this approach, the investment in Eurosilo® systems comes with a payback period of just 10 to 15 years.

So it is worth checking and comparing not only the investment cost but also the operating and maintenance costs involved.

Eurosilo compared to alternatives

The three main methods of enclosed storage are, besides the Eurosilo system, the dome (circular) and A-frame (longitudinal) storage system. Table I shows a comparison between the different kinds of enclosed storage methods.

Safer Moorings with Lankhorst Ropes

Lankhorst ropes mooring.

Winner of the 'Innovation in Ship Operations' award at the recent Seatrade Awards, the A3 splice is lighter, stronger and smaller than traditional splices. Moreover, the splice greatly improves the ease of rope handling safety during mooring and towing.

The efficiency of the A3 splice is 100%, which means there is no loss in rope strength due to splicing. It makes rope handling easier as there is no doubling of the rope or splice stiffness in the mainline, commonly experienced with traditional rope splicing. And, by reducing the weight and size of the splice, the heaviest part of the rope, the A3 splice enables single person rope handling.

Safer dry cargo moorings

The primary risk to crew and vessel safety from mooring ropes is the rope breaking during mooring operations. A rope snap can occur when either the wrong rope is used or the rope is poorly maintained. Lankhorst Ropes is committed to working with dry cargo vessel operators to improve mooring rope safety. For example, it strongly recommends that operators use the same rope for all mooring lines. Failure to do so increases the load on the mooring line with the lowest elongation properties.

Better Rope Management

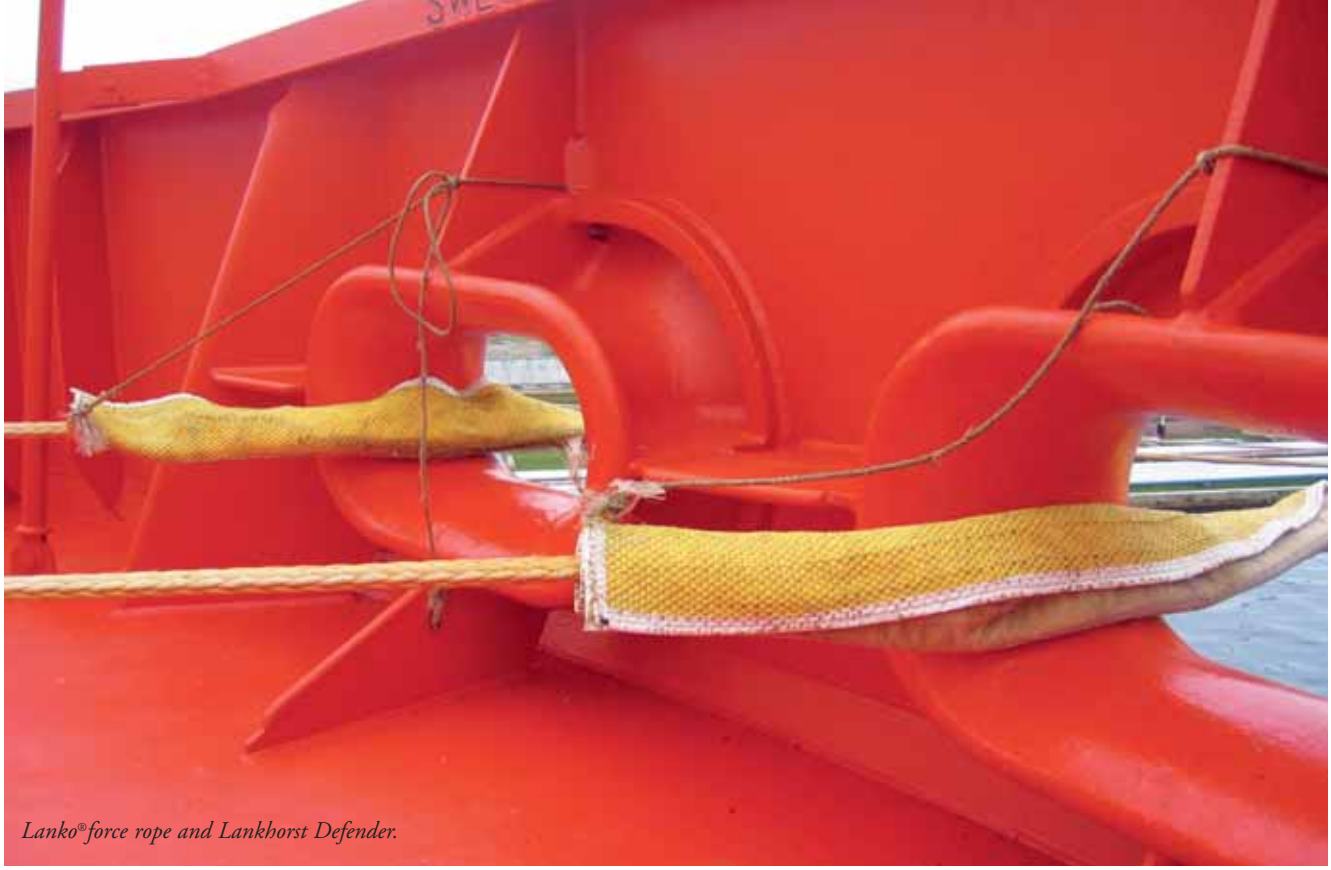
Lankhorst's mooring ropes are each given a unique identifier, comprising a tracer with the rope's unique code running the full length of the rope. The unique serial number is also clearly visible in the neck of

Part of the Royal Lankhorst Euronete Group, Lankhorst Ropes is a leading supplier of high-performance synthetic ropes and steel wire ropes for mooring and towing. The ropes are produced in accordance with Oil Companies International Marine Forum (OCIMF) and ISO standards, and are designed to provide an optimal combination of breaking strength, life-time safety and ease of handling. The company's global network of stockpoints includes Bilbao, Brisbane, Durban, Fujairah, Houston, New York, Los Angeles, Panama, Rotterdam and Singapore.

Splicing Innovation

With the trend towards fewer ship and tug crew members, Lankhorst has developed the A3 rope splice.

Lankhorst mooring rope on mooring winch.



Lanko® force rope and Lankhorst Defender.

each splice eye. The tracer and serial number correspond with the factory certificate number for each rope.

"The ability to identify the rope allows better rope maintenance. If the ropes are poorly maintained then the port vetting inspector can refuse the ship entry to the port — and the ropes must be replaced," says Hans Pieter Baaij, manager maritime division, Lankhorst Ropes. Rope identification allows ship operators to maintain a log of when the rope was first used and the number of moorings it has been used for; all of which can be shown to the port vetting inspector.

A further benefit to vessel operators of being able to identify the rope is that often ropes are delivered in batches, however, not all the ropes are used immediately or are put to work at the same time. Without the ability to identify and record each rope's use the operator may have to replace all the ropes delivered in the batch rather than only those that have been used.

Of course, the rope identifier also makes it easier for different crews to identify and reorder mooring ropes of the same type.

Residual rope strength

Ideally dry cargo ship operators want to know that the rope is safe and be able to show the residual strength of the rope to the port vetting inspector. Recently Lankhorst Ropes has gone a stage further and is now providing predictive data for mooring rope life. Baaij adds, "When a rope is new its performance is known. However, if the rope has been in service for a while it will have lost some of its strength. Over time Lankhorst Ropes has performed residual strength rope tests and correlated the results with the mooring log, this is then used to predict the residual strength for in-service ropes, giving an indication of the remaining mooring life of each rope.

"It also helps dry cargo vessel operators optimize their rope inventory management getting the maximum life from each mooring rope."

RC-Inspection B.V. in Rotterdam

RC-Inspection b.v. was established in 2006, focusing on the marine survey market. Since that time, it has expanded, and now has a ferroy-alloy and a coal-inspection department.

The coal-inspection department provides expertise on the handling of coal cargoes, coal sampling and analyses. It also provides solutions related to the specific demands of coal technologies to several international coal traders, as well as consumers of coal and/or coal products.

The senior staff members are RC-Inspection have over 40 years of experience in the coal-inspection and coal-analysis fields. It specializes in visual inspections, sampling and analysis of all types of steam coal cargoes, and steam coal from Colombia and Russia, as well as all other kinds of coal products.

The RC-Inspection coal team is very familiar with all possible problems relating to the stockpiling of Colombian steam coal. It also boasts great expertise in the cargo temperature of Colombian steam coal and stockpiles of coal from other origins.

RC-Inspection has co-ordinating headquarters Rotterdam, as well as satellite offices all around the world, from South Africa to Ukraine, China, Belgium, Russian Baltic ports as well the Russian Black Sea area. RC-Inspection is able to provide the most professional services to coal traders, shippers and coal consumers such as power stations and small industries.

RC-Inspection staff are available wherever they are needed to support coal trading activities. For example, they are in weekly attendance at North German ports for coal shipments.

Marcor Stevedoring B.V., unique shoreless facility

In the competitive market of (un-)loading and storage of dry bulk commodities in Rotterdam, Marcor Stevedoring B.V. is a steady and respectable player.

The company has been present in the port since 1997 and is still eager, flexible, efficient and reliable; furthermore service and quality are at a high level.

Every year, in the Port of Rotterdam, Marcor handles roughly 6mt (million tonnes) of dry bulk commodities. Of said volume, more than 50% is agribulk, mainly from South America.

The remaining quantity consists of mineral commodities, such as magnesite and bauxite from China, ferro alloys from South Africa and Russia, as well as steel scrap as export from Rotterdam. A range of other commodities are also handled by Marcor, such as wood pellets, sugar and salt.

The way Marcor operates is rather unique, as it does not have a shore facility at its disposal. Despite this, Marcor services its customers at a high service level, which includes storage facilities. It does this by making use of its owned storage vessel, *Marcor Bulk I* and rented barges, both with a quality level above market standards.

Any customer looking for high-quality storage and a minimum risk of contamination is in safe hands at Marcor. It is a 'given' that Marcor will preserve the identity of the products it handles, and that it will segregate them appropriately.

Sustainability is, for obvious reasons, a part of the philosophy of Marcor; as an example, the company uses low-sulphur gasoil.

The majority of vessels are handled midstream, in particular, the Waalhaven or Botlek basin.

It is also possible to handle vessels at the Caland Canal and Europoort; in other words, throughout the whole of the Port of Rotterdam.

For the handling of vessels and commodities, Marcor has four floating cranes. In addition, two floating weighing towers are available for the handling of agribulk commodities only.

These units are all of recent date and are well maintained, to avoid unexpected interruptions — delays — and thus extra costs. As a result of regular maintenance, Marcor is able to guarantee the smooth handling of both cargo and ship.

The pontoons of the six floating units are of such a size that they can withstand even extreme weather circumstances. The equipment is able to handle cargo from any type of vessel up to Capesize.

The fleet of four floating cranes, consists of two, more or less identical, 36-tonnes lifting capacity Figee cranes. These cranes

easily reach a production rate of 800tph (tonnes per hour) to 1,200tph when unloading Panamax type vessels.

The other two cranes have a lifting capacity of 25 tonnes (NDC built) and 16 tonnes (Figee built).

A regular Panamax vessel with 60,000 tonnes agri bulk is able to set for sea again in 48 to 60 hours.

Of course, Marcor lives up to the various prevailing regulations, such as ISPS, BLU code and is awarded with GMP+, Cert ID and ISO certificates.

So also from that angle all is under control.

The experienced personnel which are all part of the Marcor family, are all well skilled, professional and motivated, and they all talk the same language, also in terms of quality, care, safety, speed etc.

During the past twelve months Marcor took in 9 new and young employees, bringing the total FTE to 62 at present; and in addition 3 operational trainees. The 62 FTE is split up in 5 technical employees, 51 operational and 6 for planning and management.

Marcor is closely working together with other service providers, such as ship agents, controlling companies, forwarding agents, barge and coaster operators, to get the job done in a smooth and efficient way. All this in the interest of those involved in commodities and ships.

ZHD Stevedoring on the move

ZHD's new self-propelled 50-tonne floating crane further expands ZHD Stevedoring's crane capacity and will be operational in Rotterdam, Dordrecht and Moerdijk.

In order to further strengthen its position in the Rotterdam Rijnmond area and keep on serving its customers in a modern and professional way, some 18 million Euros have been invested at ZHD Stevedoring throughout the last 18 months. The Rotterdam based family owned, private company with more than 40 years of stevedoring experience, has been able to continue the strong growth from 2010 into 2011.

Milestones in 2011 were:

- a new mobile Gottwald crane (HMK 6407B, High Tower) – operational in Dordrecht since April 2011;
- upgrading loading and discharging facilities for waste-materials at Moerdijk — May 2011;
- a new 150m-long quay wall (Mallegat Quay Dordrecht) — opened in June 2011;
- 20,000m^2 of new developed storage area at Dordrecht — opened in December 2011; and
- a new 50-tonne self-propelled floating crane — expected to be operational as of July 2012.

Although forecasts for 2012 are still uncertain, ZHD Stevedoring has decided to keep on investing in 2012. In early 2012, ZHD Stevedoring started the preparations for the construction of covered storage in Dordrecht. The demand for covered storage from both existing as well as potential new customers has been high in 2011, says Leo Lokker, commercial director at ZHD Stevedoring.

"By investing in covered storage facilities, we expect and trust to serve our customers even better. The same goes for our new self-propelled 50-tonne floating crane which is now under construction at our terminal in Dordrecht."

This new self propelled 50-tonne floating crane further expands ZHD Stevedoring's crane capacity and will be operational in Rotterdam, Dordrecht and Moerdijk (see artist's impression above).

As of 1 July 2011, the municipality of Dordrecht and the Rotterdam Port Authorities have entered into an an agreement to join forces. Under this agreement, the Port of Dordrecht has become an integral part of the Port of Rotterdam with all its benefits. Although already active in Rotterdam for many years, by means of its self-propelled floating cranes, ZHD Stevedoring recognizes the advantages being part of the Port of Rotterdam. In close co-operation with the Rotterdam Port Authorities, ZHD Stevedoring is looking into possibilities and has started the negotiations to reclaim a further ten hectares of land at its terminal in Dordrecht. These ten hectares will be connected directly to the water with a 750m new quay wall with 9.45m draught, able to accommodate vessels up to approximately 40,000 tonnes.

Apart from handling products like minerals, coal, petcokes and seasonal products as salt, ZHD Stevedoring has been focusing on handling and storage in niche markets such as steel-scrap, biomass (woodpellets) and waste materials. Special services in

the field of breakbulk and the handling of bulk in/from containers (a.o. minerals, scrap) — a global trend which will grow in the future — are not unfamiliar to ZHD Stevedoring and complete the handling portfolio of the stevedore. With its steel terminal in Moerdijk, ZHD performs handling of coils as well as other steel products, such as wire-rods, steel bundles, etc..


Overview of Dordrecht


Salt transhipment - Rotterdam

Rotterdam-based ZHD Stevedoring is a family owned, private company with more than 40 years of stevedoring experience. ZHD is active in the total so-called Rotterdam-Rijnmond area, with terminals in Dordrecht and Moerdijk, but also with its (self-propelled) floating cranes in Rotterdam. The company offers services in bulk, neo-bulk, steel products, coils and container handling, including warehousing and storage (open, covered and floating). ZHD has both road-mobile and floating equipment and is able to handle all kinds of products. All ZHD terminals are able to work round the clock (24/7) and are ISO and ISPS certified. Furthermore, ZHD also has water-related sites available for further (industrial) development.

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BigLift Shipping Super flyjib installed on 'Happy Buccaneer'

Happy Dynamic *sailing with open hatches.*

BigLift Shipping is a heavy lift shipping company, specializing in the worldwide ocean transportation of heavy lift and project cargoes, with a history going back to 1973. BigLift strives for innovation, excellence and operational reliability, adhering to high standards of health, safety, environment and quality and operating to strict time schedules.

A great variety of heavy and over-sized cargoes of long-standing clients in the oil & gas, mining and power generating industries, is carried worldwide by its modern fleet of 13 specialized heavy lift vessels. All vessels are equipped with their own gear with capacities ranging up to 1,400 (metric) tonnes and some with ro-ro capability for loads up to 2,500 tonnes. Furthermore, five multi-purpose heavy lift carriers with lifting capacity of 2 x 400 tonnes and deadweight of 17,250 tonnes were recently added to the fleet. Two more vessels, with lifting capacities up to 1,800 tonnes in tandem, will join in 2013.


Super flyjib on Happy Buccaneer.

A team of dedicated, highly skilled professionals, with years of experience and the mindset to think creatively, enables the company to offer innovative and safe solutions for clients' technically and logistically complex requirements. Careful planning, engineering, co-ordination and supervision to ensure safe transportation are all in a day's work. BigLift is well-known for its reliability, providing fast and above all safe transportation," says BigLift managing director Arne Hubregtse. Another strong point of BigLift's fleet is that the *Happy D-* and *R-*type vessels can sail with open hatches, enabling them to transport much higher cargoes. Other vessels must place such cargo on the weather deck which may cause stability issues.

Flyjib

One of the most successful vessels in the BigLift fleet is the *Happy Buccaneer* which is outfitted with two 700-tonne heavy lift mast cranes. At the end of 2011, a 17m super flyjib was successfully installed onto one of the *Happy Buccaneer*'s cranes, thereby increasing lifting height and outreach by 50% to, respectively, 59m above deck and 55m radius. With the super flyjib mounted on the *Happy Buccaneer*, the crane boasts a maximum load of 350 tonnes at 35m outreach and a 250-tonne load at a 50m outreach. The flyjib complies to the requirements of Lloyd's Register as specified in the Lloyd's 'Code of Lifting Appliances in a Marine Environment'.

Dilemma

Originally, the Huisman-designed flyjib was to use regular steel wire rope stay cables. During the design process it became apparent that the total weight of the steel wire rope stay cables could be a problem, not only during the installation process of the flyjib on board of the *Happy Buccaneer*, but also for a job it was designed for — a very specific lifting job for a major company from Australia. Two modules of 315 tonnes each had to be placed on the quay side at 32m distance from the vessel. The total weight of all steel wire cables would be more than 5,000kg, which would have to be man-handled during transport, installation and decommissioning of the flyjib. Needless to say, this weight would require extra equipment (cranes), time and costs. Huisman invited Dutch company FibreMax to come up with a lightweight alternative to the steel wire stay cables. This manufacturer of precision tension members from synthetic fibres delivered a complete set of lightweight aramid fibre stays.

Show of strength

Neither Huisman nor Lloyd's had any experience with lightweight aramid stays in this kind of application. So, FibreMax had to prove that it was able to produce these cables prior to the actual delivery of the stay cables. Lloyd's Register witnessed the complete production process from start to finish, and part of the certification process was a break-load test on a sample cable. Lloyd's 'Code of Lifting Appliances in a Marine Environment' stipulates that steel wire rope has to have a safety factor of three in such applications. Since no specific rules exist for aramid, it was decided that an extra safety margin should be added for the breaking strength of the aramid stay cables. Instead of 7,200kN for the steel wire rope version, the aramid stay cable had to have a breaking strength of at least 9,000kN. The test was successfully performed on a 13,500kN test bench in the Netherlands. At an astonishing load of 9,553kN the cable was still in one piece. According to FibreMax this result proved that due to the unique endless winding technology, it is possible to load up the aramid cables to 90% of the breaking strength without any problem.

In the meantime, the *Happy Buccaneer* has successfully finished her first super flyjib lifting job in Australia, proving BigLift is key in heavy lift. DCi


Super flyjib on Happy Buccaneer.

Continued success for Demag Cranes on the Mississippi

Associated Terminals LLC in Louisiana/USA is expanding its fleet of machines with its seventh Gottwald floating crane. By the time this issue is printed, a Generation 5 Model 8 crane variant will have started commercial operation and will be one of the highest performance floating cranes handling bulk materials on the Mississippi. Currently, six Gottwald floating cranes supplied by Demag Cranes are in operation with Associated Terminals LLC ensuring smooth, efficient cargo handling.

"On the Mississippi, in particular, where quay facilities are few and far between, we intend to use the new Gottwald floating crane to improve our versatility in terms of midstream cargo handling," explained Gary Poirrier, director of Associated Terminals LLC. "In view of a steady increase in the volume of freight coupled with ever greater pressure to reduce costs, our customers require rapid, efficient cargo handling. In order to achieve high capacities and excellent handling rates, we are investing in reliable handling equipment made by the world market leader in floating cranes based on mobile harbour crane technology."

Significantly increased cargo handling capacities

Associated Terminals LLC uses floating cranes in midstream operation between mile markers MM 56,8 and MM 141 on the lower Mississippi. The G HPK 8400 B floating crane, a variant of Model 8, will be used for the efficient transshipment of bulk materials including ores, coal, grain and fertilizers from larger seagoing vessels in size up to 1,150ft to inland waterway vessels.

Most powerful 63-tonne grab curve

The G HPK 8400 B floating crane can cope with heavy loads up to 100 tonnes (110 US tons) and has an impressive 63-tonne (69 US tons) grab curve for handling bulk materials. Depending on the operating conditions, this crane can handle as much as 1,850 tonnes (2,040 US tons) of bulk materials per hour.

Quick and easy bridge passage

When it comes to handling cargo midstream, it is mobility and flexibility that count. A crucial advantage of Gottwald cranes is that they do not have to be dismantled or tilted to pass under the bridges on the Mississippi. They can pass under bridges with their construction intact, which makes valuable savings in terms of time and expense.

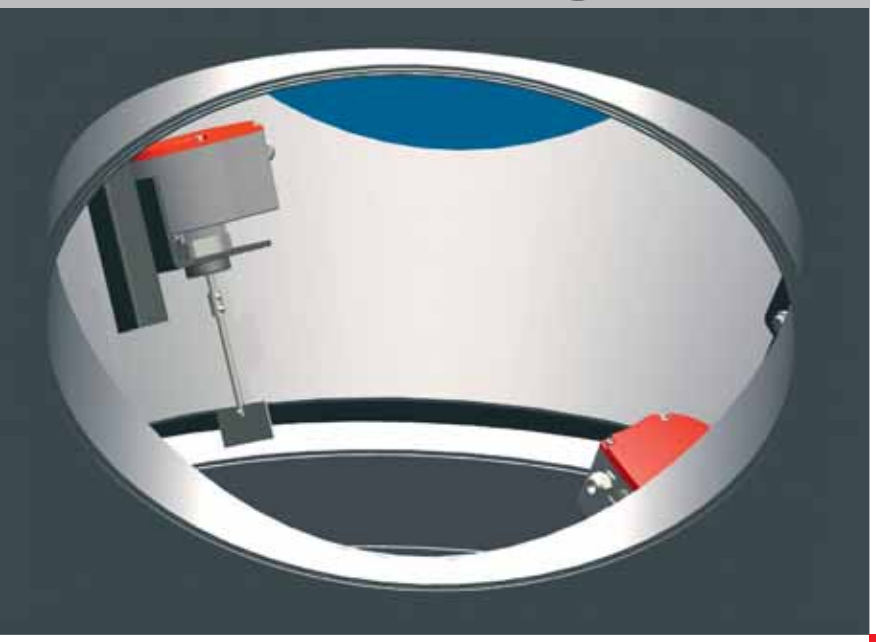
Continuous expansion of Associated Terminals LLC

It was back in 2006 that Demag Cranes supplied the first floating crane to Associated Terminals LLC and it is still operating efficiently on this stretch of the river. In the intervening years, the enterprise has purchased a further five G HPK 6400 B floating cranes. Those cranes can be used alongside all the vessel sizes commonly in use on the Mississippi and achieve handling rates of up to 1,000 tonnes (1,100 US tons) per hour. To meet the demand for faster, more efficient handling of increasing freight volumes, the new G HPK 8400 B will, in future, move up to 1,850 tonnes (2,040 US tons) of bulk materials per hour. Bob Histon, Demag Cranes' representative for North America, elaborated: "We are partners of enterprises that aim to define benchmarks in their industrial sector. Against this backdrop, the repeat order from Associated Terminals LLC will enable our customer to achieve his targets even more effectively using the very latest in handling technology."

Total of 15 Gottwald floating cranes on the Mississippi

This, the latest investment by Associated Terminals LLC, brings to 15 the number of Gottwald cargo handling cranes working on the Mississippi from May on. Another G HPK 8400 B will follow in September. The sales and service facility of Demag Cranes, located in Tampa, Florida, provides customer-orientated support and on-the-spot project management. The experienced team working for Bob Histon, Demag Cranes' representative, maintains no fewer than 200 cranes in North America and provides made-to-measure customer services which are also tailored to the specific needs of terminal-free midstream handling.

SMB Shiploading



SMB Group
best solution

Highlight of the month

All Shiploaders/Reclaimers designed and manufactured by SMB include a wide range of safety features.

- Anti-collision systems
- Firefighting – extinguishing systems
- Overflow/overfilling devices
- Lightning protection, Earthing
- Storm locking
- Acustic Signals

Ships all over the world are being loaded with know-how from SMB

All safety features are designed and implemented by SMB.
Depending on the product being loaded a fire-fighting-system may be required.
The design of this system is customized to ensure maximum efficiency.
For the safety of the ships or other mobile systems on the jetty the installation of the SMB anti-collision system could be considered.

All systems are equipped with standard devices for Lightning protection, storm warning and storm locking and all possible acoustic signals.
The material transfer points are all equipped with the MBA level switch (see picture) – this is the most reliable and robust way to avoid overfilling and spillage of material.

MBA level switches control the distance of the loading spout to the material in the ship.

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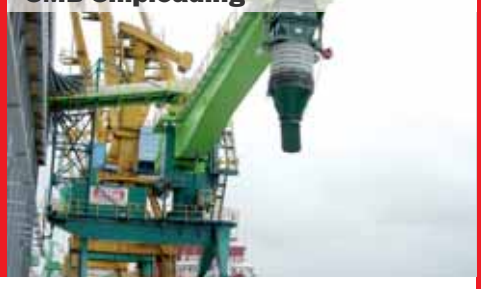

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Freight handlers flatten dust

The largest private stevedoring company in the Ukraine has significantly improved air quality and reduced dust-related complaints at the country's deepest port, a busy marine terminal where ocean-going vessels have 24/7 access to services. The key is a mobile dust suppression unit designed to produce massive numbers of tiny water droplets that are specifically sized to attract dust particles, launching the atomized mist with a powerful oscillating fan that can cover nearly half a football field from a single location.

Situated on the Black Sea at Adzhalik Bay, about 24km south from the city of Odessa, TIS (TransInvestService Ltd) specializes in transshipment of coal, grain and fertilizers in bulk quantities. With the opening of its new coal handling berth at the end of 2008 — and a terminal that has the estimated capacity to move 10mt (million metric tonnes) per year — the facility greatly increased its already significant potential for dust.

"With the ability to handle such large quantities of dust-generating materials, we felt that some form of suppression had become a necessary element of port management," observed Alexey Shlapakov from TIS. "We have specialized equipment for many of our operations, and we started doing some research on the available technologies for dust control. After comparing

features and benefits, we specified a DustBoss model DB-60," he said.

The DB-60 is the largest design in the product family from Dust Control Technology (Peoria, IL), a specialist in this growing niche industry. The firm currently provides a number of electric models as well as hydraulically-powered units that are mounted on a frame for easy transport with a skid steer.

"Dust and odour management is becoming more critical all the time," commented the company's CEO, Edwin Peterson. "What used to be considered an option a few years ago is now frequently a mandatory component of project planning," he said. "Tighter regulations and an overall enhanced environmental awareness are both contributing to that trend."

The facility

The port has an average depth of about 14 metres and a quay wall that is more than 1,000 metres long. It features two shiploaders capable of handling 950 tonnes an hour and a portal crane with a lift capacity of 16 tonnes.

Situated on 500 hectares of land, the TIS facility has a loading capacity of up to 25,000 metric tonnes of coal per day, with warehouse storage for about 270,000 tonnes. It can also handle as much as 35,000 metric tonnes of grain per day, with warehouse storage for approximately 380,000 tonnes, and is equipped to load up to 25,000 metric tonnes of fertilizers per day, with warehouse space for about 270,000 tonnes. Company officials estimate that as many as 1,000 trucks can be loaded in a single day, or up to 250 railcars.

With that kind of capacity, TIS needed a dust control solution to match. The DB-60 is built around a powerful 25HP motor that generates 30,000 CFM, giving the unit a reach of 200 feet or more and allowing it to cover as much as 21,000 square feet of area (1,950 square meters). It features 30 brass nozzles developed to atomize droplets to the

at Ukraine port terminal

optimum size for dust suppression — between 50 and 200 microns — and can be customized to suit specific particle sizes and operating conditions. The high-performance design includes an optional booster pump that delivers up to 200PSI of pressure from a supply hose.

"We noticed the effects of the DB-60 right away," Shlapakov continued. "The air quality was noticeably improved, with a definite reduction in fine airborne particles. We soon found that dust-related complaints had also dropped. The unit has proven its value in service, under some very difficult conditions, and has met all of our expectations."

TIS is the Ukraine's largest private stevedoring company, located at the nation's deepest freight harbour. Situated on Adzhalik Bay, which never freezes, even the largest ocean vessels have unrestricted access to services around the clock. The firm is equipped with grab loaders, 11km of conveyors and other specialized equipment, earning it a reputation for rapid turnaround times.

Dust Control Technology is a renowned provider of effective dust and odour control solutions for demolition, construction, recycling, transfer stations, composting facilities, mining operations, wood processing and scrap industries. The company's Dust Boss® product line helps reduce labour costs, freeing up manpower for more important tasks. The automated units also use less water than hoses and sprinklers, with some customers realizing payback in less than six months and netting an annual cost savings of more than $50,000.

BEUMER systems efficiently load bulk material

Secure loading with minimal effort

As a major supplier of equipment for the loading of dry bulk cargo, the BEUMER group designs, manufactures and installs complete systems for loading bulk material and bags on ships as well as to lorries and trains. These systems meet the individual needs of the customer. Using sophisticated technology, bags and bulk material can be loaded and unloaded virtually dust-free, with fewer personnel and minimal effort.

Bulk material such as building materials, coal, cereals, fodder, mineral compounds or products of the chemical industry are often loaded at the production location in suitable vehicles and transported as bulk cargo via motorways, railways or waterways to other locations. Loading and handling systems designed specifically for the product and adapted to the installation conditions must be available. When dimensioning these systems, characteristics of the goods like bulk density, product temperature as well as flow properties or bag weight are to be taken into account. Other important criteria are the loading capacity, weight and volume monitoring and dust-free, environmentally friendly operation.

Rapid and dust-free loading

Bulk transporter vehicles can be loaded quickly and free of dust with the BEUMER bulk loading head, which has been designed according to the double-wall system. The material inlet and the dedusting unit are separated from each other. The bulk loading head is connected to a dedusting air system. The hoist equipment consists of a powered winch. When placing the bulk loading head on a filler neck, the sealing cone is lowered and opens the outlet spout. The fill level can be adjusted using a fill level meter in the vehicle. In order to balance out any minor positional deviations of the vehicle, the bulk loading head can be moved laterally during placement.

If the BEUMER bulk loading head is equipped with an integrated compressed-air filter, it can operate independently from centralized dedusting systems and dust transporting devices. The dust removed from the bulk transporter vehicle is then fed back into the material flow during loading. An externally installed fan is used to suction off the dust.

Mobile loaders for bulk transporter vehicles

Stationary bulk loading heads are often insufficient for large loading capacities, as for example in the cement industry. It should be possible to move the bulk loading head to each filler neck of the vehicle. For this reason, BEUMER developed mobile loaders that can be adapted to the length of the vehicle.

If open vehicles are to be loaded dust-free, various telescoping loading devices are available. When the loading process starts, the bulk loading head is lowered to the floor of the vehicle and the material feed is switched on. The bulk loading head is raised automatically by a fill level switch in the lower dedusting hood, which is activated by the rising material. The edge of the dedusting hood always rests on the material cone while it rises, so that no dust can escape.

and bags on ships, lorries and wagons

Efficiently load bags

In order to load bags on lorries and wagons, BEUMER co-developed adjustable loading machines. For example, BEUMER offers side and rear loading machines, as well as machines that load from above in stationary and mobile designs for loading lorries. For loading wagons, there are machines in multiple-part and three-dimensional design, and for lorries and wagons, there are machines with and without ramps, rail-mounted or rubber coated.

Fully automatic bag loading

With the BEUMER autopac® 3000, loading and palletizing system, bags can be loaded on lorries automatically. The machine simultaneously loads and palletizes bagged goods such as cement, limestone or gypsum — without needing pallets. Therefore, it is suitable to be used in countries where no pallets are available. In rows or stacking patterns with a pre-selected number of layers, the BEUMER autopac® 3000 works quickly and effectively achieving a performance of up to 3,000 bags per hour. The machine can load bags in double patterns of five, six and ten bags. To secure the loads, five-bag patterns can be placed at both ends of the loading space to act like the walls of the lorry. The bags are handled gently, which proves to be primarily advantageous when loading paper bags and woven fabric bags, because it prevents the bags from breaking from the outset. An electronic counting device ensures that the lorry is not loaded too lightly or too heavily.

The BEUMER autopac® 3000 does not operate on a pneumatic and hydraulic drive unit, because this can lead to leakages and therefore to soiling of the load. Also, primarily in warmer countries, these energy-intense drive units require additional cooling. Therefore, for a high level of availability and efficient operation, electromechanical components are used.

Fewer personnel are required when using BEUMER systems to load bags into lorries, wagons and ships. When loading bags, for example, the system merely needs to be moved into the wagon or ship's cargo bay. Then, the bags need to be taken from the conveyor and positioned. If bulk material is being loaded on ships, the bulk loading head only needs to be moved so that the material is evenly distributed. Loading bags with the BEUMER systems is especially efficient in cases where a large number of personnel would be required. This is the case, for instance, in newly industrializing countries, in which the transshipment of bagged bulk goods and labour costs are increasing.

Terex introduces Terex port solutions at TOC Europe

Terex Corporation is introducing Terex Port Solutions at TOC in Antwerp, which is taking place from 12–14 June this year. As part of the Terex Material Handling and Port Solutions segment of the company, this group will unite Terex and Gottwald Port Technology as a single source for serving customers operating in the port business. Both are renowned global suppliers in the port equipment industry and are renowned for world-class quality, innovation and service. As part of this transition to a cohesive market vision, Gottwald Port Technology products will be branded Terex® Gottwald.

"Both Terex and Gottwald are well recognized as significant suppliers to the port industry, and we can best serve customers as a unified organization that is committed to a single purpose and identity," says Klaus Peter Hoffmann, leader of Terex Port Solutions. "By moving forward together, we believe Terex Port Solutions will offer more innovative products and services that aim to provide the highest return on investment, allowing our customers to be more profitable."

The Terex Port Solutions portfolio includes several familiar and respected product lines including the former Noell, Fantuzzi, PPM and Reggiane brands alongside the extensive portfolio of Gottwald products. The range includes ship-to-shore and mobile harbour cranes, straddle and sprinter carriers, automated guided vehicles and stacking cranes, rubber tyred and rail mounted gantry cranes, reach stackers, empty and full container handlers, as well as general cargo lift trucks. These products offer a wide range of cost-effective drive systems, including environmentally compatible electrical solutions. No other company in the port industry offers more ways to move cargo quickly, safely and efficiently, automated or non-automated, with less downtime along with strong returns on investment.

Terex Port Solutions also offers a range of software and services that are designed to improve the efficiency of cargo handling and overall terminal management. The group offers complete systems for loading and unloading, transport, handling and storage of containerized and bulk cargo.

"Expanding our port equipment solutions allows Terex to develop deeper partnerships with our customers, so tasks can be completed more cost effectively," concludes Hoffmann.

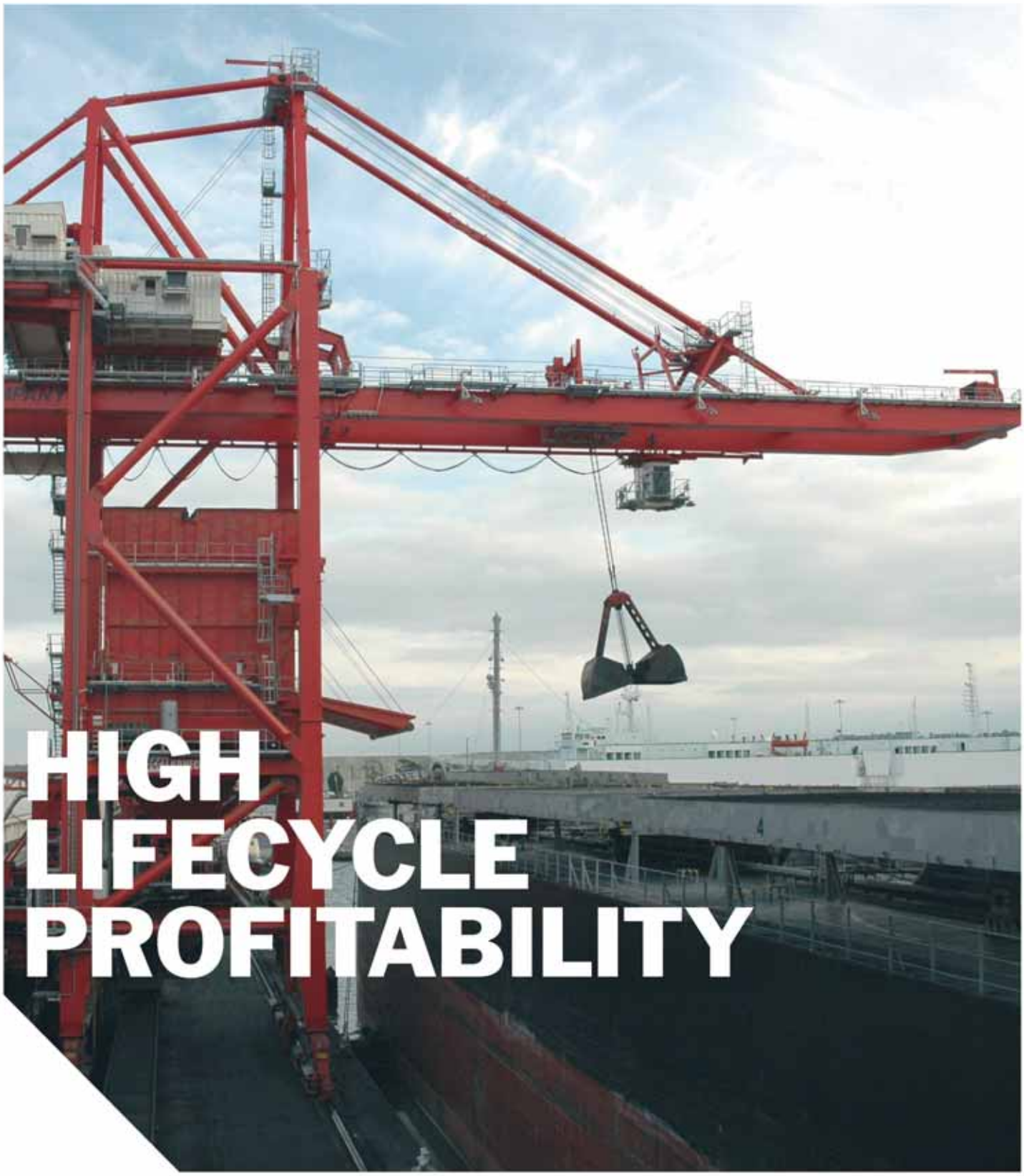
About Terex

Terex Corporation is a diversified global manufacturer reporting in five business segments: Aerial Work Platforms, Construction, Cranes, Material Handling & Port Solutions and Materials Processing. Terex manufactures a broad range of equipment for use in various industries, including the construction, infrastructure, quarrying, manufacturing, mining, shipping, transportation, refining, energy and utility industries. Terex offers financial products and services to assist in the acquisition of Terex equipment through Terex Financial Services.

Siemens unveils ultrasonic controllers

Siemens Industry Automation Division presents Sitrans LUT400 series ultrasonic controllers with one-millimeter (0.04-inch) measuring accuracy. These new controllers offer the highest accuracy available on the market and ensure consistently precise measurements. The compact, single point ultrasonic controllers continuously monitor and control level in liquids, solids, or slurry applications for a wide range of industries.

The controllers are available in three models: the Sitrans LUT420 Level Controller, Sitrans LUT430 Level, Pump, and Flow Controller, and Sitrans LUT440 High Accuracy Open Channel Monitor (which also provides a full suite of advanced level, volume, and pump controls). The series is suitable for an array of applications, including those in water/wastewater treatment facilities, manufacturing processes, and industrial storage.



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Gottwald introduces new Model 2 harbour crane

Model 2 Harbour Crane as a G HMK mobile harbour crane with a chassis (right) and as the new G HRK rubber-tyred portal harbour crane, featuring the new manoeuvrable drive-under portal (left) The G HRK will be the prototype for the market launch.

First member of Small Crane Family widens Gottwald's appeal to smaller terminals

Since 2006, Gottwald Port Technology GmbH (Gottwald), a subsidiary of Demag Cranes AG, has been redefining standards in worldwide cargo handling with its Generation 5 harbour cranes.

As part of the company's continuous development activities, the range of models has been steadily expanded. Gottwald has now extended its Generation 5 by adding the completely new Model 2 harbour crane to the Small Crane Family. Model 2 is not only a new crane model, it is also available to terminals as a new type of Gottwald crane — a G HRK rubber-tyred portal harbour crane. The target group for Model 2 is made up of smaller terminals in maritime and river ports.

Looking back, 'You Name it, We Crane it' was how Gottwald launched its Generation 5 harbour cranes in 2006, thus writing a new chapter in the history of mobile harbour crane technology.

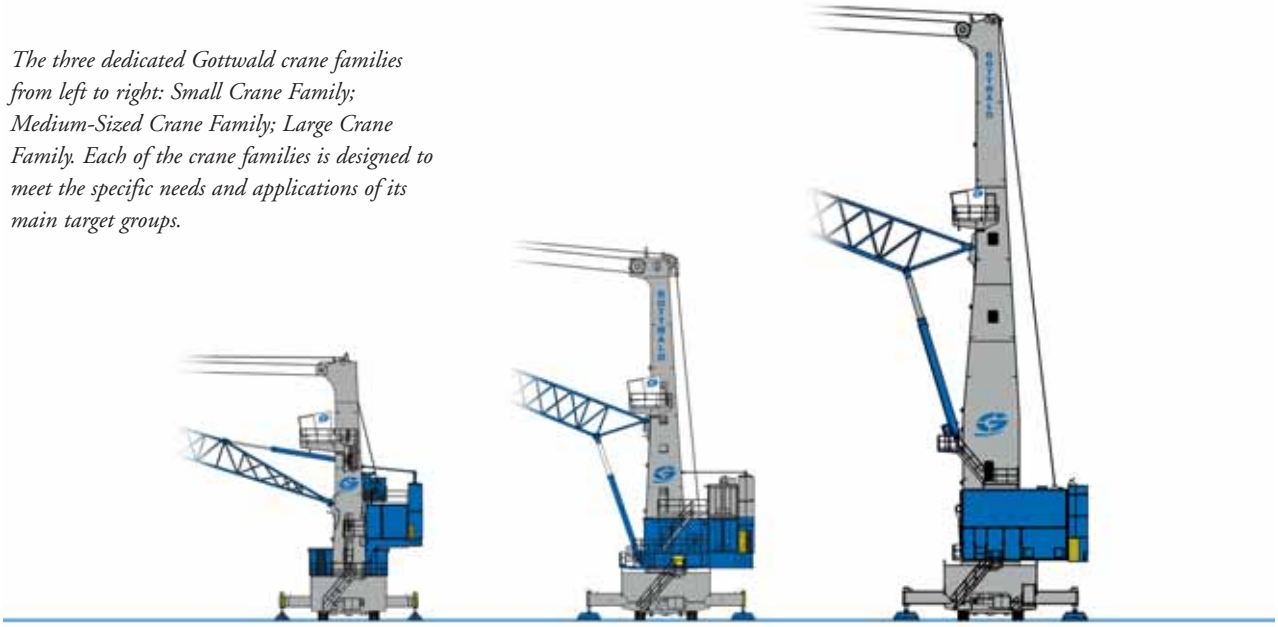
High handling rates and lifting capacities, impressive versatility and/or a high degree of specialization, cost effectiveness in terms of purchase and operation, at the same time individual tailor-made solutions and excellent reliability, safe working, ergonomic work processes and environmental friendliness — these are the clearly defined demands placed on state-of-the-art cargo-handling solutions.

These demands are met in full by Gottwald's Generation 5 harbour cranes, which are built with lifting capacities of up to 200 tonnes and working radii of up to 58m for terminals and vessels of all sizes and categories and for all applications. This concept has been made possible by consistent application of the modular design principle and a high quantity of carry-over parts.

The combination of types and a wide range of variants, together with an advance-order programme, provide individual solutions with simultaneously short delivery lead-times. Terminal operators all over the world, who have bought in excess of 300 cranes since the introduction of Generation 5, have benefited from this concept. This includes customers who, before Generation 5 became available on the market, had tended towards individually manufactured custom-built cargo handling equipment.

Gottwald's crane families

Gottwald's range of cranes consists of three crane families each designed to meet the specific needs of the main target groups. After Gottwald initially launched its Generation 5 Large Crane Family at the beginning of 2006, consisting of the particularly high performance models 6, 7 and 8, the company went on to expand the range of harbour cranes with its Models 4 and 3 in 2007 and 2010 respectively in the Medium-Sized Crane Family. Cranes in the Medium-Sized Crane Family are designed as compact machines for standard requirements. The new Model 2, the successor to the HMK 170 of which more than 150 had



The three dedicated Gottwald crane families from left to right: Small Crane Family; Medium-Sized Crane Family; Large Crane Family. Each of the crane families is designed to meet the specific needs and applications of its main target groups.

been built, has now replaced the last of the Generation 4 cranes. At the same time, the launch of Gottwald's Model 2 introduces the first member of the Small Crane Family.

Model 2 harbour crane

The entry level crane for professional cargo handling

The first member of the Small Crane Family has been specifically engineered to meet the special requirements of smaller terminals in maritime and river ports. As with all other machines in Gottwald's crane families, Model 2 combines proven technology with innovative advancements, which means it is continuing the company's tradition of providing field-tested, reliable harbour crane technology.

HMK 170 mobile harbour crane handling general cargo in the Port of Antwerp, Belgium. More than 150 of the predecessor of Model 2 were sold.

With a maximum lifting capacity of 80 tonnes, radius of up to 40m and hoisting speeds of up to 120m/min, Model 2 offers considerably better lifting capacity, two metres more radius and faster working speeds than its predecessor, the 63 t HMK 170 mobile harbour crane, enabling better handling rates to be achieved.

In comparison with its predecessor, it offers numerous new features in terms of its construction and drive technology, such as AC powered hoists and slewing gear units, already used highly successfully on Model 3 for the first time. Potential customers interested in Model 2 can choose from a broad range of options for enhancing ergonomic working, productivity and environmental compatibility. Amongst others, there is the energy-efficient hybrid drive and equipment for making use of quayside connections to the harbour mains.

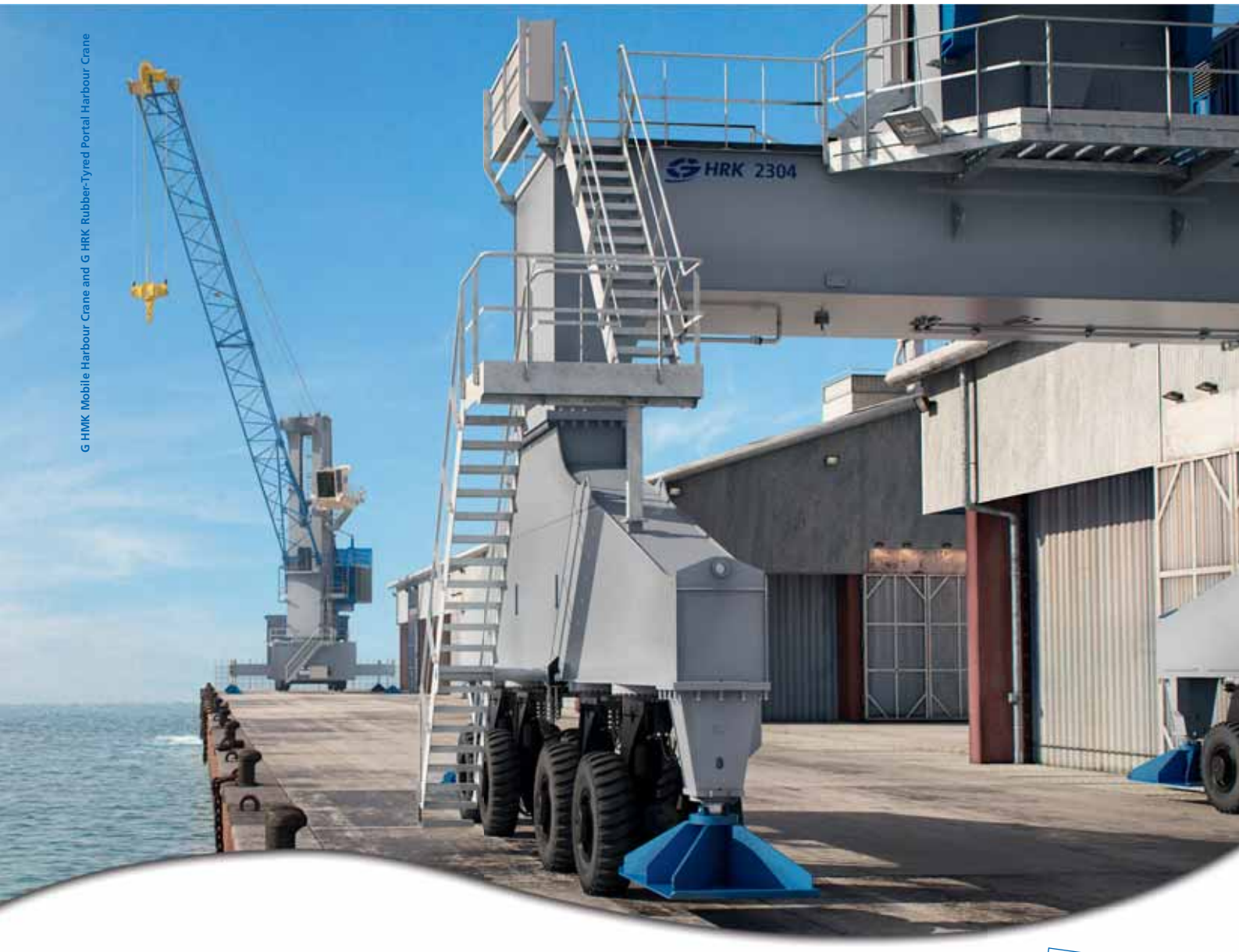
Versatility ... to meet all requirements ...

Model 2 crane variants

As with all the Generation 5 models, Model 2 is available in many different variants. The sheer range of variants available, including the lifting gear and slewing gear drives, drive units and types, is a typical characteristic of Generation 5 and is based on differing needs, e.g. the terminal infrastructure, type of cargo, goods being handled and the required lifetime and cargo handling performance.

Model 2 is available to the market in three variants. Of these, there are two configurations as two-rope cranes and one as a four-rope grab crane for professional bulk handling. The two two-rope variants, equipped with a single hoist, have maximum lifting capacities of 63 tonnes up to a radius of 21m (maximum load moment 1,323 metric tonnes) and 80t up to 17m (maximum load moment 1,360 metric tonnes). They are ideally suited to handling containers and general cargo alongside barges, coasters and feeder vessels with up to eight container rows.

The four-rope variant, fitted with a second hoist, and with a 25-tonne grab curve for A8 classification (32-tonne grab curve for A7) is designed for professional handling of bulk materials such as coal, ore, agribulk and biomass, alongside barges, coasters and Handysize vessels. The four-rope grab crane has a maximum lifting capacity of 63 tonnes and a maximum radius of 38m.



G HMK Mobile Harbour Crane and G HRK Rubber-Tyred Portal Harbour Crane

Harbour Crane **Model 2**

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GOTTWALD port technology

Gottwald's modular range of cranes includes several types of cranes: for use on the quayside but also for applications in mid-stream and even on the open sea.

...AND FLEXIBILITY ...

for every infrastructure, the right Model 2 crane

Irrespective of the crane variants mentioned above, Generation 5 and, as a result, the new Model 2, now encompasses all the Gottwald crane types introduced since 1956. These include:

- conventional G HMK mobile harbour cranes on rubber-tyred chassis;
- G HSK portal harbour cranes on individually tailored rail-bound portals;
- floating cranes (G HPK and G HSK portal harbour cranes on barges) on individually designed barges; and
- stationary G HPK pedestal-mounted harbour cranes.

These types of cranes, which all use mobile harbour crane technology from the slew ring up and which were developed by Gottwald for different terminal scenarios, are now being extended on the occasion of the market launch of Model 2 by the addition of a new G HRK rubber-tyred portal harbour crane with a mobile, drive-under tyre-mounted portal. Once again, Gottwald has demonstrated its pioneering approach among the manufacturers of mobile harbour cranes.

The G HRK rubber-tyred portal harbour crane is a crane type aimed specifically at the existing requirements and needs of smaller terminals in maritime and river ports. Here, Gottwald is often faced with terminal infrastructures that offer very little room to manoeuvre and where drive-under handling machines are preferred, which is why Gottwald, based in Düsseldorf, Germany, has built its first Model 2 prototype as a G HRK rubber-tyred portal harbour crane.

G HSK AND G HPK CRANE TYPES –

for particularly individual solutions

As with all the Generation 5 crane models, Model 2 will also be available to terminals in all the known crane types. Terminal operators who opt for a G HSK portal harbour crane, G HPK floating crane, G HSK on a barge or G HPK pedestal-mounted harbour crane (this last is a stationary installation), are provided with individually tailored portal, barge and pedestal solutions designed and manufactured by us. In the field of floating cranes in particular, Gottwald covers the full range of possibilities: from a simple floating crane through to turnkey floating crane solutions for handling cargo alongside the quay, for mid-stream transshipment and even on the open sea.

HARBOUR CRANE TECHNOLOGY IN DETAIL –

key assembly modules

From the slew ring up, all Gottwald crane types within any one family have corresponding geometries and are equipped with the same assembly modules: the tower, machinery house, cab and boom etc. With rail-bound cranes made by Gottwald, the height and width of the portal are adapted to the local conditions in

THE TYPES AND VERSATILE VARIANTS OF MODEL 2 HARBOUR CRANES

Crane type	Variant	Max. lifting capacities (t)			Max. hoisting speed (m/min)			Max. radii (m)	
		63	80	63* 25**	85	100	120	38	40
G HMK	2204	●				●			●
G HRK	2304		●		●				●
(G HSK/G HPK)	2204 B			●			●	●	

** Heavy-load operation (top), four-rope grab operation (bottom); ** A8 classification, 32-tonne grab curve in A7 classification.*

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G HRK rubber-tyred portal harbour crane

The mobile portal solution for narrow quays

Innovative combination of tyres and portal

Narrow but highly frequented and even blocked quays are a typical feature in many smaller terminals in maritime and river ports. In response to infrastructures of this kind, Gottwald has drawn on its many decades of experience in building G HMK mobile harbour cranes (on conventional rubber-tyred chassis) and G HSK portal harbour cranes (on customer-specific rail-bound portals) to produce the G HRK rubber-tyred portal harbour crane.

With a clear width of 9.5m and a clearance height of 6m, not only is the portal itself mobile, but it also ensures uninterrupted mobility on the quayside beneath the portal.

The new crane type combines the benefits of G HMK mobile harbour cranes — that is, excellent mobility since the cranes can be quickly and easily travelled — with the advantages of portal solutions offered by G HSK portal harbour cranes: road trucks, rail vehicles and conveyor belts can be used beneath the portal. On the G HRK, this blend incorporates the generously sized standard propping portal with a propping base of 12.5m x 11m, combined with mobile harbour crane technology, which has been proven a thousand times.

Mobile, drive-under portal

This mobile, drive-under solution can pay for itself within a very short time. Thanks to the portal design which provides a clearance height of 6m and clear width of 9.5m, terminal transport vehicles can easily pass beneath the G HRK rubber-tyred portal harbour crane, which maintains mobility under the crane.

As a result of the portal being mounted on tyres, the G HRK rubber-tyred portal harbour crane is, itself, mobile and can — similarly to the conventional G HMK mobile harbour cranes — quickly and easily travel from one part of the terminal to another. In this way, this crane design reduces the overall number of cranes required in a terminal and, as a result, investment costs.

The portal axles are in four alignments. The 16 tyres, the same size as those used for Gottwald's conventional G HMK mobile harbour cranes, are mounted in pairs in subframes which can be swivelled through up to 40° for crab steering. It is even possible to turn the new G HRK rubber-tyred portal harbour crane on-the-spot. The crane's tight turning circle, crab steering and on-the-spot turning all add up to excellent manoeuvrability, which means quick and easy positioning of the crane alongside the vessel, even where space is at a premium.

The two axles in each pair are spaced 2.1m apart. The spacing of 4.2m between the two inner pairs of axles means that a fifth axle can be fitted between them, retaining the same 2.1m spacing, if the G HRK rubber-tyred portal harbour crane is also to be used on quays with surface pressure restrictions, e.g. when travelling the crane.

The wheels of the rubber-tyred portal harbour crane have vertical terrain compensation of ± 250mm to surmount obstacles as the crane is being travelled. This compensation is effected hydraulically due to the crane construction and not via the mechanical equalizer beams usually found on Gottwald cranes.

the same way as the number of wheels, which depends on the permitted quay loading. On the new G HRK rubber-tyred portal harbour crane, the portal is standardized in the same way as the chassis of the well-known G HMK mobile harbour crane.

The classic G HMK mobile harbour crane – Model 2 chassis

In the case of the classic G HMK mobile harbour crane with its H-shaped propping system, a propping base of 11.5m x 11m, mechanical equalizer beams to provide vertical compensation and with a rubber-tyred chassis, the crane is equipped with four axles. The spacing between the two pairs of axles is 2.1m, which means it is 450mm greater than that on the Medium-Sized and Large Crane Families of Gottwald cranes, where it is 1.65m throughout the range.

The greater axle spacing on the Model 2 cranes, which corresponds to the axle spacing used for the portal solution on the new mobile G HRK rubber-tyred portal harbour crane, ensures better distribution of the forces into the quay structure while the crane is being travelled, which is of particular importance when the load-bearing properties of the quay are restricted.

The chassis of the G HMK mobile harbour crane and the portal of the G HRK rubber-tyred portal harbour crane are also designed to allow a fifth axle to be included in case the four-axle version is likely to be insufficient for a particular quay structure.

The enclosed, soundproofed, compact diesel-powered generator unit is mounted on the chassis on the G HMK mobile harbour crane, while, on the G HRK rubber-tyred portal

harbour crane and G HSK portal harbour crane, this power pack is mounted on the portal. On the floating crane and pedestal-mounted harbour crane, the generator unit is located in a suitable position on the barge or close to the pedestal.

Machinery rooms

There are two additional machinery rooms on a base platform at the rear of the tower. The one closer to the tower houses the hydraulic installations and the second, adjacent, room contains the electrical systems and control unit. This construction reflects the philosophy of the Small Crane Family, for which the designers placed considerable emphasis on compact dimensions and reduced weights of the components. A key objective of this design was to facilitate transport and efficient erection on-site under difficult conditions. Such difficult conditions may be a lack of erection cranes or a particularly inaccessible site.

Positioned above the hydraulics and electrics rooms there is the hoist which is easily accessible for servicing and has a maximum hoisting speed of 120m/min, and which is also attached to the rear of the tower. The hoist drive, consisting of the electric motor and oil-cooled planetary gear integrated in the rope drum, can be fitted with optional weatherproofing, if required. The four-rope grab variant for professional bulk handling is fitted with a second hoist to enable it to operate the two closing ropes, and this hoist is mounted above the first one.

On Model 2 cranes, seen here during erection of the prototype, the machinery and ancillary equipment are housed in a container mounted on the portal or chassis and in machinery rooms attached to the base platform at the rear of the tower.

The slewing gear, which has a rotary speed of 1.4 or 1.6min^{-1}, is mounted in the lower section of the tower. For the first time, this Gottwald harbour crane is fitted with slewing gear units with electric brakes which are released by solenoid valves.

AC powered hoists and slewing gear units

As the pacesetter in mobile harbour cranes and associated drive technology, Gottwald has, for many years, made use of reliable DC electric motors for its hoists and slewing gear units in cranes of all sizes and ratings. When Model 3 was launched two years ago, the drive concept was enhanced for this, the smaller crane in Gottwald's Medium-Sized Crane Family, by fitting AC technology for the hoists and slewing gear units.

AC technology has been used successfully in numerous industrial applications, including mobile handling machines, and has shown itself to be cost effective, environmentally compatible and easy to service and, in addition, is available at prices that maintain this company's value-for-money approach.

The advantages of AC technology are these:

- regular maintenance of carbon brushes is no longer required;
- gentle, power-dependent starts mean reduced power surges for the generator;
- simplified integration of such equipment as energy storage media (ultracaps); and
- improved connection characteristics for quayside power sources due to reduced power supply disturbance, such as improved cosφ and mitigated line-side harmonics.

Tower and boom

Depending on the crane type, the tower of Model 2 cranes is connected to the chassis, portal or pedestal via a roller bearing slew ring and is a torsionally rigid, welded box construction. The construction ensures excellent transmission of forces and moments into the crane substructure and, via this path, the quay. The upper section of the tower has been designed to allow the luffing cylinder to recede into the tower as it retracts. Access to the tower cab is protected from the weather, ergonomically designed and convenient via stairways angled at 50°. The cab is positioned high up and forwarded on the tower to ensure an optimal view into the vessel's hold.

Access to the top of the tower is by ladders. The large tower platform provides easy, safe access to the rope pulleys for maintenance work.

The torsionally rigid three-chord boom is a tubular lattice construction attached high up on the tower. The permanently play-free bolted flange connections between the boom root and boom tip sections ensure a high degree of rigidity and accurate crane motions.

Electric drives – economical and environmentally friendly

Like all of Gottwald's harbour cranes, Model 2 also uses electricity as its energy source — which is the most popular form of energy in ports and terminals due to its cost effectiveness and environmental friendliness.

The machines are powered either from an on-board state-of-the-art diesel-generator or externally from the terminal's

electricity supply. The latter option significantly improves the efficiency of the drive system. In addition, electrical energy recovered during lowering and braking can be returned to the mains. Further advantages are the complete avoidance of exhaust gases and considerably reduced noise emissions in the terminal. If the terminal draws its electricity from regenerative energy sources, the crane owner also benefits from an improved crane life cycle assessment.

The diesel-generators fitted on-board guarantee optimum efficiency and low fuel consumption. In contrast to the Generation 4 predecessor, Gottwald's Model 2 now uses dynamic brake resistors as standard, which results in significantly improved energy management since fuel consumption can be reduced by as much as 15.2%*.

Gottwald cranes are equipped with efficient drives. Using external power supplies or the hybrid drive significantly improves the machine's overall energy-efficiency rating and the terminal's carbon footprint.

GOTTWALD'S HYBRID DRIVE – future orientated and sustainable

If the local quay infrastructure does not allow the Model 2 crane to be connected to an external power supply, Gottwald's hybrid drive provides reductions in fuel consumption of up to 23.2%*. The hybrid drive also results in lower noise emissions as the diesel engine has quieter running characteristics.

In the hybrid drive — a combination of an on-board diesel-powered generator and electrostatic short-term energy storage — the energy recovered during the crane's lowering and braking actions is stored and then made available to the crane's power system for the next work cycle. The short-term storage medium is provided by electrostatic wear and friction-free double-layer capacitors, which store the energy as electricity so it does not have to be converted, and have a high efficiency rating, power density and cycle rate, which makes them ideally suited to the tough conditions of professional crane operation.

** Achieved under specific deployment conditions and based on experience gained from operating a Gottwald Model 6 crane over a period of more than one year.*

PRODUCT AND FEATURES

To ensure safe, ergonomic, economical crane operation and easy maintenance, Model 2, like all the Generation 5 machines, is equipped with numerous practical enhancements as standard, backed up by a range of optional features.

The standard features include dynamic brake resistors, automation aids for repetitive processes such as propping the crane, a camera on the boom head, a centralized lubrication system for the slew ring, boom root and luffing cylinder bearings and the ergonomically designed, comfortable tower cab with safe access via the weatherproof stairway system inside the tower.

Features such as the load guidance system including linear load motion, load antisway, point-to-point handling mode and hoisting height limiting, to mention just a few of the many options, are available and are intended to assist the crane driver in achieving high handling rates.

It's diversity that counts

GENERATION 5 CRANE DESIGNATIONS

Example: Model 2 as a rubber-tyred portal harbour crane, G HRK 2204 B variant

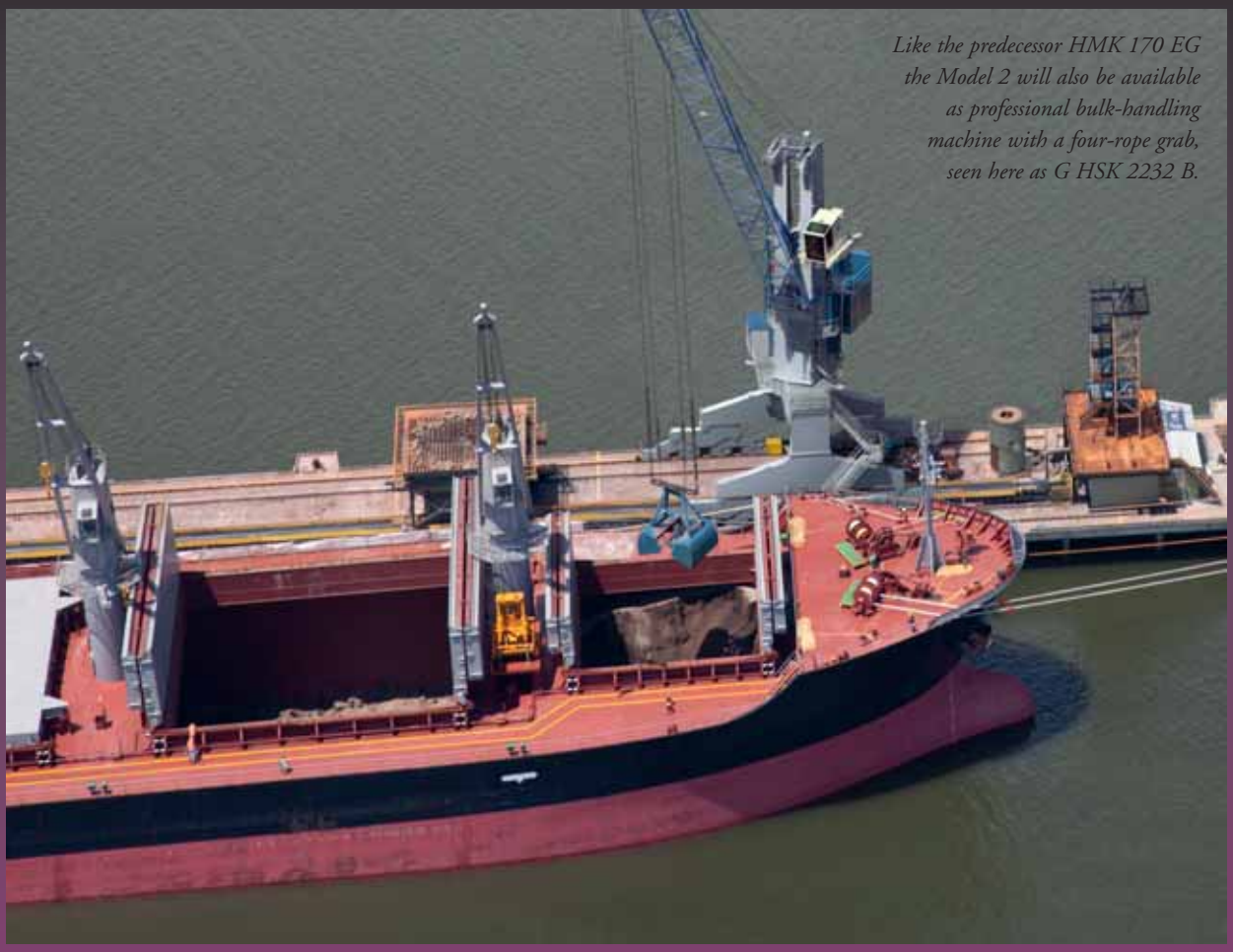
HRK 2204 B

G	Gottwald logo element
HRK	the crane type is a rubber-tyred portal harbour crane (new type)
2	Model 2
2	lifting capacity range/hoist variant
04	number of axle alignments
B	four-rope grab crane variant for professional bulk handling

The designations given to the Gottwald cranes reflect the diversity of types and variants available in Generation 5. These names are both an expression of the company's innovation and confirmation of its tradition.

The crane-type abbreviations HMK, HSK, HPK and now HRK, have the 'G' for Gottwald as a notable prefix. The abbreviations are followed by the details of the model and hoist variant, the number of axles, axle alignments or the number of wheels fitted to the four corners of rail-bound portals. If the crane is designed for use with a four-rope grab, it will have a 'B' suffix. The most important parameters for each of the harbour cranes can be clearly derived from these names.

Professional bulk handling machines



Like the predecessor HMK 170 EG the Model 2 will also be available as professional bulk-handling machine with a four-rope grab, seen here as G HSK 2232 B.

Gottwald is a key supplier of machines and services relating to the handling of bulk materials. With handling capacities of up to 1,850tph** (tonnes per hour), the four-rope grab cranes are among the most powerful in the industry.

The HMK/HSK 170 EG, as the predecessor of Model 2, was a welcome addition to bulk terminals in small maritime and river port terminals, which is why Gottwald's Model 2 will also be available as a four-rope grab variant.

The key to this positioning in the bulk-handling market is, apart from the crane itself, in the systematic approach — the aim to enable the best possible blend of cargo-handling machines, like the new Model 2, with adjacent handling equipment, work processes, software and crane personnel.

As a consequence, Gottwald has not merely concentrated on developing high-performance harbour crane models, but also expanded its product range by the inclusion of complete packages for the quayside logistics chain in bulk terminals. These include, apart from Model 2 itself, hoppers and conveyor belts installed on the quayside. Added to these are such services as consultancy through the International Dry Bulk Competence Centre (IDBCC) in the UK and software designed specifically for bulk handling equipment by Gottwald's software subsidiary, DBIS.

*** Depending on site and operating conditions*

Outlook

With the launch of Model 2 as the first member of its Small Crane Family, Gottwald has set a clear standard to be followed in professional cargo-handling at smaller terminals in maritime and river ports. By expanding its already generous range of products by the inclusion of the mobile G HRK rubber-tyred portal harbour crane, this company, based in Düsseldorf, Germany, is, once again, living up to its pioneering reputation and its claim 'You Name it, We Crane it': in other words, offering operators of particularly confined terminals who are on the look-out for mobile and, at the same time, drive-under handling machines, innovative solutions that combine proven mobile harbour crane technology with a standard portal. This new solution can, if the need arises, be transferred to other Gottwald cranes.

The close relationship between the new G HRK rubber-tyred portal harbour crane and the conventional G HMK mobile harbour crane, and the repeated use of AC technology for the hoists and slewing gear drives are in line with this world market leader's sense of development continuity in mobile harbour cranes and other crane types derived from them.

The high degree of acceptance of mobile harbour crane technology and the variety of crane types resulting from that success and customer impetus provide confirmation for the company that, with its new G HRK rubber-tyred portal harbour crane, it has developed a cargo-handling that will exactly meet the market requirements in its designated field. DCi

"Our E-Crane uses less power, and its durability and longevity will help keep our costs to a minimum."

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Equipment manufactured

The standard E-Crane product line consists of five series of balanced hydraulic cranes (E-Cranes): 700 Series, 1000 Series, 1500 Series, 2000 Series, and 3000 Series. The E-Crane is a truly revolutionary material handling machine as its main design feature is a parallelogram style boom configuration which allows the machine to be in near perfect balance throughout the duty cycle.

The E-Crane is specifically designed for barge unloading processes. Anything from coal to limestone to fertilizer to scrap steel can be handled. The E-Crane is a truly versatile machine in that it can easily switch between commodities and still offer the high production required at many ports and industrial facilities.

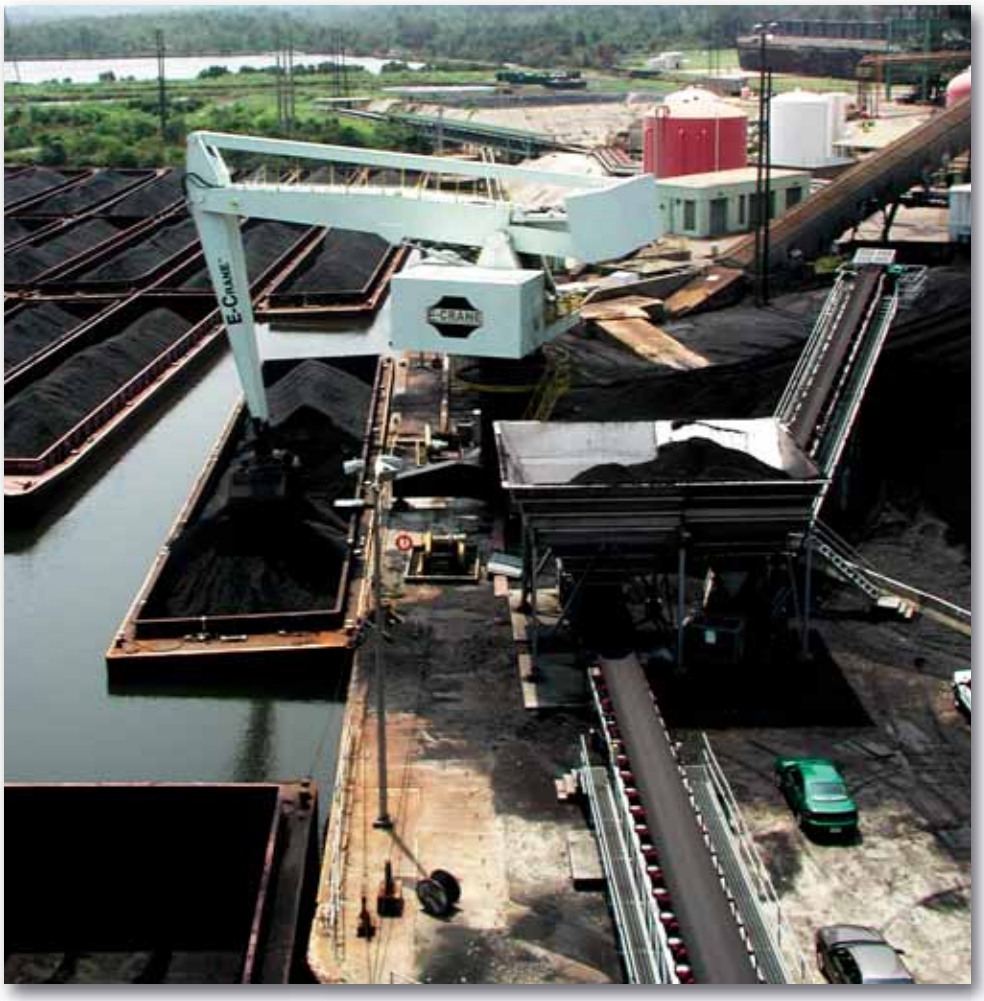
Half of the near 20 E-Cranes in operation today in North and South America are in the power sector. The E-Crane is a perfect solution for power plants because of the versatility to handle both the fuel for the plant and the other materials needed for air quality control processes. American Electric Power is the company's largest customer, along with other US-based utilities such as Southern Company, Power South, Ohio Valley Electric Corp, and Cleco, amongst others. The US inland waterways is by far the most populated area for E-Cranes as there are many different ports and stevedoring facilities that desire a high production machine with high reliability and low reoccurring maintenance costs. Terminal management firms such as Kinder Morgan have realized the advantages of the E-Crane versus other more traditional pieces of equipment.

The E-Crane is placed firmly between production line excavators (or material handlers) and large scale dedicated unloading structures. Even the smaller E-Cranes offer much more unloading capacity than the standard excavator. The larger E-Cranes can compete with dedication systems in terms of production and come in at only a fraction of the installed cost with even less annual maintenance costs. The E-Crane product line is rated for barge offloading from 500tph (tonnes per hour) to 2,000tph.

E-Crane promotes a 'turnkey' style approach to maintain a competitive advantage in the marketplace. It now offers its

customers complete barge offloading solutions including hoppers, feeders, barge positioning systems, and even floating solutions mounted on deck barges. It uses its expertise in barge offloading to design the most efficient systems so its customers can get as much out of their machines as possible. E-Crane's customers are satisfied as well since this eliminates much of the headache of procurement and project management that goes into these types of projects.

In recent years E-Crane has spent a lot of resources developing its customer service department. ECI–USA has made investments in more warehouse space and increased inventory along with additional field service engineers. It now has more than 95% of all spare parts for its customers on hand in its warehouse and its increased field service staff has secured full maintenance contracts with many of our customers. E-Crane also offers a means of remote troubleshooting via secure cellular connection with its customers who demand minimal downtime.



The Equilibrium Design

The 'E' in E-Crane stands for Equilibrium. The E-Crane design is based on an ingenious parallelogram-style boom that provides a direct mechanical connection between the counterweight and the load. This unique four-bar mechanism system ensures that the E-Crane remains in near perfect balance throughout its working range. Compared to conventional cranes that require as much as 80% of their available energy just to move the boom, stick, and grab, the E-Crane makes gravity work for you instead of against you, reducing horsepower requirements and power consumption by up to 50% and significantly reducing maintenance and operating costs.

The E-Crane series offers models with up to 50 tonnes duty cycle capacity due to their movable counterweight and fixed parallelogram linkage as well as up to 150ft/50m of horizontal and up to 100ft/30m reach below grade. Its modular design allows each E-Crane to be tailor-made to the client's specific requirements.

Recent technological developments

E-Cranes now come with a new, reliable and user-friendly control system called the EMM, or Electronic Machine Manager. This built in system is a huge innovation in data collection technology, and allows for real time data collection of things such as running time, how many times the E-Crane hits a fault while in operation, whether there is an overload or overheat, and more. Some even stream live, real-time video of the E-Crane while in operation.

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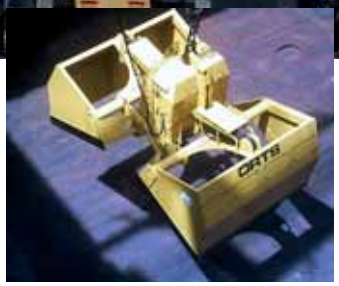
ORTS: grabbing coal and other bulk commodities for 40 years



ORTS GmbH Maschinenfabrik is a major manufacturer of grabs for bulk handling applications. The company can trace its history back to 1972, when it was founded as an engineer office and consulting company, specializing in the constructions of grabs (main business) and other types of bulk handling equipment.

To start with, it dealt only with construction and sales, with the manufacture of all appliances taking place at well-known companies in Northern Germany.

In 1985, the company set up its own workshop, and the name ORTS GmbH Maschinenfabrik was adopted.

In the early 1980s, ORTS started offering grabs with 100% enclosed buckets to protect the environment from fugitive dust.

At the end of 1990s, ORTS took over the last drawings from the bankrupt grab manufacturer ZGS (formerly TAKRAF VEB Schmiede und Schweißwerk Zwickau SSW), the leading grab manufacturer in the former East Germany (GDR/DDR). Because of the long, nearly 30-year partnership that it enjoyed with the bankrupt company, ORTS is able to provide, as far as the drawings are available, former customers from ZGS with spare parts for their grabs.

ORTS GmbH Maschinenfabrik remains extremely busy. Among recent activities, the company has delivered two mechanical four-rope grabs, type 2S-4-1B, to a customer in Indonesia. Each of the grabs has a clamshell capacity of 24m³, and they are both designed to handle coal. This Indonesian customer is a new one for ORTS, and placed the order with the company after it was recommended by another customer. ORTS was able to convince the Indonesian purchaser of the high quality of the construction, design and technical features of its grabs — as well as its competitive pricing.

ORTS has also won an order for its electro-hydraulic grabs for four newbuild bulk carriers, along with the crane equipment to operate them. For this contract, ORTS was in competition with several other manufacturers of bulk handling grabs; it won the contract because of the quality of its grabs, its pricing matrix and the fact that all its grabs are 'Made in Germany'.

This year, ORTS is celebrating its 40th anniversary. Since it started operating, ORTS has built some of the world's largest grabs. With its advances in technology over the years, it has introduced new types of grabs, including the first radio-controlled diesel-hydraulic motor grab (DHS-B), which came from ORTS's drawing board.

ORTS has been so prominent in the development of grab technology that even other grab manufacturers have bought its drawings and constructions because of its outstanding designs and technologies.

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Procon Engineering: continuing to pull its weight in the coal handling market

Industrial belt weighers play a vital role at ports and terminals for dynamically weighing bulk coal with applications covering both static and mobile installations. Belt weighing is an effective solution for accurately weighing large quantities of bulk material in applications where static weighing is either impractical or process limiting. Belt scales operate by continuously weighing the material as it travels across a predetermined length of conveyor belt above the weigh carriage (weight per unit length). This is then combined with the measured belt speed to give the throughput weight per unit time (typically in units of tonnes per hour or tph). Finally the integrated ongoing totalized weight is calculated. Throughput capabilities of such weighers typically range from less than 5tph up to 12,000tph.

By the nature of the applications, the majority of belt weighers typically operate in harsh working environments, often with minimal and infrequent maintenance. Belt weigher accuracy depends on a number of factors, including the number of rollers on the weigh carriage, the weighing technology used and the uniformity of the material being weighed. Other contributory factors that can affect accuracy include belt tension and tracking, unwanted material build up around the weigh carriage and calibration frequency. Accuracies of better than ±0.5% can be achieved for free flowing product and moisture content compensation measuring systems, used in conjunction with the belt weighers, can further improve performance. With commodity prices increasing steadily, ensuring long term accurate weighing is essential. Even small error changes, resulting in unwanted material giveaway, can make a significant difference to bottom line profitability.

A high proportion of belt weighers use strain gauge load cells to support the weigh carriage and although these provide good serviceability, they can be unreliable long term in harsh outdoor environments. To overcome this shortcoming, Procon Engineering has continued to develop its unique Resometric Belt Weighers. These robust weighers have proved to be significantly more reliable than conventional load cell based units in arduous applications. The units provide a unique combination of features that ensure the key factors influencing belt weigher performance are maintained in service over long periods of time.

At the heart of the scale is the Digital Resometric force transducer or resonator, which provides unequalled levels of measurement performance that is repeatable for extended periods. The resonator has no moving parts and is pre-loaded to a default level by the applied force from the weigh carriage. As the force varies with the load passing over the carriage rollers, the resonant frequency changes in proportion to applied load. This change in frequency is processed by the electronics and when combined with the belt travel speed, provides accurate throughput and totalized weight readings.

Lateral chains are fitted between the weigh carriage and the rigid conveyor to prevent any unwanted side forces being introduced through factors such as poor belt tracking or material asymmetry. As a result, once the weigh carriage is installed and aligned, it only sees the vertical forces produced by the material being weighed. Periodic calibration checks can be carried out simply and expediently by utilizing the built-in roll-over calibration weights fitted across the weigh carriage. These have a cam at each end and under normal operating conditions the weights sit free of the weigh carriage on the outside frame. When calibration is carried out, they are simple rotated so that the weights rest on the live weigh carriage.

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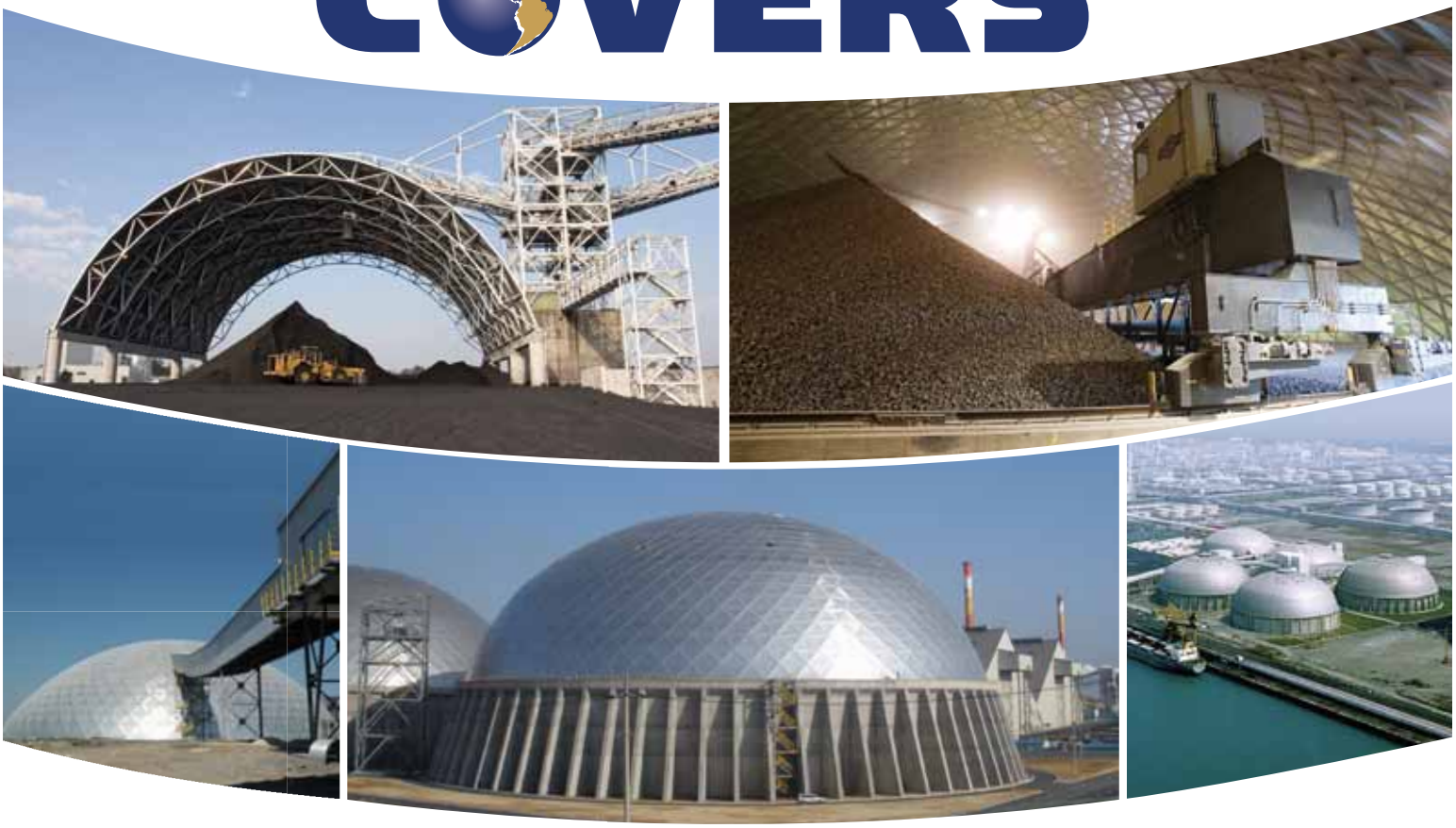

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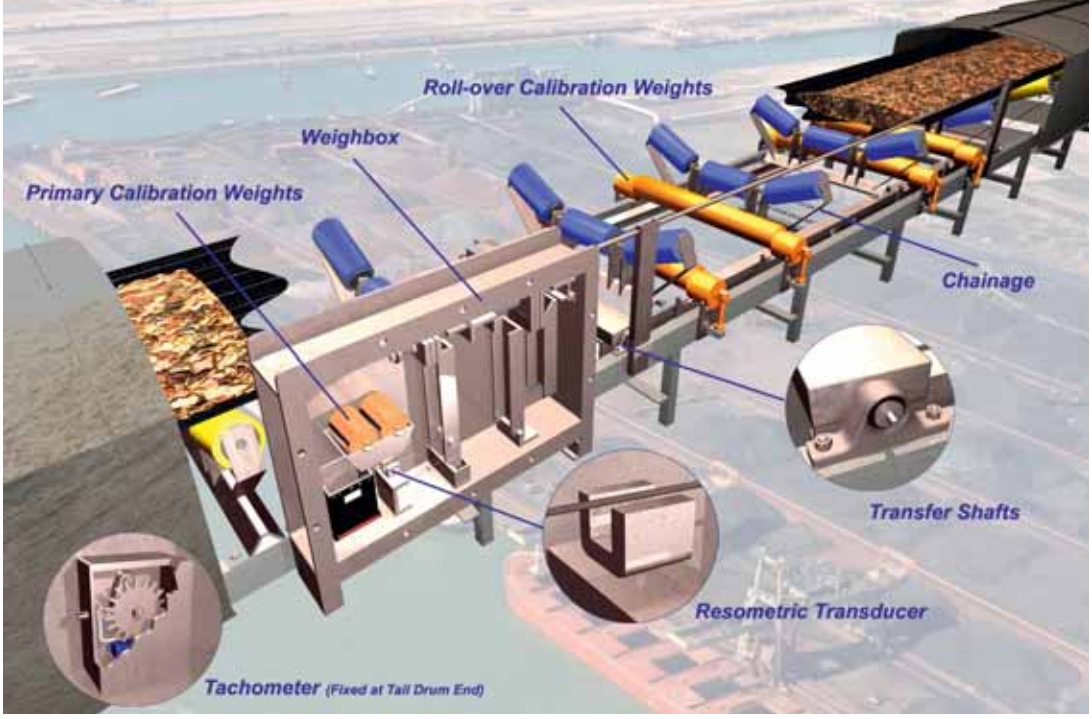

Resometric Belt Weighers in action

The long-term stability and reliability of resometric belt weighers makes them ideal for applications at ports and terminals. Over 20 such weighers are continuing to provide accurate and trouble free weighing on equipment operating in the tough working environment at the EMO terminal at Rotterdam. The weighers are fitted to giant mobile stacker reclaimers and in conveyor belts at several locations at the terminal.

EMO bv (Europees Massagoed-Overslagbedrijf) operates the largest dry bulk terminal in Europe, specializing in the unloading and storage of iron ore and coal from around the world. The company, which operates 24 hours a day, 360 days a year, handles over 35 million tonnes of raw materials annually, playing a vital role in the supply chain of iron ore and coal needed for the European steel and power generation industries.

Procon Engineering has a long-standing relationship with EMO, stretching back more than 25 years and the weighing equipment has proved to have outstanding reliability and long-term accuracy. EMO operates five Krupp/PWH stacker-reclaimers fitted with Procon Belt Weighers rated up to 7,000tph, four PHB/PWH/MAN ship-unloaders and three barge loaders. EMO's project assistant Ab van Doorn is more than satisfied with the Procon equipment and as he explains: "The weighers operate in one of the most arduous environments imaginable and they have to withstand extremes of weather with little time for maintenance. Although the weighers are a relatively small part of the giant equipment working at the terminal, their importance cannot be underestimated. Any downtime is costly and very inconvenient, and as a result, reliability is vitally important."

Unlike fixed inclination weighing applications, the belt weighers on the booms of the stacker reclaimers are subjected to constantly changing angles of operation. This would normally introduce significant cosine weighing errors due to the apparent change in the suspended weigh carriage mass. To automatically compensate for the changing angles of operation, the weighers are fitted with Procon's proprietary Astatic Mass Zero Compensation system.

The belt weighers are checked for calibration on a regular basis against two Weights & Measures-approved reference Procon belt weighers at permanent locations on site and also a train loading scale.

On the other side of the world, Procon Resometric Belt Weigher systems are playing a pivotal role in the handling of coal at the rapidly expanding Tianjin Port on China's north eastern sea board.

The belt weighers have a throughput capacity of 7,000tph and have been supplied to contractors Voest-Alpine Material Handling GmbH (VAMH) to form integral parts of its giant mobile coal reclaimers (VARL) and stacker-reclaimers (VASR).

As VAMH's senior project engineer, Johann Tielitz explains: "The belt weighers are a critical part of our equipment and we need to know they will provide long term reliability and accuracy. We have developed a strong working relationship with Procon Engineering and experience shows that their equipment exceeds our expectations."

The contract for the belt scales follows on from the successful installation of a total of three Procon belt weighers supplied to VAMH for Tianjin and a further nine belt weighers for stackers and reclaimers at the Baoshan Project in Shanghai. Procon has also supplied a further six belt scales on fixed conveyors at Tianjin.

Conclusion

Belt weighers play an important part in coal handling and processing activities worldwide and their accuracy can have a major impact on profitability. Although higher accuracy belt weighers may cost more initially, this additional premium is rapidly countered by the improved performance and reliability, bringing a relatively short-term return on investment.

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The use of new-generation, low-operating cost hydraulic harbour cranes is increasing. Users in the coal industry are also using Mantsinen's hydraulic cranes for loading/unloading railway wagons, barges and ships. The right-size Mantsinen crane and clamshell can give a handling capacity of over 1,000tph (tonnes per hour), with minimum investment and operating costs.

Among recent deliveries to the coal industry are:

Mantsinen K-200 ES handling coal in Russia.

- **Mantsinen 70 ER Electric crawler crane**, handling coal in Kemerovo Russia.
  - reach approximately 20m;
  - lifting capacity approximately 8.5 tonnes at 16 metres;
  - Mantsinen crane cabin with Mantsinen N1-3000 cabin elevator;
  - own weight approximately 80 tonnes;
  - Mantsinen R3 rotator with MC620 quick coupling;
  - Mantsinen clamshell HB 40-2 MC620 (4m³) attachment; and
  - coal loading capacity of approximately 500tph (lifting to a rail wagon).

- **two Mantsinen 200 ES HybriLift® electric cranes** powered on rails, handling coal in Tuapse Russia.
  - boom 17.5m curved, stick 15.0m = reach approximately 32m;
  - 355kW/1,500rpm electric motor, 380 V 50Hz Cavotec cable reel;
  - 10.5m rail span, bogie distance 10m, wheel diameter 630mm;
  - lifting capacity approximately 25 tonnes at 20 metres;
  - Mantsinen crane cabin;
  - own weight 220 tonnes;
  - Mantsinen R3 rotator;
  - Mantsinen HB 60-2 (6m³) clamshell attachment; and
  - coal unloading capacity approximately 600tph (unloading wagons).

- **two Mantsinen 120 R HybriLift® Diesel crawler cranes**, handling coal in Visotsk, Russia:
  - boom 14.0m curved, stick 12.0m = reach approximately 25m;
  - lifting capacity approximately 11 tonnes at 20 metres;
  - Mantsinen crane cabin;
  - own weight 125 tonnes;
  - Mantsinen R3 rotator;
  - Mantsinen HB 40-2 (4m³) clamshell attachment; and
  - coal unloading capacity approximately 500tph.

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Model	Destination
Mantsinen 50 MCT	Russia
Mantsinen 70 M Hybrilift	Spain
Mantsinen 70 M	Germany
Mantsinen 70 M	Finland
Mantsinen 90 RCT	Russia
Mantsinen 95 EF	France
Mantsinen 95 ER	Switzerland
Mantsinen 120 R Hybrilift®	Germany
Mantsinen 120 R Hybrilift®	Riga, Latvia
Mantsinen 120 R Hybrilift®	Kokkola, Finland
Mantsinen 120 R Hybrilift®	Loviisa, Finland
Mantsinen 120 R Hybrilift®	Turku, Finland
Mantsinen 160 R Hybrilift®	Germany
Mantsinen 160 R Hybrilift®	Holland

Range of models

Mantsinen's material handling and hydraulic mobile harbour cranes range in size from 50-tonne machines up to machines of over 200 tonnes.

All equipment can be customized according to customer requirements, with each customer's specific requirements taken into account during the design phase. This guarantees that all customers receive machines that are optimized for their material handling needs.

Thanks to the company's innovative product development programme, efficient machines have been created for material handling, in both terminals and ports. Mantsinen equipment makes material handling efficient, precise, safe and cost-effective. In addition the operator has a comfortable cabin with excellent visibility.

In many cases, Mantsinen mobile harbour cranes have more than doubled handling capacity, compared with traditional cable cranes.

Customers can choose machines on wheels, on rails or on tracks.

Optimizing coal supply chains from Pit to Port with QMASTOR software

Triple Point Technology's premier QMASTOR software solutions drive bottom line improvements by enabling mining companies to achieve optimized, efficient, and effective coal and mineral supply chains. QMASTOR solutions manage over one billion tonnes of bulk commodity movements each year with customers including BHP Billiton, Rio Tinto, Vale, Anglo American, Xstrata, and Peabody Energy.

QMASTOR products manage the tonnage, quality, and value of coal and minerals from 'pit' to the point of export or consumption. They help companies reduce operational, logistical, marketing, and commercial costs by optimizing and automating the management of complex supply chains that include multiple mines, stockpiles, transport legs/modes, and ports. Solutions include:

- **QMASTOR Pit to Port™** — a decision support system enabling management to plan, record, track, optimize, account, reconcile, and report the tonnage, quality, and value of materials from the mine to the point of export or consumption. Pit to Port synchronizes operations, logistics, marketing, and commercial functions for a transparent view of export, import, and domestic supply chain operations across the enterprise.

- **QMASTOR PortVu®** — an award-winning integrated bulk terminal management system that manages the complexities of stockyards, inter-modal transportation, and vessels while ensuring equipment is scheduled and utilized efficiently. PortVu integrates terminal operations with suppliers, customers, transport providers, agents, laboratories, and other partners through the use of a common platform. PortVu can be interfaced to a terminal control system to provide necessary information on stockpile position for yard equipment instructions, task and route management, vessel load and hatch plans, and belt weightometers for accurate data reconciliation and reporting.

- **QMASTOR Horizon™** — an advanced planning and scheduling system enabling complex supply chains to be modelled, planned, and scheduled simply and efficiently. The solution utilizes a business rules-based engine coupled with manual and automated scheduling mechanisms for optimized planning and scheduling based upon site-specific sets of strategies and weighted key performance indicators. Horizon can be used across the entire supply chain, or for specific processes and functions including terminal stockyard asset utilization and inventory management.

- **QMASTOR SMS3D®** — a stockpile management solution that tracks and visualizes parcels of material in three dimensional space. Dynamically models stockpile tonnage, grade, and value in real-time to enable proactive grade management and optimize process plant configuration, blend planning, and reclamation/load planning. SMS3D delivers extremely accurate tonnage and quality forecasts, and simplifies blend planning to ensure deliveries are within specification.

Triple Point also offers bulk vessel freight chartering and coal trading and risk management solutions for more broad-based mining companies. Consulting and supply chain management training is also available through Triple Point's QMASTOR QML Services division.

Triple Point solutions have been recognized industry-wide for delivering a significant, measurable return-on-investment with awards including the International Bulk Journal IT Solutions award and the Australian Bulk Handling IT Solutions award.

About Triple Point Technology

Triple Point Technology® is a renowned global provider of cloud and on-premise Commodity Management software that delivers advanced analytics to optimize end-to-end commodity and energy value chains. The company provides real-time, innovative solutions to competitively address the complex and volatile commodities supply chain: buying, selling, trading, and procurement; enterprise risk management; scheduling and logistics; storage; processing; and settlement and accounting.

Triple Point's Commodity Management platform enables over 400 customers in 35+ countries to profitably manage exposure to energy and raw materials across industries, including energy, metals, minerals, agriculture, transportation, shipping, consumer products (CP), industrial manufacturers, and big box retailers. Triple Point was named a 'Leader' in Gartner's ETRM Magic Quadrant for its completeness of vision and ability to execute in 2009, 2010, 2011, and 2012. Founded in 1993, the company employs over 800 staff in 14 offices and support centres around the globe.

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N.M. Heilig B.V. strengthens its presence in the international equipment market

N.M. Heilig B.V. is a manufacturer of durable installations and components for the international dry bulk industry. The company offers equipment to satisfy almost every need related to the transshipment and storage of material in dry bulk terminals.

N.M. Heilig B.V. has over 30 years of practical experience, and its equipment is all of a high quality. It specializes in the design and construction of elaborate installations. It offers equipment for loading, unloading, transporting, crushing, categorizing, washing, sieving, separating and processing dry bulk materials. About 250 highly skilled and enthusiastic employees divided over five subsidiaries within Europe serve the company's clients. Most installations are supplied as turnkey solutions, but individual components are also supplied to many leading companies in the bulk handling industry. The company delivers both mobile and fixed-position systems.

Project: railcar loading facility

Recently N.M. Heilig B.V. has delivered a turnkey solution for the transshipment of coal into railcars to a dry bulk terminal in Amsterdam. The railcar loading system includes a 100m³ bunker, consisting of four compartments. The bunker is filled by a movable feeding conveyor belt, which recognizes the material levels in the various compartments. Each compartment can be opened independently by hydraulic controlled discharge valves, which makes dosing during railcar loading easier. During the movements of the railcars, the railcar loading system will continue loading the bunker. The bunker is cladded on the innerside with Hardox wearplates. In case of an electrical power outage, the discharge valves will close automatically. The system includes a system to level off the material on top of the railcar, to prevent any possible spillage of coals during transport. The systems achieves a loading capacity of 20,000 metric tonnes per day including weighing. This is a robust and very reliable and high quality system from N.M. Heilig B.V.

Project: turnkey coal handling system in Western Europe.

N.M. Heilig B.V. is currently delivering, from concept to installation, two mobile loading conveyor systems, a long conveyor belt system with tripper

system, together with a stacker for coal storage. Design capacity parameter is 2,000tph (tonnes per hour). The two mobile loading systems will include a 26m³ hopper, a bunker conveyor belt and a discharge belt which will end up at a height of 5m. The systems are built on tracks for mobility on rugged terrain. The total length of the long conveyor belt system is 570m, and includes a tripper system over the full length, and a movable head section for flexibility in discharge positions. The movable head section can move in total a maximum of 15 metres, and is able to discharge in three positions. The long conveyor belt system is designed as a bi-directional transport system, which can be used for transshipment or loading activities at the client's terminal. The stacker conveyor boom is fed by the tripper system and has a length of 28 metres. The maximum stacker discharge height of 12.5 metres can be created by using the hydraulic lifting device in the stacker boom. The long conveyor belt system, including the tripper and stacker boom, are already assembled on site. The two mobile loading systems are currently in production and will be delivered within 10 weeks from now.

Special project: 'thermal rooms'

For Holland's biggest steel producer, N.M. Heilig B.V. is currently involved in the design, production and assembly on site of three so-called 'thermal rooms'. Each room is a rectangular box construction which is covered by nine big movable shutters on top of each room, where the producer will stock just-produced hot carbon-steel materials. The materials will be loaded into the 'thermal room' by gantry cranes. The rooms are constructed with robust steel structures, concrete and insulation. The shutters are mounted on rails. A lock system device for the shutters will be installed, operated by electrical hydraulic accumulators and complex operating software. Open or closed position of the shutters and synchronous operation will be detected and managed by electrical sensors. There are eight combinations to open the shutters, for required logistic reasons of the crane movements.

In normal operation, the time to open or close the shutters will be a maximum of 14 seconds, and occasionally this can be speeded up to seven seconds. This speed, in combination with a total movement of the enormous weight of approximately 10 tonnes per shutter (ca. 45m²/shutter), is a challenge which N.M. Heilig B.V. will overcome. This is a turnkey project with mechanical, electrical and civil works in the scope of delivery. The project will be commissioned in October 2012.

Engineering solutions for coal handling – and preventing fires in bunkers

Established in 1966, Jenike & Johanson is a major technology company for coal and other bulk solids handling, processing and storage.

Key services in coal and power industry include:

- reducing potential of PRB coal fires in bunkers;
- plant visits for troubleshooting coal/fuel flow problems such as arching/bridging and ratholing;
- flow properties testing of coal, fly ash, limestone, etc.;
- pneumatic conveying testing and system design;
- functional design of silos, bunkers, hoppers, chutes and feeders;
- coal and limestone gravity stockpile reclaim systems;
- standpipe sizing and air pressure analysis; and
- structural engineering for silos, hoppers and standpipes.

The coal and power industry has been evolving as a result of recent economical, environmental and regulatory requirements. Changes such as switching to low-sulphur coals are common. These materials can be poor-flowing leading to material handling issues. Apart from arching and ratholing, feeder discharge problems can also occur. Low-sulphur sub-bituminous coals tend to be cohesive and frictional and may remain stagnant inside bunkers. Also, these coals are prone to spontaneous combustion, particularly the PRB coals. An extreme consequence of such coals staying stagnant can be fires in the bunkers and feeders.

Jenike & Johanson can assist clients by solving flow and handling problems and achieving reliable material flow, and thus also reducing potential for bunker fires. It has one of the largest and most comprehensive laboratories worldwide to characterize 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 such as large slide gates.

Bulk solids handling problems are often the major cause of costly downtime and maintenance for many plants. These flow problems affect operations by limiting throughput, creating safety and health risks, as well as by 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. It doesn't guess at material properties, it measures them. For over 45 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. Its 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 testing, engineering, detailed design or equipment supply. This proven approach continually produces outstanding results for Jenike & Johanson's customers.

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Dos Santos International fixes a sticky situation

When it comes to materials handling, there are plenty of conveying solutions to choose from. While all of them share the common focus of transporting material from one point to another, not all of them share the same efficiency and capability. Various materials have different properties such as size, abrasiveness and moisture which can diminish the efficiency and suitability of some conveying solutions. Such was the case at a major steel producer in Northern Spain. The plant had previously installed a vertical pocket belt system to elevate raw coal to the blast furnace coal grinding plant. PHB Weserhütte S.A. (PWH) of Gijon, Asturias, Spain stepped in to offer a system expansion which included increased throughput to a new and existing pulverizing plant. The pocket belt, which served the pulverizing plant, proved to be problematic as it did not completely discharge the moist coal. The carry back created a continuous clean-up problem. A representative at PWH contacted Dos Santos International when the company began to focus on a more efficient means of high-angle conveying that could completely discharge the coal without any carry back.

PWH recognized the capabilities of the DSI Snake Sandwich High Angle Conveyor. The DSI Snake utilizes conventional, smooth rubber belts that completely discharge the material and scrape clean by belt scrapers. This advantage solves the problem of losing material to carry back on the pocket belt system, while still allowing the high angle path. The new DSI Snake replaced the pocket belt and provided the additional capacity for the new pulverizing plant. A bifurcated discharge chute with flop gate, allowed direction of the coal flow to either plant. The Snake elevates 250tph (tonnes per hour) of coal at a 75° angle. The DSI Snake proved successful in rectifying this sticky situation and offering a more efficient solution.

DSI Snake at Aceralia.

DSI Snake at Muskiz Refinery.

The success of this conveyor system did not go unnoticed. Since this installation, two additional DSI Snakes have been installed in Spain for Repsol Refineries. The first was installed for the Muskiz Refinery near Bibao in northeastern Spain. The second is at the Cartagena Refinery on the Mediterranean Sea in southern Spain.

The DSI Snake at the Muskiz Refinery elevates coke and delivers the hot product to a truck load-out system. Designed to operate in an enclosed, potentially explosive environment, this Snake is subject to, and compliant with, the latest and strictest ATEX standards.

The second DSI Snake at the Cartagena refinery is of 'C-shaped' profile. The refinery expansion consists of two complete storage facilities. The first one is for petroleum coke storage and the second is for sulphur storage. The DSI Snake is part of the sulphur storage facility. Its function is to transport the solid particles generated during the solidification process at the plant, and to temporarily store them in piles to be taken to the port facilities.

These two DSI Snakes for Spain are part of a growing list of installations for Dos Santos International which includes a variety of applications throughout the world. DSI offers many unique systems from stationary units in all sizes, to fully mobile high-angle shiploaders designed to accommodate wharves with limited space. The versatility of the DSI Snake is demonstrated with each application, but the full potential of the system will only become realized as more units are installed for the wide range of industries that have yet to implement this well-established technology.

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Dos Santos International, materials handling and engineering specialists, offer the latest, most advanced, high tech conveying solutions. We are the world's foremost authority on high angle conveyor applications and design of sandwich belt type high angle conveyors. Our extensive expertise and worldwide experience are reflected in our products and services which include:




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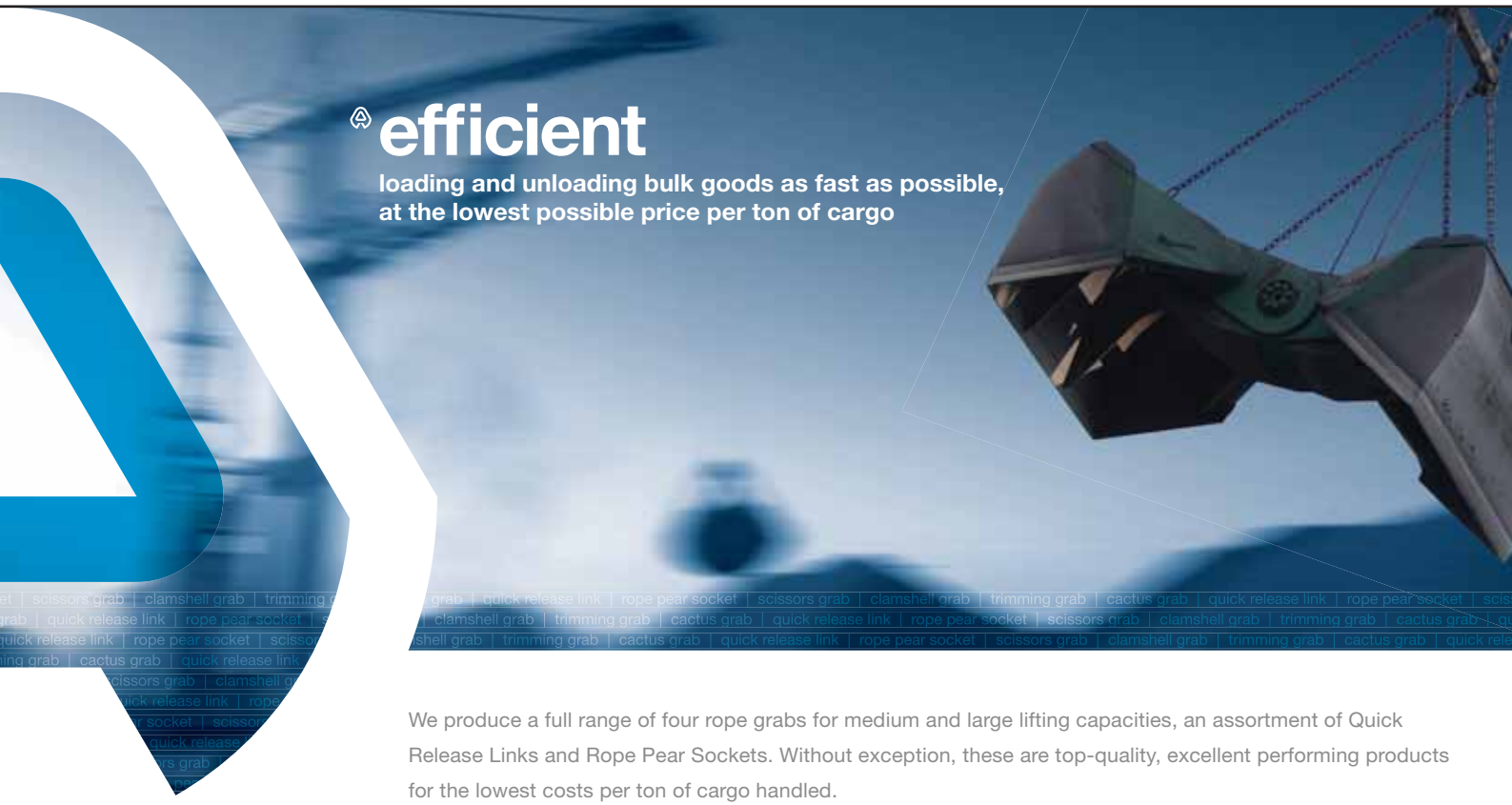

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Loading coal into railcars efficiently and accurately with PEBCO® systems

PEBCO® began in 1977 designing and supplying equipment worldwide for controlling and loading dry bulk materials. PEBCO®'s scope of supply and responsibilities include customized gates, valves, mass flow feeders, air slides, dustless loading spouts, telescopic chutes, shiploading equipment, truck and train loadout systems.

PEBCO® designed and patented the Uni-Load® train and truck loading system for in-motion loading of trucks and trains. This ground-breaking design allows for volumetric loading with accuracies approaching those of batching systems. In addition to engineering and building both volumetric and batch loading systems, PEBCO® has incorporated new innovative design modifications in its telescoping chutes.

PEBCO® has the experience of supplying over 40 in-motion train loading systems worldwide ranging from rates of 2,500tph (tonnes per hour) to over 12,000tph at speeds of between 0.5mph to 1.5mph. PEBCO® can custom design a loading system to meet its customer's needs, whether it be volumetric or batch loading with a telescoping chute or its patented Uni-Load® chute.

Chute in down position, prior to loading.

Railcar loading.

South African Train Loadout

The South African Train Loadout is located 90 miles northeast of Johannesburg, South Africa. This system is a 4,000tph volumetric loading system using a 60" square patented Uni-Load® chute delivery system to discharge and control flow into the railcars. A series of track scales monitor the weights of the empty and loaded railcars. This information is provided in electronic format to the control systems and used to make adjustments for the next railcar to be loaded in order to fine tune the loaded weight and centralize the load in the railcar. It loads an average number of three trains per day with an average number of 100 railcars per train. Due to rail restrictions, railcars were required to be under loaded with the load centralized between bogie centres +/- 1,000kg.

The control system incorporates a PLC, PC, monitor, pedestal panel, automatic and manual controls as well as interface for network connections. The panels are laid out with ease of operation in mind. The hydraulic power unit instrumentation is on the left, manual operation controls in the center and the automated controls and computer interface mouse and selection buttons are located on the right. An HMI (human–machine interface) screen provides the primary interface for the operator to monitor the overall process of loading a train.

For both volumetric and batching systems sensing the railcar height, railcar position and presence of the locomotive in the load out area are critical. These conditions and locations are verified by photo-eyes.

Wheel sensors are used to activate the track scales at the appropriate time to acquire railcar weights, trigger the Railcar Identification System and to generate a train speed indication.

Whether using a volumetric or batching system, a tare weight scale is used. Volumetric systems typically use a set of gross scales located at a position to establish the loaded weight of the railcar immediately after loading of the railcar is completed. This information is provided to the computer for adjusting the loaded weight of the railcar.

An integral part of the system is a Railcar Identification System. This unit identifies the railcar number and allows the control system to associate the correct tare weight with the proper railcar.

PEBCO® is dedicated to standing behind what it designs, manufactures, and sells. Its systems are specially designed to best serve the needs of its customers. Each project is evaluated on an individual basis allowing for customer requirements, product characteristics, environmental considerations and other elements. Its total commitment to our customer is to supply equipment and systems that incorporate the most practical and most advanced technological approaches, yet keeping in mind the economic considerations of the project.

End of railcar loading.

PHB Weserhütte

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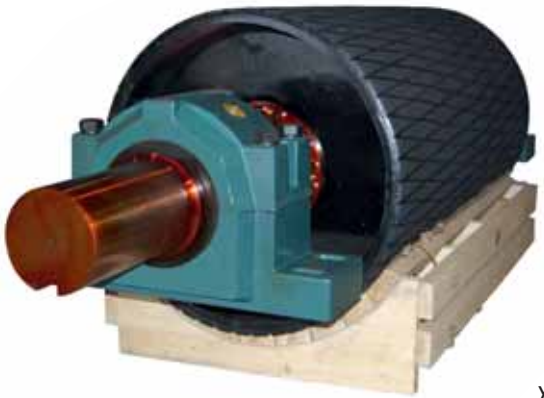
Core Systems™ design delivers conveyor uptime: a 'Superior' solution

Utilizing the expertise of the Superior Industries' knowledgeable engineering, manufacturing and sales teams, the company's Core Systems Design consulting service designs and supplies tailored power transmission components to provide a complete, custom drive package for each unique, conveying application. In addition to ensuring optimum efficiency and uptime, the single system provider and tailored approach, eliminates hassles by allowing the customer to work with a single company for both the machine and components. Installation is easy and simple with the entire drive system delivered in one complete, assembled package.

The Core Systems Design approach is a customized conveyor drive replacement service. Ideal for applications where minimal downtime is crucial such as coal, power generation plants and mines, Core Systems Design creates optimum conveyor efficiency and uptime for customers by ensuring drive components are ideally suited for the particular job specifications. The process investigates unique jobsite factors such as type and weight of material, average daily output, conveyor profile and ideal conveyor speed to ensure optimum power requirements are met.



In addition to the thorough consulting portion of the Core Systems Design service, Superior's team of engineers employs Finite Element Analysis (FEA) with every design. This technology identifies crucial stress points and predicts potential failures, allowing the engineering team to adjust the design accordingly. All Core Systems Design manufacturing team members are certified by the American Welding Society and fully trained in weld inspection and x-ray capabilities.

Fully customizable to each customer, the drive system package can incorporate any number of components, from a few select replacement parts to a complete power transmission operating system. Superior manufacturers its own pulleys and take-ups, with standard pulleys offered in diameters up to 60 inches, face widths up to 120 inches and shafting up to 15 inches. Custom pulleys are available upon request. The company works with top distributors to source additional requested components like bearings, gearing, couplings and bushings.

Superior stocks or has quick access to these power transmission components, enabling the company to provide fast turnaround time on every Core Systems Design package. Delivery on standard products exceeds industry standards and expedited service is available in as little as 24 to 48 hours from initial call to final delivery. Additionally, each custom-engineered drive assembly is delivered as a pre-assembled package, eliminating costly labour and hassle involved in onsite assembly while greatly reducing installation time. Assembly drawings and all industry leading brands of power transmission components are available upon request.

To optimize convenience, reliability and peace of mind, the entire system is engineered and built by Superior, and is guaranteed to work with the existing machine. In addition, the Core Systems Design service is backed by the company's two-year warranty with extended plans available on request. Furthermore, the shaft on each assembly is protected by a specially developed rust prevention treatment for added performance and longevity.

About Superior Industries

Established in 1972, Superior Industries has a reputation for engineering and manufacturing groundbreaking, bulk material handling conveyors and cutting-edge components. From its headquarters in Morris, Minnesota, USA, the manufacturer serves bulk handlers with stackers, transfer conveyors and stationary systems plus idlers, pulleys and accessories to lower operating costs and increase production. The company manufactures from two additional plants in Arizona and Georgia.

RE-THINK BULK STORAGE

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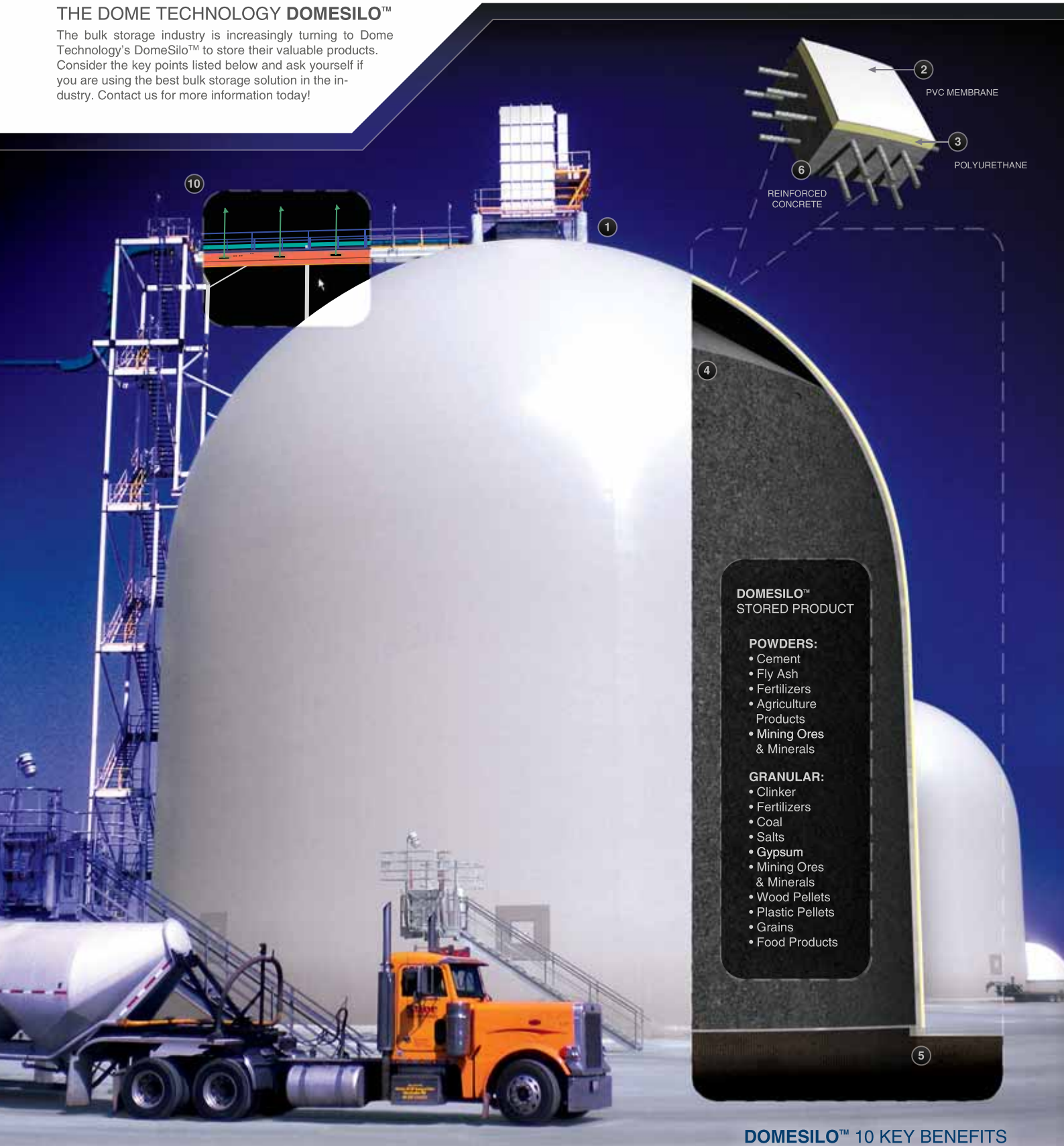
The bulk storage industry is increasingly turning to Dome Technology's DomeSilo™ to store their valuable products. Consider the key points listed below and ask yourself if you are using the best bulk storage solution in the industry. Contact us for more information today!



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Caterpillar equipment handling coal (and iron ore) at EMO

EMO, the European dry bulk and transshipment company for coal and iron ore, is the largest terminal for coal and iron ore in Europe. The biggest seagoing vessels from all over the world berth along its quay. State-of-the-art facilities unload seagoing ships fast and efficiently. EMO has a discharge capacity of 42mt (million tonnes) a year and a throughput capacity of 60mt.

For more details on EMO, please see 'EMO, full service gateway for coal and iron ore' on p39 of this issue.

Caterpillar equipment

A total of 29 Cat® machines work at the terminal and include large and medium wheel loaders, wheeled excavators, skid steer loaders, track type tractors, excavators and dump trucks.

Cat® 966 wheel loaders are used in the hold of the ships to clean the corners of the hold and help to maintain them in a very clean condition. The material is gathered to the centre where it is then picked up by a large grapple. Cat 325 hydraulic excavators fitted with a special vibrating worktool are put to task in the ships hold to remove coal that sticks at the side between the beams.

These machines work in tight and dusty conditions.

Repeatable fine modulation gives the Cat 966 superior bucket control with less spillage. The electro-hydraulic implement controls and load-sensing hydraulic system with simultaneous lift and tilt capabilities offer better control and efficiency with less effort. The wheel loaders have been equipped with a reinforced structure around the cab so they can be hoisted with a crane by a single suspension point on top of the cab. This method of hoisting the machine into the ship saves ten precious minutes per hold to the whole process which translates into more than an hour of saved time per ship. Ships must be unloaded within 24 hours of berthing. Should an extension be needed after that period, a hefty demurrage charge of around €30,000 per day is incurred. So, managing the tasks safely and within a tight time frame is crucial and requires efficient and reliable equipment.

Cat 990 and 988 wheel loaders load hoppers, train wagons and trucks, and assist the six stacker reclaimers by unloading and loading the material on the quay.

The wheel loaders are extensively used on the site and also help compact the coal to prevent the risk of spontaneous combustion (see picture, top right).

Skid steer loaders (see photo above) work alongside the 47km-long conveyor belt system that runs through the entire terminal. They scrape and gather the spillages under the belts and load the material with the help of a wheel excavator in the Cat 725 dumpers. The material is then driven to the screening area where after screening and washing it is returned to the different stock piles. EMO can wash and screen 3,000 tonnes of coal daily. Impurities are removed and special screening installations separate the clean coal into different grades.

Track-type tractors such as the Cat D8 work on the stock pile (see photo below). They are engineered for demanding work. The durable construction of the D8T is well suited for tough working conditions. Combined with the C15 engine for superior performance, fuel economy and meeting emission targets with the help of ACERT™ Technology, The D8T reliably keeps material moving at low operating costs.

Several modifications have been made to maximize efficiency. Extra lights are fitted for good visibility inside the holds of the ships and on the quay at night time. Guards protect the radiators from accidental damage and insulated electricity, fuse boxes and extra filters protect parts from dust in this aggressive environment.

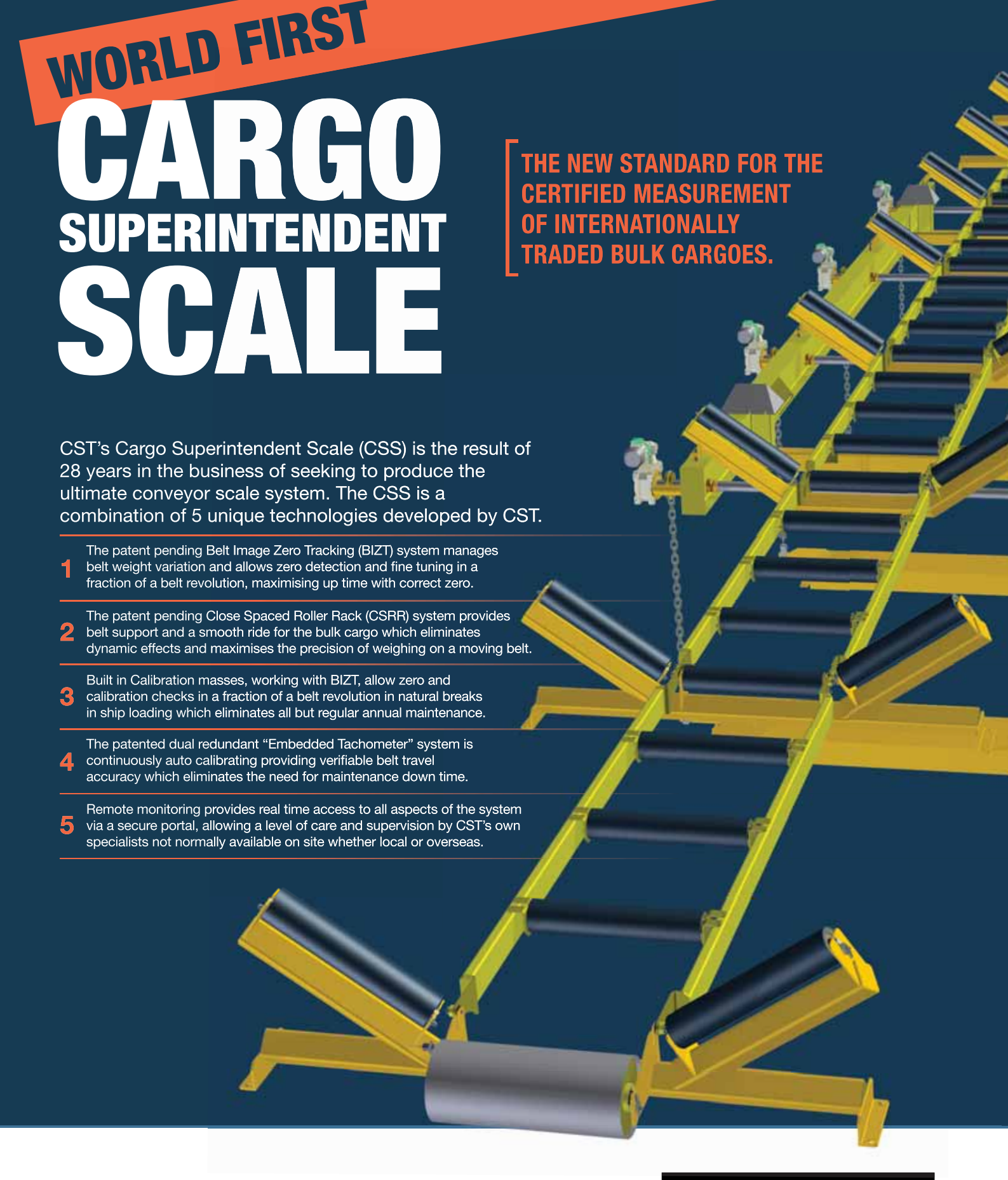
John Wannet, the key account manager at Cat Dealer Pon Equipment says: "The equipment we supply here needs to sustain extreme working conditions. The machines are heavily used and operated in five shifts, 24 hours a day, seven days a week. Our job is to ensure the machines are best equipped for this harsh environment, this results in many modifications. We deliver service 24 hours a day, seven days a week. In addition, operators have to be well trained to guarantee optimal availability and efficiency."

For this reason, new operators undergo a thorough 14-day training programme. For the first few days, wheel loader training is carried out on a Cat simulator. This method provides practical training in a safe learning environment before the operator is allowed on the machines.

WORLD FIRST

CARGO SUPERINTENDENT SCALE

THE NEW STANDARD FOR THE CERTIFIED MEASUREMENT OF INTERNATIONALLY TRADED BULK CARGOES.



CST's Cargo Superintendent Scale (CSS) is the result of 28 years in the business of seeking to produce the ultimate conveyor scale system. The CSS is a combination of 5 unique technologies developed by CST.

1. The patent pending Belt Image Zero Tracking (BIZT) system manages belt weight variation and allows zero detection and fine tuning in a fraction of a belt revolution, maximising up time with correct zero.
2. The patent pending Close Spaced Roller Rack (CSRR) system provides belt support and a smooth ride for the bulk cargo which eliminates dynamic effects and maximises the precision of weighing on a moving belt.
3. Built in Calibration masses, working with BIZT, allow zero and calibration checks in a fraction of a belt revolution in natural breaks in ship loading which eliminates all but regular annual maintenance.
4. The patented dual redundant "Embedded Tachometer" system is continuously auto calibrating providing verifiable belt travel accuracy which eliminates the need for maintenance down time.
5. Remote monitoring provides real time access to all aspects of the system via a secure portal, allowing a level of care and supervision by CST's own specialists not normally available on site whether local or overseas.

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CONTROL SYSTEMS TECHNOLOGY

Leading the way in Conveyor Belt Scale Technology

The equipment is certified for trade purposes, Europe, MID to OIML R50 Class 0.5 {0.25%} (and soon Class 0.2 {0.1%}) No. UK/0126/0084, Australia OIML R50 Class 0.5 No. 6/14D/13 Variation No 3, Canada Measurement Canada 0.5% Approval AM-5442, 0.1% Approval AM-5612 and United States NTEP 0.25% CoC No. 02-135A2 and NY CN 9269.

- Calibration may be independently verified by a third party Cargo Superintending Company against traceable mass standards. CST is seeking relationships with Cargo Superintendents world wide.
- Guaranteed accuracy of 0.1% available depending upon application. CST technology allows precision belt weighing on conveyors previously thought unsuitable. Equipment suits all belt widths, 2000-2500mm typical.

Lightening the load

ever-improving technologies simplify the shiploading process

Tackling the challenges of shiploader design

With over 50 years of experience and an international reputation in this competitive field, Aurecon knows a thing or two about designing shiploaders.

Aurecon has been designing shiploaders for Australian and international applications since 1959. Building on traditional expertise in bulk material handling and port engineering, the company has earned an international reputation as a major presence in this market.

This standing in the field has evolved, in particular, over the design of a significant number of long travelling, luffing, A-frame-type shiploaders in operation in coal ports on the east coast of Australia. Here, in many cases, the company has also managed the procurement and construction of these machines.

While recognition is primarily for the A-frame type machine, additional designs include, among others, radial shiploaders, fixed location luffing and slewing shiploaders. Designs cover machines to export a wide range of bulk materials, including coal, mineral ores, cement, sugar, grain and woodchip.

Using its experience in the field, Aurecon is able to tailor each machine to the application and the clients' requirements.

The most recent machine commissioned is the Abbot Point Shiploader 2 (SL2), delivered as part of the award winning X50 Expansion Project completed in 2011 in joint venture with HATCH. Abbot Point is the most northerly deepwater coal port of Australia, situated 25km north of Bowen, Queensland. The machine is a development of Aurecon's A-frame family of designs. The company developed the first of these designs in 1977 for the Mauritius Bulk Sugar Terminal.

The Abbot Point SL2 loads ships up to very large Cape-class at a rate of 7,200tph (tonnes per hour). The machine weighs approximately 1,400 tonnes and represents state-of-the-art design of large capacity shiploaders. The completion of wind tunnel testing of a scale model enabled design optimization beyond traditional calculated estimates of wind forces.

John Holland Group fabricated and erected the machine in Brisbane. A specialist heavy lift vessel, the *Happy Buccaneer*, transported it to Abbot Point. Transportation proved to be challenging; requiring a luffing down of the boom for transit under the Gateway bridges and then raising and securing it for the sea voyage while the *Happy Buccaneer* was under way.

There are currently two machines in the construction phase; the Hay Point Coal Terminal (HPCT) Shiploader 3; and the Wiggins Island Coal Terminal (WICT) Shiploader 1. Aurecon Hatch JV project delivery teams have designed both.

The HPCT shiploader 3 is a development of the Abbot Point machine, with a higher 8,000tph loading rate.

A trend in shiploader procurement is overseas fabrication, erection and initial dry commissioning of a machine, followed by

Abbot Point Shiploader 2 being unloaded by the Happy Buccaneer.

transport to site via a specialist heavy lift vessel. The HPCT machine will follow this trend. This approach has enabled a substantial capital saving, and represents the likely procurement strategy for most shiploaders supplied to Australian ports in the future.

This strategy creates new challenges in design and quality control, such as designing with steel sections that are readily available overseas and ensuring fabrication meets Australian Standards.

The WICT Shiploader 1 machine will operate within a semi-protected harbour. It is a new design that uses the efficient A-frame configuration, but targets cost savings in the supporting marine structure by further minimizing the weight of the machine, and reducing the machine rail gauge from 18m to 16m. The WICT machine achieves a weight saving of approximately 300 tonnes over the Abbot Point machine, while achieving a higher 8,500tph loading rate. A second, higher-capacity WICT shiploader is also currently in the design phase.

The Aurecon A-frame design includes shuttling and telescoping chutes with loading spoons to provide complete hatch coverage with simple linear movements. This feature is especially important for low density bulk products such as coal, where controlled placement of product in the ships hold is important.

The A-frame design permits narrow gauge machine rails which minimizes the cost of the marine structure. This means that the design is particularly suited to single-sided offshore deepwater berths, such as those found at the Abbot Point, Hay Point, Dalrymple Bay and Wiggins Island coal terminals.

The shiploader type selected for a port is highly dependent on the product handled, and the orientation and location of the wharf. For example, in ore handling where marine conditions suit dual-sided wharves and placement of the denser bulk product does not require the use of a telescopic chute and loading spoon it is common to employ long travelling, slewing type shiploaders. Bridge type shiploaders, which require large rail centres, are particularly suited to land backed wharves such as at NCIG's recently commissioned Newcastle coal terminal. It is essential to consider shiploader type selection in conjunction with the design and arrangement of the marine structure.

A future direction for shiploaders is an increase in the level of automation of the machines. In modern bulk material stockyards it is standard to automate yard machines such as stackers and reclaimers. However, the automation of shiploaders offers unique challenges to overcome.

The challenges mainly arise due to the variability in the shiploading operation, including;

- variability in ship designs;
- identification of potential collision sources such as hatch edges, ships derricks and bridge structure; and
- vessel movement due to wave action and tides.

Other challenges include ensuring completion of loading in accordance with the ship captain's instructions to maintain trim and ensuring systems remain reliable in adverse weather conditions.

Shiploader design will continue to be a challenging field of engineering. Each port development offers unique conditions. Some require high throughput such as the Australian east coast coal ports, calling for high rate, high utilization machines. Others have relatively low throughput, calling for an efficient, cost effective design.

About Aurecon

Aurecon provides engineering, management and specialist technical services for public and private sector clients globally. The group, with an office network extending across 23 countries, has been involved in projects in over 80 countries across Africa, Asia Pacific and the Middle East and employs around 7 000 people throughout 11 industry groups: Resources; transport; government; property; construction; water; energy; manufacturing; data & telecommunications; defence; international development assistance.

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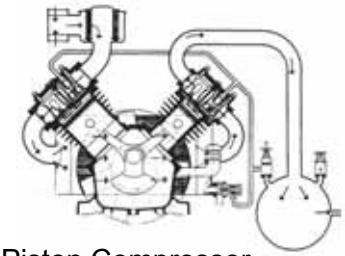
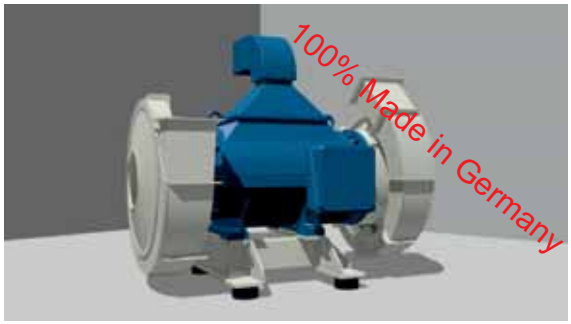

Piston Compressor (<1800)


Roots Blower (1900)


Fan with Air Flow Regulator (1960)


Fan with frequency inverter and automatic belt tension (2000)


TURBO POWER single stage (2009)



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Sugar 3,000 t/h

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Grain/Ore 1,000 t/h wood chips

Grain - 1,500 t/h

Grain - 2,500 t/h / wood chips

Kaolin 1,100 t/h

Grain - 1,500 t/h each tower

Dust trap - Upgrading

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CERTIFICATE SYSTEM ISO 9001:2008

CST consolidates its shiploading position

Control Systems Technology Pty Ltd, an Australian company operating worldwide with experienced partners in major economies, has built on its experience in shiploading scales to launch a new constellation of its existing technology as the purpose specific 'Cargo Superintendent Scale'. CST has been building belt scales specifically designed for shiploading for over 28 years and its equipment is already used at significant shiploading terminals worldwide. Australian export coal is loaded onto ships over CST scales at Abbot Point, Dalrymple Bay and Hay Point Coal Terminals in Queensland. Also NCIG, Port Waratah Coal Terminal – Kooragang Island and Carrington sites and the Port Kembla Coal Terminal in Wollongong NSW. In iron ore, CST has a presence at BHP Billiton's Port Hedland and Finucane Island facilities, as well as with Rio Tinto's Parker Point, East Intercourse Island and Cape Lambert facilities and now with FMG. The majority, if not all, of Australia's iron ore has been loaded onto ships over CST belt scales for more than ten years.

In Vancouver, Canada, CST equipment is used at Westshore and Neptune Terminals for coal loading; at Pacific Coals Terminals, it is used for loading sulphur to ships. In Vancouver too there is CST's world first trade certified 0.1% scale for shiploading where gold-copper ore is loaded over a 0.1% scale which has been in service for over five years. In this case, ships survey is no longer used as the basis of sale of the cargo; ships survey simply is not accurate enough. CST has also received a vote of confidence through its Canadian agent, TD Micronic Inc by being selected as the only equipment with the necessary accuracy and reliability to replace draught surveys at major ports in Canada and the USA. .

While world trade has depended upon ships survey for hundreds of years, it is losing ground to CST shiploading scales. This is especially true when cargoes are sold by the hold. Ships survey may be able to be maintained within +0.5%/–0.5% for a whole ship, but for a 'one hold at a time' transaction it is clearly inadequate.

CST has developed a suite of technologies based on its broad experience. Each technology is focused on meeting the customer's need for 100% availability and bullet proof reliability. CST has made improvements to all of the belt scales components, each one aimed at reducing the already minimal maintenance required by its well-established stable systems. The improvements have been made in five technology areas:

1. Better management of zero adjustment is made via CST's international patent pending **Belt Image Zero Tracking (BIZT)** system. The BIZT system is based on a technology which records an image of the weight of the conveyor belt over its entire length. The system allows the correct zero weight of the belt to be played back to the weight processor in sequence with the conveyor belt thus eliminating the normal weight/flow variation seen on a belt scale at zero flow. For a previous generation scale, the weight information for a correctly zeroed belt is actually only precise once each complete belt revolution. With the advent of the BIZT system, it is now much easier to discern whether a conveyor belt is actually empty before making a zero adjustment and an adjustment can be made in a very short period of time, much less than one revolution of a long belt. As a result, belt zero monitoring and adjustment can fit into the natural short breaks in the normal shiploading process and does not require special downtime.

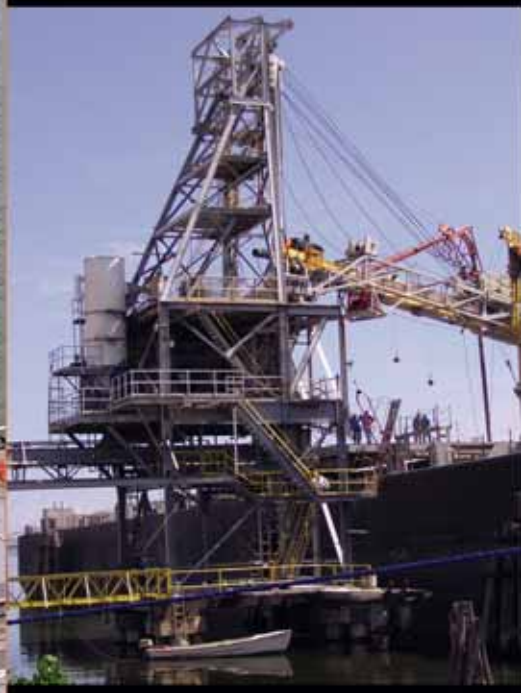
2. CST's international patent-pending **Close Spaced Roller Rack (CSRR)** smooths the ride for the cargo as it moves through the scale area. Normally, as cargo moves along on a belt, it is jostled up and down and may even become airborne at every idler set along the conveyor. The CSRR provides extra carry roll support while still providing independence of the weigh frame so that the problems of normal conveying and weighing are all but eliminated. Dynamic effects which come from the unhelpful up-down movement of the material on the belt and that of airborne material introduce the possibility of material slip on the belt, affecting both tachometer and weighing accuracy. These are brought under control creating a secure

The world's most complete line of chain and enclosed belt conveyors.

TRAMCO SHIP UNLOADERS

Tramco Retrofit

A 450 TPH Ship Unloader for existing tower.



Tram-3 Ship Unloader

Mobile 3-legged design assures you of equal weight distribution, regardless of rail or dock conditions.

The Tramco System is as easy as 1-2-3

1. We unload from truck, rail or ship.
2. We convey through storage or processing.
3. We reload on truck, rail or ship.

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system with repeatable results even though different cargoes are loaded at different flow rates.

3. **Built-in Calibration Mass**, whilst not an innovation in itself, when combined with the BIZT system and an intelligent control system, it means zero and calibration checks may be made in a fraction of a belt revolution in natural breaks during shiploading. Many people believe that belt scales are inherently unreliable and need continual calibration. CST has established that scales with well designed weigh frames which have an adequate 'signal to noise ratio' for weighing in the belt tension environment existing on the conveyor belt are stable and are unlikely to need adjustment even after 12 months of service. Therefore, be assured, the 'Stored In Place' (SIP) calibration masses are not required for the continual adjustment of the calibration of the system, but rather to maintain confidence in the system. The SIP masses are a reference mass traceable to national standards and ensure the security of the system. The checking process is required by many trade measurement authorities to ensure that a certified system remains in good condition between certifications. The SIP masses are not in themselves a legally recognized reference for trade certification; a series of pre-

or post-weighed slugs of live cargo is required for certification, however, and the SIP masses are a recognized method of ensuring that a system has remained stable. The beauty of the SIP system is that regular downtime for reference checks is not required, as the object is achieved during the normal use of the system.

4. CST's patented **dual redundant embedded tachometer** is the most reliable tachometer system ever to be offered for conveyor scales. The tachometer system has the role of accurately measuring the movement of the belt and hence the cargo across the weighing area. Any error in the tachometer system is reflected directly in the output of the system CST's embedded tachometer is incorporated directly into the weigh frame measuring the belt movement right at the weigh scale where it matters. Since it is 'dual redundant', the system can isolate a faulty tachometer and continue to operate on the good one. The system also includes a continuous automatic calibration process which continually checks and adjusts tachometry to keep the tachometer correct under all temperature, moisture, wear or even build-up situations. The benefit to the end user is that there is no routine maintenance; just a 12 monthly check.

5. The final piece of the system is remote monitoring via the internet where all of the scales subsystems can be monitored in real time, minor faults checked for and, if necessary, remedial action taken. The CSS system's internationally trade certified 'Superintendent' electronics system continually logs system performance. The log will keep maximum and minimum flow rates as well as the growth of the total as the ship is loaded. Also, there is a log of all zero and calibrations check events and all tachometer tracking events and adjustments. Any fault event is logged with time and date for each event providing unparalleled insight into system events and performance. CST's remote monitoring via a secure VPN connection provides a level of care and supervision by CST's own specialists not normally available on site whether local or overseas.

CST has a wealth of experience in all aspects of belt scales whether it be the application engineering, design, building to rugged marine standards, installation supervision, commissioning or ongoing care of mission-critical cargo scale systems.

Control Systems Technology Pty Ltd distributes its scale systems through partners worldwide. Of particular note is its Canadian agent TD Micronic, where CEO Lorne Danielson has been involved in the development and deployment of CST shiploading scale systems in coal, sulphur, copper-gold concentrate and potash. In the USA, CST is very pleased to be associated with Merrick Industries which already has a conveyor scale manufacturing and maintenance presence throughout the Americas. Merrick has long been a major player in this industry and provides additional strength to CST's existing strength in world markets.

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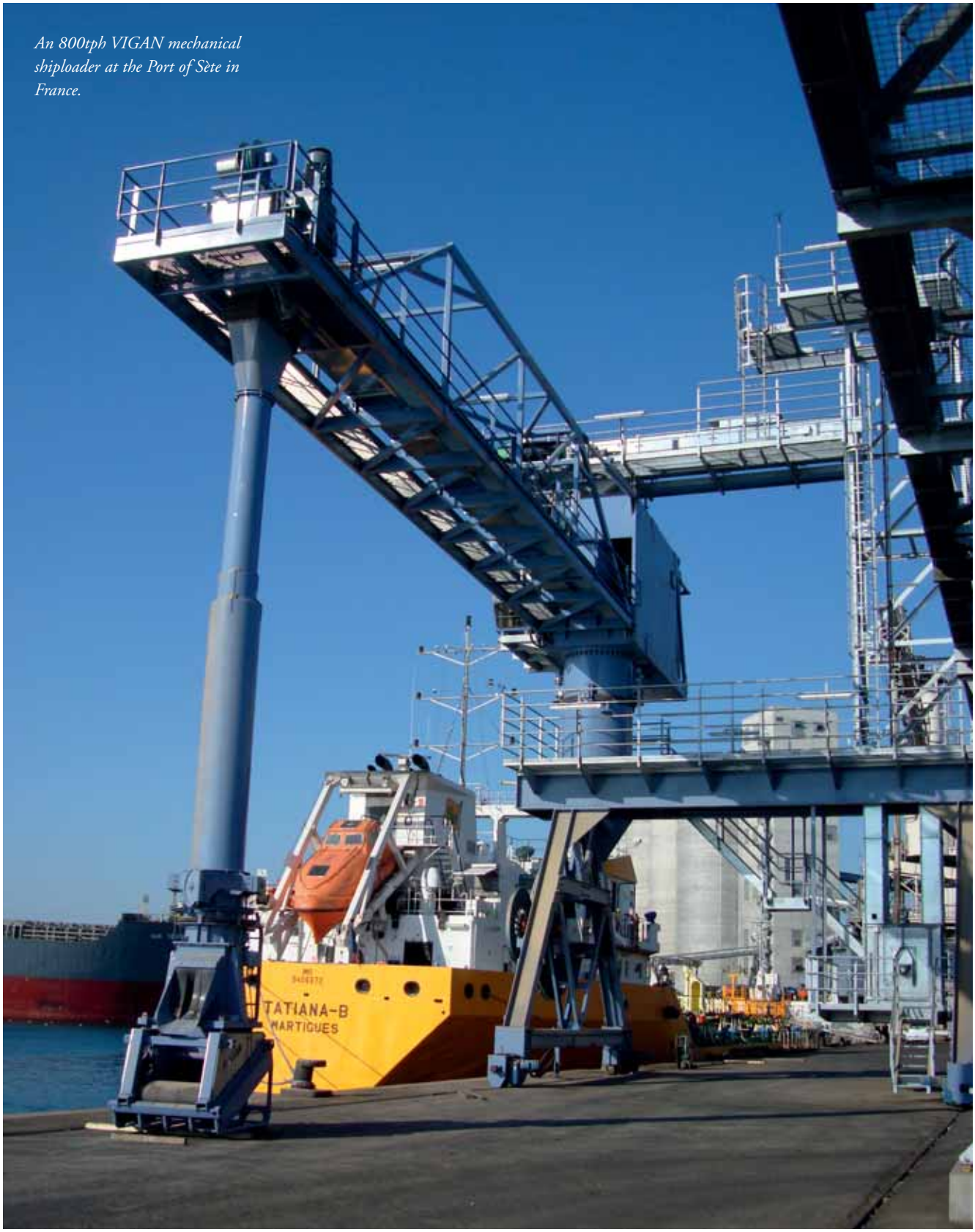
VIGAN stays on top of dust control issues in dry bulk shiploading



An 800tph VIGAN mechanical shiploader at the Port of Sète in France.

VIGAN Engineering S.A. is a Belgian company located in Nivelles industrial area of the country, about 30km south of Brussels, at the heart of the European Union. It specializes in the design and manufacture of port equipment for dry bulk handling. The company offers a range of bulk handling equipment, and has significant expertise in shiploaders and shiploading technology.

Historically VIGAN started manufacturing portable grain pumps to convey cargo, for instance from ship to trucks/quay conveyors and vice versa, to load and/or unload silos or flat warehouses, etc . The company extended its range of equipment with continuous ship unloaders (CSUs) on gantry (pneumatic and mechanical), and mechanical shiploaders.

Designed for almost any kind of products in bulk with a density from 0.2 to 1.8tm/^{3}, VIGAN loaders are suitable for all size of barges or vessels, and can reach a capacity of up to 1,200tph (metric tonnes per hour).

A 350tph VIGAN shiploader unit in operation at AK Biday Aktau Port on the Caspian Sea in Kazakhstan.

The loading is done mechanically: cargo can be, for instance, transported into the loading boom by integrated belt (eventually with a travelling movement) or chain conveyor and discharged by gravity into the ship's hold, thanks to a telescopic loading chute.

The loading boom (up to 26m) is usually mounted on a slewing ring.

The combination of telescopic and rotating movements allows continuous and uniform loading operations of the ship holds.

Customized models

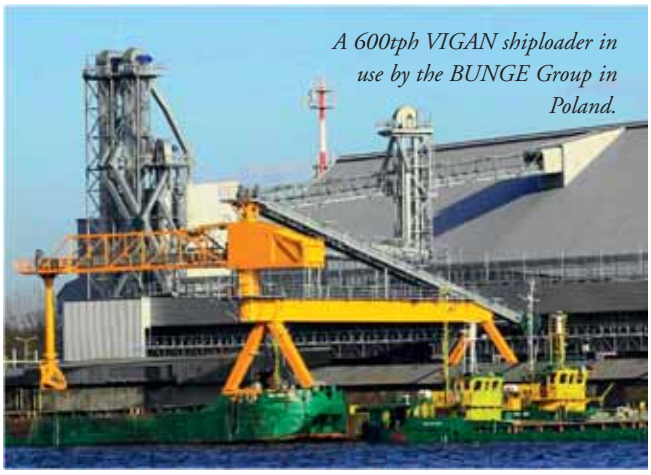
The whole loading structure can be mounted on a self-propelled gantry on rails usually with cable reels; on a self-propelled gantry on rubber wheels, with diesel generator or cable reels; or on a fixed structure.

Dust control

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



A 600tph VIGAN shiploader in use by the BUNGE Group in Poland.

Special features

These are available as options, and 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, allowing also a quite uniform spreading of the cargoes in the holds.

Recent sales

Among the most recent loading equipment sold:

- **in 2007:** VIGAN supplied a 350tph shiploader unit to AK Biday Aktau Port on the Caspian Sea in Kazakhstan. This shiploading installation helped AK Biday to export an annual 600,000 to 700,000 tonnes during the nine-month harvest, loading a monthly average of 75,000 tonnes in 5,000dwt to 6,000dwt vessels.
- **in 2010:** in Poland, one 600tph loader was sold to BUNGE Group, a leading agribusiness and food company.
- **in 2011:** the Port of Sète (in France), where grain exporting activities are continuously growing, extended its berth. It acquired from VIGAN one 400tph pneumatic barge unloader and one 800tph mechanical shiploader;
- **in 2012:** one shiploader for vessels up to 60,000dwt with a capacity of up to 1,000tph is currently being installed in the Port of Liepaja on the Baltic Sea.

PEBCO® minimizes dust and material degradation with Cleveland Cascade® chute

PEBCO® has been servicing the powder and bulk materials handling industry world wide for over a quarter of a century. PEBCO® has grown to worldwide prominence with headquarters in the United States and representation throughout the world.

PEBCO®'s resources and responsibilities include customized gates and valves, mass flow feeders, dustless loading spouts, telescopic chutes, and truck, ship and railcar loadouts.

Of particular note to the shiploading market is PEBCO®'s marketing of the Cleveland Cascade® chute, which is invaluable in the fight against dust emissions during the loading process.

Cleveland Cascade® chute

The Cleveland Cascade® chute eliminates the problem of free fall and induced air movement.

The Cleveland Cascade® chute introduces mass flow at low velocity. Mass flow maintains the bulk particles tightly packed together, thus minimizing the release of the small dust particles. The low velocity of the material traversing the chute eliminates air movement. As no air escapes from the discharge point, no dust escapes. The chute provides excellent dust control without fan assisted dust extraction systems.

The Cleveland Cascade® chute consists of a series of oppositely inclined cones, supported by straps, and surrounded by an independent wind shroud. A carrier at the lower end of the chute is raised or lowered by cables from a winch assembly. When lifted, the carrier supports the compact stack of cones, while the cones themselves automatically stack into one another without any form of guide. The winch cables perform a secondary function in the provision of guides for the wind shroud.

A specially designed steel head chute is attached to the conveyor discharge boom. It provides a support for the chute and introduces bulk material into the Cleveland Cascade® chute cones in mass flow and at the correct inclination and velocity. The chute is easily removed in a few minutes.

Options

Probes; load cell weighing system; radio remote control; skirt arrangement; trimmer (spoon); cone wear liners; transporter; and integral winch design.

Loading rates

The flow of bulk products through a Cleveland Cascade® chute is complex, depending on density, moisture content, particle size, cohesion friction, cone size, cone inclination and cone shape. A number of cone sizes are available to accommodate flow rates in the range of 200–4,000tph (tonnes) per hour based on a product density of 60pcf.

Application of the Cleveland Cascade® chute

The Cleveland Cascade® chute can be used in any situation where vertical or near vertical transfer of bulk material is required: shiploading; silo loading; open stockpiling ; conveyor transfer chutes; and road loading.

The Cleveland Cascade® chute can be attached to pivoted or fixed inclination conveyor booms.

Degradation is a problem with many bulk products. Degradation is normally associated with high velocity impact resulting from bulk material falling from a considerable height. The drop height between Cleveland Cascade® chute cones is small. At high tonnage rates, the cones partially fill, almost eliminating the drop height between cones and simulating mass flow. As a result, degradation is minimized.

Segregation occurs when the finer product particles are separated from the larger product particles. When a material is vertically dropped separation is maximized. Separation of the different particle sizes is one of the major contributors to dusting issues when loading products.

The Cleveland Cascade® chute reduces product separation by first reducing the drop height between the cones. Secondly, and most importantly, the cones are set in the chute at an angle which eliminates a vertical drop of the material. The cone angle is adjusted for the material being handled to control the product's speed. When the product moves at a slower speed there is less product separation resulting in less dusting.

As a result of the cascading flow of material through the chute and slower product speeds, the Cleveland Cascade® chute does not require dust collection at the discharge of the chute. This eliminates the capital cost and maintenance cost associate with expensive dust collection equipment.

Cleaning

The shroud is independent from the chute. It can be lowered to allow easy access to the Cascade® allowing the chute to be easily cleaned.

Chute removal

The design of the attachments between the complete chute assembly and conveyor boom is simple allowing the chute to be easily removed or replaced.

Power costs

Because of the unique design employing mass flow and eliminating air movement, no fan assisted dust extraction is normally required. As a result, the capital, operating, and running costs of filter systems are eliminated.

Materials handled

Various potash grades; grain; alumina; salt; spent insulation; bentonite; mill scale; coal; soda ash; petroleum coke; sodium sulphate; napheline syenite; coke; cement clinker; china clay (kaolin); boron; anhydrous sulphate; phosphate; iron oxide; perlite; sintered zinc; dolomet; urea; sugar; lead concentrate; zinc concentrate; and cement.

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Telestack successfully installs mobile shiploader for Isle of Wight Grain, UK

Telestack has recently installed a fully customized mobile shiploader loading grain to coaster vessels for Isle of Wight Grain, UK. The cambered boom shiploader is been fed directly from the grain hatch of trucks onto 4,000-tonne coaster vessels. The wheel-mounted radial shiploader ensures the operator can trim and change hatches with ease, also with the integrated tow hitch they can move the unit from the quayside when not in use. The unit forms part of a significant investment from the Isle of Wight grain to ensure it meets its target of 30,000 tonnes of grain exported per year to mainland Europe (France, Spain, Portugal and the Baltics). The LDU 521 grain loader has to date loaded 10,000 tonnes to vessels since its installation two months ago, and is set to load a further 5,000 to 10,000 tonnes in the coming months of the year.

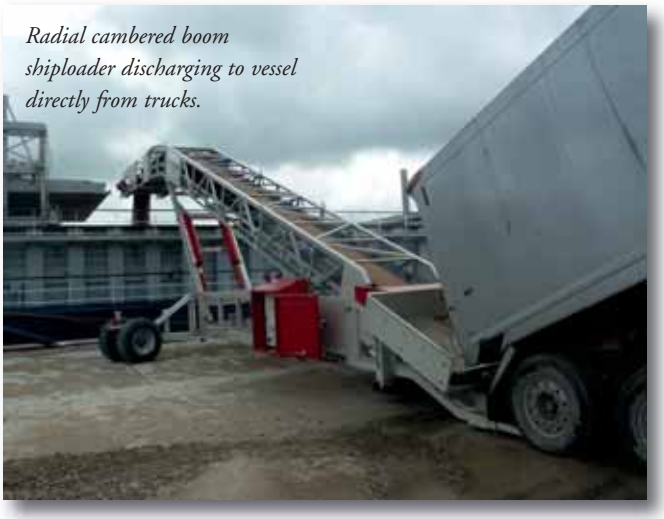
Cambered boom radial shiploader loading grain to a coaster vessel from trucks.

A 35-tonne truck unloading into the LDU 521 to a 4,000-tonne coaster vessel.

The fully electric driven unit includes an integrated variable speed drive so the operator can speed up or slow down the belt, depending on the requirement during loading. The heavy-duty lattice frame design ensures integral strength with a 1,000mm-wide chevron belt and the option of a 1,200mm-wide upgrade within the same design. This design also facilitates the integration of a 360° trimming chute, for increased trimming capabilities (if required). The operator is unloading 35-tonne grain trucks at rates of 200–300tph (tonnes per hour), ensuring that the loading time of the vessel is enhanced.

This unit replaced an 'outdated' designed unit, with the customer selecting the Telestack design over the previous supplier. This is explained by Chris Sprackling, operations manager at Isle of Wight Grain, "The previous equipment was not sufficient to meet the increasing demands of our production. As we are on a mud wharf, the previous equipment could not reach the 5m (15ft) free-board height [at high tide] necessary to load our maximum 4,000-tonne vessels. The Telestack equipment achieved the greater production rate of 200–300tph from the previous 100tph capacity and loads/trims our largest vessels with ease."

The radial facility of the LDU 521 shiploader ensures the operator can trim the hatch of the vessel from one feed-in position to reduce downtime during loading. Also, as the grain cannot get wet and loading has to stop if it rains, the hydraulic internal hub-driven radial wheels allow the operator radial out of the vessel during a hatch change or hatch sealing very quickly, to ensure the material is not contaminated/damaged. Telestack also offers complete dust enclosed conveyors to eliminate dust emissions on site, if required.



Radial cambered boom shiploader discharging to vessel directly from trucks.

Radial cambered boom shiploader discharging to vessel directly from trucks.

Telestack Limited continues to excel in providing innovative mobile bulk material handling systems to its worldwide customer base. This is emphasized by Sprackling: "We chose the Telestack unit over the competitors due to the quality of construction/design shown in their equipment and the competitive price. Overall, we are extremely happy with the units operation and would consider purchasing other equipment from Telestack in the future. Also, we have found Telestack a very competent and honest company to deal on this project."

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Shiploaders represent a major part of ZMPC's product portfolio

Shanghai Zhenhua Heavy Industries Co., Ltd. (ZPMC) is a renowned Chinese manufacturer of heavy-duty equipment, and a state owned company. ZPMC headquarters are located in Shanghai and it has ten production bases in Shanghai, Nantong and Jiangyin, with total area of 6,670,000m^2 and 10km coastline. Particularly notable is the Changxing Base, which has a 5km deep-water coastline, and includes a heavy-duty dock of 3.7km. ZPMC is a major global heavy-duty equipment manufacturer. At present, ZPMC has established six spare parts and service centres in different areas and countries, including Europe, USA, Dubai, Singapore, Korea and Istanbul, to promote the company and supply better service to customers. In particular, ZPMC Europe is a multi-faceted company specializing in repair, inspection, maintenance, modification and delivery of cargo cranes, container cranes, material handlers and so forth. Additionally, it also provides technical support and project management for customers.

ZMPC is a well-known manufacturer of shiploaders. It also supplies large-scale port container machinery and bulk material handling machinery for ore and coal, such as quayside container cranes and rubber-typed gantry cranes, which have entered into 76 countries and regions all over the world and occupied 78% world market shares. Bulk material handling machinery includes, of course, shiploaders, ship unloaders, bucket-wheel stacker-reclaimers and environment-friendly chain-bucket ship unloaders. It also supplies offshore products, such as floating cranes, pipelay vessels and other engineering vessels, all types of platforms, DP systems and jacking systems. It also manufactures large-scale steel structures and steel bridges. The production capacity is 1,000,000 tonnes per year.

For the cargo handling market, ZPMC's bulk handling equipment has been sold to more than 130 ports in 76 countries and area, such as France, Belgium, the United States, Australia, Brazil, Sweden, Canada, Morocco, Japan, India, Madagascar, Holland as well as main ports and power plants in China. ZPMC provides major and highly efficient ship unloading and loading bulk cargo machines for ore, coal, cement, sugar, soda, salt and so forth at bulk terminals all over the world. In all, ZPMC has made more than 50 shiploaders. By now, the maximum rated capacity is 12,000tph (tonnes per hour) for LLX

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Sudeste port in Brazil. The second largest rated capacity is 10,000tph Vale Sohar in Oman. Recently, the company has won a wide range of new contracts. These include, for example: one 4,500tph shiploader for Alabama Port Authority in the USA; one 5,000tph shiploader for Ningbo Port in China; one 5,000tph shiploader for Lobito Port in Angola; and four 3,000tph shiploaders for Zhuhai Shenhua Coal Center in China.

Currently, ZPMC holds more than 70% of bulk cargo handling equipment in China. The main competitors are DHI DCW Group Co., Ltd., Wuxi Gongli Engineering Machinery Plant, DINSON Industries Corporation and so on. ZPMC has a range of significant competitive advantages and strengths. Firstly, it has deep water coastlines, high-capacity fabrication workshops and heavy-duty docks. Secondly, it has strong steel structure manufacturing and assembling ability. For instance, Nantong Base is one of the main manufacturing and assembly bases for shiploaders. It has CNC cutting workshops, machining shops, steel plate pretreatment plants, blasting and painting shops and eight heavy-duty steel plants which are 220m long and 120m wide, giving it ideal facilities, enough lifting power and the capability to manufacture high-quality shiploaders. In addition, ZPMC is equipped with an excellent central laboratory, which is able to undertake material impact and tensile testing. Moreover, ZPMC has its own brands of (in accordance with international standards) high quality mechanical and electrical accessories, and has four specialized branches which manufacture and design brakes, couplings, paints elevators and gear boxes. In addition, it owns a fleet of 23 transportation ships which are from 60,000dwt to 100,000dwt, that can ship fully-erected heavy equipment to customers and shorten the delivery period significantly. ZPMC also has large-size floating cranes along the coast, so shiploaders can be erected and commissioned simultaneously and efficiently. Last but not the least, ZPMC is certified by the ISO9001 quality management system, OHSMS 18001 Occupational Health and Safety Management System, ISO14000 Environmental Management System and others.

ZPMC believes firmly in continuous improvement. It has great strengths in design, manufacture and transportation to meet its customers' requirements in terms of quality, delivery and service.

ZPMC works hard to develop new products and technologies, such as its multi-function container grab crane, railcar dumpers, CSU (continuous ship unloaders) and bulk material handling systems. There are 2,000 R&D technical engineers who engage in mechanical, electrical and hydraulic design, creating a highly experienced design team. They have been awarded more than 50 national and municipal technology awards. ZPMC insists on self-innovation and has been awarded a first award from National Science and Technology Progress. It has also established a national-level enterprise technology centre and post-doctoral workstation. In Shanghai, with nearly 260 research institutes, 60 universities and 162 academies, ZPMC offers tremendous advantages in the fields of science and technology research and development. In particular, SJTU, TJU, and SMU have been ZPMC's reliable allies on many projects. What's more, ZPMC has had an excellent after-sales service record for decades. Meanwhile, with the increase in competition and less differentiation between products, ZPMC will raise its brand value and competitive strength by providing reliable and excellent services through all stages of sales.

In the future, ZPMC plans to maintain its continuous R&D inputs, constantly raise the level of technology so that it can gain more market shares and become a world-leading manufacturer.

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Telescoping conveyors and truck unloaders greatly increase logistics efficiencies

Maritime transport is playing an ever-increasing role in the cost-effective delivery of aggregate and mineral ores. From port to port, the economic advantages of shipping by inland barges or ocean freighters increase as the tonnage and distance of transport increases. Consider that at any one time, one of the largest US aggregate producers has nearly a quarter-million tonnes of material on barges heading down the Mississippi River, for example. Commonly holding 1,500 tonnes of aggregate, barges can be grouped into tows of 30 to 40 barges depending upon the width and depth of the waterway. And, ocean freighters average tonnages between 60,000 to 120,000 tonnes, which equals the volume carried by 3,000 to 6,000 twenty-tonne dump trucks. Consequently, more and more producers are cashing in on the advantages of waterborne shipment — and more and more customers' trucks are being loaded at port facilities with materials produced hundreds or even thousands of miles away.

But importantly, the true cost-efficiencies of maritime transport can only be achieved by looking at the total picture. Certainly, if an operation is elevating its costs by loading and unloading vessels with outmoded, unwieldy or labour-intensive methods; or stockpiling with loaders and haul trucks — arguably, what is gained from a maritime transport strategy is bit by bit being given away. "To capitalize on the competitive advantages of waterborne transport, one's material handling, stockpiling, and loading/unloading systems at each port facility must be equally as efficient," says Bob Domnick, vice-president of engineering for Superior Industries, a Minnesota, USA-based manufacturer of conveyor systems and components. Among its offerings, the company designs customized loading and unloading systems that include automated telescoping radial stacking conveyors combined with a number of transfer point mobility options, truck unloaders, tripper systems and more.

Domnick cites several examples of the use of this equipment at port facilities. A Quebec, Canada-based shipper is operating three Superior Industries TeleStacker® conveyors. The portability of the equipment allows the company to serve more ports while reducing capital costs by avoiding the need to buy fixed equipment for all of its ports. Also, the TeleStacker conveyor creates larger volume stockpiles in a variety of configurations, which maximizes stockpiling capabilities in ports where space is restricted.

An Oregon, USA-based producer has a 150ft TeleStacker Conveyor mounted on a dock structure located 360ft out into

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the river where there is adequate water depth. This loading operation provides an ability to raise and lower the conveyor to adjust to the different heights of the river throughout the year, while also adjusting the discharge height as the weight of the load causes the barge to lower in the water.

Lastly, Domnick explains that when road-portable telescoping radial stacking conveyors are used in combination with portable truck unloading systems, port facilities can realize even greater cost-per-tonne savings via improved cycle times, minimized loader use, reduced labour requirements, and ensured product quality control by removing any extra handling of material. The next detailed example illustrates his point.

Agencia Aduanal Vejar is a cargo handling logistics solutions company in air, rail and maritime transport. Currently it operates out of two Mexican ports — one at Guaymus, Sonora; and the other in Lazaro Cardenas, Michoacan, Mexico. The company ships iron ore, copper concentrate, petroleum coke (petcoke), and other bulk materials via barge and ocean freighters.

It operates three 170ft TeleStacker conveyors and four Superior Industries RazerTail® truck unloaders. Offering 90-second truck cycle times, these portable truck unloaders, can quickly transfer material onto a conveyor or onto another truck, thus reducing or eliminating the use of loaders. The units require a minimal 22- to 32-inch earthen ramp that takes minutes to build.

Owner Gabriel Vejar says that prior to operating the new equipment; it would take up to four days to load 10,000 tonnes of material onto a vessel. His previous method involved the use of a flat bed trailer with two ten-tonne buckets onboard. Loaders would fill the buckets before transport to the vessel site where a crane and a six-man crew would hook up the bucket and lift it over the hold. Another six-man crew inside the hold would partially unhook the bucket to unload the cargo. With two buckets, that meant the method required a total of 12 people on the ground and 12 people in the vessel. "It was a long and painfully slow process," says Vejar.

Now, flash forward to his current method. Dump trucks travel from the mines to the Guaymus port and unload material onto two truck unloaders which feed two TeleStacker conveyors. Each works simultaneously to load two ship holds at a time. "The TeleStacker Conveyors swing left to right, up and down, safely loading and trimming the cargo," says Vejar, adding that with the use of this equipment, he has reduced his loading time by 75%, while requiring only one-third of the labour force he had needed previously.

The new equipment has also allowed Vejar to expand his service offerings into the transfer of material from specialized vessels which have a self-contained discharge system that feeds an onboard discharge conveyor. Material is transported from this conveyor at a rate of 1,000tph (tonnes per hour). In the past, numbers of excavators were used to stockpile the discharged material, and the vessel had to shut down the feed system and reposition along the dock every two hours. Now the discharge system can operate without any downtime via the use of a TeleStacker conveyor, which is fed by the discharge system. Material is then stockpiled in one large-volume configuration to await shipment by rail cars. Truck unloaders are placed on a platform above the rail tracks where they are used to feed the rail car hoppers. Vejar says that the method has reduced unload/load time at this port by more than 50%.

Domnick explains that there are three key travel modes that should be considered when considering a telescoping radial stacker in effective marine material handling: 1) an inline travel mode; 2) a dock travel or transverse travel mode with a 360° rotation; and 3) a radial travel or tow mode. Superior Industries, says Domnick, can combine its TeleStacker conveyor with a "mobile pivot base" that allows free-ranging transfer point mobility. Essentially, the mobile pivot base features a fixed-width head axle with a swiveling wheel carriage that allows rotation into each mode. Axle jacks relieve the weight, a hydraulic pin is released, and the unit swivels into the next position.

Lastly, Domnick stresses that marine material handling facilities should view the telescoping radial stacking conveyor as a "system" that can be custom-configured, via a wide range of available options, to meet the requirements of a specific application. "As an alternative to the use of labour-intensive cranes and clamshell buckets, cable stackers and other more costly stationary ship loading systems — the custom-configured telescoping radial stacking conveyor delivers the advantages of a lower capital investment, shorter lead times and quick onsite assembly," he says.

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The system includes 500 feet of fully belted groundline conveyor in a one-load, towable package.

US engineering expertise

Inset: Transport straps and pull-pins ensure each section comes off the chassis one at a time.

Jay Venter

Arizona, USA mine acquires unique material handling solution

Headquartered in Denver, Colorado, Newmont Mining Corporation is one of the world's largest gold producers, with active mines in Nevada, Indonesia, Australia, New Zealand, Ghana, and Peru; and some smaller operations in Bolivia, Mexico and Canada.

Over the last 50 years, its operations in Nevada have grown to include 14 open-pit mines, four underground mines, and 14 processing facilities. Located near Battle Mountain, Nevada, its Phoenix open-pit gold, silver and copper mine began production in 2006 and boasts one of the largest milling operations in North America. Currently the operation has reached 11mt (million tonnes) of annual production.

Newmont prides itself on discovery and development, and on identifying innovative ways to extract additional value within existing operations and projects. For example, Newmont reports that the Phoenix Mine initially had a projected life of 20 years; however, current exploration may reveal deposits that will significantly extend the mine's life. As such, the Phoenix Mine, like others owned by Newmont, is focused on a number of continuous improvement projects which emphasize equipment productivity, cost reductions, and increased mill capacity.

Throughout the Newmont organization, processing upgrades are subjected to considerable analysis, testing and validation — all with the goal of eliminating waste, re-work, and accelerating speed in arriving at a successful processing solution. Recently, the Phoenix Mine acquired a unique material handling solution — a one-of-kind portable groundline conveyor — to aid in meeting a tight testing timeframe.

The Phoenix Mine was charged with the goal of establishing an effective secondary crushing circuit to reduce feed size, hopefully resulting in an increase in SAG mill capacity. Originally, all pit-run material was processed through a gyratory crusher which fed a stockpile preceding the SAG mill. Robert Tucker, process maintenance general foreman for the Phoenix Mine, supervised the setup and ongoing testing of an additional 1,200HP cone crusher, which is at the heart of a new secondary circuit.

"Initially, we are averaging an additional 150tph (tonnes per hour) of throughput to the SAG mill," says Tucker. He explains that from the gyratory, material is crushed down to a 5-inch topsize before being fed to the secondary cone where it is crushed down to an inch and a quarter. Oversize is screened and sent to a pebble crusher before being sent to the SAG mill. The undersize material is crushed in a single pass through the SAG mill.

Key to the whole setup was a need to convey material 500 feet from the secondary crusher to a stacker which feeds the pebble bin, ultimately providing fresh feed for the SAG mill. "This project had very strict time constraints, and our biggest concern was the potential of slowing the process by four weeks or more with the erection of a permanent or stationary groundline conveyor," says Tucker.

Luckily, after talking with a local contractor, Tucker was told about a new portable conveyor designed and manufactured by

"Our biggest concern was the potential of slowing the project with the erection of a permanent or stationary groundline conveyor."

engineers at U.S. based Superior Industries, which maintains material handling manufacturing plants in Minnesota, Arizona and Georgia.

A highly unique innovation, the Trailblazer® Conveyor includes 500 feet of fully belted (36-inch belt) and assembled groundline conveyor in a mobile, one-load, towable package. Versus a traditional, stationary groundline conveyor, the Trailblazer Conveyor allows rapid deployment from road travel to working status in just about an hour. With a gravity-style take-up built into the trailer structure, the portable system simply folds in or out in an accordion-fashion from its chassis with a minimal crew required to position the supports.

In testament to the age of online media, Tucker says he first saw the Trailblazer Conveyor in operation on Superior's YouTube channel. "Then we contacted Superior Industries and made arrangements to go to their Minnesota location to see it, as we couldn't believe that a small crew could install a 500-foot conveyor in an hour and actually run it," he says.

The Phoenix Mine decided to take an expedited delivery of the Trailblazer Conveyor. "Although we witnessed the hour-long setup of the system twice at the factory, we took our time (under two days) to set it up on our site. For us, we typically do not operate any portable equipment, so we wanted to make sure that we could level, adjust and align it just the way we wanted it. Superior sent a team from their Arizona plant to assist us," says Tucker.

The Trailblazer Conveyor is engineered for easy, safe installation. The transport straps and pull-pins ensure that each conveyor system comes off the chassis in order, one at a time, as it is guided carefully onto supports. Additionally, the system features a modular take-up design with bolt-together guard rails that pin into place. Superior-brand self-aligning idlers and Navigator® Training Rolls ensure that belt alignment is correct at the hinge points and also to eliminate any belt tracking issues. The system is also designed to accommodate variations in grade, and the hinges on the channel sections can handle significant changes in grade as long as the drive is sized accordingly. Slight to moderate grades are normally achieved with the system's standard 50HP drive.

For the Phoenix Mine application, Superior Industries customized the Trailblazer Conveyor to include bolt-on plates to lock the joints on three sections to allow the accurate operation of a belt scale. Idlers were upgraded from the standard CEMA C idlers to CEMA D5 idlers, the latter being recommended for the specific application.

Tucker says that during the testing period, the operation ran approximately 500tph (tonnes per hour) over the Trailblazer Conveyor. "It's been a great solution for us, and it has kept us ahead of schedule. It will remain in the current application for now, but with its portability and ease of setup, there may be opportunities for us to utilize it in additional applications," says Tucker.

About Superior Industries

Established in 1972, Superior Industries has a reputation of engineering and manufacturing groundbreaking, bulk material handling conveyors and cutting-edge components. From its headquarters in Morris, Minnesota, the American manufacturer serves a diverse group of industries with portable stackers, transfers and feed systems; material processing plants; plus idlers, pulleys and accessories to lower operating costs and increase material production.

E-Crane for major Kanawha River power plant

American Electric Power's Amos Plant on the Kanawha River in Charleston, WV — the largest coal-powered electric plant east of the Mississippi — has installed an electric-powered 1500 B Series E-Crane to unload barges of limestone used in flue gas desulfurization (FGD). The high pedestal mounted E-Crane has 95ft outreach, 15.4 US tonne duty cycle capacity, and 17.1 US tonne lift capacity.

The machine is equipped with E-Crane's state-of-the-art Electronic Machine Management module (EMM) with screen display data for precise and efficient operator control. E-Crane provided on-the-job training at the Amos Plant, as well as training in a simulator before the crane was delivered. Amos is the sixth AEP plant to install an E-Crane in the past decade.

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New technological developments from E-Crane Worldwide

Electronic Machine Manager and Remote Access

E-Cranes now come with a new, reliable and user-friendly control system called the EMM, or Electronic Machine Manager. This built in system is a huge innovation in data collection technology, and allows for real-time data collection of things such as running time, how many times the E-Crane hits a fault while in operation, whether there is an overload or overheat, and more. Some even stream live, real time video of the E-Crane while in operation.

This real time system data can also be transmitted to the customer's network for monitoring. Depending on the needs of the customer, the EMM system can be set to generate reports of the E-Crane operation daily, weekly, or monthly. While the E-Crane is running, the system will constantly track data that the customer specifies. The customer can then log in to the system to view these reports.

The EMM system provides the link between the operator and the crane which is necessary for safe and productive bulk material handling. The software makes troubleshooting easy, by immediately displaying any warning or fault on the dialog module located right inside of the operator's cab.

The EMM system also allows for the E-Crane operator to program in certain operating parameters, for more precise and safe control of the crane. For example, the operator can set a specific position of the crane into the memory of the EMM system. This is ideal in situations where the crane is dropping material into a single location or dumping material into a fixed hopper. This saves time and work for the operator — after filling up the grab, the E-Crane will automatically return to the programmed position at the touch of a button. Not only does this reduce cycle time and ease operation, it can ensure that the E-Crane will avoid interference with other equipment.

The EMM system even allows for remote access to the E-Crane, meaning that the operating system can be monitored and repaired remotely via GPRS. An E-Crane with remote access can be diagnosed and fixed from anywhere in the world, and the system can be upgraded and updated instantly. This saves E-Crane owners from expensive and unexpected downtime and delays.

General Company Background

E-Crane Worldwide is a modern, state-of-the-art engineering and heavy equipment construction company, based in Adegem, Belgium and with subsidiary companies for sales management, technical support and service in The Netherlands (E-Crane International Europe) and Ohio, USA (E-Crane International USA). E-Crane Worldwide develops turnkey material handling solutions with engineering services, equipment manufacturing, erection, operator/maintenance training and custom tailored ongoing service programmes for its clients.

Dust Control Technology adds new VP of sales

Dust Control Technology has introduced Aaron Valencic as the company's new vice president of sales. The company, which is a renowned expert in open area dust suppression, made the announcement after a lengthy search and interview process. Valencic will be responsible for key account development and management across the globe, as well as lead generation and strategic sales planning.

Valencic joins DCT after a 12-year career in sales and management, including five years at Philippi-Hagenbuch, Inc. where he served as account manager, selling custom-engineered products to the North American mining industry. He has extensive knowledge in the oil sands and Canadian iron ore industries, as well as coal, mining, aggregates and power generation, and was instrumental in uncovering significant opportunities in previously-untapped markets that are estimated to hold the potential for $10–15 million in annual sales.

"Aaron's sales and management experience is a welcome addition to our team, and his knowledge of the mining industry and other key markets will be a huge asset," commented CEO Edwin Peterson.

Dust Control Technology is a pioneer in atomized misting solutions for dust/odor control and high-efficiency evaporation equipment for wastewater applications. The company has extensive experience with customers in mining, coal handling, demolition, rock/aggregate, recycling, scrap processing and slag handling. The company's DustBoss® and DriBoss® product lines deliver premium performance and durability, helping to reduce labour costs vs. manual sprays and free up manpower to concentrate on core businesses.

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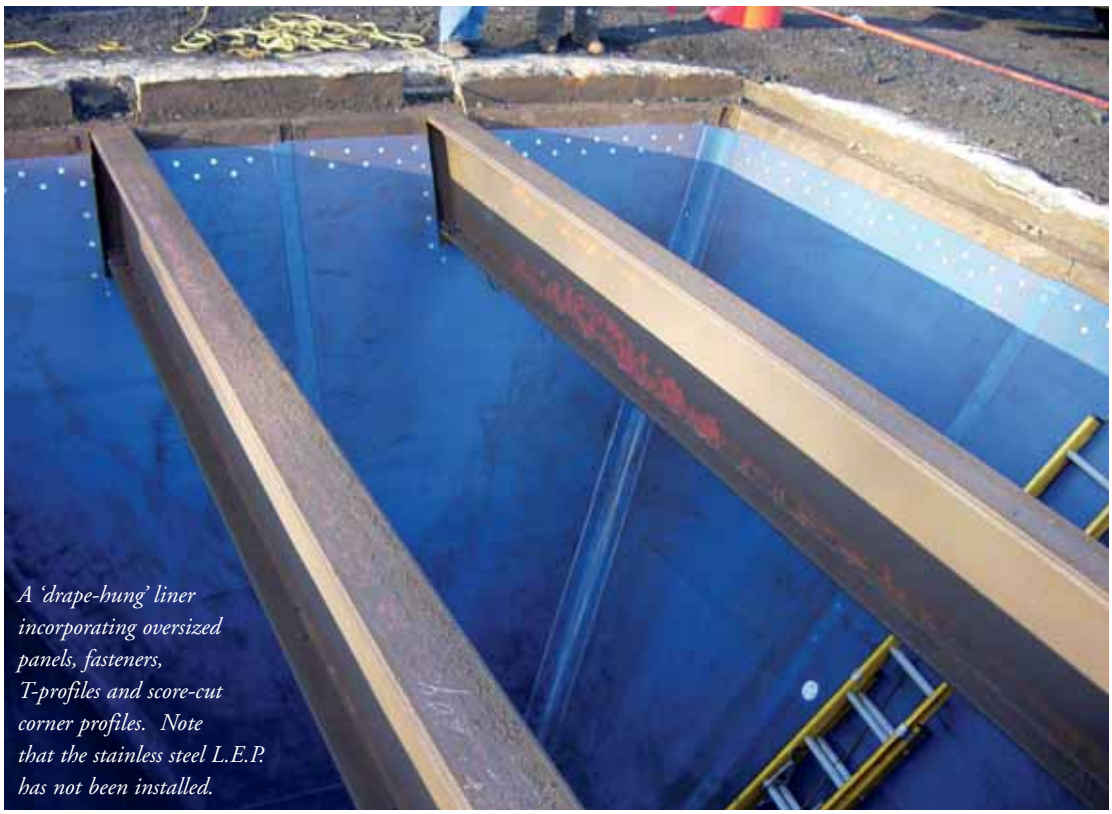
Proper liner and geometry design in ships, railcars, hoppers, bins & chutes

There are many different sizes, shapes and types of storage vessels and material handling devices within the power, rail and cement industries. Generally speaking, many of the silos, hoppers and bins are designed to store one particular bulk material.

Testing the properties of the bulk material before designing any structure is imperative to insure that the given bulk material will flow. Proper design of the structure will give the end user trouble-free service for many years. The properties of the bulk material such as the size, shape, moisture content, cohesive strength and density are used to calculate the wall angle, outlet size and the overall geometry of the structure. Many times the properties of the bulk material are changed due to blending, screening, drying and/or outdoor storage and the structure that was originally designed to handle the material may cause issues such as rat-holing, arching/bridging and erratic discharge. When this happens, a flow aid device can help improve the discharge of materials without changing the geometry of the structure. Although there are many flow aid devices out in the marketplace, one of the most effective flow aid devices is a 'polymer' liner. Liners have been used for over 40 years to improve the flow of various bulk materials such as: coal, limestone, sand, aggregate and FGD sludge. These liners are currently prevalent in ships, railcars, storage units, chutes and other such structures.

One of the most well-known liners in the marketplace is a material called TIVAR® 88, manufactured by Quadrant EPP. Quadrant manufactures various plastics used in myriad industries such as: power, cement, rail, mining, dock fendering and the pulp and paper industry just to mention a few. TIVAR® 88 is an excellent flow aid device and has been successful solving flow issues in hoppers, bins and chutes. However, proper design of the liner is also imperative to provide the end user with a solution to their flow issue. Various concepts and machining techniques may be incorporated when designing a custom liner. With Quadrant's ability to weld plastics, sheet materials can be transformed into oversized panels designed to fit almost any structure. Incorporating oversized panels in the liner design can eliminate fasteners in the flow area and create better sheet yields, therefore saving the end user capital. Oversized panels are also typically faster to install using what is called a 'drape-hung' liner. Corner, T, or H-Profiles can be implemented to complement the design which permits the liner to expand and contract as required with temperature change.

Score-cutting is another tool used by designers to permit liners to bend into a small radius. Score-cutting can be used to transform a square corner to round corner without changing the geometry of the structure. Incorporating this design into a lining system will reduce the chance of sticky bulk material hanging up in the corners of a hopper or bin. The image below depicts a 'drape-hung' liner incorporating oversized panels, fasteners, T-profiles and score-cut corner profiles. Note that the stainless steel L.E.P. (Leading Edge Protectors) have not been installed.



A 'drape-hung' liner incorporating oversized panels, fasteners, T-profiles and score-cut corner profiles. Note that the stainless steel L.E.P. has not been installed.

Additional components required for a successful lining system design are the fasteners and L.E.P. The selection of the fastener, the number of fasteners required, the spacing of the fasteners as well as the fabrication of the sheet to accept the fastener must be taken into consideration when designing a liner. The L.E.P. is a must to prevent bulk materials from migrating behind the liner. There are various designs, shapes and materials that can be used to fabricate an acceptable L.E.P. Typically, a stainless steel L.E.P. is generally incorporated to cap off the liner.

The above design criteria is transferred and incorporated onto the installation drawings. The installation drawings detail where each liner component is installed into the structure. All of the liner components are labelled so they can be easily identified as to where they are located in the structure and how they are installed. This 'kit' concept saves the installer much time and expense sorting the materials and trying to determine where the parts are located.

In conclusion, a quality liner material coupled with a proper liner design is essential to solve the flow issues in these structures. Proper installation of a well designed liner will not only eliminate flow issues, it will also reduce and/or eliminate downtime saving the end user valuable time and money.

Martin Engineering introduces new technology for total material flow

Martin Engineering's new, dual solution to material flow problems utilizes acoustic cleaning technology with industry-proven air cannons. The combination of technologies helps maintain system efficiency and profitability. Dislodging build ups and enhancing material flow, MARTIN® Sonic Horns and Air Cannons provide a total cleaning and flow solution.

"We've chosen to supply both of these cleaning technologies, because of the wide range of conditions and processes in which they might be used," explained global business development manager Jeff Shelton. "Sonic horns can clean a larger area than air cannons when we're dealing with accumulations of dry material," he said. "But high sulphur and chloride content often lead to a sticky build-up that resists acoustic cleaning. In those areas, air cannons deliver the kind of burst cleaning that can dislodge blockages and send the accumulated material back into the process stream."

In the past, some operations have adopted expensive blowers as a cleaning option, with qualified success. Steam blowers have been effective in some applications, but the process tends to be destructive. It can damage boiler tubes and typically carries high costs for operation and maintenance.

"The combined solution provides a wide range of options to match specific process conditions and operating environments," Shelton continued. "Sonic horns are well suited to selective catalytic reduction (SCR) units and process vessels, and in applications in which the bulk material is fairly dry. But in a situation where cleaning is needed in tight spaces or with moist materials, air cannons can be the better choice," he said.

Martin Engineering has been an innovator of air cannon technology since the 1970s, and today offers a full line of field-proven traditional designs, as well as breakthrough engineering in valve design, hybrid models, and multiple-port and multiple-valve technologies. The company offers both positive- and negative-pressure firing valve designs to accommodate a broad range of applications and materials.

The cannons deliver a powerful blast to dislodge accumulated material and prevent blockages, and the only component that needs to be inside the vessel is the nozzle. Air cannons also offer a variety of nozzle shapes and styles to suit specific conditions.

Martin® Sonic Horns work by producing a low-frequency, high-pressure sound wave, which is created when compressed air flexes a titanium diaphragm in the sound generator. This sound wave is then magnified as it is emitted through the bell. The sound pressure causes dry particulate deposits to resonate and become fluidized, allowing them to be removed by constant gas flow or gravity. Especially effective around pipes and behind obstacles, sonic energy de-bonds particulates with a 360° sweep, cleaning inaccessible components. Sonic Horns have a long history of performance in boilers, heat exchangers, economizers, bag houses, SCRs, ID fans, electrostatic precipitators (ESP), silos, hoppers, cyclones and air pre-heaters.

Both technologies contribute to lower operating costs and improved safety, helping facilities avoid the need for personnel to access the process and manually clean out accumulation. Reducing the need for high-pressure washing or air lancing also helps avoid unnecessary wear and tear on refractory walls and process vessels. By preventing material build-up, the systems helps reduce downtime, equipment wear and maintenance time. Backed by the company's exclusive three-year guarantee, air cannons and sonic horns are available in all regions in which Martin Engineering does business, and can be custom-engineered to suit specific operating conditions.

New cement plant boosts material flow with PLC controlled air cannons

The newest cement company in the Southwest has specified a total of 53 air cannons to prevent accumulations and ensure process flow, with the timing and firing sequence determined primarily by programmable logic control. The efforts at Drake Cement have been so successful that the plant is now running at its rated capacity of about 100tph (short tons per hour). With no shutdowns for manual cleanout in almost a year of operation, the facility has avoided the lost production time and maintenance costs associated with excessive material build-up.

The Drake plant began operations in 2011, specializing in high quality Portland cement products for the North American market. Located at the site of an old rail town about ten miles north of Paulden, the facility includes a state-of-the-art, six-stage precalciner/preheater with a rated capacity of 660,000 tonnes of clinker per year.

Efficient material flow is a key component of Drake's dry-process manufacturing, and accumulation in storage bins, process vessels or feed pipes could choke even this well-designed system. Blockages can create expensive obstacles to equipment performance and process efficiency, raising maintenance expenses and diverting manpower from core business activities, in some cases introducing safety risks for personnel.

Engineers designing the process at Drake Cement initially specified 15 air cannons from Martin Engineering in critical

Drake Cement is the newest cement company in the Southwest, specializing in high quality Portland cement products for the North American market.

locations to control accumulation and enhance material flow. Introduced by Martin Engineering in 1974, air cannon technology has developed a proven track record around the world for relieving bulk material bottlenecks. The Martin® Extra High Velocity Air Cannons at Drake Cement fire a powerful discharge of compressed air to remove material adhered to the vessel walls.

"The original cannons were located in the entry to the kiln, cooler inlet and the preheater tower," recalled Engineering & Projects manager Antonio Quiroz. "We were already familiar with Martin Engineering's designs from our two other operations in Peru, and we wanted to stay with the technology that was working well for us in those plants."

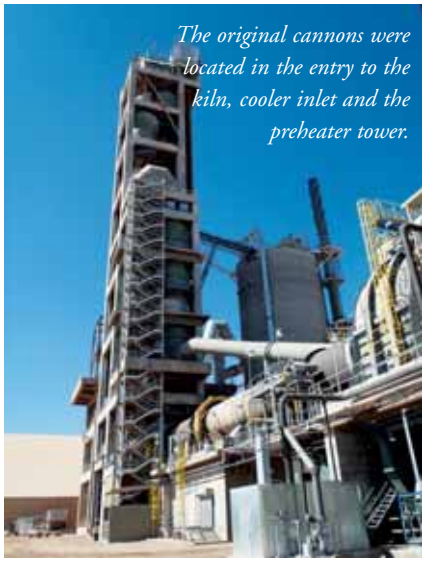
Like most new cement plants, Quiroz knew that the Drake facility would likely require some fine-tuning of material flow to optimize the process. "Any time you start up a new process, there are always small adjustments to be made to maximize material flow," observed Quiroz. "It usually doesn't take long to identify potential bottlenecks."

After initial trials, Drake engineers shut down the system to examine the process and identified some additional areas where material flow could be enhanced. "Rather than running production and having to shut down for maintenance to clear accumulations, we wanted to prevent them from occurring," Quiroz said. Martin Engineering technicians visited the site and pinpointed the optimum locations for additional cannons in the plant's additive silos and in the bottom part of the preheater, as well as the calciner and cyclones.

"The PLC tracks variables such as pressures and temperatures, and those values dictate which cannons fire and when," Quiroz explained. "The system is also set up to allow operators to fire individual cannons or groups of them, based on experience."

These cannons were positioned in the lower part of the pre-heat tower, near the automatic sampler.

The air cannon design requires no high-temperature discharge pipes or special mounting plates, and discharge nozzles are embedded directly in refractory linings. All of the units in the network are equipped with valves designed to deliver reliable performance and long service life in high-temperature applications.



The original cannons were located in the entry to the kiln, cooler inlet and the preheater tower.

The original cannons were fitted with Martin Engineering's Extra High Velocity valves, while those added later are equipped with the newer Tornado valve design. The Extra High Velocity-equipped air cannons supply a quiet but powerful discharge of compressed air to dislodge material buildups and enhance the flow of bulk solids. They deliver excellent performance in high-temperature applications, even with the most challenging materials. Designed for severe-duty applications where exposure to elevated service temperatures and harsh gases can affect performance, the Extra High Velocity has proven successful in applications such as outside cement kiln pre-heaters where interior temperatures reach up to 2,500°F (1,371°C).

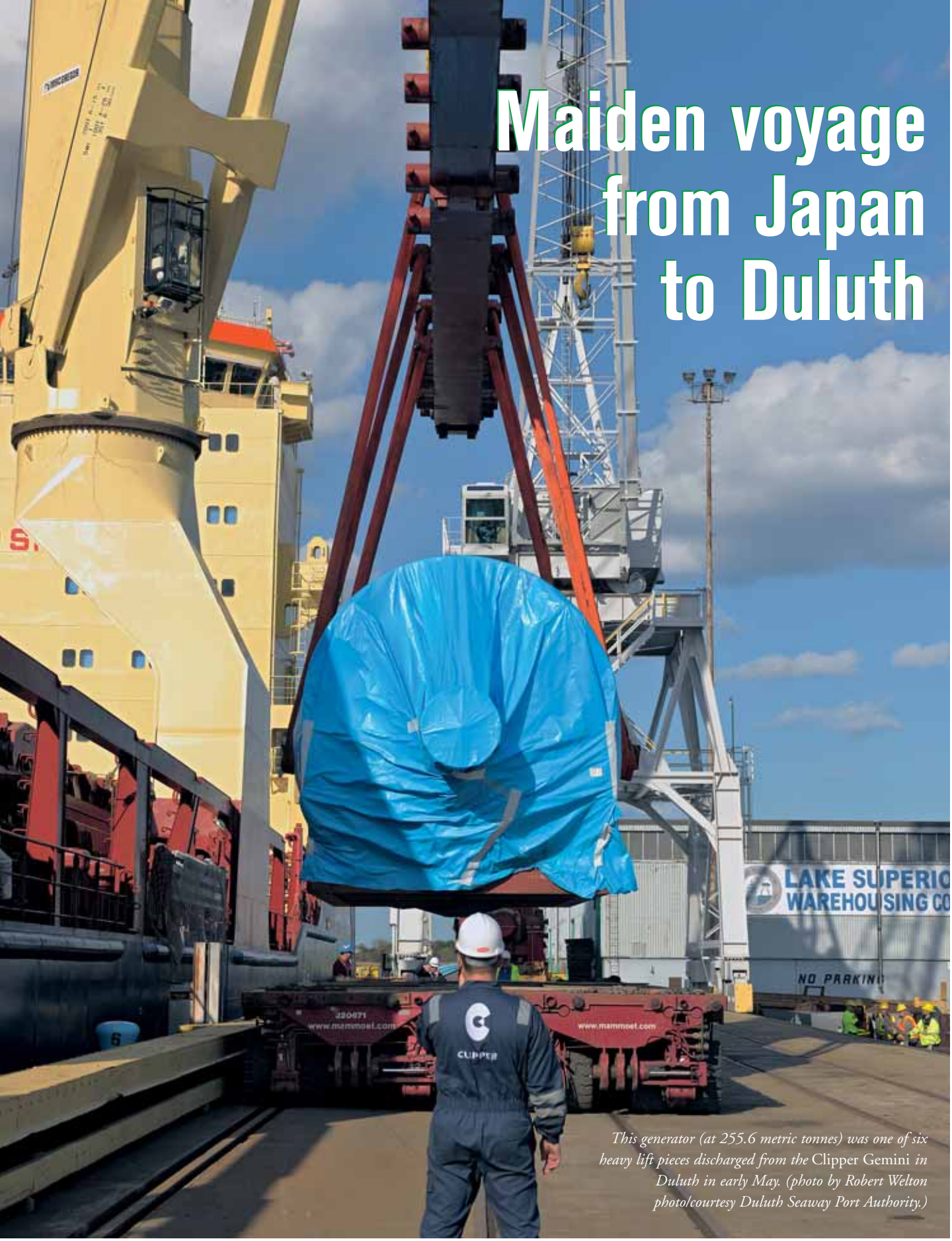
The negative pressure-firing valve is constructed with a rugged, high-temperature polymer seal for dependability and low maintenance. The advanced design delivers high output force and excellent sealing, as well as rapid discharge and filling. All Extra High Velocity valves are guaranteed for 200,000 firings, and a removable piston seat simplifies service.

Available in 2-, 4- and 6-inch models and ten different tank sizes, the Extra High Velocity Valve Assembly features an aluminium piston with a very short stroke (just 5/8" or 16mm), minimizing wear on the piston and cylinder. A return spring snaps the piston quickly back into firing position and prevents dust entry.

The patent-pending Tornado Exhaust Valve was designed to enhance material flow with even greater force and faster cycling. The cannons fire when the exhaust valve opens in response to a positive surge of air sent by a tripped solenoid. This positive-acting valve amplifies the discharge, providing up to 20% more force than a standard air cannon of the same size. In addition, the improved air path of the Tornado fills the reservoir 3-4 times faster than typical designs.

Drake Cement concentrates exclusively on the production of Type II /V(LA) Portland cement, conforming to the physical and chemical requirements of ASTM C-150 for Types I, II and V low-alkali cements, as well as ASTM C 1157 for Types GU, MS and HS cements. Drake Cement Type II/V(LA) can be used in any general construction application, including those with exposure to moderate or high levels of sulfates in soils and/or water. In addition, the low levels of alkalis in Drake Cement Type II/V(LA) Portland Cement reduce the potential for damage due to alkali-silica reactivity (ASR). DCi

Maiden voyage from Japan to Duluth

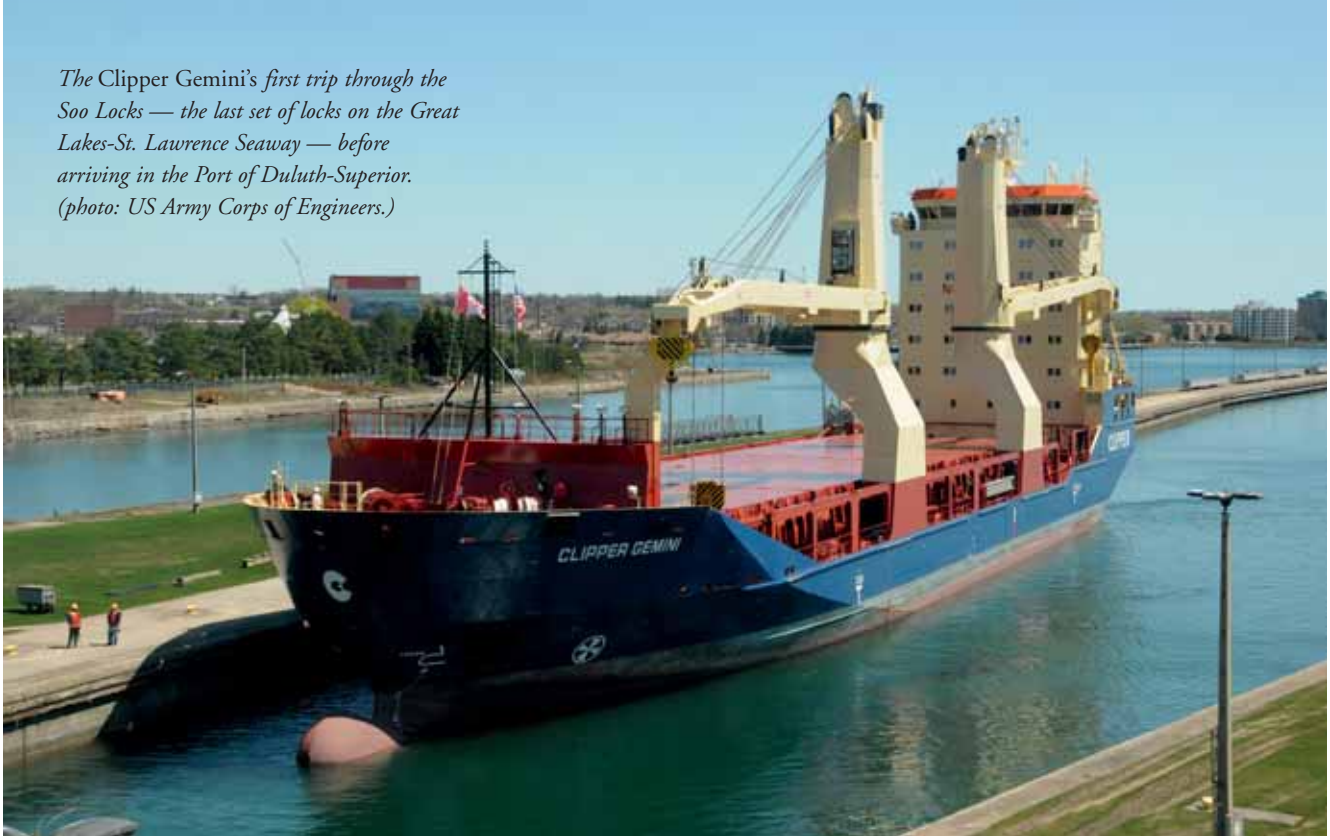


This generator (at 255.6 metric tonnes) was one of six heavy lift pieces discharged from the Clipper Gemini *in Duluth in early May. (photo by Robert Welton photo/courtesy Duluth Seaway Port Authority.)*

Heavy-lift vessel from Japan unloads unwieldy cargo at Duluth-Superior

Late in the afternoon of Saturday 5 May, a newly christened oceangoing vessel, the *Clipper Gemini*, sailed into the Port of Duluth-Superior. It's not often that Duluth ends up a port of call on a ship's maiden voyage from Japan!

The 393-foot Bahamian-flag vessel was loaded in and left Kobe, Japan, on 23 February this year. En route to Duluth, she wound her way around the globe via Xingang, China; Songkhla, Thailand; Singapore; the Suez Canal; Gibraltar; Poole, UK; and Hamburg and Rostok, Germany, before entering the St. Lawrence Seaway on 28 April. She made one last stop in Valleyfield



The Clipper Gemini's *first trip through the Soo Locks — the last set of locks on the Great Lakes-St. Lawrence Seaway — before arriving in the Port of Duluth-Superior. (photo: US Army Corps of Engineers.)*

The first gas turbine was offloaded on the morning of Sunday 6 May; this piece alone weighed 327 metric tonnes. (photo: Robert Welton.)

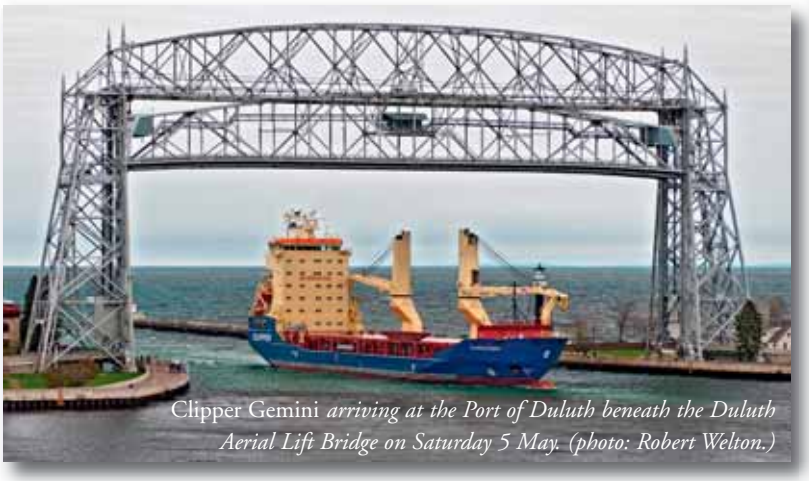
(Quebec) before arriving in the Twin Ports.

Crews from Lake Superior Warehousing Co. discharged its breakbulk cargo of gas and steam turbine/generator components for a large electricity generation project (including six heavy-lift units) at the Clure Public Marine Terminal, the port's only breakbulk terminal. The unloading took place on Sunday and Monday (6–7 May), with the rest of the smaller components unloaded on Tuesday 8 May. From Duluth, the cargo moved its final leg via specialized railcar and truck to the ENMAX Shepard Energy Centre in Calgary, Alberta, Canada.

"Delivery of this significant cargo has been painstakingly planned down to the last detail," said Gianna Manes, ENMAX Corporation President and CEO. "Each of the natural-gas fired turbines weighs about 735,000 pounds and are the equivalent to a four-storey building in length. Once in place and operational, the 800 MW Shepard Energy Centre will be a pivotal facility to Alberta's growing electricity needs."

Cargo onboard the *Clipper Gemini* is one of nearly 20 shipments of heavy machinery and other energy-related equipment expected in the Twin Ports in 2012, most of which will include components for US wind energy projects. DCi

A 255.6-metric tonne generator is lifted off the Clipper Gemini. *(photo: Robert Welton.)*



Clipper Gemini *arriving at the Port of Duluth beneath the Duluth Aerial Lift Bridge on Saturday 5 May. (photo: Robert Welton.)*

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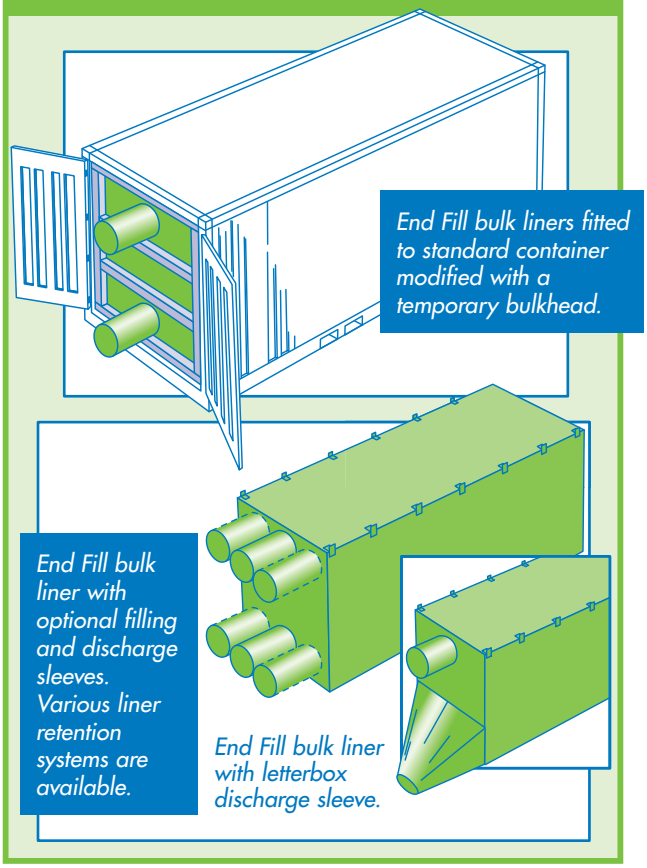
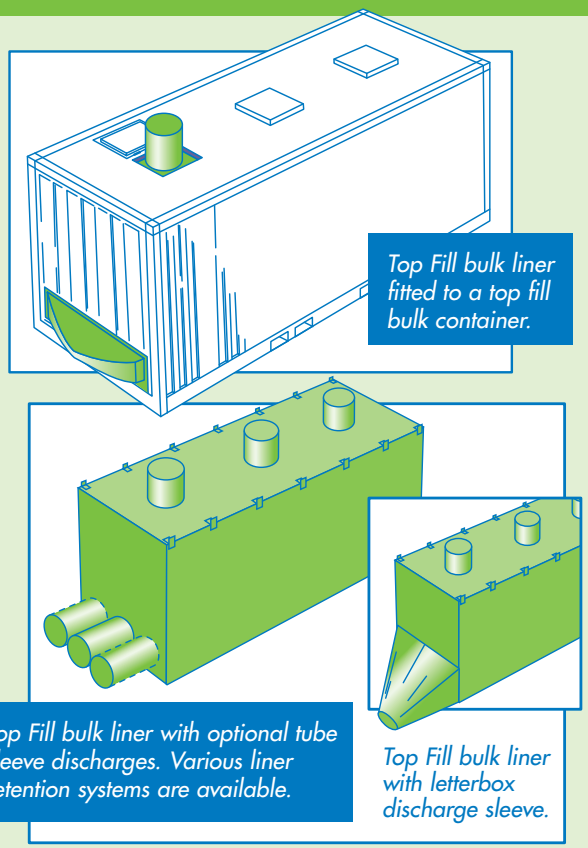


End Fill bulk liners fitted to standard container modified with a temporary bulkhead.

End Fill bulk liner with optional filling and discharge sleeves. Various liner retention systems are available.

End Fill bulk liner with letterbox discharge sleeve.

TOP FILL BULK LINERS

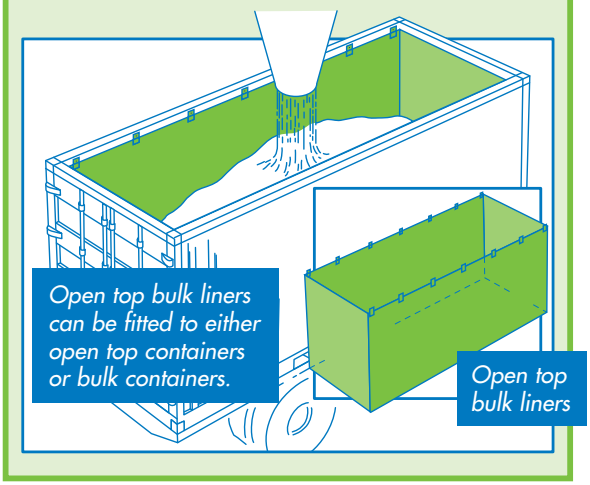


Top Fill bulk liner fitted to a top fill bulk container.

Top Fill bulk liner with optional tube sleeve discharges. Various liner retention systems are available.

Top Fill bulk liner with letterbox discharge sleeve.

OPEN TOP BULK LINERS



Open top bulk liners can be fitted to either open top containers or bulk containers.

Open top bulk liners

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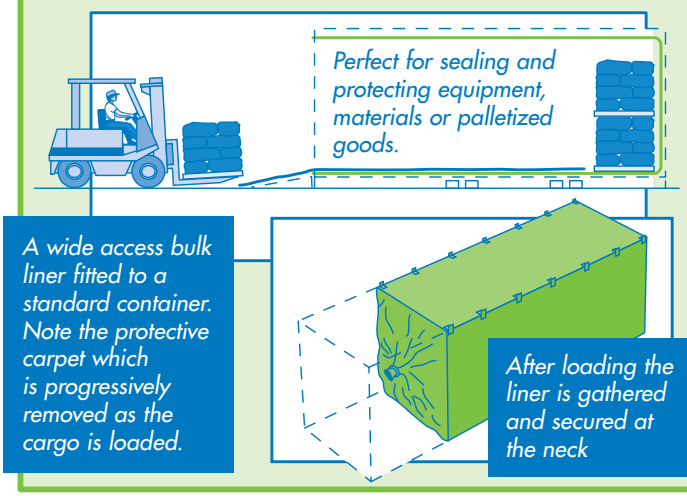

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A wide access bulk liner fitted to a standard container. Note the protective carpet which is progressively removed as the cargo is loaded.

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