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FEATURES

- Americas Coal Trades
- The Netherlands
- Shiploading
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JUNE 2013 issue

featuring...

Iron ore trade prospects mixed

Seaborne trade in many dry bulk commodities continues to benefit from a number of positive factors. Import demand for iron ore, coal and a wide range of other minerals and industrial commodities is rising. The agricultural cargoes sector has been restrained by negative influences in the grain trade, but signs of a strengthening ahead in this category are beginning to emerge.

Some recent developments affecting global economic activity could provide support. A pick up in Japan's GDP growth rate to a solid 3.5% annualized in the first quarter seemed to suggest that government policy changes are succeeding. The US economy also appears to be regaining momentum. Evidence of a re-acceleration in China has been patchy however, and the EU remains in recession with no clear pointers to when this will end.

Iron ore

Prospects for global seaborne iron ore trade expansion during 2013 as a whole are still greatly dependent on how China's import demand evolves. As shown by table 1, expectations for increased volumes among the other main importers are quite limited.

Figures for crude steel production in this year's first four months underline contrasting experiences in key raw materials importing countries. World Steel Association statistics reveal that January–April 2013 steel output in China was over 8% higher than seen in the same period a year earlier, at 258.2mt (million tonnes). Japan's output was less than 1% up, at 35.8mt. Conversely, South Korea saw a 5% decline to 22.1mt, and the EU volume was 6% lower at 55.3mt.

Coal

Recent indications of the coal trade trend suggest that not all the principal factors are currently developing positively. Yet further robust growth in global volumes seems achievable, assuming that China's and India's imports continue to perform strongly, accompanied by some extra amounts elsewhere.

One unusually weak element is the sustained downwards trend in US coal imports. In the mid-2000s, when these became more significant, about 33mt annually was purchased. Since then a steep decline to only 8.3mt in 2012 and possibly lower this year has been a noticeable feature. But in the past few years coal exports from the US increased greatly, reaching 107mt last year, amid higher gas usage in power stations, releasing more coal for export markets.

Grain

Until summer domestic grain harvests in northern hemisphere importing countries can be estimated more accurately, forecasts of global grain trade will remain highly tentative. The US Dept of Agriculture's initial calculations point to a possible 2% increase in trade during the 2013/14 marketing year starting third quarter 2013, raising the total to 273.9mt.

USDA's first forecast of related soyabeans and meal trade is much more optimistic. Growth of 13mt or 9% is predicted in 2013/14, boosting the global total to 163.4mt. A large part of this expansion could be contributed by sharply higher imports into China. Reflecting low stocks, reduced domestic production and rising consumption of soyameal and oil, China's soyabeans imports are expected to rise by 10mt (17%), reaching 69mt.

Minor bulks

Forest products trade, one of the principal elements of the minor bulks sector, consists of numerous items including logs, sawnwoods and woodchips. Growth in global seaborne movements appears to have been about 3% last year, raising the estimated total to over 180mt. Some additional volumes among major importers including Japan, China, other Asian countries and Europe could result in another increase during 2013.

Bulk carrier fleet

The Handymax (40–59,999dwt) bulk carrier fleet's growth is likely to continue decelerating this year, as shown in table 2. Newbuilding deliveries are set to fall very sharply, possibly accompanied by reduced demolition sales. But the 2013 fleet capacity expansion rate probably will remain quite rapid at almost 7%.

TABLE 1: KEY IRON ORE IMPORTERS (MILLION TONNES)

	2008	2009	2010	2011	2012	2013*
China	444.0	629.8	618.6	686.1	743.6	790.0
Japan	140.4	105.5	134.3	128.4	131.1	133.0
EU-15	132.2	74.9	106.4	102.0	99.0	98.0
South Korea	49.5	42.1	56.3	64.9	66.0	67.5
Taiwan	15.6	11.9	18.9	20.5	19.5	19.5
total of above	**781.7**	**864.2**	**934.5**	**1001.9**	**1059.2**	**1108.0**

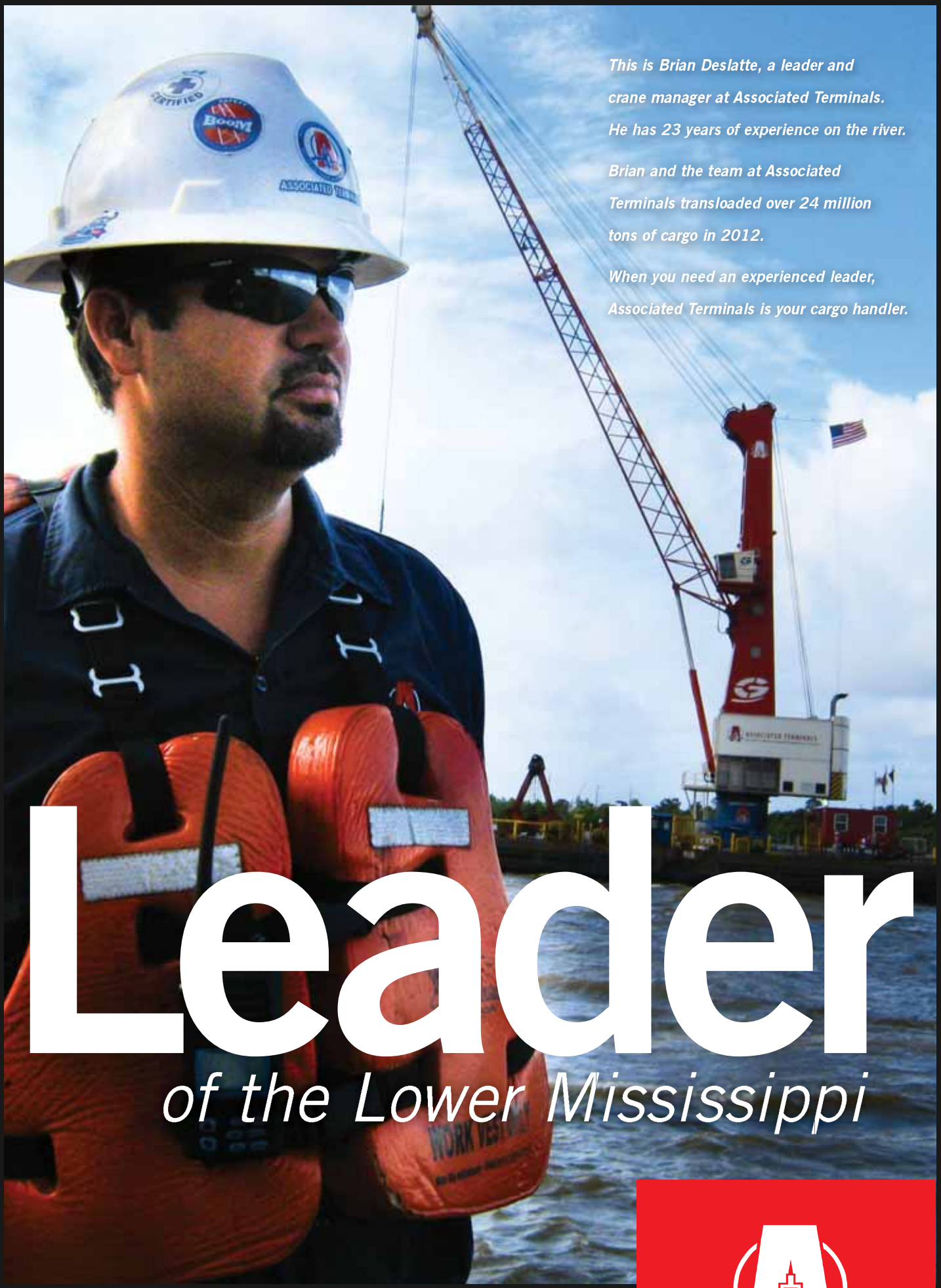
source: UNCTAD (historical data) & BSA 2013 estimates **forecast*

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

	2008	2009	2010	2011	2012	2013*
Newbuilding deliveries	6.4	10.3	17.9	20.0	17.3	13.0
Scrapping (sales)	0.5	1.4	0.4	2.2	4.6	3.5
Losses	0.0	0.0	0.2	0.1	0.1	0.0
Plus/minus adjustments	0.2	0.0	-0.2	0.0	-0.1	0.0
Fleet at end of year	**82.9**	**92.0**	**109.2**	**126.9**	**139.4**	**148.9**
% change from previous year-end	+7.9	+10.9	+18.7	+16.2	+9.9	+6.8

source: Clarksons (historical data) & BSA 2013 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



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Aisha Steel puts $70m expansion on back burner

Pakistan's Aisha Steel Mills Limited (ASML) has put on hold its decision to invest fresh equity of up to $70 million until there is greater clarity on the new government's national steel policy, according to ASML CEO Kashif Shah.

ASML is a joint venture between Arif Habib Group, Metal One Corporation; Japan (a subsidiary of Mitsubishi Group) and Universal Metal Corporation of Japan.

"All three partners of ASML are eager to invest another $50–70 million to expand its steel production by 50–60%. However, SRO 565 of 2009/10 is the biggest hurdle in the way of fresh investments," said Shah, adding that the joint venture will make a final decision on the matter once the incoming government unveils its policies for the steel sector.

Listed at Karachi Stock Exchange, ASML produces cold rolled coil (CRC), which is used to make flat steel objects with the help of pressing machines. "Just take a small piece of CRC, press it down with the help of a machine and you get a Pepsi can," said Shah.

He went on to add that CRC is a material that is not damaged during moulding, pressing and folding. In Pakistan, it is being used to make body parts of cars, tractors, motorcycles and home appliances such as washing machines and microwave ovens.

ASML currently has a market share of approximately 30% with an installed capacity of 220,000 per annum. Pakistan Steel Mills and International Steel Mills are two others manufacturers of CRC in the country. They, respectively, produce 100,000 tonnes and 250,000–300,000 tonnes. The demand of CRC stands at approximately 600,000 tonnes in Pakistan, Shah added.

Shah went on to explain that the investment by ASML could make Pakistan an exporting country of CRC. However, he said, the new government would have to provide a level playing field to all players by doing away with the SRO to make this 'dream' a reality. The SRO empowers importers to under-declare goods, under-invoice and evade taxes. Shah said such practices allow importers to sell CRC at a 26% discount, compared to local manufacturers, as they evade 16% in sales tax and 10% in custom duties.

"The SRO was introduced at a time when CRC was not being manufactured in Pakistan. Now there are three strong manufactures of the material in the country and SRO 565 of 2009/10 should be withdrawn by the government," he added.

Furthermore, the ASML CEO revealed that importers were also importing alloy steel under the name of CRC. "There is zero duty on import of alloy steel, compared to 10% on CRC," said Shah, adding that the price of alloy steel stands at approximately $1,500 per tonne, compared to about $600 tonne for CRC.

In a move to protect the local industry, Shah also demanded the new government to delist CRC from the list of products that are being imported from China at a reduced rate of duty under the Free Trade Agreement between the two countries. "The government should impose a 10% duty on import of CRC from China instead of the current 5% duty."

Coal trade saves the dry bulk market

Drewry's latest *Dry Bulk Forecaster* reports that coal has been the recent saviour of the dry bulk market. Global GDP grew by 3.2% in 2012, following growth of 5.2% and 4.0% in the post-recession years of 2010 and 2011. This slowdown blighted dry bulk cargo volumes and in turn tonnage demand. Global steel production, reflecting industrial and growth activity around the world, grew by only 1.3% in 2012, with a subsequent impact on iron ore and coking coal trade.

Dry bulk trade grew by an impressive 7% in 2012 with steam coal proving to be the saviour of the freight market, which otherwise would have seen a complete bloodbath. Steam coal trade increased by about 18% from 665mt (million tonnes) in 2011 to 784mt in 2012, supported by high availability and low prices.

The US is gaining increasing importance in the steam coal export market. Increased availability of cheap natural gas means it has more thermal coal to sell in the international market. In 2012, the US exported 47.4mt of thermal coal, up from 31.4mt in 2011 and 16.6mt in 2010.

Australian exports have also been on the rise, increasing to 168mt from 148mt in 2011, given the proliferation of coal mines in the country.

Indonesian exports, on the other hand, have been steadily declining. From as high as 181mt in 2010, Indonesian thermal coal exports dropped to 131mt in 2012. Struggling with shrinking profit margins in the international market, Indonesian traders are shifting their focus towards the domestic market.

Colombia has faced disruption to its coal supply resulting from a ban on night-time railing through urban areas for most of February. There was also a ban on coal loading at Drummond and strikes at Cerrejon's mines. Furthermore, a bomb attack derailed 17 of Cerrejon's coal wagons. This resulted in as much as 5mt of output being lost. Production is expected to recover from the second quarter of the year.

Of all the bulk commodities in the dry bulk sector, steam coal has the brightest outlook. Steam coal trade is expected to keep rising, driven more by abundant supply than high demand. High availability of coal will keep prices low enough to ensure steep increases in imports.

Moreover, freight rates are not expected to recover by much in the next few years, which will further cap CIF (cost, insurance, freight) prices, thereby supporting buying. Despite having a strong mandate favouring greener fuels, low prices have persuaded Europe to switch to coal.

India and China are expected to drive growth in coal trade. India in particular, is expected to be pivotal to thermal coal trade as its power sector expands rapidly. Given the increase in population and very low *per capita* power consumption, big expansion plans have been laid out by private power companies. To fuel these power plants, India has been increasingly dependent on imported coal. In fact, by the end of this decade, India's thermal coal imports are projected to surpass those of China.

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Americas Coal Trade

Sampling on the dock.

Dr Tim Jones, e-coal.com

Coal trade in the Americas has been largely influenced by weakness in the Atlantic markets during the past few months, and by industrial disputes in Colombia. Last year saw a large number of job losses in the US coal industry, and there was apprehension about the presidential election during the autumn. The death of Hugo Chavez in March has generated questions about the future of the Venezuelan coal industry after years of decline. Brazilian economic growth is expected to get a boost from the Olympic Games there in 2016, but coking coal shippers in Canada and the USA have not reported a significant improvement in seaborne trade there so far. Central American activity in the coal markets has been subdued, and Mexico's occasional large tenders have yet to return. There have been some disruptions to port activities ranging from a collision in Canada to environmental issues in Colombia, but the relatively lacklustre demand has prevented any substantial increase in coal prices. The market in the Americas did, however, reach its lows at the start of the second half of 2012 and US and Canadian exporters have been hoping for renewed opportunities in Asia if Chinese demand in particular begins to re-appear.

During the past month or so, thermal coal spot markets have been a little softer in most producing countries, although supply

OCEAN SPOT FREIGHT RATES (US$/T) 2012

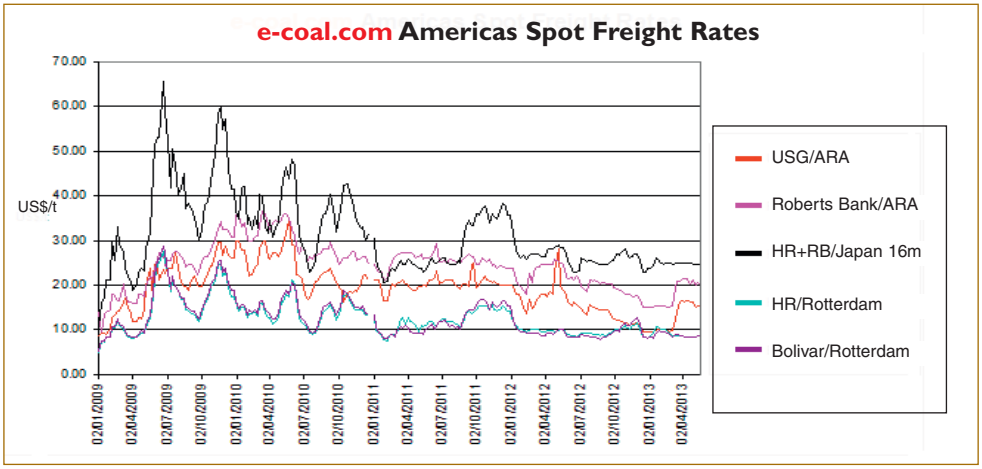
Route	Tonnage	18 May	11 May	% change
USG/ARA	65,000t	18.80	19.60	–4.08
Roberts Bank/ARA	55,000t	24.60	24.90	–1.20
HR+RB/Japan 16m	120,000t	28.50	28.50	0.00
HR/Rotterdam	110,000t	9.95	9.90	0.51
Bolivar/Rotterdam	130,000t	10.25	10.00	2.50
Queensland/R'dam	130,000t	13.80	13.90	–0.72
Rich'ds Bay/R'dam	130,000t	8.25	8.35	–1.20

Source: e-coal.com

OCEAN SPOT FREIGHT RATES (US$/T) 2013

Route	Tonnage	17 May	10 May	% change
USG/ARA	65,000t	15.00	15.40	–2.60
Roberts Bank/ARA	55,000t	20.00	20.55	–2.68
HR+RB/Japan 16m	120,000t	24.50	24.75	–1.01
HR/Rotterdam	110,000t	8.60	8.75	–1.71
Bolivar/Rotterdam	130,000t	8.40	8.60	–2.33
Queensland/R'dam	130,000t	13.05	13.00	0.38
Rich'ds Bay/R'dam	130,000t	6.50	6.50	0.00

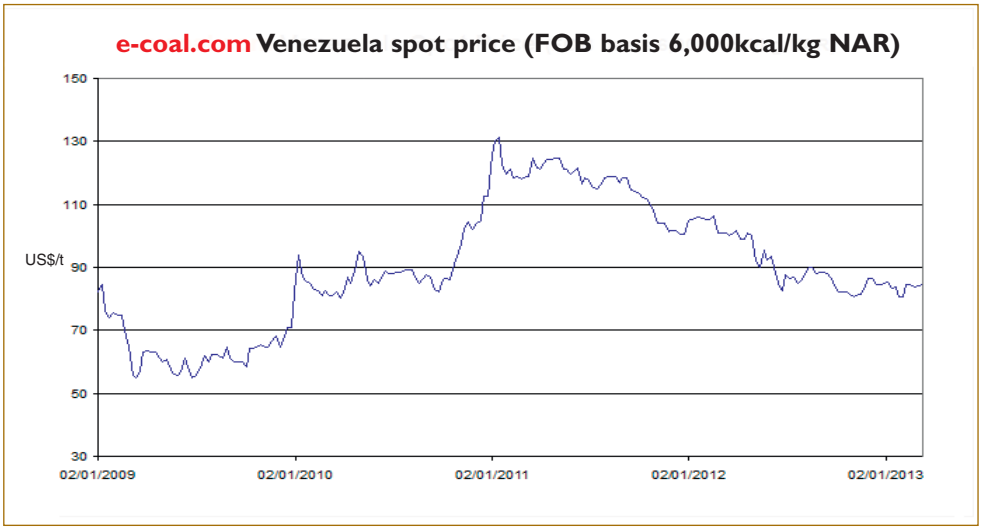
Source: e-coal.com



on the chances of the decimated coal industry recovering in the coming years. Until overseas investors are welcome again, that is unlikely. Coal production has declined to some 2mtpa (million tonnes per annum) from around 8mtpa at the industry's peak. The accompanying chart shows the trend in the spot price of thermal coal during the past few years.

Union members at Cerrejon Coal recently voted in favour of the new enterprise bargaining agreement. Their strike which had been ongoing for almost four weeks was over in early March, but about 2.6mt (million tonnes) of production was lost. The agreement includes a pay rise of 5.1% plus a bonus of US$7,000. European spot market activity remained subdued, with the force majeure situation in Colombia having limited effects on prices.

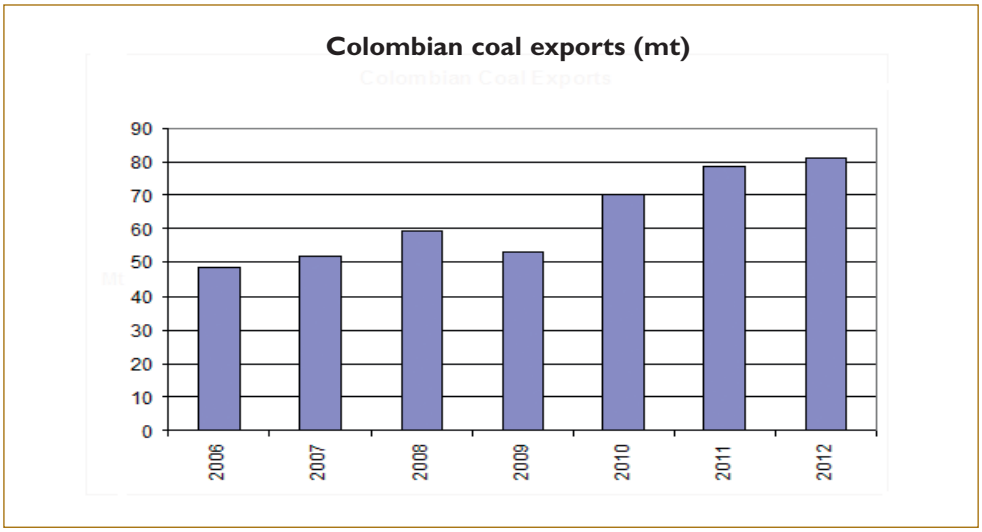
constraints continued to keep Colombian prices up. The Venezuelan market is also firmer, but on a smaller scale. The coking coal markets have been quiet, with a little softening seen in the US ports amid limited activity. BHP Billiton Mitsubishi Alliance is rumoured to be close to settling the new quarterly contract terms with Japanese customers, but in general the global steel sector is showing relatively little growth in demand for raw materials. In the freight market, Panamax rates have been firming as grain shipments from South America showed their seasonal increase. Capesize rates, however, have been softer in general, with some steadying seen on most of the main coal routes at the time of writing.



The spot market for hard coking coal has been quiet on the US east coast during March. European buyers were expected to be looking for tonnage, but there appears to have been a lull in their activity. The spot price of low vol material has softened a little and the indicator price is US$157.50/t FOB (free on board) at present. High vol product is priced at US$145/t FOB in a lacklustre market.

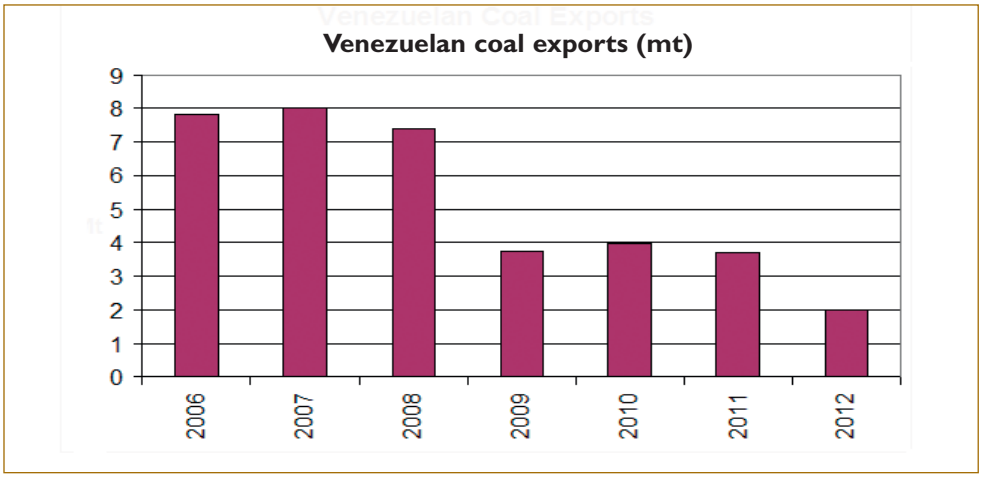
Further south, in Venezuela, following the death of President Hugo Chavez, the international coal sector has been speculating

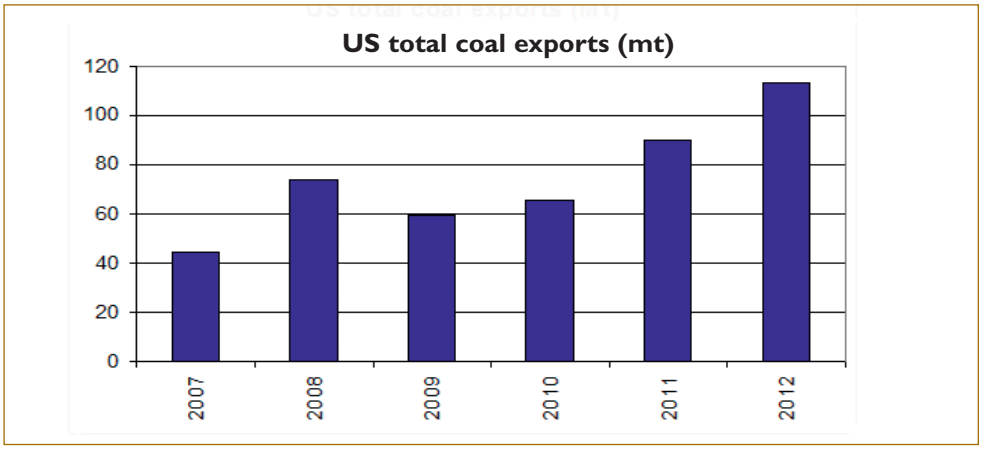
In February, the hard coking coal export market on the US east coast was lacklustre, as quarterly contract talks brought the spot market to all but a standstill. The spot price of low vol material was at US$158/t FOB in late February, but some players were anticipating a price of up to US$175/t FOB for the next quarterly contract. The spot price of high vol material was US$146/t FOB at that time. Freight differentials appear to be the main reason for the lower price of US coal in the international markets, particularly in Asia, where the Australian competitors have an advantage. Quality issues are contributing less to the price differences among broadly equivalent coal brands in the supplier countries at present. Meanwhile, another attack by terrorists on Cerrejon Coal was carried out on 24 February during the ongoing strike at its operations. Four coal trucks



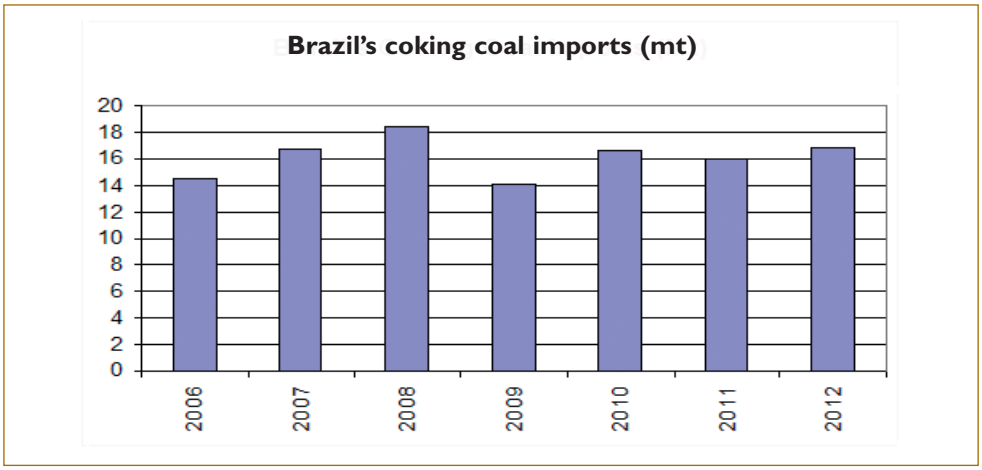
were seen as easy targets and were seriously damaged.

During February, thermal coal spot markets softened in all markets except Colombia where the industrial action and environmental issues tightened supply to the ports. Reports suggested only 20% of normal coal supply could be shipped at the time. Some interest in Polish and Russian material had been reported as buyers looked at other sources of coal in northwest Europe. US exporters were also been receiving enquiries from buyers in Europe in order to cover potential cancelled cargoes as the Colombian situation persisted. The industrial action by union members at Cerrejon Coal appeared no closer to being resolved as negotiations on the new enterprise agreement broke down.



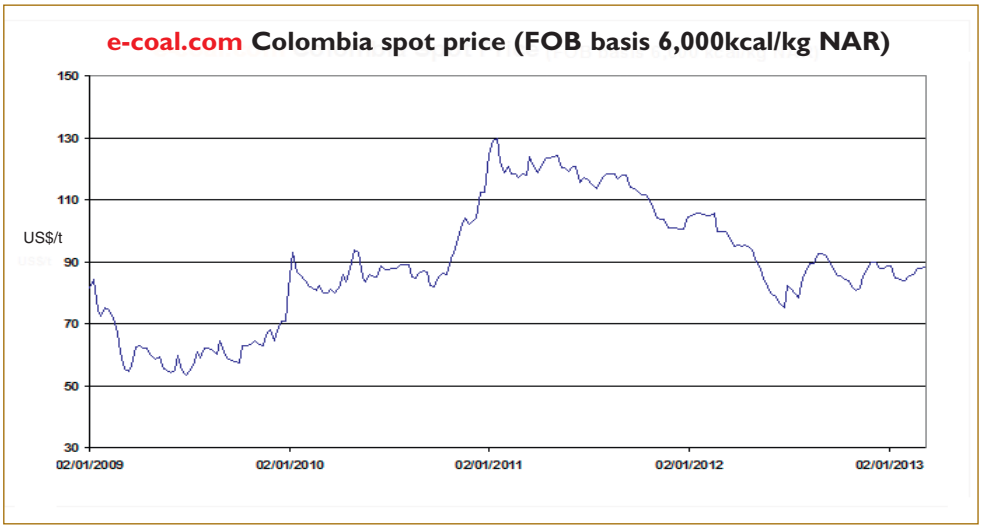


There were reports of several small deals in the domestic market for hard coking coal in the USA. Spot prices at the east coast ports firmed a little as a consequence, and low vol material was priced at about US$158/t FOB. The spot price

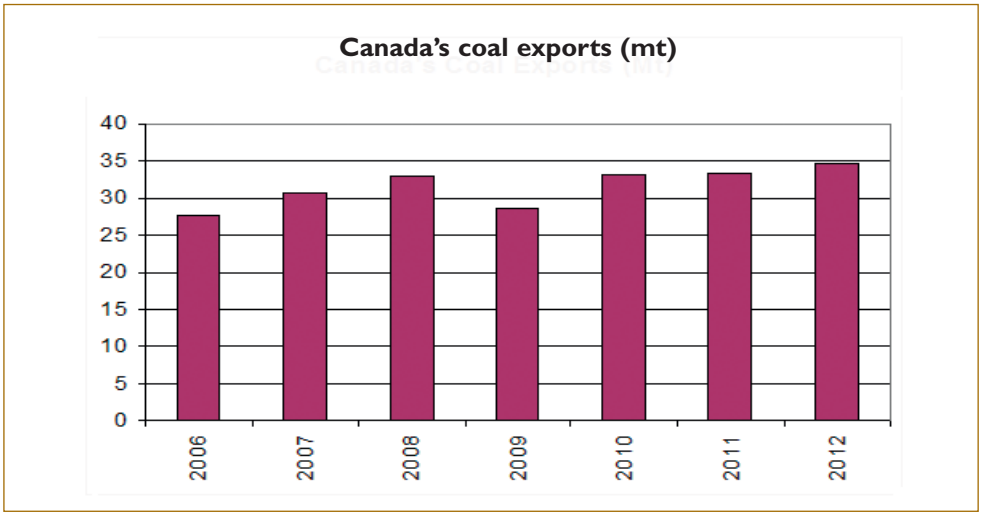


of high vol hard coking coal also firmed slightly to about US$146/t FOB. There seems to have been an expectation of higher prices among US market players than their Asian colleagues expected at the time, with reports of US$180/t being considered possible by some for the reference low vol material.

In the middle of February, the industrial action in the key supplier countries of Australia and Colombia had caused acute modest hikes in the spot price of thermal coal, but market players were understood to have been showing little anxiety about coal supplies being seriously tightened. It was felt that if the situation was not resolved soon, the pattern could have continued with a rise in the spot price being seen in relatively small steps during those conditions. At that time, reports indicated that some cargoes of US thermal coal had been sold to Japan in the previous weeks, and the latest data indicated higher coal burn among the electric power companies there. The coking coal market had remained quiet, but there were signs that lower quality hard coking coals were beginning to achieve firmer prices in the spot market. For reference brand quality, European buyers were rumoured to have been paying up to US$175/t FOB for Australian material in early February. The steel makers were understood to have been adjusting their blends amid the demanding market conditions. In Europe, higher gas prices kept interest in other fuels at the top of the fuel managers' agenda, but a substantial increase in demand for coal and a consequent rise in the price has not been evident. Polish, Russian, and US thermal coal is understood to have been of more interest recently than South African material. There were some signs of activity in Brazil when CSN issued a tender seeking 50kt of metallurgical coke in mid-February. Meanwhile, US shippers had been negotiating quarterly contract terms with the European steel makers who are interested in lower cost material for their blends over the coming months. Mid vol hard coking coal had seen some firming in price due to the improvement in demand for such material. The indicator spot price for the reference brand of low vol coal was US$157/t FOB on the east coast in mid-February. High vol coal was priced at US$145/t FOB.



Although business remained thin for US coking coal shippers in early February, there were signs that the firming of the spot price in the Australian market was having some influence in the hard coking coal spot market in the eastern US ports. Low vol material was thought to be selling for over US$157/t FOB which suggested an increase of more than US$2/t FOB in a week. High vol coals had not been seeing as much of an increase in demand but sellers were understood to be asking over US$145/t FOB at that time. At the time, the Brazilian steel makers were rumoured to be purchasing B grade high vol US hard coking coal for as little as US$120/t FOB, but no deals had been confirmed at that price. Further north, in Canada, Compliance Coal was reported to be proceeding with its plans to develop the new Raven



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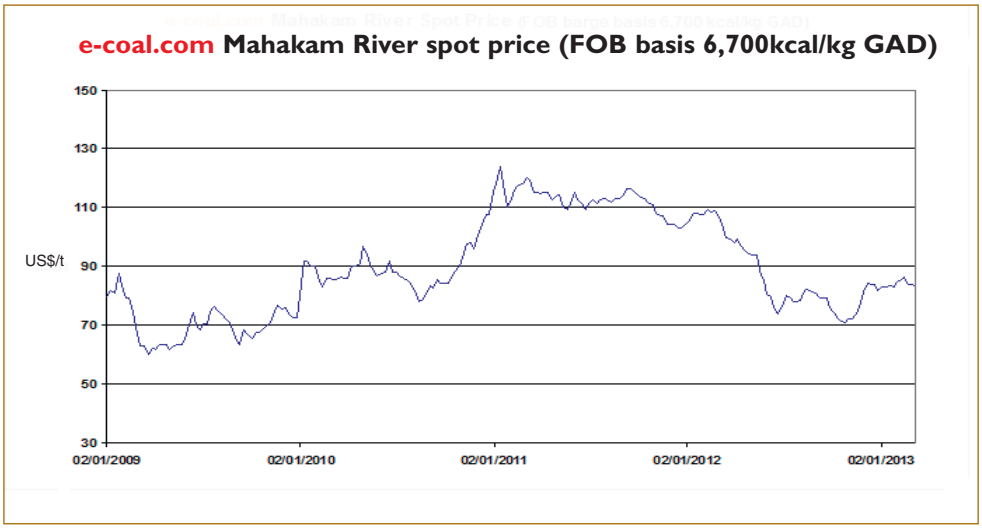
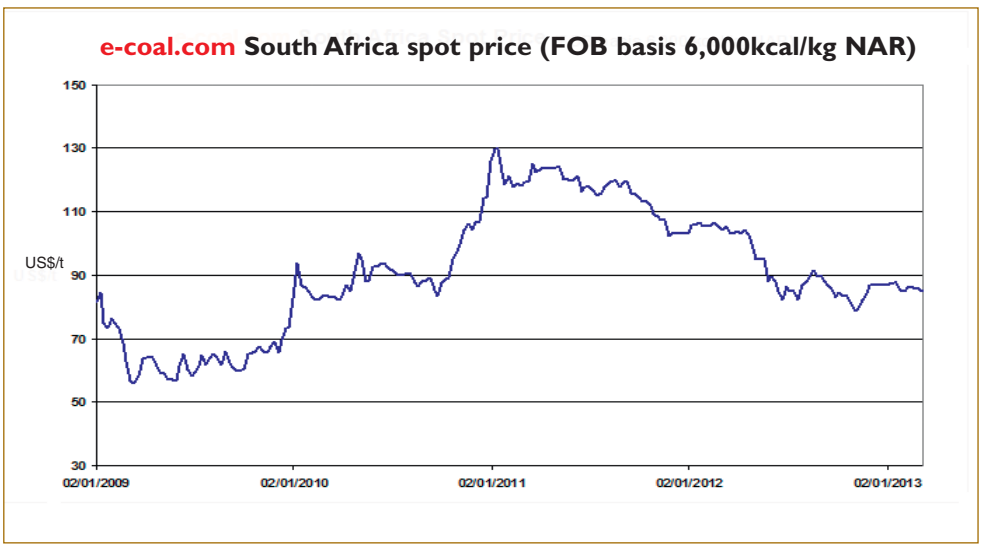


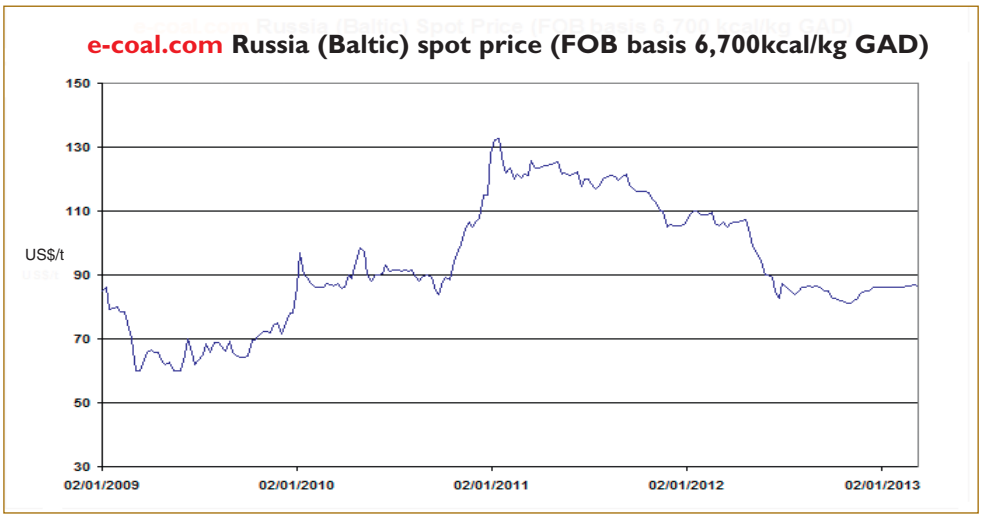
underground coking coal mine on Vancouver Island. Up to 700ktpa of coking and PCI (pulverized coal injection) coal could be produced and would be shipped from Port Alberni. In port news, following the damage on 7 December to No 1 Berth at Westshore Terminals in Canada, repairs were expected to be completed by the end of March (for more details, see 'How one night of disaster can change your whole year' on p71 of the February 2013 issue of *Dry Cargo International*). A conveyor was damaged when a ship collided with it, and it was expected to take some time to repair the pier at Berth 1. There were limited reports of disruption to exports of Canada's coking coal in the Pacific markets, but market fears led to a rise in the spot price as the incident was expected to have an impact on supply in the following weeks.

During early February, Drummond was reported to have had its operations at the port of Santa Marta suspended following an incident in which coal was allegedly lost overboard from a barge on 13 January. The suspension led to disruption of coal supply which exacerbated the constraints caused by the industrial action at Cerrejon Coal. There had been a 97% majority vote in favour of industrial action over wages among the 4,500 union members. The union was demanding an increase of 7% in wages this year, with further increases next year. Meanwhile, FARC terrorists carried out their first attack of 2013 on Cerrejon Coal's operation on 21 January. A coal train sustained minor damage and railings were delayed for a couple of hours while the track was repaired.

Also impacting coal supplies in early January, haulage on the Fenoco rail line through residential areas was banned during the night due to environmental issues including noise.

Colombia's National Mining Agency has forecast coal production growing to 98mt in 2013 with an average price of US$75/t FOB. To 2020, output is forecast to peak at 107mt during 2016–2018 with annual average prices at US$79, US$84 and US$87/t FOB respectively. Production in 2020 is forecast to be 103mt with an average price of 92/t FOB.

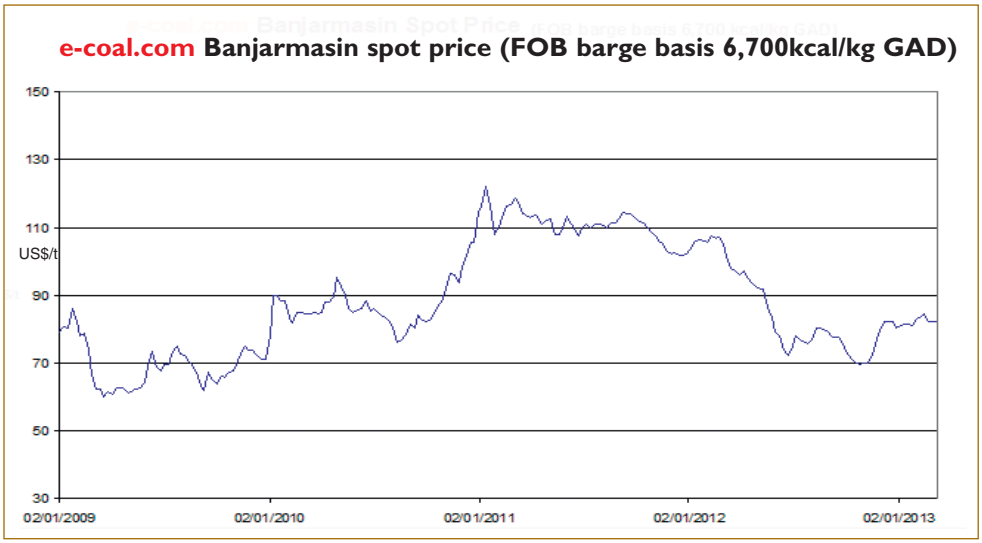




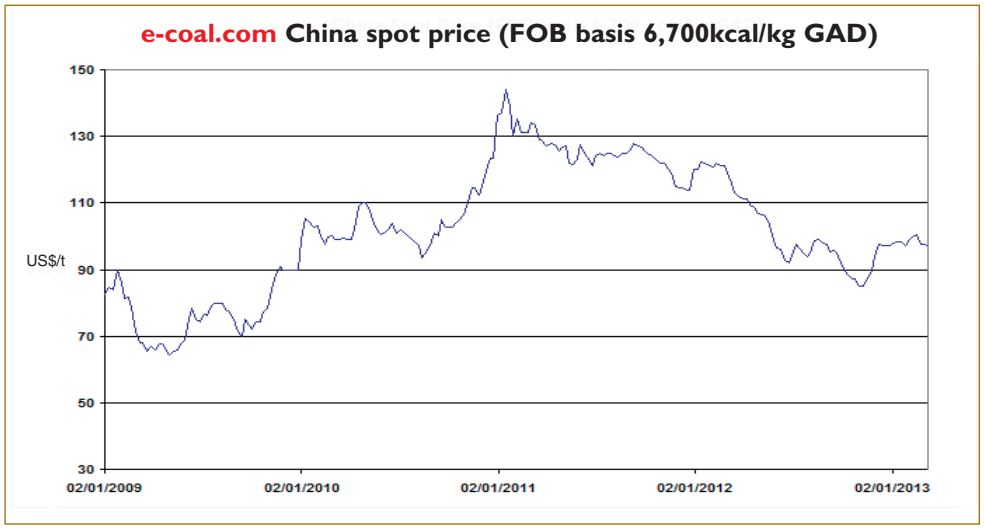
This year began with weak thermal coal spot market activity, with a similar situation in the coking coal spot markets. There were few significant factors set to influence the position, with a plummet in the price of Chinese coke and some disruption to Canadian supply being the most noticeable. There had been reports that Canadian coal producers were having problems hauling coal by road and rail to the ports on the west coast due to snow and ice during the winter freeze. The possible tightening of supply of

Canadian coking coal failed to show any impact on the spot markets. Further south, there was optimism that the Brazilian steel sector will pick up this year, ahead of the Olympic Games and soccer World Cup events there.

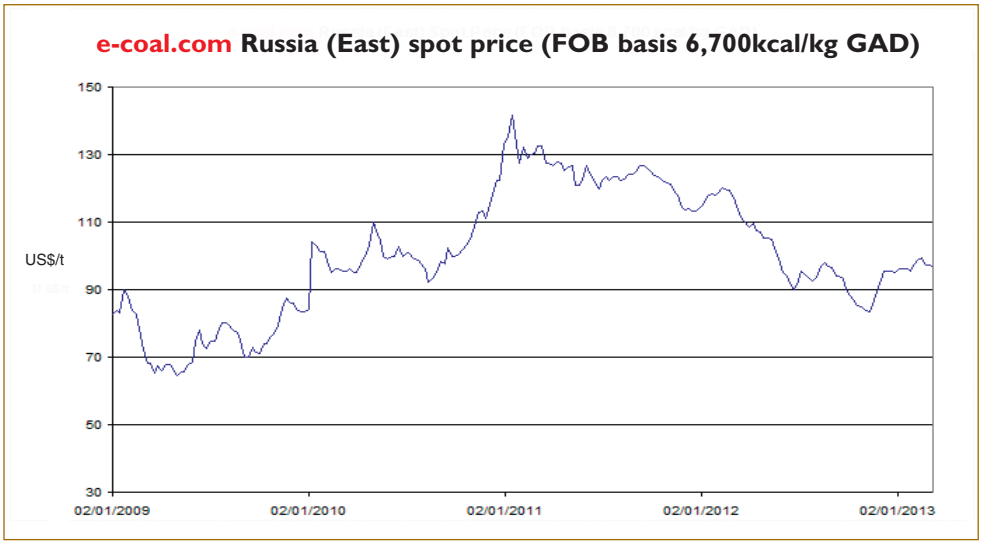
Steel makers were reported to have settled contract supply of US PCI coal for 2013 at prices in the low US$70s per tonne at the start of the year. Such prices are unsustainable for some operations, and further production cuts were expected at some mines in the coming months.

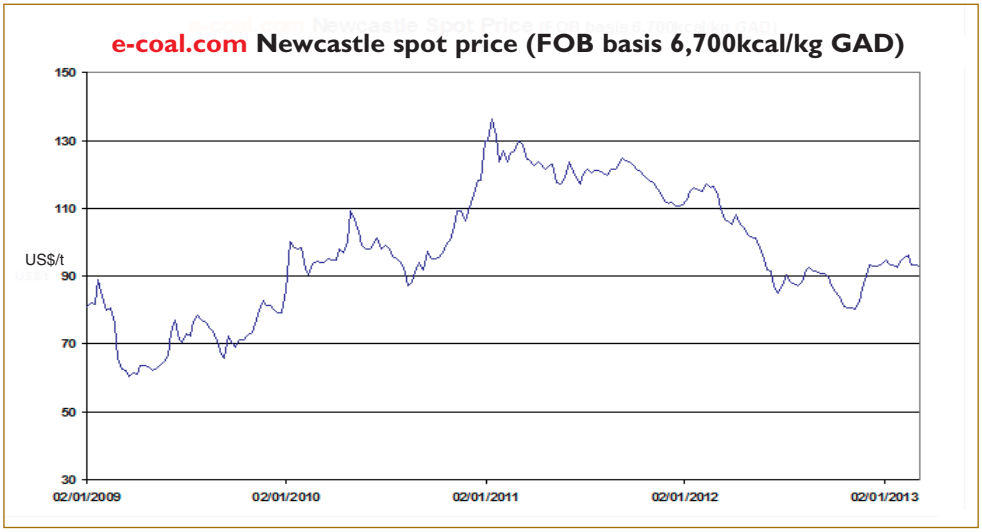


Rumours had been circulating in early January that some German utility buyers had been planning their approach to coal procurement for the second quarter of 2013 and beyond. While a number of customers had already agreed substantial tonnage in the wake of reduced nuclear power output, there was still a need for more thermal coal to be purchased in the spot and spot tender markets. The buyers were expected to be aiming for coal to be delivered to the ARA ports at prices close to US$90/t CIF (cost, insurance, freight) basis 6,000 kcal/kg NAR (net as received), and this was of interest the US traders at the time.



Looking further back at the factors influencing coal trade in the Americas as 2013 got under way, thermal coal spot markets had remained rather calm over the holiday period in December, with little movement seen in the prices around the major markets. The spot market in northern regions had been expected to firm during the first quarter of 2013 due to seasonal increases in demand for thermal coal, and it was felt that a rise could have a knock-on effect on thermal coal spot prices in the southern hemisphere markets as well. Market analysts appeared to have taken a mildly bullish sentiment to the coal market in 2013, with an overall improvement expected over the course of this year compared to 2012. US exporters were taking some comfort from the expectation of renewed demand from parts of Europe this year, with Germany being seen as one market to tap. Colombia's plans to expand coal production, however, could compete with other suppliers' hopes for Europe. China had been importing record monthly amounts of thermal coal according to the latest data, and market players did not appear to believe this would change much for the coming months. An increase in the price of natural gas was expected to see renewed consumption of coal in some major economies including the USA. One market being watched more closely was South Africa, which some players believed could see growing demand from Europe. India and China were expected to show continued growth in demand, which could influence Atlantic markets. Coking coal spot





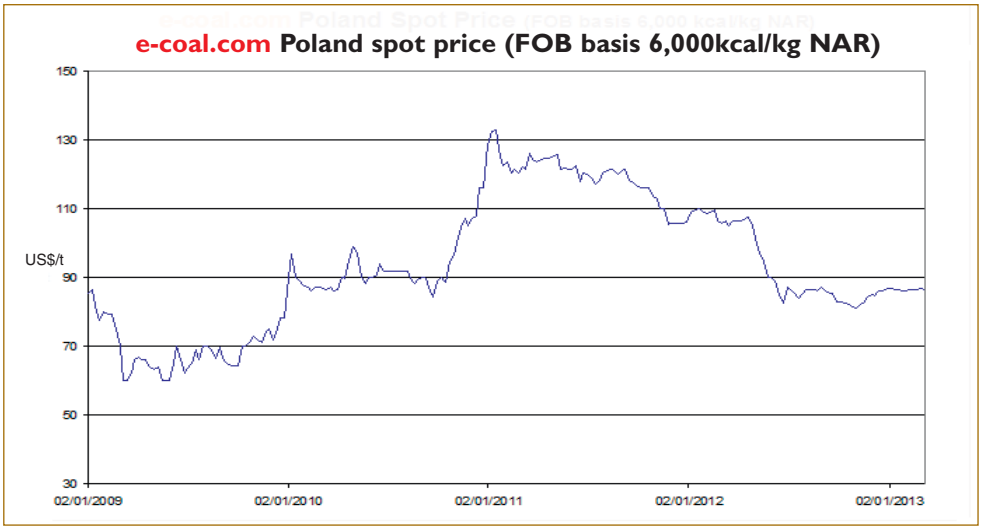
product. High vol hard coking coal was priced at about US$150/t FOB at the end of November, which was a decrease of US$2.50/t FOB compared with the week earlier. As the US shippers began to look at the export market after agreeing most of their domestic business, there was a perception that the supply of hard coking coal had picked up. This had met with limited demand which appeared to have led to a fall in the spot price.

On the demand side at that time, Chile's Guacolda had awarded the contract to construct a new 154MW unit at the Huasco coal-fired power station to Mitsubishi Heavy Industries. Commissioning of the unit is expected in the second half of 2015.

In the USA, Southern Coal had signed an LT coal supply contract with American Electric Power. As a result, the company expected to reinstate 500 workers who were retrenched earlier in 2012, and would also be seeking an additional 650 workers to help meet the target output of 9mt of coal in 2013.

markets had yet to show much activity after the holiday break, with little business being reported in early January. So overall, the initial expectations for the international coal industry as 2013 got under way were not as depressing as they had been for the past couple of years, and analysts and observers believed there could be some more positive aspects this year. The year had also begun with a firming in the freight rates on the major coal routes.

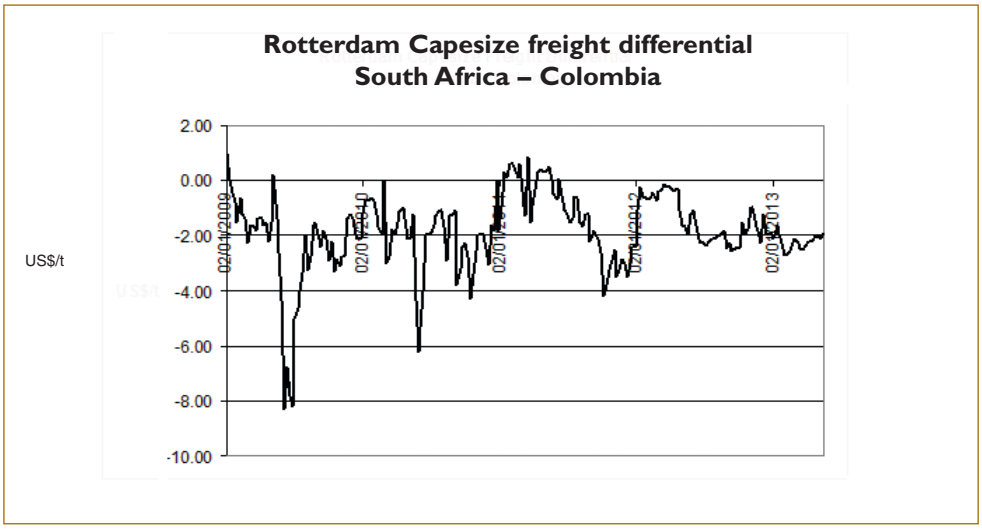
Towards the end of 2012 in the USA, it was decided that expansion of the rail network in the Powder River Basin was being postponed due to the downturn in demand for coal in favour of natural gas in the US power market. Canadian Pacific will not be proceeding with its 260 mile track extension for the time being.

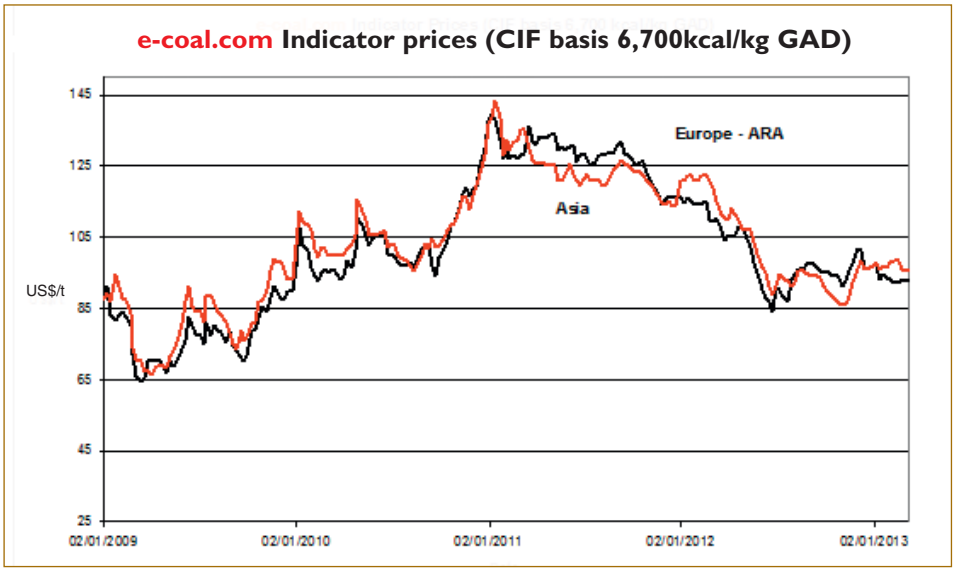


The US coking coal shippers were not benefitting from the renewed demand seen in Asia during November, with Atlantic business still subdued. European demand was particularly quiet, and rather than an increase in the spot price, there had been a drop in the indicator price to around US$158/t FOB for low vol

Towards the end of November, thermal coal spot prices had firmed in the Atlantic markets, with spot deals being seen for Colombian coal in the USA, and US coal winning some spot tender business in the Mediterranean market. Rumours suggested the Spanish coal consumers were looking at new business with US and Colombian shippers at the time. Coal burn had been higher there in the previous weeks, and coal stocks had been depleted somewhat.

A number of key marketing managers and coal buyers had been attending the Carbon Forum in early November, with





some new business expected to result from the meetings. Rumours suggested European buyers in Germany, Israel, Spain, and Turkey were actively seeking coal. The outcome of the discussions did not, however, give a particularly strong indication of the direction the market could be expected to take in the following months, both in thermal and coking coal business. Peabody Energy had been the latest major mining company to report disappointing operating results at the end of October, with a 10% or US$25m decrease in EBITDA year on year. The company announced job losses for 925 workers around its worldwide operations, with a plan to cut costs by some US$100m. Meanwhile, Canada's Teck Resources achieved an average price of US$163/t FOB for 6.2mt of hard coking coal for supply in Q4 2012. The reference price of US$170/t FOB applied to its equivalent brand, with differences on others relating to quality adjustments.

After a disappointing and challenging first half of 2012 for coal trade in the Americas, the situation improved as the northern summer drew to a close. The improvements seen in some countries during the autumn began to level off as the holiday season approached, and as some analysts had predicted, the gains reached a plateau at year end. While markets have not returned to the depressed levels of a year ago, there has been no further indication of significant growth during the first couple of months of 2013. The disruption to substantial production of coal and supply from Colombia has been a key factor in keeping coal prices relatively steady, so players will be watching how Atlantic trade develops over the coming months now that the situation has been resolved. Further financial crises in the Eurozone are not helping to boost the European economy at the time of writing, so the first half of 2013 looks set to be as challenging for coal shippers in the Americas as it was in 2012. This year the coal exporters will be hoping for new business from the improvements in China, and the boost to the Brazilian economy from the sporting events there which could help trade during the next few years. DCi

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

ABS releases ship energy efficiency measures advisory

ABS, a major provider of maritime classification services, has released the ABS Ship Energy Efficiency Measures Advisory to provide guidance on the wide range of options available to improve vessel efficiency, reduce fuel consumption and lower emissions. The Advisory assists owners, operators and other stakeholders in conducting the techno-economic analysis needed to meet the challenges of rising fuel costs and increasing environmental regulatory requirements.

As the shipping industry works to comply with environmental laws and adapt to an operating landscape of higher fuel costs, it is embracing new design concepts and looking for ways to optimize existing tonnage.

The Ship Energy Efficiency Measures Advisory gives decision-makers the tools to make informed choices about the options available for improving vessel efficiency, reducing fuel consumption and lowering emissions and guidelines for applying the technologies to their assets.

"Energy efficiency measures are probably the number one topic for owners constructing new vessels or seeking to optimize existing tonnage," says ABS Vice President for Operational and Environmental Performance (OEP) Howard Fireman. "The potential to achieve greater efficiency is not in doubt, but owners and operators need support in evaluating which options are most suitable for their vessels."

Guidance is presented in five sections, covering both newbuilds and existing tonnage. For newbuilds, topics include:

- hull form optimization; and
- influences of the International Maritime Organization's Energy Efficiency Design Index (EEDI) on ship design and efficiency

For newbuilds and existing tonnage, the Advisory includes:

- an overview of devices that can improve propulsion efficiency and technologies that reduce hull resistance;
- an examination of efficiency gains in ship machinery and systems, including main and auxiliary engines, waste heat recovery and auxiliary equipment; and
- an overview of operational measures that can reduce fuel consumption, including voyage performance management and hull/propeller condition monitoring.

"The industry is hearing claim and counter-claim on the merits of new ship designs and the potential for savings on existing tonnage. Some of these technologies are proven, while others are completely new. Determining which are applicable can be a major task," says Fireman. "This Advisory explains the merits of the major technologies so owners can judge for themselves which are worthy of further investigation," he adds.

The Advisory has been produced by the ABS Technology department and the ABS OEP team. OEP was formed in January 2013 to expand upon the previous work of the ABS Environmental Solutions Group. The expanded team provides additional resources to assist the marine and offshore industries in assessing the energy efficiency and operational performance of new and existing assets.

Much more than painting by numbers

the difficulties faced by the marine paints and coatings market

Kunal Bose

Two most significant developments, both occurring in the first decade of this millennium, posed a big challenge to marine paints manufacturers across the world. These required of manufacturers to make a complete break with a more than 40-year-old practice of using organo tin tributyltin (TBT) compounds in the making of antifouling coatings for sea going vessels. Under pressure from governments across the world, marine biologists and civic society, the International Maritime Organization first put a ban on production and sale of compounds using TBT compounds in January 2003 and then disallowed their presence in ship hulls effective January 2008.

Leading paints manufacturers responded well to the challenge of finding alternative compounds to TBT in making fouling control coatings by providing large funds for research and development. An outstanding example of the industry's new thrust on R&D found expression in International Paint, an Akzo Nobel outfit, opening a state of the art marine coatings research centre in Singapore. The centre, which gets liberal funding from International Paint, is in the forefront of making technology breakthroughs. This is once again proved by the centre coming up recently with two new breakthrough fouling control products. Both have been well received by shipyards all over the world.

In the first place, what needs to be understood well is why ships need anti-fouling coatings at all. Marine fouling happens because of settlement and growth of algae and invertebrate animals on the surface of submerged portions of ship hulls and harbour installations. Running ships will become a more expensive proposition and with major disturbances caused to the environment in case fouling deterring coatings are not used. A scientific study has established that in the absence of application of anti-fouling coatings, ship fuel consumption could be up by as much as 40%. This will translate into total global fuel consumption by vessels climbing to 500mt (million tonnes) a year from the present 350mt. What is more, ships as they move from port to port are emitting huge quantities of CO_2 and SO_2. The least that the world can put up with is more greenhouse gas emission. Application of good quality anti-fouling coatings allows ships to run at good speeds. This in turn helps in reducing 'operational, commercial and environmental costs' of running ships.

The two new coatings, developed at the Singapore R&D centre of International Paint and creating new waves of interest among shipbuilders are (i) Intercept 8000 LPP. The new biocidal linear polishing polymer antifouling allows long-term performance for in-service periods of up to 90 months. (ii) Intersleek 1100 SR is the first biocidal-free fouling control coating featuring a unique patented slime release technology. This controls micro fouling on ship hulls. The performance is maintained throughout the docking cycle. Biocidal-free coatings work by providing an uncommonly smooth, slippery, low friction hull surface. Naturally, fouling organisms find it difficult to stay attached to the outer hull surface. Some stubborn organisms, however, still do, but only manage to do so weakly making it easy to remove those. In the other types of coatings, fouling organisms are prevented from sticking to underwater portions of outer hull surfaces through controlled release of biocides. Cuprous oxide is the principal biocide used to stop barnacle, an

animal fouling, from settling on the surface. As for stopping the growth of algal, a weed, cuprous oxide needs reinforcing by rapidly degrading co-biocides. The latter do not bio-accumulate in marine environment.

An official of Indian Paints Association says "success in marine paints business demands of manufacturers coming up periodically with coatings for external and internal surfaces of ships that would last longer in an environment protective way. Equally importantly, shipyards want paints producers to be involved with them from planning stages of a new vessel building and throughout its life. Shipyards are showing distinct preferences for paint makers with capacity to offer consultancy in an area with significant bearing on vessel life and maintenance cost. Big investments in R&D and rising raw materials bills have pushed up prices of marine protective paints. But rapid quality improvement resulting from R&D breakthroughs in groups like International Paint, Jotun of Norway and Nippon Paint of Japan continues to bring down the cost of painting over a vessel's total seaworthiness period." The official further says a noticeable feature of recent times is global marine paints leaders headquartered in Europe reinforcing their presence in China and Southeast Asian countries by opening new factories and expanding the ones in operation and equally importantly doing R&D work on marine paints in those new locations.

Intersleek 1100 SR is the first biocidal-free fouling control coating featuring a unique patented slime release technology.

International marine paints leaders know their future growth will be decided in a very significant way by the kind of presence they have in Asia. Stack up the shipyards in China, South Korea, Japan, Taiwan and India and you have close to 90% of global new building capacity. Furthermore, Asian countries are where an overwhelming majority of vessels will be docked for repairing and painting jobs. China like in so many other enterprises leads the world in the number of dry docks and dry dockings. No wonder then International Paint has opened its new global marine coatings headquarters in Singapore. The move is one more proof of indispensability of physical presence in select Asian centres to be of relevance to the region's shipping industry. According to International Paint's director of marine coatings Oscar Wezenbeek, "headquartering our business [marine coatings] in Singapore will further enhance our global position as it will facilitate growing our market share in Asia-Pacific... Asia will be an increasingly important market for us in the future." The Akzo Nobel subsidiary arrived early in China in 1990 with its International Paint & Shanghai Co, which is rapidly growing manufacturing of marine coatings and coating powder for use in new building, ship maintenance and repair and on board maintenance. So much water has flowed down the Tyne river in England's New Castle where the origins of International Paint stretch back 120 years. Today, European shipyards are mainly engaged in building very special types of vessels for commerce (LNG transportation) and defence.

Jotun too with two manufacturing units in Guangzhou and Zhangjiagang has a growing profile in China where also it has got a very active regional R&D centre. Another Jotun factory for marine coatings production at Qingdao in Shandong province will soon be ready for commissioning. An official of Jotun China is on record saying "we recognize that we are not the first to enter the Chinese market where the demand for marine paints of all types is growing at a rate faster than in any other country. But our sustained investment in production facilities and the focus of our local R&D centre to develop products in line with Chinese requirements are helping us to make up for the lost time. We are ambition driven to become the best." Success in marine paints business demands of producers to be present where the market is, since their involvement is required from conceptualization of new shipbuilding and through a vessel's entire life. So it goes beyond supply of coatings to offering of a kind of consultancy to vessel builders.

European companies were early to realize that they must be present in strength in Asian countries in order to maintain a good share of a market where the future is. What they have not lost sight of is the capacity in particular of some Japanese paints groups like Nippon Paint to throw challenges to their peers from other continents in technology breakthroughs and product quality. Hasn't Nippon Paint played a pioneering role in developing anti-fouling paints sans organic tin that harms marine life? Fouling organisms find it difficult to stick to ship hull if the surface remains extraordinarily smooth. Nippon Paint kept slippery skins of dolphin and tuna in view as it developed anti-fouling paints. Naturally, the market has responded well to these paints.

Even while the Indian market for marine paints is still modest in size, the future demand driver there could well be the maintenance and repair (M&R) segment. International groups are taking care of Indian market requirements through their local offices and chains of dealers. But going a step forward, Hempel Paints of Denmark, however, is to build a marine and protective coatings plant in the western Indian coastal state of Maharashtra. Besides targeting a bigger share of the local Indian market, Hempel will use the products from Maharashtra plant to sell in other south Asian countries. With foreign groups becoming active, Indian companies with marine paints in their portfolios have realized that their staying in this niche segment will depend on their ability to acquire new technologies from abroad. Not an easy proposition though. World leaders in marine paints after having pumped in big new funds in R&D since the beginning of the new millennium will not be disposed to either sell technologies or become partners in joint ventures with Indian groups.

The growth rate of the marine paints industry is linked to activity levels of new building and M&R. New building in turn is influenced by the state of world economy and world trade. The International Monetary Fund is lowering its growth forecasts for nearly all rich countries, including a 0.3% contraction for the euro zone. While the industry growth has slowed since the ruinous 2008-09 recession, paints manufacturers have to put up with cost inflation of raw materials like epoxy resins, titanium dioxide, solvents and metals. The market being not in great shape, paint manufacturers are not in a position to pass on incremental costs on account of raw materials to their clients. Margins have, therefore, come under pressure. It will be some time before marine paints business returns to the vibrancy of pre-recession days.

Caring for cargo holds with coatings from Hempel

No other part of a ship receives the same kind of battering as a cargo hold. The profitability of a bulk carrier is highly dependent on the long term durability of the coating used in its cargo hold. Angular dry cargoes like iron ore, coal, coke, bauxite, rocks and scrap iron can inflict severe damage to the cargo hold coating from high speed impact during loading, mechanical impact and abrasion during discharging and cargo gouging from cargo settlement during ship movement and sailing. Carriage of warm cargoes can soften the coating and reduce its mechanical resistance, so high thermal resistance is needed. In addition moisture in contact with acidic cargoes can form a highly chemical corrosive environment in the cargo hold and all of this the coating will need to protect against.

HEMPEL, a specialist in developing durable abrasion and impact resistant epoxy coatings, has recently launched a new cargo hold coating. Group Marine Product Manager Michael Aamodt comments; "HEMPADUR IMPACT 47800 is our newest addition to our dedicated cargo hold coating range. The coating is developed to offer uncompromising high performance against dry cargo abrasion, impact and corrosion resistance. Hempadur Impact not only offers superior impact resistance to prevent 'shooting' damage from high speed loading in the cargo hold but also has a high glass transition temperature to keep the coating hard and resistant also when exposed to warm cargoes."

Hempadur Impact has excellent application properties; it dries and cures quicker than similar coatings on the market, and can carry hard cargoes after only three days' curing at 25°C. This low VOC pure epoxy coating is conveniently available in grey, red and aluminium shades. Applicable year-round to steel surfaces prepared to minimum Sa 2 the coating offers a smooth and easy to clean surface between different dry cargoes.

Extensive benchmark testing of Hempadur Impact on Hempel's state-of-the-art 'coal cargo test-rig' in comparison with comparable cargo hold epoxy coatings found in the market, shows that the coating offers superior protection. With a 7.5-year major repair interval it enables shipowners to extend periods between repairs — and will reliably reduce the vessel's operating costs to deliver exceptionally strong return on investment.

HEMPADUR IMPACT 47800 at a glance;

- 7.5-year major repair interval;
- 76% volume solids;
- VOC compliant (below 250g/l);
- certified for carriage of grain and FDA compliant for dry food contact;
- application temperatures: 0°C to 40°C (23°F to 104°F);
- dry film thickness: 2 × 125µm;
- time to carry first hard cargo three days at 25°C; and
- easy to clean between cargoes.

HEMPADUR IMPACT 47800 is a true value for money cargo hold coating that will have a positive impact on a vessel operating costs, whatever the cargo, don't settle for less.

Ultimately, securing correct surface preparation, paint application, drying conditions and required number of days curing before exposure to hard cargoes will determine the in-service performance and durability against damages. DCi

Ship management

safety and training must come first

Intercargo reports that only three bulk carriers were lost in 2012. But although no lives were lost on the three ships that sank, four further serious incidents led to the deaths of 12 seafarers. Intercargo said there had been two bulk carrier losses in the first quarter of 2013, including the Harita Bauxite, *which sank with the loss of 15 lives after loading nickel ore in Indonesia.*

Michael King

Shipping bodies are pushing for tougher rules governing casualty investigation reports which involve the loss of life and/or vessels.

A spokesperson for the International Chamber Shipping said that in many cases where vessel casualties have occurred "there is no information available and it is not at all clear that some Administrations are actually carrying out investigations or indeed making arrangements to do so."

Figures compiled by Intercargo, representing bulk carrier ship owners, revealed that of 11 bulk casualties involving loss of life and vessel over 2008–2011, Flag States had still not filed casualty data in the IMO's Global Integrated Shipping Information System (GISIS) for six of the incidents nor submitted investigation reports. Of the five investigation reports that have been submitted, none of the reports were available to download for use as reference material to help prevent future losses.

In accordance with SOLAS regulation I/21, maritime administrations undertake to conduct investigations into any casualty occurring to ships under their flag, and to supply IMO with relevant information concerning the findings of such investigations, especially where serious maritime casualties are concerned.

IMO codes also state that the final maritime safety investigation report should be "completed as quickly as practicable" and be made available to the public and shipping industry by the investigating State.

However, the terms of the various rules leave Flag States with plenty of scope to let the filing of reports slide or remain closed to viewing by the wider public.

The ICS and the International Transport Workers' Federation said they were hopeful governments would make current regimes tighter at the next meeting of the IMO Maritime Safety Committee next month.

"The lack of investigation and accident reports hinders the development of appropriate measures by IMO to address the

cause of serious incidents in which seafarers may have lost their lives." said ITF Acting General Secretary, Stephen Cotton.

"It also frustrates efforts by ship operators to learn from the reports and to amend or develop new procedures, or implement other measures to prevent or mitigate similar future incidents." said ICS Secretary General, Peter Hinchliffe.

The IMO has now agreed a draft circular including revised harmonized reporting procedures following a maritime casualty.

The circular invites Investigating States to populate the Global Integrated Shipping Information System (GISIS) Maritime Casualties and Incidents module with basic factual data about the casualty as soon as possible after the occurrence, so that it is registered on GISIS that a casualty event has occurred, and that it is being investigated.

"The circular reminds governments that following a very serious marine casualty, and in other casualties or incidents where data from a marine safety investigation should be supplied to the organization, the marine safety investigating State should submit a marine safety investigation report," said a spokesperson.

"Where there are important lessons to be learned from other marine casualties or incidents, full investigation reports should also be submitted to the organization."

The circular is due to be discussed and approved at the next meeting of MSC in June.

Are scrubbers a cost-effective way to comply with emission control rules?

Bulk carrier owners and ship managers face important investment decisions as they wrestle with how best to optimize operational efficiency for vessels trading in Emission Control Areas (ECA).

ECAs limit the sulphur content of bunkers used in ships sailing in North America and Northern European ECAs to 1.00% m/m until 2015, when the limit will be lowered to 0.10% m/m.

As Bimco Chief Shipping Analyst Peter Sand points out, this means vessels sailing inside ECAs are required to either use distillate fuel, which is sold at a clear mark-up over normal heavy fuel oil (HFO), or find other ways of being compliant such as investing in an LNG solution or a scrubber which allows ships to burn cheaper HFO fuel.

Assuming that the scrubber is fully compliant with regulations, the question is whether the significant upfront cost of a scrubber will lead to savings in fuel expenses. This is determined by operational patterns, such as how often the vessel will need to sail in ECA waters, and how many years of commercial operations the ship has left when the decision is made, said Sand.

"Only bulk carriers with regular port calls inside of ECAs would opt for a scrubber," he explained. "In this way, the fixture that goes into an ECA would carry that extra cost element of burning marine gas oil, but it would save some installation money up front."

The latest analysis into the use of scrubbers by Bimco focuses on medium-range tankers and Sand admits the maths were a little muddier when applied to more flexible bulk carrier markets. But he drew the broad conclusion that older vessels were not usually candidates for a scrubber installation because the investment cost was unlikely to be repaid before the end of the vessel's commercial life.

"But for many newer vessels, installing a scrubber could help you save money if you plan on trading a significant amount of time in ECAs," he added. "For a ship with ten years of commercial life left, the vessel should sail in an ECA 33% of the time for a scrubber to break even".

For owners and managers signing third party deals, the scrubber installation question also presents new factors to take into account.

"The technical manager operates in accordance with the ship owners requirements," said Sand. "So the manager must be able to take care of the engine if it is slow steaming, able to overhaul the scrubber and maintain it as well as operate the engine on different types of fuel.

"From the owners' point of view — the question would be: If I were to put my ship out to a manager, does it make sense to put a scrubber on it before I do so?"

Coping with the added burden of bureaucracy

Arvind Sharma, Director of Loss Prevention and HR Marine at Bernhard Schulte Shipmanagement, is no fan of paperwork and bureaucracy at sea. But he is confident that third party crew and vessel management service suppliers will continue to flourish in the coming years.

BSM's current managed fleet is close to 700 ships evenly divided amongst wet and dry ships, with the dry fleet including bulk carriers ranging from ultra large ore carriers to small Handysize bulkers. Sharma says the company mainly meets the needs of "blue-chip and established ship owners" on a global basis.

"BSM's fleet size has been steadily increasing, but in a planned and prudent manner, throughout the tanker, gas and dry vessel markets," he said. "We fully expect continued and sustained growth from satisfied customers in the tanker, gas and dry fleets as the world economy recovers and continues to grow, and worldwide consumption of energy and raw material rises."

Achieving those aims in a low freight rate environment will be tough, he admits. "Markets are cyclical and have always been so. However, in BSM's book, quality and safety are not options which can be switched on or off depending on the market situation.

"Having said that, BSM's competitive edge comes from continuously looking at ways to increase effectiveness and minimize costs, whether the market is up or down."

This approach means focusing on crew training and awareness to minimize damages and losses, negotiating special prices for owners on stores and spares, and consolidating transhipments of supplies to generate economies of scale.

BSM also works with some owners on a performance-based management fee structure, a trend that is growing in popularity among owners. "For years in BSM, we have measured our efforts in key areas against pre-set and pre-agreed targets, with every section of the business having their own KPIs against which they monitor their performance, and which is used annually to determine any performance linked remuneration," explained Sharma. "A similar system operates for management level Officers on board ships, thereby giving the senior officers on board a clear set of goals against which they can expect recognition and reward."

Regulation and paperwork are a growing burden on officers, however. "It is heartening to note that the IMO has taken note of this and commenced a consultation regarding the added burden coming out of their instruments and regulations," he said. "If we wish our seafarers to focus on the job of running our vessels safely and professionally, we need to reduce their paper and reporting workload.

"BSM are well on our way to reviewing and simplifying our procedures and cutting down unnecessary or duplicated reporting through development of IT initiatives and tools."

BSM does not differentiate in terms of training between its tanker and bulk operations, but Sharma said it is well known in the wider industry that the mindset on most tankers is very safety conscious, with a continuous 'what if' mentality. "Seafarers on bulk carriers many times are less safety conscious," he said.

"Just as was done with repeated training and learning for tankers in the mid-1980s, similar focus on safety has to be drummed into and inculcated in to dry ship crews."

"In BSM, besides continuous training for all seafarers irrespective of ship type, we are now looking at establishing an internal matrix for officers of dry vessels, similar to tanker oil major requirements."

Thome bulks up

Thome Ship Management continues to expand its fleet and bulk carriers remain a critical part of the mix. This time last year Singapore-based TSM had a sizeable fleet of 155 ships of which almost a third were bulkers. But in just 12 months the figure has swollen to 175 vessels of which 58 are bulk carriers.

"TSM has been on the growth path continuously," said Hardeep S. Mundae, Marine Manager. "Our fleet size has increased more than 2.5 times in the last 5 years. A major part of our expansion has been in the dry bulk division and we expect to maintain the same momentum in the future as well."

The bulk carriers TSM manages include Capesize (ice classed and non-ice classed), Kamsarmax, Panamax, Supramax (geared and non-geared) and Handymax (geared and non-geared) vessels. Major clients include owners from Scandinavia, America, Japan, Turkey and China.

"We feel that our clients believe that TSM gives quality without compromising safety, in a cost effective manner," said Mundae. "As shipowners become more financially inclined, more vessels will be handed to ship management companies. Further, large management companies like TSM also secure greater economies of scale. And the saving and profits for the owners can only be realized with the economies of scale."

Low freight rates and high fuel costs in the bulk carrier sector are driving the move of owners towards third party managers as they seek operational efficiency. "We have seen through statistics that quality has an impact in safety onboard the ships," said Mundae. "Vessels that are not funded well, either with stores and or equipment, crew etc, do operate less efficiently.

Hardeep S. Mundae.

"To succeed and be the preferred partner in the market, we strive to make sure that our vessels are always operating in utmost safest condition, are well maintained and have zero breakdowns and-or off hire periods. Investing in quality is not an expense it is in fact an investment to generate more revenues."

Mundae believes the bulk carrier sector has much to gain from looking at advances in safety procedures made in the tanker sector.

"Operating a tanker vessel is different from operating a dry bulk carrier as the risks are different," he explained. "However, there is a lot to learn from the tanker industry. Certain elements from tools like tanker management and self-assessment (TMSA), which provides a standard framework to assess a tanker ship operator's management system, can also be used in the dry industry to gauge the operating standards."

TSM utilizes technology to improve operational performance, often deviating from conventional systems and processes.

"Some of our bulk carrier vessels are fitted with 'Engine Doctor' systems to monitor main engine and auxiliary engine performance," he said. "We encourage minimum usage of power tools on deck for carrying out chipping, instead we use grit blasters. Hatch coamings water tightness is confirmed by 'Ultra Sonic' testing kit. This is one of the core measures to ensure that the cargo does not get wet during the sea passage. To maintain crane wires we have 'Masto Lubricator' for greasing. We also have "Ultra Sonic" cleaning units to clean fuel oil filters."

TSM also uses web-based vessel performance and monitoring systems to streamline vessels' noon reports. This generates real-time results which are used for data monitoring purposes and ensures that engine parameters are closely monitored. "Another measure that we have adopted is to compute Specific Fuel Oil Consumption (SFOC) and compare it with the shop/sea trial data," said Mundae. "Any deviation noted is accordingly corrected to reduce the gap."

Piracy continues to cast a shadow over bulk carriers

Piracy remains a threat to slow-moving bulk carriers despite the big decline in attacks compared to recent years, according to Captain Kuba Szymanski, Secretary General of InterManager who believes all Flag States should now allow armed guards on their vessels.

In the first three months of 2013, four vessels were hijacked, 51 vessels were boarded, seven were fired upon and there were four more reported attempted attacks, according to the latest figures from the International Maritime Bureau's dedicated Piracy Reporting Centre. Seventy five crew members were taken hostage, 14 kidnapped and one killed.

Better security has seen the effectiveness of Somali pirates significantly reduced.

The pattern of attack has, however, shifted quite considerably compared to previous years. Better security in the Indian Ocean and Gulf of Aden has seen the effectiveness of Somali pirates significantly reduced. In the quarter there were just five incidents involving pirates from Somalia, although five vessels and 60 crew members onboard are still being held and a further 17 crew are captive on land.

Instead, more emphasis has switched to western Africa and trades not generally plied by many bulk carriers. Fifteen incidents were recorded in the Gulf of Guinea including three hijackings in the first quarter with Nigeria accounting for 11 incidents and the use of guns reported in at least nine of the attacks.

Captain Szymanski said piracy attacks, especially off eastern Africa, were falling due to a combination of security at sea and efforts to tackle Somalia's issues on land. Yet he warned that some Flag States were still refusing to allow vessels to use armed guards.

"Allowing guards should be possible for all Flags in a unified way," he said. "I believe some states don't want foreigners with guns in their jurisdiction, some owners are also not prepared to pay for guards, or the charterer is not in agreement. Others won't pay seafarers danger money if they're also paying for guards so crew don't get rewarded for their risk. We need a unified system across the industry covering the use of guards which reduce the likelihood of attacks."

IMB Director Pottengal Mukundan also warned that the threat of Somalia pirates should not be discounted just yet. "The drop in reported attacks is due to proactive naval actions against suspect Pirate Action Groups, the employment of privately contracted armed security personnel and the preventive measures used by the merchant vessels," he said. "The attacks will rise to past levels if the naval presence is reduced or vessels relax their vigilance."

Captain Szymanski also said many commentators had been wrong to assume that third-party managers would lose tonnage during the shipping downturn. "We don't see that at all," he told *DCi*. "Managing in-house is always more expensive and third-party managers are more efficient so there is a definite shift towards third party managers.

"Some people were saying a few years ago that it was the end of third- party managers, but the hard facts say otherwise. As an industry we've seen steady growth over the last 25 years." DCi

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What makes self-unloaders special?

Transshipment Sierra Leone: Beltship Management Limited (BML)

History

Beltship Management Limited (BML) is a joint venture company between Globe Master Management and Gypsum Transportation Limited (GTL) and has been involved in the self unloading and transshipment market for over 20 years, *writes John McMillan, Technical Director, Beltship Management Limited.*

However with its partners BML has roots stretching back to the late 1800s with the first *Gypsum Queen* loading gypsum in Canada in the 1890s. In 1947 GTL was the first company to build ocean going self-discharging bulk carriers and as such as a group there is a vast knowledge of the industry, the self unloading concept and the cargoes carried.

Gypsum Queen.

Gypsum King.

Centennial-class self-unloaders

Moving forward to the early part of this century, BML embarked on developing a new generation of self-unloaders for its partners and clients GTL — not only to suit the particular requirements of GTL's in-house trade, but also to be able to meet the commercial demands of other identified clients, particularly in the coal and aggregate trades.

The GTL in-house trade transporting gypsum from the two quarries in Nova Scotia each posed their own particular problems. Little Narrows involves a long pilotage with very narrow turning points and berthing without the aid of tugs. Hantsport has the largest tidal range in the world, some 12 metres, allowing only a three-hour window for the vessel to berth, load and depart, all with minimal tug assistance. These factors influenced the choice of bridge and navigation design, main engine, thrusters, propeller and rudder. Additionally the short loading time, which equates to a very fast loading rate and a very short deballasting window, was a major factor in the design of the vessels ballast system.

Requirements from USG's production plants were that the new vessel should discharge quicker and avoid rapid changes in product flow, i.e. slugs of cargo. The additional requirement to carry a diverse range of bulk cargoes for other clients requirements led the owners to look at many options before finally deciding on a completely new discharge system to the marine field, the moving hole feeder, from designers Kamengo, a Canadian engineering company.

To enable the vessel to be in and out within the three-hour window at Hantsport, the vessels load at a rate of 10,000tph (tonnes per hour). This enables the vessel to load the stipulated 40,000 tonnes within the two and a half hours available for the actual loading operation. The vessel has a maximum draught at any time during the loading period of 9.75m whilst keeping an under keel clearance of only 0.3m. This scenario has required the installation of a sophisticated ballast system controlled with the aid of a loading computer interfaced with an on-line ballast monitoring and control system.

Due to the short time available for loading and the constant danger of grounding, the vessel's main engine is left running. This, together with the Lips CPP, Kawasaki 1,100kW bow thruster and the Becker high lift rudder, enables the vessel to very quickly depart the dock. Using the forward thruster and the Becker rudder the vessel can crawl sideways from the berth with virtually no forward movement and without tug assistance. The choice of a high lift rudder over a stern thruster was an easy decision as the Becker rudder not only provides enhanced docking and undocking manoeuvring but also provides better control at low speeds during pilotage, and favourable consumption figures during normal passage.

The first vessel of the class *Gypsum Centennial* is powered by a Sulzer 6RT-flex58T-B main engine, which has a maximum continuous output of 11,275kW at 93 rev/min. It is the world's first large low-speed engine in service with electronically controlled common-rail fuel injection. Due to the success of this ground breaking decision the sister vessel *Gypsum Integrity* was outfitted with the same engine.

The *Gypsum Centennial* has four cargo holds, with the traditional self-discharge shaped sloping bottoms that lead the cargo by gravity flow through the MHF and onto the two hold conveyors. The hold conveyors incline in the aft part of the cargo handling area and discharge the material onto the cross conveyors.

The combination of the MHF with the application of low coefficient of friction glass flake paint on the sloping sides of the cargo whilst holding a high angle within the cargo holds ensures difficult cargoes will be discharged quickly and effectively albeit with the loss of some cubic capacity. The longitudinal conveyor belts have been engineered oversize, at 2m, meaning the belts can operate at relatively slow speeds whilst still providing the 3,000tph discharge. This translates to lower maintenance requirements over time, reduce spillage (experience has shown that spillage is almost zero) and a reduction in dust generated.

The telescoping boom is designed to reach as diverse a scope of onshore receiving arrangements as possible. The BMH Marine designed boom has a telescopic length of 36m, which is exceptional considering the boom length is 76m and the minimum length retracted is only 40m. It is this flexibility that makes it easy to distribute the material directly to stockpiles onshore or to transfer to other receiving arrangements, such as barges, hoppers and ship-to-ship transshipments.

The entire cargo discharge operation can be controlled by one person operating a terminal located in the vessels central control station. From this station the operator, via various monitors and operator panels can control ballast and cargo discharge whist viewing the entire operation through the vessels fully integrated CCTV system.

Beltship in Sierra Leone

BML was contacted by African Minerals Limited (AML), in 2010. AML is a minerals exploration and development company with significant interests in Sierra Leone. It is listed on the Alternative Investment Market (AIM) of the London Stock Exchange, and is headquartered in London, United Kingdom.

The company is currently focused on the development of the world class iron ore deposit at Tonkolili and its related rail and port infrastructure. The project is the largest employer in Sierra

These technical advantages, inherent in the design of the vessels, together with an early start date and attractive freight rates, secured the contract for Beltship in the face of stiff opposition from other specialist transshipment companies and Beltship kicked off operations in October 2011.

Since startup the transshipment operation has been very successful and, after a short ramp-up period, the vessels have consistently over-performed relative to the requirements of the contract. This success resulted in a contract amendment to increase the transshipment exports to 20mtpa for which Beltship brought into the project a third vessel and embarked on a major upgrade of the two existing vessels to increase design discharge capacity from 3,000mtph to 3,500mtph.

Leone and is set to become the largest contributor to the country's GDP.

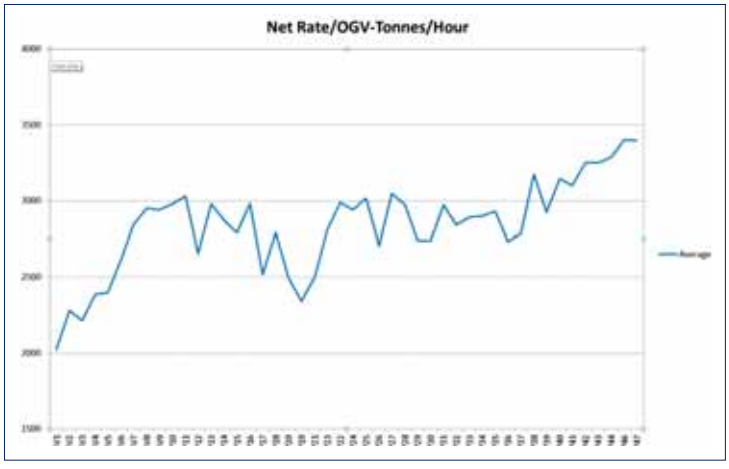
In 2010 however the project was in its infancy and AML required a transshipment solution to move 8mtpa (million tonnes per annum) of iron ore from the Port of Pepel, inland from Freetown, to an offshore transshipment location where the iron ore was to be loaded onto Capesize ocean going vessels (OGV).

The loading port has a draught restriction of 9.5m, the channel is narrow with tight bends, and currents in the channel can run in excess of four knots. We could see immediately that the environment almost completely reflected the operating challenges that the vessels were designed to overcome at the loading ports in Nova Scotia, Canada. Additionally, the advanced manoeuvrability meant that the vessels were ideal for the challenges of ship to ship operations, and with the flexibility provided by the vessels telescopic boom, efficient loading of an OGV with a minimum of TS vessel movements would be possible.

AML export cargo consists of three grades of DSO, lumps, fines and AL32. The AL32 is a product which contains a certain amount of clay which can make handling difficult, however the vessel's hopper shaped holds with their high slope angle combined with the MHF discharge system (negating hog backs) and oversized conveyors and transfer points was designed to handle 'sticky' cargoes.

This upgrade involved back fitting frequency convertor drives to all conveyors together with larger motors allowing faster belts speeds, increased discharge rates but allowing a decrease in per m^2 loading of the belts. This has afforded better performance whilst reducing the mechanical stresses on the system.

The improvement can be easily seen in *fig. 1*. An average rate of 2,800tph is required to meet the 20mtpa contract requirements whilst the actual average is now nudging 3,400tph. Beltship worked closely with Bedeschi on this upgrade. Bedeschi is one of the oldest companies in Europe for heavy clay, bulk handling and crushing equipment manufacturing and they provided the equipment in a containerized solution enabling quick outfitting on board each vessel, over a five-day period, by Beltship and Bedeschi engineers.



As continuity of service is extremely important, Beltship has entered into a number of contracts with service providers to provide expert advice and immediate backup support in the event of equipment failure.

Among these are Techomar, based in Switzerland it provides performance evaluation of the vessels' main and auxiliary engines via on-board interfaces connecting directly via satellite and the internet to its offices. This allows constant evaluation of performance providing forward looking maintenance practices which can be planned in advance and in co-ordination with the client

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EMS-Tech delivers material handling systems for five Panamax and four Great Lakes self-unloaders

The Baie St. Paul, *one of the ships EMS-Tech has supplied with material handling systems. (Photo by Brian Way.)*

Besides the noteworthy projects mentioned on p69 of this issue, EMS-Tech Inc. has also been busy on the marine front, having delivered material handling systems for installation on five Panamax and four Great Lakes self-unloaders, all of which are being constructed by Chengxi Shipyard for CSL and Klaveness.

At the time of writing, six of these ships have been successfully delivered to their owners, one of which, the *Baie St. Paul*, is pictured. These systems incorporate the latest in efficient, high performance self-unloading systems with the EMS-Tech Feeder Gate forming the basis on which these systems are built.

In other news, the *CSL Whyalla* was delivered to CSL in November 2012. This ship, which shuttles between the Arrium port facility located in Whyalla, South Australia, and Capesize vessels at anchorage, a distance of some seven nautical miles, is outfitted with an EMS-Tech Inc. material handling system.

and avoid unnecessary downtime. Another is MacGregor's marine bulkhandling division based in Enkoping, Sweden, this company is connected directly into the vessels' computers that control the discharge equipment allowing immediate interrogation of the system and online support to the vessels' crew when required. For belt maintenance Beltship has contracted QBM, a well-respected Canadian company providing services to the self-unloading and transshipment fleets. QBM is on a rapid response contract and have engineers on constant readiness, with all required visas in place, to attend in Sierra Leone at a moment's notice. To back up this response, Beltship holds a complete set of belts in Dakar at the Lisnave facility, Dakarnave, where craneage and dock space is available only a day's steaming away. A further set of all smaller belts is held on site in Sierra Leone.

Beltship has a commitment to Sierra Leone and has undertaken a cadetship scheme to provide education and employment opportunities for the youth of the country. Promising young men and women are sponsored and supported by Beltship to attend the Regional Maritime University in Ghana and regularly join the Beltship fleet for practical training and experience. Beltship also provides employment for over forty local employees in positions both ashore and afloat and are proud to support the local children's charity 'All as One', which provides orphaned and destitute children of the country with a home, education and medical care.

During June of this year, after major phase 1 investment by AML, Beltship expects to transship approximately 1.8mt of iron ore, thereby proving the 20mtpa run rate required by the client and making Beltship one of the world's largest transhippers by volume as well as one of the most experienced ship-to-ship operators worldwide.

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Quality Process for Coal Handling on the Lower Mississippi River

Louisiana Mid-Stream Terminals

Louisiana Mid-Stream Terminals has moved to the forefront of mid-stream coal and petroleum coke transfer services on the Lower Mississippi River by developing and operating a hybrid system, Louisiana Mid-Stream One (LMO), combining the cost effectiveness of crane transfer with the quality control services of a traditional land-based terminal. Located just north of New Orleans at Cooper/Consolidated's mid-stream buoy system in Laplace, LA (Mile Marker 134).

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Dedicated dry bulk terminal planned for Sohar

Sohar port in Oman is to have a dedicated dry bulk terminal, handling food grain, agricultural commodities, sugar and other food-related cargo. The new facility forms part of the government's food security strategy and will also act as support for a sugar refinery that is also being built within the port. *Barry Cross*

PTP Group to build new port at Villa Constitución

In Argentina, the PTP Group is to build a new port facility in the free zone of Villa Constitución, which will handle dry bulk, as well as liquid bulk and containers. The new facility will be located on the inland waterway linking it to the port of Nueva Palmira in Uruguay, where the company is currently expanding existing facilities it has there.

At Villa Constitución, cargo inbound on barges from both Bolivia and Paraguay will be processed, with value added services available. The company intends to handle iron ore, cereals, wheat and solid fuel. *BC*

New dry bulk plants at Magampura port

A new $220 million sugar refinery is to be built at Sri Lanka's Magampura Mahinda Rajapaksa Port by Shree Renuka Sugars Limited India, using its Lanka Sugar subsidiary.

In addition, Thatta Cement Company is also to build a manufacturing plant in the same port, located at Hambantota. Initially, this will produce 100,000 tonnes per year, increasing to 1,000,000 tonnes by the seventh year. Cement will be exported to Pakistan and also to domestic manufacturers. *BC*

Transnet to move Botswana coal to Durban

South Africa's Transnet Freight Rail (TFR) is assuming responsibility for the first coal exports from neighbouring Botswana, which started to be dispatched from the Port of Durban as of May. The company signed similar agreements in August with both Mozambique and Swaziland, which should result in a doubling of coal and magnetite exports — up to 6mt (million tonnes) this year — through Maputo.

Aerial view of the Port of Durban.

In the agreement signed with Botswana two weekly block trains, consisting each of 35 wagons, will operate between Morupule colliery, which is located near Palapye, and Durban. This will require a change of locomotives at the border because of differences in gradients.

Previously, Botswana had looked at using either Maputo, in Mozambique, or Walvis Bay, in Namibia, because of the long distance to the port of Durban and also associated high port costs there, although finally settled on the South African port following a feasibility study.

In future, TFR also hopes to transport several million tonnes of copper from DR Congo and Zambia by rail to Durban. *BC*

Mozambique to build new port at Techobanine

The government of Mozambique has awarded a construction concession for the deep water port at Techobanine, in Maputo province. The contractor's name has not yet been made public, although the contract is worth an estimated $7 billion, which will be bankrolled by the governments of both Mozambique and Botswana. Once operational, the port will handle export minerals from Botswana, South Africa and Zimbabwe, among others, and, thanks to its hundred million tonne annual capacity, will act as a strategic reserve for solid fuel. *BC*

CVRD to build Pier IV at Ponta da Madeira

CVRD has received environmental clearance for construction of Pier IV at its Ponta da Madeira maritime facility, in Maranahão, which will allow it to increase the stockpile of iron ore that it sends there from its mines in Carajás. The Carajás Railway (CFC) will also have its own annual capacity raised to 50 million tonnes thanks to the doubling of 125km of track and the construction of a dedicated rail terminal adjacent to Pier IV. This new storage capacity for iron ore and iron pellets will be equivalent to half of all these types of products sold by the company last year.

The onshore components of the project will consist of two wagon dumpers, two stockyards for iron ore, a heavy duty forklift, two reclaimers and linking conveyor belt system. Offshore, Pier IV will be accessed via a 1.6 km bridge and will be equipped with a shiploader able to handle 16,000 tonnes per hour. Environmental protection equipment will be put in place, as well. *BC*

Sea-Invest expands into Gdansk

The Antwerp-based Sea-Invest group is to invest between €40 million and €50 million in the construction of a bulk cargo terminal at the Polish port of Gdansk. The new facility, which will be the largest terminal of its kind in the Baltic, will be able to handle both import and export ore, coal, biomass and other dry bulks, whereas the existing coal terminal is dedicated purely to export consignments.

Gdansk is also building a smaller dry bulk terminal, worth €10 million, in the inner port area, which will handle much smaller vessels. This is to be operated by the Malteurop Groupe, the leading malt producer in the world. *BC*

New Mangalore Port handles largest ever coal consignment

New Mangalore Port claims to have handled its largest ever consignment of coal, which was brought there by the *Emma Schulte* and consisted of 107,102 tonnes. The shipment was inbound from South Africa and had been acquired by two end users: Minerva Steel and Power (33,000 tonnes) and Bhatia Global (74,102 tonnes).

In the 2012/13 financial year, the port handled 6.91mt (million tonnes) of coal, compared to 4.02mt the previous fiscal year. *BC*

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Kochi frightens off investors

Potential investors in a new dry bulk terminal at the Indian port of Kochi have been frightened off by regulator-determined tariffs, which are said to be uneconomical. The proposed new terminal, which would have handled coal and fertilizer, would have made use of existing berths at Ernakulam quay, where activities had been reduced following a shift of container handling to Vallarpadam.

Although five potential bidders had shown an interest, they determined that the rates, which are fixed by TAMP, were simply too low. Rather than adjust the rates, the Port Trust is now seeking to deepen the draught at these berths to 14.5m in order to attract larger vessels and therefore make the proposed rates more attractive.

Dredging work is already ongoing at the port and could easily be extended to encompass Ernakulam. *BC*

Majors bid for Vizag iron ore complex

Two of India's large industrial groups — Vedanta and Essar — are vying for a $154 million project to build an ore handling complex at the port of Vizakhapatnam. The project is to be awarded on a design, build, finance, operate and transfer basis. It involves upgrading of an existing terminal and also the creation of a new facility.

The existing iron handling capacity at the port was originally 12mt (million tonnes), but with the new facilities in place this could rise to 23mt. Last year it handled 12.24mt of iron ore, compared to 16.07mt the previous year, much of this being a result of the ban on the export of iron ore from some regions of India. *BC*

Agreement could breathe new life into Florida port

A deal between two companies with very visible roles in the Panhandle is being touted as a potential spark for the shipping port at Port St. Joe in Florida, USA.

A letter-of-intent agreement between Green Circle Bio Energy Inc. and the St. Joe Co. is expected to result in a new plant and a possible dredging project at the port. The agreement would allow Green Circle to develop a plant on property owned by St. Joe.

The port, with the new deal in place is, is now expected to move forward with grant proposals to dredge the channel improving access to the port, according to Leonard Costin, chairman of the Port St. Joe Port Authority.

"A viable business is ready to use the port and rail access to the port site is being improved; the missing link to an operational port is the necessary dredging improvements to the shipping channel," Park Brady, CEO for the St. Joe Co., wrote in a release.

The Port of Port St. Joe offers a deepwater seaport with two separate bulkheads, one with nearly 1,900 linear feet at the ship channel turning basin and the other with nearly 900 linear feet on the Gulf County Canal.

The St. Joe Co. is a real estate developer and manager which owns approximately 567,000 acres of land concentrated primarily inNorthwest Florida. Green Circle's wood pellet plant in Cottondale is the second largest in the world boasting an annual production capacity of 660,000 tonnes.

Salaverry mineral exports to increase in importance

The Peruvian port of Salaverry is expected to see significant increases in the amount of export minerals over the next few years, thereby requiring modernization of the existing dedicated terminal.

By 2016, according to the National Ports Company (Enapu), outbound consignments of copper, silver, zinc, iron and coal will have reached 3.5mt (million tonnes). At present, around 1mt of copper concentrate and coal are exported from the port, mostly to Asia.

The enhanced cargo will come from the Cajamarca mining projects, which fall within the hinterland of Salaverry.

Impala Peru SAC, which is connected to the mining industry, intends to build a new road to the port, warehouses, a conveyor belt and a minerals quay at the port. *BC*

Copper concentrate.

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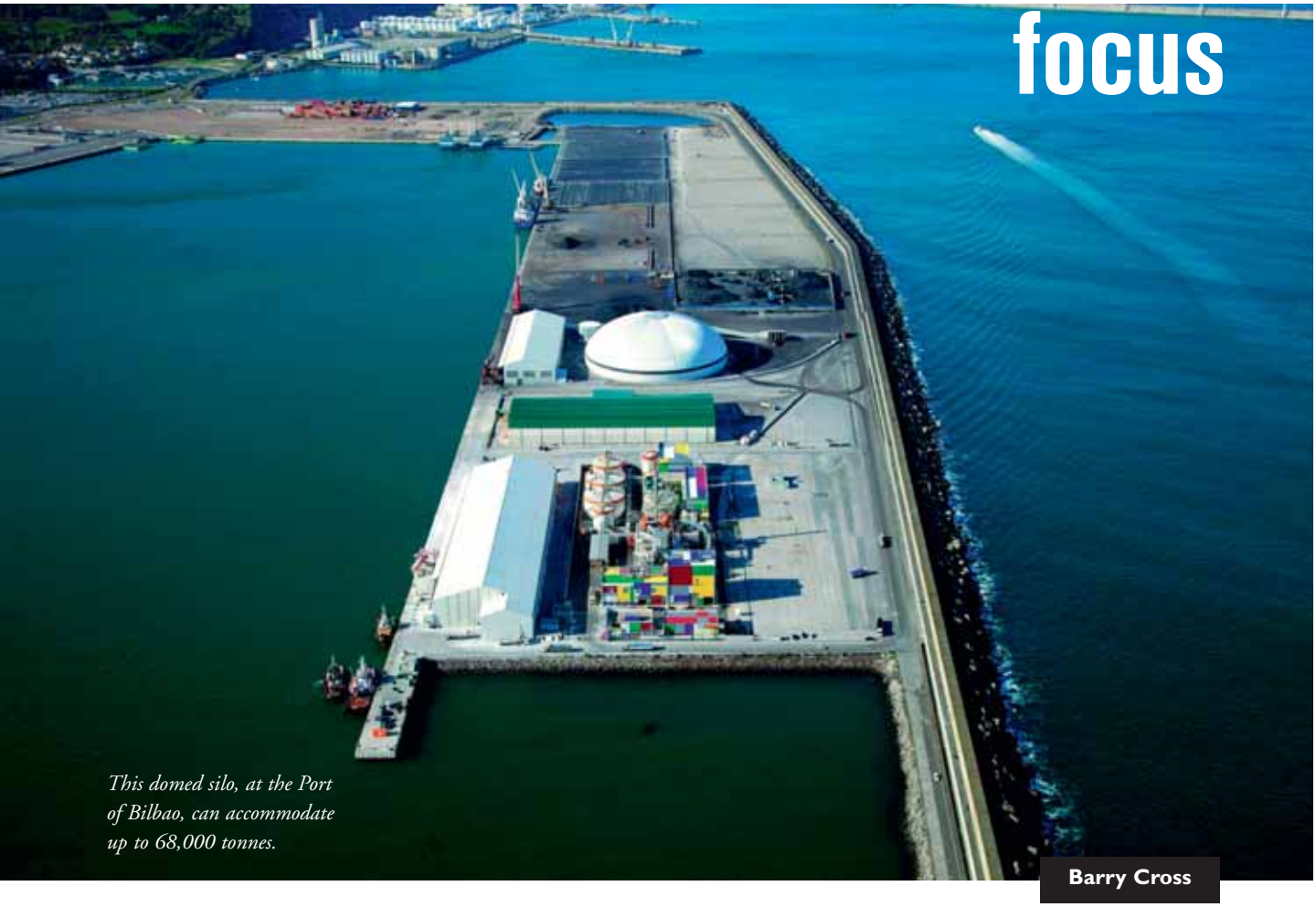

This domed silo, at the Port of Bilbao, can accommodate up to 68,000 tonnes.

Barry Cross

Spanish dry bulk: what a difference a year makes

Last year proved to be something of a banner year for Spanish dry bulk traffic. Total volume handled amounted to 88.5mt (million tonnes), which was an 11.5% increase over the 79mt reported for 2011.

As ever, Gijón topped the list, handling 14.5mt, which was growth of 15% over 2011. Thereafter, Tarragona and El Ferrol, with around 10mt each also did well, the former posting growth of 17%, that latter of 21%. However, it was the Mediterranean port of Cartagena, with an increase of 33% that registered the strongest performance, while the Spanish North African enclave, Melilla, with a 38% loss of traffic — albeit on a volume of just 20,000 tonnes — did worst.

TOP 10 SPANISH PORTS: DRY BULK THROUGHPUT

Ranking		2011	2012	% difference
1	Gijón	12.573mt	14.482mt	15.18
2	Tarragona	9.286mt	10.888mt	17.26
3	El Ferrol	8.685mt	10.505mt	20.95
4	Cartagena	3.664mt	4.880mt	33.17
5	Huelva	4.459mt	4.830mt	8.33
6	Almería	3.930mt	4.703mt	19.65
7	Barcelona	3.838mt	4.656mt	31.58
8	Bilbao	4.000mt	4.261mt	6.53
9	Avilés	3.297mt	3.386mt	2.7
10	Santander	3.060mt	3.236mt	5.77

The latest figures released by Spain's National Ports Authority (Puertos del Estado), which cover the first quarter of this year, show an overall loss of 15% in dry bulk volumes, which amounted to 18.258mt, as opposed to the 21.440mt reported for the first quarter of 2011.

Significantly, eight of last year's leading ports, reported losses on the quarter: Gijón (–7%), Tarragona (–32%), El Ferrol (–26%), Cartagena (–13%), Huelva (–12%), Almería (–15%), Barcelona (–6%) and Avilés (–23%). Only Bilbao (+9%) and Santander (+1%) reported gains and handled 1.156mt and 723,181 tonnes respectively.

The biggest overall loss for the quarter was posted by the small, northwestern port of Vilagarcía, whose meagre dry bulk traffic fell 47% to 43,978 tonnes, while the biggest gain was reported by Alicante, where volumes rose 44% to 208,893 tonnes.

In 2012, dry bulk traffic at the northern Spanish port of Bilbao amounted to 4,261,691 tonnes, an increase of 6.5% over 2011, which a port authority spokesperson puts down to two factors. The first was a 426,000-tonne increase in coal imports and the second a notable growth in export petcoke traffic following the inauguration of Petronor's dome silo.

There were other increases, too. Export cement and clinker grew by 217%, equivalent to an additional 225,000 tonnes, while

MAIN DRY BULK MARKETS FOR THE PORT OF BILBAO

	Tonnes	Difference 2012–2011 %
Brazil	987,111	8
Spain	430,868	53
UK	428,414	8
Russia	400,959	7
Venezuela	323,198	135
US	289,802	– 17
Morocco	135,477	450
Togo	124,942	>1.000
Portugal	98,432	>1.000
Argentina	93,557	– 2

imported soya bean traffic was up 26.5%, as a further 200,000 tonnes passed through Bilbao's quays.

Brazil continues being the largest market, registering growth on the year of 8%, while Morocco, with traffic increases of 450%, showed the largest overall market growth for the year thanks to export coal. The case of Togo is particularly interesting, in that it went from accounting for zero percent of Bilbao's dry bulk traffic in 2011 to generating 125,000 tonnes in 2012, based on demand for cement and clinker.

In the first quarter of 2013, the port authority notes that dry bulk traffic grew by a further 9% compared to the same period in 2012, suggesting a positive outlook for the current year. And this has come at a time when the Spanish economy is suffering notably from an imposed cut in public spending.

In terms of investment in dry bulk facilities, Petróleos del Norte (Petronor), which belongs to the Repsol group, commenced operations with its terminal in 2012. The plant was built and is managed by Graneles Sólidos del Norte, a joint venture between the Toro y Betolaza and Ibaizabal companies.

The complex is composed of two buildings for the reception, storing and despatch preparation of dry bulks. One building handles coke and the other sulphur. They cover a combined area of 31,267m^2 and absorbed investment of around €20 million. Essentially, they serve the Unidad de Reducción de Fueloil (URF) — coking plant — that Petronor has put into operation inside its refinery, located some 5km from the Port of Bilbao.

The domed silo — the first of its kind to have been built in Spain — can accommodate up to 68,000 tonnes of this commodity. The other warehouse, which has 50% less capacity, handles sulphur inbound from the sulphur purification units at the refinery.

Also in 2012, Befesa Valorización de Azufre inaugurated a sulphuric acid and Oleum production plant, making use of sulphur and sulphur residues to generate electricity. The plant, which cost €70 million to build, occupies an area of 23,365m^2. In terms of capacity, the installation can handle around 120,000 tonnes of sulphur and is capable of producing 350,000 tonnes of sulphuric acid and oleum, allowing it to generate around 90,000MW of electrical energy annually.

The Port of Bilbao has more than enough capacity to handle any increase in dry bulk traffic in the near future. This is thanks to the expansion work carried out by the port authority, which on the one hand has allowed companies to increase their overall working area and on the other has enabled new companies to

Dry bulk terminals on Santurtzi quay at the Port of Bilbao.

BILBAO PRINCIPAL DRY BULKS 2012

Coal	1,118,063
Soyabeans	954,468
Scrap	533,343
Chemical products	484,463
Cement and clinker	327,420
Iron ore	236,701
Iron and steel products	174,540
Other non-metallic minerals	156,805
Feed and fodder	138,715
Fertilizer	69,427
Phosphates	23,205
Other minerals	20,103
Grain and meal	10,416
Building materials	7,517
Timber and cork	6,505
Total dry bulks	4,261,691

establish themselves here," says a port authority spokesperson.

The Port of Bilbao continues to handle a diverse range of dry bulk traffic, as the chart above explains.

In many respects, Bilbao is an archetypal industrial port, since much of its territory is taken up by production facilities, rather than simply being a commodity-handling port. Fertiberia, for example, has in place a conveyor system that moves consignments to its own warehouse; Graneles Sólidos del Norte, for its part, has two shiploaders — one for petcoke and another for sulphur — as well as two conveyor belts for coke and other handling sulphur; Befesa Valorización de Azufre is also present, as is Atlántica de Graneles y Moliendas, operating conveyors transporting slag and clinker; Bunge Ibérica has a cereals conveyor; while Biocombustibles de Zierbena handles such things as biodiesel, oil and methanol.

In terms of dedicated dry bulk handling terminals, the port has Servicios Logísticos Portuarios (SLP), Bergé Marítima and Toro y Betolaza, the latter having a continuous loader for sulphur.

Although it is difficult to say exactly how much of the present volume of dry bulk is effectively captive to the Port of Bilbao, clearly this is significant, given the industrial plant to be found on site and surrounding the port itself.

As for vessel size, the 70,517dwt *Kyla* is the largest ever vessel to call at the port, making four visits in 2008. This vessel is 271 metres long and draws up to 16.97m of water. However, quays dedicated to dry bulk traffic at the port have draught varying between 14m and 25m, thus they can effectively handle the largest bulk carriers afloat, although the market at the port is clearly best served by Panamax vessels or smaller.

In 2012, just west along the coast from Bilbao, the port of Santander handled 3,236,676 tonnes of dry bulk, an increase of 6% over the previous year. According to sources at the port, the increase was mainly down to the buoyant nature of the iron and steel industry located around the Bay of Santander, as well as to a strong performance on the part of imported animal foodstuffs and sugar bound for the province of Castilla y León, which remains one of the Port of Santander's main hinterland markets.

For the current year, overall volumes are expected to remain similar to those of last year, with export traffic predicted have the best chance of doing well, given that the domestic market in Spain remains depressed.

"In recent years, our most important investment in the dry bulk sector has been in the construction of the new agribulk terminal, which is one of the most advanced of its kind in Europe," notes the port spokesperson. "Also of note is the money spend on deepening the draught alongside the quayside at Raos 1, which specializes in handling minerals."

The aforementioned investments, plus those made in previous years, mean that Santander can absorb any foreseeable increase in dry bulk traffic, even if it were to triple in nature.

In order of importance, these are the most important commodities handled by the port: coal, scrap, sodium carbonate, manganese, feedstuffs and fertilizer, cement and sodium sulphate.

Due to a cut-back in thermally-generated electricity in recent years, the amount of imported coal for electricity generation in and around the Port of Santander has fallen substantially in recent times. Clinker volumes have also gone south, with large reductions noted, reflecting Spain's reduced industrial demand. However, more positively, sugar trade is up, as is that of feedstuffs and iron and steel products.

In general, the port restricts itself to the loading and discharging of cargo, plus storage of consignments on site. However, for certain commodities, some value is added, too, which can be in the form of grading, along with specialist warehousing or packing.

Quizzed as to how much of the existing dry bulk traffic could be regarded as 'captive' to the port, the spokesperson notes that up to 60% is definitely in some way linked directly. This is the impact of the iron and steel industry, which is also true of the chemical industry; both have plant close to the port, making sense to use it rather than an alternative outlet. The other 40% effectively chooses Santander over local rivals.

In terms of vessel size deployed on dry bulk services in and out of Santander, the largest calls are made by Panamax bulk carriers. Nothing larger can currently access the port, because of its 13 metre draught limitation. Nevertheless, the port reveals that a project is under way to look into deepening the draught alongside those berths given over to dry bulk handling.

The Port of Santander.

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Despite the difficult economic environment in Spain, the north-western port of Ferrol-San Cibrao reported a 44% increase in dry bulk in 2012 to 10,505,476 tonnes. One of the main drivers for this was the high rate of coal discharges at Endesa, which remains one of the port's main customers in this sector.

For 2013, the aim is to consolidate last year's performance and also to continue to grow, not just by relying on existing commodities, but also finding new traffic and investment.

In recent times, the port has invested heavily in the development of new infrastructure in the Outer Harbour of Ferrol, allowing new terminals, such at that of Endesa, to be established there. The deeper draught also means that vessels of up to 200,000dwt can be accommodated, with consequent economies of scale. Indeed, by enabling ships drawing up to 20m of water to call, consignments can now be handled that could not previously be accommodated at the existing coal dock located in the Inner Harbour.

Aerial view of the Port of Ferrol.

With the Outer Harbour now operational, there is sufficient capacity to absorb all foreseeable traffic grown and also accommodate the largest bulk carriers around. If anything, this new infrastructure is allowing Ferrol-San Cibrao to aggressively market itself in the dry bulk market.

Presently, main commodities handled are coal, scrap and bauxite. The closure of the former coal mine that supplied the As Pontes Power Plant has led to an increase in the volume of imported coal traffic for Endesa.

Little in the way of value-added services — other than warehousing — nowadays take place within the port, which sees its current role as one of loading and discharging vessels for subsequent transfer to production plants.

In terms of its ability to retain traffic, most of the bulk associated with feed production is essentially captive, since it is moved to local plants. There is choice in this region of Spain (Galicia), although customer loyalty is also notable and the port has significant gateway potential to serve the rest of Spain, too.

Cargo handling at the Port of Ferrol.

In 2012, no fewer than 453 bulk carriers called at the port, with an average gross tonnage of 27,681. The largest bulk carrier had a loading capacity of 180,646dwt. Not only is vessel size market-driven, but few restrictions remain now that Ferrol-San Cibrao can offer 20m of draught in the Outer Harbour, allowing up to 200,000dwt to be handled there.

The year 2012 was not a good one in terms of dry bulk traffic for those ports — Valencia and Sagunto — managed by Valencia Port Authority. In fact, it posted an 8% reduction, as volume fell from 2.374mt to 2.177mt. However, cereals and flour actually increased by 4.69% to 782,000 tonnes, while fertilizer (both natural and artificial) grew by 2.73% to 451,000 tonnes. The main loss was in cement and clinker, which dropped 15.26% to 461,000 tonnes, which was due to the parlous state of the construction sector brought about by the current economic crisis in the country.

According to the Port Authority, for the current year, dry bulk traffic should be around 2.4mt, although a spokesperson conceded that making an accurate forecast is quite difficult, given that Valencia is not a specialist dry bulk port as such. Indeed, the main focus of Port Authority investment in this area has been in the Port of Sagunto, where shortly woodchip, cement and pet coke will be handled. The investment that has been made in these areas is more than sufficient for existing traffic, but once the economy improves in the medium term, it is expected that large volumes will naturally flow there.

"It isn't reasonable to expect operators to continue investing in installations before they see a large and sustainable recovery in economic activity," said a spokesperson.

The Port Authority prefers to talk about 'loyal' traffic rather than 'captive' traffic in respect of dry bulk. The spokesperson points out that the choice of port in the majority of cases is dictated by the end user and also the cost of moving consignments inland.

As for vessel size, this is dictated by the draught, which can vary between 14m and 16m depending on the terminal. To date, this has proved more than sufficient for those companies involved in dry bulk handling.

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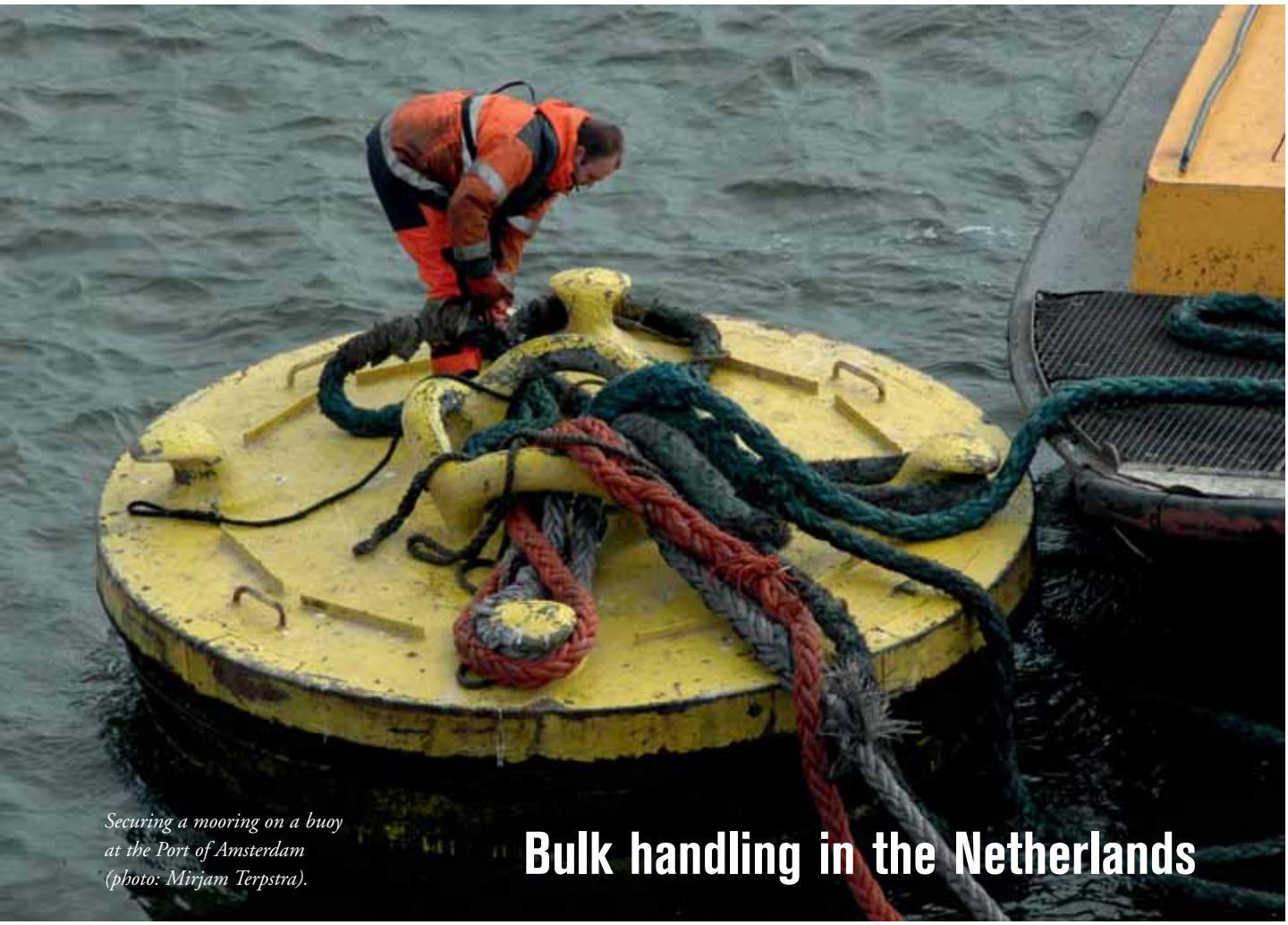
Going Dutch



Securing a mooring on a buoy at the Port of Amsterdam (photo: Mirjam Terpstra).

Bulk handling in the Netherlands

Port of Amsterdam achieves corporatization

The Port of Amsterdam has finally been corporatized, freeing managers to more easily access financial markets and fund investments both at home and abroad, *writes Michael King*.

Port managers have long been pushing for the change in legal structure which was finalized on 1 April. Although the Municipality of Amsterdam will remain the port's single shareholder, instead of being a municipal service company the Port of Amsterdam has now been registered as a public limited company.

"This means we are able to act quicker and more market oriented," said Lex De Ridder, commercial manager for bulk cargoes.

The legal change is highly significant in how the port develops in the future. Despite all its success over the last decade, port managers have been hamstrung in terms of identifying new ways of generating income because, as a municipal service company, they had to largely comply with public law. Corporatization via the creation of Havenbedrijf Amsterdam NV means managers are now only constrained by the parameters of private law, opening up new partnership opportunities.

In future, other public authorities such as regional authorities may also be free to acquire shares in the company and the new structure will also allow easier access to financial markets.

The strategic focus as Havenbedrijf Amsterdam NV will be two-fold: to optimize operations in the region of Amsterdam and its hinterland through further partnerships with other maritime facilities and ports; and to seek out profit generating port investment opportunities further afield.

"We will be taking a much broader look moving forward," said De Ridder. "So we will continue to push for improvements in our competitive position here to maximize earnings in our port region by exploring new ways of generating money, but we will also identify new opportunities. This can be in The Netherlands as well as abroad.

"This could mean for example co-investing on projects in West Africa, South America of the Baltic area, for example.

"We have good connections in West Africa in places such as Ivory Coal, Ghana, Nigeria and Cameroon due to our cocoa business.

"We are looking for opportunities to co-operate and develop ports. If they're connected to Amsterdam's current cargoes, that is good. But the first aim is to look for interesting investments and now we're corporatized we can do this."

The port will be able to largely utilize its own capital after boosting revenues throughout the global financial crisis. Additional finances will be raised from traditional financial

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Aerial view of the Port of Amsterdam.

sources such as pension funds and banks.

"We didn't make a lot of new investments in the last three years, so we have our own capital we can draw down," said De Ridder.

The first priority will be the construction of a lightering station, to be located at a harbour on the North Sea at Ijmuiden. This will enable two Capesize vessels to be handled simultaneously, doubling current capacity at a cost of some €100m. A further €700m is earmarked for a new locks system at Ijmuiden which will allow direct access to the port of Amsterdam for Capesize vessels within the dimensions of around 17 metres draught, 65–70 metres beam and 500 metres in length.

"The whole project of the locks and lightering facilities is in full swing," he said. "Legislation and all environmental licenses are in process now so we are almost ready to start."

Construction of the lightering facility will start next year and should take two years to complete, while the new locks will be in place by the end of the decade.

"This will take some of our investment capacity, so if we want to make the next move then we have to go the banks and pension funds to attract risk capital," said De Ridder.

While many ports in Europe struggled last year, Amsterdam performed well, posting volume growth of almost 3%, mainly to the good performance in the energy sector.

"It was a good year in the end. Oil products did well but agribulk was a bit slower, and building materials fell," said De Ridder. "Energy is the big difference for us. We were on for a coal record until a strike at EDF, so in the end we were level year-on-year. Without the strike, growth would have been about 5%."

Energy markets have seen major ructions recently which has had a significant impact on trade flows and long-term forecasts for Amsterdam. The widespread extraction of shale gas in the US has forced mining companies to push exports more aggressively, while the closure of coal mines in Germany, along with a pull back from building nuclear power stations following the Fukishima nuclear disaster in Japan in 2011, have changed the outlook for coal imports at Amsterdam.

"The market for coal in Germany looks quite good now," said De Ridder. "It looks really positive that it will remain at least at current levels until 2024 and there could even be some growth. After that we don't know. Coal could still be important, but gas could take over if shale gas gets developed in Europe on a mass scale.

"Last year we had three million tonnes of imports of coal from the US, but Colombia is still the dominant source here. US exports aren't an extreme trend yet, but compared to three to four years ago, we're receiving four times as much.

"Another interesting trade has been biomass. We're now seeing this coming from Italy and the UK where they don't have the capacity to process it. It's used here as a feed stock for electricity production."

New regulations currently under discussion in the Netherlands could give the biomass business a further boost, with terminals such as OBA eyeing the market for potential growth. "In the second half of this year there will be a decision on biomass burning regulations which could mean a subsidy for its use, or the obligation that companies use it for electricity generation," said De Ridder. "Companies could be obliged to co-fire power stations, which could mean more biomass, perhaps up to 500,000 tonnes extra a year.

"If that happens then there could be lots of investment at big energy terminals, but also some of the companies dealing with soft commodities like cocoa and sugar are looking at this market, so depending on what happens there could be a big investment boost.

"We already have two dedicated biomass terminals planned and financed and ready to take off. Building will start in the second half of the year. One is already connected to Cargill's plant and another will be developed and operated by Eucocorp in 2014."

Amsterdam's co-operation with other ports in the Netherlands is also continuing, particularly with Rotterdam. As well as both ports jointly exploiting the Betuweroute rail link to the German border, the ports also now have a fully operating IT system called Portbase, which registers all cargo and customs information in one huge data base.

The Port Community System covers all port sectors and supply chains including those used for bulk cargoes to reduce costs and improve information access and service provision. "Everyone uses this now, it's going really well," said De Ridder. "For bulk shippers it give us the opportunity to monitor cargo and intermodality in the hinterland much better, right through to Germany from both ports."

However, the two ports still compete for cargoes ferociously. "We co-operate on promotion, and the relationship is very good, but we still compete and that will continue. In some markets there is excess port capacity such as containers and perhaps liquid and dry bulk in the years ahead so that competition will remain. It's healthy competition."

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Rotterdam rides out tough conditions with new market opportunities

Rotterdam expects new markets to help boost forward demand as traditional sectors face hard market conditions, writes Michael King.

Regulatory reforms across Europe's power sector are set to drive demand for biomass in the year ahead and managers at the Port of Rotterdam expect to win a sizeable share of the new business.

The port recently commissioned the Copernicus Institute of the University of Utrecht to study the biomass market and its forward potential. Analysis revealed that at present demand for biomass in northwest Europe amounts to some 44mt (million tonnes). And while Europe is still largely self-supporting, imports already amount to 4mt.

International trade in biomass is conducted mostly in the form of wood pellets, and the study found that demand for tradable wood pellets will grow to a maximum of 70mt in 2030. "This means that Europe will become more and more dependent on imports from other regions like Canada, the United States, Brazil, Russia and the Ukraine," said the study, which predicts that feedstock hubs will develop in Europe around supply chain centres such as key ports.

"The Port of Rotterdam is perfectly positioned for this, in part because the port and the industrial complex already process these materials," said the study.

This could see Rotterdam handling up to 15mt of wood pellets by 2030, from one million tonnes at present.

Abengoa Bioenergia already operates a bioethanol plant at the port and Karel Peters, Senior Business Manager Dry Bulk Industry & Bulk Department, said the Dutch government was currently debating new regulations for biomass use at power stations which could potentially be a big boost to trade. "We expect a decision this year, but we are also looking to other countries such as Britain where the government is supporting biomass and the conversion of power plants to full-biomass firing," he said.

"We expect investments in the biomass business especially as power plants in England will need ports to handle and stock biomass.

"Several terminals are looking at this market and we hope to win a big part of it."

Last year Rotterdam's leading bulk stevedores handled some 73mt of incoming dry bulk, down 7.8% year-on-year, and 5.7mt of outgoing cargo, a decline of 27.4% compared to 2011.

A poor harvest due to drought last year in the Americas saw imports of agribulk cargo contract 17% in 2012 to just over 7mt. Peters said oils, seeds and bean imports were most affected. "It was a bad harvest in South America and it was dry in North America also," he said. "The feed industry looked for compensation with grains and rapeseed but still, the volumes were less."

Even so, Cargill is still expanding its facility in the Botlek area of the port by 28,000m^2. Earlier this year the company's sea

DRY BULK CARRIERS BY DWT CLASS

		Number of calls	
Ship type	**dwt-class**	**2012**	**2011**
Handysize	10,000–35,000	253	340
Handy-/Supramax	35,001–55,000	189	218
Panamax	60,000–80,000	138	137
Capesize	140,000–200,000	360	344
VLBC	200,001–300,000	50	64
ULBC	>300,001	13	14
Total		**1,003**	**1,117**

The Port of Rotterdam.

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Total throughput by commodity

	2012	2011	2010
Agribulk 8.1	9.9	8.4	
Iron ore and scrap 32.7	37.4	39.9	
Coal	25.3	26.7	24.1
Other dry bulk 12.0	13.3	12.3	
Subtotal dry bulk	**78.1**	**87.3**	**84.6**
Crude oil	98.3	92.8	100.2
Mineral oil products	81.8	73.4	77.6
LNG	0.6	0.6	0.0
Other liquid bulk	33.5	31.7	31.6
Subtotal liquid bulk	**214.2**	**198.5**	**209.0**
Total bulk goods	**292.3**	**285.9**	**294.1**
Containers	**125.4**	**123.6**	**112.3**
Roll-on/Roll-off	17.9	17.5	17.0
Other general cargo	5.9	7.7	6.9
Total breakbulk	**23.8**	**25.1**	**23.8**
Total throughput	**441.5**	**434.6**	**430.2**

Incoming and outgoing by commodity 2012

	Incoming	Outgoing	Total
Agribulk	7.0	1.0	8.1
Iron ore and scrap	30.6	2.2	32.7
Coal	24.8	0.5	25.3
Other dry bulk	10.0	2.0	12.0
Subtotal dry bulk	**72.4**	**5.7**	**78.1**
Crude oil	98.2	0.1	98.3
Mineral oil products	45.0	36.8	81.8
LNG	0.6	0.0	0.6
Other liquid bulk	**20.6**	**12.9**	**33.5**
Subtotal liquid bulk	**164.4**	**49.8**	**214.2**
Total bulk goods	**236.8**	**55.5**	**292.3**
Containers	60.7	64.7	125.4
Roll-on/Roll-off	8.7	9.2	17.9
Other general cargo	3.9	1.9	5.9
Total breakbulk	**12.6**	**11.1**	**23.8**
Total throughput	**310.1**	**131.4**	**441.5**

Source: Port of Rotterdam; Unit: Gross weight x 1 million metric tonnes

jetty was relocated enabling ships over 200 metres long to access the jetty directly, simplifying terminal logistics and boosting capacity at its vegetable oils and fats refinery in Rotterdam, one of the largest in Europe.

The travails of Europe's steel industry also inevitably hit Rotterdam during 2012. Iron ore and scrap imports declined 10.6% to see volumes plunge to 30.8mt, although Peters said the port's decline could have been worse given that European demand for steel products was some 20–30% lower in 2012 than in 2011. Volumes to VoestAlpine's Austrian facilities did, however, remain stable, via Rotterdam, with incoming volumes transhipped to barges headed for the port Duisburg from where the cargo is loaded onto rail wagons for onward transportation.

Rotterdam's ability to handle the world's largest ships, including the massive Valemax fleet of vessels operated by Brazilian mining giant Vale, has been a key factor in keeping iron ore volumes relatively buoyant in the face of the stiff headwinds faced by the steel sector. "Seventy-five per cent of our iron ore comes from Brazil and 25% from other countries like Canada and when it's sourced in Brazil we see a growing amount of calls of Valemax ships. We are seeing more of them," said Peters. "That's an advantage for us because we are the only port that

can receive these vessels fully loaded. EMO and EECV can both handle them.

"In the first quarter of this year iron ore volumes increased by 500,000 tonnes. Partly this was to do with restocking, but we're also winning transshipment business with Valemax ships coming here before being transshipped to smaller vessels to ports such as Bremen, Ghent and Dunkirk. Last year iron ore for Dunkirk went direct, but the use of Valemax ships can change this so we hope to become a hub for other ports."

As for all of Europe's leading bulk ports, future demand for coal remains a key factor in dry bulk demand and one shrouded in mystery as various governments weigh up forward energy demand and how to meet it in the face of environmental policies that favour alternative sources of power. Energy price is also a key factor in long-term projections, with the potential of shale gas development in Europe, and the greater availability of coal

INCOMING AND OUTGOING DRY BULK GOODS, GROUPED BY ORIGIN AND DESTINATION, 2011

Incoming	Outgoing	Total	
Agribulk			
Brazil	2,477	0	2,477
Argentina	1,879	0	1,879
USA	715	0	715
Ukraine	611	0	611
UK	392	754	1,146
Other countries	2,833	600	3,433
Total	8,516	1,354	9,870
Iron ore and scrap			
Brazil	21,011	0	21,011
Canada	3,561	0	3,561
South Africa	3,119	0	3,119
Germany	0	1,850	1,850
Other countries	6,818	1,090	7,908
Total	34,509	2,940	37,449
Coal			
Columbia	11,867	0	11,867
Australia	4,233	0	4,233
USA	4,088	0	4,088
South Africa	2,304	0	2,304
Other countries	3,216	999	4,215
Total	25,708	999	26,707
Other dry bulk			
Norway	2,893	635	3,528
China	857	0	857
UK	750	589	1,339
USA	321	75	396
Other countries	5,894	1,286	7,180
Total	**10,715**	**2,585**	**13,300**

Source: Port of Rotterdam based on CBS figures

from the US where shale gas output from fracking is already having a huge impact on power generation, muddying the forward demand waters.

"On the one hand we expect growing imports because of the closing of German coal mines so they will need more imports," said Peters. "In Rotterdam we also have two new coal-fired power plants coming into operation at the end of this year, operated by E.on Benelux and Electrabel/GDF Suez respectively. These plants is, depending on occupancy and co-firing of biomass, will require about 3mt to 4mt of coal annually, supplied via EMO's facilities. So imports of coal will grow.

"In Germany there were a lot of projects for coal-fired power plants, but a lot of them have been postponed or are cancelled. But there are some new projects which are already in operation or will come on steam this year — for example, Trianel's plant at Lünen, STEAG at Duisburg and EnBW at Karlsruhe.

"But next to the social resistance against coal-firing the problem is that coal has to compete with wind and solar power so it depends on the price of coal in the future."

More imports are also now arriving at Rotterdam from the US, he added. "What we see in the US is the gas price is very low, so production of coal is not used there but exported, and the price is attractively low so we are getting more imports," said Peters.

"There are lots of factors that influence coal imports - price, stock, demand for energy etc. But we expect growing demand in the short and medium term."

Both EECV (coking coal) and EBS (steam coal) have extended their dry bulk handling capacity in recent years, and EMO will do the same on the Hartelstrip from 2015. Peters said EECV was now receiving met coal from other Dutch ports and was onward shipping them to blast furnaces in Germany. "EECV is owned by ThyssenKrupp Steel Europe and they prefer to use their own terminal to supply plants," he said.

Looking forward to the rest of this year, Peters is optimistic. In the first quarter Rotterdam handled 109mt of cargo across all sectors, down 1% compared to a year earlier. However, although coal volume fell due to stock at terminal being cut back, and agribulk was also down, iron ore and scrap volumes increased 10% to push dry bulk throughput to a 4% increase year-on-year to total 20mt.

"We now have enough capacity to cover rising imports of coal, we expect growth in biomass and although iron ore is expected to fall due to the general market, we are winning transshipment cargoes," said Peters. "We are moderately optimistic about 2013."

Stevedores merge

Bulk Stevedoring Rotterdam is merging with Van Uden stevedoring to create a new company BSR-Van Uden stevedoring. This combined entity will operate bulk terminals in both Rotterdam and Moerdijk, where it will have a total of five portal cranes and two floating cranes operating over an area of 8 ha and 1500 m of quay.

The two companies began co-operating intensively in 2012 and the new combined company is exploring possible expansion of its storage capability and also the acquisition of a third floating crane. *Barry Cross*

Ovet invests in rail to improve coal shipments to growing German market

Ovet is investing in its rail capacity as the stevedore expects coal import volumes destined for Germany's coal and power sectors to continue to rise.

At the start of July the handler will open a new train loading facility at its Vlissingen terminal. This will enable trains as long as 44 wagons to be loaded in 2.5 hours, an undertaking that typically means lifting and loading around 2,700 metric tonnes net weight.

Sander van der Veeke, Account & Planning Manager at Ovet, said as Germany closes mines and pulls away from building new nuclear power stations, more coal imports will be required and the new capacity will aid in handling growing demand. "The train loader offers us more flexibility in modality for the German market," he said. "At this moment we can only offer barge loading to customers. We are not able at this moment to play an important role in the German market. We believe that with the train loader, we can.

He said the rail carrier or shipper would usually decide on the routing to final destination by rail and this might not always involve using the Netherlands' dedicated freight railway, the Betuweroute.

"DB Schenker will make use of the Betuweroute, others would use the Brabantroute (Eindhoven – Venlo) and another is thinking of Vlissingen – Antwerp- Ardennes – Luxemburg – South-Germany," he told *DCI*.

Last year the port handled some 8.6mt (million tonnes) of 'solid fuel', a definition that takes in thermal and met coals, plus petcoke and anthracite. Ore volumes totalled 1.3mt with 'miscellaneous' cargo accounting for 0.2mt. This year some 10mt are expected to pass over its quays, said Van Der Veeke.

Unlike the ports of Amsterdam and Rotterdam which receive a large chunk of their coal imports from Colombia, Ovet's Terneuzen and Vlissingen facilities mainly receive met

coal from Australia, steam coal from Russia with imports from the US a growing feature.

Biomass has been handled at the port since 2005 and Ovet now boasts a 30,000m^2 warehouse with six closed fully ventilated compartments designed specifically for its handling. "We have special grabs for the handling of biomass (36m^3). We transport the cargo by tipper trucks from the quay to the warehouse," said Van Der Veeke.

As other ports in The Netherlands point out, however, forward demand from Dutch power stations is now in doubt as the government debates whether to renew subsidies for the sector.

"Since 2009 the handled volume has been decreasing due to more competition and power stations invested in their own logistics facilities," said Van Der Veeke. "The biomass market in the Netherlands is subsidy driven. At this moment the subsidy fund is finished, so no imports will be coming as of summer 2013. Without subsidies it is not a profitable business."

Bulk Terminal Amsterdam

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- **Main Terminal:** quay length 1.2 km with two berths/separate belt system for simultaneous discharge of two large coal vessels (up to Capesize) at a high capacity to the various stacking installations (3250 and 3850tph)
- **Terminal North:** quay length 350 meters / one berth for up to Capesize vessels
- Max vessel size: 17.80 meters draft SWEK, max beam 45 meters
- 4 gantry cranes (1 x 60 tons/1 x 50 tons/2 x 30 tons)
- Floating crane (50 tons)
- Coal storage capacity 3mio tons on 650,000m²
- Railcar loading facility; 25,000 tpd
- Two large ship (spout)loaders: 60,000 tpd at the Sonthaven for (push)barge combinations and seagoing vessels.
- Grab loading into barge/seagoing vessel at Main Terminal and Terminal North
- In ttl 9 heavy duty magnetic separators installed in all inward and outward bound conveyor belt routes, including the railcar loader. Board/board into barge barge/coaster also possible via the magnetic separators.
- Homogenising of various grades of coal whilst loading via the conveyor belt incl. weight assessment per quality
- Screening/crushing/mixing
- Covered storage capacity at Main Terminal in 5 sheds directly under reach of the grabs; ttl. 25,000m² for biomass, agribulk and minerals.

OBA Bulk Terminal Amsterdam

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ZHD Stevedoring: new 50-tonne floating crane operational and new-building of 50,000m³ warehouses has started

Artist's impression of ZHD's new warehouses.

ZHD's Dordrecht terminal.

ZHD's 10-hectare expansion plan.

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 20 million Euros have been invested at ZHD Stevedoring throughout the last 2 years. The Rotterdam based (family owned) private company with more than 40 years of stevedoring experience, is – even in these difficult market-situation within Europe - still working on a major investment program for the next 5 years.

Milestones in 2011 - 2013 were:

- a new mobile Gottwald crane (HMK 6407B, High Tower), which has been 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;
- 20,000m² of newly developed storage area at Dordrecht — opened in December 2011;
- a new 50-tonne self-propelled floating crane — operational as of July 2012 and presented as highlight during the World Port Days in Rotterdam;
- ZHD has been GMP+ certified — December 2012; and
- the new building of covered warehouses, with a capacity of approximately 50,000m³ — operational from August 2013.

Although the start of 2013 was not that positive due to difficult market circumstances, ZHD Stevedoring has decided to keep on investing in 2013. Mid 2012, ZHD Stevedoring has started the preparations for the construction of covered storage in Dordrecht. On 3 May, the new building started and the warehouses are expected to be operational in August 2013. "The demand for covered storage from both existing as well as potential new customers has been high in 2012," 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 tonnes floating crane which is now operational in Dordrecht, Moerdijk and — of course — Rotterdam." This new self-propelled 50-tonne floating crane further expands ZHD Stevedoring's crane capacity and already has proven to increase performance and service of ZHD Stevedoring.

As of 1 July 2011 the municipality of Dordrecht and the Rotterdam Port Authorities have entered into an agreement to bundle forces, which was formalized in January 2012. This implicates that of this date (officially) the Port of Dordrecht has become an integral part of the Port of Rotterdam with all its benefits. Although already being 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 started the negotiations to reclaim another 10 hectares of land at its terminal in Dordrecht. This 10 hectares will be connected directly to the water with a 750m new quay wall with a 9.45m. draught, able to accommodate vessels up to approximately 40,000 tonnes. ZHD expects to announce a positive outcome

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Technical Data

Type	PLM 6400
Year build	2013
Application	Pedestal mounted, floating hoist crane
Capacity	400 ton @ 20m
Boom length	60m – 70m
Total weight	583 ton
Main hoist (2x)	SWL 200 ton
Aux. hoist 1	SWL 20 ton (controlled free fall)
Aux. Hoist 2	SWL 20 ton
Tugger winch (2x)	SWL 3 ton
System	Diesel - Hydraulic
Yoke block (2x)	50° swivel angle (per yoke block)
Drivers cabin	Tiltable

Possibility to mount two (2) 20ft powerpack containers for piling on the crane construction

ZHD's new floating crane Ahoy 50.

of these negotiations before the end of 2013, from which the preparation and construction of this huge project can be started.

Apart from handling products like minerals, coal, petcokes and seasonal products as salt, ZHD Stevedoring has been focussing on handling and storage in niche markets such as steel-scrap, biomass (woodpellets) and waste-materials. From 1 December 2012, ZHD has also been GMP+ certified, giving it the chance to play its part in the transshipment of agricultural products. Special services are offered in the field of breakbulk and the handling of bulk in/from containers (among others, minerals, scrap) — a global trend which will grow in the future — are not unfamiliar to ZHD Stevedoring and completes 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..

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 kind of product. 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.

DAMEN Pontoons & Barges launches second DAMEN crane barge 6324

On 9 January 2013, Damen Shipyards launched, at its Chinese Nantong Yahua Shipyard, the second crane barge 6324 in a row. The CBa 6324 is designed for transshipment works in open waters and will be equipped with a Liebherr CBG350 crane, a proven design and well accepted crane in the transshipment market.

The second crane barge in the series (the first one is in outfitting stage in Rotterdam) will be completely outfitted at Yahua Shipyards. Both crane barges are built on speculation and a delivery time of March 2013 can be ensured for both crane barges. One barge to be delivered ex-Nantong China, one barge ex-Rotterdam.

The equipment used on board of the LRs registered barges is all of a reputable make to ensure a high quality and second hand value. For example, Caterpillar generating sets, Azque pumps, DMT winches, van der Leun electrical installation and the Liebherr crane are used while the paint system has been applied by International Paint.

The Damen CBa 6324's main purpose is to be used as a transshipment barge, but it can also be used for container handling operations and salvage operations. In grab operation the crane can handle 35t at 36m and daily production can reach up to 30,000 tonnes, in hook operation the crane can handle 45t at 36m.

The barge has a huge amount of free deck space and the wooden deck is equipped with container fittings all over the deck. A day and night accommodation for 12 persons including spare spaces is standard, optional propulsion units can be supplied.

Royal HaskoningDHV helps prepare fully automated fly ash terminal

Vliegasunie delivers mineral raw materials (fly ash, bottom ash and gypsum) to the construction industry and civil engineering. In order to balance supply and demand, Vliegasunie has several handling and storage facilities in the Netherlands.

Since January 2013 Vliegasunie has been operating a new fly ash silo in Moerdijk. The new distribution station SMZ is a fully automated plant which receives, stores, mixes and expedites various qualities of fly-ash without on-site operators.

Barges are unloaded pneumatically and only require the skipper to connect to the intake system. The automation system receives information about the type of fly ash from the dedicated cable connection to the main office, and when the skipper identifies himself with a personal badge at the local operator terminal, the installation will store the fly ash in the right segment of the multi-bin silo. The different qualities of fly ash are blended to the required specification before storing them in the two large storage silos.

Underneath the storage silos truck loading stations are installed. The automation system receives information about the fly ash shipments from the dedicated cable connection to the main office. By simply identifying himself at the gate and the correct truck loading location with a personal badge, the truck will be loaded automatically and the manifest will be printed.

Off-site monitoring by Vliegasunie, including cameras, allows a quick response in case of emergencies.

Royal HaskoningDHV assisted Vliegasunie with the site selection, feasibility study, basic engineering, preparation of tender documents and assistance during tendering. After contract award, Royal HaskoningDHV carried out site supervision including start-up and commissioning.

Dunlop Holland forges ahead

Fenner Dunlop CEO Nick Hobson (left) with Dunlop Holland's managing director, Edwin Have officially opening the new steelcord line.

At a time when so many businesses are in economic turmoil and talk only seems to be of austerity, closures and job losses, Netherlands-based Dunlop Conveyor Belting continues to forge ahead in just about every way imaginable. On 13 May, Fenner Dunlop chief executive officer Nick Hobson officially opened Dunlop Holland's new steelcord production line, which is being used to produce steelcord belting there for the first time ever.

Sales and marketing director Andries Smilda already has eyes on winning new market share. "This will create a whole new dimension to our sales efforts. A great many of our customers use steelcord as well as rubber multi-ply belting so we have a ready-made target market to attack". Up until now, supplies of steelcord belting for their existing customers have largely been produced by Fenner Dunlop Americas and Fenner South Africa. "The quality is excellent " explains Smilda, "but with our own steelcord production located in Europe we are now able to be much more flexible and responsive to the needs of our customers. In fact we have already received orders from regions such as the Middle East and Africa that will fill the press for the next six months!"

The new production line is an integral part of the recent factory extension in Drachten and is able to produce steelcord belts. Technical director, Dr Michiel Eijpe, believes that it is one of the most technologically advanced and efficient steelcord production lines in the world. "Thanks to the help and experience of our colleagues around the world of Fenner Dunlop, we were able to build in several enhancements that make this line super efficient."

The first belts have already rolled off of the presses without a single fault. "To achieve that level of quality at the first attempt on a brand new production line of any kind is virtually unheard of" he continued. "It certainly justifies all of the very detailed planning and preparation work that went into the project."

Steelcord production can be immensely complex. For

example, on a 1,600mm-wide belt, there are 142 steel cables that have to be fed simultaneously (and very precisely) into the machine. To make loading more efficient than the usual method of using a loading robot, a special, Dunlop Drachten designed feeding belt has been installed in the creel (the rack holding the spools of cable), which carries the spools towards the correct position in the rack. While this is all happening the position of the second 'deck' has been designed to allow the operators to prepare the next set of cables to achieve an almost uninterrupted production flow and thereby significantly reduce lost production time.

Dunlop Conveyor Belting Ghana Ltd.

Dunlop Service Holland continues network expansion

Not content with expanding its production capacity in Drachten, introducing steelcord production for the first time ever and investing heavily in upgrading their laboratory and R&D facilities, the Dunlop Service network is also being expanded at a rapid pace. Following its recent opening of a new sales office and warehouse in Dubai, Dunlop has even more recently opened a new Dunlop Service outlet in Ghana to cater for the needs of the West African market. The decision to go ahead with what is seen as a strategically important move was driven by the economic growth in the region over the recent years, plus positive developments in the mining and petroleum sectors. The new company, 'Dunlop Conveyor Belting Ghana Ltd', is based in the capital, Accra.

Phase one is now complete with the new office now functioning and further recruitment is taking place to strengthen the team. Phases two and three are already underway to create a warehouse for conveyor belt stock together with a workshop facility for the service team. The aim is to be fully functional by the end of the third quarter of 2013. The management team in Ghana is confident that they will bring rapid growth to the company and further strengthen the already renowned Dunlop reputation for quality. "We have already had a lot of very positive feedback from customers, including those in the mining, and quarrying industries" says regional manager James Cammock. "The fact that we are the very first conveyor belt manufacturing company to establish such a physical presence in the region has been very well received and much appreciated by the local market" added Cammock. "Taking our business to the customer and providing added value and services rather than trying to work at a distance from The Netherlands will make us stronger than ever. We are very excited by the challenge and looking forward to putting Dunlop even more firmly on the map in West Africa."

These latest investments are proof positive that this is certainly one Netherlands-based company that is not prepared to sit back and wait for things to pick up. Dunlop's management maintains that more and more companies are beginning to realize that spending a little more for higher-quality belts that provide a much longer working life is a more effective way to reduce their conveyor running costs rather than opting for short-term, apparently low-price solutions. "The world economic situation, especially in Europe, is a big challenge," says managing director Edwin Have, "but economic recessions also provide opportunities for those who are prepared to invest and innovate rather than cutting costs by compromising on the quality of the product. So that is precisely what we are doing."

RC-Inspection B.V. in Rotterdam

RC-Inspection b.v. was established in 2006, and is an independent, privately owned inspection company operating in the field of dry bulk commodities, metals and marine survey related services.

RC Inspection employs a well-trained, professional and committed office and field staff within a global network operating in more than 40 countries. All services are carried out by highly experienced experts, who are well equipped with state of the art means of communication enabling fast reporting to all customers with main operational centres, which are all strategically based in Rotterdam, Johannesburg and Hong Kong.

The management staff in these operational centres is a mixture of key personnel who all held senior management positions/ownership in other global operation inspection companies.

The core business philosophy of RC Inspection is to provide an independent, fast and reliable service with a direct people-to-people approach as befits a modern company.

Sampling and analytical services

RC-Inspection's sample preparation facilities are equipped with the latest models of sample preparation machinery enabling swift finalization of the sample preparation, after which the company ensures that accurate reporting of analytical results is followed by unbeaten turnaround times.

RC-Inspection delivers:

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- base- minor- and rare earth metals;
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- ferro- and noble alloys;
- minerals, concentrates and ores; and
- precious metals;

Weighing, sampling and visual assessments on:

- scrap;
- waste; and
- recycling materials.

Other Services

Besides sampling, inspection and analytical services RC Inspection is offering added value services on various commodities such as:

- operating of exploration and mine site laboratories;
- pre-shipment inspections of storage areas;
- pre-shipment inspections on stockpiles;
- volumetric stockpile surveys;
- technical support on coal, anthracite, petroleum-coke and coke products;
- density testing;
- re-conditioning and re-packing (also damaged/contaminated goods);
- re-weighing of rare earth metals;
- high precision weighing; and
- radio activity testing.

All services are carried out by highly experienced experts, who are all equipped with state of the art means of communication, enabling prompt on the spot reporting to customers, avoiding time delays.

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Reputation for reliability earns Siwertell a new road-mobile unloader order

A Turkish customer has returned to Siwertell for a second road-mobile unloader following the performance and reliability of its first machine; it will be used to handle cement in the city of Trabzon, Turkey.

Cargotec has secured a new order for a Siwertell 5 000 S, trailer-based, diesel-powered unloader with double bellows system and dust filters. It is destined for operation by Muhammet Gümüstas, in the Black Sea coastal city of Trabzon, Turkey. In 2012, the cement services company commissioned its first Siwertell unit, a 10 000 S unloader. Both units are dedicated to cement handling at a rated capacity of 300tph.

"Muhammet Gümüstas ordered a second unloader because of its favourable experience with the first unloader, and because of Siwertell's reputation for offering one of the most reliable unloading systems available on the market today," says Jörgen Ojeda, sales director for Siwertell Mobile Unloaders. "The unloader's flexibility and capacity, combined with low operational and maintenance costs, also had a major impact on the client's decision."

"With more than 400 units delivered to the market since 1972, 100 of which are mobile systems, we have positioned ourselves as the market leader in bulk material handling.

"Its unique design makes the Siwertell unloader one of the most environmentally-friendly shore-based ship unloading systems available," adds Ojeda. "Dust-free handling and low energy consumption, along with minimal exhaust and sound emissions mean that it can be used in sensitive sites and those close to populated areas, such as Trabzon."

The new unloader will be built in Bjuv, Sweden; delivery is scheduled for May 2013.

Pair of road-mobile Siwertell unloaders for Turkish operations

Cargotec has secured a new contract for two Siwertell road-mobile unloaders from Medcem Global Pazarlama AS, in Turkey. This is the second order from Turkey in less than a month. The 10 000 S trailer-based, diesel-powered Siwertell ship unloaders will be built at the Siwertell fabrication plant in Bjuv, Sweden and the delivery is scheduled for October and November this year.

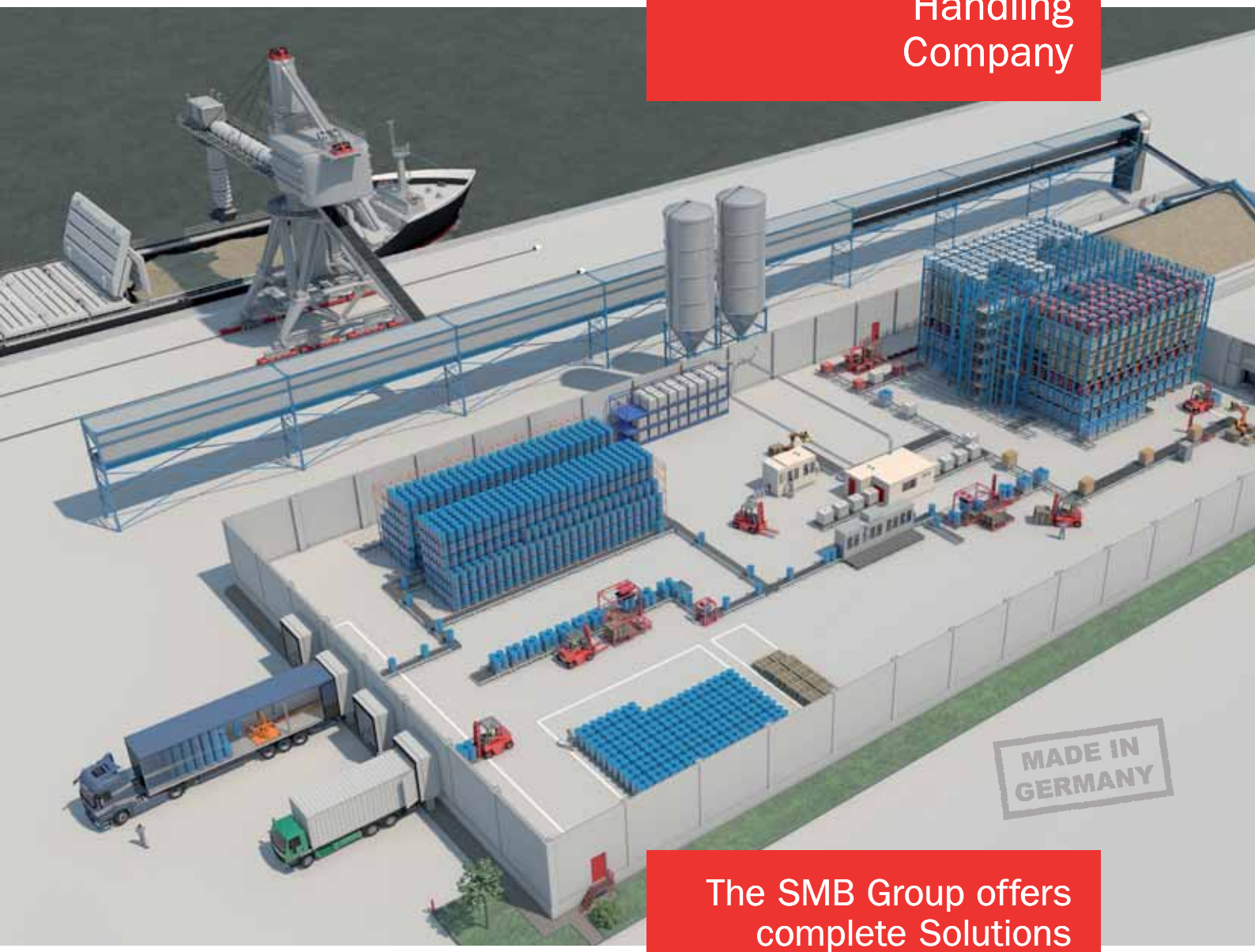
The unloaders will be used to discharge cement at a rated capacity of 300tph (tonnes per hour). Each will be fitted with a dust filter and double bellows system for loading trucks for onward transportation by road.

"The Siwertell mobile unloader has a reputation as one of the most reliable unloading systems available on the market today," says Jörgen Ojeda, sales director for Siwertell Mobile Unloaders. "With more than 100 road-mobile unloading systems delivered worldwide, they have earned a high profile reputation as state-of-the-art unloading equipment. This was one of the reasons that Medcem Global Pazarlama chose this particular system."

"Other advantages that influenced the client's decision include the flexibility and high capacity that these systems offer, in combination with low operational and maintenance costs. As there is no need for any preparatory on-site engineering works, the mobile unloaders are available to start operations immediately upon delivery," adds Ojeda.

Siwertell ship unloaders and loaders are based on unique screw conveyor technology, in combination with belt conveyors and aeroslides, and can handle virtually any dry bulk cargo, such as coal, cement, fertilizer, agribulk, clinker, sulphur and grain. Siwertell products and solutions are all designed to ensure environmentally-friendly and efficient cargo operations.

Material Handling Company



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Two Terex® CC2800-1 crawler cranes make

As the United States marches toward energy independence, 2012 was a banner year for wind energy projects. According to the American Wind Energy Association (AWEA), wind energy projects throughout the country posted their strongest year in 2012, bringing online a record 13,124MW of power in 26 states and Puerto Rico. In the fourth quarter alone, 8,380MW were installed. By the end of the year, wind generated more than 60,000MW of power.

Recently, Developer RPM Access (RPMA), LLC of West Des Moines, with help of two Terex® CC2800-1 crawler cranes, completed the Hawkeye Wind Farm project in rural Fayette County, Iowa. This was one of the installations contributing to the record-breaking year for the wind industry. Hawkeye's 15 wind turbines generate enough power to provide for the needs of more than 12,000 typical family homes each year. More importantly, the clean energy source will save at least 60 tonnes of carbon dioxide, 360 tonnes of sulphur dioxide and nearly 225 tonnes of nitrogen oxide emissions.

Model of efficiency

The volume of wind projects poses a double-edged sword for a relatively small developer like RPMA. On one hand, market demand for new wind turbine erection is strong. On the other, a limited supply of crane capacity makes scheduling turbine projects difficult.

"Heavy lift cranes for turbine construction can be the project bottleneck," explains Steve Dryden, president of RPMA. "Heavy lift contractors will typically complete the big jobs first," leaving the smaller projects like Hawkeye waiting for a crane to become available.

RPMA has learned that efficiency is the key to getting heavy lift cranes like the Terex CC2800-1 at the jobsite when it's needed. The company works with its contractors to maximize the number of lifting days for turbine erection. Prior to bringing in the heavy lifting equipment, Nordex USA, Inc. of Chicago, Ill. acted as the general contractor and started the project in November of 2011. The first projects were to develop the 4.2mi (6.8km) of access roads and install 11.8mi (19.0km) of underground cable.

The following April, crews began pouring 15 turbine foundations, which consisted of up to 605yd^3 (462.6m^3) of concrete. By the time the two CC2800-1 crawler cranes were ready to be brought on site, RPMA and Nordex made sure the infrastructure was in place, so the cranes were on site for as the shortest time period possible.

Two better than one

The 328ft (100m) tall turbines were erected on an average one turbine every two to three days. Each turbine consisted of seven lifts: five tower segments; a nacelle consisting of a deck, generator, gearbox, and cooling and control equipment; and a blade and hub assembly. These tall turbines present more of a challenge than the 262.5ft (80m) tall structures of just a few years ago, as there is a significant increase in wind shear between 262.5 and 328ft (80 and 100m) above ground level.

To combat this issue and expedite turbine tower construction, the cranes were configured differently. One CC2800-1 crawler crane was equipped with enough boom and full counterweight to successfully lift the upper two tower sections, nacelle and hub/blade assembly. The second, shorter crane configuration had just enough lattice boom installed in order to erect the first three tower segments to a total height of 203.4ft (60m).

The nimble Terex CC2800-1 crawler crane led the construction charge, which began in early July, by erecting the first

short work of Hawkeye Wind Farm

three tower segments. These heavier base sections ranged in weight between 79.6 and 81.7 ton (72.2 and 74.1 tonne). After completing installation of these three base tower segments, the crawler crane was moved the 0.25 to 1mi (0.4 to 1.6km) to begin construction of the next tower base.

The second, taller CC2800-1 followed closely behind to complete the turbine installation. This configuration was the workhorse of the project, lifting the top two tower segments, 300-ton (272-tonne) nacelle and 37.5-ton (34.0-tonne) blade/hub assembly.

This crawler crane can be quickly configured for wind turbine erection applications with only a few special components, which include reinforced main boom segments and a rigid luffing jib developed specifically with wind power-related applications in mind. Offering a 661 ton (600 tonne) maximum lift capacity at a 32ft, 10in (10m) radius, the Terex CC2800-1 can erect 328ft (100m) turbines without the need of its Superlift system, which saves time with crane assembly and disassembly. This provided a great benefit to RPMA for this project.

According to Kevin Lehs, Hawkeye project manager for RPMA, "We had to traverse agricultural fields and cross over county and state highways," which required the cranes to be partially dismantled at times to transport from tower to tower. "With proper planning, we were able to minimize this to twice, and we were very impressed at the speed of crane assembly and disassembly."

When the shorter of the two CC2800-1 cranes finished constructing the three base tower segments of the 15th and final turbine, crews reconfigured the crane with a longer boom, so that it could help to 'top off' the turbines. This allowed both crawler cranes to work toward each other until construction of all turbines were completed.

Within a month's time, the turbines were finished, leaving Nordex USA to complete the final steps of the Hawkeye Wind Farm project. In October of 2012, commercial operation of the 36MW wind farm commenced, bringing power to thousands in northeastern Iowa.

About the Terex CC2800-1

The Terex CC2800-1 lattice boom crawler crane can be converted from a standard crane to a special-purpose crane for wind turbine projects — and back — with only a few special components. These special components include specially reinforced main boom segments and a rigid luffing fly jib (LF2) with a length of 39, 78, or 118ft (12, 24, or 36 m) that were developed specifically with wind power-related applications in mind.

The crane's rated lifting capacity is 661 tons (600 tonnes) at a reach of 32ft, 10in (10m), while its maximum load moment is 7,710 metric tonnes. The standard carrier is available in duo- or quadro-drive and a narrow-track (NT) version, the latter allowing the crane to move through 17.3ft (5.3m) wide roads. The narrow track kit can be used with either 3.9ft (1.2m) wide track pads for a smaller total width or 4.9ft (1.5m) wide track pads for reduced ground pressure.

In addition, the crane can be supplied with a chassis designed for road travel. The basic machine, including all winches and the A-frame, can be transported within a 13.2 ton (12 tonne) axle load limit. The high level of flexibility provided by these options and features saves time and money during transportation, setup, and disassembly, providing for a high level of cost-effectiveness in the process. Moreover, the time-tested Terex® IC1 control system, featuring remote radio control capabilities, makes it possible to operate the Terex CC2800-1 easily, safely, and comfortably in virtually any operating condition.

About RPM Access, LLC

RPM Access LLC (RPMA) is a leading developer of wind generation projects throughout the Midwest. RPMA's primary business is the development, owning and operating of smaller scale, utility grade, wind generation in the Midwest. The company has developed over 716MW of operating wind generation projects in Iowa, amounting to approximately 15% of the total installed wind capacity in Iowa. Currently RPMA is the owner and operator of the 41MW Elk Wind Farm in Delaware County, 36MW Hawkeye Wind Farm in Fayette County and 50MW Rippey Wind Farm in Greene County.

About Terex

Terex Corporation is a diversified global manufacturer of a broad range of equipment that is focused on delivering reliable, customer driven solutions for many applications, including the construction, infrastructure, quarrying, mining, shipping, transportation, refining, energy, utility and manufacturing industries. Terex reports in five business segments: Aerial Work Platforms; Construction; Cranes; Material Handling & Port Solutions; and Materials Processing. Terex offers financial products and services to assist in the acquisition of equipment through Terex Financial Services.

Co-operation between AEP and E-Crane continues

American Electric Power, the major electric utility company headquartered in Columbus, Ohio is one of E-Crane's largest customers in the US with no fewer than eight E-Cranes in operation.

The relationship between the two companies is a testament to AEP's desire for energy-efficient and environmentally friendly bulk material handling equipment and E-Crane's ability to support this desire with the required project management, parts, and maintenance services.

In 2012, the latest E-Crane for AEP was installed at the Clifty Creek Power plant near Madison Indiana. The 1500 series E-Crane is used for unloading limestone for the flue gas desulphurization (FGD) process that takes place at the plant. Along with the crane, E-Crane also designed and provided a receiving hopper and barge haul system for Clifty. The hopper was designed by E-Crane engineers and was installed simultaneously with the E-Crane in May of 2012. A barge haul system, consisting of wire rope strung between two opposing winches, was also installed. The wire rope is connected to the barge and the winches either pay-out or take-up rope to move the barge downstream or upstream.

In 2008, E-Crane developed a similar project for AEP at Ohio Valley Electric Corporation's (OVEC) Kyger Creek plant in Cheshire, Ohio. Both cranes have a 15.5t lift capacity and 29m reach.




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Bobcat Company breaks ground on $20m expansion

Bobcat Company has officially broken ground on its $20 million renovation and expansion to create the Acceleration Center in Bismarck, North Dakota, USA. When complete, the Acceleration Center will be a modern complex for advancing innovation where professionals utilize technology and modern design to maintain Bobcat's position in the compact equipment industry.

The project includes expansion of an existing building as well as development of a new test track and indoor testing facility — all at the Northern Plains Commerce Centre in Bismarck. The expansion of the existing building will include a two-story office building and provide a total of 160,000ft^2 of modern workspace. Additionally, a 35,000ft^2 indoor testing arena will be constructed next to a 22-acre outdoor testing and track area. Construction is expected to be complete by summer 2014.

The Acceleration Center will initially house 135 employees tasked with innovating and advancing designs; testing; prototype engineering; and the computer simulation of ideas and concepts. These efforts will be accelerated thanks to the collaborative open environment and modern technology built into the facility. Company president Rich Goldsbury was the master of ceremonies for the groundbreaking event, while North Dakota Governor Jack Dalrymple, U.S. Senators John Hoeven and Heidi Heitkamp, U.S. Representative Kevin Cramer, and Bismarck Mayor John Warford were on hand to make the ceremonial turn of dirt, which included the use of Bobcat® equipment to mark the moment.

More MacGregor K50 cranes specified for India's bulk handling businesses

In April 2013, MacGregor secured another K5036 floating crane order from one of the largest stevedoring companies on the west coast of India, M/s Shreeji Shipping. This new order has a similar specification to the first MacGregor order received in October 2012: K5036-4HD floating crane with a 50-tonne SWL in grab operation.

"Once delivered, MacGregor will have four K4-HD floating cranes, one floating transfer terminal equipped with two K3028-4HD cranes, and one self-unloading transshipper serving the Indian bulk market on both the east and west coasts," highlights Anders Berencsy, sales manager for the K50 crane. "With these references MacGregor has strengthened its position in the region and is well-poised to face even bigger bulk handling demands.

"This project is significant for MacGregor," notes Berencsy. "Shreeji Shipping's decision to go for a MacGregor crane was predominately based on the distinct advantages that our K50 crane brings, namely: higher capacity, better performance and the crane's lower through-life cost. Good customer contacts, achieved through our local office, were also vital in securing the order."

Shreeji Shipping has been established for almost two decades and handles more than 12 million tonnes of cargo a year. It is predominantly engaged in handling bulk cargo and can offer stevedoring, lighterage, transportation documentation, warehousing, customs clearance and all other related ancillary services.

The operator's MacGregor K5036 crane will be delivered in August 2013 along with a generator for the crane as part of a turnkey package. It will operate in the Gulf of Khambata, in the state of Gujarat on the western coast, and will primarily be used for unloading coal from capesize vessels into open hatch river barges. These barges will then discharge the coal at a nearby jetty, which serves a local power station.

Mammoth move of EMS-Tech designed & constructed stacker/reclaimers

Fig. 1. A 1,500 tonne, 8,000tph (iron ore), stacker/reclaimer designed and supplied by EMS-Tech Inc., being prepped for the 600km barge journey from the MQM assembly site in Belledune, NB to its final destination, the ArcelorMittal export terminal located at Port Cartier, QC.
(Photo: Brian Houston)

History is being made. By the time this story is published, a 1,500-tonne, 8,000tph (tonnes per hour) for iron ore, stacker/reclaimer (Fig. 1) designed and constructed by EMS-Tech Inc. of Belleville, Ontario, Canada, will have been moved by barge from its assembly site in Belledune, New Brunswick to Port Cartier, Quebec, a 600km journey, where it will be landed and transported to the rail system on which it will be commissioned before being turned over to its owner, ArcelorMittal.

The machine, one of the largest of its kind, and certainly the first to be transported by barge in one piece, incorporates fabrications and machinery parts purchased from around the world. The machine was assembled for EMS-Tech Inc. in Belledune by MQM Ltd and Mammoet has been engaged to move the machine in two barge movements to Port Cartier, the first being the tripper/elevating conveyor, followed a week later by the stacker/reclaimer. The process is expected to be complete the first week of June.

In addition to this historic move, and another first for EMS-Tech, and perhaps Canada, a second equally ambitious project is underway at this time on the west coast of Canada wherein EMS-Tech is delivering a second 7,000tph (coal) stacker/reclaimer (Fig 2.), to Neptune Terminals in North Vancouver. In this case the machine will be delivered in large assembled pieces by barge from an assembly site in Sidney on Vancouver Island. Three barge movements will be employed in two runs across the Strait of Georgia to the Neptune Terminal site. This machine, which was assembled for EMS-Tech Inc. by Ramsey Machine Works at their Sidney, Vancouver Island, facility, will be transported across the runway by APEX Industrial Movers on a heavy transporter to waiting barges that will transfer the heavy machine to the mainland where it will be final assembled and commissioned before entering service for Neptune.

Both of these projects above follow on the heels of yet another hugely significant project for EMS-Tech Inc., notably the design and supply of a 4,500tph stacker and 8,000tph reclaimer (Fig. 3) for PT Kaltim Prima Coal (KPC) at their coal terminal located in East Kalimantan, Indonesia.

The machines in question, pictured above, have just completed rigorous commissioning tests and will commence service for KPC shortly. In addition to this work, EMS-Tech has delivered shiploaders that have recently entered service for Compass Minerals and Oxbow Carbon & Minerals Ltd. at their facilities located in Goderich, Ontario and Argentina respectively.

EMS-Tech Inc. has also been very active at the Port of Beauport, adjacent to Quebec City, on a series of projects for St. Lawrence Stevedoring. EMS-Tech Inc. has overseen the doubling in length of the out haul conveyor which is also now the primary receiving conveyor, the addition of two new conveyors and associated transfer towers. One tower enables two conveyors to feed onto any one of three outgoing conveyors to various areas of the highly organized terminal. EMS-Tech Inc. also designed and oversaw the installation of four mobile hoppers which will be used to improve ship unloading times and to add stockpile flexibility via the aforementioned transfer tower.

Fig. 2. The 7,000tph (coal), stacker/reclaimer pictured here, also designed and supplied by EMS-Tech Inc., highlights the enormous Boom Head End section being prepared for transfer to the barge that will deliver the large assembled units to Neptune Coal Terminals, in North Vancouver where it will be final assembled and commissioned.

Beyond these significant landside projects, EMS-Tech Inc. has been busy on the marine front as well, of which more details can be found on p29 of this issue.

Fig. 3. A 4,500tph stacker and 8,000tph reclaimer for PT Kaltim Prima Coal (KPC) at their coal terminal located in East Kalimantan, Indonesia.

High performance steel wire ropes for cranes by TEUFELBERGER

TEUFELBERGER Seil Ges.m.b.H. consistently stands for the highest product quality, innovation, dynamic drive, reliability, and internationality. This is why customers from around the world consider the Austrian rope manufacturer as their strong partner in the field of crane ropes for harbour, offshore and construction cranes.

Crane ropes are the executing element in any type of crane work. Therefore, they constitute an important element in ensuring the smooth conduct of work processes of cranes in harbours, on offshore platforms, and in many other applications where cranes are deployed. These ropes need to be highly resistant to corrosion, very durable, safe, and cost-effective. TEUFELBERGER achieves all this by using only first-rate materials, perfectly tuned manufacturing processes, and cutting-edge rope technology. In addition, the close cooperation with leading crane manufacturers such as Liebherr, Kenz, Huisman, Seatrax, ZPMC or National Oilwell enables the development of customized solutions for every kind of application. Extensive and sustained research conducted in the R&D department in Wels, Austria, ensures that TEUFELBERGER continues to pioneer new technologies.

The design of the inner rope of the QS 816 V and the PLASTFILL™ technology result into best stability against lateral pressure and therefore optimal winding characteristics.

EVOLUTION Q8 – the high-performance hoisting rope for harbour cranes and industrial applications impresses with exceptionally long service life and high breaking strength due to the innovative outer compaction.

The technology – TEUFELBERGER's contribution

With the PLASTFILL™ technology, the strands of the lubricated steel core are embedded in a compact plastic cover during the stranding process. This cover offers resistance to compression, lateral pressures and the ingress of water into the core as well as it guarantees the accurate positioning of the strands with equidistant strand spacing. This results in high breaking strength due to improved friction conditions in the rope and longer service life. The SUPERFILL® technology compacts every single rope strand in a special procedure. As a result, the rope's breaking load increases by more than 30% in comparison to conventional ropes. The smooth rope surface leads to less abrasion on rope, sheaves and drums. The permanent lubricated core helps to increase safety and lowers the maintenance effort.

High-performance ropes for the bulk industry

The loading capacity of modern cranes is constantly increasing and they are often used 365 days a year. Therefore highest breaking forces, resistance against mechanical wear, shock and corrosion as well as long service life are important. Years of experience in rope production, know-how and innovation enables TEUFELBERGER to develop the right solution for each application. For applications on mobile harbour cranes, ship-to-shore cranes, grab unloaders or RTGs, the high performance ropes EVOLUTION Q8 and QS 816 V are particularly well suited. Both are processed with PLASTFILL™ and SUPERFILL® technology and ensure high breaking forces, high flexibility, and long service lives. QS 816 V, which is available up to a diameter of 70mm, offers excellent bending cycle performance, high form stability against lateral pressures and high resistance against mechanical wear. EVOLUTION Q 8 features up to 40% higher service life in relation to bending fatigue and up to 5% higher breaking force than comparable products. As a result of the compacted outer strands, it is also ideal for multi-layerspooling. The product range goes from a diameter of 16 to 60mm. Both ropes can be produced in ordinary or langs lay as well as right or left lay configurations. TEUFELBERGER will as well offer tailor-made diameter tolerances as this is very important to consider when it comes to replacement ropes and worn out sheaves. Countries where bulk business is a major part of the economy, like India, China or Indonesia, trust in the high quality and reliability of TEUFELBERGER ropes.

About the TEUFELBERGER Group

The name TEUFELBERGER stands for a dynamic group of companies working with three key technologies in three strategic divisions and relying on more than 220 years of experience. In 2012, its 800 highly motivated employees achieved sales of about € 165 million.

In addition to wire ropes for use on ropeways, cranes, and in forestry, TEUFELBERGER is also active in the segments Synthetic fibres (fibre ropes for marine applications, high-performance ropes for industry, forestry, arboriculture, and special-purpose applications, overbraiding and metal-composite interconnections) and extrusion (plastic strapping and baler twines). TEUFELBERGER operates production facilities in five locations: two sites in Wels (Upper Austria; all products), and one each in St. Aegyd (Lower Austria; wire ropes), Veselí nad Lužnicí (Czech Republic, fibre ropes), and Fall River (USA, fibre ropes).

Associated Terminals awards contract to DBIS for terminal management software

DBIS (software and Automation) Ltd has announced that Louisiana based Associated Terminals has selected CommTrac as its operational software for all of its terminal and midstream operations.

David Trueman, sales director of DBIS Ltd, stated, "We are delighted to be working with Associated Terminals on this project. They have a very professional team who have taken time to understand the benefits of our CommTrac Terminal Management Software prior to making their investment.

Associated Terminals is one of the largest midstream stevedoring companies on the Mississippi River, operating a fleet of high-capacity floating cranes. The company transloads cargo to and from vessels and barges at eleven mid-stream anchorage facilities on the lower Mississippi, as well as at additional dockside and on-site locations.

Tony Collins, vice president of Associated Terminals stated, "We are extremely excited about working alongside DBIS and see the implementation of CommTrac as the next major step in making our operations as efficient as possible"

This latest contract with Associated Terminals will be DBIS's first installation in the US. Unprecedented sales growth over the previous two years has created a customer base of 24 terminals across the globe.

About DBIS

UK-based DBIS is a leading international provider of software solutions for bulk and breakbulk terminals. Its product CommTrac is installed in 24 terminals across the globe. CommTrac is a terminal management system that is designed to meet the very special needs of bulk and break bulk terminals. CommTrac is configurable to satisfy both import and export of commodities such as coal, ores, grain, minerals, animal feed, biomass, paper, timber, fertilizer, steel coils, ingots, pallets, rods, cars etc.

Tenova Pyromet replaces key equipment at Assmang Chrome Machadodorp

Tenova Pyromet, part of the globally present Tenova Mining & Minerals, has successfully completed the replacement of Assmang Chrome Machadodorp Works Furnace No 2's electrode pressure rings, four weeks ahead of schedule.

Awarded as a turnkey contract in April 2012, the project involved the verification and adjustment of designs, supply and installation of lower electrode equipment, including pressure rings and heat shields, manufactured from stainless steel, as opposed to the mild steel of the original equipment. The conversion to stainless steel was necessary to enable the equipment to withstand the higher temperatures required for smelting manganese. The fast track contract was originally scheduled for a 16 week duration, but at the client's request, was reduced to 12 weeks.

The furnace conversion was carried out without a single lost-time injury in the 1,850 man hours worked. "This was a significant achievement, given the challenging conditions of the brownfields project," says Francois Smith, Tenova Pyromet project manager. "We were working in very tight spaces, which required much of the rigging and moving of the heavy equipment to be carried out manually."

As with the original furnace rebuild, the new equipment was based on the Tenova (Tagliaferri) design, which has been proven in many furnace operations worldwide since 1968. Along with the Tenova Bateman and Tenova Pyromet technologies used, it is part of Tenova Pyromet's portfolio of electrode technologies that are considered to be the benchmark in the furnace industry. "The equipment was manufactured in South Africa, which facilitated meeting a tight contract schedule," notes Smith. "In our planning, we also had to take into account working seamlessly with a number of other contractors on site."

In the converted 30 MVA FeMn furnace, manganese ore, from Assmang Limited's manganese mines in South Africa's Northern Cape, is fed with reductant into a submerged arc furnace where it is beneficiated into manganese and slag.

Tenova Pyromet was responsible for the original Furnace 2 Rebuild, when the furnace was still producing ferrochrome. The 33 MVA, 29 MW furnace featured a 1,270mm Tagliaferri electrode column and was designed to produce 69,000tpa of ferrochrome. The rebuild took place over ten months from December 2004 to September 2005. The Tenova Group's relationship with Assmang Limited, however, stretches far back to 1971, with the design and supply of two 12 MVA furnaces to produce molten slag at that time.

Assmang Limited supplies raw material to the world's steel mills and alloy plants. Formed in 1935, it currently has three operating divisions based on its three commodities namely chrome, manganese and iron ore.

Tenova Pyromet, a Tenova Mining & Minerals company, is a renowned company in design and supply of high capacity AC and DC furnaces and complete smelting plants for production of ferroalloys, base metals, slag cleaning and refining.

Tenova Pyromet also designs and supplies equipment for material handling and pre-treatment, alloy conversion and refining, granulation of metal, matte and slag, furnace off-gas fume collection and treatment, and treatment of hazardous dusts and waste. Tenova Pyromet has several technologies to reduce operating costs and production power consumption.

Tenova Mining & Minerals is a total integrated solutions provider to the global mining, bulk materials handling and minerals beneficiation and processing sectors, offering innovative technological solutions and full process and commodity knowledge across the mining industry value chain.

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

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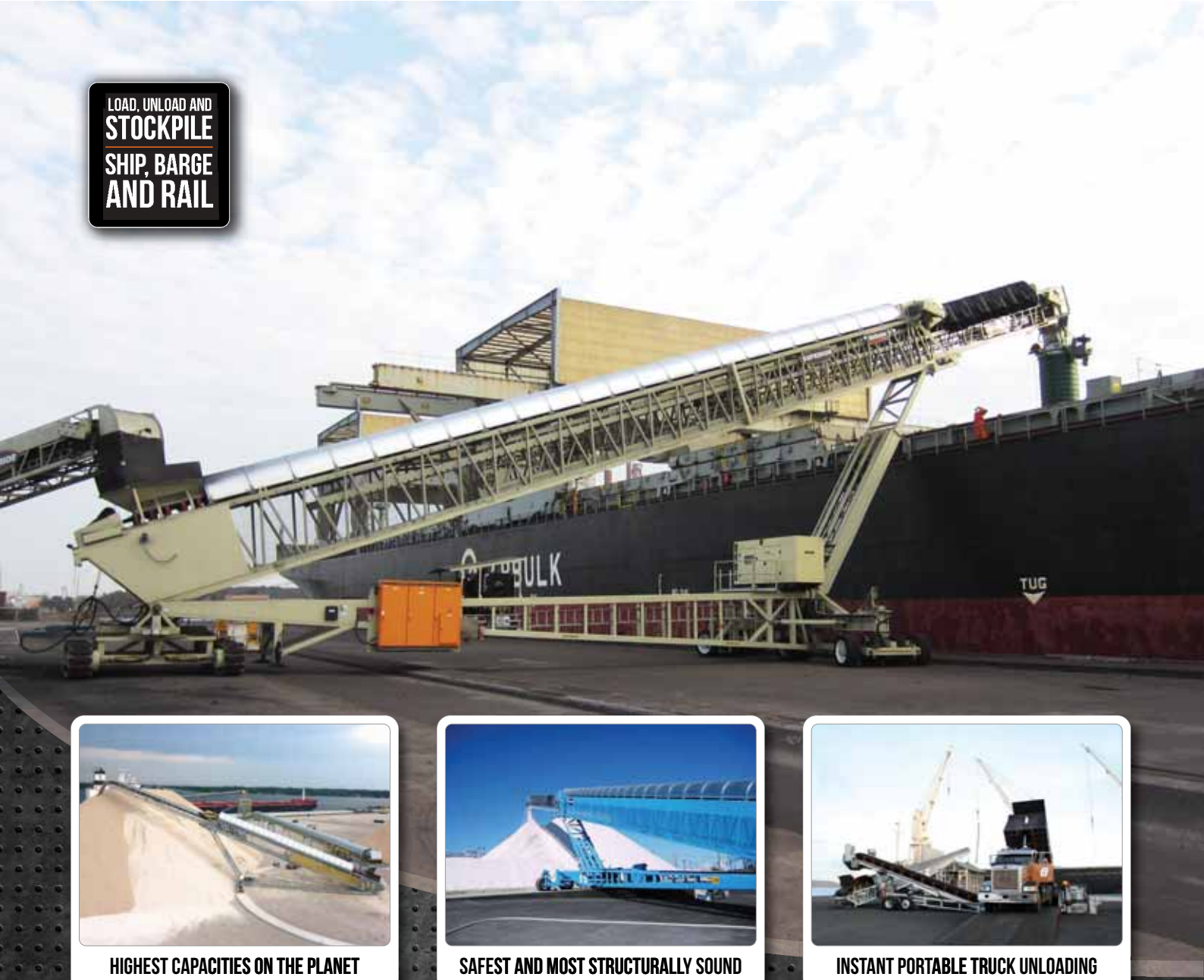

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Keeping abreast of shiploading technologies

Louise Dodds-Ely

Superior debuts new mobile shiploader to significantly reduce vessel load time

Superior Industries, North America's only combination manufacturer of conveyor systems and their related components, launched its latest material handling solution to help ship loading applications reduce downtime at ports and terminals. Called the Stingray™ mobile shiploader, the portable unit greatly reduces downtime by trimming multiple hatches from one feed point.

"Repositioning a shiploader's feed point or loading hopper cuts off the material flow from loader to ship, resulting in costly downtime," says Vice President of Engineering Bob Domnick. "Our goal is to reduce the number of times a feed point needs to be moved and then speed the time it takes when relocation is required."

Telescopic conveyor

Superior Industries first introduced telescopic conveyor technology into its products back in 1997. Since then, the 40-year-old company has manufactured almost 1,000 conveyors equipped with the technology.

In marine terminal applications, the Stingray mobile shiploader's telescopic conveyor allows the equipment to extend an additional 30%. This means the new shiploader reaches out to multiple hatches from the same feed point. In addition, while positioned over a hatch, extension and retraction of the telescopic conveyor means fully trimmed hatches.

"We know of one client who compared a unit without this conveyor technology to one of our telescopic units," says Domnick. "According to their load sequence, our telescopic conveyor reduced the amount of moves required to load their vessel from 35 to seven."

Increased mobility

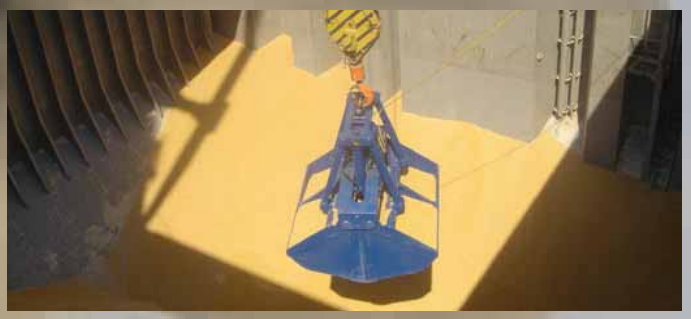
In addition, Superior says a commitment to conveyor mobility is another variable for accelerated load times. Each Stingray mobile shiploader is manufactured with expanded mobility packages at both the feed-point or tail of the conveyor and at its radial or drive tyres.

Often manufactured with track technology, portability at the shiploader's feed-point allows for rapid relocation from hold-to-hold and simplifies movement on, off and throughout a terminal or port. In addition to the 360° rotation at the tail, the conveyor's drive tyres are equipped to move inline, transversely and radially.

"We have invested a lot of time into products that focus on conveyor mobility," says Domnick. "In fact, our founder started this business after seeing a need for better portable conveying

Beco Grabs

Bulk Grabs



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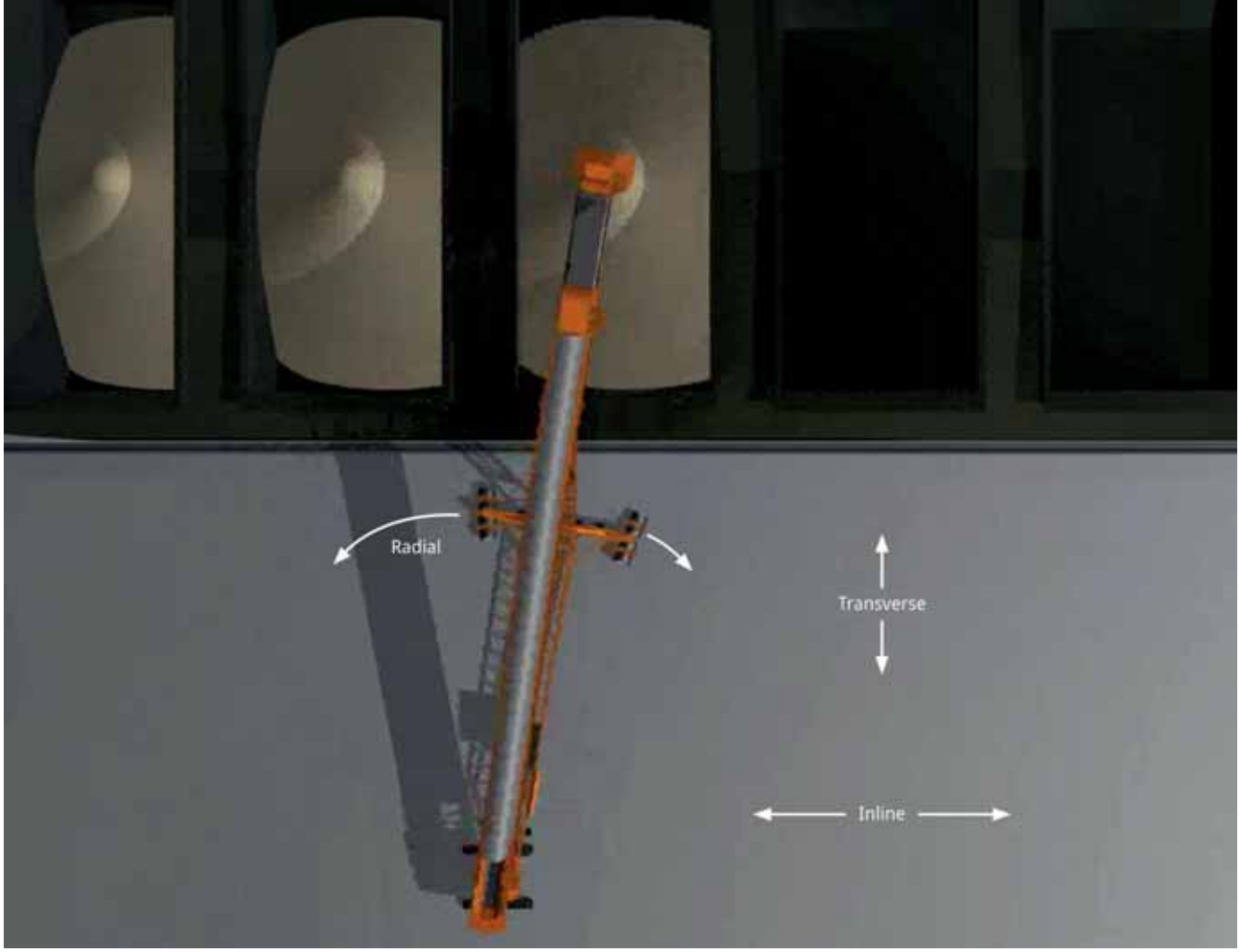
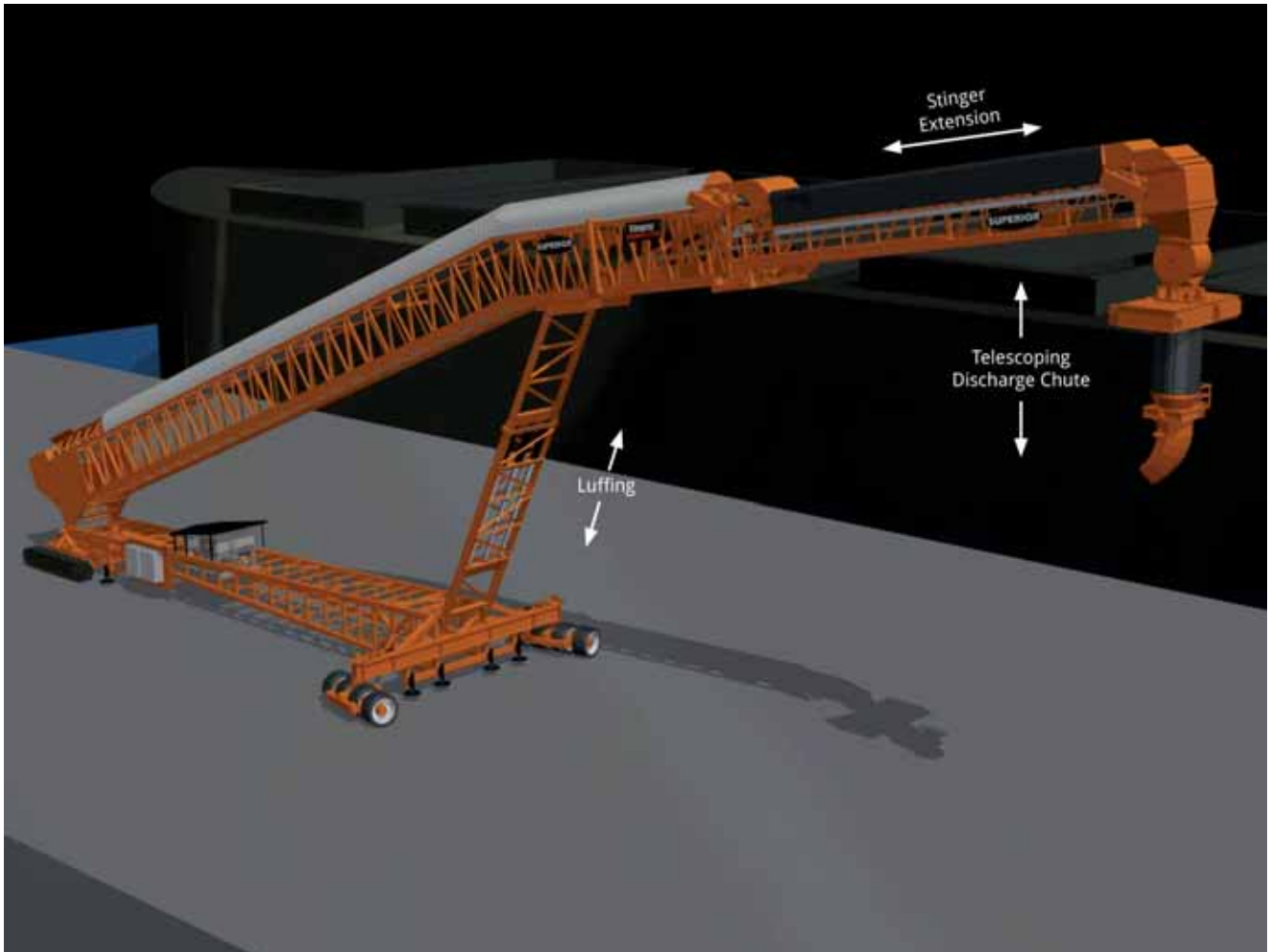


equipment. Since then, we have manufactured more than 5,000 mobile conveyors."

Cambered profile

New to Superior, says the company, is a camber or slight arch shape to the conveyor's structure. This allows the Stingray mobile shiploader to maintain a tight clearance between the conveyor and the deck of the vessel.

This design benefits owners because it reduces the shiploader's drop height to eliminate dust, preserve material integrity and reduce the length of discharge chutes, a costly component.



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Marine duty

Lastly, Superior says it is intentionally armed with a massive engineering department to work closely with clients on custom, individual applications and specifications. Common to any port or terminal client, local environment plays a crucial role in how each shiploader is individually designed.

Common components and conveyor enhancements include galvanized or epoxy finishes, belt covers, dust suppression/ extraction systems, onboard power, remote controls, spillage defence, telescopic chutes, hoppers and a multitude of other options.

Superior's experience includes engineering and manufacturing work of some of the most complexly engineered conveyors, including the world's highest-capacity mobile telescopic radial travel conveyor. The 72-inch (1,800mm) wide by 190-foot (58m) long unit moves 5,000 tonnes per hour at the Port of Tampa in Tampa, Florida, USA. The first Stingray mobile shiploader is designed for Panamax vessels, but can be altered to accommodate other dimensions of dry bulk vessels and barges.

About Superior Industries

Superior Industries has a reputation for engineering and manufacturing groundbreaking, bulk material handling conveyors and cutting-edge conveyor components. From its headquarters, it supplies stackers, transfer conveyors, feed systems, shiploaders; plus idlers, pulleys and accessories to lower operating costs and increase production. The company manufactures from additional plants in Arizona and Georgia, USA.

BEDESCHI

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Bedeschi: more than one hundred years' experience to share

Ore Fabrica *floating hub — 6,000tph travelling shiploader.*

Bedeschi offers creativity, innovation and experience when handling dry bulk material carefully and efficiently.

Bedeschi manufactures and supplies various types of shiploaders, for both onshore and offshore applications mainly operating in Columbia, India, Indonesia, USA, Greece, Italy, Philippines.

Each shiploader is designed to fit the specific project requirements and expectations; there is therefore no 'standard' shiploader, rather Bedeschi supplies customized shiploaders to maximize efficiency.

Raw commodities suppliers (Vale, Vedanta, Salgaocar, Timblo, etc.), terminal operators (Yara, Peureto Brisa, Titan, etc.), and floating terminal operators (Rocktree, Swire CTM, MBSS, MSI, Coeclerici, etc) rely on Bedeschi shiploaders to export cement, clinker, coal, petcoke, iron ore, urea, mineral concentrate, bauxite, limestone, agribulk (grains, soya meals, sunflower seed) and fertilizers.

According to the features of the project, some shiploaders have shuttle type delivery boom with reversible belts, while others have a retractable mechanism capable to extend the outreach; some have been fitted with a straight delivery spout while others have incorporated a distributing chute designed to deliver cargo in all parts of the holds in order to avoid broken spaces.

Furthermore, some shiploaders have even been fitted with lifting mechanisms to transfer bulldozers into the holds of the vessels.

In general, Bedeschi shiploaders are designed in such a way to maximize the working range of the shiploader and to minimize the risk of cargo clogging and spillage. Dust suppression devices, like water sprinklers or bag filters, can be incorporated as well. Trimming chutes are specifically designed to suit the cargo to be handled. Metal detectors, online weighing devices and automatic sampling devices are some of the other features provided as optional in various projects.

The largest shiploader (developed with Logmarin support) is installed on *Ore Fabrica*, the world's largest floating hub for Vale iron ore operating at Subic Bay (Philippines). This shiploader has a designed capacity of 6,000tph (tonnes per hour) and is capable of travelling the entire length of the floating hub, thereby having the ability to deliver cargo into all the holds of Capesize shuttle vessel, without the need to shift it alongside. The newest transshipper on which Bedeschi's shiploaders have been installed is the *Ore Sossego*, which has been commissioned recently. On *Ore Sossego*, two fixed shiploaders with slewing and luffing abilities have been installed. These shiploaders, each with a capacity of 3,000tph capacity, are extendable so as to have an outreach of 44m.

Ore Fabrica and *Ore Sossego* transship cargo from 400,000dwt Valemaxes into more manageable shuttle vessels (170,000dwt).

Besides shiploaders, Bedeschi also manufacturers other related equipment like hoppers (to receive cargo from cranes), feeders (to extract cargo from hoppers and deliver onto conveyors), belt conveyors, trippers, storage facilities, etc.

Bedeschi has successfully pursued the strategy of expanding beyond port and stockpile cargo handling facility and, thanks to the support of Logmarin Advisors and Liebherr (when integrated solutions are required), can work with its valuable client to find the most efficient integrated cargo handling solutions for loading, unloading and storage dry bulk commodities at any stage of the supply chain.

Bedeschi believes creativeness is the best way to stay ahead in the competitive environment: innovative designs developed together with Logmarin Advisors are the result of years of experience and application of the feedback received from the ongoing operations.

Bedeschi and Logmarin's team-working has led to innovative projects: Logmarin carries out feasibility studies (market analysis, simulation models), project implementation (design and engineering, construction supervision) and operational support (commissioning and performance assessment) complying with the project features/merging its know-how with Bedeschi's experience.

Bedeschi, Logmarin and Liebherr (the world-renowned maritime crane supplier), which are the individual constituents of the consortium Bulk Logistics Landmark (BLL), firmly believe that only state-of-the-art, integrated solutions are successful on a long term period. Properly planning the whole project means improving operating efficiency, productivity and cutting future maintenance time and costs: high-level engineering leads to profitability maximization.

Since each project has its own features, BLL works together with the client in order to provide cost-effective and reliable cargo handling solutions: by merging skills and expertise with its partners, Liebherr and Logmarin, Bedeschi provides dependable and complete projects to convey the dry bulk commodity to industry smoothly and efficiently.

BLL provides the widest range of high-technical solutions: from a single product up to turn-key projects (including commissioning, crew training, after-sale support, etc…).

Bedeschi, Logmarin and Liebherr are committed to provide innovative solutions in order to bridge the infrastructural gaps from mine to clients.

Willingness to keep customer's requirements and feedback as paramount considerations and to develop a solution to suit those requirements, rather than pushing a standard product and compromising the customer's needs, is BLL's distinctive strategy. BLL repeat orders from satisfied clients demonstrate efficiency and effectiveness of the projects carried out.

Shiploader Titan *at Athens harbour handling cement and clinker at 800tph, in an environmentally friendly operation.*

Stay on the right course: efficient use of waterways with SMB shiploaders

Using waterways is a cost-efficient transport alternative, particularly in countries with poor infrastructure. In order to reach remote inland harbours without having to reload the freight, smaller ships are loaded from the outset. The prerequisite for this type of cost-effective transport is to load ships quickly and safely and to exploit the entire freight hold available.

SMB International provides an optimum solution particularly for these tasks. In the last 20 years, SMB has provided more than 80 shiploading systems in many countries — the company's international references range from Western Europe and Russia to Latin America and even Southeast Asia. Loading systems for ships from 5,000dwt to 90,000dwt have been developed and built, regardless of whether a stationary loading system is used or whether mobile loading systems travel back and forth on rails along the quay wall. The faster a ship is loaded with fertilizers, rice, corn, slag or cement bags, the shorter the idle periods are, resulting in more cost-effective transport.

Shiploading systems for a variety of applications

For the loading of bulk materials, cascade chutes optimize the flow speed of the material and thus ensure largely intact grain structure of the bulk materials. Moreover, an encapsulated suction system minimizes the emission of dust. The damage risk of sensitive goods is significantly reduced due to the chutes; high insurance and transport costs are avoided

For bag loading, an extension arm combined with a conveyor belt is swivelled above the ship. Through the spiral chute, which is vertically attached to the extension arm, the bags slide into the freight hold. A swivelable rotating table with a telescopic conveyor belt that can be extended up to three times ensures precise bag positioning to the centimetre, even in the most remote corners of the freight hold.

With the combined shiploading system, the spiral chute for bags and cascade chute for bulk materials are both installed at the same extension arm; loading can optionally be performed for bags or bulk goods.

SMB — plant at Quickborn near Hamburg in Germany — enables a large vertical manufacturing range

All mechanical and electrical components and modules are developed and produced by SMB employees at its plant in Quickborn, near Hamburg, Germany. This is a good basis for efficient project implementation and for later on-site assembly. The large vertical range of manufacture ensures reliability with regard to quality and delivery periods. SMB's 3-D animations of construction components are particularly useful. They facilitate common workflows since they provide a better overview for customers during the planning phase.

For modification and capacity increase of existing systems SMB also offers various options. Thus, individual adjustment to existing systems is not only interesting for ship owners.

Complete support

SMB International provides its customers with an all-round carefree package: maintenance agreements including intensive training of staff on site; installation of a digital interface for remote transmission and diagnosis; and even camera surveillance. All options are imaginable and can be realized.

"Our SMB shiploading systems are capable of loading ships to sizes between 5,000dwt and 90,000dwt, to lengths up to 150 metres and widths up to 40 metres. The systems handle up to 2,000 tonnes per hour but significantly higher outputs are feasible," explains Dipl. Ing. Andreas Heckel, CEO of SMB Group.

SMB Group

SMB International and MBA Instruments: two brands — one idea. SMB and MBA have focused their business activities in the area of 'material handling'. Planning, development, manufacturing, global distribution and service of highly complex, automatic loading systems, filling systems, level and conductivity measurement technology, palletizers, conveyor systems, compact high-bay warehouses and ship loaders are part of its product range.

Quite consciously, the SMB Group has opted for a high proportion of in-house production at its plant in Quickborn, near Hamburg. In this way, customer requirements are spontaneously and targeted implemented quickly using a consistently high Mechanical and electrical components are designed and produced in-house, which has led to high production values, and ensures reliability in terms of quality and delivery time. Installation and service teams work on national and international projects. The global sales network ensures quick and targeted information and co-ordination.

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E-Crane offers flexibility and efficiency to shiploading market

While shiploading/offloading systems can be costly and inflexible, E-Crane is just the opposite, providing the solution for loading and offloading bulk materials in seaports and river ports throughout the world.

Mobile harbour equipment

E-Crane offers its customers the choice between several different types of undercarriages which are customized to their needs.

"The E-Crane system has cut our unloading time in half, cut our maintenance time dramatically, simplified operation and reduced our costs."

Mike Barton, Utility Supervisor at PowerSouth Energy Cooperative, Lowman Power Plant

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Along with the fixed pedestal and the free-standing pedestal lowers, E-Cranes can be installed on either low or high gantry portals on rails, or on crawlers. The balanced design also provides great stability, making it the perfect solution for a floating barge mount.

When choosing the type of undercarriage, E-Crane will work closely together with the customer to find the best solution for that customer's operation. All options can be utilized in ports, but mobile options are especially frequently used in shiploading and offloading. Both rail mounted and crawler mounted solutions allow the E-Crane increased flexibility and mobility because the crane can travel alongside the ship in order to optimize the loading operation.

New and repeat customers know why E-Crane is an ideal solution for mobile harbour requirements. E-Crane's fundamental 'Equilibrium' design allows gravity to work for its customers, instead of against them, offering savings on maintenance and power costs. These economic advantages, along with high ship loading and unloading rates, are behind the E-Cranes' high popularity.

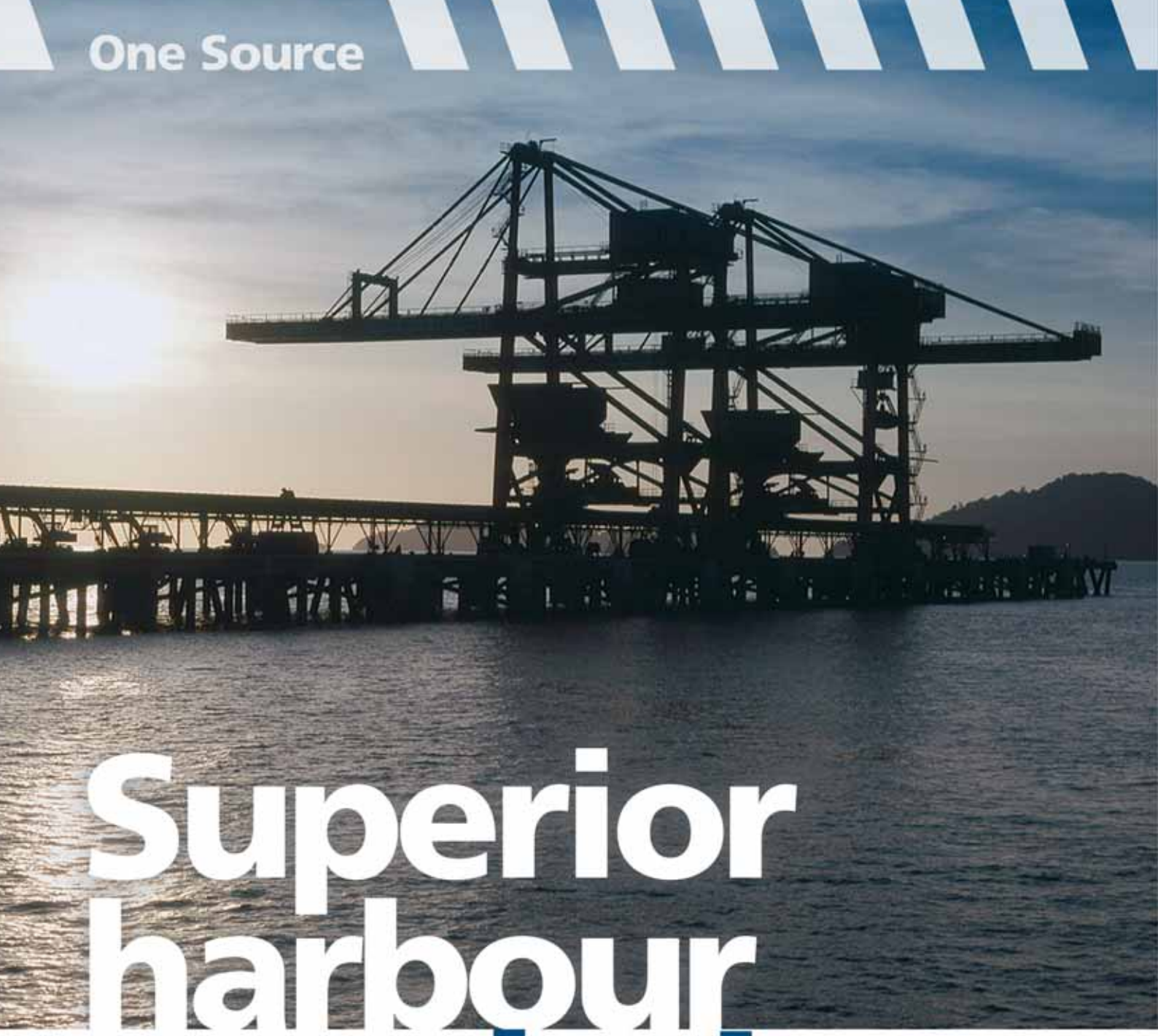
Grab system

E-Crane also designs and supplies two types of custom-engineered attachments and grabs: the hydraulic clamshell grab and the orange peel grab.

Not only are these grabs very competitively priced, with short delivery times and easy shipping, both also have major advantages for shiploading in seaports and river ports.

E-Crane's positive grab control provides operational precision, push-down force and overall productivity with very little clean up

One Source



Superior harbour solutions

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needed. The main advantage of an E-Crane grab is that the grab is hydraulically controlled and not cable suspended. With hydraulic control, the grab can be accurately positioned for material pickup and can provide a push-down force of up to 50% of the lift force in order to break up lumpy, sticky or frozen material. Additionally, hydraulic control over all machine movements promotes short duty cycle times and increased production.

Quick change

If a company needs to use multiple attachments (sometimes necessary depending on the company's operation), E-Crane has a quick change solution which allows the client to switch attachments in a matter of minutes. E-Crane can easily modify existing grabs to fit the quick-change twist-lock pattern. This mechanical coupler is a more efficient and safer way to switch between attachments, and saves clients time and money due to downtime while changing attachments.

EMM

E-Cranes also come with a new, reliable and user-friendly control system called the EMM, or Electronic Machine Manager. This built-in system 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.

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. E-Crane's can also be remotely diagnosed by E-Crane service technicians anywhere in the world through the EMM system.

Unique design

E-Cranes are broken down into five different machine series based on capacity requirements; the 700, 1000, 1500, 2000 and 3000 series, E-Crane features a unique design with a moveable counterweight and a parallelogram-style linkage than can provide up to 150ft/50m reach and up to 49 tonnes duty cycle capacity. It provides a fast, easy, low-cost-per-tonne method of unloading bulk materials from barges and ships up to and including Panamax vessels. Further, with the E-Crane's® modular design, each E-Crane® is tailored to meet the customer's specific needs and preferences.

NEUERO Industrietechnik: dust-controlled shiploading solutions

It was not possible to assemble the shiploader for Poland on site, so the machine was shipped pre-assembled using a floating crane.

In recent years, NEUERO Industrietechnik has developed shiploading solutions that take into account today's ever more stringent dust control regulations.

The company's main export markets are to countries such as Russia, the Ukraine and Brazil. However, recently NEUERO has supplied equipment to Poland, and also within Germany.

Because of a lack of access at the site, it was necessary for NEUERO to assemble the equipment outside and to ship it to the site in Poland using a floating crane.

Because NEUERO manufactures its own components, it can

NEUERO custom-engineered a solution for Russia's Taman Grain Terminal, whereby it is possible to load both sides of a vessel simultaneously, saving precious time.

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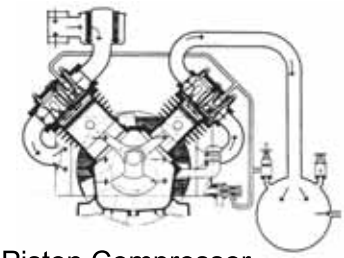


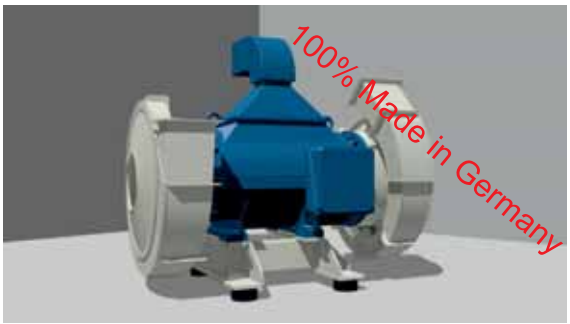
Piston Compressor (<1800)

Roots Blower (1900)

Fan with Air Flow Regulator (1960)

Fan with frequency inverter and automatic belt tension (2000)

TURBO POWER single stage (2009)



TURBO POWER double stage (2011)

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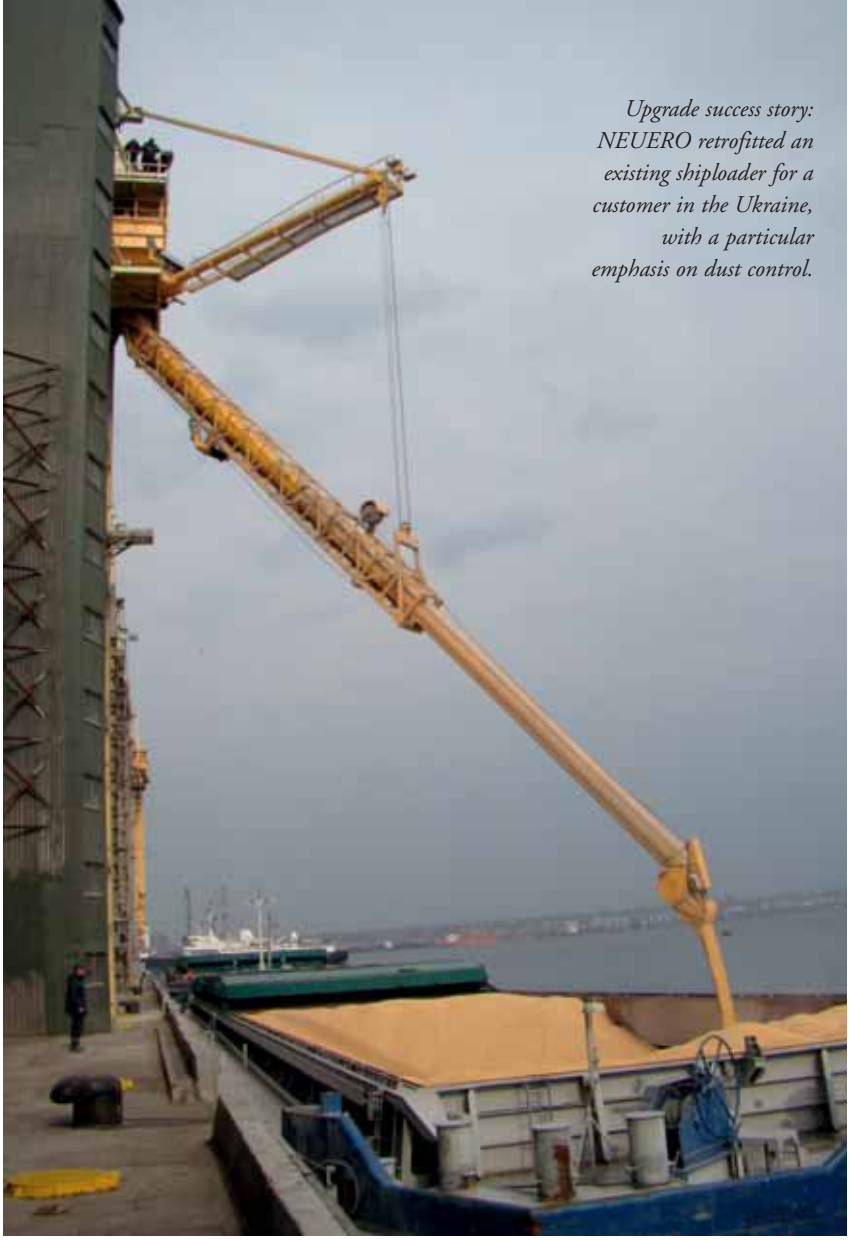
supply equipment of the highest quality. One example was the retrofitting of the tower of an existing shiploader in Nikolaev in the Ukraine. The customer had experienced problems related to high wear and, particularly, dust pollution. NEUERO supplied new loading systems with integrated dust suppression, and the pipes were made of Hardox. The winches are also designed and manufactured by NEUERO.

Another example of the company's custom design is its work at Russia's Taman Grain Terminal. The task was to make it possible to load a vessel from both sides, or one side. The idea was to save precious time. Loading from both sides increases risk, especially if equipment does not follow the strict geometry of quay edge and ship inclination angle. Please see the photo at the bottom of p90).

In Germany, NEUERO supplied a loading system for fertilizer made completely of stainless steel. This is especially difficult because not all steel shapes and parts are easily available in the market. However, this type of product is essential to ensure a long life.

Also in Russia, NEUERO has just commissioned two 600tph shiploaders, both in Kaliningrad. These shiploaders form part of the Sodrugestvo expansion project, where NEUERO has also supplied two ship-unloaders, which are set to be commissioned this year.



Upgrade success story: NEUERO retrofitted an existing shiploader for a customer in the Ukraine, with a particular emphasis on dust control.

NEUERO supplied a loading system for fertilizer, made completely of stainless steel.

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Successful shiploading with VIGAN

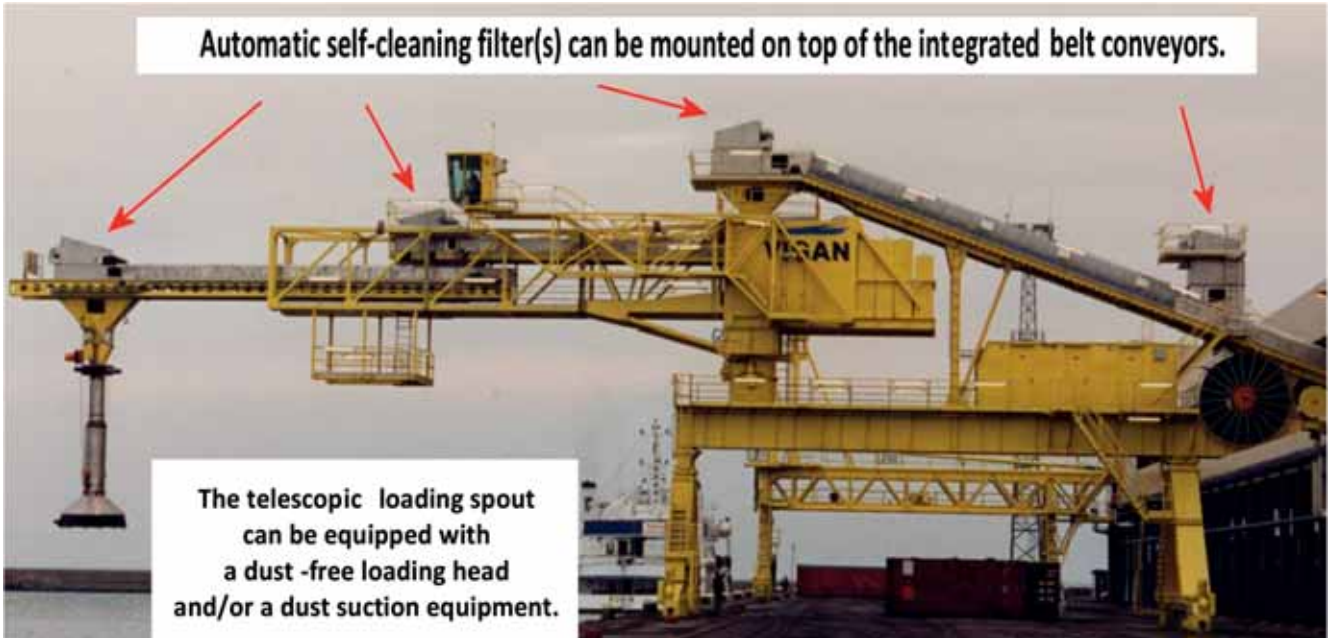
An 800tph VIGAN mechanical shiploader at the Port of Sète in France.

Well recognized for the supply of ship unloading equipment worldwide, VIGAN Engineering S.A. is also a provider of flexible and customized loading solutions.

VIGAN loaders are designed for almost any kind of products in bulk (with density from 0.2 to 1.8), and are suitable for all size of barges or vessels. Whether fixed, tractable or mounted on a self-propelled gantry (on rails or on rubber wheels), VIGAN loading machines guarantee a capacity of up to 1,200tph (metric tonnes per hour), and work with an electrically driven motor or with a diesel power unit.

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

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



mounted on a slewing ring and can reach up to 25 metres. The combination of telescopic and rotating movements allows continuous and uniform loading operations of the ship holds.

A newcomer in VIGAN's history: the Port of Liepaja

In 2012, VIGAN supplied an electric shiploader to Danstore, part of Copenhagen Merchants. This unit can be used on vessels up to 60,000dwt, and has a capacity of 1,000tph when handling grain with a bulk density of 0.75.

Installed in the Port of Liepaja in Latvia, the new machine is gantry-mounted on self-propelled rails. The transfer of grain from the tripper conveyor to the foot of the bucket elevator is operated by an inclined chain conveyor. This chain conveyor is mounted on a slewing ring run by an electrical motoreducer.

A 24m bucket elevator on the gantry transfers the cargo to the upper transfer chain conveyor. A 9m chain conveyor transfers the grain from the bucket elevator up to the shiploading system.

The loading boom has an integrated 25m chain conveyor. The end of the loading boom is equipped with a telescopic loading spout, whose bottom is equipped with a large dust skirt at outlet. A level sensor controls the automatic luffing of the skirt at the bottom of the loading pipe during the loading process in order to control the dust emanation.

Dust control is today a major concern in ports. VIGAN shiploaders are equipped with state-of-the-art dust reduction devices, such as air suction pipes nearby most critical parts of the equipment.

One or several filters ensure the cleaning of this air before its flowing out to the environment.

Customized solutions

VIGAN innovates with permanent technical developments. Thanks to a team of talented engineering experts and the transmission of expertise, VIGAN delivers qualitative equipment recognized and appreciated worldwide for its long-term reliability.

During the last five years, VIGAN has sold shiploaders in Kazakhstan, Poland, France and Latvia with capacities varying from 350tph to 1,000tph.

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

VIGAN shiploaders are fully customized and specially manufactured.

VIGAN jet slinger, which enables even distribution of product while loading.

TMSA, the shiploader specialist in South America

Four 1,500tph shiploaders at the TGG -Terminal Graneis Guarujá /SP (TMSA Brazil).

TMSA Tecnologia em Movimentação S/A, is one of the major suppliers in the South American market for bulk solids material handling, especially in port terminals. TMSA specializes in heavy duty and long distance conveyors.

It is estimated that about one third of Brazil's exports of grain/meals/sugar are handled by TMSA equipment. The company's main activity is to design and manufacture shiploaders and belt conveyors, with their associated dust control systems. TMSA is able to fulfil Engineering, Procurement & Construction (EPC) contracts.

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

Based in Brazil, the head office is located in Porto Alegre, Rio Grande do Sul State, where TMSA has a large 32,000m^2 manufacturing facility.

This facility is equipped with highly integrated engineering capabilities, with in house mechanical, civil, structural, electrical, automation and de-dusting specialists; all under ISO 9001:2000 certification.

The working team comprises approximately 500 employees, including the branch offices in Belo Horizonte at TMSA Minas and in Buenos Aires, at Bulktech Argentina S/A. TMSA's large team of over 50 engineers and designers — of all ages — guarantee 'state-of-the-art' solutions, with long-term support from the company's in-house mechanical, structural, finite element analysis, electrical, automation and dust control specialists.

Prominent in the Mercosur market for bulk loading port terminals, TMSA has a large portfolio of different shiploader designs. One of the company's notable contracts is the turnkey supply of port terminal equipment to AGP in the Port of Grays Harbor in WA, USA. This project gave TMSA considerable experience with all types of American Standards and seismic zones.

TMSA SHIPLOADER PRODUCT LINE

This includes more than 70 references, including some retrofits, of six different types of ship and barge loaders supplied, as follows:

1. **Fixed tower; luffing and slewing boom without counterweight; basculating or fixed telescopic spout.**

Loading port terminals with piers are typically equipped with mobile shiploaders. Terminals without piers are usually equipped with stationary fixed loading towers with booms, which can be slewed, lifted and lowered. Towers can be built in steel or concrete.

Fixed tower shiploaders are an efficient and cost-effective solution. Ship hatches can be loaded individually or simultaneously by several loading lines. Their loading boom movements (lifting, lowering, and slewing) eliminate the need for time-consuming shifting of ships. The loading booms can be equipped with a kick or trimmer system to optimize loading, consisting of deflection shovels attached to the end of the loading spouts, increasing the loading area. Dust control loading systems are usually installed to satisfy operational and environmental requirements.

BUNGE — Rio Grande/RS: 3 × 2,500tph shiploaders (TMSA Brazil).

L.Dreyfus — Rosario/Argentina: 3 × 2,000tph each (TMSA).

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AGP — Aberdeen/WA/USA:1,500tph grains, with a shuttle conveyor along the berth, feeding the loader and gaining important extra useful length of the pier (TMSA Brazil).

2. Fixed pedestal; luffing and slewing boom with counterweight; basculating telescopic spout.

This is a suspended, revolving type with a shrinkable tilting telescopic tube with swivelling revolving chute.

3. Travelling gantry; luffing boom; travelling telescopic spout (see pictures above).

Travelling shiploaders are composed of the main portal frame, an articulated boom with a moveable head conveyor, travelling bogies, telescopic loading spout and the required dust suppression system within all the mechanical, structural and electrical components.

Travelling systems normally travel at 20m/min with 32 wheels driven by motor reducer units with electromagnetic brakes and speed control by frequency inverter.

The boom hoisting system has a lifting angle from 0° to 60° with a hoisting drive with steel cable winch.

4. Travelling gantry; luffing and slewing boom; fixed telescopic spout.

The RUMO Logistica shiploader in Santos, Brazil, has a loading capacity of 3,000tph when handling bulk sugar, through a 60"-wide belt conveyor, equipped with a dedusting system for environmental control.

Blocking sensors stop the loader in case of proximity to other loader or obstacle. A set of electrical drives with PLC and exclusive supervisory system, provided with safety devices for product conveying, loading cells for overloads control of steel cables, sensors, emergency brakes and other standard devices.

The combination of movements makes it possible to reach all points of the vessel's hatches.

The equipment has a boom rotating angle from 0° to 180°. The telescoping spout course is 20m. Maximum reach of the boom is 30.80m. Total installed power is 538 HP and the approximate total weight is 400 metric tonnes.

A similar machine is currently being installed for Copersucar terminal in Santos, Brazil.

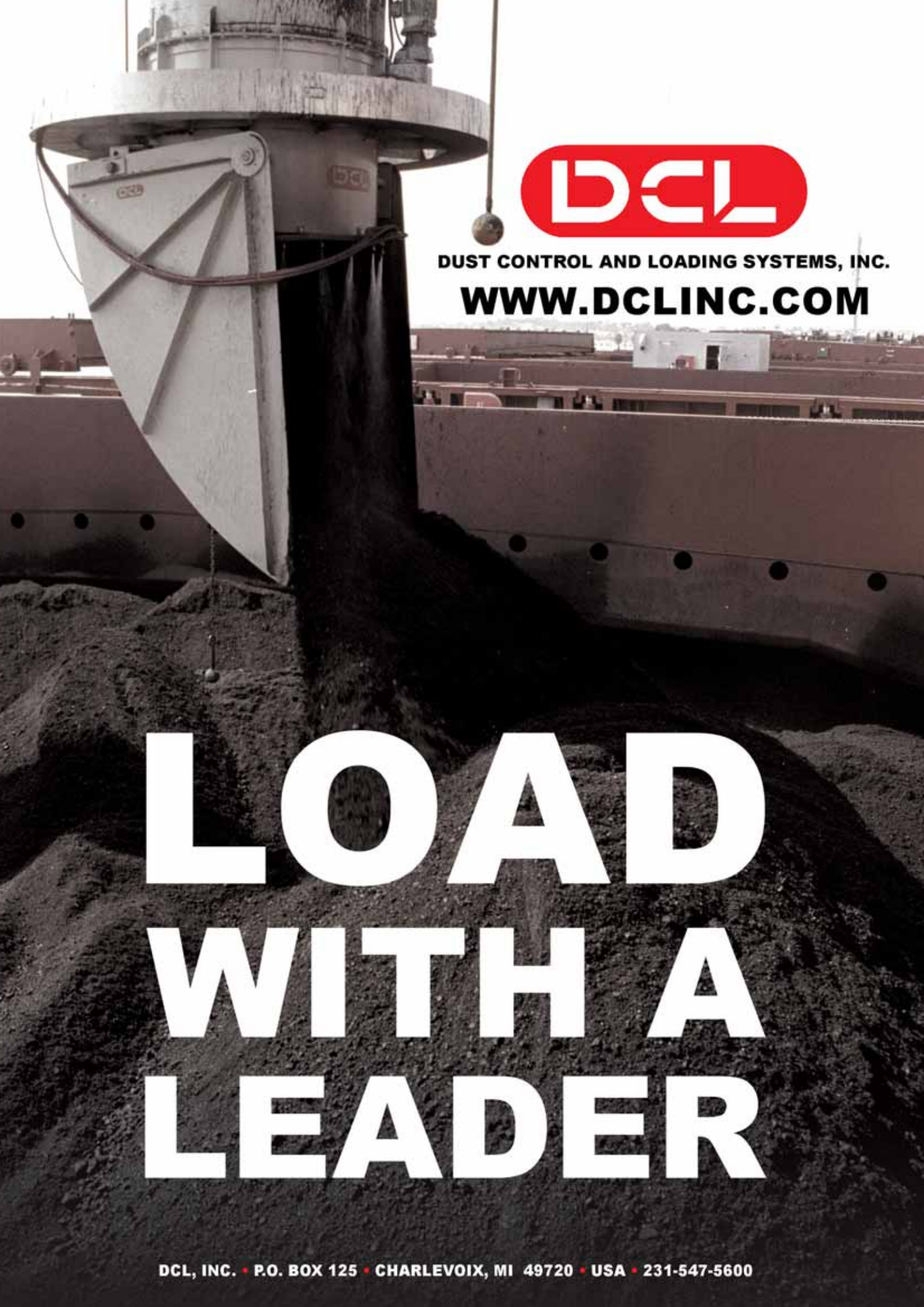
5. Longitudinal travelling; luffing boom.

In the selection of the type of shiploaders, besides location and type of material supply, loading capacities and ship sizes, some parameters as water levels of rivers or sea tides are crucial.

This is a special loader for 4,000tph iron ore, for a river ship and barge terminal where the tides had a difference of 5m and needed an innovative solution: the loader is supported on a floating pontoon, having a special design to allow loading ships or barges.

Please see photograph on p101.

RUMO Logistica — Santos/SP , 3000tph sugar (TMSA Brazil).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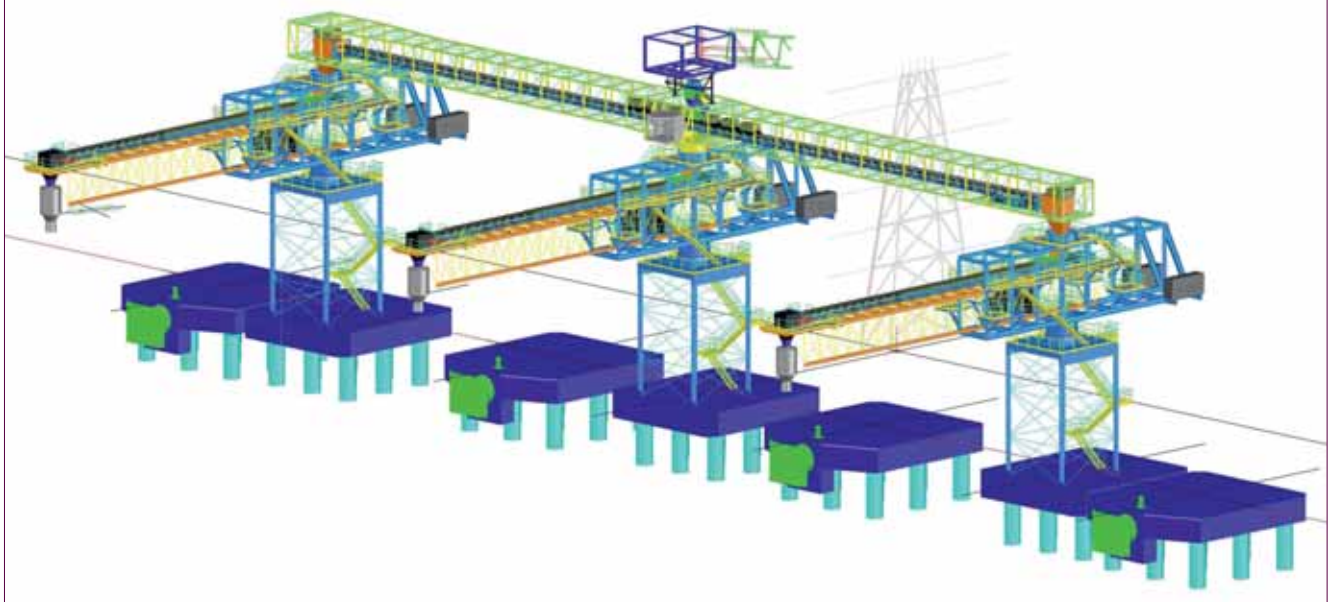
Anglo American/MMX — Santana/AP. 4,000tph iron ore on a river terminal supported on a floating pontoon (TMSA Brazil).

6. Tower shiploader, slewing type with shuttle boom and telescopic loading spout.

Slewing angle of 180°, minimum of ±90° turns in both directions, in order to cover as much as possible the area of the vessel hatch. The boom is structurally fixed to support-out-of-service winds and has a storm anchorage system.

The shuttle conveyor is supported on rollers and shuttles both sides to reach any loading point. Its total extension is 45 to 50 metres to make it possible to reach all the hatches of a 40,000dwt vessels as well as a 140,000dwt Capesize vessel. The

VALE PRC Potasio Rio Colorado-Bahia Blanca/Argentina: 3 × 1,500tph potash (TMSA Brazil).



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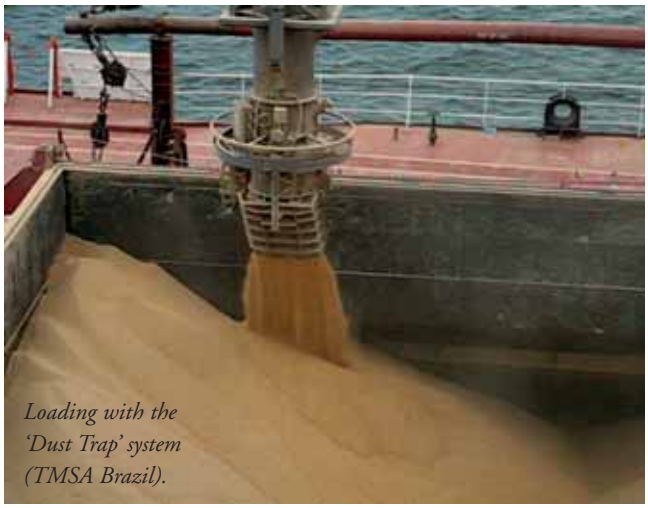

Loading with the 'Dust Trap' system (TMSA Brazil).

telescoping loading spout can achieve an extended length of 20 metres and vertical travel of approximately 13 metres, allowing the spout to go until the mean water line. The chute is completely closed and sealed with a rotary trimming spoon that improves the efficiency of the loader and a better weight distribution on the ship.

TMSA SUPPLIES DUST CONTROL SYSTEMS FOR THEIR OWN OR EXISTING SHIP LOADERS

TMSA supplies conventional designs, such as telescopic loading chutes, as well as its own innovative designs such the Dust Trap system or the new DSH – Dust Suppression Hopper from New Zealand.

ACCESSORY MOBILE EQUIPMENT FOR THE PORT TERMINALS

For port terminals, TMSA offers a truck unloading unit. This consists of a superficial hopper with a low-profile feeder and a Manutube conveyor. This is a totally dustless technology, designed by Absam Engineering, France. The Manutube is an enclosed belt conveyor with a belt sliding inside a plastic tube with no idlers, fully enclosed. For high capacity, over 1,000tph, and heavy duty applications, TMSA offers the Low Profile Feeder from Transmin, Australia".

To complete the range of equipment for ship and barge loading and unloading, TMSA represents in the Mercosur countries: VIGAN from Belgium, for ship-unloading; Telestack from Ireland, for mobile telescopic shiploaders; and Absam from France, for enclosed dustless mobile shiploaders.

TMSA, as a strong specialist in bulk material handling, offers different solutions for the conveying of the bulk material from ship-unloaders to the silos or from the silos to the shiploaders. Its wide technological portfolio offers belt conveyors that can be open, covered or enclosed, such as the RopeCon system, pipe-conveyors, overland conveyors or conventional trough conveyor belts with high capacities. TMSA has the knowledge and experience for the proper selection of a shiploader and conveying system which will better fit the needs and budget of each project.

Dustless double truck surface unloading hopper for coal at Pecem Port in Brazil, with flat feeder and Manutube conveyor (TMSA, Brazil).

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Unloader that handles coal AND biomass

Siwertell's flexible unloaders make good commercial sense

As the new breed of power generation and industrial plants turn to a combination of coal and biomass, Siwertell screw-type unloaders provide the flexibility and efficiency necessary to safely handle the mix of fuels.

Biomass, generally used in some form of combination with coal, is moving out of small scale processes into major power generation and industrial applications, says Lars-Eric Lundgren, Siwertell regional sales manager. "Biomass comes in a wide range of shapes sizes with varying properties. If you are faced with the need to deliver a mix of fuels it makes good commercial sense to install an unloader that can handle all types of biomass, as well as coal, economically and efficiently, without the need to make any adjustments for the various types and grades of material to be handled.

"Siwertell's multi-purpose unloaders can handle almost any type of bulk material; this makes them ideal for the coal and biomass intakes at the new generation of plants employing this combination of fuels to reduce the environmental impact of their operations," he notes. "In the longer term, the use of biomass as fuel should be a significant factor in delivering a more sustainable, carbon-neutral industrial environment. Alongside the increase in large-scale plants burning biomass, small-scale biomass operations still have their place. Siwertell road-mobile unloaders are ideal in these circumstances, especially where barges are used with lower capacity requirements."

Although biomass has excellent environmental credentials, handling it in bulk presents some serious issues, in particular the possibility of heating, fire and dust explosions.

Lundgren says that a number of features of Siwertell unloaders, along with the brand's lengthy experience of handling hazardous cargoes, especially sulphur, minimizes or even eliminate the risks associated with the bulk handling of biomass.

"For sulphur handling we have developed our 4S system, which incorporates a number of features to detect, contain and extinguish any fire in the unloader's conveyors. In fact, Siwertell unloaders are the only mechanical, continuous unloaders used for the large-scale handling of hazardous cargoes such as sulphur. The safety elements include fire sensors and an extinguishing system. In the event of a fire the unloader automatically stops the conveyors; this ensures that no burning material is transferred into the bulk storage facility ashore. Dust collectors minimize the risk of dust explosions; however the enclosed system is designed to be strong enough to withstand an explosion and is fitted devices that will release the pressure resulting from an explosion within the system.

"We have adapted the elements of the 4S system and incorporated them, as appropriate, in projects involving other hazardous materials such as wood dust and wood pellets.

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Furthermore, our screw technology is very kind to the materials it handles; that is to say there is little cargo degradation and therefore very little dust creation. Dust creation is also minimized at the point of cargo take up. The inlet feed is below the material's surface and cargo is removed in layers, so there is little likelihood of cargo avalanches. Both of these dust-reducing factors are important in reducing the explosion risk," says Lundgren.

"You can see that when it comes to large scale projects, for power generation or for industrial processes including steel and cement production, Siwertell's high-capacity screw type unloaders have all the right characteristics for safe and efficient multi-fuel handling."

This view is supported by an important contract from Denmark's leading power company, Dong Energy, one of Northern Europe's largest energy groups. In 2012 it ordered a Siwertell type ST 790-M ship unloader from Cargotec to be used for unloading wood pellets and coal for the company's combined heat and power station at Avedøre, discharging ships of up to 12,000dwt at a rated capacity of 800tph (tonnes per hour).

Dong Energy, which is majority owned by the Danish Government, says that the Avedøre multi-fuel power station, situated just south of Copenhagen, is one of the most efficient of its kind in the world, achieving fuel efficiencies of up to 94%.

Lundgren says the Siwertell unloader, which will be delivered in June this year, will be a vital part of this high-efficiency operation. "It was chosen, amongst other considerations, for its environmental credentials, which include totally-enclosed bulk transfer, resulting in a clean, dust-free environment. Our long experience with bulk handling systems was also an important factor in winning this contract," he adds.

Siwertell has already accumulated considerable experience of handling all kinds of biomass, and has market leading knowledge of handling all types of coal. Siwertell's totally enclosed, continuous conveyor system extends from the cargo pick up in the ship's hold all the way to the receiving facility ashore. Cargo pick up is optimized by virtue of the high degree of manoeuvrability enjoyed by the vertical arm system. Cargo is picked up, layer-by-layer, right out to the corners of the hold as well as underneath the hatch coamings. This provides not only the most efficient but also the best environmental unloading solution available, says Lundgren.

"We can discharge the most common varieties of wood pellets at between 800 to 2,000tph, depending on the density. Coal is denser than biomass, so any specific Siwertell machine will achieve a higher discharge rate for coal."

Naturally there are major economic benefits associated with handling coal and biomass with the same unloader. Jetty occupancy is minimized, while the annual intake over the jetty is optimized. The capital investment required is considerably reduced when one unloader can handle all the materials delivered to the jetty; this is also true of the associated shore -based conveying system.

"Our customers operate in all dry bulk trades and we have extensive references from those who appreciate the reliability, efficiency, safety and economic advantages that come as standard with our products. In addition, our totally enclosed systems have unrivalled environmental credentials and this is very important in a world where providing clean operations is rapidly becoming much less a matter of choice.

"At Siwertell we offer the best solutions for handling almost all dry bulk commodities with our range of fully multi-purpose machines, tailor made to meet your exact requirements."

Coal handling and storage systems

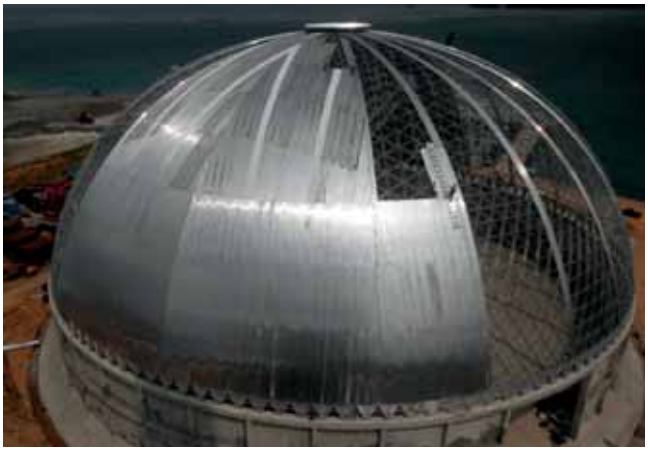
Louise Dodds-Ely

Shiny dome, clean coal – thanks to Geometrica

This article describes the collaboration that produced a circular coal-storage dome for Indonesia's largest fertilizer producer, PT Pupuk Kalimantan Timur (Pupuk-Kaltim), *write Francisco Castaño of Geometrica, Inc. and Ahmad Mardiani of PT Pupuk Kalimantan Timur*. Pupuk-Kaltim has won numerous awards for its green practices and outstanding engineering. Pupuk-Kaltim selected Geometrica, Inc. based on its ability to meet some very specific logistical and environmental needs.

Indonesian fertilizer producer combines coal with environmental responsibility

After carefully considering the fluctuations of the natural-gas



Ensuring coal quality with SGS's sampling services

SGS is a world-renowned inspection, verification, testing and certification company. SGS is recognized as a global benchmark for quality and integrity. With more than 75,000 employees, SGS operates a network of over 1,500 offices and laboratories around the world. SGS offers a full range of coal testing services including exploration, laboratory and production services as well as inspection and sampling. With core services and industrial expertise to help its clients improve their operational efficiencies, SGS's global technical leadership helps minimize operational and financial risk.

Clients

SGS clientele includes major, intermediate and junior coal companies active around the world.

Technology and expertise

SGS offers a full range of mechanical sampling systems (MSS) services that are designed to meet the unique requirements of its customers' sites. SGS has the capability to design sampling systems based on the variability of the material being sampled in order to meet the required level of precision as defined by ISO standards. From these layout designs, an accurate cost proposal for an installed system can also be developed by SGS. SGS has standard MSS equipment designs for:

- falling stream samplers;
- cross-belt samplers;

- feeders;
- crushers;
- sample collection units; and
- auger samplers.

Turnkey MSS installation services and systems operations include:

- monitoring and monthly reports that demonstrate the MSS system is operating correctly;
- inspection services to validate the MSS is properly designed and operating in compliance with the relevant standards so it meets the requirements for probability sampling (note these inspections should be done prior to any bias test);
- bias testing of the customer's MSS;
- SGS guarantees that the MSS built will test bias free;
- precision testing of the customer's MSS; and
- laboratory services for analysis of MSS samples.

SGS is experienced in the inclusion of on-line analysers in mechanical sampling systems to control coal quality with sorting or blending facilities. On-line analyser systems can be used to control coal quality through blending which can be used to improve operating efficiency in power plants. SGS designs on-line analyser systems to improve operational profitability through the use of real time coal quality data, not for the replacement of sampling systems that are required to monitor and calibrate on-line analyser instruments.

SGS has a coordinated global mechanical sampling capability with centres of MSS excellence in Australia (covering Australia, Southern Africa, and Asia), Italy (covering Greater Europe, Russia and Northern Africa), India, China and USA (covering Canada, the USA, Mexico and South America). These centres of MSS excellence are all ready and able to meet the local needs of our customers who require mechanical sampling systems for any bulk material. The systems are designed and supplied at mine, port, or delivery sites as required.

SGS coordinates this MSS capability from the SGS Australia office.

market in recent years, Pupuk-Kaltim launched a project to diversify its fuel in its Bontang, East Kalimantan facility with a new coal boiler. In addition to adhering to government policies that encourage the use of coal as a substitute for natural gas, Pupuk-Kaltim noted substantial economic benefits.

One possible problem, of course, could be environmental impact. Addressing that, Pupuk-Kaltim chose to use only clean-coal technologies, including a circulating fluidized-bed boiler, a Geometrica coal-storage dome and a continuous barge unloader. These technologies had earned recognition for their successful use at the JEA Northside power plant in Jacksonville, Florida, and help keep the environment around the facility pristine.

Specifications via the internet

After initial research on dome storage for coal, Mr. Supriono, a mechanical engineer with Pupuk-Kaltim, made the initial contact with Geometrica in 2009. The dome was to be supported by a 10-metre-high, reinforced-concrete, perimeter-ring wall and would cover 40,000 tonnes of coal, plus a coal stacker and a portal reclaimer. Within a few days, Cecilio Zalba, Geometrica's sales manager, emailed Supriono a proposal with preliminary drawings and a guide specification for an 80m-diameter, circular, galvanized-steel dome with aluminium cladding.

With that, plus input from possible alternate suppliers, Pupuk-Kaltim wrote a functional specification for the dome. The specification allowed the consideration of different dome-construction technologies, including concrete, aluminium and steel. The dome not only had to resist the specified environmental loads, withstand corrosive attack from the humid Kalimantan environment and help control explosion hazards, but also use technology that permitted fast construction by local crews and without special equipment.

Supplier selection

After carefully evaluating the various technologies and bids, the project builder, PT Inti Karya Persada Technics (IKPT), selected

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Geometrica as the dome supplier. "The contractor also received bids from manufacturers of concrete domes and aluminium domes," said Zalba. "But the Geometrica solution offered more than 25% savings." IKPT and Pupuk-Kaltim chose Geometrica, which set to work on construction drawings.

"This project was very similar to domed bulk-storage facilities we have built worldwide," said Jorge Parada, Geometrica's site consultant. "Our galvanized-steel dome technology has proved itself in many environments and applications. This one, along the coast of Indonesia in a tropical rainforest, is another great example."

The galvanized-steel dome structure is clad with aluminium sheeting, combining the strength of steel with the corrosion resistance of aluminium. It also meets National Fire Protection Association guidelines for control of confined dust.

Construction in just four months

By early 2011, the design had been approved in Indonesia, and Geometrica had manufactured the components for the dome at its plant in Monterrey, Mexico. Geometrica labelled, pre-sorted, and packaged the components in the order required for assembly. Crates of these materials were then loaded into containers for shipment to the Port of Jakarta, Indonesia. From there, IKPT transported the containers to the job site in Tanjung Harapan.

Construction of the dome and stacker/reclaimer began simultaneously in June 2011. Assembly began at the top of the concrete wall and progressed toward the apex. The assembly, by 20 workers, assisted by two Geometrica consultants, took two months. The aluminium cladding was complete after another two months.

A satisfied new customer and a 'green' success

Geometrica met all of the expectations for this project, and Pupuk-Kaltim is pleased with the operation of the storage facility. The first coal drop into the new storage facility was on 21 May 2012. The dome is protecting the coal from rain and protects the environment from coal dust.

Today, Pupuk-Kaltim's coal-boiler project is humming along, producing the steam required to help the company deliver its annual 3mt (million tonnes) of urea to its customers in Indonesia and beyond. And the shiny new Geometrica dome at Bontang keeps the coal, and the company's track record, spotless.

About Geometrica

Geometrica is an international firm based in Houston, Texas, USA that specializes in domes and space frames for architectural, industrial, and bulk storage uses. Geometrica provides the most striking and cost effective solutions for sports facilities, exhibition centers, passenger terminals, malls, assembly areas, production facilities, and many other buildings that require distinctive structures to cover great spans with no intermediate supports.

Kinder Morgan expands to increase coal handling capabilities

Pier IX has been significantly improved with upgraded conveyors and coal chutes, a new tandem rotary dumper, new railcar thaw shed and new mass flow coal feeders.

The domestic and international demand for US-origin metallurgical and thermal coal has dramatically changed in the last few quarters. The international demand for US export metallurgical and thermal coals has continued to grow in Europe and Asia at record levels, while US demand for domestic coal has fallen. For the past two years, Kinder Morgan has been focused on expanding a few key export terminals to keep up with the increased demand. At Kinder Morgan's terminals, export coal volumes increased by almost 38% for the full year to a record of approximately 20.7mt (million tonnes) versus 2011. The increased volume was shipped primarily through the Pier IX terminal, with the International Marine Terminal (IMT) and the Port of Houston terminals seeing increases in volume during construction improvements which will increase the throughput capacity at the terminals.

Pier IX

At Pier IX, some of Kinder Morgan's improvements over the past few years include a new tandem rotary dumper, upgraded conveyors and coal chutes, a new railcar thaw shed and new mass flow coal feeders. In addition, Kinder Morgan is investing approximately $29 million of additional capital to further expand

Pier IX, which has been significantly upgraded to handle the huge increase in coal export volumes.

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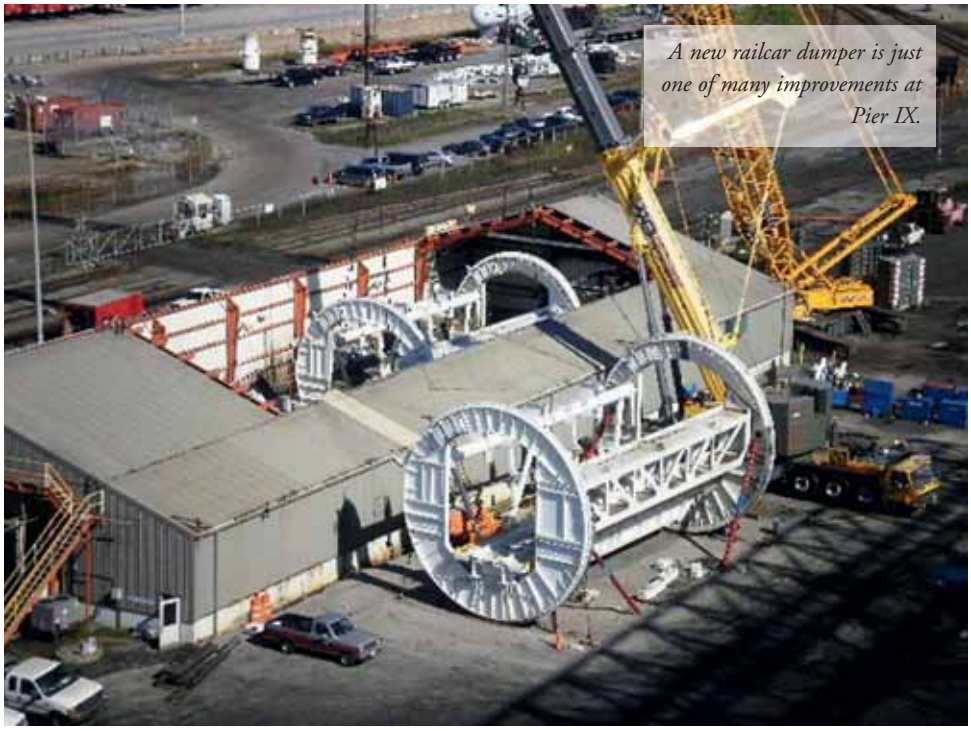
the overall capacity and throughput of the Pier IX terminal. The improvements will include the expansion of the existing storage yards, the replacement of the existing rail indexer, and dredging of the north side of the export berth to accept full Panamax vessels. The additional capacity is fully subscribed and is supported by a new long-term agreement with a major US coal producer. Upon completion of the expansion, the improvement will increase the coal export capacity of the Pier IX terminal by approximately 1.5 million short tons allowing the terminal to handle more than 17 million short tons of coal per year to the export market.



A new railcar dumper is just one of many improvements at Pier IX.

IMT

Kinder Morgan is also investing approximately $400 million to expand its Gulf Coast terminal network. Kinder Morgan's Gulf Coast terminal network is comprised of its partnership interest in the International Marine Terminal, which is located in Myrtle Grove Louisiana, the Houston Bulk Terminal and the Deepwater Export Terminal, both located in Houston, Texas. After completion of all of the export expansion projects, Kinder Morgan's Gulf Coast terminal network will have a coal export nameplate capacity of

Kinder Morgan handling coal at IMT.

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approximately 27 million short tons per year. At IMT, Kinder Morgan and its partner, AEP River Operations, will invest approximately $170 million to increase IMT's coal export capacity. The IMT terminal improvements include a new ship loader that will be capable of loading Capesize vessels. The improvements will also include a second continuous barge unloader, improved reclaim and distribution systems, and a dedicated barge loader for ocean going Gulf barges. These improvements will eliminate technical bottlenecks that have constrained the terminal's throughput capacity in the past. Upon completion of the improvements, IMT will have an export capacity of 16 million short tons.

HSC

One of the biggest changes on the Gulf Coast is Kinder Morgan's ability to export coal out of the Houston Ship Channel. Kinder Morgan's two Houston terminals, Houston Bulk Terminal and Deepwater Export Terminal, provide western producers with the ability to rail their coal directly to the export terminals as compared to railing material to the river and barging it to the lower Mississippi River.

Back stopped by long-term contracts with Peabody and Arch, Kinder Morgan is constructing improvements at its existing petcoke export terminals which will allow them to efficiently and economically export western coal. The first phase of the Houston Bulk Terminal expansion project and the interim improvements at Deepwater are completed, and both terminals will export coal in 2013. At the Houston Bulk Terminal, Kinder Morgan has constructed a new coal receiving, storage and reclaim system. Kinder Morgan is also upgrading the existing shipping system which will increase the terminal's coal and petcoke export capacity. Upon completion of the improvements, the Houston Bulk Terminal will have the ability to export three million short tons of coal annually. The improvements at the

Deepwater Export Terminal include a new shiploader capable of loading post-Panamax vessels, new loop tracks capable of simultaneously holding three 135-car unit trains, a new rotary dumper, segregated distribution and reclaim systems, and a new shipping system. Following completion of the expansion, the Deepwater Terminal will have an export coal throughput capacity of 10 million short tons of coal per year.

In addition to the East Coast and Gulf expansions, Kinder Morgan continues to investigate and develop addition export terminal capacity in the Pacific Northwest and other markets for US coal producers, traders and foreign utilities.

Safety

All of the capital improvements will be designed and constructed to meet or exceed industry safety and environmental standards for similar facilities. Safety, environmental excellence and compliance, and commitment to our customers continue to be high priorities at Kinder Morgan. In 2012, Kinder Morgan Terminals recorded a Total Recordable Incident Rate (TRIR) of 1.58 which is considerably less than the industry average.

Improvements at the Deepwater Export Terminal include a new shiploader, new loop tracks capable of simultaneously holding three 135-car unit trains, a new rotary dumper, segregated distribution and reclaim systems, and a new shipping system.

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Telestack: alternative methods of coal blending for power plants & stockyards

3D image of TU1015R track-mounted mobile truck unloader feeding reclaim line fed by wheel loaders.

Telestack continues to innovate with regards to providing technical solutions to its clients on material bulk handling issues. One such innovation has recently involved the accurate blending of differing grades/qualities of coal within a power plant in South East Asia. In any given power plant stockyard, there will be various grades and specifications of coal which will have been sourced from various countries in various batch sizes.

Each of these grades will have a differing value of the following main material characteristics:

A. Calorific value
B. Ash content
C. Sulphur content
D. Moisture content

The challenge with any power plant operations team is how to accurately blend the various grades of coal with the above varying material characteristics to ensure that they are sending a consistent blend to the furnace.

Traditionally this blending has been carried out by using two stacker/reclaimers that feed onto a central conveyor which then sends the blended coal mix to the furnace. The main issues with this method of blending is that the blend ratios can vary dramatically and, as such, one of the stacker/reclaimers may be operating at a greatly under utilized rate.

This results in high operating costs per tonne for the process of reclaiming at these lower rates. For example: a power plant may want to blend an Indonesian coal of lower calorific value with that of an Australian coal with a higher calorific value. The total reclaim rate to the furnace is 1,400tph (tonnes per hour). If using a 80% Australian to 20 % Indonesian blend, then the stacker/reclaimer A is operating at 1,120tph while the stacker/reclaimer B is only operating at 280tph. The operating costs per tonne for stacker/reclaimer B as a result are excessive.

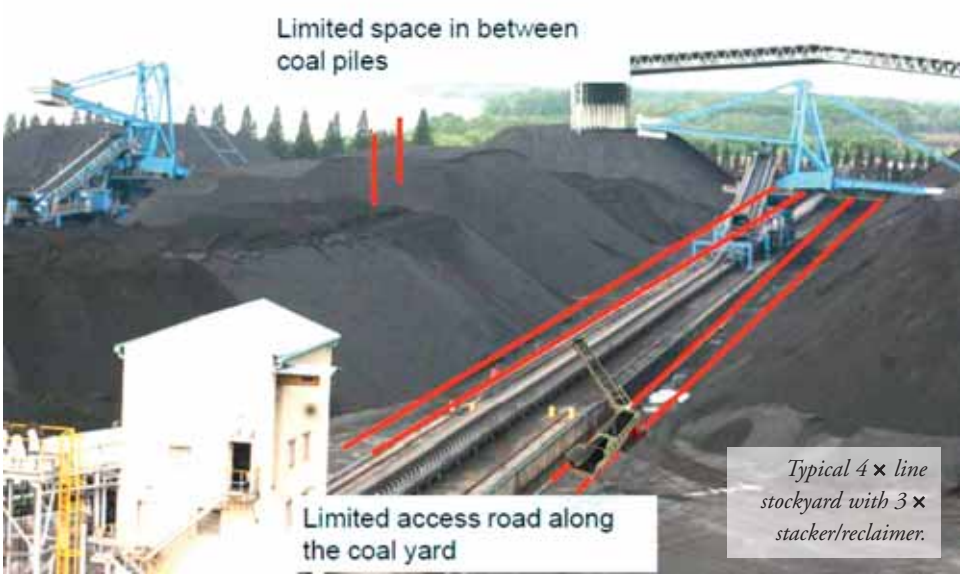
Also, the design of many power plant stockyards allows for both stacking of imported coal whilst unloading vessels and simultaneous reclaiming of coal from the beds to the furnace. However, when unloading vessels and stacking, a typical layout would incorporate two ship unloaders, and these would feed material to two stackers. This normally only leaves one stacker/reclaimer to send material to the furnace and, as such, blending cannot be carried out when unloading vessels. If reclaiming sub-bituminous coal, this can result in the de-rating of power generation.

This can also occur during periods when carrying out repair and maintenance on a stacker/reclaimer when the unit is not in operation. This can put additional pressure on other reclaimers when carrying out normal day to day reclaiming/stacking duties.

Solutions to these issues

Telestack listened to the issues facing the operations team of the power plant and worked in conjunction with them to offer them a unique and innovative technical solution to the above operational issues.

The equipment selected was a Telestack TU1015R mobile

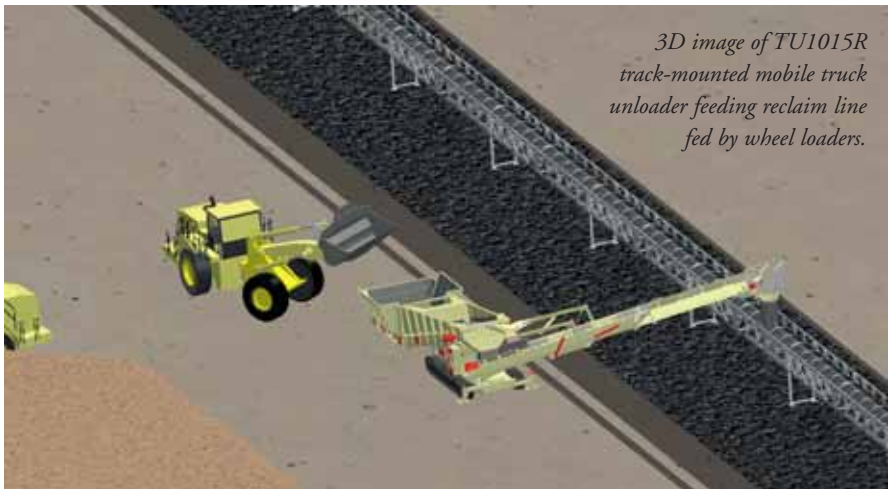


Typical 4 × line stockyard with 3 × stacker/reclaimer.

the cycles times and efficiency as well as allowing better control of the material onto the incline section. The integrated hopper is specially designed using a chain apron belt feeder which combines the strength of an apron feeder along with the sealing quality of a belt feeder.

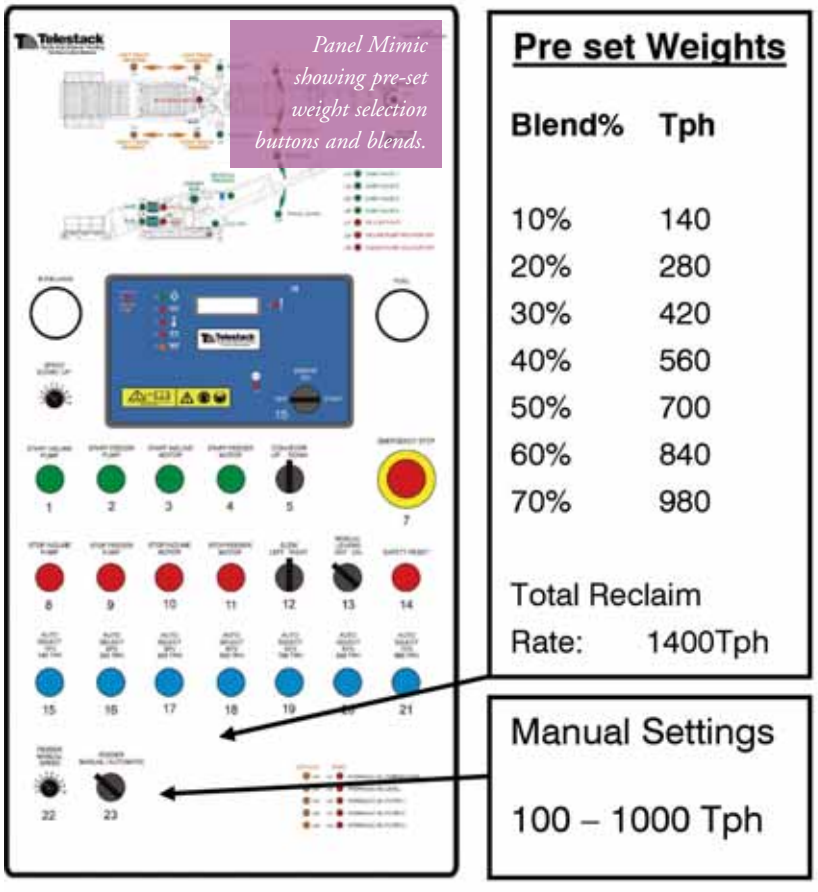
The boom is radialled by a slew gearbox and drive, which turns on an external slew bearing on which the boom is mounted. This gives greater control when positioning the boom over the reclaim line

track-mounted truck unloader with integrated hopper feeder with radial and luffing boom. The machine was selected because of its excellent mobility and manoeuvrability around the narrow areas of the stockyard and narrow access roads between the stockpile and the reclaim line. The radial boom enabled the machine to fit within the five-metre area and reach the reclaim line. The fully self contained machine with CAT 96KW diesel engine and 4.1-metre crawler tracks allows the unit to travel over rough terrain especially in the rainy season when heavy rutting can occur on access roadways.



3D image of TU1015R track-mounted mobile truck unloader feeding reclaim line fed by wheel loaders.

The Telestack TU1015R has a fully integrated feed hopper to allow the trucks/wheel loader to 'dump' and go, thus improving and, combined with the luffing ability from 0–23°, this allows the operator to place the boom precisely.



Panel Mimic showing pre-set weight selection buttons and blends.

The Telestack design ensures versatility in that it can be fed by front end loader/excavator or trucks. When reclaiming the machine is fed by one or a combination of above and can be set at pre set percentage ratios with the touch of a button.

The Telestack TU1015R can work in conjunction with a stacker/reclaimer to send an accurate blend to the furnace. The unit incorporates a dual idler belt weigher which is connected to a PLC on the machine; this PLC controls the feed rate to the reclaim line and can be linked to the central control room via an ethernet connection or a Wi-Fi communication system.

The 1015R can also be utilized for following duties within the stockyard:

1. stacking in passive areas — where the stacker/reclaimer cannot reach;
2. interyard transfer of coal from one heap to another via stacker/reclaimer; and
3. emergency reclaiming in event of breakdown/ or planned maintenance of stacker/reclaimer.

In summary, the machine can be used to compliment existing fixed stockyard infrastructure and can give the operations team additional capacity for reclaiming and flexibility with regards to stockyard management.

Liebherr presents its maritime crane simulators

Liebherr has launched its range of maritime crane simulators. Based on original software and hardware, the Liebherr simulators increase safety and productivity by providing a cost-effective and highly efficient crane operator training solution. These simulators are suitable for training operators handling a wide variety of commodities, including coal.

The development of this advanced training tool is driven by Liebherr's extensive experience in highly immersive crane driver training. Approved by training experts, the range of simulated cranes includes ship to shore, rubber tyre gantry, mobile harbour and offshore cranes.

Focusing on efficiency, safety and costs

Successful companies are continuously looking for efficient ways of up skilling their employees at the highest safety level while costs including time are kept to a minimum. Liebherr Simulations (LiSIM®) offers sophisticated solutions that tick all the boxes, allowing trainees to significantly improve their skills in a realistic but virtual maritime environment.

Thanks to the virtual environment, damage to maritime equipment and injuries to personnel are eliminated. Because training does not interfere with day to day operations and is relatively inexpensive, trainees can spend extended time in the virtual environment, learning instinctively how to react to unexpected situations. This naturally increases safety in real cargo and container handling.

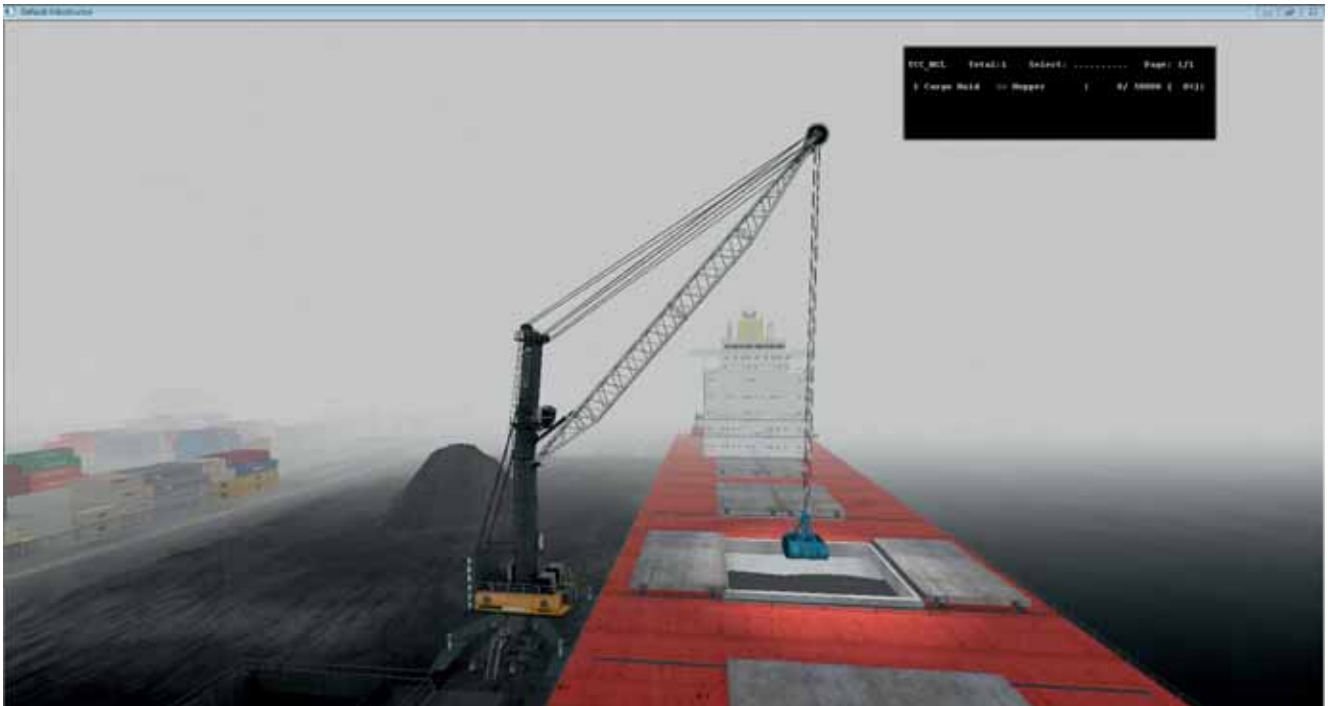
A major benefit of simulator training is the ability to simulate harsh environmental conditions when required. This allows both experienced operators and trainees to gain valuable experience operating under challenging conditions in a safe environment. The resulting increase in operator skills allows for safe and productive crane operation under similar conditions in the real world, boosting productivity. For example, even though it may be a calm and sunny day, the trainee can practise cargo handling in harsh weather conditions such as snowfall, heavy winds, torrential rain and high waves.

The sophisticated LiSIM® environmental and physics engine allows for an unprecedented level of detail and realism. Thanks to this non-destructive virtual environment, the operator has the opportunity to learn the operational boundaries of the crane without any consequences, gaining useful experience for highly efficient crane operation.

Simulator based training avoids costly downtime and reductions in productivity caused by on-crane training. The emission and fuel-free LiSIM® training solution is in line with an eco-friendly maritime operation. Moreover, expensive delays in training caused by poor weather conditions are eliminated. Thanks to well-trained operators, simulators have the potential to significantly reduce accidents. Simulator-based training is recognized as a cost-saving and safety improving measure.

Original software and hardware

The installation of original Liebherr drive systems, software and hardware guarantees a realistic training experience. The drive systems reproduce all crane movements exactly both in space



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and in real-time. LiSIM® is the only realistic virtual solution available in the market for learning the innovative and precise handling of Liebherr's maritime cranes and their innovative features.

Trainees benefit from the ergonomically designed driver's cabin and control panel. The motion platform ensures that the driver in a Liebherr simulator cabin experiences realistic movement which mimics precisely the response and feel of a crane mounted driver's cabin and seat. Full high-definition flat screen monitors and high quality surround sound speakers reproduce the views and sounds typically experienced in the cabin.

Liebherr simulators are available in three configurations. The classroom solution is easily integrated into existing training centres with the display, seat and controls mounted on a base and a sturdy display frame. The space-saving cabin solution ensures that the driver becomes familiar with controlling the crane in a real life environment. The easy-to-transport containerized solution houses the simulator in a 40ft container and features a training room, utility room and cabin simulator. Each of the three models is equipped with multifunctional instructor stations.

Comprehensive functionality

In view of the varied situations which occur during cargo and container handling, comprehensive functionality is indispensable when guaranteeing an authentic simulation. Each realistic LiSIM® scenario is set in a typical maritime environment where numerous parameters can be modified according to training requirements, including day-time or night-time operation, weather conditions, kind of cargo and vessel size. Additional parameters allow for the simulation of virtually any kind of cargo or container handling situation. The implementation of customized maritime environments and layouts is also possible.

The multifunctional instructor station has complete control over the simulation. Thus, the instructor has the possibility to create challenging and unexpected situations for the trainee at any time. This includes heavy wind or lift object faults for example. LiSIM® has database and performance metric functionality so it is possible to track the progress of the students over time.

Successfully pre-tested and now available

Liebherr's training simulator has already proven its capabilities and worth in training centres and at various exhibitions, representing one of the major attractions at the TOC Europe and the Intermodal Sao Paulo. Now this state-of-the-art training solution is available for customers all over the world who want to improve efficiency in container or cargo handling combined with increased safety and reduced costs.

Natural gamma to measure the ash content of coal – 25 years of success

Back in the mid 1980s UK researchers started the development of a fully on-line instrument for measuring the ash content of conveyed coal, *writes Paul Michael Taylor*. This fledgling instrument, using natural gamma technology, was called the Natural Gamma Coal Quality Monitor (NGCQM) (Wykes *et al*, 1989). In 1994 Bretby Gammatech was formed to continue this work. Over the years the NGCQM has been progressively developed and is now known as the Ash Eye (Taylor *et al,* 2013).

In the late 1990s there was a requirement for a hand portable ash monitor. The Ash Probe was developed to meet this need. The development and application of the Ash Probe has been outlined previously (Taylor 2000 & 2010). This stimulated the development of the Lab Ash which is a laboratory instrument providing a quick ash measurement from a ~10kg sample of crushed coal (Taylor 2002). Both these instruments use natural gamma technology (NG).

The single most significant advantage of NG is that it requires no radioactive sources — it relies solely on the natural gamma emissions from the shales and mudstones associated with mined coal being greater than those emissions from the coal itself. For most coals this property holds true, albeit there can be variations from coal source to coal source. This article describes the technical details of the latest NG instruments including the applications and benefits that can be derived from their good use.

Brief description of natural gamma

The natural gamma technique for the measurement of the ash (or non-combustible mineral content) is well documented (Wykes *et al* 1989). In summary, the technique relies on the fact that the ash forming shales and mudstones associated with mined coal contain a higher concentration of naturally occurring radioactive isotopes than the coal itself. The principal contributing isotopes are Potassuim40 and members of the Uranium and Thorium radioactive series. The level of gamma radiation emitted from a given weight of mined material increases monotonically with its ash content. Thus the count rate from a sensitive gamma detector placed close to a given mass of coal is well correlated with the ash content of that load. Of course, the gamma count rate is also correlated with the mass of the load but this relationship is non-linear. The increase in countrate falls off as the mass loading increases due to self absorption of the gamma energy (Wykes *et al* 1989). Thus for an on-belt system where the mass loading is variable, a tonnage and a belt speed signal from a belt weigher are required.

The mass loading is not an issue with the Ash Probe because the sensor, located at the tip end of the probe, is buried deep into the pile of coal and is effectively saturated with gamma counts. This geometry has further advantages because the effect of background variations are minimized due to the attenuating effect of the intervening coal. The ash content is calculated directly from the gamma counts sensed by the probe.

With the Lab Ash a lead shielded chamber is used to minimize the effects of background.

The Ash Eye

The Ash Eye comprises four main components (and an optional fifth):

1. A main sensor (MS), mounted under the conveyor suitably collimated to sense the full width of the load.

2. An over-the-belt shield (OTBS) to reduce the effect of background radiation on the signals detected by the main sensor.

Figure 2: Over-the-belt shield.

3. A background sensor (BS), mounted above the OTBS and well shielded from the load to sense background radiation variations. The signals from this sensor are used to compensate for any background radiation variations detected by the MS even after the attenuating effects of the OTBS have been taken into account.

Figure 3: Local processor.

4. A local processor (LP) which takes in the signals from the above two sensors plus a tonnage signal and a belt speed signal

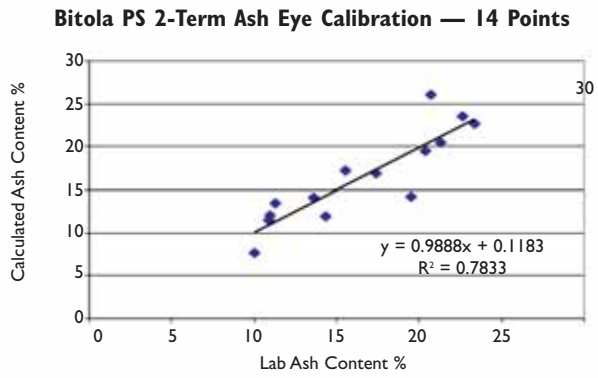
Figure 1. The main sensor.

Figure 4: Optional remote display.

from a weigher (or a contact closure representing belt running if the speed is fixed). From these signals the LP calculates the instantaneous ash content and mass weighted shift ash content. It relays these signals via a serial interface to the customer's computer control system or to an optional remote display unit.

5. An optional remote display unit (RDU) provides a numerical and scrolling full colour graphical display of instantaneous ash and tonnage rate. It also provides a scrolling display of shift deviation from target as well as a numerical display of shift tonnes and a mass weighted shift ash. The data is archived and it can be retrieved in the form of shift reports, batch reports and trend graph displays from the past hour to the past six months. This data can also be downloaded for later offline analysis.

Graph 1: Typical ash eye calibration.



Small variations in background radiation can and do have a detrimental effect on the performance of a simple NG ash monitor. The Ash Eye uses a sophisticated background compensation algorithm to overcome this limitation.

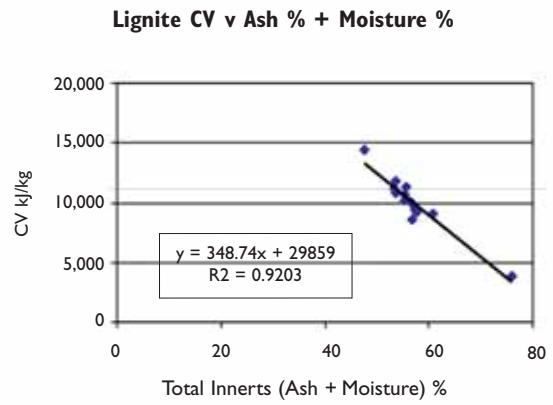
The Ash Eye can be used for many different applications. The main ones are:

- on blend belts where the ash information can be used to control the feed rates of the constituent coals in order to arrive at a consistent end product;
- on run-of-mine belts for QC purposes; and
- on final product belts for QC monitoring purposes.

The heat eye

At most sites there is a good correlation between the total inerts (ash plus moisture) and the calorific value (CV) of the fuel – see Graph 2. Thus by the simple addition of the

Graph 2: CV to ash plus moisture relation.



instantaneous measurements of ash and moisture an estimate of the instantaneous CV can be determined. The Heat Eye comprises an Ash Eye plus a moisture meter. Any good commercial moisture meter such as the Callidan MA500 or the Berthold LB series can be used. Generally a 4-20mA signal representing a particular moisture range is input to the Heat Eye local processor.

The Ash Probe

The Ash Probe is a hand portable instrument for measuring the ash content of coal in piles, wagons or trucks. It comes in two main parts, the probe and the display unit (DU).

Figure 5: Ash Probe - Probe.

The probe comprises a stainless steel tube containing a sensitive gamma detector at its inner end. This ensures that the detector is buried sufficiently deep to make certain that all the gamma signal comes from the surrounding coal and not from the naturally occurring background. For a detailed description, refer to the many articles about the Ash Probe e.g. (Taylor, 2000, 2002, 2010). Once calibrated the Ash Probe provides the ash reading

Figure 6: Ash Probe — Display Unit.

for each probing within 1–2 minutes of operation. Multiple probings are made to provide a precise measurement for the complete pile, or wagon load being tested. The DU provides the average ash content of the pile from all the probings, complete with its standard error (or precision) along with the total number of probings made. This data is stored within the DU for later download to a PC.

There are many applications for the Ash Probe but the main ones are:

- the testing of raw coal prior to washing. The results are used to allocate the coal to a pile of specific ash content. This enables the plant to be fine tuned to wash this known ash content coal leading to a more consistent product, a higher yield and more satisfied customers;
- The testing of washed coal products. This ash information is fed back to adjust the washing parameters to optimize the process leading to a more consistent product, a higher yield and more satisfied customers; and
- the testing of coal deliveries to washeries, power stations, cement works or steel plants. This information is used for a variety of purposes but, for example, can be used to reject deliveries of poor quality coal.

Due to the portability of the Ash Probe there are often multiple applications at the same site.

Figure 7: Ash Probe in use.

The Lab Ash

The Lab Ash is a laboratory instrument for measuring the ash content of small samples (~10kg) of coal. It comprises two parts: a sample measuring chamber and a display unit. The sample chamber is a substantial lead walled cylinder containing a scintillation crystal and associated electronics. The crystal is positioned vertically in the centre of the chamber so that when a special beaker containing the coal sample is lowered into position the crystal is evenly surrounded by the sample. The mains-powered display unit provides the user interface and is housed in a case suitable for desk or bench top operation.

The applications for the Lab Ash are manifold but the main use is in a coal laboratory to keep a check on the ash content of regular QC samples. These samples can be taken by an auto-sampler or be simple hand samples. The ash data from the quick analysis of these samples by the Lab Ash can be used to control the process or plant that is supplying the samples.

Figure 8: Lab Ash in use.

Conclusions

Over the past 25 years the natural gamma technique has become established as one of the main technologies used for the rapid measurement of the ash content of coal. The on-belt Ash Eye is rapidly gaining in popularity around the world with 14 units sold in the past year alone. The Ash Probe remains the flagship instrument with over 230 in operation in over 20 different countries around the world. The Lab Ash is also gaining acceptance in several countries but most notably Russia.

The take up of this technology is very likely to increase in the future. This is due to the quick and accurate results that these instruments can provide. The fact that there are no radioactive sources is also becoming an increasingly attractive feature in these environmentally cost conscious times.

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Eriez: range of coal processing equipment

Eriez is recognized as a world authority in separation technologies, *writes Sarah Grain, Export Sales Manager at Eriez*. The company designs, develops, manufactures and markets magnetic separation, metal detection, materials feeding, conveying and process equipment for use in a variety of industries, including process, mining, aggregate, metalworking and recycling.

When it comes to the coal processing sector, Eriez is a one-stop solution thanks to its range of magnetic separators, metal detectors, feeders, wet drums and other processing equipment. Working closely with end-users or engineering companies, Eriez focuses on providing an optimized solution for customers' processing problems.

MA3600 Metalarm metal detector in coal operation.

One of the primary products for this industry sector is the suspended magnet for removal of tramp iron from coal on conveyor belts. Eriez's extensive range of both standard and custom design suspended electromagnets ensures that customers have a suitable option for all separation requirements and budgets. Eriez standard range of suspended electromagnets is typically naturally oil cooled, but Eriez also offers a special custom design service for difficult applications where large belt widths, high belt speeds and high capacities make removal of tramp iron a big challenge. Eriez is able to offer force cooled magnets, which use additional cooling of the electromagnetic coils to enable more powerful magnets to be manufactured within space and budget limitations. Eriez offers both manual and self-cleaning versions of its suspended electro magnets and these can be installed either across the belt at 90° to the product flow, in a diagonal orientation at approximately 45° to the material flow to aid with the removal of long rods and bars or above the discharge point of the conveyor. The choice of magnet model, location and performance is decided upon in close discussion with the customer, to ensure that the equipment offered matches both customer expectations and industry requirements. Eriez suspended electromagnets are in use in coal processing applications worldwide and can be customized to suit all local environmental factors, including extremes of temperature, altitude and operating conditions. These Eriez electromagnets are manufactured throughout the Eriez family of manufacturing affiliates, enabling Eriez customers to benefit from a choice of manufacturing locations.

Metal detector EZ-TEC 9000RD at a coal power station.

Force-cooled electromagnet at coal power station.

Eriez is also the only manufacturer worldwide to offer a Superconducting Suspended Magnet (SSE). Eriez developed this unique, cryogen free superconducting magnet in the early 2000s to provide a solution for a specific problem at China Coal. Conventional suspended electromagnets were already being used to remove general tramp iron from coal, but detonating caps were still present in the coal and these needed to be removed from the coal prior to shiploading. Due to their small size, an extremely high magnetic field is required to lift them from a burden of coal on a moving belt. The SSE has an incredibly high gradient magnetic field generated by a superconducting coil. Once operational, this coil uses just a fraction of the power consumption of traditional copper or aluminium coil electromagnets and due to Eriez's

innovative design can operate without the need for expensive cryogens to cool the superconducting coil.

This is the world's strongest suspended magnet and goes hand in hand with the Eriez Guinness Book of World Records award for manufacturing the world's largest electromagnet at around 60 tonnes. That particular magnet is in use in Chile at the Radomiro Tomic copper mine.

Eriez metal detectors for the coal processing industry are used in conjunction with suspended electromagnets to ensure that coal processing lines have secondary protection from damage by both magnetic and non-magnetic metal contamination. Their primary purpose is to protect crushers and belts at transfer points from costly damage by tramp metal. Eriez's metal detectors are designed for easy installation on existing conveyor systems, without cutting the belt. They are custom-built to suit any belt width and in a design that is extremely robust and suitable for outdoors use in difficult operating conditions.

Wet drum separator at coal mine.


Self-cleaning suspended electromagnet in factory.

Eriez can offer both suspended magnet and metal detectors that comply with current ATEX requirements, in keeping with the changing demands of the sector.

To assist the coal processors with the reclamation of magnetite or ferrosilicon in heavy media applications, Eriez offers a comprehensive range of wet drum separators. Eriez wet drums typically offer >99% recovery of magnetite or ferrosilicon with a design that can handle fluctuations in slurry flow and magnetite content. Eriez wet drums are available in various diameters, widths and tank designs to meet different operational challenges, including the latest innovative self-levelling design.

Eriez also offers a comprehensive range of other equipment for use in the coal processing sector, including heavy duty, high capacity mechanical and electromagnetic vibratory feeders, Crossflow® Teeter bed separators for run-of-mine coal and state-of-the-art Coalpro™ column flotation cells for the recovery of fine coal, to name but a few.

With over 1,000 direct employees in its worldwide network of manufacturing facilities and test laboratories coupled with over seven decades of manufacturing and its network of experienced, factory-trained representatives, Eriez continues to reinforce its position at the forefront of this sector by offering innovative products and service to the industry. DCi


Double wet drum separators installation.


The world's largest suspended electromagnet.

Bulk handling in Australasia

Page Macrae Engineering proves its worth

The 'complete package': one of Page Macrae Engineering's diesel hydraulic grabs unloading a ship into the company's dust controlled hopper.

One of the biggest names in shiploading and unloading equipment in the Australasian region is Page Macrae Engineering.

Known for advanced design in cargo handling equipment, the company recently completed an order for a major Australian client for two discharge hoppers and two diesel hydraulic grabs. This followed the outstanding success of a previous order two years ago from the same customer, for three grabs and two hoppers.

Their original acquisition has helped the client to achieve impressive handling efficiencies and ship turnaround times, while meeting ever-increasing environmental compliance standards for dust emission. Needless to say, they're pretty happy about that, says Cargo Handling manager Bruce Ennis.

Thanks largely to the efficiency and durability of its package solutions for loading and unloading equipment, and its ability to custom design and manufacture machinery for specific tasks, Page Macrae has experienced strong growth in bulk grab and hopper sales in recent years.

Factors behind that growth are easy to see, as Page Macrae's innovative grabs and hoppers handle a large range of products including fertilizers, clinker, palm kernel, grains, soda ash, mineral concentrates and sand.

With Australia in the midst of a major boom in exports of iron ore, bauxite, coal and other minerals, the name Page Macrae Engineering is gaining much attention from decision-makers when it comes to purchasing new equipment. That's not just because of the innovative design of the brand's products, but because of Page Macrae's reputation for supplying equipment that can provide productivity gains, low operating costs and highly efficient dust and pollution control measures.

Their strong reputation for outstanding service and technical assistance has also helped the company win business overseas

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and in its home market.

"We are particularly proud of the strong relationships we have built with all of our clients. We can provide a 24-hour service and can dispatch service personnel quickly, whenever and wherever they're needed," says Ennis.

"For instance we recently sent an engineer to assist a client in the United States who needed an urgent solution to a cargo handling problem. Within a day and a half the problem had been solved and our engineer was on his way back to New Zealand.

"We keep in touch with our clients, including travelling to their sites, to ensure we keep ourselves up to date with their operations, checking to make sure that their equipment is working the way they want it to and to advise them of our new products and their capabilities."

One of those new products is set to attract plenty of attention: with increasingly strict environmental controls in place at ports in Australia, New Zealand, and around the world, Page Macrae Engineering has refined its hopper design with a new product that integrates a dust collection system with the hopper.

Previously the two units were separate, and the dust collection system had to be moved to wherever the hopper happened to be working on the wharf.

"It's a new evolution in our line of equipment and it completes our dust controlled hopper package," says Ennis.

Efficient dust emission control is a big feature of the company's range of discharge hoppers, which provide ship-to-hopper spillage recovery, dust controlled inflow chutes and a choice of onboard or separate dust collection.

Page Macrae's PMGrabs-branded range of diesel/hydraulic grabs is perfect for unloading and loading jobs demanding low operating height and minimum noise emissions. They are also ideal for working in difficult discharge situations because like the PMGrabs-branded wire and chain grabs, they incorporate features to cut the risk of environmental impact from product spills and produce low dust emissions.

Operated via remote control by a crane operator, the PMGrab range of diesel-hydraulic grabs are designed to discharge large volumes of bulk material from ships' holds. They can carry up to 20t of material at a time, discharging hundreds of tonnes per hour and allowing stevedores and shipping companies to save valuable time and money, says Ennis.

Incorporating special features to control spillage, noise and dust emissions, the grabs also provide operators with significant gains in productivity.

The company's range of wire or chain mechanical grabs stand out for their low operating costs, exceptional productivity and high digging capacity. They feature a unique overlapping blade seal that seals the material being transported, preventing leakage and solving a major headache for cargo handlers.

Ennis says Page Macrae works closely with clients in coming up with cargo handling solutions for their specific requirements. That innovative 'can do' approach also helps Page Macrae Engineering stay ahead of the game in a competitive global market.

The company is particularly adept at tailoring equipment to suit specific needs, which sometimes means designing and manufacturing custom discharge systems, Ennis says.

"Our clients don't always know exactly what they want, but they do know the outcome they require. We tailor-make solutions for those outcomes and provide any advice or technical support they might need."

Page Macrae Engineering's aptitude for innovation in the bulk cargo equipment field and the market-leading quality and durability of its products put it in the spotlight in 2010, when it won a premium award in the annual Australian Bulk Handling Awards in Brisbane.

Based near the Port of Tauranga at Mount Maunganui on the east coast of the North Island, the 55-year-old company won the Innovative Technology category for its diesel-hydraulic grabs in the face of competition from some of the world's leading manufacturers.

Bulk cargo handling equipment designed and manufactured at the company's premises includes log lifters, container spreaders, container loading equipment, over-height spreaders, spreader beams, remote and manual release multi-lifters, lifting cages and lifting beams. DCi

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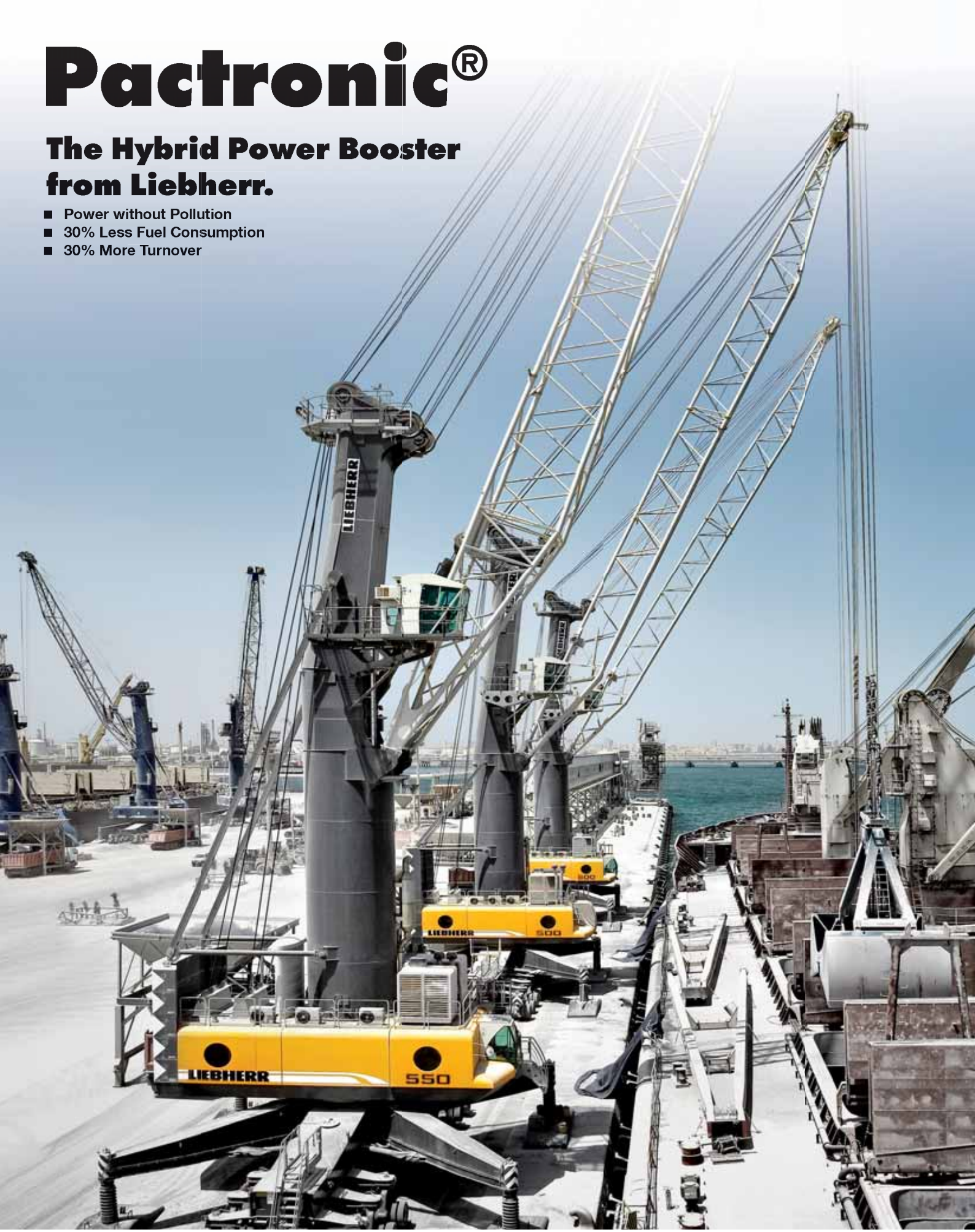

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