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FEATURES

- Global Coal Trades
- Coal Handling
- Self Unloaders
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Coeclerici Floating Transfer Station (FTS) **Bulk Java** *during operation. The FTS is part of a fleet comprising four units working for PT Berau Coal to perform coal loading operations at Muara Pantai anchorage in Indonesia.*

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FEBRUARY 2014 issue

featuring...

Some positive coal trade signs

Among the many commodities contributing to global seaborne dry bulk trade, positive signs for 2014 are prominent. Some of these are difficult to quantify precisely, although this problem is not unusual. Several negative indicators are visible as well. A cautiously optimistic view of prospects for the year ahead seems to be a realistic conclusion, reflected in further moderate growth.

One encouraging sign is an improvement in prospects for the world economy, despite ongoing anxiety about China's performance. The latest IMF update, published in late January, very slightly upgraded forecast world GDP growth in 2014 to 3.7%. Predictions for the USA, Japan and UK were raised, while a slow revival in the eurozone still appears to be on track.

Coal

Uncertainties about coal trade's longer-term growth potential are accentuated by attention focused on the environmental consequences of coal burning. Yet this fuel probably will remain the most economically advantageous source of energy for many countries. As a result, rising import demand is likely, especially in the Asian region.

In the coking coal sector, comprising about one quarter of world seaborne coal trade, coal is an essential ingredient for blast furnace pig iron based steel production. As shown by table 1, imports into Asia, comprising a large part of the global total, increased last year. In 2014 additional volumes into India, China and some other key importers could enable continued expansion.

Iron ore

The pattern of steel production among raw materials importing countries last year was mixed. Japan's crude steel output was 3% higher at 110.6mt (million tonnes), while European Union output declined by 2% to 165.6m. South Korea's volume was also lower, by 4% at 66.0mt. China achieved a brisk 7% increase to 779.0mt, underpinning strong 10% growth in iron ore imports.

Another sizeable increase in global seaborne iron ore trade could be seen in 2014, supported by a more general pattern of growing steel production around the world. But there are signs of a considerably slower enlargement pace in China, assuming that demand from some steel-consuming industries will slacken. However, the price and quality advantages of foreign iron ore supplies are seen as implying continued brisk imports growth.

Grain

In many bulk commodity trades attention remains heavily focused on China's imports, and the grain (including soya) sector is no exception. Predictions of increased global seaborne movements of wheat, coarse grains and soyabeans currently are largely dependent on forecasts of much higher Chinese buying.

Recent USDA forecasts continue to point to global soya trade growing robustly in marketing year 2013/14 ending September. A 10% rise to 164.8m is estimated, resulting mainly from expectations of a 15% increase for China's purchases, raising the Chinese volume to 69mt. Wheat and coarse grains imports into China during 2013/14 are expected to more than double to 18.6mt, despite a larger domestic grain harvest several months ago.

Minor bulks

Recovering economic activity in the 'advanced' group of economies (mainly USA, Europe, Japan and South Korea), assuming this trend is maintained over the next twelve months, could benefit a wide range of minor bulk trades. Additional import demand for steel products and forest products may be accompanied by higher movements of other commodities, related to manufacturing and construction activity.

Bulk carrier fleet

Cargo-carrying capacity in the world fleet of bulk carriers was boosted last year by a massive volume of newbuilding deliveries. As shown by table 2, these are provisionally estimated at 63m deadweight tonnes. However, the total was well below volumes seen in the three previous years. Although scrapping also fell in 2013, fleet growth slowed sharply to about 6%. Another newbuildings decline in 2014 is foreseen, contributing to a further slowing of the fleet growth rate.

TABLE 1: KEY ASIAN SEABORNE COKING COAL IMPORTERS (MILLION TONNES)

	2008	2009	2010	2011	2012	2013
Japan	80.7	65.6	76.6	68.7	70.5	73.0
South Korea	19.7	16.0	23.4	25.9	25.7	26.0
Taiwan	10.4	9.4	10.2	10.7	10.5	11.0
China	6.8	34.5	47.3	44.7	53.6	68.0
India	29.0	29.0	35.0	33.0	35.5	38.0
Total of above	**146.6**	**154.5**	**192.5**	**183.0**	**195.8**	**216.0**

source: various & BSA 2013 estimates * *estimate*

TABLE 2: BULK CARRIER NEWBUILDING DELIVERIES (MILLION DEADWEIGHT TONNES)

	2008	2009	2010	2011	2012	2013
Handysize (10-39,999dwt)	3.1	5.3	8.4	9.4	10.0	6.1
Handymax (40-64,999dwt)	6.9	10.5	19.0	21.7	20.4	14.2
Panamax (65-99,999dwt)	6.0	6.7	14.4	22.2	26.9	20.2
Capesize (100,000dwt and over)	8.6	21.0	38.6	45.6	41.9	22.5
Total	**24.6**	**43.5**	**80.4**	**98.9**	**99.2**	**63.0**
% change from previous year	-1.1%	+76.8%	+84.8%	+23.0%	+0.3%	-36.5%

source: Clarksons & BSA 2013 estimates * *estimate*

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

Oversupply continues to depress prices of sugar

For how long will global sugar prices remain at the current level causing distress to producers from Brazil to India to Thailand and traders long on physical inventories? Chronic oversupply for four years in a row, including the season that began in October 2013 and an all-time high stockpile of 43.379mt (million tonnes) estimated by the US Department of Agriculture continue to weigh heavily on the market. Most analysts agree sugar prices will remain low for at least the next few months. At the same time, sugar economist Pablo Sherwell of Rabobank thinks sugar prices have reached the bottom and these could rise moving into the 2014/15 crop year (October to September). To an analyst with Sucden Financial Sugar, the market for the commodity appears "all doom and gloom at the moment, at least for producers who see their future crops diminished in value. The only thing we see on the horizon to support prices is the fact that so many are bearish and therefore, we assume already short."

Indian producer Om Prakash Dhanuka says the world sugar remains trapped in a long-term bear market with prices down by 25% from one-year high in October 2013. To add to the pressure of an oversupplied market, the Indian government announced on 15 January that it would offer a package of WTO complaint incentives for export of up to 4mt of sugar over two years. No sooner did the Indian announcement come than raw sugar prices on New York's Intercontinental Exchange (ICE) tumbled to their lowest since June 2010. Losses could not be staunched since on news of likely expanded supplies from Brazil and Thailand, the world's two leading exporters of sugar, to now on now off exporter India. The March raw price has breached the psychologically important price of 15 cents a pound.

Besides taking count of inventories in growing regions of the world, traders pick up cue from crop forecasts in Brazil, the world's biggest producer and exporter and other nations and the likely global demand growth. According to the Brazilian sugar industry association UNICA, factories in the South American country had processed 594.1mt of cane till 1 January, up 12% from a year earlier. Sugar production, which depends on sucrose recovery rate from cane, however, had marginally risen to 34.3mt. The cane crop in Thailand is bigger than last time. The monsoon, having behaved well and then followed by spells of dry weather, facilitated cane drying and early harvesting of Thai cane. Local millers and trade officials are, however, keeping their fingers crossed that the political turmoil does not interfere with harvesting operation and despatch of sugar to foreign destinations. India is the world's second-largest producer of sugar. With the country having a large domestic market for the commodity — local consumption last year was an estimated 22.8mt — New Delhi would allow export only when warehouses and silos are left with no space to keep any more sugar and prices prove "extremely hurtful for factories," says Dhanuka.

The crisis in the Indian sugar industry brimmed over in the season ended October 2013 and there is still no remission in the pains of factories unable to recover production cost from prevailing market prices of the sweetener. This is in spite of white sugar in Bombay being about $40 a tonne more expensive than rates quoting on NYSE Liffe in London. No wonder, government officials recognise there is no way factories will be able to sell sugar in the world market without "subsidy to recompense us," according to Dhanuka. Explaining the fundamental reason why sugar factories in the country "continue to move deeper and deeper in the red" irrespective of their daily cane crushing capacity, operational efficiency and processing of cane with rates of sugar recovery varying from 9% in Bihar to 11.5% in Maharashtra, Dhanuka says "the devil is in the lack of linkage between cane price and sugar price."

As it obtains in India, the federal government will every year fix the 'fair and remunerative' prices (FRPs) of cane. But state governments in order to pander to cane growers coming in millions will demand of factories to pay them 'statutory minimum prices [SMP],' commanding high premiums over FRPs. "Herein lies the problem. We opened the current season in October with inventories of nearly 9mt. The standing crop makes it certain that 2013/14 will be the fourth year in a row that India will have bumper sugar production of around 25mt against 25.14mt last time. In this situation, there is no way the high cane prices we are required to pay can be recovered by selling sugar in a depressed market," argues Dhanuka. Therefore, at one point last season, unpaid cane bills of factories rose to $1.5 billion causing a great degree of rural unrest. The situation left New Delhi with no option but to offer factories interest free loan to clear cane dues.

A high powered commission headed by Dr C Rangarajan, chairman of the Economic Advisory Council to the prime minister, has said in a report that the Indian sugar industry could be put on an even keel provided a linkage is established between prices of cane and sugar. The commission suggestion is, there should be value sharing of sugar and its primary by-products such as bagasse, molasses and press mud between farmers and factories in a 70:30 ratio. In fact, the value sharing formula is the reason why the viability of the industry has not been compromised in many other countries in a bear market. At the same time like Brazil, the Indian sugar industry should start making ethanol directly from cane whenever a big cane crop will be posing a threat of market inundation of sugar.

In the meantime, according to a Reuters report quoting analyst Green Pool, Chinese cane plantation having suffered heavy rains and frost in spells in November and December, there is scaling down of the country's sugar output for 2013/14 to 13.1mt from the earlier estimate of 13.3mt. This means production will remain virtually unchanged from 2012-13. A further downside in Chinese production is not ruled out, since sugar content in weather beaten crop might have taken a hit.

By Kunal Bose

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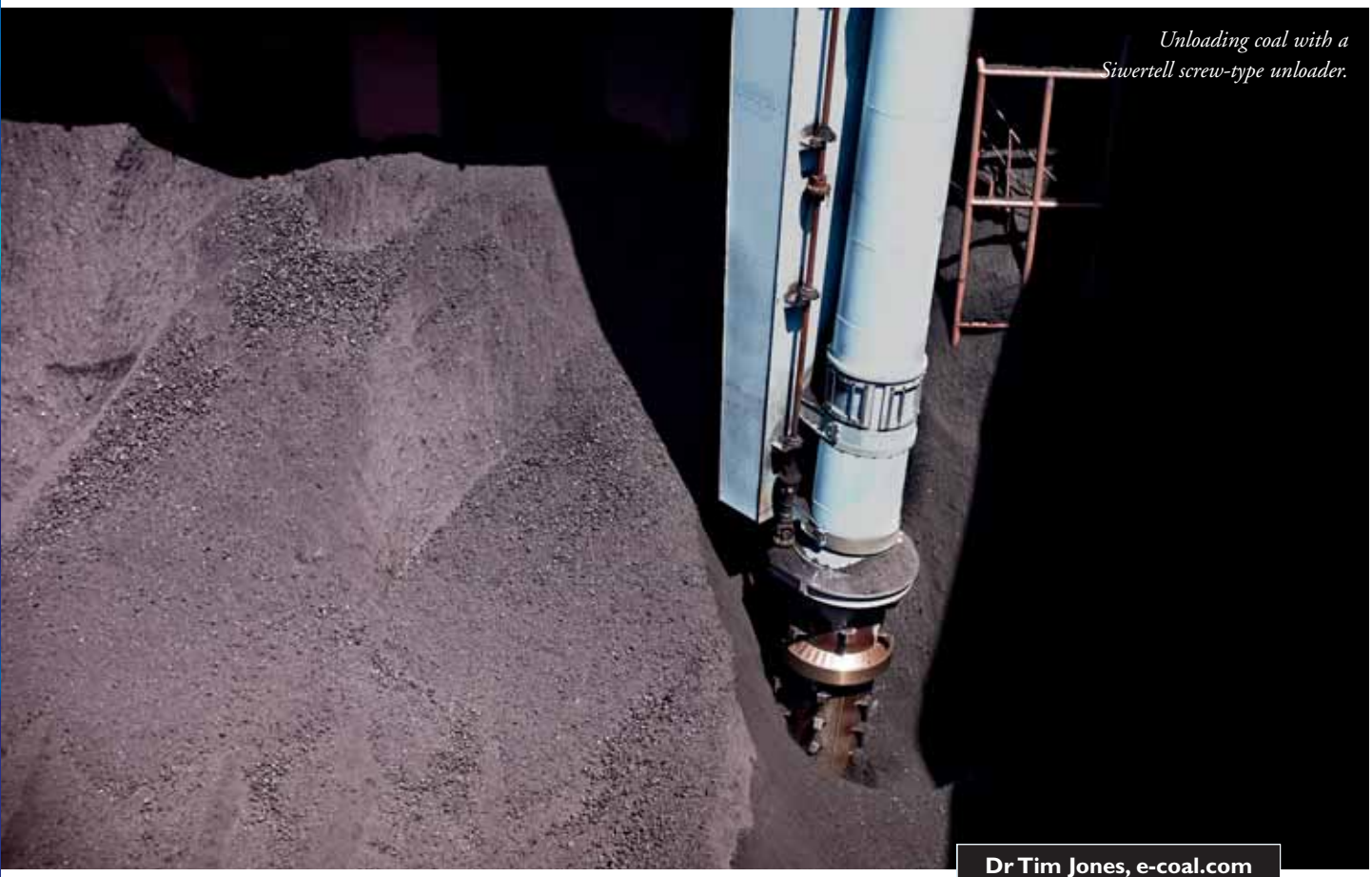
World coal trade 2013



Unloading coal with a Siwertell screw-type unloader.

Dr Tim Jones, e-coal.com

At the beginning of 2013, thermal coal spot markets had remained rather calm over the holiday period, with little movement seen in the prices around the major markets. By the end of the year, there had only been a small change in the spot prices compared to how 2013 had started out, and the large movements of some previous years were absent last year. A year ago, the spot market in northern regions were expected to firm during the first quarter of 2013 due to seasonal increases in demand for thermal coal, and a rise was expected to 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 the year compared to 2012. US exporters were taking some comfort from the expectation of renewed demand from parts of Europe in 2013, with Germany being seen as one market to tap. Colombia's plans to expand coal production, however, were likely to compete with other suppliers' hopes for Europe. China had been importing record monthly amounts of thermal coal, and market players did not appear to believe this would change much for the following 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 to watch more closely in the early months of last year was South Africa which was expected to see growing demand from Europe. India and China were expected to show continued growth in

OCEAN SPOT FREIGHT RATES (US$/T) 2013

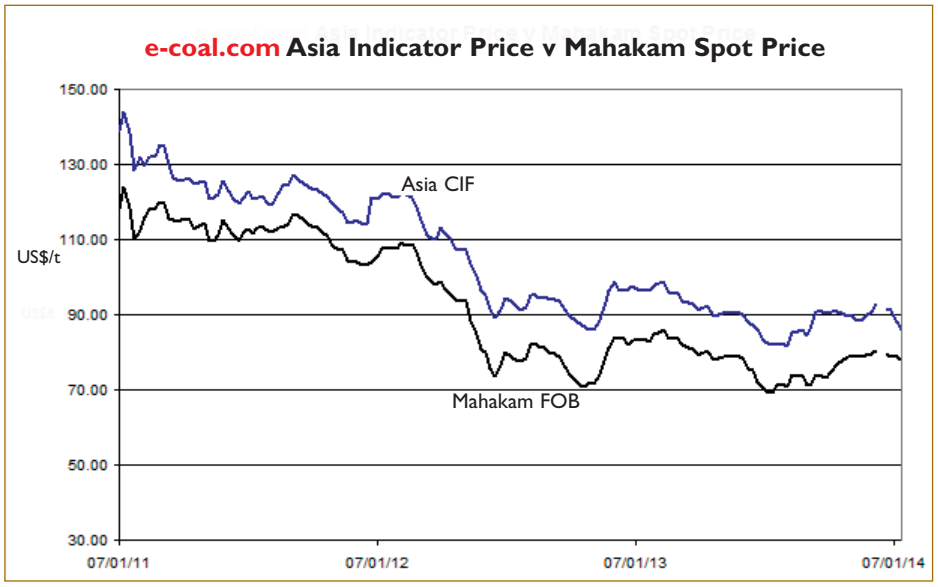
Route	Tonnage	18 Jan	11 Jan	% change
USG/ARA	65,000t	9.70	9.50	2.11
Roberts Bank/ARA	55,000t	15.20	15.00	1.33
HR+RB/Japan 16m	120,000t	26.00	24.25	7.22
HR/Rotterdam	110,000t	10.65	9.15	16.39
Bolivar/Rotterdam	130,000t	9.40	8.10	16.05
Queensland/R'dam	130,000t	14.00	13.20	6.06
Rich'ds Bay/R'dam	130,000t	7.50	6.50	15.38

Source: e-coal.com

OCEAN SPOT FREIGHT RATES (US$/T) 2014

Route	Tonnage	17 Jan	10 Jan	% change
USG/ARA	65,000t	19.20	19.00	1.05
Roberts Bank/ARA	55,000t	20.55	21.05	–2.38
HR+RB/Japan 16m	120,000t	28.30	31.75	–10.87
HR/Rotterdam	110,000t	10.60	10.55	0.47
Bolivar/Rotterdam	130,000t	11.70	13.75	–14.91
Queensland/R'dam	130,000t	10.95	12.80	–14.45
Rich'ds Bay/R'dam	130,000t	8.00	8.00	0.00

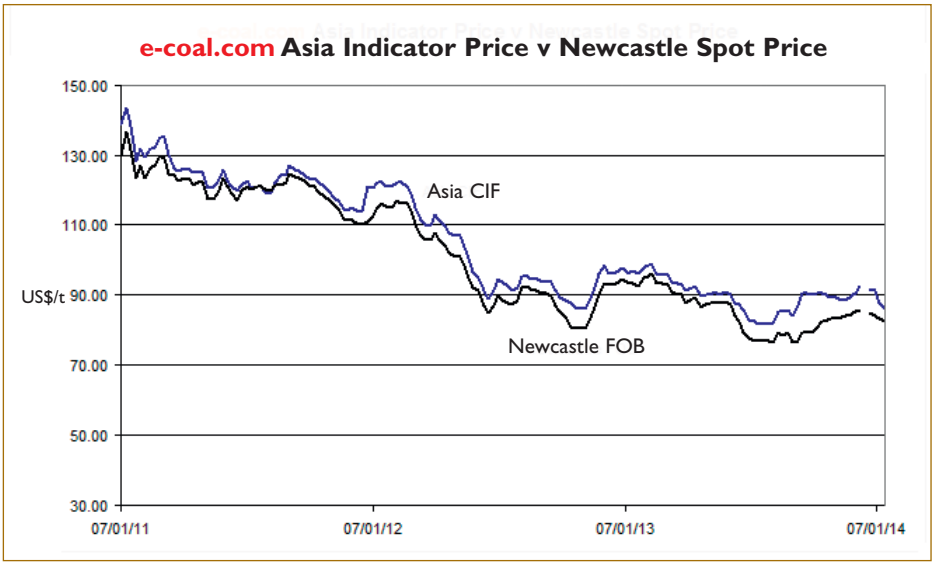
Source: e-coal.com

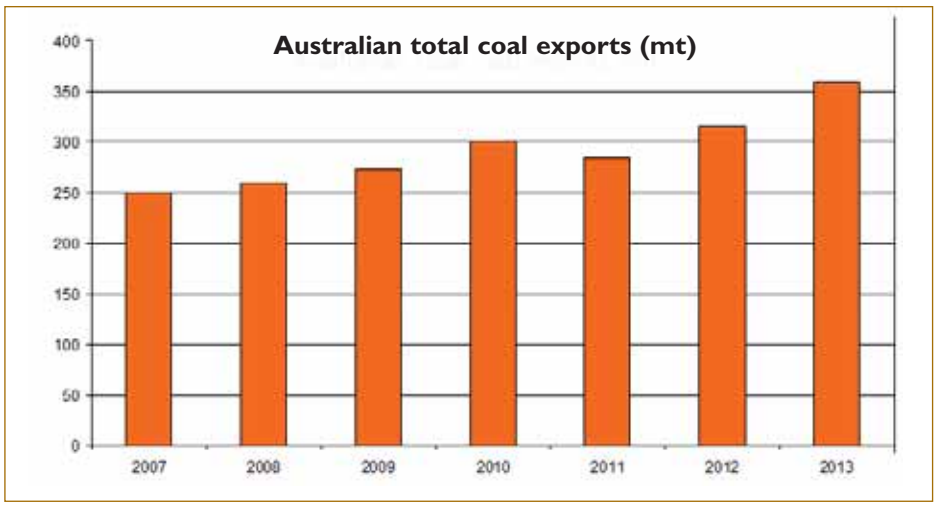


demand, which was then anticipated to influence Atlantic markets. A year ago, coking coal spot markets had yet to show much activity after the holiday break, with little business being reported in January. So, overall, the initial expectations for the international coal industry as 2013 got under way were not as depressing as they had been for the previous couple of years, and some more positive aspects were hoped for in 2013. The year had also begun with a firming in the freight rates on the major coal routes.

Early 2013 saw weak thermal coal spot market activity, with a similar result 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. 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 — an annual event that does not appear to have been so severe this winter so far. Further south, there was optimism that the Brazilian steel sector would pick up in 2013, ahead of the Olympic Games and soccer World Cup events there. The hard coking coal market was difficult to assess due to mixed comments from players, depending on their individual positions. Some sellers and traders were bullish, but there was limited evidence of increased trade at firmer prices.

The Asian spot tender market was the most visible in early 2013, with a significant availability of Indonesian sub-bituminous coal apparent for delivery during the first half based on responses to enquiries at the time. In north India, the coldest weather since the early 1970s was expected to result in an increase in coal burn, and in turn, traders were anticipating that the stocks reported at the ports were going to decrease. Some shippers, particularly in South Africa and Indonesia, were preparing for firmer demand for imported coal in India in the following few months. In South Africa, however, there were already fears that industrial disputes could disrupt the coal chain during 2013, and lead to some tightening of coal supply to India and elsewhere.



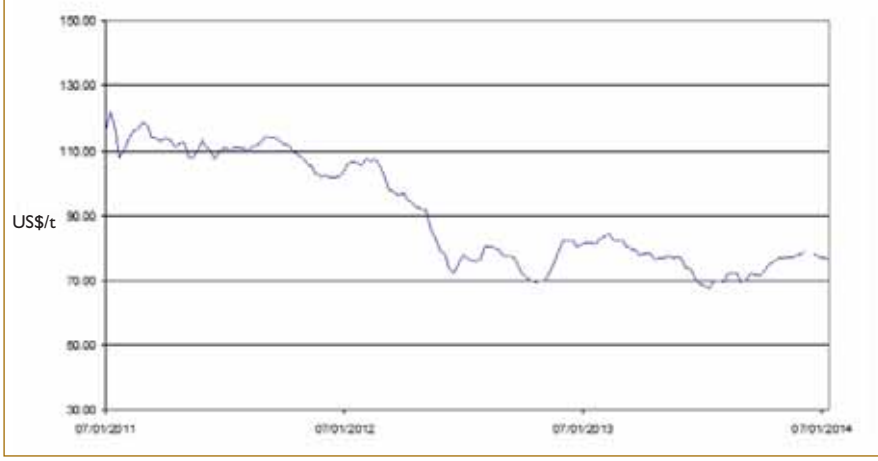


The supply of coking coal from Queensland was being disrupted by adverse weather, as well as the earlier threat of industrial action by coal train drivers. As the international coking coal market became a little more active as 2013 got under way, there were optimistic forecasts that China's demand for steel would increase during the year, and output was forecast to rise by 3–4.5% to reach about 750mt (million tonnes). In 2012, production had increased to 716.5mt. Disruption of Atlantic supplies of thermal coal were feared by some players as workers at Cerrejon's operations in Colombia

prepared to vote on strike action in February. There was an expectation that a strike was unlikely, however, as the markets had not reacted in such a way as to push up prices by that stage. While spot market activity in Europe was still lacklustre, the Asian buyers continued to issue spot tenders on a regular basis. Coal India Limited was also expected to begin purchasing imported coal in its own right.

By the start of the second quarter of 2013, there had been weakness in the Asian thermal and coking coal spot markets. Although some buyers were said to be bidding lower prices for hard coking coal, there were few deals being done at those levels. Nevertheless, some journalists were believed to be

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



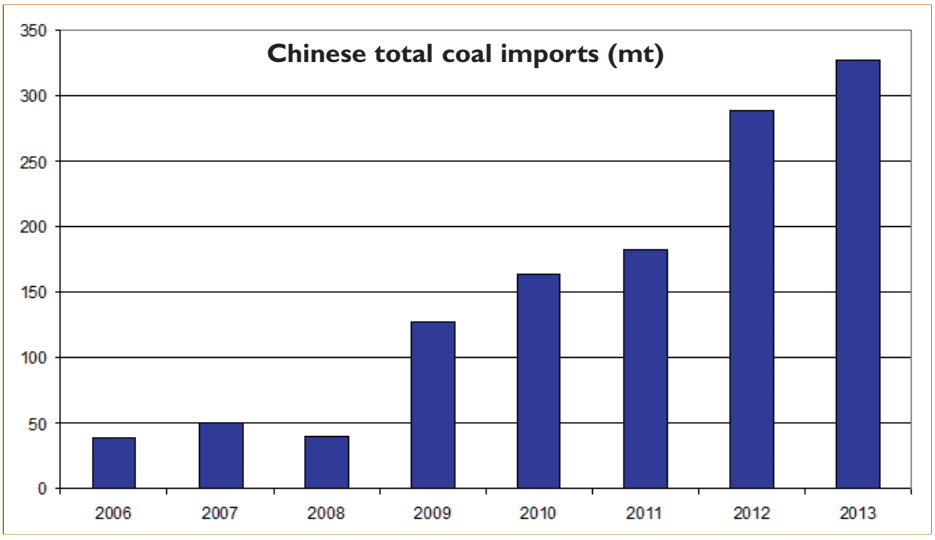
lowering the level of their price reporting without any confirmed deals to support those prices. While spot markets remained lacklustre it was in the spot tender and contract markets that business continued to be done at reasonable levels. The Asian spot tender market remained the most visible, particularly in Korea and Taiwan where indications of the state of the thermal coal market were best shown, in terms of tonnage, quality, and price. The European coking and thermal coal markets were quiet, although contract business was clearly showing coal deliveries were continuing into the ARA (Antwerp–Rotterdam–

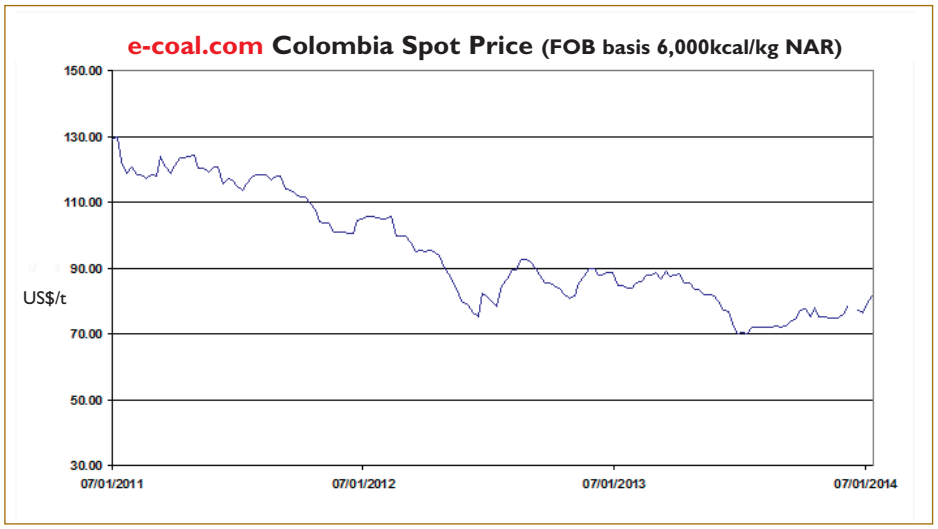
Amsterdam) ports and the United Kingdom. Russian coal continued to be purchased by the UK generators, and higher sulphur material at discounted prices from the USA and elsewhere was of interest to those consumers with scrubber technologies at their plant. There had also been renewed thermal coal spot tender activity in Eastern Europe, and spot market activity on electronic platforms picked up.

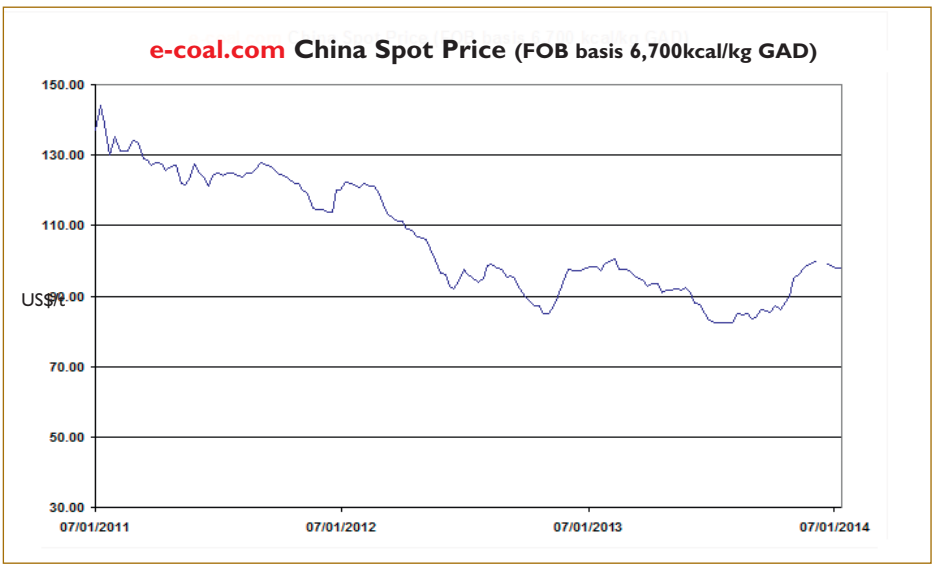
The relatively soft price of thermal coal in the Atlantic market did not correspond with some reports that the European utilities had been keen to buy coal during April. The material to supply some of them may have been taken up from the pads at Rotterdam, but coal stocks at the ARA ports were said to have been depleting during the month. The cold snap in northern Europe had kept up demand for electricity and coal, which helped boost spot prices above previous levels. The renewed availability of Colombian coal, however, countered upward pressure on the spot price to some extent. Traders also reported that thermal coal to supply Europe would be available at Richards Bay when the enquiries arose. In the Asian thermal coal market, buyers were understood to be holding off new business while negotiations on the JFY2013 contract were ongoing. With a price settled at US$95.00/t FOB (free on board) the shippers were likely to cut costs and supply by reducing output further in the following months.

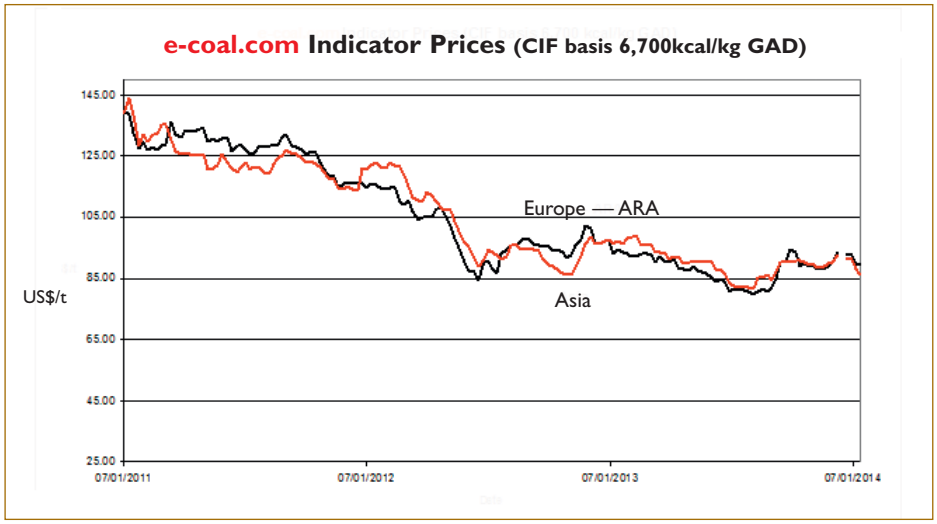
By April, European buyers were taking some US tonnage in the thermal coal spot tender market, while the Asian spot market softened by a couple of dollars per tonne. Coal stocks had been building in Europe as contract tonnage arrived at the ports, and this had been sending some signals to suppliers that demand would be more subdued in the spot markets. Chinese buyers of thermal coal were limited by adequate domestic supply at the time, and the main visible players in the Asian markets were the Korean gencos. Indian buyers were seeking mainly lower CV Indonesian sub-bituminous material ahead of the monsoon, and South African and other exporters were not seeing high demand for their products from India. There had been some reports of buyers of cargoes destined for China reneging on their contracts, with Australian, South African and US coal rumoured to have been affected.

By the middle of 2013, thermal coal spot markets had been seeing a softening in all regions. A weak rupee was impacting coal buyers in India at the time, and there were already rumours of some defaults on contracts. The Russian exporters were facing some rail disruptions. While Africa has been the focus of much investment in the coal sector in more economically buoyant years, some areas had developed problems including a resurgence of terrorist action in Mozambique. In the freight market, Capesize rates had eased a







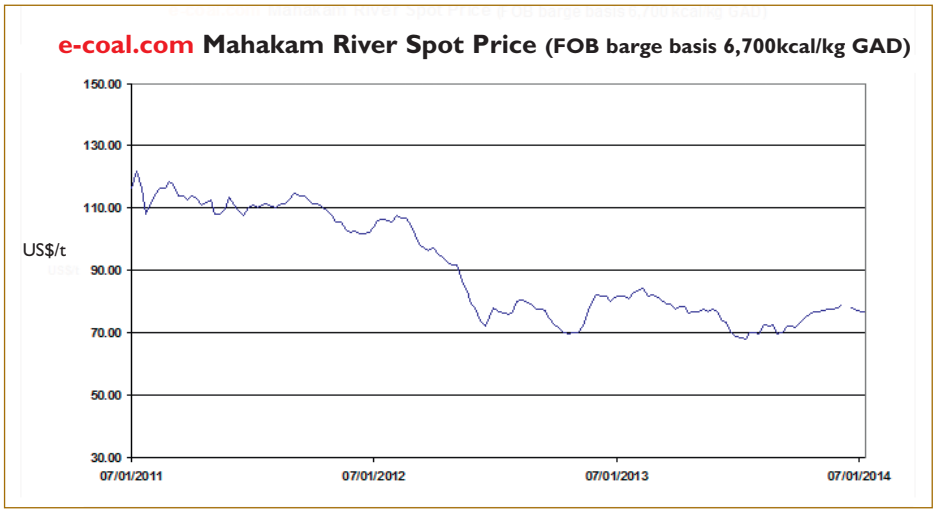


June at 32.57mt. Planned electricity generating capacity continued to grow there, with imported coal the only realistic option to satisfy expected demand. There had been hard evidence of production cutbacks in the US coking coal sector by mid-2013, with job losses expected.

Buyers in Taiwan remained active in the spot tender market, seeking additional bituminous coal in July. Atlantic business had been lacklustre, with little movement seen in the spot markets. Coking coal spot markets remained extremely quiet in all areas with little sign of activity expected in the following weeks. In the freight market, the quantity of newbuilds was reported to have decreased during the second quarter of 2013 to the lowest level for four years. This appeared to confirm the volume had peaked, which was expected to influence rates in the coming year as supply of vessels stabilized again.

little after the earlier rally which was largely attributed to iron ore shipments in Asia.

The thermal coal spot markets were behaving rather differently in the Atlantic and Asian regions during July, with weakness persisting in the latter. Thermal coal spot prices softened further out of all the main locations as lacklustre prompt spot demand in the Asian consumer destinations continued. There had been new enquiries, however, in the spot tender market from the major buyers in India, Korea and Taiwan during early July. Other buyers were expected to enter the spot tender market again during the following few weeks to take advantage of the weak prices ahead of the final quarter when markets could have recovered somewhat. An overall weakness in the spot markets across the globe had not been evident at that time, and the Atlantic spot prices were relatively stable after a couple of small dips and recoveries. Indian domestic coal production continued to fall behind target amid a growing demand situation, and Coal India was reported to have been 8% below target in



Australian shippers appeared to have found a level for their spot sales, but Indonesian sellers were still finding a range of interest across their coal types. The Chinese thermal coal

PROMPT SPOT PRICES FOR THERMAL COAL 2013

(US$/t)

(FOB basis 6,700 kcal/kg GAD) ash, 15% max, sulphur 1% max

Location	18 Jan 13	11 Jan 13	% change
South Africa	87.50	87.45	0.06
Colombia	84.65	84.50	0.18
Venezuela	83.75	83.60	0.18
Russia Baltic	86.30	86.20	0.12
Poland	86.35	86.25	0.12
Newcastle	93.25	93.20	0.05
Queensland	94.00	94.00	0.00
China	98.35	98.25	0.10
Russia East	96.25	96.10	0.16
Banjarmasin	81.55	81.50	0.06
Mahakam	83.35	83.25	0.12

Prices are FOB vessel except Banjarmasin and Mahakam River which are FOB barge. Source: e-coal.com

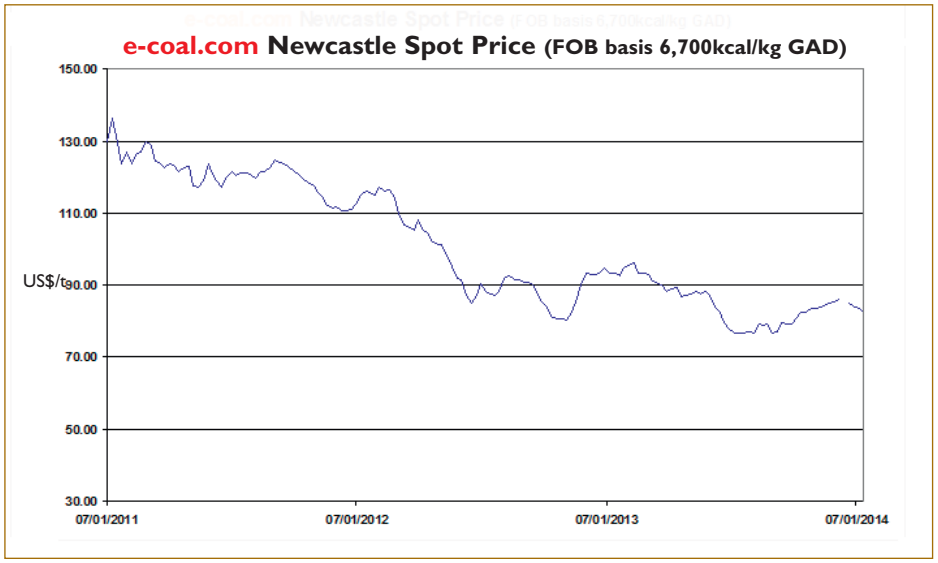
PROMPT SPOT PRICES FOR THERMAL COAL 2014

(US$/t)

(FOB basis 6,700 kcal/kg GAD) ash, 15% max, sulphur 1% max

Location	17 Jan 14	10 Jan 14	% change
South Africa	85.25	82.90	2.83
Colombia	82.00	80.00	2.50
Venezuela	84.00	80.00	5.00
Russia Baltic	83.20	80.80	2.97
Poland	83.40	80.90	3.09
Newcastle	82.50	83.50	–1.20
Queensland	83.25	84.25	–1.19
China	98.00	98.00	0.00
Russia East	87.30	87.75	–0.51
Banjarmasin	76.50	77.00	–0.65
Mahakam	78.20	78.75	–0.70

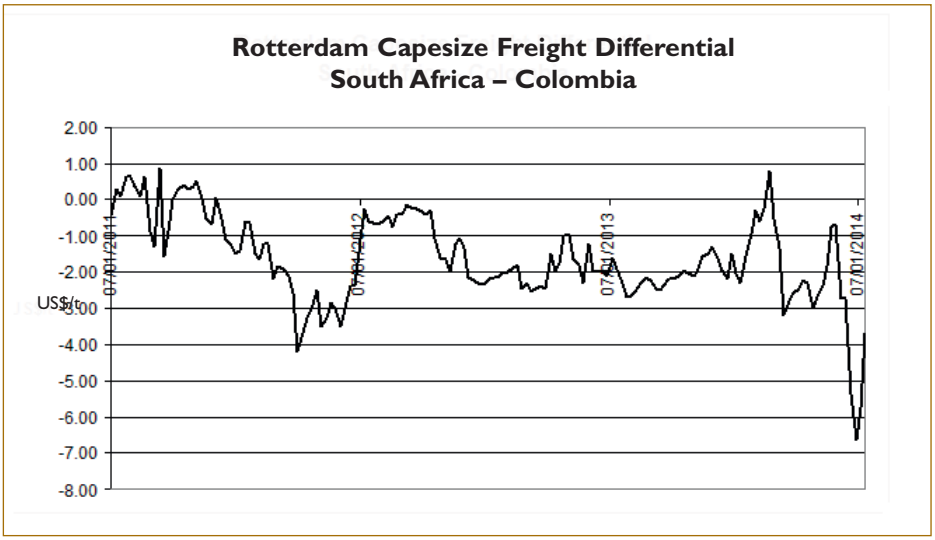
Prices are FOB vessel except Banjarmasin and Mahakam River which are FOB barge. Source: e-coal.com

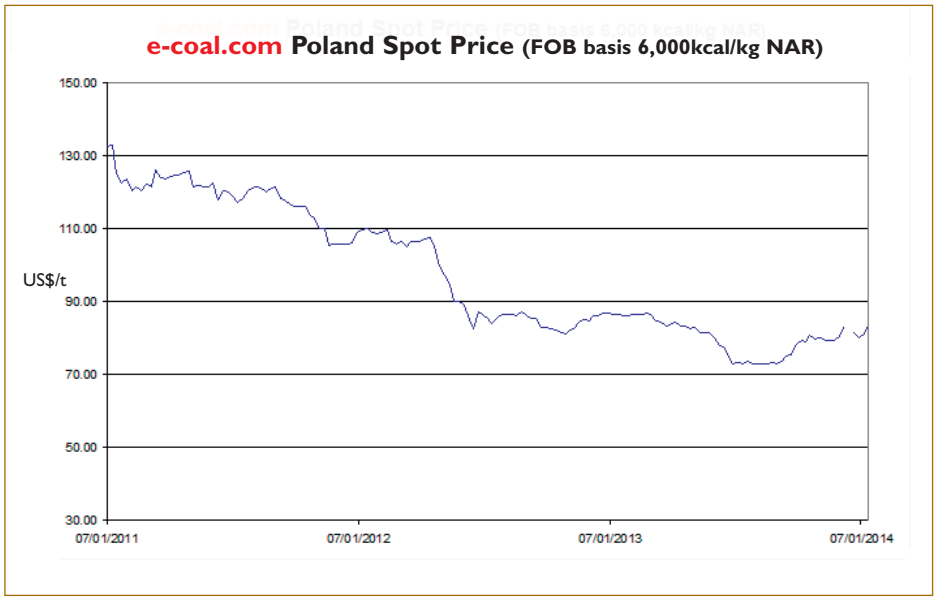


the overall market seemed less likely to move into balance as demand had fallen, because the level of expected production cuts did not seem to be materializing. Major miners had reported actual increases in output rather than decreases during the year. Rather than aiming to put on pressure for a price increase they appeared to be looking to increase productivity and minimize their costs while continuing to compete with shippers in the major producing countries around the world. The coking coal market remained inactive, but there were some interesting signs that traders had been attempting to inject life into the market by suggesting the spot price was rising.

By October, the Asian markets were showing mixed activity, and the holidays in China had an impact on much of the usual trade in the region. The Japanese remained the highest payers for quality Australian thermal coal on a contract basis, with Korea paying close to the e-coal.com Newcastle Spot Price for contract tonnage. European markets had seen some increased demand for thermal coal ahead of the winter burn, with consumers seeking new tonnage to build stockpiles during the autumn. The spot price had been firming due to the boost in demand amid a relatively tight prompt spot market. Some South African tonnage was likely to be heading towards Europe when the vessel backlog eased there if the spot price was attractive, and the buyers were bidding higher prices than those in India that month. Transport problems were delaying coal supply from Russia's Kemerovo region over the summer months. In the wake of the hard coking coal price settlements, some quarterly contract

buyers continued to push for lower prices, and spot tender business in Korea and Taiwan provided for the most visible activity. The industrial dispute by workers at Drummond had an effect on coal markets in the north Atlantic, with a slight rise in the price of coal delivered to Europe. The strike was disrupting production and ship loading in Colombia, with about a third of the country's coal supply affected. Demand for coal in the spot market was still relatively quiet in Europe, however, and supplies from the USA, Russia, Poland, South Africa, and elsewhere appeared to be adequate to prevent much of a firming in the spot price. *Force majeure* had been declared on a number of cargoes, and vessels were being delayed at Puerto Drummond and some had been diverted elsewhere. By early August, European traders had been locking in tonnage for delivery in 2014 from other supplier countries in reaction to the tightening of supply from Colombia. Indications suggested



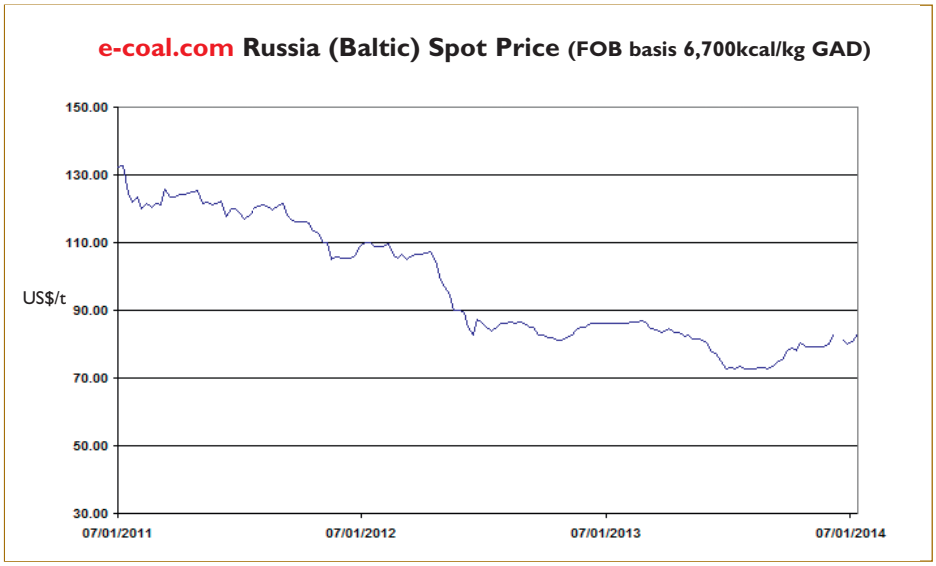


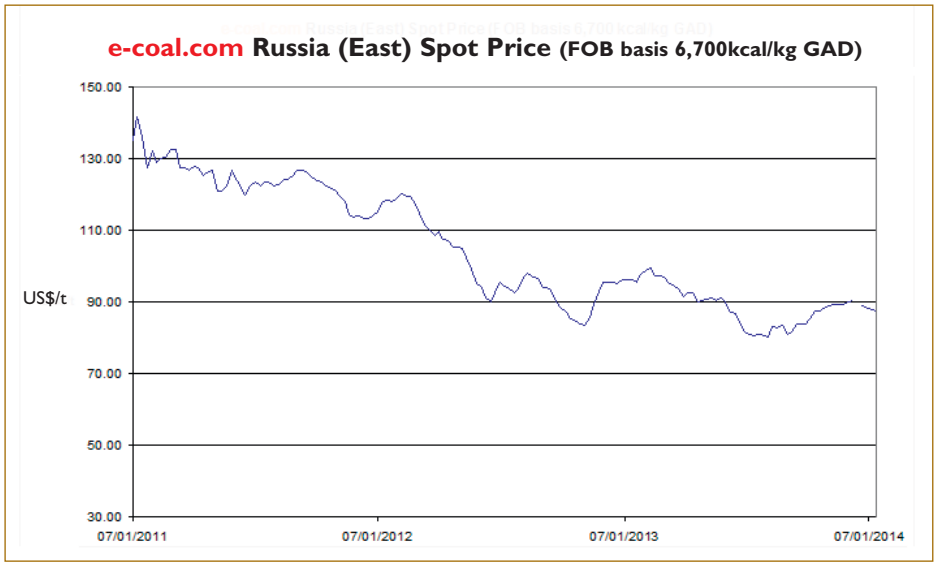
agreements had been made for ultra low vol PCI (pulverized coal injection) coal for the current period, with modest but welcome increases for the shippers. At that time in the freight market, further substantial increases had been seen in the Panamax rate across the north Atlantic, where the US Gulf – ARA rate reached the highest since May 2012 at US$20.55/t.

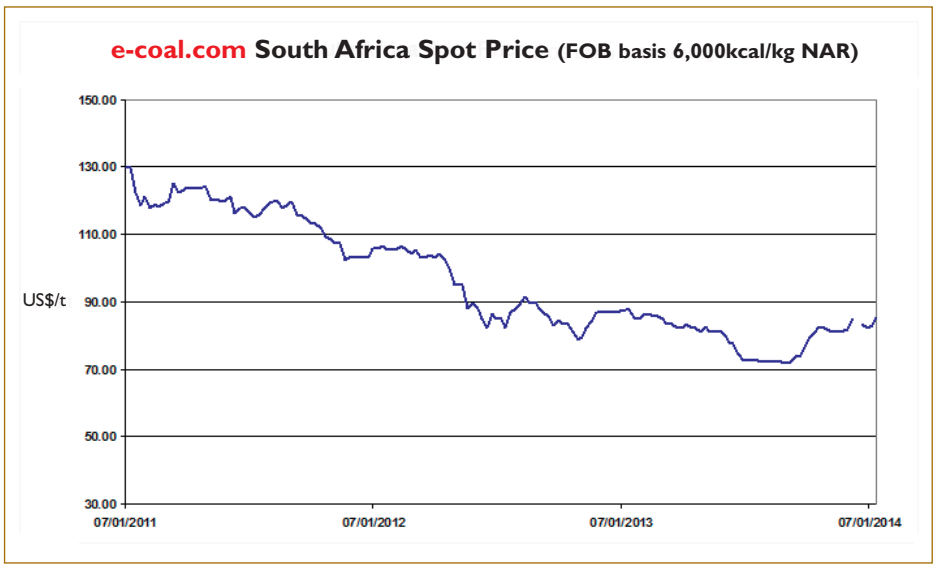
Coking coal exporters in the Asian region were hopeful that the Chinese would return to market with renewed demand following their holiday period. Trade had been relatively quiet during the previous weeks, but some price increases had been achieved in the contract market for various grades of coking coal. The talks took place amid the rising spot market which helped sellers in their negotiations after a period of weak prices. Increasing costs had led to power generating companies and domestic coal suppliers hiking the price of electricity and coal in some regions around the world in October. Increases in the price of coal had been reported in China, and the price of electricity in the United Kingdom was to rise as fuel costs and other expenses such as environmental taxes impacted the financial positions of utilities. The delivered price of coal to Europe remained at the highest levels since the start of the year due to the rise in freight rates, but Asian delivered prices were not at those earlier levels at that time.

The strategy of increasing coal production amid the low prices in the prevailing market had been continuing for Rio Tinto, as reported by the company in October. There had been some more trade of thermal coal into China following the increase in the domestic price there. The spike in the freight rate had eased, and delivered prices were becoming more attractive to the coastal consumers in southern China. A backlog of supply from Colombia had been evident in the European market, and a number of cargoes had been purchased as they became available for delivery over the following three months. The industrial issues in Colombia helped to firm up the spot price for a while, but there were signs that these had stabilized somewhat ahead of the Coaltrans conference in Berlin in late October. South African shippers had seen demand from Europe, and with improving interest from India as well as other demand in Asia, the Richards Bay spot price was maintaining its level. Capesize freight rates eased further on the major coal routes, but the Panamax rate from the US Gulf to Rotterdam firmed by 5% as vessel availability was tighter.

There were reports of some European interest in coking coal from the USA towards the end of October, with a spot Panamax cargo purchased. Freight rates continued to decrease on all the major coal routes, both in the Capesize and Panamax markets,

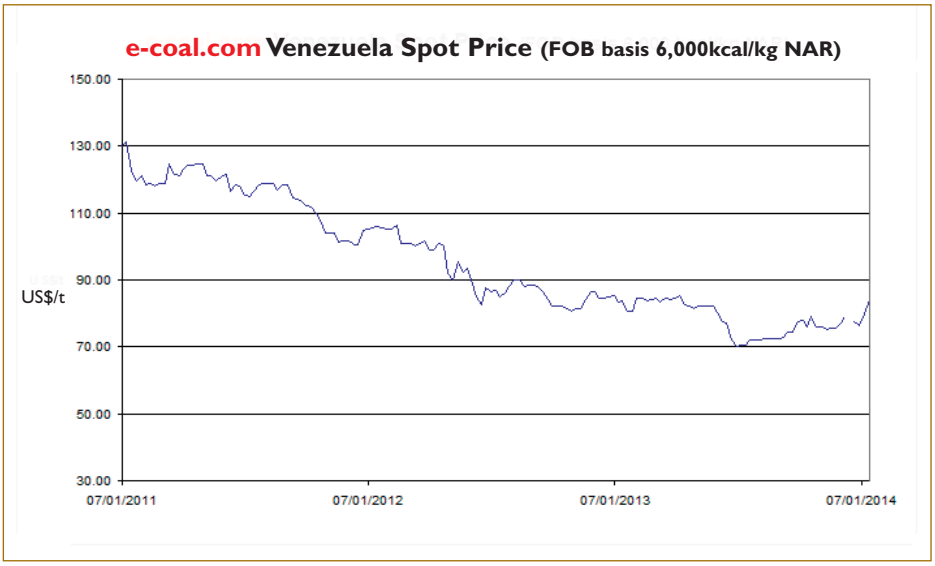






and delivered prices for coal were easing. The surge seen in previous weeks appeared to have turned around, with significant reductions in the prices being seen on a week-by-week basis. Rates did, however, remain above the lows seen earlier in 2013.

As the year drew to a close, the thermal coal spot market in Asia firmed, with reports that Japanese, Indian, and Chinese buyers had been seeking coal. The major buyers in Korea and Taiwan were also active in the spot tender market. European spot pricing was firmer amid the continuing steady market. Uncertainty about Colombian supply in the next few months had helped firm the spot price in the European and Mediterranean markets, with Russian shippers benefiting ahead of the winter constraints,



and South African shippers seeing renewed enquiries from buyers looking to secure other options in the Atlantic. US shippers were also understood to have been offering tonnage for the first half of 2014. New import taxes or an outright ban on low quality coal were expected to impact the market from 2014, with Korea and China due to introduce new policies on that. The Indonesian producers are expected to be adversely impacted more than elsewhere, while Australian shippers as well as Russian and Canadian exporters could benefit. Mass protests in Ukraine resulted from the refusal of the government to sign new trade agreements with the European Union, and rather to forge closer ties with Russia. This could have implications for the energy sector in the future, and political uncertainty is likely to continue for some time there. In the coking coal market, negotiations started on the new contract terms.

Just before the end of 2013, the thermal coal spot market in the Asian region saw quality brands being sought after ahead of the holiday period. Australian, Indonesian, and Russian shippers had been seeing enquiries. The only sector said to be seeing some weakness was the low end of the Indonesian thermal coal market with little interest from Indian buyers at the end of December. Delivered prices for quality material had risen again as the freight market maintained its position for a relatively strong end to 2013. European trade had also been more active towards the end of December, and in the Mediterranean market, the Turkish cement makers were looking for tonnage amid increasing delivered prices. The onset of the winter freeze was affecting Russian supply out of all ports including those in the Black Sea. US exporters had been seeing interest from buyers in Asia and Europe, with consumers with FGD (flue-gas desulphurization) still showing interest in high sulphur material. The year ended with mixed changes in the freight market, depending on the vessel size and route. Atlantic thermal coal spot prices saw little change compared to the level 12 months earlier, but spot prices in the Asia-Pacific region had decreased by several dollars per tonne. Initial data suggests there were increases in the volume of coal produced by some of the major miners amid the weak pricing environment in 2013. 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.*

Dry bulk cargo specialist brought in by ISS

Major maritime services provider Inchcape Shipping Services (ISS), has announced a key hire in its Cargo Solutions division. Vincent Mazzone, a dry bulk supply chain and risk management professional, has been appointed to the newly created Geneva-based role of Vice President Cargo Solutions Business Development.

Vincent Mazzone has been appointed to the role of Vice President Cargo Solutions Business Development.

Mazzone joins ISS following a career in dry bulk products including coal, ore, non-ferrous concentrates and fertilizers. Working for SGS, Koch Carbon LLC and most recently as a consultant, he has for over 30 years provided supply chain management services for buyers, sellers, traders, producers and international inspection companies.

Reporting to Tim Cahill, Chief Operating Officer of Cargo Solutions, Mazzone will focus on developing ISS's business in the areas of cargo management, transportation and logistics. His remit encompasses CESI Cargo Services, the ISS group company which offers a wide range of consulting and field services to consumers, trading companies and, producers of coal and other bulk commodities.

Cahill commented on his appointment, saying: "Vincent brings to ISS significant expertise and a wealth of industry connections. ISS is developing a world-renowned reputation in cargo supply chain management, especially in dry bulk, and this appointment signals further growth in this area."

ISS has over 300 proprietary offices in 65 countries, and a workforce of over 3,800. The company's diverse global customer base now includes owners and charterers in the oil, cruise, container and bulk commodity sectors as well as naval, government and inter-governmental organizations.

ISS provides landside commercial and humanitarian logistics, transit, offshore support, informational and other associated marine services. The company also provides a growing range of outsourcing services including global crew and marine spares logistics; port hub agency management; and sophisticated Enterprise Resource Planning solutions through its subsidiary ShipNet.

Fednav again recognized as one of the top employers in Montreal

Fednav Limited, the largest international dry bulk shipping group in Canada, has joined the ranks of the best employers in Montreal in 2014, for the third consecutive year.

Montreal's Top Employers is an annual competition organized by Mediacorp Canada, in collaboration with The Gazette. Each year, a group of HR experts reviews nominations based on nine criteria, including benefits related to health and family, training and skills development, and community involvement.

The strengths that surface in this competition display important features of what Fednav offers employees: a comprehensive group insurance plan, a defined-benefit pension plan, an athletic subsidy, maternity top-up, as well as a distinct culture of caring for the community and the environment, and for delivering a high standard of expertise and reliability.

"Fednav believes that service, reliability, professionalism, and personal relationships create long-term partnerships that define our success," says Paul Pathy, President and co-CEO of Fednav Limited. "One of our core values is standing by our employees. This provides them with a platform to expand their boundaries and meet challenges with confidence and enthusiasm."

Fednav Limited

Fednav is an international ship-owning company headquartered in Montreal. Its principal activities include the transport of bulk and general cargo worldwide. The company has offices in Antwerp, Barbados, Hamburg, Rio de Janeiro, London, Singapore, and Tokyo and regional offices in Canada and the United States. Fednav also has terminal, logistics, ice analysis, and shipping agency services and divisions. It employs 260 people and nearly 2,000 crew members and stevedores.

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London Club stresses need to observe passage planning and weather info

The London P&I Club says it has seen a rise over the past twelve months in the number of deficiencies relating to Temporary and Preliminary (T&P) notices to mariners, and an increase in negative findings in relation to the management of radio navigation and meteorological warnings.

In the latest issue of its StopLoss Bulletin, the club says its Ship Inspection Programme has identified failure to manage T&P notices, or to apply them to the ship's chart folio, as a commonly recorded occurrence. It says, "If T&P notices are not consistently applied to the chart folio, the ship's navigating officer and officers of the watch may be deprived of valuable passage planning information. T&P notices contain a vast array of information which may influence the planning or conduct of a passage. Efficient passage planning requires the assimilation of good-quality information which ought to leave the mariner better equipped to decide how to conduct the passage of a ship."

The club also points to a failure to properly observe navigation/meteorological warnings and/or systems by which information is collected, applied and displayed for watchkeeping officers to monitor. It says a lack of observation of the meteorological information provided by the Navtex system on the bridge of a ship entered with the club recently contributed greatly to a significant oil spill claim. The Navtex equipment on the bridge of the ship, which was anchored at the time of the incident, was fully operational and properly set. Unfortunately, there was no established system by which the information — whether navigational or meteorological — was read, considered and applied on the bridge. Heavy weather was forecast by various means, including Navtex, but was quite unexpected at that time of year. By the time the poor weather struck, it caught the bridge team by surprise in the early hours of the morning. In the time that it took to get the main engine on-line, the ship had dragged its anchor approximately one nautical mile onto a rocky shoreline, puncturing its bunker tanks.

The resultant spill clean-up and associated claims amounted to more than $44m.

The club concludes, "Officers should be reminded of the full extent of the chart and publication folio to which corrections apply, and of the risks of ignoring sources of navigational and meteorological information."

ABS publishes advisory for navigating Northern Sea Route

In late January, ABS, a leading provider of global maritime classification services, released its *Navigating the Northern Sea Route Advisory* to support shipowners and operators intending to transit the increasingly popular commercial shipping routes through the Arctic seas.

The comprehensive advisory, which was developed with assistance from Russia's Central Marine Research and Design Institute, provides owners with the information they need to apply for permits and to identify the possible technical and operational risks that could arise when trading in some of the world's most challenging commercial shipping environments.

"The Northern Sear Route was virtually unnavigable by all but powerful icebreakers just a few short years ago," says Todd Grove, Chief Technology Officer for ABS, noting that the Russian Federation's recent moves to encourage international shipping through the Northern Sea Route (NSR) and the melting ice floes there have opened commercial shipping opportunities. "The NSR's growing popularity has positive implications for transit times between Asia and Northern Europe," Grove explains, "but the often unpredictable and unfamiliar shipping environment through the north also poses operational and technical challenges. This Advisory was developed to provide the industry with some of the information it needs to navigate those challenges safely and efficiently, while also helping to minimize the impact on the environment."

The Advisory includes the following:

- The Northern Sea Route
- The Arctic environment
- NSR Regulations
- Winterization strategies
- The practice of navigating in ice-covered waters
- Ports of the NSR

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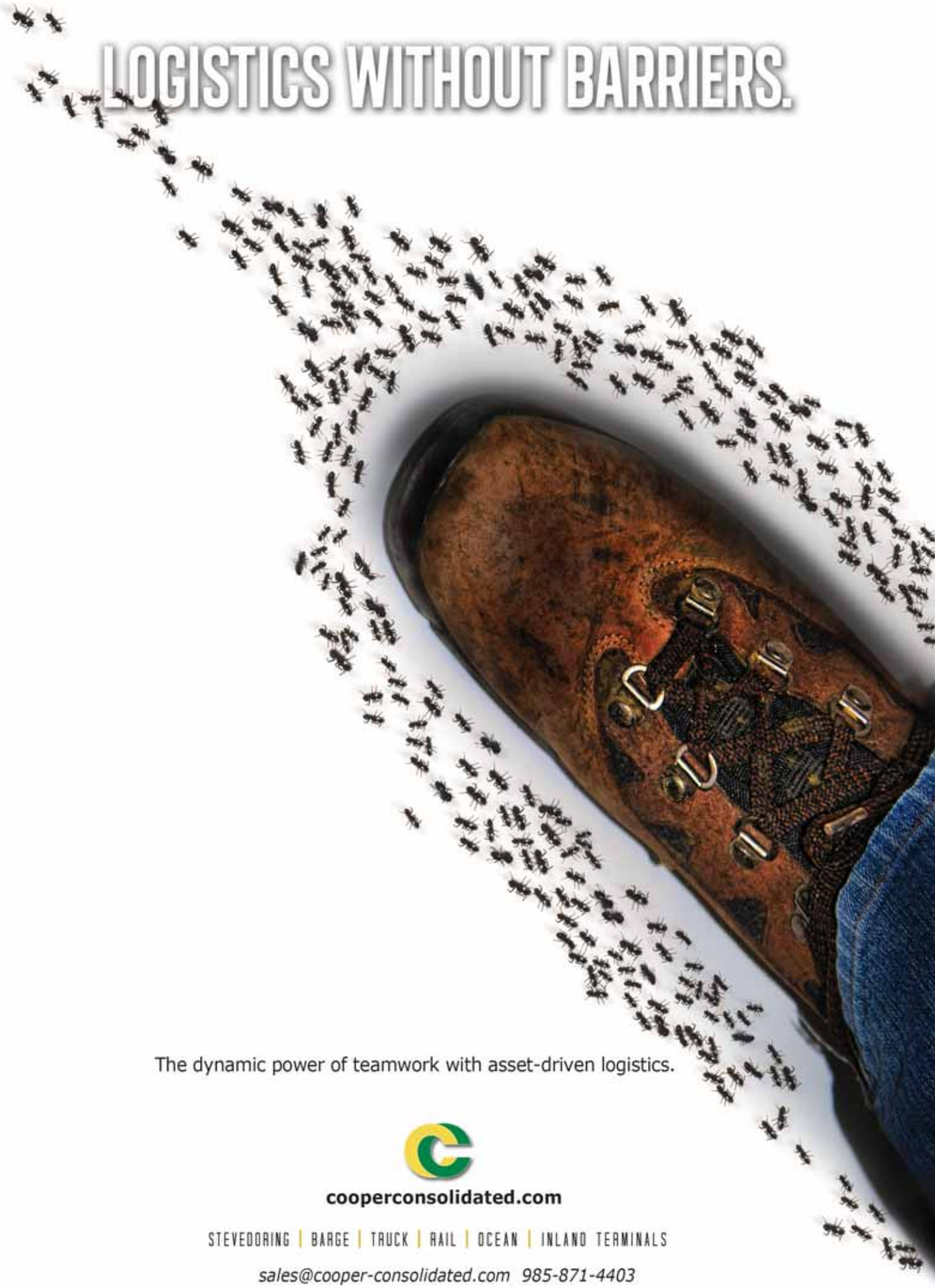

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The role of the ship agent

ASBA: ensuring quality and integrity

The Association of Ship Brokers and Agents (ASBA) was established in January of 1934 to advance and foster ideals and standards of personal and professional conduct and practices, to inculcate just and equitable principles among those engaged in the trade, to define customs of the business, to establish and maintain uniformity in commercial usages, to adjust controversies and misunderstandings, and to promote the common interests of those business establishments which are engaged in business as ship brokers and agents. One of the first tasks of the Association was to set forth the Code of Ethics (see box below).

After a number of high-profile agent company bankruptcies,

ASBA Code of Ethics

The officers, partners and associates of each member firm of this Association are firmly pledged to the following principles in the conduct of their brokerage and agency business.

1. In the conduct of his profession, a member shall exercise great care to avoid misrepresentation and shall be guided by the principles of honesty and fair-dealing.
2. A member shall be diligent at acquainting himself with market conditions and shall keep his principal accurately informed thereof.
3. A member shall always assist — never hinder — principals in reaching and performing an agreement, always rendering his best efforts and using his best judgement on their behalf.
4. A member shall handle all proposals accurately and expeditiously.
5. When acting as a broker, he shall not make decisions for the principals unless so authorized by them; and when negotiating on a standard or well-known form of charter party, a member shall advise the principals of any deviation from the usual form.
6. The member's responsibility as ship's agent is to protect the ship's interests at all times. The ship agent will make every effort to manage the ship's call efficiently.
7. Each member agrees to inculcate his organization with the principles set forth herein, for it is recognized that only by their observance will the standards of personal and professional conduct be advanced, and the practice of ship brokerage and agency continue to inspire confidence as an essential and effective part of the shipping industry.

As adopted December 16, 1949
As amended June 23, 1981 and February 3, 2011

ARTICLE XIII: Criteria for Certification of ASBA Ship Agent Members

Section 1. All Ship Agent Members ("Ship Agents") must abide by the ASBA Code of Ethics.

Section 2. All Ship Agents must comply with the following standards of Financial Responsibility.

A) Retain an external CPA for issuance of an "Agreed Upon Procedure Report" submitted to ASBA annually.

The following procedures, based on random sampling, must be attested to:

- ❖ Amounts due from/to principals in company's general ledger are supported by detailed accounting and reporting for principals which agrees in total to the general ledger.
- ❖ Detailed accounting/reporting for principals includes a listing of cash receipts and disbursements (by invoice) for sample voyages with total amounts due to/from the principal for each selected voyage and in total at end of reporting period.
- ❖ Maintain separate files for principals to include supporting documentation.
- ❖ All transactions for principals must be supported by invoices and/or receipts.

B) Certification by Ship Agent's management that undisputed accounts are settled in accordance to agent's agreement with principals and vendors.

C) Ship Agents must demonstrate adequate insurance coverage, submit proof annually and name ASBA as a notify party.

a) Automobile Coverage (owned and non-owned vehicles)
b) Workmen's Compensation for USL&H as required.
c) Liability Coverage – minimum of 1 million dollars per event.

D) Company in good standing as certified annually by the Secretary of the State in which the Ship Agent is incorporated.

Section 3. Industry Experience

A) At least one year in the business.

Section 4. Each Ship Agent must ensure that its Employees are Trained and Professional

A) Ship Agents must provide on the job training or participate in member or ASBA provided training seminars.

B) Ship Agents must successfully complete the ASBA Ship Agent Exam.

Section 5. Ship Agents agree that the ASBA Ethics & Grievance Committee will be the governing body should issues regarding noncompliance with this article arise.

A Ship Agents agree to abide by the ruling of the committee.

B) Ship Agents face possible suspension of and/or expulsion from membership for failure to comply with the requirements of this Article.

and the general opinion of ASBA's members, it was decided that the industry was in need of a mechanism whereby principals could identify quality ship agency providers. In February of 2005, the full membership of the Association approved the Guidelines for Certification — please see box above.

ASBA is an active member association of the Federation of National Associations of Ship Brokers & Agents. It presented its certification to the FONASBA members and, happily, the members approved the FONASBA Quality Standard in 2007 with 22 member Associations having received approval to issue the Quality Standard to their member companies.

ASBA's members have used the following text to inform their principals of ASBA's certification.

"The Association of Ship Brokers and Agents (USA) Inc. (ASBA) agent members have raised the bar for agency companies by implementing an annual certification process that is intended to assure principals of member agent's quality and credibility in three areas:

- ❖ *Sound handling of principal's cash*
- ❖ *Adequacy of insurance coverage*
- ❖ *Competence of staff*

ALL ASBA member agents are required to submit an annual procedure report from an external CPA, insurance coverage of $1M per event of liability, automobile and workmen's compensation as required. All agents employed by member companies must pass the ASBA Agent Exam testing their knowledge of the industry and agency business.

ASBA promoted the endorsement of a similar international standard through its international counterpart the Federation of National Associations of Ship Brokers & Agents (FONASBA), which has as one of its core values the promotion of the highest levels of professionalism in the agency and broking professions worldwide. FONASBA approved their Quality Standard that embraces the core objectives of ASBA's Certification. ASBA Agent Members were one of the first to be awarded same. INTERTANKO and BIMCO have endorsed the FONASBA Quality Standard (FQS), which attests to their recognition of the value of this initiative for their members. Twenty-two FONASBA Member National Associations have been approved to award the FQS to qualifying members."

ASBA Ship Agents

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American Shipping and Chartering
Luis A. Ayala Colon Sucrs., Inc.
Biehl & Co., LP
Blue Water Shipping Company
Cascade Marine Agencies, Ltd.
John S. Connor, Inc.
Fillette Green Shipping Services (USA) Corp.
GAC Shipping (USA) Inc.
General Steamship Agencies, Inc.
T. Parker Host, Inc.
Inchcape Shipping Services
Lott Ship Agency, Inc.
Max Shipping, Inc.
Mid-Gulf Shipping Company, Inc.
Moran Shipping Agencies, Inc.
Moran-Gulf Shipping Agencies, Inc.
Newship, Inc.
Nord-Sud Shipping, Inc.
North American Shipping Agencies
Norton Lilly International
Peabody & Lane Corp.
Riley-Sherman Shipping Agency, Inc.
Southport Agencies, Inc.
Sunshine Shipping, Inc.
Tormar Inc.
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USG Services, LLC
Valls Ship Agencies, LP

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asba@asba.org • www.asba.org

ASBA member ship agents: tested – trusted – certified

In a recent survey conducted by the Association of Ship Brokers & Agents (USA) Inc. (ASBA), maritime principals ranked the qualities deemed most important in their decision to appoint a ship's agent.

- fiscally responsible company
- trained boarding agents
- past experience with the ship agent and the agent's experience with the cargo and vessel type

ASBA's Agent Member Certification, renewed annually, specifically addresses these qualities. But, in order to describe what it means to be ASBA certified — what, exactly, is an agent, and what does an agent do?

"Except for the pilot, the first and last person to board or depart during every ship's port call is the ship's agent." The agent is like a control tower for a ship's port call, co-ordinating local scheduling and logistics with the key players — the owner, charterer, shipper, receiver, terminal, and, of course, the ship.

The agent dispatches the local services necessary for a successful port call by arranging pilotage, towage, and customs entry and clearance, while navigating deftly through the myriad national and local regulatory requirements involving the ship, her cargo and crew. Beyond the commercial operation there is often an extensive list of husbanding requirements that includes co-ordination of ship's stores and spare parts as well as crew changes, crew medical, and service technicians.

An agent's job is to safely and economically expedite the vessel's port call. Understanding the impact of high daily operating costs of ships and marine terminals, the pressures of berth congestion, and contract deadlines for loading and unloading cargoes contributes positively to the success of a voyage. Solid rapport and good standing within the local marine community is critical. The agent stands in the shoes of his, or her, principal, protecting their interest at a specified port.

Fiscal responsibility

ASBA member agents must retain an external Certified Public Accountant to complete a procedural review in order to attest in writing to ASBA that the member maintains separate files by principal and that all financial transactions are properly supported by invoices and receipts that tie back to their general ledger. Fiscally sound accounting practices should be a key component of the principal's risk management strategy.

Trained

Certified Agent Members must maintain a well-trained staff that is service oriented and armed with knowledge to make necessary decisions on behalf of their principals. All member boarding agents and their managers must successfully complete a comprehensive exam administered by ASBA.

ASBA provides a variety of maritime courses and seminars on shipbroking, chartering, and agency to meet the needs of members for initial training and ongoing education. Other courses offered by ASBA include maritime law, marine insurance, and commercial trade transactions. ASBA's Annual Cargo Conference has become the must attend maritime event in the USA and provides member agents with another avenue to expand their industry knowledge. Panellists include charterers, owners, and operators that share their thoughts on the hot topics of the year as well as their views on the market and trends in shipping.

Experienced

ASBA's 30 member agents handled approximately 43,000 non-container vessel calls in the USA and Canada in 2013. Of this total, approximately 14,000 were dry bulk and breakbulk vessels. Based on the association's calculations, ASBA Certified Agents have represented close to 65% of the dry and wet bulk vessels calling US ports last year. In terms of experience, these statistics tell a clear story.

ASBA was formed in 1934. Members use the Association to address issues affecting their companies and principals on a national level — and to advocate for quality. ASBA's landmark member certification was embraced by its international counterpart, the Federation of National Associations of Ship Brokers & Agents (FONASBA) in 2007, is called the FONASBA Quality Standard and is now being awarded in 22 member countries. Owner's organizations, BIMCO, INTERTANKO, and INTERCARGO, recognized the value of promoting 'quality' in the appointment of ship agents when they endorsed the Quality Standard.

As a best practice that supports operational excellence and risk mitigation, ASBA encourages all vessel charterers, owners, and operators to nominate and appoint ASBA-certified agents at USA and Canada ports whenever possible.

General Steamship Agencies – defending the industry from political interference

General Steamship Agencies, Inc. act as agents for principals engaged in a charter party. Its duty is to execute the responsibilities its principals have contracted to, and to protect their interests in the maritime contract. This duty ranges from government formalities to cargo operations, through to documentation and financial dealings with vendors. The goal is economic and expedited sailing of the vessels entrusted to General Steamship Agencies. The company exited the liner business in 1985, since which time it has focused exclusively on the dry and wet trades.

General Steamship Agencies' offices cover most of North America, from all ports in Alaska down the Canadian and US West Coast throughout the US Gulf and within the Delaware

River/New York area. Its clients include large domestic and international vessel operators, trading houses and industrial producers and consumers of wet and dry bulk commodities. Dry bulk constitutes half of the agency's vessel volume.

The group traces its beginnings to 1920, and has performed many related services beside agency, including terminal and stevedoring, chartering, harbour services and logistics support. These operations have flowed up and down over the decades as service demands have required.

One concern that the agency has is the rapid increase in regulatory and political interference in the maritime sector. This industry has a long forward view. Short-term political fixes and

patronage postings of politically connected people who do not execute their duties in the best interests of trade and jobs for the citizens are increasingly common. San Diego recently came close to building a sports stadium over the top of its main marine terminal!

This requires a very active commitment to industry associations, and the time and money necessary to stay vocal and visible. These two traits are not something that shipping is historically comfortable with. General Steamship Agencies, Inc. has a well-documented commitment to leadership roles in local, regional and national industry associations to defend and promote the industry against such assaults.

Transmarine Navigation Corporation: on-board experience and expertise

Celebrating its 76th year, employee-owned Transmarine Navigation Corporation is a leading bulk cargo shipping agency in the United States. Headquartered in Long Beach, California it has US offices on the US West Coast, the US Gulf and in Hawaii. Its dry bulk activity consists of its established market position with grain exports from the Colombia River along with a rising volume of solid fuel, sulphur and other dry bulk commodities from US Gulf, California and Puget Sound ports.

Transmarine delivers value-creating agency service by employing a different model than its competitors: while some companies concentrate their expertise in the office and send entry-level personnel to vessels, Transmarine's boarding agents are trained veterans with an equity stake in the firm, placing experience and expertise aboard the vessel. These agents are backed by highly experienced operations mangers and senior management.

The role of an agency divides into the routine and the exceptional. Routine agency tasks are not dramatic, but performing them poorly results in costly delays and blinding confusion for vessel owners and cargo interests; performing them with reliable consistency creates savings and clarity for our clients. However, it is in the exceptional issues when an agency's expertise and collective experience produce value for the client far beyond the cost of the service.

The agent needs to communicate constantly with the vessel operator and the cargo interests to report precise operational facts and also to illuminate possible complications to people in distant time zones who are perhaps unfamiliar with local practices. Empathy is essential. The agent has to communicate a situation and its nuances, provide advice with the aid of his experience and expertise, receive instruction, and act with promptness.

It is vital that an agency have a solid relationship with the people who work at the dry bulk terminals in the port, relationships that come from years of living and working in the same community, sharing similar concerns and interests. Agents also have to have a proper and courteous conduct when dealing with port authorities on behalf of principals. Operational knowledge, communications skills, clear and efficient accounting — these are all agency essentials. But agency is a people business, where honesty and decency are the fundamentals.

Transmarine's clients form a roster of the world's most prestigious and recognizable companies in bulk shipping, commodities trading, grain import houses, industrial conglomerates, national oil companies (petcoke and sulphur), cement makers, and electricity generation utilities – from all continents.

Transmarine's coverage map includes every dry bulk port on the US West Coast along with the ports in Texas, Louisiana, the lower Mississippi River and Hawaii.

Transmarine is pre-eminent in the tanker market, but its dry bulk vessel volume is growing on all fronts: number of calls, amount of revenue and proportion of calls. Dry bulk is a key growth area for Transmarine. The company does not perform liner container work.

Competitors are well-known dry bulk agencies. All seem to have a regional concentration and try to expand their service offerings into other dry bulk regions of the country.

Transmarine's challenges relate to the competitive conditions of the ports and regions in which it operates, the environmental, labour and economic issues reported in the press. The poor condition of the dry bulk freight market makes cost control an ever higher priority and funds management a crucial factor in the survival of an agency. The agency that is highly disciplined with funding is performing a vital service for his principal and all other industry stakeholders.

Transmarine invests considerable time representing its principals' interests by participation in local maritime associations and harbor safety committees, and as a member of ASBA (Association of Shipbrokers and Agents) on a national level.

Founded in 1938, Transmarine became an ESOP (Employee Stock Ownership Plan) majority-owned company in 2012. The company believes it is the first shipping agency to achieve this. There are 75 employee/owners across offices in:

- California: Long Beach, San Francisco, Stockton, San Diego;
- Oregon: Portland;
- Washington: Seattle, Bellingham, Anacortes, Grays Harbor;
- Texas: Houston;
- Louisiana: New Orleans; and
- Hawaii: Honolulu.

Dry bulk contacts are:

- Mark Hanson: VP Dry Cargo Marketing;
- Patrick Dunbar: Solid Fuels Marketing;
- Phil Brotherton: Breakbulk Marketing;
- Ivan Nikolic: Marketing Manager;
- Kyle Munson: Texas District Manager; and
- Paul Clancey: Louisiana District Manager.

Agemar: covering Venezuela and Trinidad

Agemar is Venezuela's major shipping agency. The company, which was incorporated in 1969, is privately owned. It offers its principals world-class shipping agency services, through well-trained and capable personnel.

Services include: oil tankers, product tankers, dry bulk carriers, chemical tankers, gas carriers, project cargoes, cruise ships, research vessels, cable-laying vessels, offshore platforms, navy vessels, crew attendance and bunker deliveries.

Agemar offers agency services in Venezuela and also in Trinidad through its sister company Agemar Trinidad Ltd. General operations are controlled from the head office in Caracas.

Agemar has an extensive list of first class clients for oil, LNG, chemicals and dry bulk operations and prides itself on covering all of their requirements in the most transparent and professional manner through its expert knowledge of Venezuelan and Trinidadian laws in terms of import/export operations.

The company has a sound financial standing, and is capable of meeting all demanding local obligations, and able to reassure its principals that advanced funds will be used appropriately.

Agemar offers:

- high quality and consistent service at competitive prices;
- top-level shipping agency industry expertise;
- integrity;
- high quality in all its services;
- financial strength;
- administrative flexibility;
- long-standing working relationship with port authorities and government entities;
- efficient turn-around of vessels and continuous improvement of services;
- over four decades of experience support the most comprehensive agency system in Venezuela and Trinidad;
- port shipping agency for all type of vessels;
- husbandry agency;
- assistance for bunkering services;
- supervision of delivery of spare parts, mail and provisions;
- port information services;
- crew attendance at airports and terminals;
- efficient and prompt communications;
- up-to-date information technology applications and systems;
- on-time financial and operational reports;
- confidentiality; and
- risk assessment procedures.

In the petrochemicals sector, Agemar Venezuela is a popular choice for first class chemical tanker owners and ship operators when calling into Venezuelan Ports.

Agemar Venezuela pioneered the Methanol and MTBE export cargoes since the beginning of operations of the Jose Complex in Venezuela. Also, its Trinidad sister company is deeply engaged attending LNG Vessels in Atlantic LNG terminal.

Among other top cargo services, Agemar provides logistical support to the following bulk cargoes to and from Venezuela: rice, sugar, beans, coal, urea, petcoke, ammonia, clinker, alumina, iron pellets and iron ore.

The agency provides round the clock services in all our offices and guarantee precise and timely information on 24/7 basis, 365 days a year. It is ISO 9001:2008 certified as Port Agent by Bureau Veritas, and is an associated agent of INTERTANKO.

INTER BALT: Poland's port specialist celebrates its tenth anniversary

The INTER BALT company is a major presence in the Polish shipping industry. It is one of the country's leading bulk ship agencies.

With its headquarters in Gdansk and branch office in Szczecin, INTER BALT began its business activities on 1 January 2004. The foundation of the company was the result of the restructuring activities in Weglokoks S.A. — Center of Foreign Trade of Coal.

Today with 46 employees, INTER BALT provides comprehensive services in the field of port clearance and agency services to vessels calling at Polish ports and shipyards, as well as shipbroking services, logistics and forwarding services for coal, coke, biomass and other bulk cargoes.

After its foundation, INTER BALT successfully organized the company's agency activities within the new company. According to maritime law, a ship agent is entitled to act on behalf of the ship owner when dealing with the authorities and entities managing sea ports. In other words, the agency represents a ship owner's interests from the moment a ship enters the port until the moment it leaves. The agent concludes handling or delivery contracts on behalf of the ship owner, and is entitled to collect or pay any sorts of liabilities related to the ship calling at a port. It can also make claims resulting from

Ship and barge loader at the Port of Szczecin.

Bulk berth at the Port of Gdansk.

shipping agreements and collisions at sea on behalf of the ship owner.

The job of a maritime agent is very specific — the agency works non-stop, seven days a week, 365 days a year. Further, the work requires in-depth knowledge of the procedures related to port operations. INTER BALT's highly experienced agency team enjoys good reputation among the biggest owners, and does its utmost to fulfill the 24-hour husbandry mission. It owes its dynamic and continuous growth to two factors: first, its team of highly skilled staff, which pursues with great commitment the company's strategy; and second, to the loyal support from its partners and customers, with whom it has built long-term business relations. INTER BALT successfully co-operates on a regular basis with a number of owners.

From the beginning, INTER BALT has specialized in bulk carriers transporting coal, coke, biomass for Polish power plants, aggregate, liquid fuel, scrap metal, magnetite ore as well as in rendering agency services to vessels renovated in Polish shipyards.

The company's several years' experience in forwarding mass commodities, good relations with the companies, institutions and offices dealing with port traffic will guarantee that its customers' expectations are met. As the port agent, INTER BALT comes into contact with individuals and organizations. These include ships' masters, officers and crew, customs, immigration, port authorities, towage companies, boatman and stevedores. Depending on circumstances, owners need a range of services, including the arrangement of repairs, surveys, medical attention and so forth.

This list is by no means exhaustive, but merely serves as an illustration of the diversity of people and organizations that are involved at one time or another with a vessel and its cargo during a port call. INTER BALT helps its principals to comply with legal requirements, both Polish and international. It is important to remember that, in recent years, new legislation has been introduced which includes PHICS (Polish Harbours Information & Control System) in Polish ports, and the Paris MoU, a new inspection regime as well as new regulations in respect of increased efficiency, safety and environment protection.

INTER BALT's major clients include several companies: Weglokoks S.A. GFD Suez, SUEK AG, and Vattenfall which between them represent 90% of INTER BALT's principals

The company works hard to remain competitive in the agency market, and must deal with competition from many companies among which include Polfracht, Inchcape, MAG, Rentrans and Anchor.

A very important and relatively new scope of activity of the

Coal handling at the Port of Gdynia.

agency team is shipbroking — concluding charter agreements for the transportation of goods ordered by external companies. Several years ago INTER BALT successfully commenced such activity receiving orders from foreign contractors.

INTER BALT aims to be the preferred international provider of high quality, innovative, cost-effective and added-value business solutions for shipyard and shipping services, employment, international trade and logistics, offering mutual benefits for its partners and communities in which it is active. The agency is open to co-operation with every contractor and offers consulting services connected with its specialist operations to each potential client. It has offered end-to-end dry cargo management solutions to principals for the last ten years and has provided customized answers, which incorporate procurement, shipping, port logistics, land transportation and shipping consultancy. The company shows great flexibility in diversification of its operations and expanding the sources of income concentrating on the enterprises related mainly to maritime economy, agency and logistic services, according to the CEO of INTER BALT Poland, Mark Kowalski.

INTER BALT is a member of the Polish Shipbrokers' Association and is BIMCO registered, no. 162101.

Port of Swinoujscie.

Sri Lanka served by Aitken Spence

The Aitken Spence PLC, a public listed company based in Sri Lanka is a diversified conglomerate. The company has been in the shipping agency business since its inception in 1868 and currently represents many major international shipping principals.

Aitken Spence Shipping Ltd was the first shipping agency in Sri Lanka to obtain ISO 9002 certification. It is also a member of the prestigious Multiport Agency network, and is a committee member of the Ceylon Association of Ship Agents.

The agency also represents world-renowned international freight forwarding companies and NVOCC (non-vessel operating container carrier) operators. In addition, it is the agent for numerous cruise lines.

In addition to its representation in liner, cruise, NVOCC operations, Aitken Spence handles liquid bulk and dry bulk vessels for numerous principals. Dry bulk constitutes approximately 2% of its business as its main focus has been on the containerized business. The agency handles vessels in all ports in Sri Lanka. The main sea ports are Colombo, Trincomalee, Galle and Hambantota.

Dry bulk cargo in Sri Lanka is limited to a very few commodities as most of the cargo is containerized. The main cargoes are cement, clinker, gypsum, coal, fertilizer and wheat. Handling of clinker, gypsum and cement are done in the Ports of Colombo, Galle and Trincomalee. Coal is handled in Trincomalee and at anchorage in Norochcholai in close proximity to the coal-fired power plant. Bulk wheat is handled in Trincomalee and Colombo and fertilizer is handled in Colombo.

The Port of Colombo handles approximately 2.7mt (million tonnes) of dry bulk cargo whilst the Port of Trincomalee handles 2.4 mt and the Port of Galle handles 0.42mt of dry bulk cargo.

The role of the agent in handling dry bulk cargo is critical especially in Sri Lanka as direct delivery of cargo has to be effected upon discharge. The ports in Sri Lanka do not provide any storage or warehousing facilities and as such the consignees either have to have their storage facilities set up on their own in the port premises or outside the port.

In the case of bulk wheat imports, there are two main flour milling plants which have set up their storage facilities inside the port premises and the milling facilities inside and in close proximity to the port. Since cargo is discharged using pneumatic vacuators, handling such ships is not a major problem.

In the case of bulk cement, the three main importers have their storage facilities inside the port premises. Cargo is discharged using vacuators directly to the silos. There are other importers which do not have storage facilities in the port, and have to provide bulk transporters to take delivery from the vessel and transfer to their storage facilities outside the port premises. This becomes a challenge in trying to co-ordinate the delivery and clearance process.

Bulk gypsum and clinker are imported by the two main cement manufacturers in Sri Lanka. This cargo is discharged using grabs and transported in trucks to the cement plants.

Fertilizer is discharged using grabs onto hoppers, where some of the cargo is transported in trucks to the storage facility of the importers, whilst some of the cargo is immediately bagged alongside the vessel and the bags are transported to the warehouses of the importers. Handling and co-ordinating the discharge of bulk fertilizer is a challenge, to ensure that there are adequate trucks to take direct delivery, adequate labour to work 24x7 and for the smooth co-ordination of the discharge and delivery operations.

The bulk coal that is discharged is for two main importers. One importer is a cement producer which discharges the coal in Trincomalee using grabs, takes direct delivery onto trucks and transports the coal immediately to its storage facility located over 150km away. The other importer is the Ceylon Electricity Board, the national producer of electricity which operates 2x300MW coal-fired power generating plants located 110km north of Colombo. Since there is no alongside facility to handle ships, the coal is discharged at anchorage onto barges using grabs and the barges come alongside the pier, where the cargo is discharged using grabs onto a conveyor. This is quite a tedious task and coordinating the discharge is quite a challenge. Since discharge from the ships is done in open sea, during the monsoon period, which lasts about four months, no activities can be done.

Aitken Spence Shipping Ltd handles vessels that discharge bulk cement, wheat and clinker. These cargoes are contracted by the importers and the agents in most cases are appointed by the importers. The agency handles dry bulk cargo in the Ports of Colombo, Galle and Trincomalee. Its dry bulk customers include Holcim Cement, Ambuja Cement, Prima Flour Mills.

The Port of Colombo in Sri Lanka.

GAC: your eyes and ears in port

Eric Barnard, GAC Group Sales Director – Shipping, explores the integral role ship agents play in helping dry bulk operators to protect themselves against volatile market conditions.

According to BIMCO's review of 2013 and market outlook for 2014, China — the lynchpin of the global dry bulk market — imported record-high quantities of coal and iron ore during 2013, and that trend is expected to continue. Global steel production also rose by 3.5% in 2013, pushed up by Asia and the Middle East according to the World Steel Association. Elsewhere, coal exports from the United States to the likes of Europe are also set to increase, thanks in large part to the country's move from coal to shale gas as their primary power source.

But the picture is not all rosy for dry bulk shipping. Whilst there are positive signs on the demand side, this is driven by Asia. Steel production actually fell in the European Union and in North America in 2013. On the supply side, there is uncertainty over scrapping rates and the number of vessels due to come into service in the near future, and that could further upset the supply-demand balance. Adding to the volatility of the dry bulk market, factors such as the impact of seasonal weather can further disturb shipping rates and make it harder for shippers to plan for the future.

Given the pressures faced by all parties across the dry bulk supply chain, ship agents play an important role in helping their customers to control costs, manage their operations and effectively capitalize on periods of positive market growth, whilst protecting them against the swings of fortune that freight rates susceptible to volatility may bring. Ship agents are also key to protecting the most valuable assets – vessels, cargoes and crew.

Specialist expertise

Not only should your agent be able to undertake their immediate tasks in port, they must also possess a forensic insight into the dry bulk industry, understand the operational and commercial constraints for each particular port and type of cargo, have the knowledge and foresight to account for all potential risk and the resources to deal with problems when they arise. They must also have the infrastructure, resources and personnel in place to ensure the most efficient handling of cargoes.

Established in 1956, GAC is now one of the world's largest providers of shipping services with a proven track record of serving large dry bulk players globally. GAC's unparalleled expertise and experience in delivering professional ship agency services for a wide range of dry bulk markets help you achieve time and cost efficiency.

As the eyes and ears of our customers, we oversee activities such as proper loading of cargoes and correct customs clearance documentation, and also ensure that all pollution prevention and cleaning measures are in place (reporting to our clients with photographs), where permitted. Such duties vary considerably for different types of cargo and it is essential that your ship agent has specific knowledge of your sector to avoid costly and even dangerous mistakes.

Global reach

Just as sector specific knowledge is required for the safe and cost-effective handling of dry cargoes, so too is strong local expertise and contacts to expedite services and guarantee all local regulations, requirements and procedures are correctly followed. Having a global agent with a local presence in every port you visit can create significant savings and remove much of the uncertainty associated with enlisting a reputable agent.

Eric Barnard, GAC Group Sales Director of Shipping.

GAC represents more than 3,500 customers and handles over 60,000 vessels every year through a worldwide network of more than 300 offices, so we have the reach and the resources to help you achieve smooth and rapid vessel turnaround at both load and discharge ports.

Further, working with an agent with an established global presence and reputation for quality services means that you can expect a consistent standard of service wherever you are calling. Worldwide, GAC applies the highest Health, Safety, Security and the Environment (HSSE) standards to everything we do, underpinned by our code of ethics and our anti-bribery and corruption, whistle-blowing, sanctions, corporate social responsibility and quality policies. This includes full compliance with international and local environmental and business regulations.

Value-added services

Saving time and money is fundamentally about streamlining operations and maximizing the efficiency of the vessel, the crew and all service providers to reduce downtime and cut costs. It's about avoiding complicated, time-consuming procedures and working to suit your own business needs, rather than being constrained by the limitations of other service providers. In a nutshell, you can only move as quickly as the slowest link in your supply chain.

That's why ship agents providing a wide range of complementary services tailored to the needs of each customer can be an important ally to owners and operators looking to protect their bottom line. At GAC, we offer a range of additional services such as maritime security, hub agency, vessel/crew husbandry services, ship spares logistics, bunkering, weather routing services, hull cleaning and more, any of which can be selected as requested and billed through our Global Disbursement Centre, providing a consolidated service and saving on port call-related services.

Owners and operators should be able to focus on securing the best rates for their vessels, to manage their fleet in the right way and to concentrate on building their businesses. A trusted ship agent should be on hand to help with the rest.

Wilhelmsen Ships Service: the view from the top

Frederic Fontarosa, Business Director Ships Agency Americas, Wilhelmsen Ships Service, gives his response to questions relating to ships' agency services.

What do you consider the role of a ships' agent to be:
According to shipping law, the ship agent acts as the legal representative of the owner while the vessel is in port and traditionally, a ships agent acts as the 'eyes and arms' of the ship operator on the ground.

However, the role of the 'traditional' ship agent has evolved over time and is rapidly changing as technology develops in a bid to make the business more transparent. Today, the ship agent is under pressure to be more responsive and keep the customer informed in real time.

Although demand for what we term 'regular' services has not increased in itself, ships agents are facing ever-growing requests from customers for better efficiency in the delivery of those services.

Customers are looking for operational efficiency for their vessel, and for relevant, accurate, and timely information to support their commercial decision making. Hence the reasons we established our Ships Agency Re-Defined (SARD) offer.

Providing relevant, timely, accurate information remain a key customer challenge agents want to become better at.

The realization that customers have higher expectations of the ship agency they deal with and how they expect them to interact with them is the route to successful relationship. Success in ship agency is engagement in your customer strategy. There has never been a greater time to create meaningful engagement on building long term relationship to help your customer create a competitive advantage. And this route is providing them with relevant intelligence gathered and analysed specifically to their market enabling customers to make the best commercial decision

Whilst it is difficult for independent local agent to consolidated global or regional intelligence, Global Ship Agency Network are in better position to provide a single and centralized source of market intelligence which can offer a 360° view of all the information pertaining to one customer individual need.

At what ports are you represented?
Building up our infrastructure according to customer needs is a key part of the ongoing management of our business. We now count 2,500 ports in both established and emerging markets across 125 countries. In recent years, we've expanded our network in China, India and Brazil and West Africa.

Who are your main competitors?
In the current climate, we need to ensure that the service we are providing meets a professional and competent level that enables us to differentiate ourselves. We have concentrated on bringing to market an integrated ship agency solution that enables us to compete on a local level as well as globally. As such, we have continued to operate successfully within a difficult economic climate.

How is business at the moment?
The market has not yet fully recovered from the demand shock in 2009. We know that relationships count, which is why many businesses are looking for a well-known, trusted partner like WSS for management of all their ships agency requirements.

With the SARD and upcoming offer, we aim to gain market share by differentiating ourselves from the locals. Fundamentally, the ship agency business is no different from other service industries and combining our global network of offices with our competence and experience puts us in a unique position to lead change within the agency market.

Ultimately, we can drive costs down for our customers and help them make sound commercial decision in difficult economic times

How much of your business relates to dry bulk?
Around half of our activity relates to dry bulk. Due to our extensive worldwide coverage we offer agency services across multiple segments, from cruise to offshore; however our biggest activity is within the handling of dry and wet bulk cargo.

GAC Australia signs 3-year contract with MOL

Multi-modal transport operator Mitsui O.S.K Lines (MOL) has awarded an exclusive three-year contract to serve its vessels and port calls across Australia to GAC Australia, part of the global shipping, logistics and marine service provider GAC Group.

The contract was signed by Mark Austin, Managing Director of Mitsui O.S.K Lines Australia (MOL), and Phil Coolican, Managing Director, GAC Australia, following a rigorous tender process.

MOL is one of the world's largest marine transportation companies, operating a global fleet of more than 900 vessels with an overall capacity of around 66 million deadweight tonnes (dwt). That fleet includes containerships, bulk cargo carriers, car carriers, oil tankers, chemical products carriers, and liquefied natural gas (LNG) carriers.

Phil Coolican adds: "This is a highly significant contract for GAC in Australia and we are delighted that MOL have entrusted their fleet to us. Our extensive operation across Australia is focused on helping MOL to deliver their strategy in Australia, and beyond, by providing the highest quality services and working closely with them to make sure that all of their needs are met."

"On the back of this contract and in light of the further growth in demand for GAC's services across Australia, we are investing in further development of our own infrastructure and operations to ensure that we are able to work reflexively to meet the needs of our customers across the country." He further commented.

Established in 2007, GAC Australia provides a full range of shipping, logistics and marine services covering all ports across the country from 14 strategically located branch offices and its national headquarters in Sydney.

Shipping.dk: ship agency services in Denmark, Sweden and France

Shipping.dk is a logistics company with its own terminals, trucks and ships. Its line of business is agency (including STS), stevedoring, chartering, air freight, courier service, project cargo and road — both import and export. Furthermore, it offers storage facilities and bagging.

Shipping.dk is part of USTC (United Shipping & Trading Company), which is owned by Torben Østergaard-Nielsen.

Activities

Shipping.dk is one of the leading logistic companies in Denmark. It focuses on:

- ship agency;
- ship-to-ship operations;
- project shipments;
- terminals;
- stevedoring; and
- road division

Coverage/locations

With offices in all the ports mentioned below, Shipping.dk covers all of Denmark's ports and the northern part of the Swedish west coast:

- Frederikshavn;
- Aarhus;
- Fredericia;
- Aabenraa;
- Kalundborg;
- Køge;
- Copenhagen;
- Lysekil, Sweden; and
- Marseille, France.

Role of an agent

The main role of an agent is co-ordination and foresight. Shipping.dk is its principals' local representative, who has the local knowledge enabling us to ensure optimal and smooth operation. The agent has to know all parties involved in the cargo operation and needs to be able to foresee potential problems and prevent them, rather than solving them once they have occurred.

With the increase in demands and new systems from authorities, it is important for an agent always to be updated on this in order to avoid delays on the vessels and penalties for the principals. A good agent can save owners a great deal of money in reduced lay time and in general port costs (reduced number of tugs etc.).

Main agency activities

Shipping.dk handles about 2,000 port calls per year with more or less a 50/50 split between dry cargo and tankers. This gives it extensive expertise and knowledge of the market, which it always strives to extend to all its locations. The company's position within agency on dry cargo vessels has been built up through investments in terminals, warehouses and equipment, which is highly valued by the cargo owners.

Main challenges

With all the new IT systems and registration demands from both Danish Authorities and EU Law, it has become much more complex to act as a shipping agent, and in many cases owners/ charterers can face penalties if they fail to remain up to date. When the shippers and owners take on a shipping agent, the shipping agent takes over some of the obligations otherwise placed on the shippers and owners. Shipping.dk takes pride in the fact that its Agency department is well renowned for always being extremely up to date.

Inchcape Shipping Services restructures to improve global agency offering

DCI recently had a long chat with Tim Cahill, Chief Operating Officer of Cargo Solutions at Inchcape Shipping Services. The maritime behemoth traces its roots back to 1847 and now handles over 70,000 port calls each year operating out of more than 300 offices employing over 3,800 people across 65 countries. Cahill explained how recent restructuring will further help expands ISS' ability to offer global value-added services to ship owners and cargo firms all along the supply chain.

DCI: *Inchcape Shipping Services has a long history in shipping and dry bulk. Can you explain recent company strategy and your plans for moving forward in terms of growing your marine services footprint?*
Cahill: Last month the company was restructured into three business verticals. The plan is to cement our position as the world leader in maritime and cargo services by globalising our existing service range and leveraging our existing positions to further grow our overall business.

DCI: *How does this strategy break down in terms of service delivery and operations?*
Cahill: Well, first we have our Marine Solutions Division, which is our original port and ship agency business and has been part of our business for over 100 years. In addition to that, in 2013 we entered a joint venture with Palumbo S.P.A. which is a project cargo and logistics company, creating ISS Palumbo. This has now been put into another vertical called Supply Chain Solutions which includes our government services division which, among other things, feeds 30,000 people each day in Somalia. And then we have the Cargo Solutions team which includes CESI Cargo Services which I sold to ISS in 2008 and was originally set up in the US back in 1982.

DCI: *And what is the strategy for the Cargo Solutions division that you head up?*
Cahill: We've already taken our Cargo Solutions division global. As the name suggests, our job is to focus on cargo. So, unlike our port agency business, which is more about supplying port services to ship owners, charterers and operators, we work on behalf of mining entities, trading companies, industrials and other cargo owners. From the point of origination we arrange and manage transport logistics for multiple bulk commodities, we manage stockpiles, oversee blending, manage and measure inventories through geo-spatial surveys and oversee the loading and surveys during the vessel loading process. On the discharge side we supervise the unloading and stockpiling process and can arrange inland transport for final delivery to the end user. So we can do the whole supply chain end to end and offer management services on a day-to-day basis. So, for example, we already handle the logistics for coal exporters, traders and for buyers in Indonesia, but apart from the cargo management services and the tug, barge operations and the loading onto ocean carriers, we can also manage unloading and delivery once it arrives at, for example, India, including transport to the power station. We've also done this for met coal exports end-to-end from the US into India.

DCI: *How will you leverage ISS' agency business to expand your Cargo Solutions division globally while still keeping a sharp eye on your extensive interests in the US?*
Cahill: Our agency services are the core business and take in all types of ships, including cruise vessels, tankers and bulkers to name a few. At Cargo Solutions, we work on behalf of the people who control the cargo. The majority of the time our cargo customer will also be the vessel charterer. Utilizing our existing Marine Solutions global office platform allows us to leverage our existing presence to identify and expand our cargo management business and in turn provide new port agency opportunities for our existing offices. So, if we're moving a bulk cargo from one of our operations in South Africa, Colombia or the US to, say, Thailand, then we can use our agency office in conjunction with our Cargo Solutions expertise in that country to manage it. It's the same for our Supply Chain Solutions group. If we are managing a pipeline project our Marine Solutions team can assist with the port services for vessels serving the project and also the vessel owners or charterers. So now we have evolved into a global Marine and Cargo management company, not just a marine port agency company. The key is to identify or develop an opportunity where we can

‘We are still in a challenging market’

‘We are still in a challenging market — Asia is no exception, says WSS’s new Regional Vice President Asia Pacific, Neal De Roche. He says Wilhelmsen Ships Service (WSS) remains focused on providing innovative solutions to client needs.

Speaking as he takes up his new role in Singapore, following five years in Shanghai, De Roche says the recent recovery of some shipping segments should not be taken as a sign of a return to a simple ‘business as usual’ scenario.

“It has been struggle over the last few years. We are still in a challenging market and Asia is no exception. Despite perceptions to the contrary, China is a quality not a quantity market,” he says. “Credit risk will continue to be a challenge in the current trading conditions. But there are signs of recovery and we will ensure we are ready as the market improves further.”

New offers, promotions and campaigns are under preparation to roll out during 2014 covering Ships Agency, Technical Services and Safety, areas De Roche says can add further value for customers. He believes WSS is well-positioned in its core business sectors to draw on support from a diverse customer base, including marine chemicals, marine products, safety systems and ships agency.

Nonetheless, he accepts that competition will continue to be tough within China and the wider north and south Asian regions, even as the trading environment improves.

“We have had great success in China thanks to our investments in operational service and support. We now have around ten owned offices in various locations covering the most important ports,” he says. “Our challenges are in continuing to develop innovative offers which add value to our customers and enable us to operate sustainably long term. Operational efficiency is a big focus area and this will be at the top of our agenda. The more we can optimize, the better we can serve our customers and ourselves.”

De Roche says the core WSS philosophy — helping clients meet their efficiency and safety compliance needs — will see the company push forward as regulatory pressure increasingly impacts day-to-day operations.

“Our maritime expertise and focus in specific business streams sets us apart from the rest and gives us a unique advantage. We rely on and will continue to build on our global network capabilities to ensure we are at the right locations for our customers both operational and commercially. Basing our regional office in Singapore provides an opportunity to connect with key traders, charterers and shipmanagers and take advantage of the logistics advantage offered by a central delivery base.”

Neal De Roche began his shipping career at 16, when he joined his first ocean-going vessel as a navigation cadet. He joined the Wilhelmsen group in 1997 and served as Area Director for East and South Africa based in Dubai, then as General Manager, Abu Dhabi and in various positions in South Africa. He was Area Director for North East Asia, based in Shanghai and responsible for China, Hong Kong, Japan, South Korea and Taiwan before becoming Regional Vice President Asia Pacific in mid-2013.

add-value by either providing an existing service or develop a new one in the supply chain process. Having the existing global offices acting as our eyes and ears on the ground looking for these cargo opportunities I feel will increase the potential to develop new opportunities for our entire organization.

DCI: *You recently appointed Vincent Mazzone to the role of Vice President Cargo Solutions Business Development (see ‘Dry bulk cargo specialist brought in by ISS’ on p13 of this issue). What will Vincent offer to the company?*
Cahill: Well, Vince has over 30 years of cargo and risk management experience with bulk cargoes. He has worked for SGS, Koch Carbon LLC and most recently as a consultant. So, first and foremost, he knows the cargo management business.

DCI: *Why is he based in Geneva?*
Cahill: He has been there for over 20 years providing cargo and risk management services for buyers, sellers, traders, producers and international inspection companies. He will be travelling, but the advantage of Geneva is you have a lot of large trading entities based there along with the opportunity to also engage clients in London and on the continent on similar time zones. Our company opened an office in Geneva last year with our JV partner (ISS-Tositti) and we think it will be helpful to have Vince in there with his bulk cargo experience along with his personal contacts with buyers, traders and sellers. So it’s like with our terminals business, the additional presence in Geneva with traders and cargo entities brings another section of potential clients into contact with the rest of the business. So we are continuing to utilize our existing infrastructure investments to leverage opportunities.

DCI: *You mentioned your terminal operations and management business, how is this progressing?*
Cahill: We recently hired Mike Ferguson who joined us in February and he has a lot of experience in bulk terminals in the US with companies like Drummond and Kinder Morgan, as well as Shell and more recently with Forge Group in the USA. So he has a very dynamic broad background in terminal design, business development and on the operating side as well. His remit is to use his extensive experience and knowledge to grow our terminal operating entities as part of our Cargo Solutions business.

DCI: *Do you think your Cargo Solutions division is now fully equipped to pursue your goals as part of ISS’ growth strategy?*
Cahill: If you look at Inchcape Shipping Services and how we are positioned moving forward, we now have the largest marine services company through our Marine Solutions division. A very dynamic Supply Chain Solutions division which is quickly expanding across the globe. And we have our Cargo Solutions division which provides risk and cargo management services to serve the commodity markets — dry and liquid bulk — in conjunction with our shipping entities that control those markets. Then our terminals group will take it further into land-based areas. So we are evolving and we are continuing with our strategy. All three business streams will help one another to the overall benefit of ISS globally.

T. Parker Host: your host on the water

With a long-standing tradition of providing customers with exceptional vessel agency services, T. Parker Host, Inc. handles over 3,600 ships a year and has emerged as the largest dry bulk agent in the United States. T. Parker Host, Senior, a life-long maritime leader in Hampton Roads, VA, founded the company in 1923. Tending to coal ships calling Newport News, VA via the C&O Railroad, he laid the groundwork for what has now become known as the 'Host' standard of service. Now in its fourth generation, the family-owned business is proud to build off of this legacy.

With the guidance of Chairman & CEO David Host and Vice Chairman Tom Host, the company is currently led by President Adam Anderson, who started his career in 1998 as a boarding agent with the ship agency. Respected throughout the industry for the scope of his maritime knowledge, Adam knows first-hand that the role of an agent at T. Parker Host, Inc. is to "make our customer's problem our problem and to make every effort to solve these problems in a timely and cost-effective manner."

As with all ship agents, T. Parker Host, Inc. is tasked with obtaining information to subsequently provide the most accurate prospects, schedule, and details of a port call. "Because we approach every decision with a commercial mindset, we are able to stand out among the rest," says Southeast Regional Operations Manager Bobby Scott. In this way, T. Parker Host, Inc. positions itself to be the best possible eyes and ears for its customers in the ports they service by maintaining strong local knowledge of port activity and continued relationships with local maritime community including terminals, railroads, pilots, tugs, etc.

T. Parker Host's team of ASBA certified and trained boarding agents currently operates out of fourteen office locations along the US East and Gulf Coasts and is proud to have opened its first international office this past fall in Colombia. Whether it be importing or exporting, T. Parker Host, Inc., handles all types of

T. PARKER HOST, INC. OFFICE LOCATIONS

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- Baltimore, MD
- Norfolk, VA
- Wilmington, NC
- Charleston, SC
- Savannah, GA
- Fernandina Beach, FL
- Fort Lauderdale, FL
- Mobile, AL
- New Orleans, LA
- Port Arthur, TX
- Houston, TX
- Corpus Christi, TX
- Santa Marta, Colombia

Vice Chairman Tom Host and Executive Vice President Finn Host at the US Gulf Grand Opening Reception.

View from T. Parker Host, Inc. New Orleans office.

Boarding agent Jessica Maguire at work.

Host Terminals, Inc. discharging vessel in South Florida.

commodities including, but not limited to, coal, crude, grain,

With its initial roots in supporting the coal industry, T. Parker Host, Inc. has progressively strengthened into the top agency service provider to the United States coal export industry. The company has handled thousands of export coal shipments in the past 90 years and handled a record-breaking 60mt (million tonnes) in 2012 alone. David Host explains this success as being, "all about relationships and earning the trust from producers, receivers, railroads, terminals, and the many other support companies in the coal export chain. That the agency service provided is of the highest quality ensures smooth transportation logistics and support services from the coal mine to the end user. That level of service is our goal and our responsibility."

To even better service its customers, T. Parker Host, Inc. has expanded beyond traditional ship agency services and offers freight forwarding and documentation reporting, cargo supervision, KPI tracking, logistical support services, and transportation consulting.

Sister company, Host Terminals, Inc., was established in 2001 and provides marine terminal operations and stevedoring services. Host Terminals currently operates at seven US East Coast locations and handles over 7mt of bulk cargo annually. Like T. Parker Host, Inc., the focus is on providing innovative and customized solutions to forge long-term customer relationships.

Rich in tradition and experience, T. Parker Host, Inc. was built upon a foundation of the 'Host' standard of service. It operates under the mantra that, "Our only asset is our people. Our only product is our service. Let us put them to work for you." And judging by their rapid expansion and increasing success, many major companies have entrusted Host to do just that. DCi

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Speakers

• Jeffrey Landsberg, President, Commodore Research & Consultancy • Jonathan Chalacombe, Associate Professor in Maritime Studies & International Logistics Plymouth Business School • Peter Sand, Chief Shipping Analyst, BIMCO • David Peel, European Manager, RightShip • Ulrich Koester, Managing Owner, Maritime Tecnet GmbH • Teus van Vianen, Delft University of Technology • Brian Pittenger, Director Business Development, Jenike & Johanson, Inc. • Ian Adams, Executive Director, International Dry Bulk Terminals Group • Professor Mike Bradley, Greenwich University • Han Ozturk, Managing Director, Nectar • Johan Pruisken, Royal HaskoningDHV • David Trueman, DBIS • Micha de Jong, General Manager, Wuvio Chemicals

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Self-unloading vessels

offering flexibility and autonomy

Fig. 6 Cement tanker Goliath.

Self-unloading cement carriers with maximum hold volume

Introduction

Self-unloading cement carriers enable independent operation because they need no shore-based ship-unloading equipment and the enclosed material handling system ensures weather-independent, flexible, efficient and clean transportation of cement, fly-ash or ground blast furnace slag, *writes Mario Rämmele, IBAU HAMBURG, Germany.* As a rule the vessels have a fluidized system in the cargo holds but differ in loading/unloading technologies. The world fleet comprises almost 300 vessels from 2,000dwt up to 30,000dwt for seaborne cement transportation and domestic cement supply with the majority being in the 5,000 < 10,000dwt and 10,000 < 20,000dwt range (see Fig. 1 on p38). Over the years, the fleet has aged considerably and now about 40% of the fleet is older than 28 years. The average age of these

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Dust-free loading procedures independent of any weather conditions: The M.V. GOLIATH reaching the Sydney Depot.

During the voyage on the River Seine in France: The cement barge of LAFARGE Cement.

Advanced technology for self-discharging cement carriers: In line with our customers' needs IBAU HAMBURG installed especially in cement carriers advanced systems, which are fully automated and able to achieve high loading and unloading rates. Unique for the revolutionary IBAU concept is the space saving midship tunnel design that integrates the discharge equipment and divides the holds into a port side and starboard compartment. The IBAU midship tunnel eliminates an additional hold for the discharge equipment. The self unloaders are loaded and unloaded in the most efficient way by means of IBAU Pumps, complete with rotary piston blowers and other IBAU components, all made to measure, and all placed in the midship tunnel. IBAU HAMBURG has an excellent project experience in seaborne transportation as well as lake/river transport.

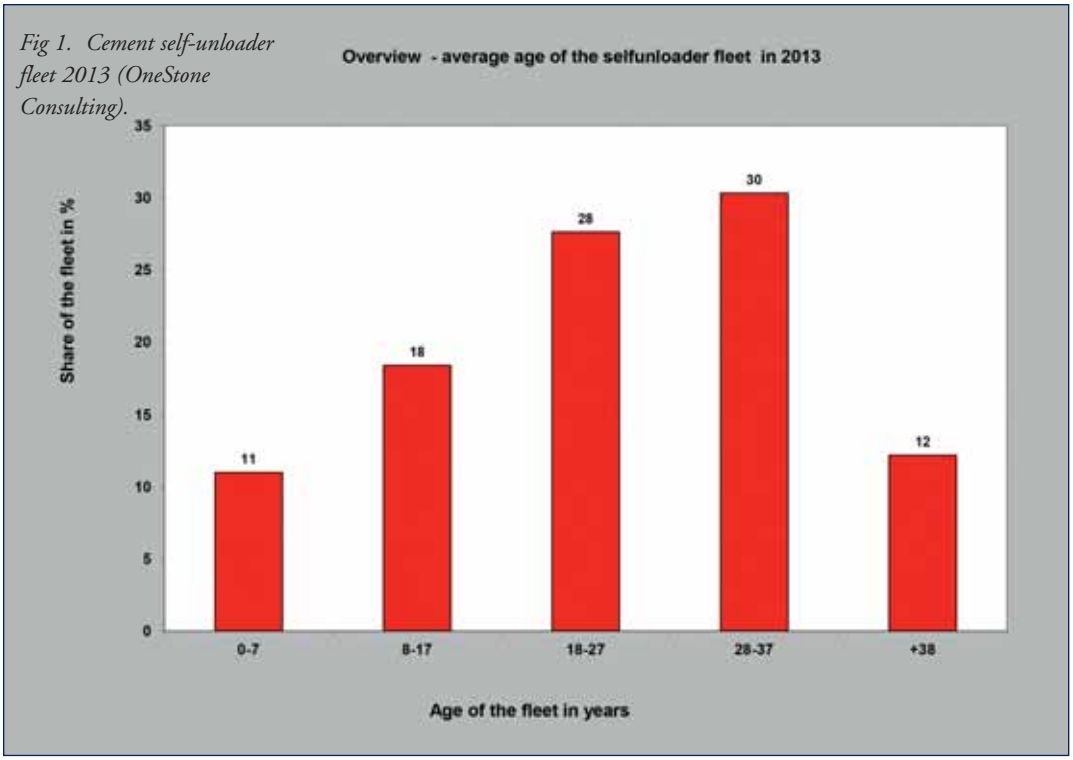
The IBAU HAMBURG Tunnel concept: Midship tunnel with the IBAU Pump and aeration panels.

The M.V. CEMSEA and the M.V. CEMSTAR during supply voyage.

vessels is 24 years, the average deadweight is 8,200dwt.

Trends are changing. New cement terminals for the growing domestic supply have encouraged cement traders and ship owners to invest in new buildings and convert bulkers to self-unloading carriers. In addition, the top charterers have changed their policy and limit the age of vessels to 25 years. Investment decisions are becoming more and more professional. Whereas, in the past, buying decisions were mainly based on the capital investment, now systems reliability, operational costs and maximum utilization of the ship's hold volume are taken into account.

Fig 1. Cement self-unloader fleet 2013 (OneStone Consulting).



Self-unloading technology and fields of application

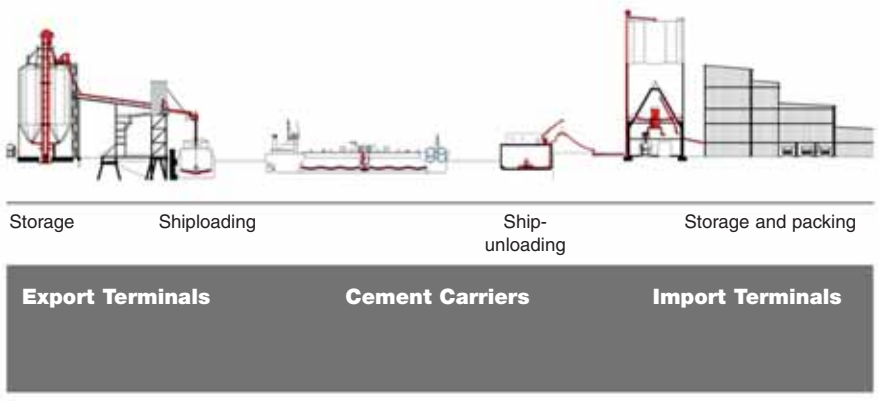
Shipping is the key to cement distribution, due to the large cost benefit when compared with rail and road transportation. Cement transported on domestic waterways has almost reached the same size as seaborne volumes. Countries transporting the largest volume of cement using domestic transportation are Japan, Indonesia, South Korea, Taiwan, India, Vietnam and Australia. Not surprisingly, these countries also have some of the largest self-unloading cement carrier fleets and in Japan at least 75 self-unloading cement carriers over 2,000dwt are in operation for coastal services. In Indonesia, there is at present a fleet of about 50 vessels and it is rapidly expanding. South Korea has a fleet of 30 self-unloaders over 2,000dwt, although the demand here has been decreasing for the last few years. In total, these three Asian countries account for more than 50% of the world's fleet.

Other large fleets exist in Cyprus and Malta, but this has nothing to do with the demand in these countries, it is a result of the flag chosen by ship-owners for economic reasons. With a current fleet of 18 vessels owned and 3 other operated KGJ Cement (Kristian Gerhard Jebsen Group) is one of the largest independent owners and operators of self-discharging cement carriers, worldwide. Its ships are from 1,725 to 28,980dwt size, and the largest use combined pneumatic and mechanical discharge systems, whilst in the smaller to medium range pneumatic discharge dominates. This is also true for Baltrader Schifffahrt (being a part of Brise Group), which currently operates a fleet of nine modern cement self-unloaders with pneumatic discharge, ranging from 2,200 to 6,800dwt. It should also be noted that these self-unloaders very often carry fly-ash or ground blast furnace slag as well as cement.

In the last few years, cement self-unloaders with pneumatic discharge have become more popular than mechanical systems, because they can be fully automated and are almost 100% reliable. Pneumatic discharge systems can be used on all ship sizes and are combined either with downstream pneumatic or mechanical system, or a combination thereof. Systems that can only discharge mechanically over the ship's side to load trucks directly are used for small or mini cement distribution terminals. For larger cement terminals with annual throughputs in excess of 0.1mt (million tonnes), the standard is for silo or storage systems, which include packing, cement mixing, truck and or railcar loading systems. These silos are mostly some distance from the berth and at least one pipe system is needed to transport the material from the ship to the storage silos.

Self-unloading cement carrier's equipment has to fit in with different ship-to-shore transport distances and materials as well as high loading and

Fig. 2: Integrated cement shipping scheme.



unloading rates of up to 1,000tph to reduce the time that the ship is berthed. As the transportation market has become more competitive, there is a greater focus on the operating and maintenance costs of the self-unloading system and maximizing the utilization of the ships hold, to reduce costs. The different systems on the market each need a certain amount of space which reduces the ship's gross cement cargo capacity. These cargo losses can be significant and require a careful analysis of the different designs for each planned ship size. Additionally customers require automated systems which can be handled by the ship's crew to reduce stevedoring and labour costs.

IBAU TECHNOLOGY

IBAU HAMBURG is one of the few suppliers which is capable of designing and supplying both onshore and offshore transport systems (Fig. 2 on p38), including shiploading systems, self-unloading systems and silo/storage receiving systems with a number of different technology options. Terminal projects can be handled either turnkey, including the plant engineering, manufacturing and delivery of mechanical and electrical equipment, automation, steel construction, building design drawings, installation, commissioning and testing or can deliver elements of the project such as engineering and supply of equipment. Its experience of cement storage installations includes flat storage, dome storage, steel silo and concrete silo design. For large volumes the IBAU Central cone silo design was introduced to the market in 1975 and since then several thousand have been installed.

For cement self-unloaders, IBAU has introduced the light midship tunnel concept. In this unique space-saving design, cargo holds are divided into a portside and starboard compartment. The compartments are equipped with fluidization panels (Fig. 3, right), which are very similar to those in IBAU Central cone silos. The ship length is divided into separate holds and each hold bottom is covered with slightly inclined panels. When the panels are aerated, cement flows to the lowest points in the hold, where IBAU flow-control gates are installed, to allow adjustable, computerized cement extraction from the holds. In the midship tunnel the extracted cement is collected by an IBAU pump for downstream conveying to the storage facilities (Fig. 4, below).

Fig. 3: Cargo hold with aeration panels.

While other solutions use a vacuum system, pressure tank system or screw conveyor system with downstream pressure vessel conveyors for transporting the cement from the hold to the shore terminal, IBAU uses the screw pump concept for direct ship to shore transport. One pump transports a maximum 350tph of cement with conveying distances of more than 500m. For larger capacities a series of pumps is used. IBAU pumps need little maintenance with only bearing oil level control, packing box and wear of the screw end-flight needed. Worn parts, including the packing box and end-flight are easy to replace.

Cement loading into the self-unloader holds can be direct or indirect. For direct loading, pneumatic systems are used, which convey the cement through one or more pipelines directly into the cargo holds. Flexible hoses for the connection of the shore and ship pipes are carried by an onboard crane (Fig. 5 on p40). Loading lines on deck are equipped with motor actuated IBAU two-way valves for directing the cement into the selected holds. For cement distribution from an on

Fig. 4: IBAU midship tunnel concept.

deck central loading device either fluidslides or horizontal screws can be used.

In the IBAU concept cement loading and reclaiming is completely automated and computer controlled. During loading, cement is automatically directed into the holds, while the ship is balanced. Unloading rates can be pre-selected and the operator gets continual information about the state of the hold and discharge equipment. IBAU HAMBURG can fit the computer systems with latest state-of-the-art technology to ensure highest possible through the hold capacity with the shortest lay-time for the ship in port.

System comparison

In principle there are four different types of self-unloading systems, which are based on pneumatic cement extraction from the ship's hold — the pressure vessel system, combined vacuum/pressure system, combined screw conveyor/blow tank system and midship tunnel/screw pump system. The pressure vessel or three-tank system uses a separate suction tank with integrated filter, which is installed on top of two or more pressure vessels for continuous operation. In the vacuum/pressure vessel system, two tandem blow tanks work in a quasi-continuous way. The cement is sucked by means of vacuum pumps from the holds to the blow tanks. In the combined screw conveyor/blow tank system instead of a vacuum system the blow tanks are fed by vertical screw conveyors. In the midship tunnel/screw pump systems, the cement is transported to the screw pump, which is able to convey cement over distances of more than 500m with vertical and horizontal piping.

The space requirement in the ship's hold is very low with the IBAU midship tunnel/screw pump technology, because the midship tunnel takes up only very little space and the pumps for the ship-to-shore transport have a very low feed point. The power consumption that is required for an IBAU pump is no

Fig. 5: Board crane lifting flexible hoses.

Fig. 7: MV Cemstar and MV Cemsea.

higher than for a combined vacuum/pressure vessel system and only slightly above screw systems for medium and long distance.

IBAU HAMBURG has completed a study on the space requirements for its system, which showed that with the midship tunnel concept the space loss is a maximum of 15% of the ship's hold. This space loss reflects the complete cement handling system with inclined panel aeration system, midship tunnel for the conveyor and flow control gates as well as a small bottom-to-deck hold for the downstream discharge equipment. The maximum space loss of the IBAU system compares very well with all other systems, which have a larger space requirement. Nevertheless it is suggested that ship-owners/operators do a comparison for their preferred ship size.

Another strong point of the IBAU pump is the adaptability to latest automation requirements. Self-unloaders can operate under any weather conditions. During loading and unloading the cement is always enclosed so that the environment is not exposed to cement dust. There is no contamination of the cargo by water or cargo residues. In cases where different cement materials have to be transported one after the other, a 100% cement reclaim from the cargo holds is achieved by the optional IBAU vacuum cleaner. The cargo holds are equipped with docking stations for the cleaner, which transfers the remaining cement between aeration panels into the bin of the IBAU pump. Particle separation is effected in the pump filter and no additional cement transportation equipment is needed.

New builds and conversions

The IBAU project list comprises new builds as well as conversions.

The *Goliath* (Fig. 6 on p35) is an example of a completely independent cement vessel.

The 15,000dwt cement tanker is operated by CSL Australia (Canadian Steamship Lines Australia). Each year, the vessel transports more than 1mt of cement from Devonport Harbour (which is near the Railton cement plant) to cement terminals in Port Melbourne, Glebe Islands (Sydney) and Newcastle. For loading, the shore-based pipes are connected via flexible hoses to the vessel's cement distribution system. The required compressed air for the cement transfer is generated by compressors on board. The appropriate cement tanker hold is selected from the ship's central control room to achieve stability. Loading capacity is 1,400tph with four shore-based IBAU pumps, unloading is via four IBAU pumps with 1,200tph and 300m conveying distance.

A typical conversion is the *Cemstar* (Fig. 7 on p40) (formerly *Lisa Lehmann*) with 2,000dwt cement capacity and two holds. Loading is either done by a shiploader with loading chute for 300tph or directly from road tankers. Unloading is done via an IBAU pump which delivers 150tph over a conveying distance of 265m. Cement is transported directly from the ship into storage terminals. This conversion was completed in just three months. The *Cemstar* is operated by Baltrader Schifffahrt. This year the company awarded IBAU HAMBURG another contract for the *Cemsea III*, which will have a 6,000dwt cement capacity and will be equipped with an IBAU pump, size 350, which can achieve an unloading rate of 300tph.

Conclusion

Cement self-unloaders with the IBAU midship tunnel design fulfil the most stringent system requirements and allow a maximum utilization of the ship's hold. Installation times for such systems are relatively short and the operating and maintenance costs are low when compared with other systems. IBAU HAMBURG has extensive project experience with ship sizes of 2,000–20,000dwt. Projects include new buildings as well as ship conversions. These cement tankers are adapted for different terminal facilities and depending on the ship's capacity and equipment are able to handle high loading and unloading rates of up to 1,000tph.

Turning a gravity self-unloader into a transloader: 'CSL Whyalla'

In the past, long discharge booms were the norm on gravity self-unloaders, and this was true of the many recent newbuilds completed by EMS-Tech for several high profile shipowners. The shipowners, as with the ones in the past, demanded this solution as it allowed them to both build large stockpiles onshore and service the greatest number of port facilities with varying receiving systems.

In recent years, however, some of the traditional self-unloader trades have disappeared as the world market has struggled under an excess of available shipping capability. At the same time, transloading systems have found a niche, especially in undeveloped areas of the world where there is little to no shore infrastructure. Rather than construct an expensive port facility, or dredge to allow larger vessels to service an existing port, a fully mobile transloading station can be a much more economical solution.

Most transloading systems today feature a raised telescopic shiploader boom rather than a fixed length boom. This provides the necessary loading flexibility as well as the height necessary to load Capesize ocean going vessels (OGVs), the vessel size of choice for movement of materials on long distance routes. Long discharge booms are less than ideal for transshipping, because the boom length is excessive for trimming and continuous ranging of the transloader alongside the OGV.

In 2010 EMS-Tech was contracted by CSL Australia to design and supply material handling system upgrades for its gravity self-unloader *CSL Sams* to convert it for transloader service to load iron ore to Capesize OGVs.

The original material handling system worked reasonably well, but the discharge boom was too low to the deck to provide the lift necessary to reach over the decks of larger vessels. Another issue with the *CSL Sams* was the fact that it was fitted with roller track style cargo gates below the cargo holds, and these would not provide a reliable steady stream of iron ore to the

conveyor system. Discharge to the conveyor system would be erratic, spillage would be excessive, and overall performance poor.

One of EMS-Tech Inc.'s many success stories has been the introduction of the patented Feeder Gate system approximately ten years ago. The Feeder Gates guarantee a steady flow of cargo out of the holds, even when the cargo is extremely wet and sticky or very dry and fluid. To date, over 1,000 Feeder Gates have been installed and are working on self-unloading vessels around the world, and these gates allow the discharge rate to be fine-tuned to suit the receivers demands, be they small or large. Much like a 'choke feeder', the gates are allowed to be open and the material is simply pulled out by the variable speed conveyor as required to meet discharge demands, free of spillage and dusting.

The Feeder Gates on the *CSL Sams*, renamed the *CSL Whyalla* after the conversion, allow the upgraded material handling system on this vessel to discharge iron ore at a precise rate of 4,200tph (metric tonnes per hour). Substantial upgrades to the system were completed to increase the capacity of the system from 2,500tph to 4,200tph and to increase system reliability. The original 40m-long discharge boom was removed and replaced with a 50m boom which can either elevate material to a new pedestal mounted 39m telescoping shiploader or discharge directly to shore.

The new 39m-long shiploader quickly and effectively loads and trims cargo into the Capesize OGV holds with a minimum of ship movement. The above deck system is fitted with dust control equipment to suitably address environmental concerns which exist both at the port of Whyalla and across Australia in general.

The *Whyalla* acts as a transshipment shuttle vessel (TSV) and provides extra flexibility to the existing Whyalla ore export operation. She is fitted with two bow thrusters and two azimuth thrusters for precision manoeuvring. The Feeder Gates ensure a constant feed of cargo to load the OGV as quickly as possible. The system is currently on target to transship 6.5 million tonnes in the next fiscal year.

The *CSL Whyalla* is one of a growing number of self-unloaders retrofitted to work as transshippers. However, there are issues to be dealt with when converting a vessel. One of the main concerns is to make sure that the system is sound enough to be operated at sea under dynamic pitching and rolling conditions, since most self unloaders were only designed to operate at berth. Precise engineering is required to ensure transshipment is possible.

EMS-Tech Inc. is pleased to be a part of this project and that this project is now delivering material in a reliable manner as expected and demanded by both the shipowner and the iron ore exporter.

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The weighing system can be seen in the picture at the boom tip of the floating cranes operating on the Mississippi River.

Low bulk freight rates and less than compelling commodity prices are not ideal conditions for those supplying materials handling equipment, *writes Michael King*. In a bid to boost sales, many are now searching out new cargo markets or seeking to further explore geographies where they have already achieved success. This is particularly apparent in the floating crane and offshore transhipment market, where operators are also countering the reluctance of miners to commit to heavy investments by promoting the low-fixed cost and flexibility of assets that can be rapidly transferred to where they are needed most.

Typical is Swire CTM Bulk Logistics, which already has a solid portfolio of offshore handling solutions in operation in Asia, mostly in the coal sector. Trevor Larbey, general manager, said the company was now marketing and adapting its coal solutions to the needs of customers in the iron ore and bauxite sector.

"Since 2012 the coal market has been in decline with prices falling through oversupply and softening economic fundamentals," said Larbey. "This, however, raises the importance of transhipping transfer rates to vessels, as faster turnaround times increase output volumes and the opportunity for mines to lower their operating costs. The longer you have a vessel loading the less volumes are selling.

"Market prospects for offshore handling designs in South East Asia remain subdued in the current market, however offshore bulk handing technology is still evolving and optimizing recent advances in this market allow us to focus on long-term benefits in design."

Terex Port Solutions, meanwhile, has been achieving yet more success in the US with its series of Terex Gottwald floating cranes. Based on mobile crane technology, TPS usually supplies the floating crane from the slew ring up and combines the machine with a barge provided by the customer. The crane can also be installed on a self-propelled barge to enable self-navigation without the need for a tug for ship-to-ship transshipment and ship-to-quay operations.

Last year the company sold its 30th floating crane and, fittingly, it was due to be deployed on the Mississippi River, where TPS has enjoyed most of its US success. The Model 8 crane ordered by Associated Terminals will be deployed at the Port of South Louisiana and will be configured as a G HPK 8400 B four-rope grab variant.

Peter Klein, senior manager for marketing at TPS, said approximately two-thirds of Terex Gottwald floating cranes had been sold in the US since 2004 when the company first entered the market with its floating crane series. "St. James Stevedoring Company, based near the Mississippi River, was the initial customer for our mobile harbour crane technology on barges," he said. "This was a common approach and a great example of how to combine customer ideas and requirements with supplier capabilities."

Because the environmental conditions on the Mississippi River make it difficult to build quays and harbours, stevedoring companies tend to rely on floating cranes to load and unload vessels and barges with transhipment from and to seagoing vessels/barges executed midstream. "Since the early 2000s,

stevedoring companies along the Mississippi River have been looking for better productivity and greater handling rates," said Klein. "This was finally achieved by Terex Port Solutions applying our proven mobile harbour crane technology on barges. The cranes ordered became larger and larger, and at the end, stevedoring companies ordered our Model 8 cranes, the largest crane we offer in our portfolio, as a floating crane."

One key attraction, according to Klein, has been the constant upgrades made to the solution as crane technology has moved forward. "We always consider the application of state-of-the-art market ready technologies to our floating cranes," he said. "Since our floating cranes are adapted from our mobile harbour crane technology, all new relevant developments are incorporated in the floating cranes."

He said a good example of the company's design innovation was the patented Terex® Gottwald weighing system. This unique system is installed direct on the crane and allows bulk materials to be precisely weighed during handling. "Besides simple integration into the handling process, the weighing system offers benefits to the bulk-industry by giving operators absolute transparency, up to every single grab, and objective performance measurement," he said.

Elsewhere TPS has had success marketing its floating cranes in Brazil and the Netherlands in the Ports of Rotterdam and Amsterdam, but its second biggest market is now Indonesia, a major export of bulk cargoes, especially thermal coal. "In Indonesia all cranes are dedicated cranes for open sea application working several kilometres off the shore in transhipment of coal," said Klein.

Of course, Swire CTM also made its name in Indonesia's coal sector. There it has been one of the pioneers of offshore bulk handling solutions, and its floating platforms have been a key enabler for miners as they seek to overcome the archipelago's shallow draughts and limited port capacity by using river and barge systems to feed offshore stations to load ocean –going vessels. Indeed, Indonesia's rise to become the world's leading thermal coal exporter would not have been possible without its multitude of transhipment platforms.

Swire's first major success in Indonesia came in 2008 with the *Princesse Abby* – jointly owned with PT Mitra Bahtera Segarasejati (MBSS) – which was deployed off Kalimantan. A second floating transfer system was then also built for PT Berau Coal and christened the FTS *Princess Chloe*, which Larbey claims is "arguably the fastest coal loading vessel in Indonesia" currently in operation.

The 5,500 GRT *Princess Chloe* is 98 metres long, 27 metres wide and has a draught of 4.8 metres. Designed by Italian companies Logmarin and Interprogetti and classed by Rina, the vessel features two Liebherr electro-hydraulic cranes able to handle 28 tonnes at 27 metres and is fitted with 2 × 20.6m^3 coal grabs supplied by SMAG Peiner and a continuous belted shiploader supplied by Bedeschi. The unit is also fitted with metal detection and sampling units.

"Despite the current downturn occurring in the global steaming coal market, we are positive about the medium to long-term prospects for Indonesian coal both in terms of export and domestic demand," said Larbey. "Domestic demand has doubled in recent years and the marine logistic task remains complex as regional and domestic trade volumes increase.

"For Swire CTM Bulk Logistics, Indonesia is a key focus and a

market in which we plan to develop future capabilities with our partners MBSS to service Indonesia's growing importance in Asia as a reliable supplier of quality maritime logistics services".

Klein, meanwhile, believes the market for floating cranes, and specifically Terex Gottwald models, is still in its infancy and offers huge potential, irrespective of bulk freight rates and commodity prices. "It goes without saying that Terex® Gottwald floating cranes can also be applied at other great rivers around the globe as well as in other ports, depending on environmental conditions," he said. "And, in fact, there are requests from many regions. Floating cranes based on mobile harbour crane technology are quite a recent innovation and the market for these types of cranes is still growing.

He also believes the formation of Terex Port Solutions gives Terex Gottwald cranes access to a much broader customer base. "When we were formerly Gottwald Port Technology, we used to be a niche market player for both mobile harbour cranes — including floating and portal cranes — and automated port equipment," he explained. "This completely changed when we joined Terex and became Terex Port Solutions, the new force in the ports market offering the most comprehensive port-related product portfolio.

"By combining our product portfolios, we are in the position to offer the individual and sustained solutions customers are really looking for — with regard to manual, semi-automated and fully automated solutions.

"Having integrated and streamlined our sales and service organizations, our customer responsiveness and worldwide coverage improved drastically. This means that we do have better access to additional geographic markets as well as more and more types of customers we can introduce our floating cranes solutions to."

Advanced floating terminals facilities design from Logmarin

Investment in transshipment facilities and self-unloading vessels may be an effective alternative to the shore-based terminal to stay competitive in today's market.

With *Ratu Giok 5* just delivered, the fleet of floating facilities designed and commissioned by Logmarin Advisors has now reached 20 units, of different sizes and features, which have handled more than 58mt (million tonnes) of dry bulk commodities in the last 12 months. Logmarin is recognized as a world leader in the development of floating terminal solutions.

The 'royal' family is growing

On 14 February 2013, the Indonesian company PT Kartika Samudra Adijaya (KSA) held the naming ceremony for *Ratu Giok 5* at Keppel Subic. This floating crane is twin sister of *Ratu Giok's* 'royal' family, operating in Indonesia since 2011. *Ratu Giok* (translation: *Queens of Jade*), was designed by Logmarin and built under RINA supervision to meet flag regulations, IMO, MARPOL and IOPP requirements.

Also for this Indonesian-flag floating crane, Logmarin carried out project management, supervision during construction and testing, assistance in procuring, crew training and will lead the commissioning at the operative site. Classed by RINA, this unit is 60 metres long, 3,400dwt and 4.15m maximum draught.

Since the concept of the modern floating crane was introduced by Logmarin for the first time in Italy in 2007, nine units have been commissioned and one more is under construction.

Logmarin notes that many copies of the originals are making their appearance, but the company is not overly concerned and sees it as a compliment, "...only valuables get copied" and according to the company the duplicates never perform as well as the original ones.

Thanks to the improvements applied, *Ratu Giok* is different from conventional floating cranes. Just to list a few:

- cargo storage allowing a stowage of about 3,000 tonnes, useful for balancing and trimming of vessel thus avoiding return cargo on the last barge;
- less sensitivity to adverse weather conditions thanks to the combined roll-damping systems' for pontoon rolling motion attenuation;
- crane positioning: perfect balancing between cargo, power and speed make this crane the most efficient one in the market, consuming only a glass of marine diesel oil for every tonne of coal handled.
- the *Queens of Jade's* performances have been shown to be steadily above the daily contractual loading rate. The 'older'

Multipurpose self-unloading vessel at design stage.

Even the world's largest floating terminal is no obstacle for Logmarin.

sister *Ratu Giok 1* is the record holder, both for the best daily average loading rate (29,638 tonnes in September 2013, while loading the Kamsarmax *Ocean Libra*) and for the largest amount of Kaltim Prima coal loaded in a month (584,861 tonnes in last October).

The Liebherr crane incorporates specific features for open water and heavy duty conditions. The cargo gathering and crane cycle time is enhanced by using a four-rope scissor lobster type Peiner 24.5m³ grab. Thanks to the great experience gained in the field and through pooling of marine knowledge, operational experience and technological skills, Logmarin can provide customized solutions: from the 'simple' one, like the *Ratu Giok* floating crane type, to the world's largest transhipping unit ever built (*Ore Fabrica*).

Growing beyond borders

In addition to a leading position in floating terminal design, just in the past eight years Logmarin has developed 60 feasibility studies and supply chain optimization concepts for the import/export of dry bulk, gas, forest products, containers, etc, and 22 technical services (supervision, inspections, performance and maintenance monitoring, etc).

The outlook for the Chinese year of the Horse, is promising too. As well as designing a multipurpose self-unloading vessel (mainly for wood chips and coal — see computer graphic on p47) and two floating terminals, Logmarin is currently involved in supply chain projects for gas (Ghana), cement (New Zealand), logs (Russia), coal (Vietnam, Indonesia and Canada,) sand (Philippines) and nickel-ore (Guatemala).

Multidisciplinary team

Logmarin Advisors is member of RINA, a multi-national group with over 150 years of experience, 2,200 employees, 150 offices in 53 countries and €300 million turnover.

RINA group companies are capable of supporting their clients providing consulting, engineering, classification and certification services, testing and inspections; every activity with custom orientation thanks to the group interaction.

In particular, Logmarin collaborates closely with the civil and port engineering sister company D'Appolonia, providing broad and integrated services such as site engineering, planning and design, hydrologic and hydraulic analysis, mechanical, civil and geotechnical engineering, EIA (environmental impact assessment) and others.

Value-added advice, device and design

As with anything else in life, it is only sound, experienced foresight and preparation that guarantee success in new enterprises.

Designing a supply chain and the relative infrastructures is a complex, challenging, multidisciplinary and creative process that has a critical impact on the project's economic viability and competitiveness.

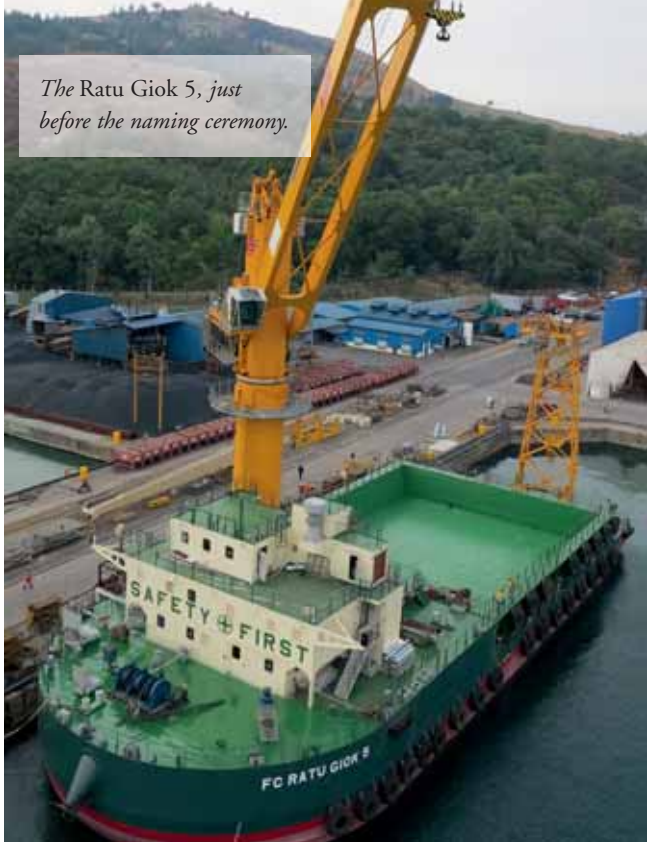
However, sometimes this vital preliminary activity is driven by engineering consultancy firms, contractors or end users, with a lack of a global view and comprehensive open-minded approach to supply chain.

There are many examples of supply chain solutions where end users have been 'burned' by improper advice. Consequences can be devastating: designed solutions proved to be completely unsuitable (some iron ore projects in Africa or Brazil), project performances and/or safety and environmental standards fall below expectations, or even leading to unforeseen expensive operations.

Just to mention some significant cases: open jetty designed 300 metres longer than actually required; terminals built to comply with out-dated standards, fleet of barges unsuitable to sail at sea; floating terminals unable to handle the materials and to perform in the environment for which they were built; terminal upstream unable to cope with the downstream logistics, or vice versa, etc.

This mainly happens due to a combination of different aspects:

- design of supply chains is often left to mining and port engineering that often do not manage to cover all the marine, operational, economic and environmental implications of the project as a whole;
- bid winners are often appointed because of either their cheap proposal or their 'big name' worldwide. In both cases the study is usually developed by people with lack of experience and or narrow-minded approach.
- moreover, clients search for knowledge, expertize and capability they don't have and that, as a consequence, they cannot easily assess and recognize the real knowledge and capability of the consultant as required by their specific project needs.



The Ratu Giok 5, *just before the naming ceremony.*

Moreover, some engineering firms tend to try and persuade the client to buy the project that they want sell, rather than working together with the client to provide what they actually need.

This approach is no longer successful and there are many examples in which bottlenecks, costs and opportunities are not assessed correctly and results do not meet expectations.

'Theoretical' and practical backgrounds have to be merged for an effective design, and this is part of the due diligence that a supply chain project requires.

Logmarin's team concentrates all efforts to compete against the bottlenecks of its clients' commodity supply chain using four key effective tools:

- the right technology (Log.Des), a dynamic simulation software to identify the optimal supply chain solution;
- the operational experience acquired in the field and the feedback received from on-going operations;
- the team-working capability and experience synergies with its clients.
- a global view of the supply chain, bridging the logistic gap between supplier and industry.

Preventing mistakes that may occur at the design stage is crucial for the success of the supply chain itself; this is a professional and reliable duty Logmarin guarantees to its clients, and can protect the project by mitigating risks of unplanned events.

To achieve the best possible results, each supply chain needs to be considered as unique, avoiding the application of 'standard solutions'. A solid knowledge of the market and of the material to be handled, together with technical and operational expertise, is fundamental to producing a solution delivering value to the client.

Advancements in transshipment at CSL

CSL Spirit: *The* CSL Spirit *loading iron ore into the* CSB Years.

Combining best practices in the design, construction and operation of conveyor-based cargo-handling systems, CSL's self-unloading ships and transshipment vessels are breaking new ground throughout the world.

In the Bay of Sept-Îles, Canada, the *CSL Spirit*, a 70,000dwt gravity-fed self-unloading vessel, completed the first ever loading of a Chinamax class dry bulk vessel in North America. During this historic maritime transshipment operation, 302,264 metric tonnes of iron ore were loaded by the *CSL Spirit* into the *CSB Years*, one of the largest vessels in the world, owned by China Shipping Bulk Carrier Company.

Equipped with a telescopic, center-mounted discharge boom, the Panamax-sized *CSL Spirit* is well suited for the large-scale iron ore transshipment operation, which was performed for Cliffs Natural Resources in late 2013. The massive undertaking highlights the flexibility, reliability and efficiency that can be expected from CSL's transshipment services, and marks a significant milestone for CSL and for shipping in North America.

In Australia, the growth of global trade in iron ore and the limited availability of deep water ports have sparked a sharp increase in demand for offshore transshipment. To maximize value for customers, CSL uses technological innovation to achieve cost-effective and environmentally sustainable solutions. A case in point is the *CSL Whyalla*, a converted gravity-fed self-unloading transshipment vessel currently operating at Whyalla, South Australia, for Arrium Mining.

With deadweight of 12,500 tonnes, the CSL Whyalla is capable of loading on a draught of five metres and transshipping iron ore into a Capesize vessel at a rate of 4,200tph (tonnes per hour). It is highly manoeuvrable and transships the cargo via a system of inclined belts and conveyors, all of which are covered to eliminate dust. *CSL Whyalla* is able to operate in swells of up to two metres.

CSL's high-capacity transshippers have superior productivity and reliability built right into the design. A transshipment operation will require minimal or no dredging, reduce capital expenditures at the onset of a project, and, with simplified shore-side infrastructure, bring down maintenance costs. A fully enclosed cargo handling system eliminates the risk of fugitive material and reduces dust, noise and vibration in both air and water.

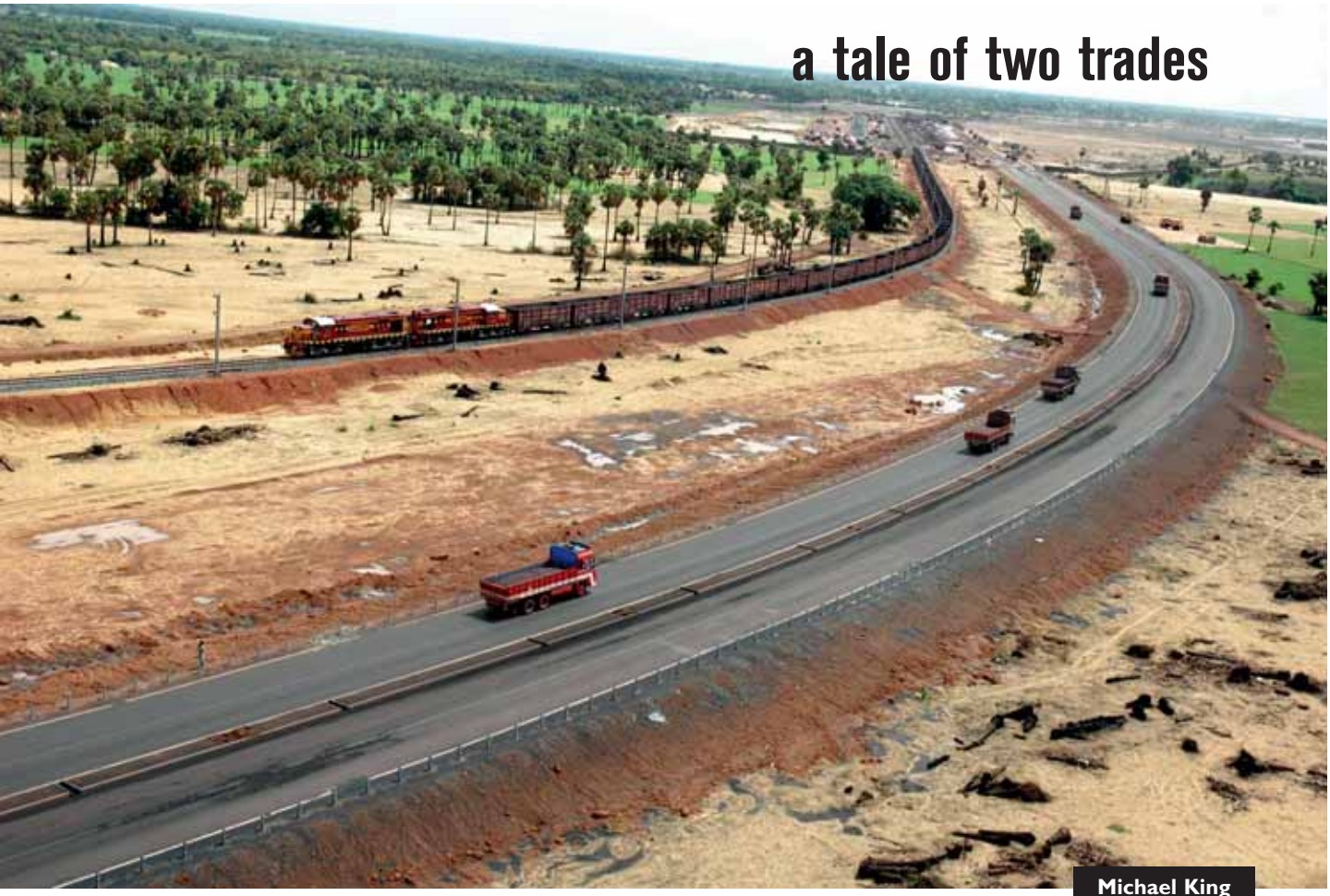
Building on its capabilities and expertise, CSL has designed a high-capacity gravity-fed transshipment shuttle vessel (TSV) to cost-effectively meet the rigorous requirements of high-volume transshipment. Ranging in size from 12,000 metric tonnes to 60,000 metric tonnes, CSL's next generation TSVs will be able to transship cargo at peak rates up to 10,000tph. The design also allows all dimensions – length, beam and draught — to be adjusted to suit the requirements of any project. Thanks to bow and stern thrusters, and dynamic positioning, the TSV can operate without tug assistance.

CSL understands that customers seek a tailored, scalable, approach to their export requirements, whether they are 1mt (million tonnes) or 100mt per year. This is why the company has developed a responsive, accessible business approach to transshipping, driven by the needs of customers.

A pioneer in transshipment and cargo top-off operations around the globe, the CSL Group is the world's largest owner and operator of self-unloading vessels. DCi

India

a tale of two trades



Michael King

As demand for electricity generation soars India has never imported so much coal, but the outlook for iron ore exporters is grim

India's importance to the dry bulk shipping trades has been changing, and doing so with almost indecent haste. Ten years ago, rapidly accelerating iron ore exports driven by China's steel industry and myriad small mining concerns eager to make a quick buck on soaring export prices were one of the biggest demand movers and shakers on the bulk carrier stage. Nowadays a clampdown on illegal mining, and the need to reinvigorate supplies to India's domestic sector, has seen exports collapse amid a flurry of legal suits and counter-suits as miners fight for the right to access international markets.

Instead, the evolving nature of India's dynamic economy has seen the focus of bulk cargo traders and shipbrokers shift to power generation. Economic growth, India's burgeoning middle class, extensive electrification programmes and increasing industrial activity are all driving the need for more electricity. And as India powers up this is translating into more thermal coal imports by sea.

Indeed, such is the turnaround in the net supply-demand of India's bulk trade in recent years that a number of port facilities designed for iron ore exports are now being converted to handle the vast amounts of incoming coal shipped in increasingly large bulk carriers.

According to figures from Drewry, in 2012 India imported 131.2mt (million tonnes) of thermal and met coal. Jayendu Krishna, senior manager at Drewry Shipping Consultants, estimates this rose to a combined figure of more than 150mt in 2013 although with official figures still not available he adds the rider "that it may have been even higher".

The main increase has come from thermal coal imports, which jumped from 107mt in 2012/2013 to an anticipated 130mt in 2013/14. "If you look at both coals, coking coal imports for the steel industry in the last five years are only up 9.3%," he said. "Steam coal imports are up 35% over last five years. So this is electricity-, rather than steel-, driven."

This is reflected in electricity output increases. Krishna said coal-fired power electricity generation in India in December 2013 was 14.3% higher than a year earlier. "The largest share of this rise was from the private sector coal-fired power producers which increased output 36% in December compared to December 2012," he added (see table on p52). "This means that reliance on imports is also increasing because most of the new power plants are relying on coal imports.

"The non-coal electricity sector only increased electricity output 6.3% year-on-year in December."

Domestic shortfall

Despite its huge reserves, national producer Coal India Limited (CIL) has long been unable to meet production targets due to a combination of poor administration, political and policy interference and lack of investment. CIL's own analysis

CAPACITY GROWTH

	Coal Fired			Total			Total – Coal		
	2012-Dec	2013-Dec	Annual Growth	2012-Dec	2013-Dec	Annual Growth	2012-Dec	2013-Dec	Annual Growth
State	49,623	53,078	7.0%	86,406	90,837	5.1%	36,783	37,759	2.7%
Private	29,195	39,700	36.0%	61,659	76,095	23.4%	32,464	36,395	12.1%
Central	42,055	45,435	8.0%	62,887	66,998	6.5%	20,832	21,563	3.5%
Total	**120,873**	**138,213**	**14.3%**	**210,952**	**233,930**	**10.9%**	**90,078**	**95,717**	**6.3%**

Source: CEA Monthly Reports

IRON EXPORT TRADES

Financial year	Iron ore export	
1999/00	15,716.17	
2000/01	20,161.36	
2001/02	23,084.57	
2002/03	57,093.34	
2003/04	51,497.91	
2004/05	87,282.64	
2005/06	84,046.00	
2006/07	91,424.43	
2007/08	68,476.02	
2008/09	68,902.79	
2009/10	101,529.68	
2010/11	46,889.35	
2011/12	47,153.20	
2012/13	18,120.04	
2013/14	14,958.28	(annualized based on Apr–Sept 2013–14) figure)
CAGR –2000–13	–2.3%	

Source: Commerce.nic.in

concludes that India faces a shortage in coal supply of 350mt by 2016/17.

"CIL is trying to boost output but it can't keep up with demand and it's very hard to see how increases in domestic production will be a major factor moving forward," said Krishna. "There is also a logistic issue. CIL's deposits are, in most cases, far away from the coast where most of the new power plants are being built so domestic coal is not really viable for many plants."

This stasis has left a vacuum that new private sector producers have been only too eager to fill, with most new projects located near the coast so they can easily source coal from abroad.

Generating growth and imports

But how much coal India will import in the future depends on a range of factors. India's future coal imports are inextricably linked to its economic development over the last decade. GDP growth may have dipped from the high tempo of the last decade to a relatively measly 3.2% in 2012 and less than 5% last year, according to most estimates, but if India can address its endemic problems of corruption, lack of infrastructure and suffocating red-tape, then investors are expected to flood in, boosting economic growth.

HSBC economic Ronald Man, for example, expects India to gradually recover from recent financial shocks to the economy such as the rupee's rapid exchange rate deterioration against the greenback which saw inflation soar. And, with elections due later this year, an end to the current policy-making vacuum and further commitment to tackling graft and easing the bureaucratic and permitting burden on investors should, according to the bullish Man, see a return to growth rates of 8% per annum through 2020.

As the economy expands, so demand for electricity will further surge. Man estimates accelerating growth will translate into a rise in energy consumption of 48% by 2020. And coal, which currently makes up 53% of India's energy mix, will continue to play a large role, even if India is increasingly, and determinedly, exploring its nuclear options.

The International Energy Agency now predicts that India will become a bigger importer of coal than China within the next five years. Krishna said that imports of coking coal are expected to remain in line with increases in steel output because India does not have domestic deposits and expects annual growth of around 7–8% per annum each year. "However," he continued, "if you look at thermal coal imports in the next three to four years, we expect similar sort of growth to the last five years, so about 35% if independent producers continue to increase capacity. So that means total thermal coal imports will increase to around 200mt by 2017 or 2018."

One major risk to these forecasts is the possibility of a major increase in coal prices. Because power prices in India are fixed, any major hike in cost can render production unviable, although power cuts are just as unpalatable for politicians to explain as electricity price rises.

Sourcing, ocean freight rates and infrastructure could also impact import volumes and where they are sourced from. Indonesia currently supplies more than 50% of India's coal and its proximity offers it a freight rate advantage — an advantage which will become more useful as Sumatran miners ramp up production for export or if freight rates increase.

Australia is also a major supplier of coal to India, but is more prominent in the coking coal market than as a thermal coal supplier. The shale gas revolution is forcing US coal miners to look for sales overseas and they are doing so with increasing ambition, not least by deploying Capesize vessels into Indian ports to reduce their freight disadvantage. South Africa is also expected to remain a major player, with Colombia also in the picture.

Iron's net deficit

But while demand for coal — both coking and thermal — is set to continue to rise, India's net impact on bulk markets has been neutered somewhat by its tumble down the international ranking tables as a net exporter of iron ore.

Until 2010 Indian exports had grown for twelve consecutive years. But a ban on shipments in an effort to curtail illegal mining, along with hikes in export duties and rail freight charges,

have seen exports slide. From being the world's third-biggest exporter in 2010, India now barely makes the top ten, with exports this year forecast to languish at around 10–15% of the 100mt+ shipped in 2010 unless there is a major, unexpected, about-turn in the legal and political landscape. Indeed, the ban on exports has also seen India's iron ore production drop and some steel makers report being forced to turn to imports to ensure they receive ample, timely, supplies.

Exports of iron ore pellets, previously exempt from export duties on fines and lumps, were also hit with a 5% increase in duty earlier this year and further hikes could follow.

"We're expecting about 11mt of iron ore exports this year but it depends what happens during the year," said Krishna. "Some non-governmental organizations are asking the Supreme Court for there to be less, so it's not entirely clear. But in the short-term we won't see a return to the huge export volumes we saw before. There is too much lobbying against this."

Gangavaram Port.

Logistics and ports

Another constraining factor on India's bulk trades is its supply chain capacity. India has long had a reputation as a country where it is difficult to do business due to bureaucracy, corruption and a lack of infrastructure and these are also factors in supply chain management. Sical Logistics, which runs a number of dry bulk ports, said India's high logistics costs mean that the sector accounts for 13% of GDP, significantly higher than in the US (9%), Europe (10%) and Japan (11%), despite its low labour costs.

Logistics costs typically constitute some 20% of product costs, four to five times the ratio of developed countries. Port congestion, lack of road and rail capacity and sudden disruptions to supply chains all take their toll. "The high levels of logistics cost in the economy adversely impacts the competitiveness of the Indian economy as well as the financial well-being of the individual citizen," said Sical.

Many of the new coal power stations are built at or near ports to cut down on supply chain costs, but with volumes expected to continue rising exponentially, truck, rail and port capacity are live issues even though, as Krishna points out, port development in India is accelerating.

Paradip port is now deepening approach channels and after completion will have an entrance channel depth of 17.1 metres and approach channel depth of 18.7 metres to handle vessels up to 125,000dwt, for example.

Adani has also now won a tender to build a coal terminal at Cochin with annual capacity of more than 4mt. The mining conglomerate also completed construction of a new coal facility at Visakhapatnam in December which offers annual capacity of 5mt and capacity for ships up to 80,000dwt.

"At least three private ports — Gangavaram, Krishnapatnam and Mundra — can also handle coal at rates over 100,000 tonnes per day," said Krishna.

A novel solution to coal import terminal capacity issues is the conversion of vacant or underused iron ore export facilities for coal import usage. MMTC and its partners Sical Logistics and L&T Infrastructure Development spent some $80 million on building a new iron ore export facility in the boom years. But the facility has not handled any cargo since opening in 2010/11 as it fell victim to bans on mining and exports. The company now intends spending $16m converting the terminal to handle coal imports for power producers in Tamil Nadu state.

"The port capacity situation in India is improving for bulk cargoes and port conversions will play their part," said Krishna. DCi

Handling fertilizer at Krishnapatnam port.

Terrorist target Somalia charcoal exports

The Somalian terrorist organization Al-Shebab has banned the export of charcoal through the Port of Kismayo, despite the fact that it is no longer in control of facilities there. Nevertheless, the group has ordered businessmen to cease all exports. The new government administration has not responded to the threat, being accused itself of allowing the illegal export of charcoal through the port in the past. *Barry Cross*

CCX Colombia gets green light for new port

The Brazilian company CCX Coal, via its subsidiary CCX Colombia, has been given the go-ahead by the Colombian National Infrastructure Agency (ANI) to build a private terminal in the La Guajira administrative area. The company has been granted a 30-year concession dependent on the issuing of an environmental permit. The new facility will have a capacity of 30 million tonnes of coal annually. *BC*

Arica reports major growth in Bolivian traffic

At the Chilean port of Arica, operator Terminal Puerto Arica (TPA) forecasts handling at least 3mt (million tonnes) of Bolivian cargo in 2013. In 2012, this type of traffic reached 2.5mt, but in the first ten months of 2013 2.4mt had already passed through TPA facilities. There is something of an equilibrium between imports and exports, with Bolivian traffic accounting for 80% of total traffic at the Chilean port. *BC*

New dry bulk berth at New Mangalore

In India, New Mangalore Port Trust has placed a contract to build new berth 18, which will handle both dry bulk traffic and containers. Construction will cost in the region of $15 million and will be funded entirely by the port trust itself. Because dredging is not involved, the berth could become operational within 20 months, adding a further 5 million tonnes of capacity.

The Trust has also given the go-ahead for the purchase of two mobile harbour cranes, each of which will be to handle loads of up to 60 tonnes when they are deployed on general cargo berths 2, 3 and 4. *BC*

Producers annoyed at switch in location of proposed Indian port

Farmers, as well as tobacco and granite exporters, have urged the government of India to establish a major new port at Ramaiahpatnam rather than move it to Dugarajapatnam, since the original location will be closer to production centres. The technical committee of experts found that the original site was the best to be found in that part of Andhra Pradesh, although intense lobbying persuaded the Cabinet Committee on Economic Affairs to go for Dugarajapatnam.

Granite exporters that have mines in Prakasam district at Cheemakurthi favour the original decision, since annual consignments from there are worth more than $1.626 billion and they are currently poorly served by coastal ports. *BC*

New Brazilian highways gives relief to southern bulk ports

The new BR-63 highway in Brazil will connect the soya production areas of the state of Mato Grosso with two Northern Brazilian ports, which will help cut the extremely high transport cost for grain and also help relieve heavily congested ports in the South. As a result, in the coming year, a further 3 million tonnes of soya and corn will be dispatched via ports in the North.

These two facilities are currently managed by major players in the industry: Bunge and Cargill, with the latter forecasting that it will quadruple exports in the coming years.

The BR-63, which has been planned for decades, will eventually stretch for 1,385km, although some 400km in the northern state of Pará, are expected to remain unpaved for the foreseeable future. *BC*

Aqaba opens phosphate terminal

The King of Jordan has officially inaugurated the new phosphate terminal at the port of Aqaba, which is owned by the Aqaba Development Corporation (ADC). The terminal cost $240 million and has a storage capacity of 240,000 tonnes. Eventually, the facility will handle around 6 million tonnes annually. It is accessed via a 200-metre-long berth and can accommodate vessels up 100,000dwt. *BC*

Huelva aims to boost traffic by 9%

The Board of Directors of the southern Spanish Port of Huelva has approved the 2012–2017 Strategic Port Plan, which aims to shape policy up to 2022. By 2017, the objective is to position the port as a reference facility in the handling of dry bulk and general cargo in the Atlantic Arc. The plan itself identifies 20 main objectives and 71 actions required to achieve these. By 2017, for example, it wants to boost current volumes, which totalled 30,000,000 tonnes per annum, by 9%. *BC*

Duqm to build fertilizer and bitumen terminals

In Muscat, construction will begin either in the last quarter of this year or in the first quarter of 2014 of new cement and bitumen import terminals at the port of Duqm. Raysut Cement, which is the country's largest cement manufacture, will set up a distribution centre there, too. This will handle both bulk bagged cement. At the same time, the UAE-based Richmond Group is due to start operations at its bitumen terminal, the first of its kind in Muscat. *BC*

Corinto to build dry bulk terminal

Nicaragua's main port, Corinto, has announced that it is to build a new dry bulk terminal with a capacity of 65,000 tonnes. The port already has a multipurpose terminal, a container terminal, a liquid bulk terminal and dedicated to banana traffic.

Shiploaders will be deployed at the new facility, eliminating the need to use big bags, which will make it faster to load consignments and also cheaper. Currently, Corinto handles just 1,815 tonnes of dry bulk, but this is expected to increase exponentially once the terminal becomes operational. *BC*

Cargill warns of negative impact of Brazilian port reform

Cargill, which is the second-largest handler of soya beans in Brazil, believes that the new port concession model adopted by the government will discourage the export of soya bean meal and soya bean oil, both products that add value to basic soya bean exports. It believes that changes to legislation only favour the creation of export grain terminals.

According to Paulo Sousa, Cargill's director of grain and soya processing in Brazil, the new concession model favours companies handing the highest amount of cargo at the lowest price, which he believes will leave commodities such as bran, which is lighter than grain, at a disadvantage, because a belt loader can handle twice as much grain as bran in the same period of time.

"Ports moving bran will have less yield," he said.

Cargill is faced with having to reapply for the concession to operate the terminal that it is managed for almost 40 years at the port of Paranaguá. However, Sousa remains confident that the company will be successful in its re-bid, since the amended legislation definitely favours companies handling large volumes, which is the case with Cargill. *BC*

Ethiopian steel clogs up Djibouti port

Coal Terminal DevelopmentsOfficials of the Ethiopian Shipping & Logistics Services Enterprise have complained that Ethiopian importers of steel have not been collecting their consignments from the Port of Djibouti, which meant that up to 200,000 tonnes of steel could be there at any one time awaiting pickup. One-hundred-and-eighty-thousand tonnes of the steel belonged to private importers, most of whom faced financial problems.

This unacceptable situation, claims the Enterprise, is resulting in congestion. However, this is disputed by the port authority, which says that it has additional capacity available for even more steel imports if necessary, up to a limit of 500,000 tonnes. Nevertheless, the Enterprise disputes this, pointing out that a lot of the steel at the port is now being stored close to the quayside because of a lack of space. *BC*

Rio Tinto achieves new loading record at Beira port

Rio Tinto Coal Mozambique has revealed that it achieved a new monthly loading record at the port of Beira in October of last year, when 95,000 tons were transported to its export facility via the Sena railway. This was done using 38 block trains from mines in the province of Sofala. Rio says that transporting such quantities has been made possible by ongoing upgrades to the line, where capacity has been boosted. *BC*

Caserones look to ports outside the Atacama

The suspension of work in August 2012 of a new Chilean port at Castilla, being developed by Brazilian and German interests to serve a projected nearby power plant, left the Caserones mining company without a maritime outlet in the country's Atacama region. As a result, it has signed contracts with two ports further afield.

Over the next three years, consignments of copper concentrates will be exported via the port of Coquimbo, while a second contract has also been signed with the port of Antofagasta for a period of 12 months. The latter port is due to handle around 30,000 tonnes annually, while Coquimbo should see up to 400,000 tonnes initially, rising to 500,000 tonnes later on into the contract. Consignments using Coquimbo will commence early this year. *BC*

Paraná cuts waiting time for fertilizer vessels

According to ports superintendent, Luiz Dividino, adjustments to logistics, productivity improvements and capacity expansion have all allowed waiting times to be cut for fertilizer vessels deployed to ports in the state of Paraná, Brazil. In the first three quarters of last year, for example, 7.1mt (million tonnes) of fertilizer was imported — an 11% increase over the previous year — with there being no waiting time at all for vessels. Previously, up to 50 vessels at a time have been known to be waiting for a berth.

"We have been able to deploy the largest programme of improvements ever made in the history of ports in the fertilizer sector. The results have been immediate: increase movement and reduced waiting times for ships. This automatically produces decreases in prices because the cost of demurrage falls," he said.

The port of Antonina has introduced a second crane to unload fertilizers, effectively doubling terminal capacity, while in Paranaguá, a second crane has also been added for fertilizer handling. *BC*

Vale outsources management of Valemax vessels

Brazilian coal and iron ore giant, Vale, has reached a $500 million agreement with the Chinese Shandong Shipping company, encompassing the transfer of four Valemax vessels to its operation. These are the largest iron ore carriers in the world, with a capacity of 400,000dwt.

However, it remains unclear whether these vessels will be able to make use of Chinese ports, since existing legislation effectively restricts their use for vessels above 350,000dwt. If there are changes to these regulations, then Shandong will be tasked with managing Valemax vessels ultimately deployed on Chinese routes. Because of the embargo on it ships, Vale has developed distribution and transfers stations in both Asia and Oman.

During 2014, the fleet of Valemax bulk carriers will have reached 35 units, of which 19 will be retained by Vale and a further 16 chartered on long-term contracts.

Coal Terminal Developments

Jay Venter

OVET dry bulk terminal – quality in bulk

OVET B.V. offers a wide range of stevedoring services in the Netherlands. It can handle commodities including: coal, coke, pet coke, ores, minerals and scrap.

The main activities of OVET are lightening, discharging, storing and distribution and screening of solid fuels, ores, other bulk cargoes and scrap.

OVET operates at two deepwater terminals with all hardened and paved stockyards:

- Terneuzen (Panamax) with a capacity of 160,000m² — 600,000 tonnes; and
- Vlissingen (Capesize) with a capacity of 315,000m² — 2,000,000 tonnes.

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

Terneuzen and Flushing offer excellent connections (inland waterways, rail and road) to Benelux, France and Germany and have also ideal possibilities for overseas dispatch to Scandinavia, UK and Ireland.

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

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

At the Vlissingen terminal OVET operates a warehouse of 6,000m² for the covered storage of all kinds of dry bulk products. The warehouse contains six separate cells and each cell measures 7,500m³ and can be fully ventilated.

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

OVET Holding holds 50% of the shares of OBA, the bulk stevedore of Amsterdam, which means more service and flexibility for both the customers of OVET and OBA.

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

Another affiliate of OVET is OVET Screening, a company which is specialized in screening, crushing and blending activities. At both terminals OVET operates (mobile) screening and

crushing installations. Recently investments were done in two new mobile screening installations for the Vlissingen terminal. With these machines OVET is able to screen dry bulk material up to 5 fractions with a maximum input capacity of 400 metric tonnes per hour.

Because of its flexible layout and mobile equipment OVET is capable to make 100% homogeneous blends. By means of mobile stacker- and conveyor belts, weight determination, etc. the blending operation is executed with the greatest care.

New train loading facilities

Since summer 2013, OVET has a new state-of-the art train loading station available at its terminal in Vlissingen/Flushing. This new piece of equipment will allow OVET to receive 44 wagon trains in one length. A 24-hour round trip to, e.g. the German Ruhr area, has proven to be successful.

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

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

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

Paving the way for growth at the Rhenus Bulk Terminal Wilhelmshaven

Germany makes very great use of coal from overseas at its power stations, and large quantities of this fuel are imported through the seaports on the North Sea coast. **Dry Cargo International** *spoke to Michael Appelhans from the Rhenus Group about what port operators need when handling coal and the opportunities that are available at a time when Germany is about to abandon nuclear fuel and make even greater use of renewable sources.*

Mr Michael Appelhans, Rhenus Group. ©Rhenus Midgard.

Everybody is talking about energy from the sun, wind and other renewable sources, and the aim is to guarantee clean power generation in future. So is the modernization and expansion of the Rhenus Bulk Terminal in Wilhelmshaven not rather out of tune with the times?

Michael Appelhans: The decision to expand and modify the facility was made in 2008 and the general conditions at that time were certainly different. There's no doubt about that. But in order to anticipate your question about whether we would make the same decision now, I'd point out that it's part of logistics experts' daily work to familiarize themselves with new conditions and adapt their services to customers' changing needs.

So you would make the same decision again?

Michael Appelhans: Certainly not in quite the same way, because that would indicate that we'd not learned anything from the changing circumstances as Germany moves towards greater use of renewable energy sources. But with the two local power stations and our circle of customers further inland, we have a good foundation for the ongoing development of our business. Imported coal will still be needed to guarantee supplies in the energy mix in Germany and our terminal is ideally equipped to cope with this task. Greater quantities and new supply chains can and will make their way through Wilhelmshaven.

Which specific measures have you adopted as a result?

Michael Appelhans: We've invested in new cranes, which enable us to unload vessels quickly, and more efficient conveyor belt systems. We've expanded our storage capacity and fine-tuned our loading operations for railway wagons. Our fully automatic stacker/reclaimers and the efficient wagon loading facility guarantee high handling rates and rapid dispatch operations for the trains connecting Wilhelmshaven with the power plants located further inland.

And you were able to handle the first fully laden Capesize vessel at a German seaport at the end of 2012?

Michael Appelhans: That's correct. By deepening the navigable channel to 18.50 metres, Capesize vessels can now reach the Rhenus Bulk Terminal Wilhelmshaven without having to unload part of their cargo elsewhere first. We're now a genuine alternative to the ARA ports and are better equipped than other German North Sea ports. Customers using our services can be certain that we will provide professional handling for their maritime and rail traffic at any time.

Have these improvements been reflected in your turnover figures too?

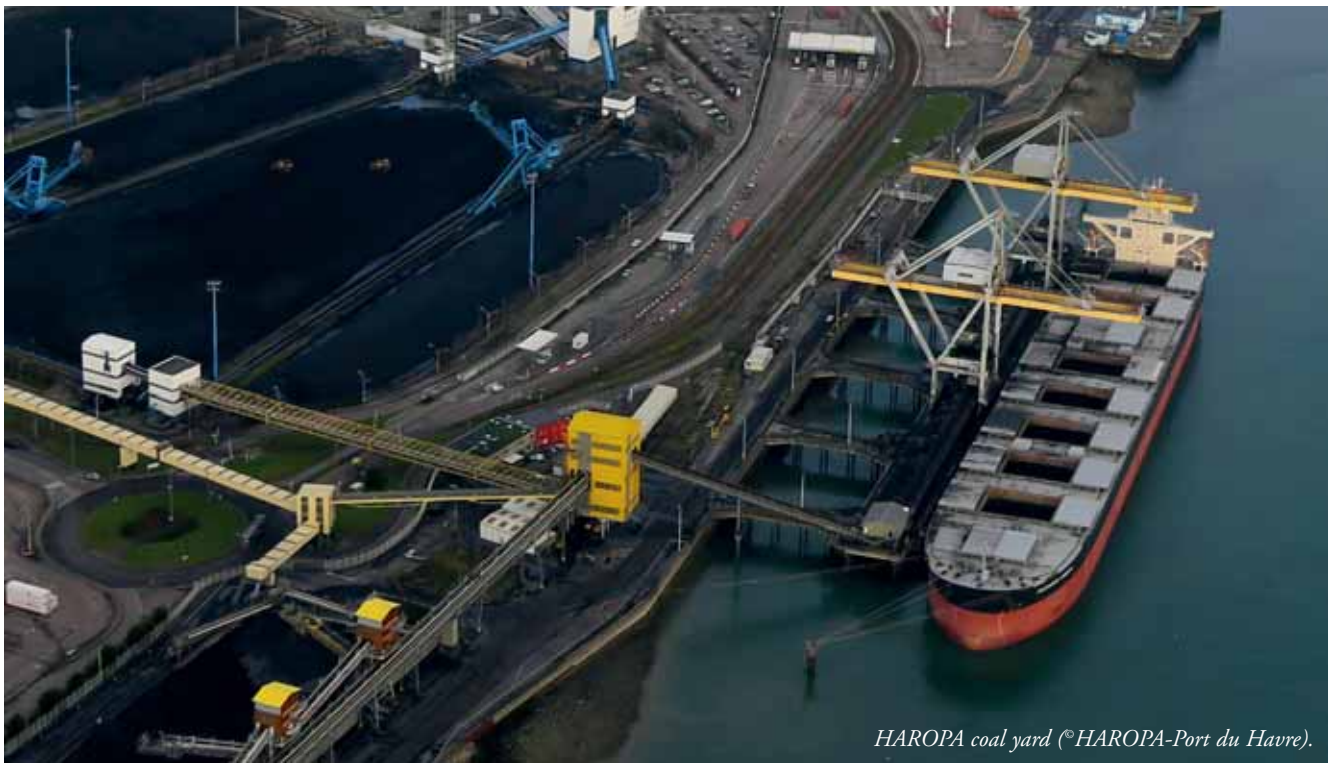
Michael Appelhans: It was quite natural that certain types of business had to be handled in a different way for a brief period during the modification and expansion work in Wilhelmshaven. We offered our customers handling services at our Nordenham business site, for example, during this phase. Since the completion of the work in Wilhelmshaven last year, the optimization of the terminal facilities has had a very positive effect on our turnover. Handling 3.3 million tonnes of coal is a new record for the Rhenus Bulk Terminal Wilhelmshaven. And we have firm plans for further growth, because the conditions here allow us to achieve even more. But to reach our target of between eight and ten million tonnes, we'll naturally have to continue investing in handling and storage facilities in line with our customers' wishes.

©Rhenus Midgard Wilhelmshaven GmbH & Co KG

What's the next project in the pipeline?

Michael Appelhans: Up to now we've had two storage areas for 900,000 tonnes of coal. They'll no longer be enough in the light of the growth that we're expecting. We're busy planning a third storage area, which will further increase the space available once it has been completed.

HAROPA, a high-performance dry bulk port



HAROPA coal yard (©HAROPA-Port du Havre).

HAROPA, the joint venture between the ports of Le Havre, Rouen and Paris (France), is a new port system joining forces to provide end-to-end competitive solutions, thus constituting the fifth-largest North European port complex.

HAROPA provides 55 sea and river terminals, dedicated to the handling of dry and liquid bulk from the sea to the east of the Paris area. Dry bulk accounts for a significant part of the overall traffic of HAROPA ports, in addition to container traffic for which HAROPA ranks number one in France. Dry bulk especially includes grain (wheat, barley, etc.), coal, sugar, malt, cocoa, oil seeds, fertilizers, sand, gravels and crushed stones, aggregates, snow-clearing salt, peat, cakes, biomass, and more. HAROPA recorded 14mt (million tonnes) of dry bulk traffic in 2013 (+24 %).

Coal traffic: good figures for 2013

HAROPA recorded traffic of over 2mt in 2013, that is a 26% rise over the previous year. HAROPA-Port of Le Havre experienced a clear upturn and the imports of industrial coal also increased in HAROPA-Port of Rouen where five Capesize vessels were received by SEA-Invest. There were also double calls by Panamax vessels, which generates a maritime-river traffic (of around 100,000 tonnes) bound for the Paris area to provide city heating. There is also traffic growth for petroleum coke via Honfleur and Rouen, reaching 70,000 tonnes in 2013.

Cereals: high-quality produce and strong growth

Cereals alone account for more than half the tonnage of dry bulk (7.4mt, that is +35%). The recovery of grain exports was achieved far beyond the forecasts of mid-2013, with a rise of more than 1.9mt of the exports of wheat and barley in 2013, compared with the previous year. The year 2013 is therefore a good one, higher than the average despite stiff international competition, and of a very good quality owing to the crops in the Rouen hinterland. HAROPA-Port of Rouen is the leading European port for wheat export, with main destinations, Algeria and Western Africa, being on the rise. It is worth noting that Le Havre port has strongly risen as regards the export of cereals (especially barley and malt to Asia and Africa) in containers. In 2013, there was strengthening in the cereal trade, especially by the creation by 'Interface Céréales' and 'Axéréal', of 'Granit Céréales' an association for grain marketing via HAROPA-Port of Rouen, which will come on stream in the coming months.

Stable traffic for aggregates

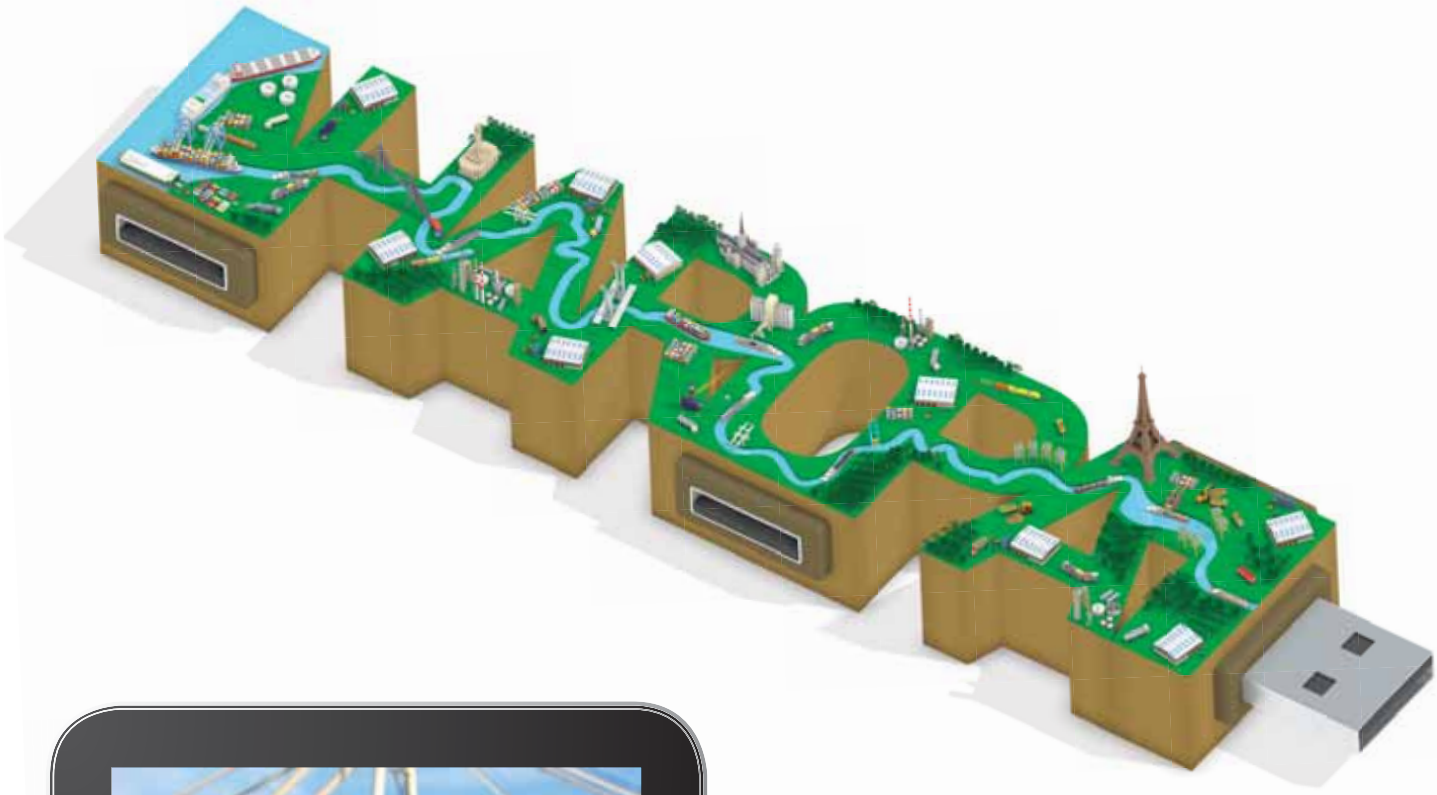
With 1.9mt of aggregates, HAROPA records stable traffic. High growth also recorded at the terminals of HAROPA-Port of Rouen (756,000 tonnes of aggregates, +22.3%) especially due to the business of the SPS company in the Rouen area which started in July 2012, the contract of construction of the A 150 motorway developing traffic from Norway via Stema in Rouen and the business of Holcim Yeoman/Eurovia in Saint-Wandrille, also in Rouen area. New prospects are being made concrete by the concessions of marine aggregates along the English Channel sea coast, developing volumes extracted of more than 15mt per year for 25 to 30 years.

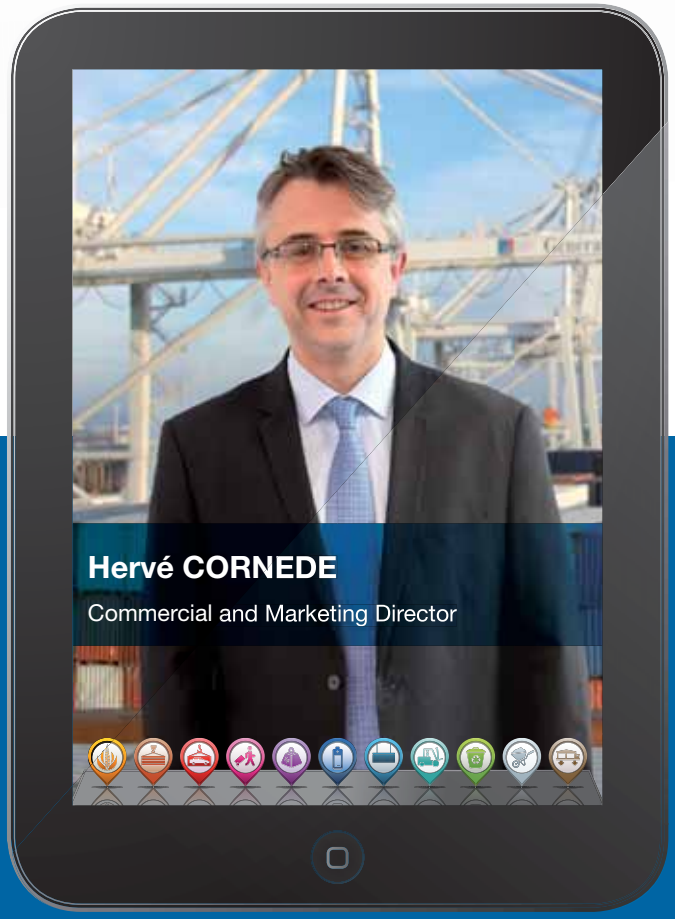
Oil seeds

Rape imports for the agri-fuel factory Saipol in Grand-Couronne (Rouen area) have recorded a good year.

HAROPA cereals (©GPMR).

High speed
PORT SYSTEM





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Flours

Exports of flour in bags are on the rise, owing to new trades by Soufflet bound for Angola.

Dry fertilizers

GPN being bought out by the Boréalis Group very positively strengthens the industrial site of Rouen/Grand-Quevilly and develops the export of ammonium nitrates. The logistics of imports of dry fertilizers via Rouen is part of Cap Invest business, being created between Cap Seine, SEA-Invest and In Vivo. In imports, too, the American company Koch, is growing in partnership with Sénalia, and the other operators are showing dynamism in inbound ammonium nitrates and compound fertilizers.

Snow-clearing salts

It has been a year of recovery for HAROPA-Port of Rouen terminals, as regional authorities and motorway management companies have built up their stocks again.

HAROPA has gained international recognition of its technical means and human expertise and those of its industrial partners specialized in the handling, storage and distribution of dry bulk cargo.

Coal handling (©GPMR Andrew Wheeler).

About HAROPA

HAROPA, the fifth-largest port complex in Northern Europe, is a joint venture between the ports of Le Havre, Rouen and Paris. Connected to every continent owing to a first-rate international shipping offer (with connections to more than 550 ports worldwide), the 'one-stop' hub forms a global transport and logistics system, capable of providing a comprehensive end-to-end service. It handles around 120mt of cargo by sea and waterway each year. HAROPA business represents 160,000 jobs.

New coal sample preparation facility set up at ABP's Humber International Terminal (HIT) in Immingham by Inspectorate International

A new coal sample preparation facility has been set up at HIT in Immingham by Inspectorate.

Inspectorate is a wholly owned subsidiary of Bureau Veritas, one of the world's leading independent testing, inspection and certification companies.

The sampling and preparation will be fully consistent with ISO 18283:2006.

The new facility will be operational from 1 February 2014, it will be staffed with Inspectorate employees and equipped with two QHS Hammermill crushers, a Retch SR300 Rotormill, drying ovens, and Gilson riffle dividers. From the initial bulk sample of several tonnes, the facility can rapidly produce representative laboratory samples of <0.2mm to test the coal quality for its customers.

Inspectorate believes that the on-site capability will help reduce turnaround times for proximate analysis significantly. This will be a major benefit to customers who need initial constituent readings before the material can be used to maximum efficiency.

Erwin Oosterveen, Inspectorate's Solid Fuels Business Development Manager for the UK and Northern Europe, said: "This major new development in on-site sampling should be tremendously helpful to the industry. It's a one-stop shop for the energy industry that is convenient and quick. And that's all backed up by the accuracy of testing and analysis for which Inspectorate International is renowned.

"Our new Immingham facility complements Inspectorate's (and its parent company Bureau Veritas'), existing large global network of coal and solid fuels sampling and testing facilities, which includes the USA, Canada, Russia, Colombia and South Africa. The facility means we can now offer an end-to-end service to clients importing these products into the UK.

"In time we can see the facilities we offer being extended to cater for more industry needs. Our main aim now, however, is to make sure that the new service gets off to a flying start. We are confident that it will and look forward to proving ourselves to clients."

Inspectorate is part of the Bureau Veritas Commodities Division. Bureau Veritas acquired Inspectorate in 2010, making it one of the world leaders in commodities inspection and testing. Inspectorate is the core of Bureau Veritas' Commodities Division. Its customers can look forward to continued expertise and excellent customer service, supported by a global network and a brand name synonymous with quality, professionalism and integrity.

New sheet pile wall completed in the Elbe Port of Brunsbuttel

On 20 September 2013 completion of the new sheet pile wall at the Elbe Port of Brunsbuttel for around €10 million was marked by a small ceremony attended by Dr. Frank Nagele, Parliamentary Under-Secretary in Schleswig-Holstein's Ministry of Economics.

Inaugurated in 1968 and owned by the private SCHRAMM group, the Elbe Port of Brunsbuttel has been upgraded in a further stage of development. At least ten years ago, a section of the port on the Eastern bank of the Elbe was reinforced with new piles. Now the middle berth in the Elbe port, a universal one handling bulk and, especially, general cargoes such as wind power installations, has been prepared for the coming decades and equipped to meet future requirements. A new sheet pile wall to handle greater loads has been positioned and driven as part of the building work. The hydraulic building work has been carried out by Tiefbau Unterweser GmbH, or TAGU.

"With this private investment, the Elbe port is being even better equipped for handling such general cargoes as plant and project shipments or wind power installations for the onshore and offshore sector. At the same time, the top priority principle in our corporate approach will remain flexible reaction as a universal port to the requirements of the market," explains Frank Schnabel, Managing Director of Brunsbuttel Ports GmbH.

Brunsbuttel Ports GmbH, the private port operator and owner of the infrastructure, is investing a total of approximately €15 million in upgrading the middle berth. As the main element of the project, the new sheet piling wall has now been completed, involving total investment of around €10 million. The state of Schleswig-Holstein is backing the project with around

The new sheet pile wall in the middle berth in Brunsbüttel Elbe Port.

From l. to r.: Frank Schnabel, Dr. Frank Nägele, Parliamentary Under- Secretary, Hans Helmut Schramm, Lutz Dröge.

€1.35 million from its 'Future of the Economy Program'. This investment in an infrastructure measure further strengthens Brunsbuttel as an industrial base. Having reported steady growth in recent years, Brunsbuttel Ports are well positioned for the future.

"Completion of the sheet piling wall represents a further step in consolidating and maintaining the Elbe port's successful growth course," said Dr. Frank Nagele, Parliamentary Under-Secretary for Transport, as it entered service. "I feel confident that Brunsbuttel's further development will proceed satisfactorily. The present state government will play its part in that," continued the Under- Secretary.

Following the ramming work, parts of the pier surface in the port area are being renewed; in addition, maintenance work is being done on the quayside rail track and the crane rails. Completion of the building work as a whole is anticipated in autumn 2014.

A close-up look at the Port of Gdansk

Even though the figure of almost 30.3mt (million tonnes) of commodities handled last year in Poland's Port of Gdansk cannot equal the performance of the largest ports of Asia, Africa, North America or Western Europe, it makes Gdansk one of the very leading ports in the Baltic Region, *writes Janusz Kasprowicz, PR Officer, Port of Gdansk Authority SA.*

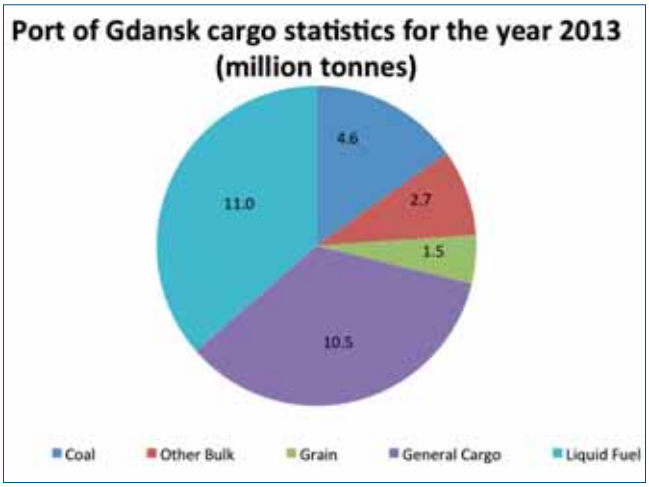
A thousand-year-old port erected at the mouth of the Vistula River, the queen of Polish rivers, reminded the world of its chief assets. Since it is situated at the intersection of main trading routes connecting Eastern and Central Europe with Scandinavia, and the west with the east of Europe, the Port of Gdansk has been an important trading centre for centuries.

Poland's accession to the European Union created additional opportunities for Gdansk to develop, including the use of the EU funds. The already completed and scheduled projects will result in the extension and upgrade of the port's infrastructure to let it keep up with global trends. They also make the Port of Gdansk, the never-freezing easternmost port on the Baltic Sea, available 12 months a year for almost 165 million commodity recipients and providers from landlocked countries, including the Czech Republic, Slovakia, Hungary and Belarus. It is a traditional partner for producers and consumers from north-eastern Ukraine. The Port of Gdansk handles cargoes of crude oil for refineries in Poland and Germany as well as a stream of container cargoes to Russia. With a throughput of over 1.15 million TEU, the Deepwater Container Terminal owned by Global Infrastructure Fund, a fund managed by Macquarie Bank Group seated in Australia, placed Gdansk in the Top 100 of largest container ports in the world.

The Port of Gdansk was designated an important node in the EU transport corridors. The value of commodities handled in 2013 exceeded €40 bn. A sizeable portion of all commodities handled in Gdansk included liquid fuels pumped from and to the port through pipelines. The second place was taken by containers. In receiving deep sea vessels with maximum draught for transiting the Danish Straits, Gdansk serves a role of a Baltic hub port for both types of cargoes. Because of its investment attractiveness and co-operation with global shipping powers, including SEA-invest, the owner of Port Północny, the Port of Gdansk regained the significance it had during the Hanseatic League in the Middle Ages.

PORT OF GDANSK CARGO STATISTICS FOR THE YEAR 2013 (MILLION TONNES)

	2013
Coal	4.6
Other bulk	2.7
Grain	1.5
General cargo	10.5
Liquid fuel	11.0
TOTAL	**30.3**



Safe sailing in the deep-water, up to 15 metres in draught, and never-freezing section of the port is supported by extensive development base located on both banks of the Vistula — the river that as early as over one thousand years ago made it possible for commodities to float from the broad overflow area connecting Central European countries through navigable canals. Quays that still make a considerable contribution to the port's throughput were built along the river banks. Vessels of up to 10.5 metres in draught handled by Port Gdanski Eksploatacja company berth to that quays nowadays. Having handled over 4.5 million tonnes of commodities in 2013, PGE had a 15 per cent share in the port's total operations. Its significance for the port and, more importantly, profitability are determined by types of cargoes that are attractive for short-range sailing. Port of Gdansk Authority S.A. is going to find, in line with the Polish law, an investor for the company that would be interested in buying 100 per cent of the company's shares in order to enable PGE to fulfil the rising number of tasks provided for in the port's development strategy. The new budget of the European Union passed under the 2014–2020 Financial Framework provides for a considerable portion of funds for the development of sea transport and improvement of port availability. A substantial portion of projects prepared by PGA S.A. stipulates the increasing of the port's internal part's throughput. As a result, new opportunities will be created for handling companies.

A reasonable and real scenario for the port's development, based on the World Bank's forecasts and key factors of economic growth in the EU member states, anticipates that the number of handling operations carried out in the port will be multiplied. The port faces new prospects as it started receiving, as part of AE container service, Maersk Line world's largest Triple-E class container ships holding 18,200 TEU at a time. The Port of Gdansk's promotional slogan reading 'a port for any ship and any cargo' has come true.

Handling coal at the port of Thessaloniki (Greece)

For 2013, the world economy was expected to grow by 2–2.2% for a fourth consecutive year after the negative results of 2009, although this growth will be lower than that of 2010, 2011 and maybe 2012, *writes Dr George Vaggelas, Advisor to the President and C.E.O. of Thessaloniki Port Authority S.A.*

Based on the forecasts of UNCTAD (published in the Review of Maritime Transport) the seaborne trade for 2013 will reach 9,568 billion tonnes, an increase of 4.39% comparing with the 2012 seaborne trade volume. The five major dry bulk cargoes are expected to represent a significant part of this traffic. In

2012 for example the seaborne trade of the five major dry bulk cargoes reached 2.7 billion tonnes. Coal continues to play a significant role, not only among the five major dry bulks, but also in the global seaborne trade as 1.06 billion tonnes of coal transported by sea in 2012.

The top three exporters of coal for 2012 (Indonesia, Australia and U.S.A, in a hierarchy ranking) represent 73% of the global coal exports while the top three importers (EU, Japan and China in a hierarchy ranking) represent 52% of the global imports. For 2012, the European Union imported 222.61mt (million tonnes) of coal, while it's worth mentioning that almost 30% of the power generated in EU is coal based.

Coal is also an important commodity for the Southern Balkan countries due to the fact that many steel industries (a major consumer of coal) are located in that area. As a result coal trade is an important component of the region's port traffic. There are three major ports that facilitate the coal trade in this area, Thessaloniki in Greece, Durres in Albania and Bar in Montenegro. Thessaloniki is the biggest among the three ports and due to its proximity to major sea routes as well as the road and rail connections with its hinterland is the first choice for the shippers.

Infrastructures for handling coal at the port of Thessaloniki

Thessaloniki is the second biggest port in Greece and the first in handling dry bulk cargoes. It has six piers, with four of them used for handling cargoes.

The dry bulk and general cargoes are facilitated through piers 4, 5 and the eastern part of pier 6. There are two specialized docks for handling coal, dock 21 with a length of 185m and a depth of 12m and dock 24 with a length of 635m and a depth of 12m. If needed, dock 20 with a length of 350m and a depth of 10m can also be used for handling coal. Dock 21 is equipped with a rail-mounted dock crane with a capacity of 15 tonnes and two mobile harbor cranes with a capacity of 100 tonnes. Dock 24 has six rail-mounted dock cranes, four of them having a capacity of 40 tonnes and the other two having a capacity of 32 tonnes. For the storage of coal there are open space areas with a total surface of 3.5ha at piers 5 and 6. These areas are included at the port's Free Zone which complies with the EU customs regulation.

Statistics-2013: A significant decrease in coal volumes

The Port of Thessaloniki handles any kind of dry bulk cargoes. For 2013 the port handled 3.78mt of dry bulk cargoes, of which 349,000 tonnes were coal.

TABLE 1

DRY BULK TRAFFIC 2011-2013, PORT OF THESSALONIKI

YEAR	2011	2012	2013
DRY BULK (Total)	3.251.609	3.650.332	3.783.636
Coal (total)	479.241	485.254	348.996
Coal (% of dry bulk)	14,74%	13,29%	9,22%
Coal (transit)	214.461	229.584	101.614
Transit coal as a % of total coal throughput	44,75%	47.31%	29,11%

Based on the above data, coal represents 9.22% of the total dry bulk traffic at the port of Thessaloniki in 2013, showing a significant decrease comparing to the previous years. The most important outcome is that almost half of the coal traffic is destined to the port's hinterland (as the whole transit traffic represents imports by the neighbouring countries) although in 2013 the transit volumes followed the general decreasing trend. The decrease in coal throughput for 2013 can be attributed to the reduction of the steel factories production in FYROM (Former Yugoslavian Republic of Macedonia), a fact that is also evident from the transit volumes which fell by almost 53%!

Multimodal Transports

The Port of Thessaloniki is well connected with its hinterland through road and rail network. The completion of Trans-European Transport Corridors IV and X will expand the port's hinterland and will give access to the central European markets. From March 2014, the quality of the port's hinterland connections will be increased because of two regular rail services that will be launched. More specifically there will be two weekly itineraries from Thessaloniki to Skopje (FYROM) and vice versa for the transportation of dry bulk cargoes as well as

two weekly itineraries from Thessaloniki to Sofia (Bulgaria) and vice versa for the transportation of containers. The itineraries will be evaluated after four months and if needed, the capacity will be further increased with additional itineraries. Also during 2014 new rail connections will be tested. Thessaloniki will be connected with Istanbul, Belgrade and Bucharest. If these itineraries prove to be successful, additional itineraries are likely to debut in the future.

Investments

Thessaloniki port authority planned an expansion of dock 24 by 300m in length and 160m in width creating a new dock with a depth of 16m able to facilitate bulk carriers up to 80,000dwt. This major investment has been put on hold by the main shareholder of the port authority, the Hellenic Republic Asset Development Fund (HRADF). The reason behind this decision is the long-lasting (since 2011) process of HRADF on deciding the further exploitation of the port with the use of private funds. HRADF until now has not taken a clear position on this issue although there are signs that HRADF will proceed with the privatization of the Thessaloniki port authority by selling its shares (about 74.27% of the port authority's shares). Despite the stagnation on the port infrastructure projects, investments in new cargo handling equipment are under way. Recently the port authority ordered a rail-mounted dock crane of 40 tonnes capacity. The cost of the crane is €3,47 million and is expected to be operational at the end of 2014. Also the port authority is in the process of ordering two additional rail-mounted cranes with 40 tonnes capacity each.

Dr George Vaggelas is an Advisor to the President and C.E.O. of Thessaloniki Port Authority S.A. and a Research Fellow in European Port Policy (EPP) at the University of the Aegean, Greece. He has authored several papers published in scientific journals and conferences. He is member of PortEconomics.eu, a web-based initiative aiming to advance knowledge on seaport studies.

Bulk cargo handling growth expected at the Port of Hamburg

The import of coal reached a volume of 3.83mt (million tonnes) during the first nine months of 2013 in the Port of Hamburg.

For 2013 the Port of Hamburg expects to handle 5.7mt of coal. This will be an increase of 10% in comparison to 2012. The total bulk cargo segment was able to report growth of no less than 8.9 percent to 31.4mt. In the first nine months of 2013, bulk goods handling therefore contributed around 44% of the growth in all seaborne cargo handling in the Port of Hamburg. All three bulk cargo segments reported positive throughput figures for the first nine months. At 5.9mt, throughput of suction cargoes that include grain, oil fruits and feedstuffs, was up by 30.9%, in percentage terms the strongest growth. The grab cargo segment, mainly comprising ores, coal, coke and fertilizers, reached 14.5mt, up by 2.1%. For the dry bulk cargo segment the port expects a total handling in 2013 of 27.5mt (+9 percent). On the export side the port expects a growth of 28% up to 7.3mt, the import will be 20.2mt, a plus of 3%.

Dry bulk handling at Hansaport terminal, Port of Hamburg. © Dietmar Hasenpusch

Hansaport terminal at the Port of Hamburg, © HHM Michael Lindner.

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Recovering volumes in the Port of Pori

The Port of Pori has two harbours. In Tahkoluoto harbour, coal is the main commodity.

In the year 2013, coal handling volumes recovered. One million tonnes of coal were imported to the Port of Pori. The amount of coal import increased by 64% compared to the previous year. About 0.3mt of industrial coal was reloaded to barges and transported to the smelter north of Pori, where the winter navigation conditions are more difficult than in Pori. The total volume of coal handled was thus 1.3mt. The total volume was, however, far away from the long-term average of nearly 2mt. The stockpiles were already full in the season 2012/2013 and, during winter 2013, capacity use of the coal power plants situated in the port area was at low level. Therefore no Capesize vessel called at the Tahkoluoto harbour in 2013. The year was exceptional, because normally three to five Capesize vessels over 100,000 tonnes call at Tahkoluoto annually.

Soya being transferred ship-to-ship at Tahkoluoto harbour, Port of Pori.

The year was also exceptional due to the call of *Nordic Orion*. *Nordic Orion,* owned by the shipping company Nordic Bulk Carriers, sailed through the Northwest Passage on its way to Pori. The vessel carried coal from Canada to Finland. In this historical voyage *Nordic Orion* was the second cargo vessel and the first dry bulk carrier ever to use the Northwest Passage as a shortcut from ocean to ocean. (See 'Historic sea route opens through Canadian Arctic harbours' on p21 of the October 2013 issue of *Dry Cargo International*.) The vessel called at Tahkoluoto harbour at the beginning of October and, one month later, her sister vessel *Nordic Odyssey* called at Tahkoluoto using the same route.

Besides coal, Tahkoluoto also handles recycled metals, minerals, ferrous sulphates and ammonium sulphate are handled.

In 2013 soya beans were handled in Tahkoluoto harbour for the first time. Soya beans were imported from South America on a large vessel and unloaded to shore. One part of the cargo was reloaded directly from-ship-to-ship. A smaller vessel transported soya beans to a port south of Pori, where dimensions of the fairway does not allow large vessels. Ship-to-ship handling is rarely done in the Port of Pori, but the work was done fluently with the bridge crane made by Konecranes, which has an outreach of 45 metres.

In Mäntyluoto harbour the main dry bulk commodities handled are copper and nickel concentrates. In concentrates the flows are steady, because of the nature of the smelting industry. Concentrate comes from abroad, but concentrate shipment with a coaster from the mining area in Northern Finland was also tested during the year 2013.

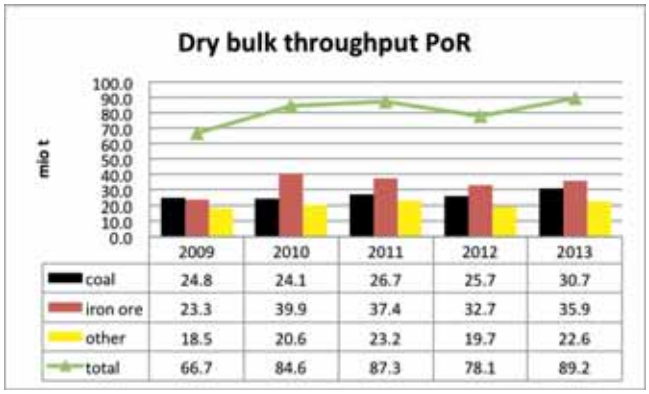
Growth is predicted for the mining industry in Finland, with the boom speculated to be waiting just round the corner. As a general port handling all kind of cargoes, the Port of Pori is ready to serve the metal and mining cluster as a whole, not only in dry bulk, but also in chemical transports and in project cargoes. The Port of Pori is benchmarking itself as one of the best ports for the mining industry in Finland. There is plenty of vacant land for example for a pelletizing plant of ores. Besides concentrates, other dry bulk commodities are also handled in Mäntyluoto, for example recycled metals, salt and grain.

The Port of Pori's dry bulk handling infrastructure is in good shape. Much attention has been paid to the environmentally friendly handling of dry bulk. In Tahkoluoto, there is a closed loading system for dust created by dry bulk. Also other conveyors are covered. New large investments on dry bulk infrastructure were not made in 2013. ISO 9001, ISO 14001 and OHAS 18001 certificates issued by DNV were kept in force.

The Port of Pori has the deepest fairway in the Gulf of Bothnia, which is the sea area between Finland and Sweden. The depth of the fairway to Tahkoluoto deep harbour is 15.3m and to Mäntyluoto harbour 12.0m. All vessels that pass the Danish Straits are able to call at Tahkoluoto when draught is considered. Energy efficiency is one of the means that the Port of Pori will use to tackle the upcoming sulphur emission restrictions in 2015. New fuels will also be on focus. In Tahkoluoto harbour there is a site and an approved town plan for a LNG terminal. The investment decision will be made probably during the year 2014. The LNG terminal will serve bunkering of the vessels, but it will also improve operating conditions of the industry situated in the hinterland of the Port of Pori. Supply of LNG enables investments like pelletizing plant for different kind of ores.

Rotterdam coal port confident 2013's good throughput is sustainable

Dry bulk throughput in the Port of Rotterdam increased with 14% to 89mt (million tonnes) last year — the best result since 2009, the year that dry bulk traffic collapsed with 30%. The good result in 2013 was for a large part due to the strong increase in coal. In fact, with almost 31mt, coal throughput reached an all-time high in the history of the port.



	2009	2010	2011	2012	2013
coal	24.8	24.1	26.7	25.7	30.7
iron ore	23.3	39.9	37.4	32.7	35.9
other	18.5	20.6	23.2	19.7	22.6
total	66.7	84.6	87.3	78.1	89.2

Source: Port of Rotterdam Authority (other includes agribulk, minerals, biomass).

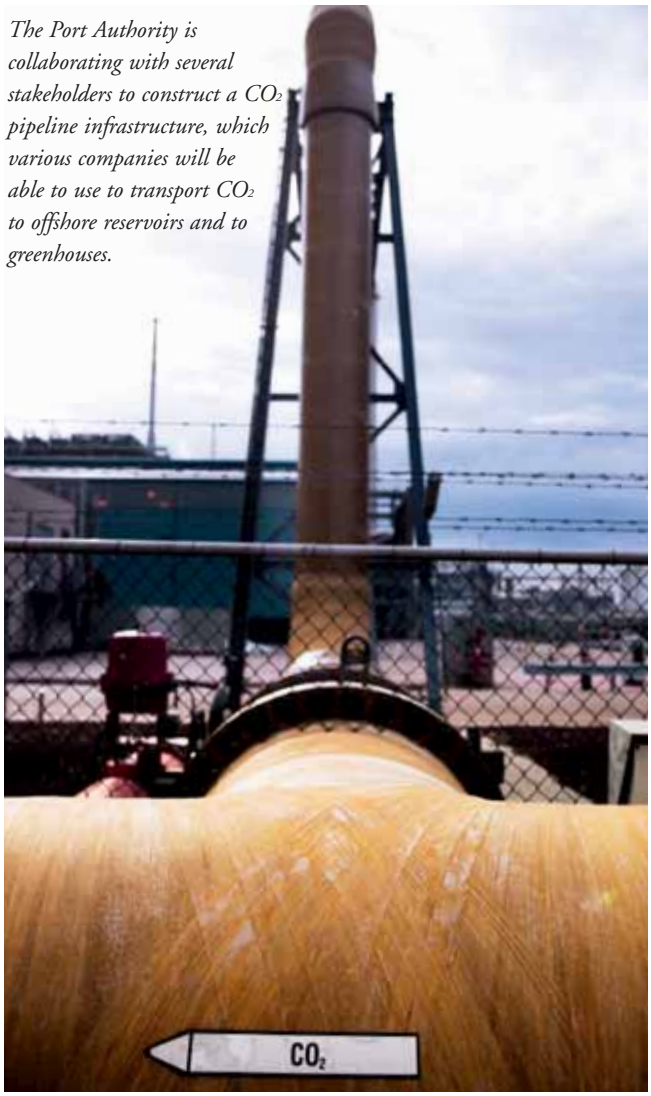
The main reason for the strong growth in steam coal handling was the favourable situation in the European energy market: there was a large supply of cheap coal from the USA (where coal was squeezed out the domestic market by shale gas), and at the same time the price of gas was relatively high in Europe, combine this with very low CO_2 prices and it is clear why utilities were burning a lot of coal- and gas-fired power plants were mothballed.

Another reason was the continuing decrease of German coal mining. In the first nine months of 2013 German coal production declined by 32% to 6.2mt. The last mine will close in 2018.

In contrast coking coal imports developed less positive. The demand for steel making raw materials (coal, iron ore, scrap, minerals) by the European steel industry remains depressed. This makes it all the more remarkable that iron ore throughput in Rotterdam increased with almost 10% last year.

This is because the port was able to benefit from its unrivalled nautical advantages, Rotterdam is the only port in North West Europe where Valemax vessels (400,000dwt) can enter. These ships were originally intended for the Brazil–China trade. However, because the Chinese government refuses to let these ships enter Chinese ports, mining company Vale seeks other employment for these giant bulk carriers in other markets like the Middle East and Europe. In 2013 seven Valemax bulk carriers called at the Port of Rotterdam, from where the iron ore was distributed to blast furnaces in Dunkirk, Bremen, Ghent and Dillingen.

Returning to coal, for 2014 the port expects a further increase in coal handling. The situation with healthy economics for coal fired power production (dark spread) compared to gas fired power plants (spark spread) will continue this year. On top of that, new coal-fired power plants come into operation both in the port area itself (E.On and GdF Suez) as in the hinterland of Rotterdam (Trianel in Lünen, STEAG in Duisburg) giving a boost to coal imports for the EMO terminal in the port of Rotterdam. To accommodate the expected growth in coal traffic the EMO terminal has invested in new berths, a second rail loading system, a new loader for sea going vessels, a fifth 85-tonne grab crane, and a seventh stacker reclaimer.



The Port Authority is collaborating with several stakeholders to construct a CO_2 pipeline infrastructure, which various companies will be able to use to transport CO_2 to offshore reservoirs and to greenhouses.

However not all news is positive on the coal front. More competition can be expected from the port of Wilhelmshaven in Germany. This port has increased its coal handling capacity to 6mt, not only to accommodate the local power plants but also looking at rail distribution of coal to power plants in the hinterland. And, in the longer run, one of the consequences of the Dutch Energy Agreement is the closure of older coal-fired power plants in the Netherlands. Three plants will be closed by January 2016 and the other two by July 2017. Although the decision is under condition of approval by regulator ACM (the Netherlands Authority for Consumers and Markets).

An alternative fuel for coal-fired power plants is biomass. In 2012, the Port of Rotterdam (including Dordrecht) handled around a million tonnes of biomass, more specific wood pellets. And several stevedoring companies in the port (ZHD, EBS) already have increased their covered storage capacity.

But demand for wood pellets fell last year. One of the reasons is the temporary closure of the GdF Suez coal plant in Nijmegen because of a fire. However, more importantly, the subsidy scheme for biomass co-firing has ended. This is another clear indication of the uncertainties in this market, without some form of government support it is very difficult for biomass to compete with coal. The low CO_2 prices also are not really helpful in this respect. For 2014 the port is more positive about the prospects for the heat market. Strong growth in demand for

E.On coal plant Maasvlakte.

premium pellets in countries like Germany, Austria and Italy opens up the market for more overseas imports.

In addition to the gradual transition to sustainable energy production, the Port Authority also works on the development of a CO_2-Hub. In order to neutralize CO_2 emissions from coal plants and other large industrial installations, a lot of work is going into the capture and storage of greenhouse gases. In connection with this, E.ON and GDF Suez are working together in ROAD (Rotterdam capture and storage demonstration project). The aim of this project is to capture 1mt of CO_2 and store it in a large empty gas field under the North Sea, for several years starting in 2017. This is the next step for a CO_2 hub development at Rotterdam.

The Port Authority is collaborating with several stakeholders to construct CO_2 pipeline infrastructure, which various companies will be able to use to transport CO_2 to offshore reservoirs and to greenhouses. The future infrastructure will also provide opportunities for coal-fired power plants in the hinterland to transport their CO_2 to the hub in Rotterdam.

Within a sustainable energy port, both coal and biomass will play a significant role for the port of Rotterdam in the coming decades. Along with the economic recovery in Europe, industrial production will pick up again, and this implies that demand for raw materials and solid fuels will show positive growth in the coming years. Therefore the port is confident that the good dry bulk throughput result of 2013 can be sustained in 2014 and beyond.

EMO terminal.

EBS coal handling.

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LOOK TO THE FUTURE AND PLAN AHEAD

Since 1973, the EMO terminal in the Rotterdam port has been a major hub in transporting coal and iron ore from all over the world to the European hinterland. EMO has always been a reliable partner for its customers in helping to control these flows of goods by combining daily processes with a clear vision for the future.

EMO is able to accommodate the world's largest dry bulk vessels, and yet we never cease to look to the future and plan ahead – now more than ever! In 2012, we have strongly increased our storage and transhipment capacity and efficiency by commissioning five new, state-of-the-art projects: the seventh stacker reclaimer, the fifth unloader, the second fully automated coal wagon loader, a brand-new sea-going vessel loader along an innovative, new quay, and a high-tech operations centre. These projects ensure that we are fully equipped to enhance our safety, efficiency and sustainability performance, and to continue to serve you as a reliable partner in dry bulk transhipment in the coming decades.

EMO

energising your business

Terminales Portuarias del Pacífico increases loading rates with second crane

Terminales Portuarias del Pacífico (TPP) has purchased a second crane to support its operation, selecting a LIEBHERR Pactronic LHM 600 model, which will be operational by March this year, expecting to increase its loading rates to 40,000 tonnes per day.

TPP is the first specialized port terminal in bulk cargo and steel products handling, principally, iron ore mineral, and energy products. In 2013, TPP handled an annual tonnage of 3.6 million metric tonnes.

TTP's new Liebherr Pactronic LHM 600 crane is expected to to increase its loading rates to 40,000 tonnes per day.

Innovation at St. James Stevedoring Partners LLC

St. James Stevedoring Partners LLC announced the dedication of two new Model 8 Terex/Gottwald floating cranes on 28 February 2014.

The new cranes are named the *Miss Tara* and the *Randy W* after long-term St. James employees Tara Sevario and Randy Wintz. The addition of these two cranes bring St. James' fleet of TEREX/Gottwald floating cranes to a total of 10 cranes, the world's largest TEREX/Gottwald floating crane fleet. The new Model 8s feature Verstegen buckets, the first Verstegen buckets used in the United States. Each crane is fitted with a 61 yard rubber sealed general purpose buckets, a 54 yard rubber sealed intermediate product bucket and a 25 yard heavy ore bucket. The cranes have a gross lift of 63mt (metric tonnes) at 149 feet radius.

St. James was founded in 1985 as a Mississippi River midstream stevedore with stevedoring operations between New Orleans at Baton Rouge. St. James has six berths and an annual capacity exceeding 30mt of dry bulk. St. James specializes in transfer of dry bulk materials such as coal, fertilizer, ores and minerals, cement and grain by-products between ship and barge. St. James also handles steel, bagged cargo and project cargo transfers between ships and barges. St. James also provides stevedoring services at industrial facilities.

Operational excellence and customer service continue to be the company's guiding principle. In 2013 the company achieved regular loadings of coal at rates over 60,000 tonnes per day. In addition to handling panamax sized vessels St. James regularly loaded Capesize vessels.

Safety remains a high priority at St. James. Since 2006 St. James has given away eight pick-up trucks valued at a total of $240,000 to employees for meeting safety goals of no lost time injuries.

Innovation has been a hallmark of St. James. In 2003, the company began a system of statistical measurement of process. This system has led to major changes in management direction as well as driven the development of new technologies. St. James was the first company in the world to place mobile harbour cranes on barges.

In 2013, St. James, in conjunction with Phoenix Products, pioneered the use of LED lighting on floating cranes. The use of LED lights at St. James has proven to save fuel as well as improve St. James productivity. In addition St. James now has a safer working environment due to the 'instant on' feature of its LED lights. All of St. James cranes are now fitted with LED lights.

St. James sister company, St. James Technologies, was created to develop innovative solutions for the stevedoring industry. The basic idea was to use St. James Stevedoring as a laboratory in which operator driven technological solutions could be developed. One of St. James Technologies successes is Harbor Telematics a company created to develop a crane data system (CDS) for TEREX/Gottwald cranes. By the end of 2013 more than 50 cranes worldwide were fitted with the Harbor Telematics CDS system. The Harbor Telematics system allows the crane owner/operator to monitor crane conditions and performance on a real time basis. It also features an alert system, with which email notifications are sent of designated operational and maintenance conditions. An example of the benefits of St. James' Harbor Telematics CDS is the St. James fuel savings system — when a St. James crane is idle for 15 minutes the Harbor Telematics CDS sends an email to the St. James on duty operations supervisor who then makes an affirmative decision to continue operations or switch to auxiliary power. In St. James operations, the company anticipates significant annual fuel savings and a smaller operational carbon footprint.

In February of 2014, St. James will be dedicating and moving into its new office building. The new St. James office is the 49,000 square foot, former Romeville Elementary School which was purchased by St. James from the St. James Parish School Board in late 2012. The complex includes a full gymnasium and 13 acres of land for future development. The new office features an array of innovative technologies designed to improve communications and transparency of operations.

The new office building will also be the headquarters of the St. James led Next25 Foundation. The Next25 Foundation received its' non-profit status from the US Government in 2013. The goals of the foundation are to facilitate the training of local residence for jobs in local industry. The foundation is led by an advisory board made up of senior managers of industry, community leaders and government officials in St. James Parish, Louisiana.

Through the Big River Coalition, St. James continues to work toward the deepening of the Mississippi River to 50 feet to match the new Panama Canal. Today Mississippi River is the only port on the US Gulf which will be able to immediately offer loading of vessels to 47 feet on the first day the New Panama Canal is opened.

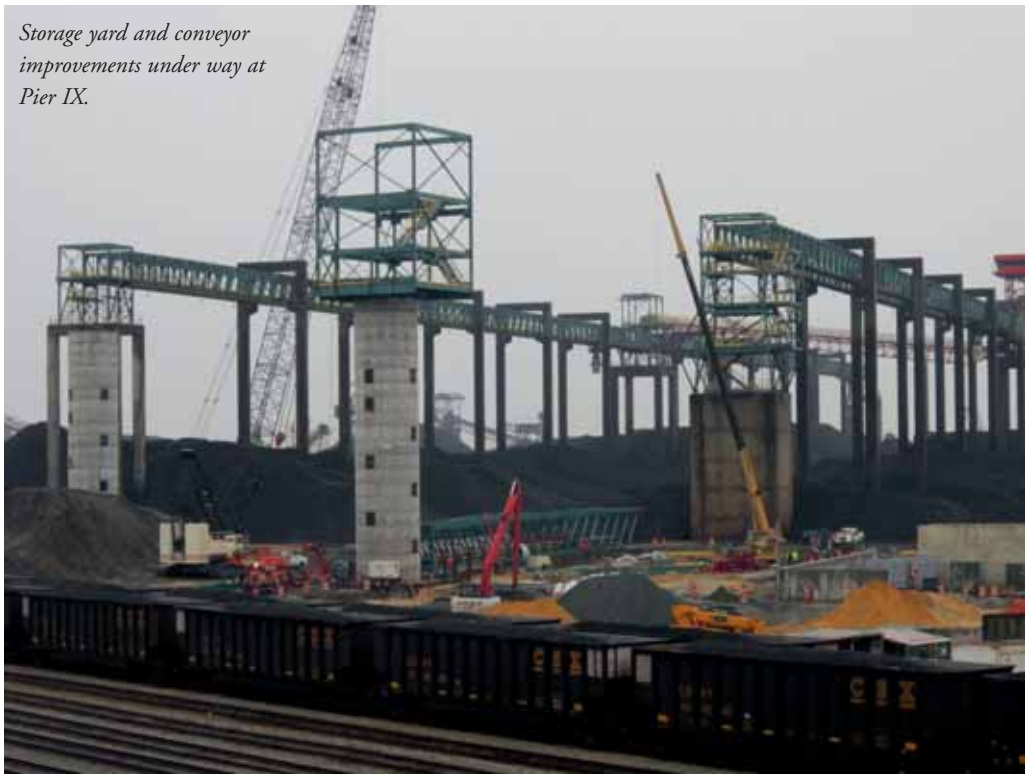
Multiple Kinder Morgan terminal improvements to come online this year

The long-term demand for thermal coal's use as the baseline energy source by many developed and developing countries looks strong, and although steel production has slumped in the short term, the longer-term outlook for steel production, and the resulting demand for metallurgical coal looks bright, as well. This international demand will provide many US coal companies a target market beyond the normal domestic thermal power consumption that has been reduced substantially by the new large supply of natural gas in the US.

Kinder Morgan has been working closely with many large US coal companies over the past few years to make significant improvements to provide new export terminal capacity at its terminals due to this new, long term market shift. In 2014, many of the improvements that Kinder Morgan has been making to terminals, such as Pier IX in Newport News, Virginia, IMT in Myrtle Grove, Louisiana, and Houston Bulk Terminal and Deepwater Terminal in Houston will finally come online, giving these customers long term terminal access that represents roughly 25.2 million new tonnes of new coal export capacity.

Overview of IMT with its expanded storage yard capacity.

Pier IX Terminal



Storage yard and conveyor improvements under way at Pier IX.

In April of this year, Pier IX Terminal in Newport News Virginia will add 1.5mt (million tonnes) of new capacity with an expansion of the terminal's coal storage yard. This expansion is targeted for handling mostly new metallurgical coals going to Europe and the Far East. The expansion will also include the dredging of the north side of the export berth to 50 feet for acceptance of larger coal vessels to parallel this same draft allowance already on the south side of the berth. The additional coal storage 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 improvements will increase the total coal export capacity of the Pier IX Terminal to handle more than 16 million short tons of coal per year to the export market.

International Marine Terminal (IMT)

At International Marine Terminal (IMT) located in Myrtle Grove, Louisiana, Kinder Morgan and its partner, AEP River Operations, have invested approximately $170 million to increase the terminal's coal export capacity. The IMT terminal improvements include a new ship loader that is capable of loading cape-size vessels. The improvements also include a second continuous barge unloader, improved reclaim and distribution systems, and a dedicated barge loader for ocean going Gulf barges. These improvements have been made to 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.

Houston Bulk Terminal and Houston Deepwater Terminal

Kinder Morgan's two Houston, Texas terminals, Houston Bulk Terminal and Deepwater Export Terminal, provide export coal throughput for western producers that wish to rail their coal directly to the US Gulf, as compared to railing coal to the Mississippi River and barging it to the secondary export terminals located in the lower river region of the US Gulf. Back-stopped by long-term contracts with large coal producers, Kinder Morgan is constructing improvements at its existing petcoke export terminals that will allow them to efficiently and economically export western coal.

At the Houston Bulk Terminal, Kinder Morgan has constructed a new coal receiving, storage and reclaim system. The receiving system consists of a shaker house with a rail dump pit with 72 inch conveyor belts. The coal is then put on a storage pad using a 180 degree stacking system. Houston Bulk

Terminal also has seven storage tracks capable of storing up to 300 railcars at a time at the terminal. Kinder Morgan has also upgraded the existing shipping system, which will increase the terminal's coal and petcoke export capacity. The terminal also has a brand new dockside shipping conveyor that increases the maximum vessel loading rates at Houston Bulk Terminal to 3,000tph (tonnes per hour). The Houston Bulk Terminal has the capability to export 3 million short tons of coal annually.

New Deepwater Terminal coal storage yard nearing completion.

Just down the Houston Ship Channel from the Houston Bulk Terminal, Kinder Morgan is finalizing improvements to its Deepwater Export Terminal that include a new shiploader capable of loading post-Panamax vessels at rates approaching 5,000tph, new rail loop tracks capable of simultaneously holding three, 135-car unit trains, a new railcar rotary dumper, and segregated distribution and dual reclaim systems on each pad capable of rates of 2,500tph each. Following completion of the improvements in mid-2014, 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 the development of additional export terminal capacity in the Pacific Northwest and other markets for US coal producers, trading companies 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 2013, Kinder Morgan Terminals recorded a Total Recordable Incident Rate (TRIR) of 1.64 which is considerably less than the industry average.

BHP Billiton rejects calls to give up capacity at Richards Bay

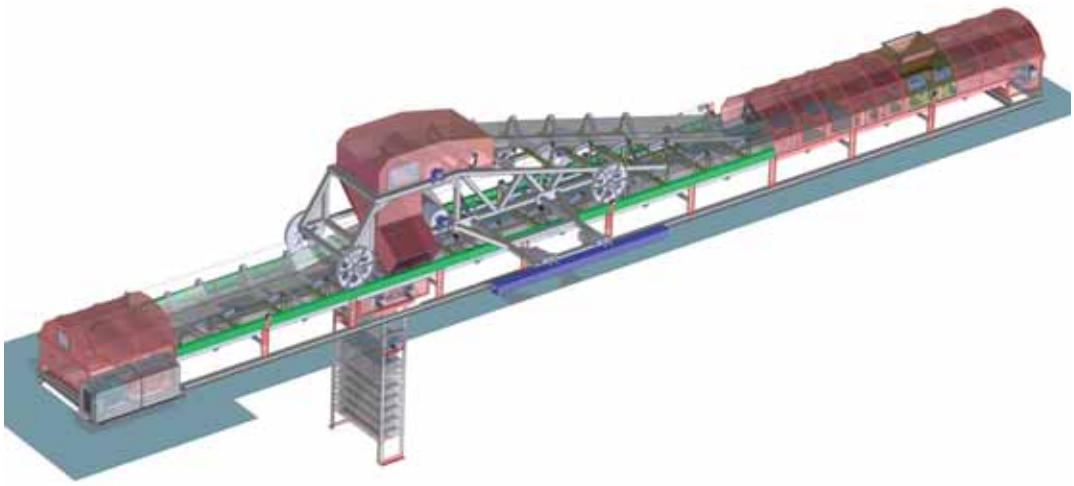
BHP Billiton has refused all government requests to give up capacity at Richards Bay Coal Terminal to junior black miners. It said that accusations made by Transnet CEO Brian Molefe that it was hampering access to the facility were "far from the truth". Indeed, the company says that the problem it faces at Richards Bay in using its available capacity is down to the failure of Transnet to develop the rail link in line with expansion of both the port and terminal. As a result, it says it is unable to develop new mining interests because of a lack of sufficient logistics support.

At present, the coal terminal can handle approximately 91mt (million tonnes) of export coal per annum; Transnet can only offer a theoretical capacity of 79mt on the connecting railway line.

Barry Cross

Golfetto Sangati to supply Romanian terminal

Canopus, a JV company of Cargill (USA) and TTS (Romania) has awarded Golfetto Sangati (Pavan Group) a contract to design, manufacture, deliver and start up a new shiploading terminal in the Port of Constanta in Romania.



The scope of supply includes one TRANSLOAD mobile shiploader, rated at 800tph (tonnes per hour) and the relevant handling equipment from truck intake to storage and ship load-out.

The new terminal is scheduled to be commissioned in the second half of 2014.

The picture above shows the conveyor belt, 1,200mm wide and 138m long, with tripper connected to the shiploader.

All equipment has been designed and built according to client specifications.

Golfetto Sangati can provide fully customized solutions to meet client specifications for any kind of ship-unloading, ship-loading and cereals handling.

Merger allows Sumitomo to broaden CSU offering

As of 1 April 2013 Sumitomo merged with the Logistics & Parking System division of Sumitomo Heavy Industries (the parent company) to become Sumitomo Heavy Industries Material Handling Systems Co., Ltd (abbreviated SHI-MH). The new company combines the existing material handling equipment business, which consists mainly of cranes and bulk handling, with the logistics systems and automated parking equipment business to become a comprehensive material handling company. With this move, SHI-MH is now able to provide engineering, products and after-service covering a wider field to all of its customers.

SHI-MH's wide product range includes simple overhead cranes to heavy-duty ladle cranes for steel mills, high capacity unloaders and so on. One of its main products is the continuous ship unloader (CSU), which it has been manufacturing since 1976, the first of the large number of units it has since delivered to many customers.

Recent deliveries

Since 2007, SHI-MH has delivered 11 CSUs in Japan, seven to steel mills, one unit to a chemical company and three units to electric power companies. The largest of these has an unloading capacity of 2,500tph (tonnes per hour) for coal and 3,500tph for iron ore. Further SHI-MH US in the process of manufacturing two units for Taiwan and one for Indonesia.

Characteristics of Sumitomo's CSU

SHI-MH's CSUs are designed to greatly minimize costs and have effectively reduced costs for total unloading facilities, unloading operations, stockyard and wharf facilities. The design places importance on environmental impact by reducing operating energy and dust and noise emissions.

All these, along with the simplification of the operation of the CSU, have resulted in a high degree of customer satisfaction.

SHI-MH's CSU design is well suited for unloading a wide range of ship sizes and the hold bottom clean-up feature offers a very flexible and safe operating environment for customers.

Protection against seismic events

As countermeasures for large scale earthquakes and tsunamis, SHI-MH has incorporated structural reinforcements and adopted structures which are less prone to effects of external forces, by analysing the shocks produced by earthquakes, and these countermeasures are proving to be effective.

Future CSU trends

The demand for CSUs in the Japanese market is steady and with the changes and steady growth continuing in East Asia, ASEAN and India, SHI-MH expects expenditures for energy and infrastructure will also result in demand in this region. Further, the company expects this trend will prompt more Japanese companies to plan facilities in this region, generating further demand for CSUs in the future.

An all-rounder for material handling: SENNEBOGEN 821 E-Series at work

The current SENNEBOGEN 821 E-Series convinces in all recycling and sorting tasks. As an all-rounder the machine covers a broad implementation spectrum with working ranges to 12m and an operating weight of 23.9 tonnes. At the scrapyard or recycling waste, the compact machine reveals its strengths — this is impressively demonstrated by the first customer implementations.

In 2013, with the new 821 material handling machine of the current E-Series, SENNEBOGEN presented an all-around machine for scrap handling and recycling. Now the first machines are in demanding use at many customer sites — time for an initial report.

As a reliable all-round machine with a powerful 97kW Cummins diesel engine, in accordance with TIER 4i, the SENNEBOGEN 821 is convincing in numerous application areas, from the recycling of waste and raw materials, to sorting and loading activities at the scrapyard. In addition to different equipment lengths, ranging from 9m to 12m, and ULM stick variants, the proven SENNEBOGEN modular system also offers the customer-specific version with mobile and crawler undercarriage or special solutions.

Defies the dust: practical implementation under difficult conditions

As one of the first implementations the machine went to the Netherlands to be thoroughly tested in practical application by several customers. The conditions in the recycling halls could not be more demanding. Household waste and industrial waste is loaded and shredded there. The dust exposure is extremely high. In 24-hour shift operation the 821 is continuously exposed to the highest stresses and it convinces. In test operation diesel consumption of less than 12 litres per hour was determined — an outstanding result. In another application with a load lift magnet, single-digit consumption values were achieved. Moreover, consumption reduction of as much as 20% when operating in ECO Mode could be confirmed — consumption data that pleases every one responsible for machine park management.

A high dust burden and the sprinkler system in the hall quickly ensure a stubborn layer of dirt on all surfaces and machine parts. In this application, the fan reversal in particular, turned out to be a crucial quality criterion. Thanks to a short reversal interval and the good fan capacity the cooling ribs remain free of contamination, and this permanently ensures cooling capacity. Possible dust deposits in the engine compartment and on the exhaust pipe could be prevented through the well-designed air conduction.

Perfectly equipped: SENNEBOGEN grapple and the new Maxcab

Location change: meanwhile, more than 1,000km away, in Skillingaryd, Sweden, another SENNEBOGEN 821 Mobile is working at the Uniscrap Sverige AB scrapyard, sorting and loading materials of all type. Equipped with a SENNEBOGEN SGM 5-shell gripper, which thanks to the narrow design of the shell, can be immersed particularly effectively in containers. The low deadweight of the grapple has been specially matched to the SENNEBOGEN material handling machines and enables effective use of the working load. Secure grapple closure is ensured even for bulky materials such as auto bodies and long goods.

Effective immediately; for this machine class as well, the Maxcab comfort cab offers the operator maximum operating comfort, an excellent overview, and a high level of safety. The elevating cab with sliding door, comfort seat and automated heater/air conditioner automation promise the operator a pleasant work environment. Thanks to the elevated position and with generously dimensioned windows, an ideal overview is always ensured.

The new SENNEBOGEN control system, SENCON, supports the operator in daily operation. Idle stop automation and ECO Mode save fuel. In the Optimode of the SENNEBOGEN 821, adjustments can be made for each area of implementation so that the machine can work at the highest level of efficiency. In combination with the optimized engine controller, savings of up to 25% are possible.

One Source

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FLSmidth's stockyard equipment is designed and manufactured to satisfy the requir
1 million m³ at rates up to 16,000 t/h. Based on innovative modular design, FLSmidth systems ensure efficient material handling at low investment and operating cost, combining a wide variety of proven components for tailor-made solution according to customer's specifications.

FLSmidth stockyard equipment provides state-of-the-art systems for efficient material handling.

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FLSmidth

Keeping coal on the move

coal handling systems and technologies

Louise Dodds-Ely

Full-service approach enhances FLSmidth's coal handling technologies

FLSmidth, major supplier of equipment and services to the global cement and minerals industries, employs over 15,000 staff in more than 40 countries, with project and technology centres located close to its customers around the world, *writes David Woodruff, Key Industry Director, Coal at FLSmidth*. Serving customers in the cements and minerals industries, FLSmidth offers a wide range of products, from single machinery to complete plants and facilities. In addition, the company also takes a full-service approach before, during and after installation; offering customers expertise in project management, engineering and other professional services.

FLSmidth supplies the world's leading mining and power companies with a wide range of equipment. Very few companies can match FLSmidth's coverage of the entire flowsheet, from run-of-mine material to the final product. Specific to coal handling, it can customize multiple product solutions through offering a range of mobile and fixed crushers, sizers for in-pit or out-of-pit applications, and fixed or mobile conveyors configurable to optimize any mine site. Within FLSmidth's conveyor line, it has successfully supplied trough and pipe conveyors for many coal handling applications. In addition, FLSmidth has a range of shiploaders and unloaders, including pneumatic, grab- and screw-type models.

Examples of FLSmidth's large-scale coal handling projects include:

- the Tutupan project in Indonesia, where a major out-of-pit crushing and conveying system is nearing completion;
- the recent installation of a ship-unloader for a new coal-fired power plant owned by Vattenfall at Hamburg port in Germany;
- Mozambique, where FLSmidth has been called upon to supply material handling equipment for two phases of the new Moatise Coal mine for Vale;
- the supply of a bucket wheel stacker reclaimer to JSW Energy Ltd. in India, which will have a stacking capacity of 4,000tph (tonnes per hour) and can reclaim material at 2,000tph; and
- also in India, FLSmidth is working with NTPC-Tamil Nadu Energy Company Ltd. to construct an external coal handling package including a 4,000tph pipe conveyor.

Vale has long been a client of FLSmidth. The recently awarded Vale project contract includes design, detailing, fabrication, supply, delivery to site, supervision of erection and commissioning together with start-up assistance. In accordance with FLSmidth's One Source strategy, full lifecycle support will be supplied from the FLSmidth service centre in Tete, Mozambique. The material handling equipment to be supplied includes a crushing plant and in-plant and stockyard conveyors. The crushing plant consists of a tip bin, feeders, primary, secondary and tertiary sizers as well as supporting steel structures and auxiliaries. The process equipment includes FLSmidth Ludowici® Reflux Classifiers and

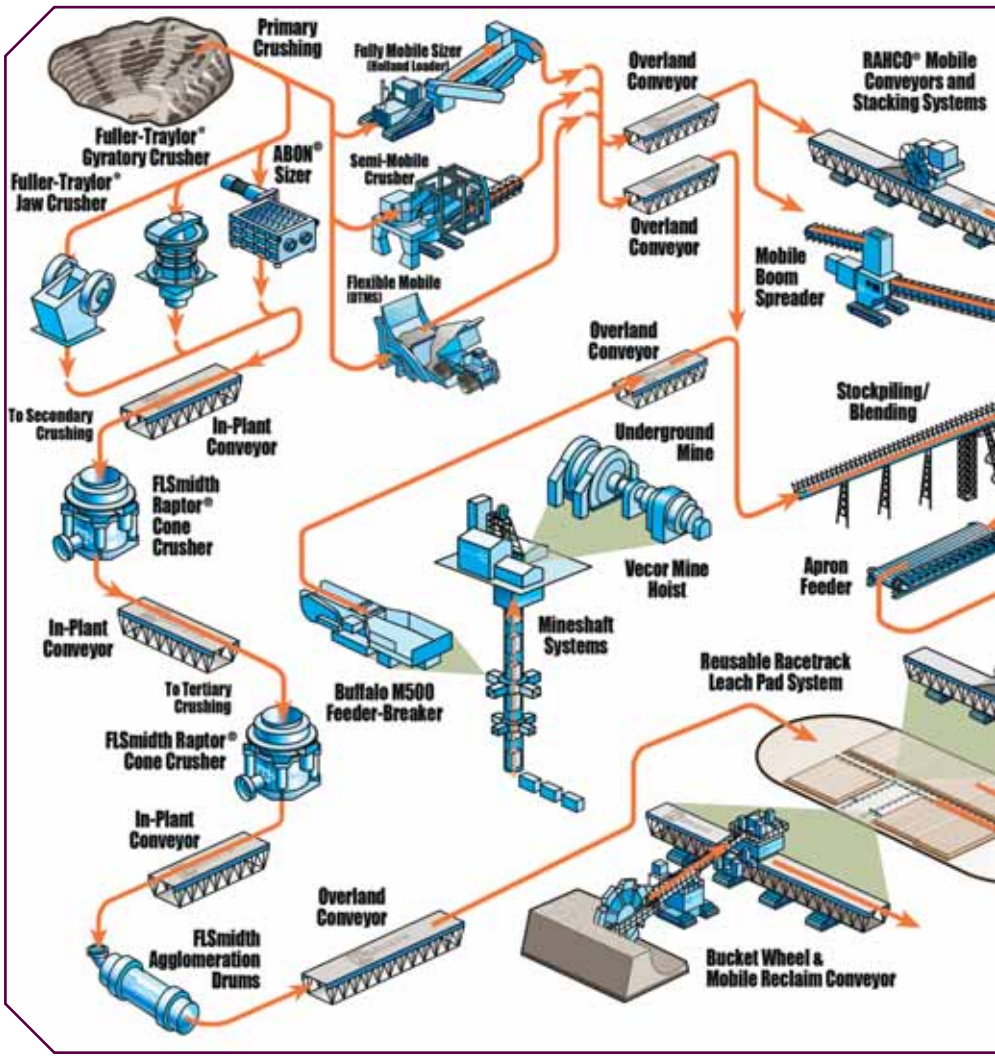
horizontal belt filters.

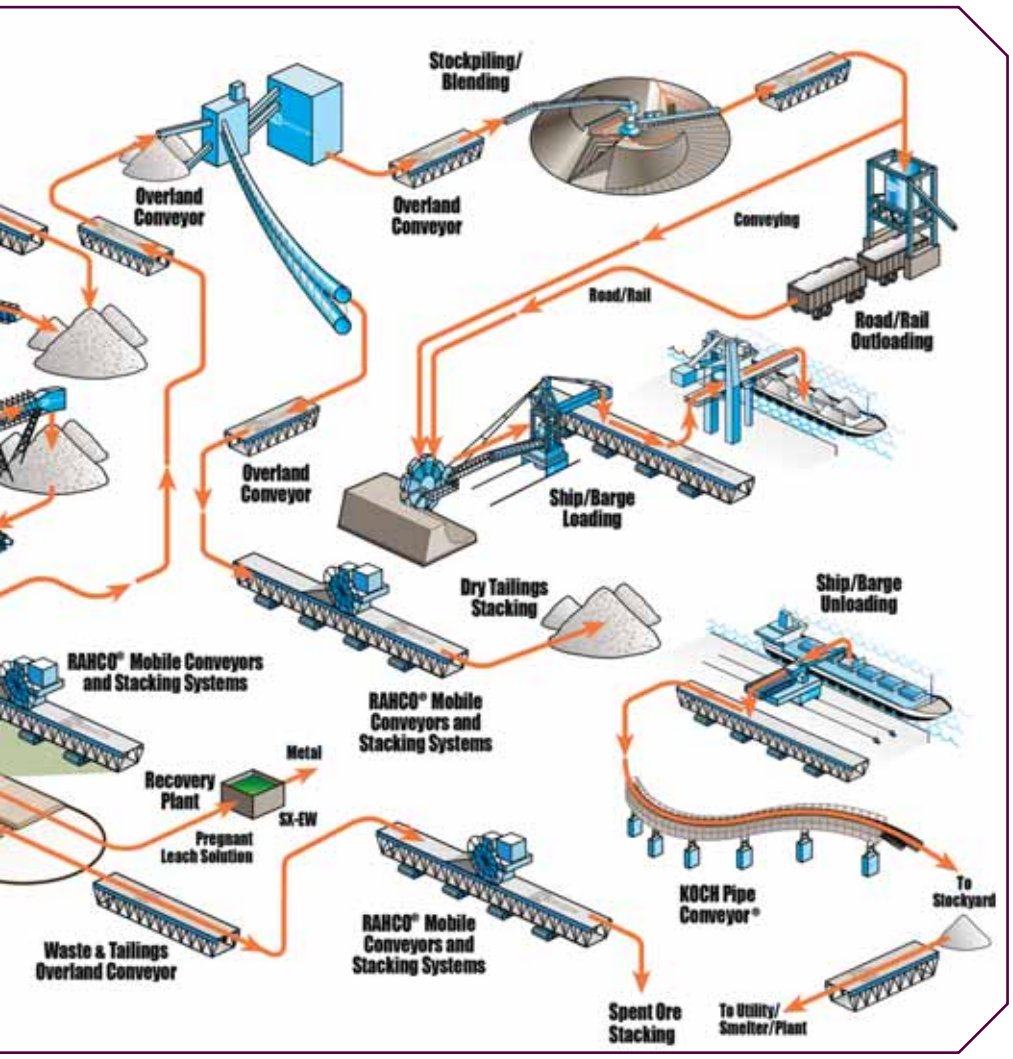
FLSmidth has previously delivered a crushing plant and filters for the first phase of the Moatize mine along with a contract for supply of equipment for Vale's Nacala Port expansion. This second phase of the project will enable Vale to approximately double the production capacity at the mine.

FLSmidth's coal handling project with PT Adaro in Indonesia is nearing completion. The material handling equipment is part of the client's mining operations expansion which will enable a decrease of the average hauling distance of the overburden trucking operations, and therefore, the company's dependency on oil. The supplied equipment comprises an out-of-pit overburden crushing and conveying system, consisting of FLSmidth ABON® sizers, RAHCO® overland conveyors, and RAHCO mobile stacking conveyors. The system has a capacity of 12,000tph and an annual overburden volume of 40 million bank cubic metres. FLSmidth's Indonesia office will provide the mine with customer service aftermarket support.

As mentioned earlier, FLSmidth recently supplied two grab ship-unloaders and one shiploader in a coal handling project to Vattenfall Europe Power Energy in Moorburg, Germany. The system capacity is 1,500tph with a grab capacity of 32–40 tonnes. The boom working area is 38m longitudinal travel. The shiploader operates at 200 to 1,000tph.

To remain competitive, the FLSmidth team understands that it is not just about what equipment they offer, but how the company operates, as well. With global sourcing strategies, cost-efficient engineering practices, and streamlined manufacturing, FLSmidth has the expertise and worldwide systems in place to provide competitive pricing on its quality equipment offerings.





improvements to many existing product lines. Equipment for in-pit crushing and conveying (IPCC) applications such as the Triple Track Mobile Sizer and Dual Truck Mobile Sizer are evidence that they are pushing the boundaries of what is possible in mining.

RAHCO Dual Truck Mobile Sizer

The Dual Truck Mobile Sizer (DTMS) is the world's first fully mobile truck dump station and is unique in that it interfaces directly with rear dump trucks. The DTMS works like a large, mobile, shovel-fed sizing station, but with the added benefit of truck haulage to ensure flexibility and efficiency. In addition, by using a shiftable face conveyor and a mobile overland hopper, a mine can achieve a highly mobile system and a considerable reduction in its fleet of haulage trucks.

Wagon tippler

FLSmidth is currently developing wagon tipplers capable of handling train wagons of varying dimensions. These tipplers will also come on single or tandem configurations depending on capacity requirements.

For example, FLSmidth is directly supervising a manufacturing project in China involving the manufacturing of 12,000 tonnes of steel. FLSmidth also has several service Supercentres that have been opened to foster partnerships with both customers and local communities. These Supercentres are strategically located close to both mining and cement operations, and offer parts warehouses, conference rooms, testing facilities and training centers.

Developing tomorrow's technologies

FLSmidth has always had a strong emphasis on innovative design, and is leveraging R&D, customer focus and industry know-how to hold a strong position in today's competitive marketplace. FLSmidth's focus is on delivering the best, full-service solutions for their clients' needs. The company is aggressively pursuing development of several new technologies and applying R&D

Large capacity stacking and reclaiming systems

With the success of the Tutupan coal handling project in Indonesia and the Karara overburden handling project in Australia, FLSmidth continues to lead the industry in large capacity mobile stacking systems. Success was achieved on both of these projects through working closely with the client to optimize equipment arrangement and function, ensuring top performance at the mine site. Each of these can handle over 12,000tph, reduce operational costs, and also deliver increased sustainability benefits through a reduced carbon footprint.

These developments and more are sure to keep FLSmidth on the cusp of tomorrow's solutions, all driven by the needs of their clients. FLSmidth will be adding more capacity with its complete line of material handling equipment at projects around the world, demonstrating its technology leadership and focus on its core industries of coal, gold, copper, cements, fertilizers and iron ore.

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Mantsinen reports on 2013 – and what it expects from 2014

Port Visotsk received two Mantsinen 120 R HybriLift®s in December 2013.

During the year 2013 Mantsinen Group Ltd Oy continued to grow and strengthen its position in the marketplace, with the vast majority of its machines being sold for use handling coal. Both Mantsinen Group business units — Material Handling Machinery and Logistic Services — expanded successfully into new territories.

The Material Handling Machinery division has focused on hydraulic material handlers and harbour mobile cranes, as well as on attachments to complement the machinery range. Mantsinen material handlers are available from 70 tonnes to over 200 tonnes. All Mantsinen material handlers are available with either diesel or electric engines. Mantsinen provides an undercarriage customized according to the needs of the customer, and all material handlers are available on tracks, on rails, with wheels or stationary.

Mantsinen has a wide range of attachments, such as clamshell buckets, orange peel grabs, roundwood grapples, sawn timber spreaders, big bag spreaders etc., so customers have a complete package from Mantsinen.

Mantsinen is committed to the continuous improvement of its material handler product range.

Environmental issues, such as improving energy efficiency and reducing particulate and noise emissions are important for Mantsinen. Mantsinen HybriLift® has a proven track record of reducing fuel consumption up to 35% and in some cases even more.

Productivity and a long life span are critical features for all material handling equipment. Mantsinen's R&D team strives to continuously improve the performance of material handlers, and reduce the operational costs.

During 2013, the majority of Mantsinen machines were ordered and delivered to coal handling. Over 70% of total sales was related to coal handling, mainly in Russia. The total amount of coal handled by Russian ports in 2013 was 101.1mt [million tonnes] (+13.3% year-on-year).

Many major ports in Russia have trusted Mantsinen for their

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Coal handling at Murmansk Commercial Sea Port.

coal handling in port terminal areas. To name some of the major customers 2013, all of which use Mantsinen for coal handling:

- **Murmansk Commercial Sea Port** ordered three units — one Mantsinen 120 R HybriLift® and two Mantsinen 70 Rs. The machines were delivered early autumn 2013;
- **Tuapse Commercial Sea Port** received its third Mantsinen 200 ES HybriLift® in summer 2013;
- **Port Visotsk** received two Mantsinen 120 R HybriLift®s in December 2013. Port Visotsk currently has a fleet of four Mantsinen 120 R HybriLift®s, two Mantsinen 105 ES and two Mantsinen 100 RHCs.
- **Vanino Commercial Sea Port** ordered four Mantsinen 120 R HybriLift®s and four Mantsinen 70 Rs in summer 2013 and machines will be delivered in the first quarter of this year. Vanino Commercial Sea Port now focuses only on coal handling. The port will have a fleet of 15 Mantsinen material handlers in total once the set of eight brand new Mantsinen are commissioned.

Some of the 2013 deliveries include:

- one Mantsinen 70 ER for Ege Çelik Endüstrisi Sanayi Ve Ticaret A.Ş, Turkey;
- two Mantsinen 70 R for Murmansk Sea Commercial Port OJSC, Russia;
- two Mantsinen 70 R for JSC Terneyles, Russia;
- one Mantsinen 120 M HybriLift® for Schuster Entsorgung GmbH, Germany;
- three Mantsinen 120 R HybriLift® for Murmansk Sea Commercial Port OJSC, Russia;
- two Mantsinen 120 R HybriLift® for Visotsk Port, Russia;
- one Mantsinen 120 EM HybriLift® for ShoreLink AB, Sweden; and
- one Mantsinen 200 ES HybriLift®, Tuapse Commercial Sea Port, Russia.

In 2013 Mantsinen Group turnover was approximately €55 million, with a growth of approximately 5% compared with the previous year. Company turnover has been growing in both business units, Material Handling Machinery and Logistic Services. Mantsinen is a multinational company and employs about 450 people in Finland and Russia. Mantsinen Material Handlers have found customers in nearly 30 different countries and the distribution network is widening rapidly. Mantsinen celebrated its 50 years in material handling business in 2013.

Outlook for 2014

The outlook for 2014 is positive. The order book has grown steadily during H2/2013 and reflects the slightly brighter general outlook, especially in the eurozone. Mantsinen holds a leading market position in Russia and new models are taking over Europe as well. Mantsinen has invested in improving distribution network and is establishing dealerships in Asia.

The order book for 2014 includes, among others, the following projects:

- four Mantsinen 70 R, Vanino Commercial Sea Port, Russia (coal handling);
- one Mantsinen 70 R, Tapojärvi Oy, Finland;
- two Mantsinen 70 ER, Ege Çelik Endüstrisi Sanayi Ve Ticaret A.Ş, Turkey;
- one Mantsinen 90 ER, Port of Gülluk, Turkey;
- one Mantsinen 90 M, Goeyvaerts R. bvba, Belgium;
- four Mantsinen 120 R HybriLift®, Vanino Commercial Sea Port, Russia (coal handling);
- one Mantsinen 120 EM HybriLift®, Chemion, Germany;
- two Mantsinen 200 M, Goeyvaerts R. bvba, Belgium;
- one Mantsinen 200 M, Cuypers Vorkliften nv, Belgium; and
- one Mantsinen 200 ER, Ugursan Shipping and Port Operations Co, Turkey.

Product launch

A major product launch in 2014 will be Mantsinen 200 M HybriLift®, the largest hydraulic material handler on wheels ever produced. The Mantsinen 55 series will be launched summer 2014. New innovations to enhance material handling productivity with even less energy are continuously researched and applications found.

Tough application, ingenious solution } Exactly

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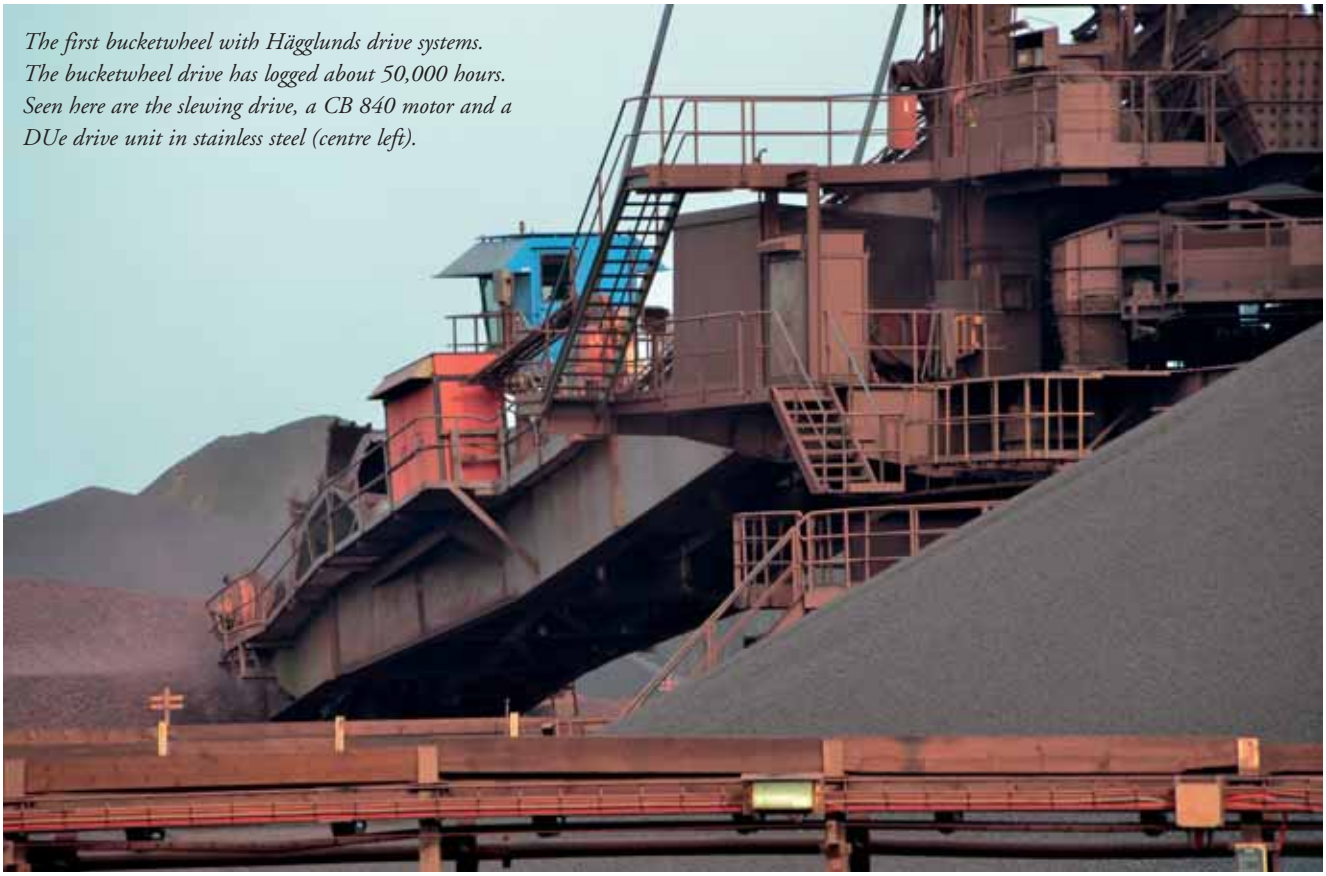
Hägglunds drives help push forward EECV expansion



The first bucketwheel with Hägglunds drive systems. The bucketwheel drive has logged about 50,000 hours. Seen here are the slewing drive, a CB 840 motor and a DUe drive unit in stainless steel (centre left).

EECV in Rotterdam keeps on expanding and improving. In 2013, its transshipment of coal increased and it installed a new bucketwheel reclaimer with a capacity of 3,500tph (tonnes per hour). EECV chose a direct drive system from Bosch Rexroth for this big bucketwheel. The drive system consists of a Hägglunds MB 1600 motor and a DUe drive unit. It is the seventh bucket wheel reclaimer at EECV with Hägglunds direct drive systems installed and has been in successful operation since February.

Versatility

Direct drives are ideal, not only for the bucket wheel itself, but for many of the main functions on a stacker/reclaimer. Their specific advantages and high torque capacity make them well-suited for heavy duty applications.

EECV in Rotterdam has expanded its coal operations with a new stacker/reclaimer. It is the seventh bucketwheel reclaimer at EECV with Hägglunds direct drive systems installed and has been in successful operation since February.

3,500tph — that's how much the latest bucketwheel reclaimer at EECV handles.

At EECV, Hägglunds direct drives are also installed for slewing and long travelling on some of the stacker/reclaimers; on three of the four older stacker/reclaimers the slewing drives have been changed to direct drives, replacing the electric motor with brake, gearbox and open gear stage. Today, Hägglunds CB 840 motors with Bica brake successfully drive the pinions for slewing. The long travel drives on two of the bucketwheel reclaimers have been fitted with Hägglunds CA 50 motors. Govert de Bruin, mechanical manager at EECV, says "These drive systems offer reliability and torque. They are low maintenance, have a long life span and we always receive excellent support."

Long-term performance

In 1987 EECV installed the first Hägglunds direct drive on two of its apron feeders in Rotterdam. Since then, it has installed direct drives on the remaining apron feeders, its bucketwheels, slewing drives, long travel drives and conveyor head wagons. Today some 150 Hägglunds direct drives can be found at EECV. In addition to the Hägglunds drive systems, the stacker/reclaimers and

Today, 26 years later, the first two Hägglunds direct drives that were installed on the feeders have been running for over 140,000 hours and still work perfectly.

unloaders are also equipped with Rexroth cylinders and power units. The cylinders range from relatively small, suitable for hinged lids, to massive units that hold the arms or jibs.

The first direct drive

More than 140,000 trouble-free working hours

EECV was first introduced to the hydraulic direct drive concept in 1984. It had previously experienced problems with variable speed electromechanical drives, leading to high repair costs and unacceptable production losses. At that time, EECV was handling iron ore and considering other options; after considerable research, discussion and investigation, it decided to try an alternative technology. In 1987, EECV installed the first two Hägglunds MA 200 motors on the two apron feeders on one of

EECV's mechanical manager Govert de Bruin and Bosch Rexroth's Hans Langerak have met with each other many times since long-term co-operation between Hägglunds Drives, now Bosch Rexroth, and EECV began in 1983. In the background is one of the first bucketwheels at EECV with Hägglunds direct drives installed.

EECV port. In front, the coal terminal, with the iron ore terminal in the distance. 150 Hägglunds drives are in operation at the port. Rexroth cylinders and power units can also be found on stacker/reclaimers and ship unloaders, ranging from relatively small units for hinged lids to massive units holding the arms or jibs.

The ship unloader was installed in 2008, a grab-type portal crane with a 65-tonne hoisting capacity.

the ship unloaders.

After one year of trouble-free operation, EECV was sufficiently pleased to order an additional four motors for the remaining apron feeders. Today, 26 years later, the first two motors have been running for more than 140,000 hours and are still working perfectly. Only the shaft seals and wear rings have needed to be replaced, but only twice. The apron feeders that were the source of so many headaches in the past now run so well that many people at EECV say they even forget the drives are there. Govert de Bruin says: "Before using the hydraulic drives we had constant headaches. We tried several variable-speed solutions, but we were constantly plagued by unforeseen downtime and high maintenance costs. Ever since we introduced the Hägglunds motors things have been working perfectly."

The first bucketwheel drive

Production increased by 15–20%

Performance of bucket wheel stacker/reclaimers is essential to EECV operations. When problems were encountered here, it chose to install the first hydraulic bucketwheel drive based on its positive experience with direct drives on apron feeders. The solution was the prototype of the Hägglunds MB 1600 motor.

The advantages of direct drive on bucketwheels soon became apparent, with features such as variable speed that optimized material throughput, while overload protection and high starting torque reduced stall delays from the prior 90 seconds down to about ten seconds. In addition, the highly reliable system features low weight that reduces the load on the slewing bearing, while its excellent overload protection has significantly reduced both downtime and maintenance costs, which are even further reduced by soft, smooth starts.

The first hydraulic bucketwheel direct drive was commissioned in April 1991 and has now logged about 50,000 trouble-free hours. After 7,500 hours the motor was opened and inspected in the presence of EECV engineers. The results were impressive: everything was in perfect condition. In 1992 EECV ordered an additional three direct drive systems for its remaining three stacker/reclaimers. The hydraulic bucketwheel drive has boosted production by a total of about 15–20%, depending on materials and circumstances, while simultaneously slashing maintenance costs. Over time, the slewing drive on the first three stacker/reclaimers was also replaced by direct drives.

Small but powerful

The small, compact Hägglunds CA motors with MDA brakes were soon also found to be suitable for the long travel drives that move the large ship unloaders along the rails. Between 2001 and 2010, direct drives were installed on the long travel drives of the ship unloaders, providing benefits such as simplicity, automatic load-sharing and reduced system complexity. In all, 54 direct drives, 18 on each unloader, were installed on the long travel drives, providing a compact and clean solution around the wheels, fewer components in the contaminated area, and convenient cleaning using water jets. Maintenance also improved and could be concentrated to a single sheltered convenient location.

Going into coal

In 2005 EECV expanded operations to encompass coal transshipment. Two new stacker/reclaimers and a barge loader were ordered for this purpose. Hägglunds direct drive systems were fitted on the bucketwheel of the stacker/reclaimers, as well as on the long travel drives. The barge loader was fitted with 12 Hägglunds CA motors and Bica brakes. In 2008 coal operations were further expanded with a new ship unloader, a grab-type portal crane with a 65-tonne hoisting capacity. This time around, Hägglunds direct drives were specified for the long travelling wheels, the feeders below the bunker and their head wagons. The long travel drives were equipped with 18 CA 100 motors with MDA 14 brakes, one on each side of a double wheel set. This clean, compact solution results in excellent load-sharing, as well as smooth starting and stopping. Two Hägglunds CB 280s with built-in crossover valve and speed encoder are installed on the feeders, providing advantages such as excellent starting torque and performance, overload protection, and convenient maintenance. Two CA 70s were also installed on the head wagons. Drive units and the rest of the system were engineered, produced and delivered by Bosch Rexroth in a collaborative effort involving its German and Chinese facilities.

Experienced service

The drive systems and motors at EECV are handled and maintained by an enthusiastic small team of hydraulic engineers. The teams were previously managed by Govert de Bruin, who is currently mechanical manager at the site. When asked to give his opinion about Bosch Rexroth's direct drives he does not hesitate: "I've known Hägglunds for a long time. Hägglunds stands for torque, longevity, reliability, low maintenance costs and excellent service and support."

New direct drive brings new possibilities

Two of a total of 18 Hägglunds CA motors on the long travel drives of this ship unloader at EECV.

The latest addition to Rexroth's wide range of products is the Hägglunds CBM motor, released in late 2012, yet another direct drive that is advantageous for many heavy duty applications. The new motor opens up new possibilities. The CBM not only handles heavier workloads, but also occupies less space and places less weight on the driveshaft. This allows customer machines, and in some cases the facilities that house them, to be smaller, lighter and simpler. The motor's reduced installation requirements, combined with improved productivity, can translate into lower overall investment and higher long-term revenue. Added to this are the unique operating advantages of a hydraulic direct drive: full torque from zero speed, protection from shock loads, overload protection and four-quadrant operation.

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Manage coal trading risk and optimize supply chain operations

In the following article, *Peter Cooperman of Triple Point Technology* discusses how hydraulic fracturing has set the stage for US coal to enter international markets and create historic levels of volatility for market participants. Leaders in the coal industry, including Rio Tinto, Vale and Anglo American rely on Triple Point Technology software to navigate this volatility, manage risk and optimize their end-to-end supply chain operations.

Introduction

Market sentiment suggests that the coal industry must prepare for a volatile year in 2014. Many companies will find themselves in an unfamiliar role as the flow of energy-related exports and imports change course. New technology in the form of specialized equipment and techniques used to recover natural gas and oil, combined with regulation to limit emissions is due to have a lasting impact in world markets. Among those in the energy industry, coal producers and traders are most likely to experience dramatic effects that will reduce regional selling opportunities and force them into international markets. A larger footprint brings on new levels of complexity alongside a disappearance of long-term contracts and a growing number of spot transactions.

The impact of these changes increases the level of risk present in today's market that can only be addressed using enterprise commodity management and supply chain optimization software. Triple Point's Commodity XL for Coal™, Commodity XL Pit to Port®, and Commodity XL PortVu enterprise software solutions are relied on by world leaders in the coal industry to guide decisions that mitigate commodity risk, maximize blending and processing efficiency and optimize end-to-end coal supply chains.

The natural gas effect

North America has become a world leader in hydraulic fracturing and the natural gas recovered has had a major impact on all competing energy commodities, but none as much as coal. While still the leading source of power generation in the United States, it appears to be only a matter of time before natural gas takes over. Miners and traders in North American markets are feeling the constraints of lower margins and displaced demand, as investments are made to bring natural gas to more parts of the country through investments in pipelines, processing plants, refineries, and other infrastructure. Meanwhile, environmental regulations and low relative prices have already motivated many power plants to replace coal-fired plants with new gas-burning facilities. Even the plants that continue to rely on coal are relying less heavily on long-term futures contracts and are instead demanding spot market transactions. Regional coal mining operations are finding themselves in a business ending sea of risk and the only way to escape is through expansion into international markets.

Growing a geographic footprint successfully

Geographic growth is a major but necessary change for survival in today's trading environment. Demand for coal is greatest in

growing countries that need a cheap source of energy and feedstock for building materials to support their growth. Regions faced with relatively high natural gas prices and phase outs of nuclear power plants have also been clamouring for a cheaper source of power generation. This creates an excellent opportunity to profit; however, regional players must be prepared to manage a much more complex supply chain before they can enter international markets.

Historically, one could argue that little more than a handshake solidified a deal between a coal mine and a local power generator. A short supply chain between a coal mine and a local power generator was easy to manage and quality concerns could be addressed quickly when they arose. International contracts tend to take quality extremely seriously. A mine owner must remain diligent in properly assessing the quality and location of a given stockpile.

Similarly, a trader must know what stockpiles they can pull from, and when making deals each risks losing potential profit or facing severe penalties of the stock piles are not blended properly. In fact, the biggest penalties are issued when the wrong quality of coal is put on a vessel. Suddenly, a small regional operation will find itself with a new series of challenges that must be overcome before a contract is struck or a coal shipment begins its journey to the buyer.

Logistics is probably the most complex challenge; however, it also represents the largest profit opportunity. International market success requires upstream and midstream coal participants to have better visibility into their end-to-end supply chain from pit to port and from port to end user. As the number of contracts and parties involved increase, the risk that a shipment will be delayed, arrive early or be otherwise unacceptable increases exponentially. A manual process to properly manage the risk associated with participation in today's coal markets is beyond the capabilities of most organizations. Technology has become a key component and is needed to succeed.

Turn to technology

Triple Point Technology's Commodity XL for Coal, Commodity XL Pit to Port, and Commodity XL PortVu help its clients mitigate commodity risk and optimize end-to-end supply chains. Rio Tinto, Anglo American and Vale rely on Triple Point Technology software to analyse data and distribute relevant information to the correct people so they can make profitable decisions. The following features are just some of the capabilities that organizations gain when they select Triple Point Technology as their commodity management and supply chain software provider.

Commodity XL for Coal

- manage contracts of increasing complexity;
- combine physical and financial reporting;
- apply 'what-if' analyses to make better trades;
- gather business operations information into a central data repository; and
- increase visibility across an organization granting the ability to react quickly and ensure efficient operations.

Commodity XL Pit to Port and Commodity XL PortVu

- manage physical supply chain from pit to customer;
- perform quality assurance/blending in field, nearly eliminating the risk of an out-of-spec product being put on a vessel;
- determine ideal blend ratios to maximize profitability and meet all contract commitments by minimizing deviation from spec;
- optimize logistics with an integrated view of terminal operations and an ability to forecast and view actual movements;
- maintain business continuity in the wake of an unexpected event or circumstance with near real-time stock and quality data for coal supplies located all over the world; and
- gain further insight with 2D and 3D modelling of stockpile qualities and locations.

Triple Point Technology® is a major global provider of on-premise and in-cloud Commodity Management software that delivers advanced analytics for optimizing end-to-end commodity and energy value chains. The company provides innovative solutions for managing all aspects of volatile commodity supply chains: trading, procurement, enterprise risk, logistics, scheduling, storage/inventory, processing, settlement, and accounting. Triple Point has customers in 35+ countries across industries including energy, metals, minerals, chemicals, agriculture, shipping, consumer products, food and beverage, retail, and manufacturing. The company employs staff in 15 offices and support centres worldwide.

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- **Manganese**
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GEOSCAN COALSCAN

Euroports: greater terminal efficiency and value-added services for coal

Euroports' terminal in Rostock, Germany, handles approximately 1mt of coal per year.

Euroports has four main coal cargo hubs in Germany, Italy and Spain. A consolidated volume of 1.9mt (million tonnes) of coal was handled at Marghera and Vado's (Italy) Euroports terminals. Handling an average of one seagoing vessel of coal per week has made the Italian facilities main entry points for coal into Italy and its natural hinterland. In Tarragona (Spain), Euroports operates one of the most important maritime gates for this traffic at national level, with a dedicated coal terminal with a 700,000-tonne instant storage capacity; it is the largest terminal in the Mediterranean. The Rostock, Germany, facilities handle approximately 1mt of coal per year for the supply of local power plants. The company is further developing its services to secure its position as a maritime supply chain provider to the energy market.

In Marghera, Venice, the annual handling capacity is about 500,000 tonnes per year. With a draught of 11.5 metres, the site is amongst the most competitive ports in the North Italian Adriatic range. That, combined with one of the fastest-discharging rates for coal (15,000 tonnes/day on average) allows for efficient handling of the vessels and quick turnaround times. The site offers value-added services such as screening of the product and arranges deliveries by train to end-users of the cargo. Transshipment of coal cargoes is also part of the services offered.

To better meet safety and product quality requirements, a spray water plant with film-forming was installed on both cranes handling coal to reduce dust propagation according to environmental regulations in 2011. In 2013 an optimization of gate in/out delivery services was carried out, reducing truck lead times up to 40 %. Like this, not only is vessel handling fast, but the rest of the supply chain as well: storage, and loading of both trains and trucks. With future plans to expand yard capacity for coal handling, the site will remain one of the Mediterranean's best entry points for coal products.

At Euroports' Vado facilities, a similar operation is present. There is an even greater vessel draught (12.5 metres — to be increased to 15 metres). Similar to the Venice operations, a dedicated area for coal handling is in operation to separate it from other product handling. In Vado the berth handling capacity can reach 2.5mt/year. Discharging speeds are the same as those in Venice. On top of that, the Vado facilities can offer discrete storage areas separating coal cargo per type depending on characteristics. A covered warehouse, with a capacity of 125,000 tonnes, is available for this. In 2014, the terminal in Vado will add screening operations similar to the Venice ones to its service portfolio. The increase of the draught to 15 metres will allow the terminal to accept vessels up to 100,000 tonnes coal cargo.

It Tarragona, Spain, a draught of up to 20.5 metres allows the terminal to handle Capesize vessels (discharging vessels of up to 200,000dwt). Euroports is in a unique position in the Med, being

Coal yard at Marghera, Venice.

one of the limited number of deep sea ports allowing this depth. Needless to say, many major coal importers are serving their customers and delivering to power plants from Tarragona. Excellent hinterland connections and seamless delivery services are a big driver in that. The site has its on train facility, and handles wagon, truck and vessel deliveries in a non-stop daily service. Loading, unloading, and transshipment operations are supported by dedicated equipment including gantry and mobile cranes, stacker with maximum height of 20 metres as well as 3.3km of conveyor belts. The terminal lives by the highest environmental standards, having installed water sprinklers as well as having implemented the use of surfactants as an effective means to avoid dust emission.

Rostock has a draught of 13m, allowing the terminal to handle Panamax vessels. Its dedicated equipment enables high unloading performance of 20,000 tonnes per day (average) for its customers. Operations for coal handling are set up slightly differently. The customer can choose unloading operations that lead to direct unloading via gantry crane onto conveyor belt, with direct connection to the nearby power plant stock. Euroports offers the handling and operates the storage facilities and conveyors to supply the nearby power plant just in time from the coal storage. For this, a long-term partnership between Euroports and the power plant is in place. Further hinterland connections are also an option, with option to load onto truck and the availability of a wagon loading station. This is used for e.g. anthracite coal to supply a steel plant in the hinterland.

At the Vado facilities, there is a vessel draught of 12m, due to increase to 15m.

Storage facility at Vado.

TIVAR® 88 liners help smooth the way for bulk products including coal

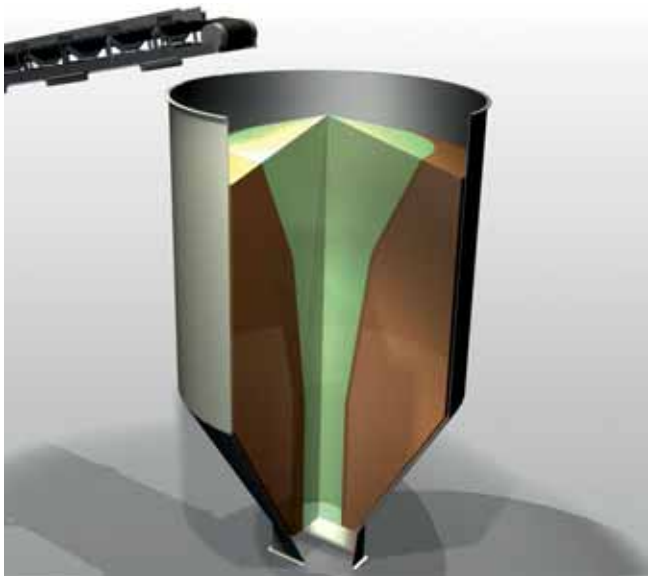
Lawrence Industries, Inc. is a technical sales organization which represents a select group of US manufacturers that provide specialized products and services for the bulk material handling industry. Lawrence Industries specializes in TIVAR® 88 lining materials and services related to improving the flow of bulk solids in bunkers, bins, silos, hoppers, chutes, transfer points and transportation equipment. Lawrence Industries can develop solutions for improving operating efficiencies, production time and extending the service life of operating equipment with bulk materials such as coal, synthetic gypsum, natural gypsum, limestone, fly ash, bauxite, grain, sand, and lime.

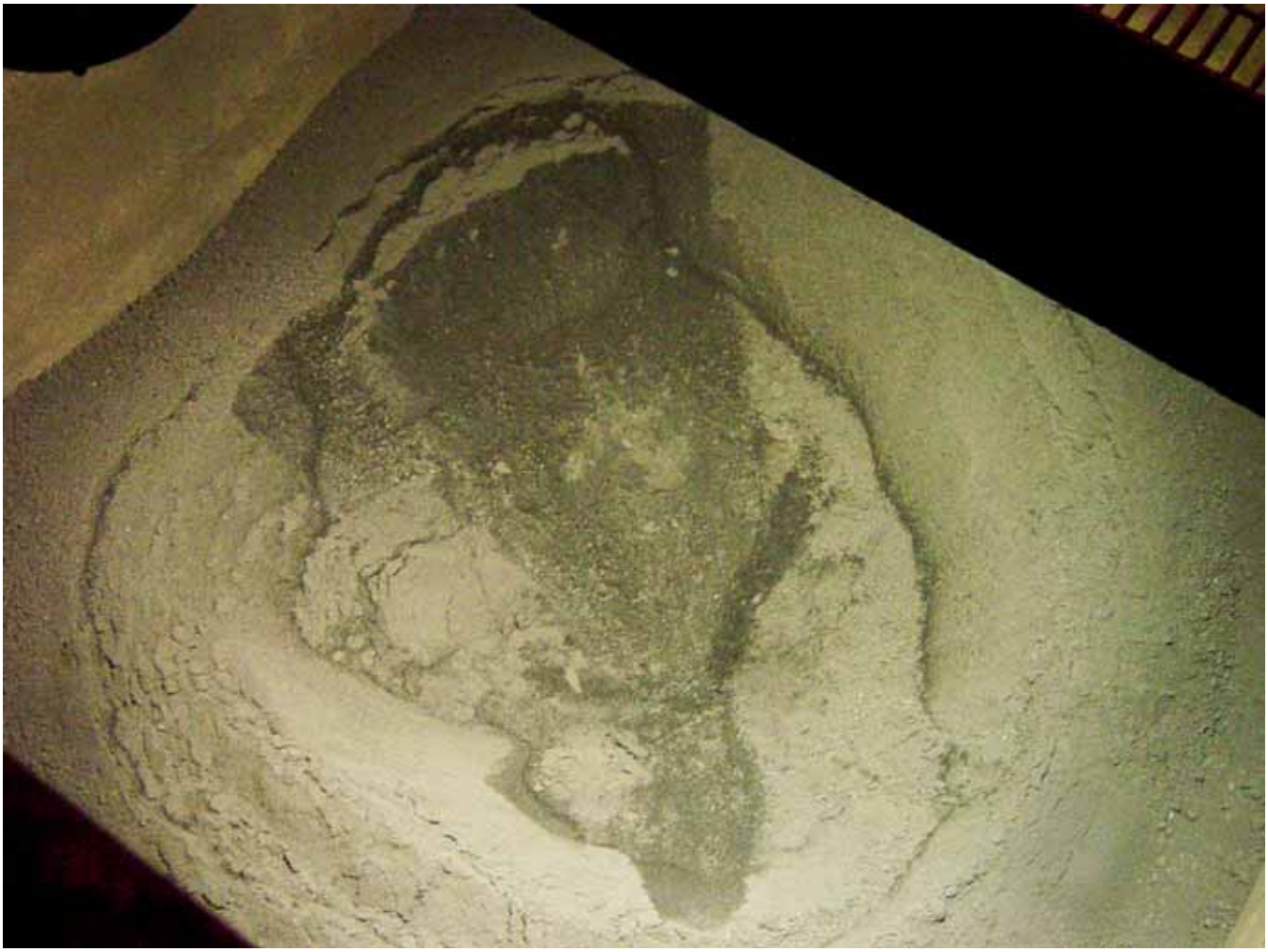
Lawrence Industries combines the latest in engineered materials, bulk solids analysis, geometric designs and manufacturing capabilities to develop cost-effective solutions for problems with bulk material handling such as ratholing, plugging, funnel flow, spontaneous combustion, surface corrosion, erosion and abrasion.

Lawrence Industries specializes in the use and application of TIVAR 88 liners. TIVAR 88 is an industrial grade lining material that has been used in the coal industry for over 40 years. The primary use of TIVAR 88 liners has been to improve coal flow by reducing sliding friction. TIVAR® 88 has a lower coefficient of friction than 304 2B stainless steel and in slide abrasion applications can out wear carbon steel. The material release and non-stick properties of TIVAR® 88 make this an ideal lining material for bins, bunkers, silos, chutes, railcars, off road trucks and excavating equipment. TIVAR® 88 will help to eliminate problems with sticking arching, bridging, ratholing, plugging, carryback, spoilage, cross batch contamination and spontaneous combustion.

One of the most common problems with bulk material flow is a condition known as ratholing. Ratholing occurs with cohesive bulk materials are stored and conveyed in vessels with a funnel flow discharge pattern. When a stable rathole develops the bulk material remaining in the vessel is stagnant and will not discharge. This stagnant inventory of bulk material can spoil, causing cross batch contamination, spontaneously combust and reduce live storage capacity.

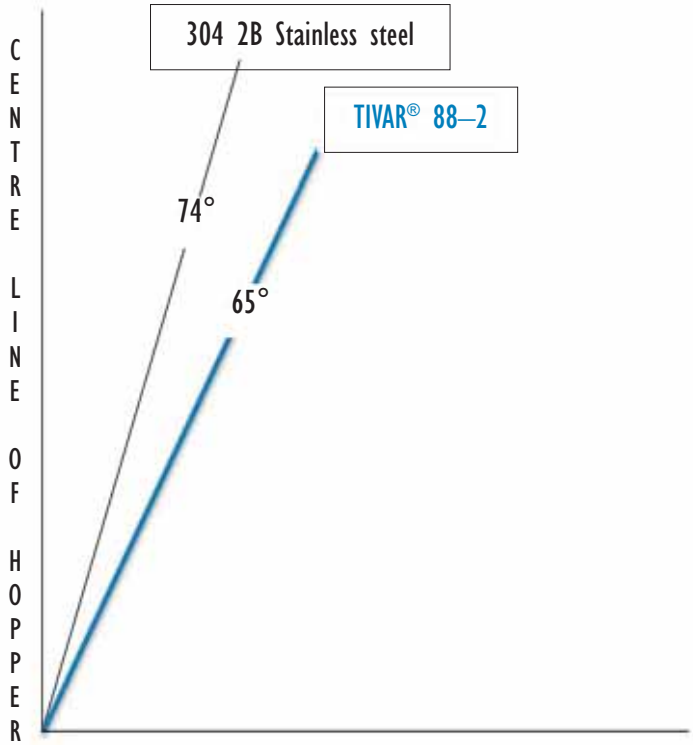
In many situations the condition of ratholing occurs because the wall surfaces of the vessel are not steep or smooth enough for materials to flow. This condition is highlighted in the picture below, which shows the rathole flow channel in green and the bulk material highlighted in brown.



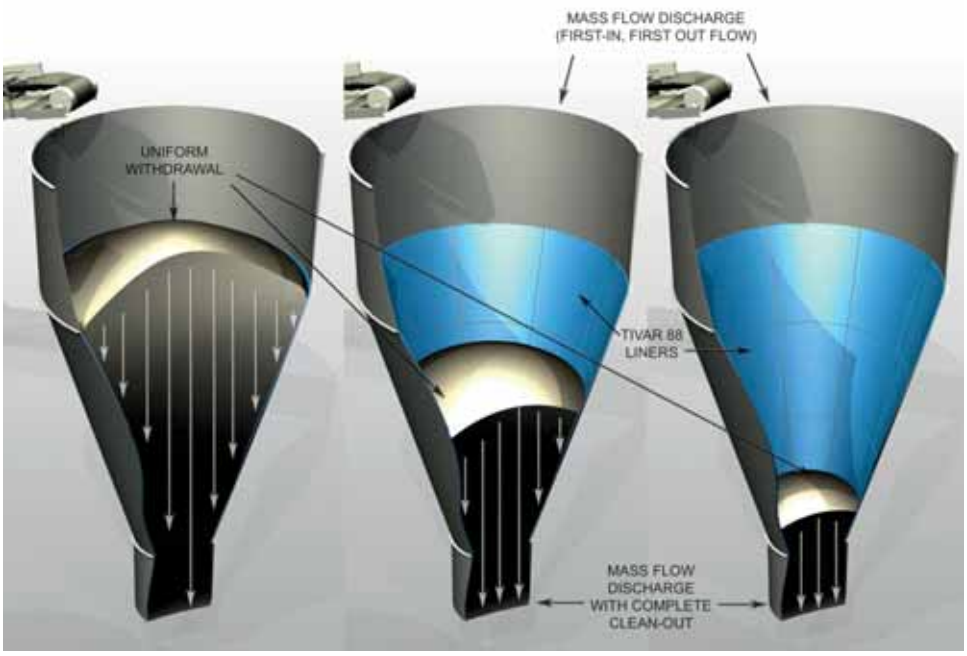


Above is an actual photograph showing a stable rathole developing in a coal bunker discharging Powder River Basin sub-bituminous coal. This pyramidal shape coal bunker built in the early 1950s was constructed of carbon steel and coated with gunite on both the vertical and sloping walls for corrosion protection. This high friction coating worked well, until the coal was switched from high sulphur bituminous to low sulphur sub-bituminous. The finer sub-bituminous coal with higher internal moisture and clay content flowed poorly on the gunite coating, resulting in pockets of stagnant coal, which then lead to bunker fires.

An efficient way of achieving the reliable discharge of bulk materials in bins, bunkers, silos and chutes is to line the sloping wall surfaces of the storage vessel with a low coefficient of friction material. TIVAR® 88-2 is an ideal product for this application. The frictional properties of TIVAR® 88-2 are consistently the lowest in the industry versus a wide variety of bulk materials, with surface lubricity lower than 304 2B stainless steel, baked on coatings, ceramics, chrome plating and sprayed on urethanes. The adjacent chart shows an example of the wall angles required to achieve flow discharge in a silo handling Powder River Basin coal. The lower wall angle provided by TIVAR® 88-2 means bulk materials



Sloping wall angles to achieve mass flow discharge with PRB coal, as measured by the Jenike Direct Shear Tester ASTM test method D6128-00.



slide or flow on shallower surfaces as compared to stainless steel. The wall friction angle data supporting this chart was generated using the ASTM test method D-6128.

When mass flow discharge develops in a storage vessel the movement of bulk material is uniform and consistent. The flow pattern sequence shown to the right depicts how mass flow discharge would occur. this flow pattern is described as 'first-in, first-out' flow. When any material is withdrawn from the storage vessels all of the product is in movement and full live storage capacity is available. Mass flow discharge is ideal for bulk materials that are classified as non-free-flowing and susceptible to spoilage, cross batch contamination or spontaneous combustion.

Coal handling applications for TIVAR 88 liners are many. The photographs above and right show the interior of a railcar rotary dump receiving hopper being lined with TIVAR 88 panels. The location of the two receiving hoppers is at a major public utility in the upper Midwest portion of the United States. During winter operations the utility experienced a condition in which coal being rotary dumped from the railcars would build a large eyebrow of coal on the spill side walls and center divider. This massive build-up of coal would bring dumping operations to a stand still and require the use of a hydraulic lump breaker (backhoe arm) to dislodge the build-up coal, in order to continue operations. The upper spill walls and centre dividers were constructed of concrete, which over years of wear had exposed the aggregate surfaces, adding to surface roughness and adhesion of coal. To expedite the installation process and remove the inconsistencies of the concrete surfaces, TIVAR 88 liners were pre-fabricated and attached to steel backer plates, which were then concrete anchor mounted to the hopper walls. After four years of continuous operation and over six million tonnes of coal transfer, the TIVAR 88 liners are still performing well with no signs of wear or dislodgment. Since the completion of the installation the use and maintenance of the lump breaker has been reduced by a factor of 75%, turn-around times for unit train deliveries has been increased and plant operations considers the capital investment to have been a complete success.

New-generation Doosan DL420-3 wheel loader: ideal for moving coal

The new-generation DL420-3 large wheel loader from Doosan Construction Equipment is designed to set new benchmarks for exceptional performance, ease of handling, serviceability, durability and significantly enhanced operator comfort.

With a bucket capacity of 4m³, the new DL420-3 wheel loader is intended to meet a wide range of material-handling needs from loading and transporting granular material (such as sand and gravel) to industrial, mining and quarrying applications.

The DL420-3 wheel loader is powered by the 13-litre Scania DC13 SCR 6-cylinder diesel engine delivering 'best in class' power and engine torque, with a maximum power output of 264kW at 1,800rpm and meeting Stage IIIB emission regulations through the use of SCR (selective catalytic reduction) technology.

Part of the new family of Stage IIIB compliant large wheel loaders from Doosan, the new DL420-3 wheel loader combines high engine power output and SCR technology with a new ZF transmission and several other features to minimize fuel consumption. SCR technology reduces fuel consumption by about 10% compared with similar size machines with EGR technology. Resale is also better as it is easy to reset to Tier 2 engines for use in emerging markets.

SPECIFICATIONS

Capacity, heaped:	4m³
Static tipping load, straight:	18,570kg
Static tipping load, at 40°	16,400kg
Length with bucket:	8,910mm
Width with bucket:	2,985mm
Height:	3,535mm
Bucket hinge height:	4,280mm
Dump height (at 45°) w/bolt-on teeth:	2,985mm
Dump reach (at 45°) w/bolt-on teeth:	1,380mm
Wheel base:	3,500mm
Turning radius, bucket edge:	6,970mm
Maximum travel speed (5th gear):	38 km/h
Engine:	6-cylinder Scania DC13 SCR, delivering 264kW at 1,800rpm
Operating weight:	22,980kg
Breakout force:	210kN

Lower fuel consumption

The new ZF 5-gear transmission improves the transfer of power from the engine to the wheels and contributes significantly to the overall reduction in fuel consumption. The change from four to five gears provides better response and acceleration, especially on slopes. Engine speed variation is less thanks to smaller gear steps, and lower engine speed throughout the whole drive range reduces fuel consumption. Thanks to higher shift quality, noise levels are lower while driving performance and productivity have been increased. A lock-up-clutch also helps to reduce fuel consumption.

The new large wheel loader has three engine working modes: ECO, NORMAL and POWER, to adapt the machine to different applications, with different engine speeds and gear steps according to the working mode engaged. With the 'power-up' function, the operator can manually adjust to the next highest working mode by applying a full stroke of the accelerator pedal. With this function, the operator can travel in moderate NORMAL mode and switch to POWER mode when it is really needed, such as when taking material from a pile. This capability helps to reduce fuel consumption. The ECO Bar provides information about fuel consumption in relation to machine performance in real-time, allowing the operator to select the driving profile for the best fuel efficiency.

The operator can set a password for machine start. If Auto Idle is activated, engine speed goes down about 200rpm after ten seconds if there is no machine movement. Auto Idle is ideal for applications with long waiting times, such as truck loading. Thanks to Auto Idle, fuel consumption is reduced by up to 8%.

New ZF limited slip Type II differential axles provide more durability and a longer lifetime. Rolling resistance for the axles is also reduced, improving traction and decreasing fuel consumption. As an option, customers can choose ZF axles with a hydraulic differential lock. This function is engaged via the operator pedal or in automatic mode, depending on the torque resistance in first and second gear. The advantage of the hydraulic lock system is that it has less rolling resistance compared to the limited slip system.

Torque-converter-cut-off system

All new-generation Doosan large wheel loaders are equipped with a torque-converter-cut-off (TCCO) system which, when activated, switches on automatically. This provides a direct mechanical connection between the engine and transmission without loss of power and

torque by the torque converter. Tests show that fuel consumption is up to 10% lower with increased traction compared with conventional systems. In contrast to the drive systems on other machines, the TCCO can be engaged even in second to fifth gear, not just in the highest gear. This makes the TCCO more efficient.

With the clutch cut-off system engaged, the driver is able to disconnect the transmission from the engine by operating the brake pedal, to have 100% engine performance for the hydraulic system. As a result, movements are faster, breakout force is maximized and fuel consumption is reduced.

In common with all new-generation Doosan large wheel loaders, the new DL420-3 model is equipped with load-sensing controlled, variable hydraulic piston pumps, improving performance and reducing fuel consumption. With load sensing, the hydraulic pumps receive a signal from the MCV informing how much oil is needed. This helps to save on engine performance.

The radiator fan is hydraulically driven and controlled by an ECU. Changing the fan direction for cleaning the radiator can be done manually from the cab, without having to switch off the engine. Fan reverse intervals (30 minutes to 2 hours) can be set via the menu.

High operator comfort

A new cab design features improvements both outside – such as better visibility due to a wider front glass section and an extended wiper blade area, better protection thanks to larger mud guards, improved hand rail and step designs and a new roof cover — as well as inside — such as the new instrument panel with integrated vehicle control unit (VCU).

The control panel has been redesigned to allow the operator to choose the information they want on the display. Using the Main Menu, the operator has access to several functions and machine information. Pressure, temperature and engine speed can be monitored in real time. Detailed operating information is available via the Special Menu.

By relocating the reservoir for the wiper water to the outside of the cab, space inside has been increased, providing more foot room. The air conditioning system is regulated automatically by a temperature sensor.

To keep cans and food fresh, a new cooling compartment is standard. There is also more storage room behind the seat.

Durability and serviceability

Like all Doosan new-generation large wheel loaders, the DL420-3 model has as standard the SKF Vogel Auto Lubrication system. This system increases operational hours and extends the lifetime of the machine.

The lift arm has been strengthened with 10% thicker metal in the arm and the tilt lever.

An automatic front control system allows the operator to save one low and one high position. The boom raise 'kick out' function reduces cycle times and increases operator comfort. 'Return to dig' positions can also be saved.

New kinematics and a larger cylinder on the lift arm have allowed the main pressure in the front hydraulic system to be increased by up to 70 bar, with a corresponding increase in breakout and lifting forces of up to 5%.

A larger opening angle for the side door improves serviceability. A 90° swing-out fan with swing-out side doors provides easy access to the rear for cleaning the new one block radiator. The operator can set and monitor the time remaining to the next service. If the maintenance period is exceeded, a pop-up warning will appear. Increased space in the engine compartment ensures that components such as filters, valves and batteries are within easy reach for service work.

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Mechanical sampling: the value of using an SGS-designed system

Understanding your coal quality and sampling representatively is essential to eliminate penalties and maximize profits. SGS works hand-in-hand with its customers' operations to generate cost-effective solutions for quality and address operational challenges.

SGS offers the highest levels of integrity, independence, impartiality and accuracy. Its services and industrial expertise help improve operational efficiencies and its global technical leadership helps minimize customers' operational and financial risk. The company's experienced staff are able to provide sampling, inspection or laboratory services, mechanical sampling systems, on-line analysis for blending and sorting support.

The value of a coal cargo is determined by testing a sample collected manually or by a mechanical coal sampling system. If the sampling method or the sample preparation is biased or inconsistent, the value of the cargo can be inaccurately or imprecisely determined. This results in the cargo being over-or under-valued and transaction is then unfair to either the buyer or the seller.

Costly decisions are often made based upon biased, incorrect, or erratic data. Coal is often a difficult material to sample because of its inherent heterogeneity with in its inorganic and organic constituents. It can be widely variable with respect to size and chemical composition, varying in moisture, ash, and sulphur content in addition to its heating value. The process for determining the quality parameters such as gross calorific value (GCV) of coal begins with sampling, a process that requires adherence to established rules and guidelines given in ISO, ASTM and other published standards.

Sampling

The processes of sampling and laboratory analysis provide valid estimates of the desired quality parameters. There are, however, uncertainties associated with each such estimate. Sampling statistics can often provide a means of calculating this uncertainty and a way to evaluate the risks associated with the use of the sample results.

The minimum mass of the gross sample should be sufficient to ensure that extraneous mineral and coal particles appear in the sample in the same proportions as in the lot from which the sample was collected. Sampling standards provide minimum numbers of increments to be collected at each stage of sampling. Attention must also be given to sample flows through the system so as to minimize the potential for sample moisture losses. SGS has years of experience in sampling and is a leader in the field of bulk material dynamic sampling theory.

Mechanical sampling systems

Proper sampling is the first critical step in determining the value of a cargo. Risks associated with inaccurate sample results are minimized by utilized a well-designed and constructed mechanical sampling system (MSS). Such a system, well operated and monitored, will consistently provide accurate quality data. Mechanical sampling is generally preferred over manual sampling.

There is no human discretion involved in MSS, and the MSS will collect increments from any part of the lot. MSSs can be expensive to purchase, install, and maintain, but the increased reliability, accuracy and precision are well worth the cost, especially if large amounts of coal are handled. Use of an MSS must include an on-going quality assurance programme, including monitoring of the sampling ratio. The system should also be periodically bias-tested to assure bias-free performance.

There are four key components in engineering mechanical sampling systems which include:

- ❖ defining the sample plan;
- ❖ establishing a systems layout;
- ❖ creating MSS specifications; and
- ❖ estimating the budget.

Service 1: defining the sample plan

To design a mechanical sampling system requires determining the number of primary increments and the mass of the increments required for the lots being sampled. ASTM D7430 (which replaced D2234 in 2009) and ISO 13909 define the standard practices for collection of a gross sample of coal with a mechanical sampling system. ASTM and ISO standards provide general purpose procedures to determine the number of increments required when sampling lots of coal based on: lot size, variability, sample preparation and sample testing.

If desired, when the precision for a design system is unknown, these standards provide factors for raw data. In addition, these standards allow for studying the variability of the coal. The data is used to calculate the number of increments needed to attain a given precision. As clients become more informed about the need to meet specific precision requirements, they are more willing to determine the variability of the material and designing systems to meet specific minimum precision requirements.

Using a proven procedure, SGS can determine the number of primary increments and sub-lots needed to obtain objective levels of precision. This entails use of applied statistics on data collected from stopped-belt sampling and data obtained from duplication of preparation and analysis of these stopped belt increments. SGS develops the extraction data for the system which defines all system design requirements from samplers to feeders and crushers. Extraction calculations also provide the basis for the on-going sampling ratio monitoring of the system, which assures proper on-going system performance.

Service 2: system layout

When initially designing the sampling system, all required capabilities must be considered. Initial questions that must be addressed include:

- ❑ is it possible that an on-line analyser will be added in the future?
- ❑ are samples required for a product size determination to be made?

ASTM and ISO recommend that the systems be designed so that the sampling system precision can be tested. These are decisions that must be made by the customer, but they can have

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a big effect on layout and equipment selection.

Sampling systems are of no value if they are not operating. System layout and selection of components affect:

- ❏ operational availability;
- ❏ ease of inspection of critical components; and
- ❏ maintainability.

While the objective is always to minimize costs, a well designed sampling system will result in the lowest cost possible. SGS engineering services define the trade-offs between capital costs and operation costs and availability and allow you to make informed decisions. Design of chutes and material flow systems to allow hard-to-handle coals to be sampled without problems is another function critical to providing a satisfactory system.

SGS uses the latest in 3D CAD software to develop layouts that work to the customer's unique site requirements. SGS's ability to generate detailed renderings helps in the presentation of concepts to non-technical audiences as well as allowing the engineering team to evaluate the constructibility and operations issues in the proposed design.

Service 3: mechanical sampling system specifications

The minimum standards for the equipment must be specified. In sampling equipment the first consideration is to avoid bias. A sample system should be tested to be free of bias and in the specifications a guarantee of no bias must be specified along with a description of the bias test procedure that will be used. There are critical equipment design issues that need to be met to allow a system to sample coal free from bias, such as minimum material flows through crushers.

Part of the equipment specifications address access to allow the inspection and maintenance operations to be performed easily to ensure good system operations. Also the mechanical requirements of the system will be addressed to ensure long term performance. The minimum drive motor size, activation method, brake sizing and types are recommended.

In addition to equipment specifications, P&ID diagrams and basic PLC programming needs are specified. Also, acceptance test criteria for the systems will be defined for bias tests, sampling ratio tests and other acceptance tests.

Service 4: budget estimate

SGS provides an itemized budget estimate for the project. This is not for the bidders on the sample systems but for the information of the owner. The budget estimate will contain a list of options so its customers can explore additional capabilities while understanding the cost implications. The final product from SGS will have a specification to which the customer can add general terms and conditions, safety and site-specific requirements. SGS normally uses its customers' standard painting, electrical, and structural specifications.

SGS SERVICES FOR NEW MECHANICAL SAMPLING SERVICES

For an MSS design, detailed information is needed about the sampling location, the material to be sampled, including its top size, surface moisture content and material handling characteristics. An engineering site visit is required to assure the ultimate design will meet ASTM, ISO or other specific specifications and be suitable for the intended use.

General points SGS considers when designing an MSS are:

- ❖ cutter widths should be at least 2.5 times (three times is preferred) the top size of the material;
- ❖ chutes should have angles that promote material flow;
- ❖ there should be no choke points in the conveyors and chutes;
- ❖ the MSS should be as compact as possible, but be maintained easily and safely;
- ❖ the MSS should be as airtight as possible to prevent drafting. This will prevent moisture bias;
- ❖ the MSS should have access doors to observe the system's performance. These allow verification that the cutters are cutting the entire stream material, are moving at an appropriate speed and are not plugged; and
- ❖ reliability, expense, and practical operational considerations must be optimized.

SGS SERVICES FOR EXISTING MECHANICAL SAMPLING SYSTEMS

SGS can provide the following services for MSS:

- ❖ inspection;
- ❖ bias testing;
- ❖ sample collection and analysis;
- ❖ validation;
- ❖ calibration;
- ❖ operation.

SGS has over 25 years' experience designing, installing and commissioning client-dedicated, site-specific mechanical sampling systems. There are over 300 SGS-designed systems operating in more than 20 countries worldwide. Experienced SGS sampling technicians, familiar with industry standards related to proper operation of mechanical sampling systems, are located in all major coal producing areas.

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Terex Fuchs port machines know every trick in the book

Terex Fuchs mobile loading machines for port handling make it possible to load and unload quickly, with the greatest precision. Over time, the company's innovative machines have been precisely adapted to the requirements of modern port logistics, and are particularly popular for handling coal.

As tireless and highly efficient work horses, they give excellent performance for flexible as well as customized requirements for port operation. A big grab, enormous working radiuses, and extremely short loading ranges when used at full throttle — with these advantages, Terex Fuchs modern power packages are an ideal interface between ships, trucks, trains, conveyor belts, and storage areas.

The Terex Fuchs loading machines are sought-after top performers for bulky goods handling, especially when handling coal — not only because of their height-adjustable cab, but also due to their numerous outstanding features, their incredible performance and robust nature. A heavy duty design, soft hydraulics that can be precisely controlled, and high stability make a superb combination. The in-house Application Center, where the machines can be adjusted exactly to the customer's requirements, ensures a high-level of flexibility for customizing the machines.

The Terex Fuchs loading machines immediately show their strengths in the customer's application.

Bulk Connections, a bulk cargo handler in South Africa and part of the market-listed Bidvest Group, handles a wide range of sensitive cargo, but with a focus on coal.

The bulk material terminal in Durban port was established in 1907 for coal export. Since then, the terminal has increasingly specialized in handling bulk goods. Loading ships with manganese, coal, and anthracite coal and unloading coke are particularly important to the companies. Over 3mt (million tonnes) of bulky goods are loaded annually over the quay walls of Bulk Connections to Panamax and Handysize ships.

Bulk Connections' management team has opted for two Terex Fuchs RHL380 crawler loading machines. Equipped with 8m^3 clamshell grabs, the machines with a service weight of around 70 tonnes and a reach of 22m are the most flexible top performers in Durban port. The RHL380 also offers excellent stability on uneven ground thanks to the large undercarriage with big crawlers. Due to the crawler design they can also work on the quay walls, as the crawler units distribute the pressure optimally and transfer it into the ground. Up to 1,000tph (tonnes per hour) of coal are transferred per machine from the storage yard on to the conveyor belts to prepare the ships for export. Unlike conventional devices, such as cable cranes or portal cranes, both the Terex Fuchs machines are easy to operate and can quickly move forwards and backwards on the operation site. With the high-performance hydraulics system that responds accurately, loads can be loaded precisely into the hold of a ship or into the storage area of a railway wagon or truck. "The investment in Terex Fuchs loading machines has set new standards for production in our companies and they have added to the overall flexibility of the terminal. There is undoubtedly sufficient demand for this type of machine, which, thanks to sensitive control, even enables us to move the load safely and very quickly without swinging or disruptions to production in high winds.

"Thanks to the enormous reach of the machines, we can pile

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up the raw materials high, thus avoiding the use of other hydraulic excavators on different levels. We have been able to replace three machines just on the Durban site, and are therefore not only saving fuel, but can also stack cargo in the same amount of time as before. It was the right decision for us to considerably increase our capacity thanks to these machines.

Our company has bulk facilities in South Africa and, for some years now, in Mozambique, where Terex Fuchs loading machines are used individually, without being modified, to load the trucks, move them to the operation site and operate them. This gives us the opportunity to react quickly and flexibly and therefore to compete in the market," states the managing director of Bulk Connections, Iain Geldart.

"Bigger isn't always better," Andreas Gruber, Terex Fuchs port application manager says of the customer's requirements. "It is not always an advantage to offer the biggest reach, it is much more important for our customers to receive the right system and an efficient system from us as a manufacturer. We're looking beyond what is important to us, because if workflows and framework conditions are considered when selecting a machine, the maximum reach will in most cases only be a secondary consideration. Through clever co-operation between a Terex Fuchs loading machine and a Terex Skid steer loader, ships that are considerably wider than the maximum reach of the machine can also be unloaded. We are always willing to listen to the requirements of our customers; this is how our Application Center could develop a new port lift cab for our MHL385D in collaboration with a customer. MHL385D, a machine with a reach of 23m and a service weight of 75 tonnes, is equipped with a port lift cab, and we far exceeded the requirements of the customer. What was important for us was to take into account the future requirements of the port authorities when making this development. Safe access into the cab from the floor, an increase in efficiency thanks to the improved view in the inner corners of the ship hold, and the not inconsiderable transport height of these machines for quick changes of location rounds up our understanding of modern port handling."

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Edge Innovate expands material handling range

New Year, new products: the Edge material handling range has just got bigger. Edge has recently unveiled the newest member of its 'family' — the RS1500 roll-sizer. Building from the success of new products launched in 2013 such as the Slayer XL, the MS100 and the 360° Unlimited range, the company has no intention of resting on its laurels. Each new product launch has contributed in its own right to Edge's success.

With a number of new R&D projects ongoing, Edge anticipates further growth in 2014. It is with this in mind that the Edge design team set out to design the most efficient mobile mineral sizing solution available on the market today. Through extensive research, testing and the use of high quality components, it believes that it has been able to deliver on that target.

Innovatively designed, the RS1500 can process a wide range of materials including coal, lignite, bituminous, sub-bituminous hard-to-handle materials — graphite electrodes to sticky materials, friable materials, soft ores, limestone and limes, salts, glass, fertilizer, recycled concrete and tarmac. Its robust design, coupled with high manoeuvrability and small footprint, all ensure that the RS1500 is a formidable option for the quarrying and recycling sectors.

Boasting an impressive list of design features — including a highly efficient hydraulic drive system, tramp metal release, easy selective piece sizing controls, intelligent hydraulic load sensing system and a five function remote control — the RS1500 is packed with the most up-to-date technology and components.

The full HMI (human–machine interface) controlled panel interface provides easy fine tuning for accurate application performance. The HMI allows for automatic start/stop operation and displays visual data output such as engine load, individual shaft pressure, hydraulic oil temperature and fuel consumption while the machine is still operating.

The unit is powered via a Caterpillar C9 260Kw (350HP) designed to suit Tier IV regulations. The C9 engine offers full

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Purpose-built bulk handling, dredging and hoisting cranes.

torque whilst only consuming 25–30 litres (6–8 US gallons) per hour. The RS1500 has the capacity to process 250 tonnes per hour (276 US tons) with a maximum feed size of 400mm.

Material is fed into the RS1500 7m³ (9 square yards) hopper and is carried to the pre-screen via the 1,400mm (55")-wide heavy duty belt. Full length impact bars prevent sag, reducing material roll back and taking impact from feeding material, prolonging the life of the conveyor belt. Variable belt speed controls the flow of material to pre-screen. The feed hopper boasts a hydraulic sliding function to enable quick transition from transport to operating position.

A single deck, two-bearing pre-screen allows fines to by-pass the chamber, increasing processing efficiency and throughput. An easily retrofitable optional side conveyor is available to stockpile diverted fines separately.

The roll-sizer chamber has the ability to handle wet and sticky material and employs an intelligent load sensing system to prevent overload. The tooth rotor design allows undersize material to pass through the precision designed shafts increasing product throughput. The shafts are designed to grab the feed material and reduce it to the desired product size whilst creating the minimum of fines. The RS1500 incorporates an automatic sensing system that protects the roller shafts against tramp metal or trapped material. This vitally reduces maintenance costs and downtime. The chamber houses two variable speed, reversible roller shafts for accurate piece sizing both of which are independently driven and controlled via the HMI control panel. Piece sizing is also easily adjusted via the control panel. The feedbox enclosing the chamber not only acts to feed material from the pre-screen into the chamber, but also prevent debris and dust from exiting the chamber. Removable plates are provided to gain access to the chamber for maintenance when and as required.

Material is stockpiled via the 1,150mm (46") wide, heavy duty ply product conveyor which provides a discharge height of 3,560mm (11'8") creating a stockpile volume of 77.5m³ (101 square yards) or 125 tonnes (138 US tons). Impact bars underneath the chamber take the impact from processed material, prolonging the life of the conveyor belt. The hydraulic folding head section allows for quick transition from transport to operating position.

With its impressive cubical piece size, minimal fines produced, low power consumption and high tonnage per hour, the Edge RS1500 is the most sensible option for many applications. The company will be showcasing its products at the CONEXPO exhibition, which will take place from 4–8 March this year in Las Vegas. With new products in the design process, and the ever-growing options available, Edge is staying true to its ethos of 'Innovation at Work'.

"A MAN WHO STOPS ADVERTISING TO SAVE MONEY IS LIKE A MAN WHO STOPS A CLOCK TO SAVE TIME"

– Henry Ford

Coal handling cables and hoses pose no problem for Conductix-Wampfler

Conductix-Wampfler is part of the Delachaux Group, founded in 1902. The company specializes in the design and manufacture of power, data and media transfer systems for mobile applications. Active on every continent, the company has centres of excellence, responsible for production, R&D, engineering and central support functions located in Germany, France, USA and Italy, with dedicated production centres in Ireland, India, UK, China, Australia and Brazil.

Conductix-Wampfler's activities are market driven, with the emphasis on five focus markets; Mining & Bulk Material Handling, Ports and Container Handling, Automotive Industries, Intralogistics and Overhead Cranes. The company also works in other markets, such as theatre and stage, people carriers/transit, offshore and construction.

Conductix-Wampfler is heavily involved in coal handling systems, which comes under its Mining & Bulk Material Handling focus market. The company is able to accommodate the full range of movements required by today's heavy duty coal handling equipment, supplying solutions for stacker & reclaimers, stockyard cranes, ship loaders/unloaders, car dumpers and tripper conveyors.

Products

Handling the robust, heavy cables and hoses required for modern coal handling systems is no problem to the Conductix-Wampfler range of motor-driven and spring cable reels, heavy duty festoons and energy guiding chains. Long/gantry travel can be accommodated by a range of solutions, from large level wind reels handling over 2,000m of cable, through monospiral, 3–2–3 and random winding drums for shorter run lengths. When combined with the Conductix-Wampfler fibre-optic rotary joint, the systems are able to utilize combined power and fibre-optic cables, which have the ability to transfer large amounts of data quickly and efficiently.

Coal stockpile reclaimer powered by a Conductix-Wampfler MagDrive mono-spiral reeling drum.

Cable reels

Conductix-Wampfler produces reels with a wide range of powering options, from the company's patented MAGdrive magnetic coupler, through torque motor, hydraulic and variable-frequency drive systems. The reels can be supplied with an impressive range of slip ring and fluid rotary joints, able to handle voltages up to 36kV and pressures of over 400 Bar.

Cables and hoses are sourced from premium suppliers, with many of them made to Conductix-Wampflers' own design.

Conductix-Wampfler cable reels are utilized on many coal handling sites, from surface mines and stockyards to bulk ports and processing sites, transmitting power and control signals, data and dust suppression water to stackers, reclaimers and combined stacker/reclaimers of all types, grab cranes, tripper conveyors, ship loaders and unloaders and mobile hoppers

Bucketwheel reclaimer slewing motion powered through curved Conductix-Wampfler system 360 heavy duty I beam festoon.

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

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

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

Rugged Energy & Data Transmission Systems

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

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CONDUCTIX wampfler

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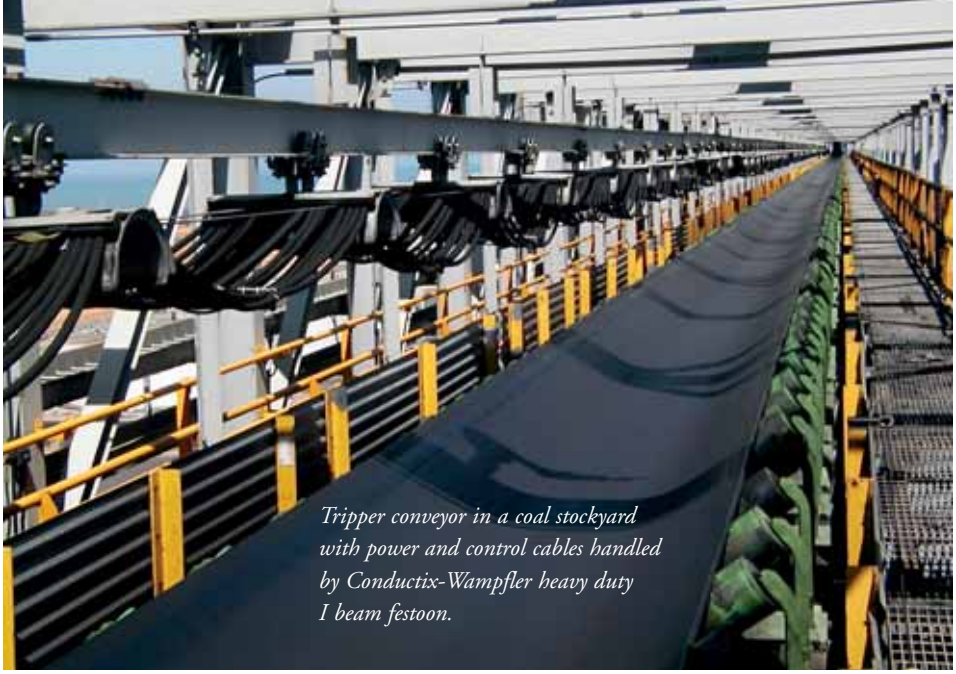
I-Beam Festoons and energy guiding chains

For shorter run lengths and slewing motions with multiple cable/hose requirements, Conductix-Wampfler produces a range of heavy duty I-beam festoon systems and energy guiding chains. The festoon systems are configurable to accommodate a wide range of I-beam dimensions with either parallel or tapered flanges and designed to fit existing installations or according to the customer's wishes. The components are hot dip galvanized as standard, but are available in stainless steel for especially harsh environments. All come with stainless steel fasteners as standard.



Tripper conveyor in a coal stockyard with power and control cables handled by Conductix-Wampfler heavy duty I beam festoon.

Steel energy guiding chains are especially suitable for multiple cable/hose requirements on car dumpers and for slewing motions on a variety of equipment. Available in hot dip galvanized or stainless steel, the chains can also be supplied with ATEX certification.

Where infinite rotation is required, Conductix-Wampfler can supply slip rings and fluidic rotary joints. With ingress protection up to IP67, and with ATEX 21 and 22 certification available, the units are able to handle most of the environmental requirements seen in the coal handling world.

Rail car dumper powered by a slip ring constructed of Conductix-Wampfler system 812 conductor bar.

Coal handling equipment demands robust solutions, providing high machine availability and low maintenance; the Conductix-Wampfler range fits the bill, being designed and built to withstand the aggressive environment of dust, water, salt and high/low temperatures common in this market.

Recent contract awards

Conductix-Wampfler has recently won a contract to supply 14 motorized mono-spiral cable reels and two stainless steel energy guiding chains for the Formosa Steel Project in Taiwan. The units, which comprise reels and chains for three luffing and slewing reclaimers, five boom-type reclaimers, two luffing stackers, two bridge reclaimers and two stacker/reclaimers will be supplied by its sales and marketing organizations in India and Australia and will be designed for use on machines handling a range of materials, including coal.

Rail-mounted electric bulk handling machine powered by Conductix-Wampfler MagDrive mono-spiral reeling drum.

The sales and marketing organization of Conductix-Wampfler Australia has also had recent success at Wiggins Island Coal Export Terminal, Dalrymple Bay Coal Terminal and at Caval Ridge yard, supplying level wind cable and hose reels, mono-spiral cable and hose reels and energy guiding chains, as well as the cables and hoses to suit.

The trust shown by these major operators demonstrates their belief in Conductix-Wampfler's capabilities. With more than 80 years' experience in this field, customized products to meet customer needs and a global network for first class back-up, it is a fact that Conductix-Wampfler can help you 'move your business'.

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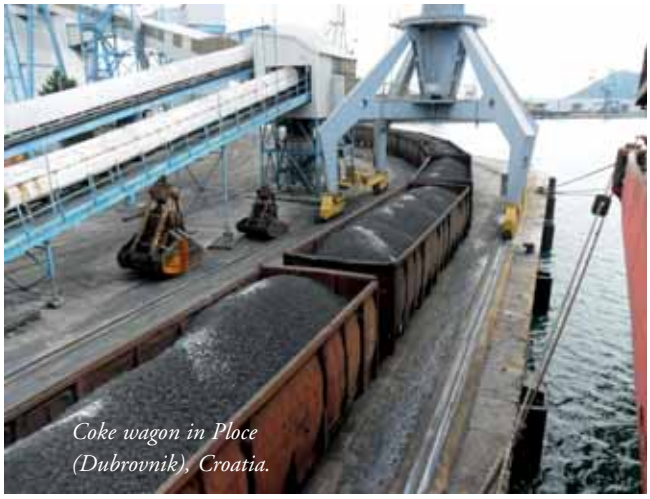
Coal inspection: protecting the commercial interests of all stakeholders

The importance of coal as a global commodity cannot be overstated and Inspectorate International is an integral part of the supply chain, protecting its clients' commercial interests. As regular readers of *DCi* will know, Inspectorate is now part of the Commodities Division of Bureau Veritas, one of the largest inspection and certification companies in the world.

The Coal Business Line had another busy year in 2013, with major coal-handling centres and coal laboratories being commissioned and upgraded around the globe.

At ports across the world, Inspectorate's inspectors are involved in sampling, testing and draught surveys. Recent examples of barge fires in Rotterdam are clear examples of the potential hazards. Similarly coal piles can overheat and need the expert knowledge that the company provides.



Coke wagon in Ploce (Dubrovnik), Croatia.

Carbon/sulphur analysers at the Inspectorate USA lab in New Orleans.

In the UK, Inspectorate has just finished commissioning a new coal preparation and testing facility at the Humber International Terminal (HIT) in Immingham. The sampling and preparation will be fully consistent with ISO 18283:2006. The new facility will be operational from 1 February 2014, being staffed with Inspectorate employees and equipped with two QHS Hammermill crushers, a Retch SR300 Rotormill, drying ovens, and Gilson riffle dividers. From the initial bulk sample of several tonnes, the facility can rapidly produce representative laboratory samples of <0.2mm to test the coal quality for Inspectorate's customers.

Inspectorate believes that the on-site capability will help reduce turnaround times for proximate analysis significantly. This will be a major benefit to customers who need initial constituent readings before the material can be used to maximum efficiency.

Erwin Oosterveen, the company's Solid Fuels Business Development Manager for UK and Northern Europe, said: " This major new development in on-site sampling should be tremendously helpful to the industry. It's a one-stop-shop for the energy industry that is convenient and quick. And that's all backed up by the accuracy of testing and analysis for which Inspectorate International is renowned.

"Our new Immingham facility complements Inspectorate's existing large global network of coal and solid fuels sampling and testing facilities. The facility means we can now offer an end-to-end service to clients importing these products into the UK from all over the world.

"In time we can see the facilities we offer being extended to cater for more industry needs. Our main aim now, however, is to make sure that the new service gets off to a flying start. We are confident that it will and look forward to proving ourselves to clients," says Oosterveen.

During the first quarter of 2014, a new coal testing facility will be added to the already comprehensive analytical and testing services provided at Inspectorate's Witham Laboratory Facility which is located just outside London, in Essex.

Elsewhere in Europe, Inspectorate International serves the key European ports of Amsterdam, Rotterdam, Antwerp and German ports intensively.

It inspects, tests and certifies in the region of 500mt (million tonnes) of material a year globally.

Over in the USA a new Solid Fuels Technical Centre has been established near New Orleans, which handles met coal, thermal coal, pet coke and wood pellets. As the world looks for new sources of renewable energy, the inspection of wood pellets and other bio-mass products for the energy industry is becoming increasingly important.

The Inspectorate USA lab in New Orleans.

The La Place facility has a fully-fledged sample preparation area, for crushing, grinding and dividing bulk samples for analysis, with drying ovens for bulk and semi prepared samples. The fully equipped laboratory performs analysis of physical and chemical parameters, i.e. proximate; total sulphur; calorific value; hardgrove grindability index; ash fusion temperatures; carbon; hydrogen; nitrogen and particle size distribution, whilst ICP analysers are used for the determination of trace elements in various sample types. The laboratory performs tests according to recognized international standards (ISO/ASTM) and is in the process of attaining ISO 17025 accreditation.

In Colombia, Inspectorate International operates CMC's laboratory at Puerto Bolivar. A brand new laboratory has been recently established at Cienaga, to test coal exported from other nearby Colombian ports. The company estimates that it is responsible for dealing with the testing of around 60% of Colombia's export market, which totalled some 82mt in 2012, according to the World Coal Association.

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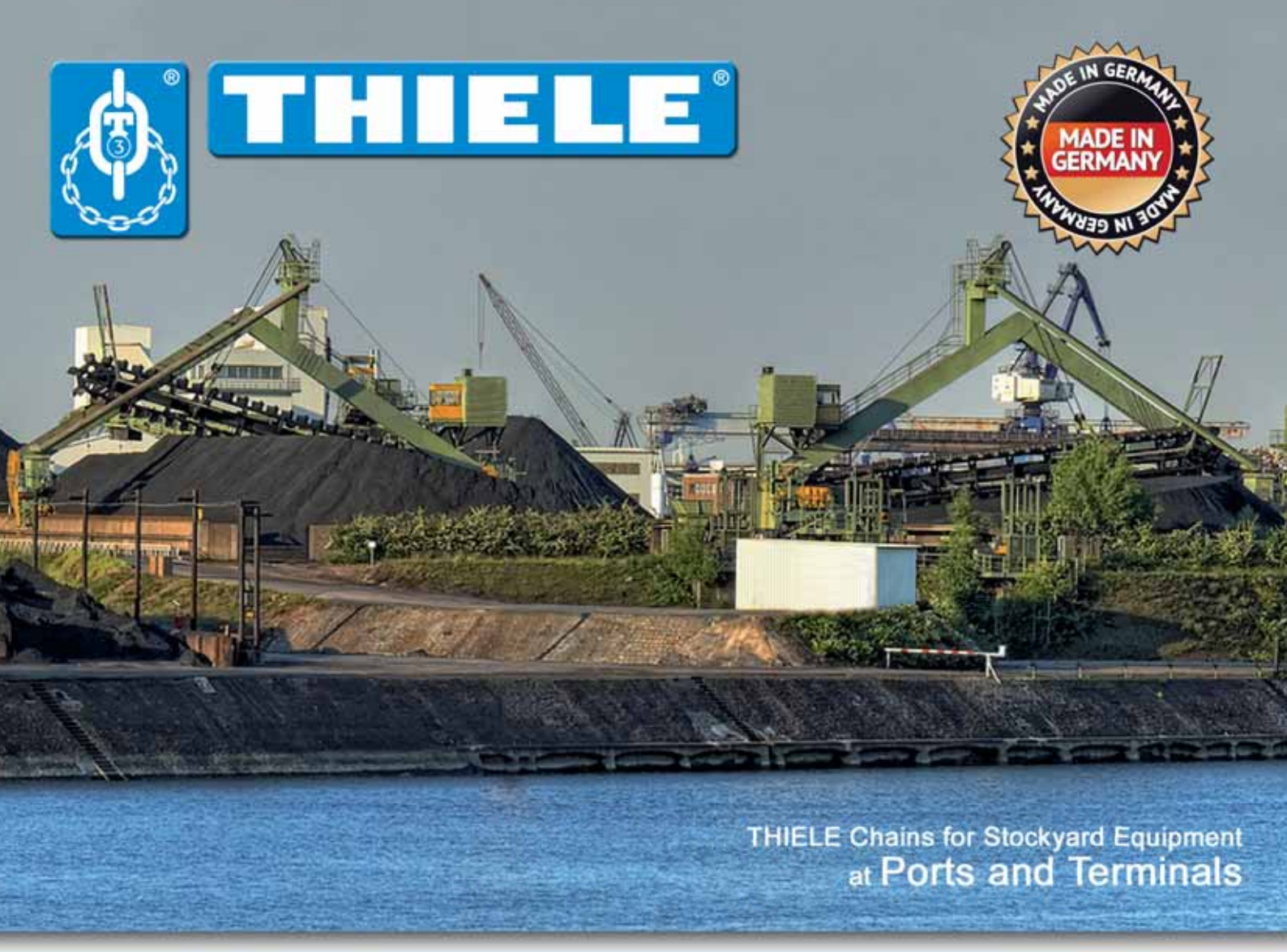

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Inspectorate International has a presence in all the world's major importing and exporting countries. One of the largest operations is in South Africa at Richards Bay, where it runs the coal testing laboratory for the RBCT (Richards Bay Coal Terminal) shareholders, testing about 70mt of thermal coal, actually twice — once for rail deliveries into the port stockpiles and then again on to the vessel exporting to consuming countries. Inspectorate's African operations have grown extensively over the last two years with new high capacity exploration testing laboratories being constructed in Middleburg and Centurion. In addition, facilities have been built and extended in Mozambique to accommodate the coal testing and certification requirements of this new coal-exporting nation.

There are also major facilities in Eastern Europe, including Russia, where there are laboratories in Kemerovo, St Petersburg and Murmansk, and a brand new facility has been built in UlaanBaatar Mongolia.

Andrew Mynn, Global Vice President – Coal said: "Our new facility in Mongolia is a state-of-the-art facility that has been built specifically to test borecore exploration samples from the vast deposits of coal that are now being extensively explored for the first time in Mongolia. Exploration testing allows the quality of the coal in ground to be determined and how this can be best mined and beneficiated to make the best possible saleable products for the mine owner. This facility complements our other dedicated exploration testing facilities in Australia and Africa." Bureau Veritas/Inspectorate International are also responsible for a considerable proportion of the coal inspection business in Australia. The main laboratories are in Brisbane, Newcastle, Gladstone and Mackay, with satellite laboratories around the country, including Blackwater, Emerald, Moranbah and Singleton.

Inspectorate's new laboratory in UlaanBataar, Mongolia.

In Southeast Asia, Inspectorate has a considerable presence in Indonesia, which is the world's largest exporter of coal, particularly steam coal. Five newly established laboratories are fully engaged in coal testing in East Kalimantan.

Richard Downs, Vice-President of the Metals & Minerals Trade Division said: "Inspectorate international is a forward-looking, technologically driven, company with traditional values in terms of customer service and building long-term relationships. We trade in expertise and are a vital supplier to the coal industry at every stage, helping to minimize risk and contribute to the efficiency of global commerce."

Inspectorate International anticipates further expansions in its coal services platform in 2014 as it looks to continue to deliver world class testing facilities to its customers all over the globe.

Recent developments in mines, terminals and stockyards from ThyssenKrupp

As one of world leading suppliers of materials handling equipment, and with over 100 years' experience, ThyssenKrupp Industrial Solutions, Business Unit Resource Technologies (TKRT, formerly TKF) has developed a complete range of products for bulk terminals, stockyards and coal-fired power plants.

Recent technical achievements and contracts highlight TKRT's development work for coal handling in terminals and power plants.

1. Breakthrough success for coal terminals of China

From 1999 to 2008 ThyssenKrupp successfully supplied more than 18 high capacity shiploaders for ships up to 200,000dwt, with capacities of 6,000–8,000tph (tonnes per hour). It also delivered more than 12 high capacity car dumpers to the ports around Bohai Bay of Northern China, the most important China's coal terminals. This success story continued with the award for a further four shiploaders and two quadruple car dumpers, which are proven to be the largest in China.

At the end of 2013, two milestone contracts were awarded to ThyssenKrupp for the design, supply and installation of four 6,800tph shiploaders and two car dumpers for coal by Huaneng Corp. China for its new coal terminal, Caofeidian No. IV Coal Terminal.

Car dumpers

The award of the contract for two quadruple car dumpers by Huaneng Corp. China for its Caofeidian IV Coal Terminal is a breakthrough achievement for TKRT in China for this kind of car dumper, and follows on from the success story in China back in 2000. The expansion project will enable Huaneng Group to export 40mt (million tonnes) of coal each year. Each new car dumper has the same unloading capacity as the existing one, but with increased capacity of hauling railcars of longer and heavier trains arriving at the port.

High-performance rail car dumpers in operation at Huanghua Coal Terminal, China.

Each car dumper will simultaneously unload four rail freight wagons, each weighing a maximum of 100 tonnes, at a rate of up to 28 cycles per hour, thus unloading an average 8,000 tonnes of coal per hour with a maximum capacity of 8,600tph. The systems are equipped with a positioner to position the wagons correctly, wagon weighbridges, hoppers, discharge feeders and dust control systems.

The new car dumpers will be designed on the basis of the car dumpers built for China since 2000. However, there will be significant improvements in the hydraulic system, and special mechanisms for the rotor and drives and in the environmental facilities. These measures will ensure high reliability and performance, enabling an annual throughput of 40mt using only two car dumpers.

In 2015, both car dumpers will be installed, commissioned and put into commercial operation in the terminal. An annual throughput exceeding 100mt will be reached, using the company's own railway and unloaded by the eight car dumpers supplied by TKRT.

Giant shiploaders

TKRT's China success story continues with the award for a further four shiploaders, the largest ones in China.

These machines are designed to load ships at a rated capacity of 6,000tph (max. 6,800tph) and ship sizes up to 150,000dwt. They are equipped with portal travel gears, boom with shuttle head and a loading device with trimming spoon, which allows 360° slewing. With this option, it is possible to achieve homogenous filling of the corresponding ship holds up to the uppermost edge, at a high nominal loading capacity. All mechanisms including those for the belt conveyor are equipped with variable-speed drives by means of frequency converter.

TK's giant shiploaders at the port of Qinhuangdao, similar to those for Caofeidian IV.

To serve different ship sizes, a shuttle with rack and pinion drive, controlled by frequency converter, is incorporated in the luffing boom, varying the outreach from a minimum for matching small ship size to a maximum of Capesize ships

A modern drive control and PLC system is incorporated in the shiploaders; operation is mainly controlled via the computerized operator's panel in the operator's cabin. The high degree of automation and the visually assisted operator's guide in Chinese allow the operating staff to operate the machines easily and in a comfortable fashion.

For environmental protection, a water spray dust suppression system is installed with a suction pump, water tank, spray pressure pump and spraying nozzles for all transfer points and the loading spout and cleaning compressed-air line. Special measures are also taken in the design to the transfer points and materials flow for a better and functional sealing of the chutes and skirting.

These giants are expected to be commissioned in 2015, readying them for entry into commercial operation.

Coal handling plant for power plants in Malaysia

The Tanjung Bin No. 4 Power Station, an expansion of the existing power plants with three 700MW blocks — one having one

1,000MW modern unit — is situated besides Tanjung Bin Power Plant 1–3. Again, as with the Tanjung-Bin and Jimah Power Plants between 2005 and 2008, TKRT and its partner, TKIIL (ThyssenKrupp Industries India) have been awarded a follow-on contract for the coal handling plant for the newly built power station block 4.

The coal handling system comprises the following major parts:

- connection to the existing coal handling plant;
- two combined bucket wheel stacker/reclaimers;
- incoming conveyor system in two lines from the jetty to the coal stockyard;
- coal conveyor system in two lines from the coal yard to the bunkers;
- crusher and screens; and
- overall electrical and control system for the automatic operation of the coal handling plant.

All of the tailor-made equipment and machines in this coal handling system will be supplied by TKIIL and TKRT itself using the latest bulk handling technology, and taking into account the high performance, efficiency and availability requirements. It will also offer a high degree of automatic operation and environmental protection against dust and noise emissions, which are necessary in a modern power plant.

Coal handling plant at Tanjung Bin 1-3, Malaysia, built by TKRT between 2004 and 2006.

The materials will be taken from the existing conveyor system at the connection point and delivered to the stockyard. The stockyard will have four stockpiles, for the different sorts of coal, which will be served by three identical combined bucketwheel stacker/reclaimers. The coal yard has been designed to carry out simultaneous receiving and reclaiming of material, which means one machine will do the stacking, while the other two are reclaiming. In order to achieve the best simultaneous operation with the optimum use of the stockyard area, the boom length of each stacker/reclaimer will be 46.5m.

Each machine will basically consist of :

- undercarriage with three-point supports and long travel gear;
- slewing superstructure with pylon and counterweight boom;
- hinged boom with bucketwheel and reversible belt conveyor; and
- retractable tripper car and intermediate conveyor.

An HMI (human–machine interface) panel will constantly inform the operator of the operating condition of the machine. A communication system between the operator's cabin and the central control room of the loading and unloading plant will ensure a fast exchange of information and therefore an economic use of the machines.

Three modes of control are provided for:

- local control in case of maintenance and repair work;
- manual control; and
- automatic control

During manual operation, the operator controls the individual motions from the driver's cabin.

In automatic mode, all operating sequences are carried out automatically. However, this is only possible after manual selection of the stockpile area and height and during reclaiming, after the first cut across the pile has been carried out.

The main tasks of the combined stacker/reclaimers are:

- stacking coal from both ship unloaders using one machine at a rate of 4,000tph (peak 4,200tph);
- feeding the coal bunkers of all three units within 12 hours at a rate of 1,400tph; and
- blending different sorts of coals for blending ratios of between 10:90% and 50:50%;

To achieve the required blending effect, the reclaiming rate of each machine will have an accuracy of 0.5% for the range of 30–100% capacity.

In 2013, site construction began and the CHP will be ready for commissioning and putting into operation 2014.

There is no doubt that this outstanding reference and the previous reference for the Tanjung-Bin and Jimah power plants will enhance TKRT's chances for further contracts, especially in this part of the world.

Coal export terminal Posjet, Russia taking shape

Increased demand on the world coal market is leading to an increase in Russian coal production. In order to handle this increase in the ports, all major coal producers are investing in the infrastructure of their port handling facilities.

One of these ports is Posjet Port, located in the very far east of Russia, close to the Chinese and North Korean borders. From

Similar coal yard arrangement with BW machines.

TK's BW stacker/reclaimer. This is now fully erected, and is ready for commissioning.

this location, one of the important players on the coal market, Mechel Group, handles bulk coal shipments to Japan, Korea and South East Asia.

To increase its competitiveness in the market, the Mechel Group is investing heavily in the upgrade of Posjet Port and contracted TKRT for engineering and supply of all necessary bulk material handling equipment for the upgrade of the port.

The scope of work comprises delivery of railcar unloading facility (twin side discharge tipplers) unloading simultaneously two railcar wagons, one transfer car, two bucket-wheel stacker/reclaimers, one shiploader, crushing- and a complete conveying system, including all galleries, transfer towers and conveyor bridges.

To protect the environment, special requirements had to be taken into consideration when designing and configuring the handling system, in particular in terms of environmental protection against dust and noise emission.

Twin side discharge car dumper installed at Posjet Coal Terminal, Russia

The handling capacity of the equipment is designed for 3,000tph, with an overall handling capacity of 7mt per year.

The current handling capacity is between 2–3mt a year, so the port expansion will increase capacity by more than 1.5 times.

TKRT is one of the few suppliers in the world to be able to cover the complete production programme, all of the handling facilities in the port system will be based on TK's expertise. The client can therefore rely on a tailor-made system from a single source.

Currently, TKRT is assisting the Mechel Group with the construction of all necessary bulk material handling equipment, and the coal terminal is taking shape and will ready for operation this year.

In order to ensure the total throughput of coal (7mt/year) by a single railway line, the client has requested a special design, as follows:

- side discharge car dumper instead of rotary car dumper should be adopted, so that the receiving hoppers are kept flat to reduce the costs in civil works and to avoid the influence of high level ground water;
- high throughput of wagon unloading shall be achieved;

TKRT has therefore developed a 'Twin Side Discharge Car Dumper' design, to be used on one railway line, for this special case.

The twin side discharge car dumper for wagons with a payload of 75 tonnes offer a maximum cycle time of 2 × 20 wagons per hour, achieving maximum capacity of 3,000tph. This is the highest capacity ever built by TKRT for side discharge car dumpers.

Dust Solutions Inc. wind fence and dry fog systems combat dust at port facilities

30m/100ft-tall DustTamer™ Wind Fence for air quality compliance.

As a major supplier of dust control systems for the coal handling industry, Dust Solutions Incorporated (D.S.I.) has seen a significant increase of customer inquiries from port facilities. This may be in part due to the shifting focus of anti-coal organizations which are targeting coal import/export facilities as part of their efforts to reduce use of carbon based fuels.

Government regulators are responding to increasing pressure from these groups to write ordinances to reduce the environmental impacts of material handling and storage. At this writing a major city in the United States has proposed strict requirements for controlling dust from stockpiles as well as specific control measures that must be in place. One of these control measures is to require the use of wind fences to prevent wind from carrying dust off site.

What is a wind fence?

A wind fence is typically defined as a porous structure (usually a porous fabric mounted to column supports) that is placed on the upwind side of the area that one is trying to protect from the wind. To be effective, the fence must allow a certain percentage of wind to bleed through the fence to equalize the pressure differential on both sides. The definition of wind is the movement of air from a high-pressure zone to a low-pressure zone. Equalization of air pressure reduces the air velocities. By allowing some air to bleed through, the higher speed winds are deflected away from the downwind storage area as the wind then 'sees' medium air pressure already present at the stockpile location. The end result can be wind reductions of over 50%.

Trees are natural way of creating these same phenomena and have been used for centuries in the agriculture industry to protect farm fields from damaging winds that cause soil erosion. However, trees take years to grow and require site conditions where they can live (most coal yards are not plant friendly).

Not all fabrics are created equal

Dust Solutions DustTamer™ Wind Fence System uses a specially engineered fabric that is knitted from industrial grade woven polyester, resistant to UV rays, inclement weather and temperature extremes. It comes in two porosities to best meet site specific requirements of fence height and coverage area. Its unique ability to be tensioned prevents 'flagging' of the material and consequential damage due to abrasion that lesser fabrics are subject to. Real world applications over the last 30 years have shown that DustTamer can withstand winds in excess of 100 mile per hour with no damage.

Another important feature of DustTamer™ fabric besides its strength and durability is its ability to not plug with dust, debris, snow and ice. This self-cleaning feature is due to its ribbed and slotted design. Horizontal 'ribs' provide the structure and vertical filaments joining each rib provide the porosity. DustTamers vertical filaments stay loose and move around to release materials that can plug a basket weave type of fabric. This 'self-cleaning' feature is very important as it prevents the issue associated with using basket weave pattern materials. If the fabric plugs two things can happen: 1) Plugged fabric prevents the bleed through effect that is necessary for wind reduction so the

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benefit is lost. 2) If the material is plugged the fabric and the structure will receive higher wind loads than when clean, possibly resulting in either fabric or structure failure in high winds.

Wind Screens combined with Dry Fog™ Dust Suppression Systems

DustTamer can be used for protecting conveyors, dump and grab hoppers from blowing dust as well. D.S.I. uses DustTamer in conjunction with dry fog dust suppression systems to reduce the ambient airflow across dump hoppers and to contain the dust-fog mixture inside the hopper. Typically the screen is mounted to a frame and surrounds the hopper on three or four sides.

Unlike conventional water spray or chemical spray systems, dry fog is not designed to wet the process material; it only wets the airborne dust. This makes it an ideal solution for dust from moisture sensitive materials such as coal, coke for fuel, copper concentrate, clinker and cement. Moisture addition to the material is typically less than 0.05% by weight and many times is undetectable.

Dry fog systems do not require any chemicals to break up surface tension as its unique nozzle design creates 1–10 micron size droplets that are of like size to the airborne dust. Making the droplet the same size as the airborne dust particles overcomes surface tension as well as the slipstream effect that larger droplets from misting or water sprays create which are ineffective in removing particles from the air.

D.S.I. nozzles flow rates are measured in gallons or litres per hour not minute, ranging from 3.5 GPH/13.25 litres per hour up to 13 GPH/ 60 litres per hour. It has been estimated that a DSI nozzle can cover the surface area of ½ a football field with fog with only 1 gallon/3.78 litres of water. This allows for the D.S.I. nozzles to create large volumes of fog in dump pockets or hoppers.

In conclusion, these technologies can help any port facility comply with air quality regulations, increase worker safety, prevent product loss all while improving their public image.

DustTamer™ containing Dry Fog™ to agglomerate the airborne dust.

Verachtert custom-designs coal buckets for Dutch terminals

The Netherlands is a country that shouldn't exist. A large part of it lies below sea level. This means that reclaiming land and then defending it against the sea and flooding has been a major focus of activity over the centuries. In turn, this has led to a wealth of experience in building large infrastructure projects and also to the growth of an innovative supply sector to service the country's burgeoning portside and infrastructure industries. One such supplier is the Dutch firm of Verachtert.

Over the last 60 years, Verachtert has become internationally renowned as a specialist in work tools for excavators, wheel loaders and cranes of all brands. The company engineers and sells products such as quick couplers, buckets, grabs, shears and hammers that are widely recognized for quality and productivity. Verachtert's customer base includes international clients in earthmoving, road and water engineering, demolition, scrap metal processing, recycling, general industry and bulk handling. In fact, many of their products are custom-built to meet the client's specific needs. All work tools come with an extensive services package that includes expert advice on the best tool for the job through to maintenance and repair. And the company is also a major European supplier of pre-owned tools.

DCC-Vantec-Grabs

In 2003, Verachtert became part of the Pon group, one of Holland's largest family businesses, which specializes in mobility-related industries worldwide. In January 2013, the company also acquired the Dutch firm DCC Grabs, allowing it to offer customers an even broader product portfolio and opening the way to servicing heavy industries such as mining and quarrying.

DCC-Vantec-Grabs is fully acquainted with the market. The company constantly follows changes and trends, implementing these in the form of practical custom-made solutions. The main objective is to ensure that its grabs add value for the client, through innovative design and product development. In fact, the

company's philosophy is built on solving specific customer-related problems.

DCC-Vantec-Grabs has implemented an innovative grab design that conforms to the latest environmental (pollution control) rules and regulations. Due to their strength, low empty weight and excellent quality, DCC-Vantec's grabs have been particularly successful in the dry bulk cargo and dredging industries. The grabs guarantee a high return on investment, and save valuable time. Each DCC-Vantec grab is thoroughly inspected and tested prior to delivery.

High-volume coal buckets

For major Dutch terminals at the ports of Amsterdam and Rotterdam, Verachtert designed and produced several special coal buckets (CAT980, CAT988 and CAT990). Activities concern the unloading and loading of dry bulk cargo from/onto sea-going vessels, coasters, lighters, trains and trucks, as well as bulk storage.

The challenge with these orders was to design the most efficient type of bucket, providing both maximum storage capacity and resistance to wear. Verachtert more than satisfied these requirements. The CAT980 packs a volume of 11m^3, the 988 16.5m^3, and the CAT990 buckets hold 22.5m^3. Currently, Verachtert is developing a 30m^3 bucket for the CAT992. Naturally, these buckets are also available for brands other than CAT. The capacity of the machines was enhanced through integrated suspension, large jaw action and smart engineering, resulting in a significant reduction of the operational cost per ton

of bulk cargo handled. The bucket is constructed largely from Hardox and fitted with chockey bars for extended operation. This is a perfect example of the type of customized solutions Verachtert offers for practically every conceivable situation.

New Vantec customized products for every application

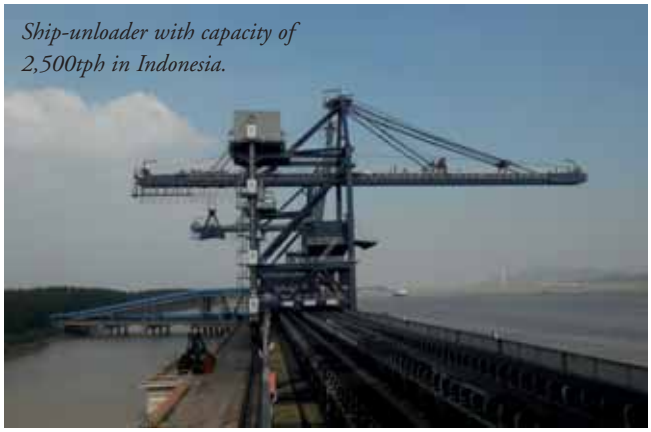
Verachtert is also an official dealer for trusted brands such as Caterpillar and Engcon. With the addition of the Vantec range, the company has complemented its portfolio with a line of tough work tool products based on extensive knowledge acquired over many years' experience in the trade and reflecting a complete understanding of work conditions, materials, productivity and efficiency. And, as usual, all products can be customized to meet the client's specific needs.

RHC Heavy Machinery combines European expertise with Asian economy

The RHC company was founded in 2005, with headquarters in Germany and offices in Shanghai and Incheon/Korea. The company's strategy is to combine European expertise and experience with low-cost production in Asia.

All of RHC Heavy Machinery Ltd.'s business is based on trust, and its customers are confident in its products and services. It prides itself on being able to provide the highest international levels of quality, safety standards, reliability and performance.

RHC Heavy Machinery Ltd. specializes in all kinds of heavy duty material handling. Its products include single machines as well as complete integrated systems. RHC customers come from the metallurgy industry, ports, shipyards and the mining sector.



Ship-unloader with capacity of 2,500tph in Indonesia.

Depending on the products and applications, the engineering for the equipment will be carried out in Europe, China or Korea. Workshops are mainly in China and Korea. Equipment and systems related to the self-unloading and loading of bulk material, conveyors and terminal equipment are designed and manufactured in China, at two factories near to Shanghai with their own heavy duty shipping facilities. Both manufacturing partners are experienced in the supply of such equipment to international customers with a high demand for reliability, quality and low maintenance, as well as low operational cost. RHC's equipment is environmentally friendly, and very efficient in operation.

RHC's main products for the handling of bulk materials (coal, iron ore, grain, etc.) are:

- shiploading and unloading systems;
- continuous or discontinuous, including dust collection systems;
- conveyor systems;
- stackers and reclaimers (indoor or outdoor);
- gantry cranes;
- wagon tippers;
- warehouse overhead cranes; and
- mobile carriers, truck and trailer systems

For the handling of coal, RHC and its partners offer several systems. These are mainly bridge-type ship-unloaders, used at small and medium sized ports, power stations, steel mills, etc. The unloader family meets all customer needs, in terms of different site conditions. Coal capacities range of up to 3,000tph (tonnes per hour). The rope

Outdoor stacker reclaimer.

Continuous shiploading systems.

arrangement uses advanced technology, and reduces the length of the ropes and the number of rope pulleys. All key components are from top-ranking international brands.

For hoppers, RHC offers different designs and arrangements; for example, they can be lined and with bolted wear plates. Dust collection systems are also available.

All designs are to international standards, and manufacturing partners are certified to the appropriate ISO standard, and have strict quality and process control procedures. They also have their own heavy-duty shipping pier for deep water vessels.

RHC's products are maintenance friendly, with high productivity, and are very reliable. Operating costs are very low, and the company offers after-sales service support world-wide.

Stacker/reclaimers are available in indoor and outdoor design. Indoor circular stockyards are covered, so operations are not affected by heavy weather conditions, dust is much less, occupied areas are smaller. Diameters are up to 120 metres, and capacities are 2,000tph or larger for coal.

Continuous shiploading systems are custom-made. They are available in different designs, with liftable main boom, and telescopic and rotating booms. These shiploaders are mainly used for ocean shipment and for larger quantity of material like coal, iron ore, grain, etc. Rated capacities can exceed 6,000tph.

Within the last few years, transshipment systems for the handling of coal have become ever more popular. Quite often, coal mines are well inside countries, and coal is transported by smaller river vessels or barges to the export harbor to be loaded on ocean going vessel. Often, these locations do not have the facilities to load to larger vessels. When this is the case, transshipment systems are used, either with some buffer storage on the transshipment vessel, or for direct loading. Rated capacities of such transshipment systems are up to 2,500tph and more.

RHC and its partners are well known for high performance and reliable solutions for all kinds of integrated material handling systems.

Transshipment systems working in Indonesia.

Telestack installs TS 2058 radial telescopic stacker for AES Genera in Chile

TS2058 radial telescopic stacker with integrated windrow stockpiling programme stockpiling coal.

Telestack Limited has recently commissioned a TS 2058 radial telescopic stacker in Chile for AES Genera, a coal-fired power station in the Port of Ventanas, Chile. The stacker is part of a complete vessel unloading and import material handling system upgrade carried out to replace the existing ageing infrastructure.

Thermal Power Plant Ventanas previously had an installed capacity of 330MW, which increased with the extra two units of 250MW each. The total capacity of the coal-fired power plant is now 830MW. The consumption of the two first units operated at full capacity was approximately 1.2mt (million tonnes) per year and is currently expanding to nearly 3mt of annual coal consumption. The project management of AES Genera Central Thermal coal is associated with a future expansion project in the Port of Ventanas.

Currently the maximum capacity is 1,300tph (tonnes per hour) discharge rate. This is made with two Kranbau cranes with level luffing, free digging, double booms each with capacity of 750tph. These cranes feed on two conventional hoppers with 100-tonne capacity which then feed on a conveyor system rated at 1,300tph.

TS2058 radial telescopic stacker stockpiling coal from elevated plinth.

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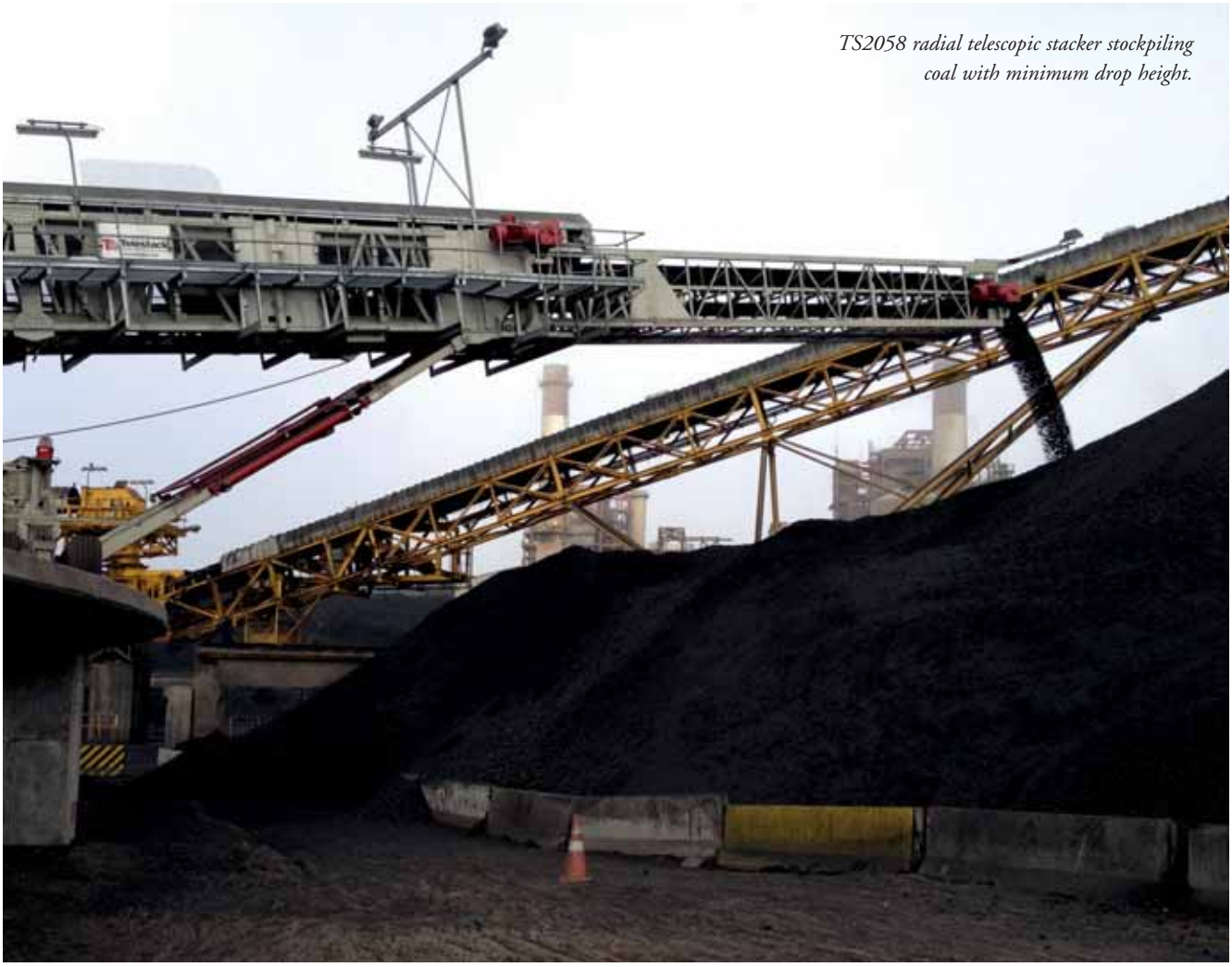

TS2058 radial telescopic stacker stockpiling coal with minimum drop height.

Once onto the conveyor system the material is transported to the coal stockyard via a series of static overhead conveyors and transfer towers. Once the material enters the stockyard it is transferred to the Telestack TS 2058 radial stockpiling conveyor.

The new projected upgrade includes two new cranes of 1,200tph free digging with the same level luffing double boom. It is proposed the hoppers will have 150-tonne capacities and an upgraded conveyor system of 2,000 nominal tonnes per hour.

The TS 2058 radial telescopic conveyor has a capacity of 2,000tph (with density of 0.85t/m^3 – 2,500m^3) of coal to cater for this future expansion. The machine incorporates a 1,400mm-wide conveyor belt with a 35-metre outer conveyor and 23-metre 'stinger' extending inner conveyor to maximize stockpile capacity. The telescopic conveyor enables an additional 30% of material to be stockpiled within the same footprint. Total stacking capacity of the TS 2058 on a 180° radius is 136, 360m^3 or 109, 090 tonnes of coal (Density of 0.8 tonnes). AES Genera was able to further increase this capacity by placing the TS 2058 unit on an elevated two-metre concrete radial plinth. With the integrated windrow stockpiling programme, the machine is able to automatically stockpile coal with minimum drop height, thus ensuring product integrity is maintained and dust emissions are minimized.

Telestack also supplied the equipment to be compliant with local Chilean structural standards for earthquake conditions. This involved an internal and external audit of structural integrity in order to comply with the rigorous structural standards of the Chilean Code NCh2369. These structural standards are some of the most stringent standards in the world in order to comply with local seismic conditions in event of an earthquake.

As the machine is operating in a coal fired power plant the equipment also had to be compliant with ATEX standards due to the combustible nature of the material being conveyed. Telestack supplied the equipment with ATEX 21 explosion-proof motors, solenoid valves, glands, joints and junction boxes. The control panel was removed from the zone to an operator's cabin therefore eliminating the requirement for the panel to be ATEX compliant and consequently significantly reducing the capital expenditure for the client.

The equipment also incorporated dual-access walkways in order to allow the operators to carry out routine maintenance of the machine due to the machine being positioned above ground level. Impact protection at transfer points along with TIVAR 88 liners ensured efficient and effective material flow of coal over the stacker. Telestack also included ATEX compliant lighting along the machine for 24-hour operation during unloading and stacking process.

Telestack delivered the equipment to site in Chile in 7x40ft-high cube containers, thus minimizing freight costs for the client. The modular nature of the equipment with quick and easy to assemble sections enables the machine to be assembled in a short period. Telestack installation engineers supervised the installation and commissioning of the equipment.

The unique structural and electrical requirements of this application illustrate Telestack's continuous commitment to supplying equipment which fulfils local standards and regulations whilst providing value for money, quality engineered and manufactured equipment on a global scale. As an ISO 9001:2008 certified manufacturer, Telestack is able to consistently meet and exceed the expectations of its customers around the world. DCi

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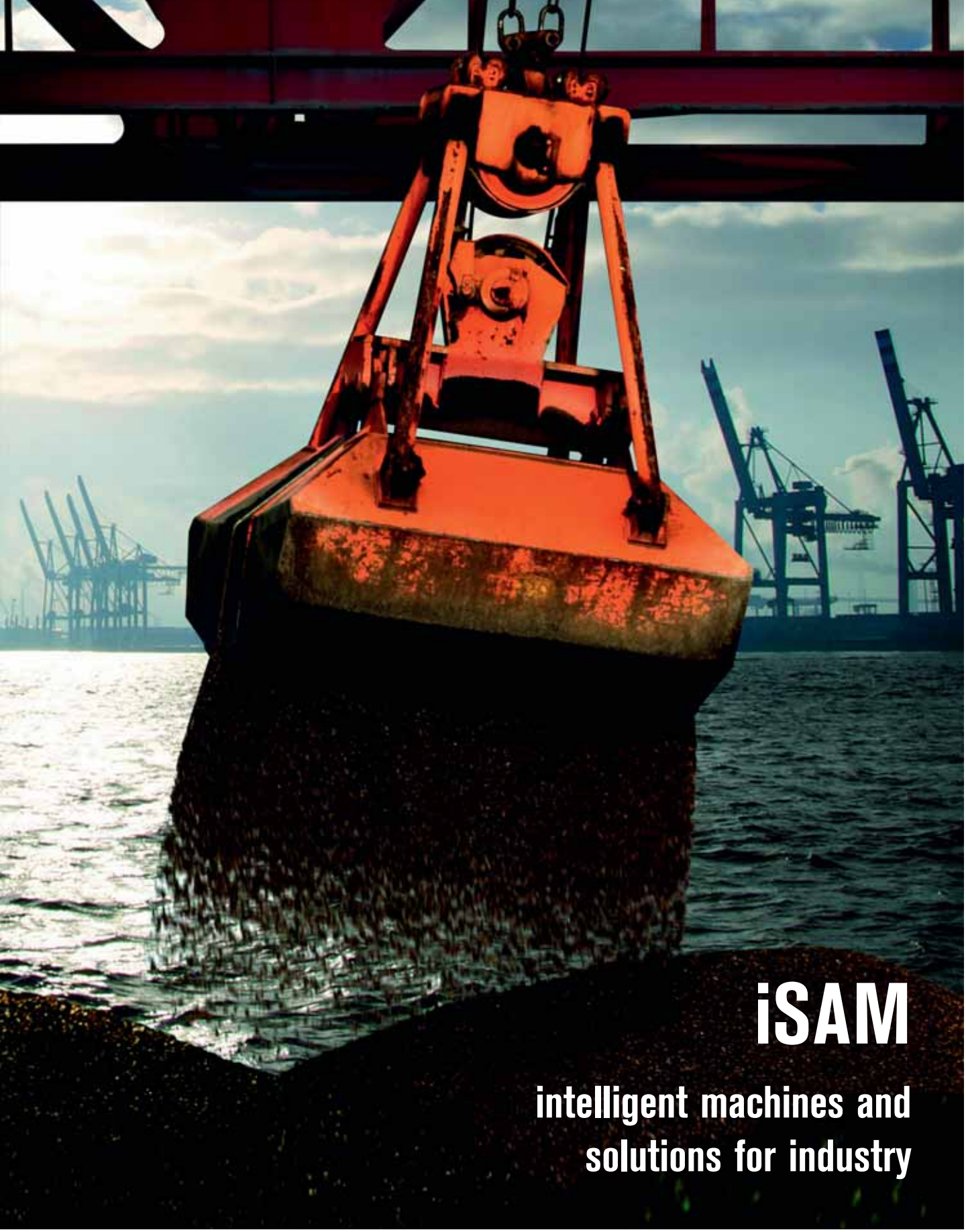


iSAM

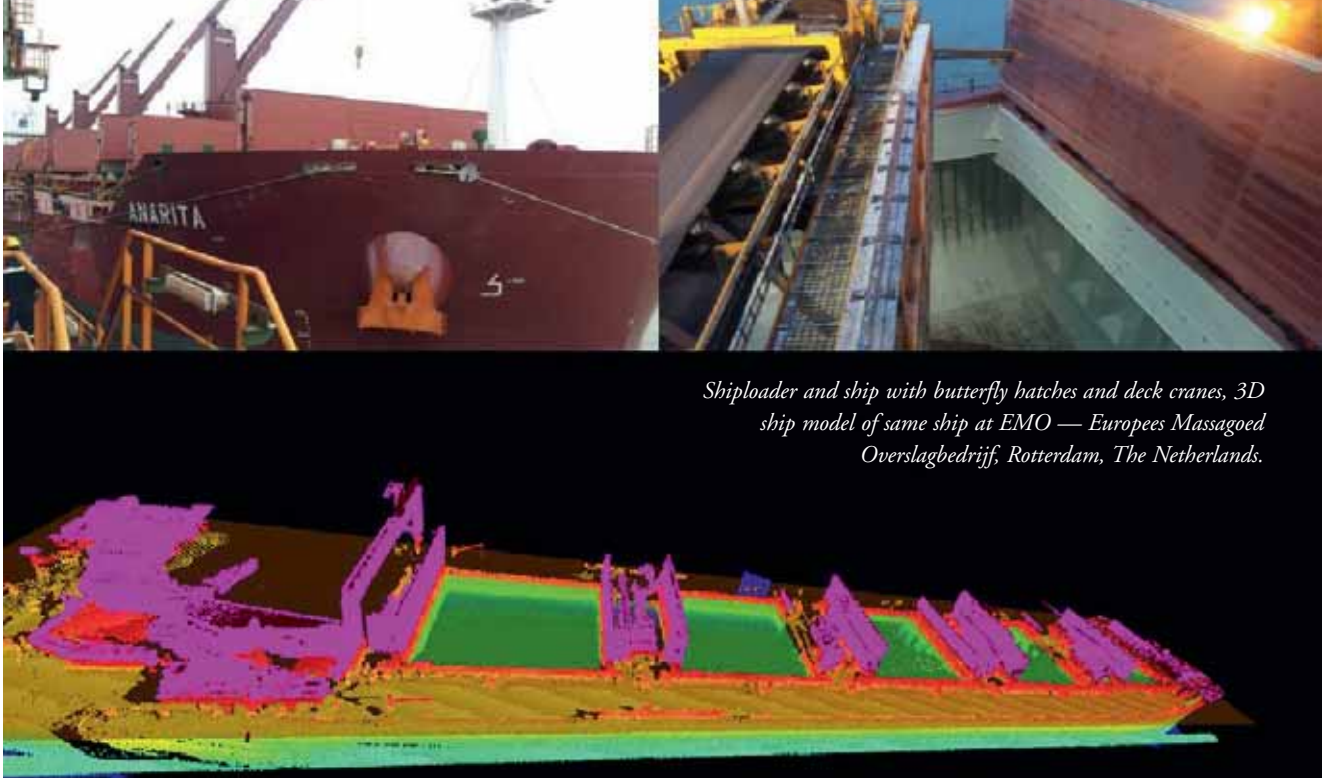
intelligent machines and solutions for industry

iSAM AG is a medium-sized technology firm based in Mülheim an der Ruhr, Germany. Including its holding companies at home and abroad, the iSAM group employs almost 100 people, primarily engineers, IT experts and natural scientists. Since its launch in 1983 as iSAM Hellmich GmbH, the firm has been developing and supplying control and automation systems along with the corresponding logistics for industry, in particular, seaport transshipment, steel manufacturing, large diameter pipes and aerospace are areas of expertise.

In the field of automated bulk handling systems, iSAM is a major global presence, with over 30 large-scale machines, from fully automatic stacker/reclaimers to ship unloaders and shiploaders.

Made in Germany...

Systems and equipment from iSAM AG have been in use internationally from early on, even though the firm was almost



Shiploader and ship with butterfly hatches and deck cranes, 3D ship model of same ship at EMO — Europees Massagoed Overslagbedrijf, Rotterdam, The Netherlands.

exclusively a sub-contractor for major German plant construction companies. However, the ever-increasing development costs of complex systems demanded broader access to the international market — the German market alone had become too small for iSAM. In 2001, only 0.3 million Euro out of a total turnover of 4.3 million Euro was generated from clients outside Germany. iSAM's objective was to expand its turnover outside Germany to a considerable degree, without neglecting the home market. In addition, the up-front costs of developing new markets should be kept as low as possible. Research, development and production should remain in Mülheim an der Ruhr, since spreading its activities over several locations in the company's size at that time would have endangered the synergies only just achieved.

... FOR THE GLOBAL MARKET

The guiding principle behind iSAM's internationalization strategy was to open up as large a market as possible for those products with which it had — with considerable effort — succeeded in occupying a top position in Germany. Importing products and services from abroad so far plays only a subordinate role here. Since its foundation, iSAM has pursued a 'one face to the customer' strategy, which means that even in the sales phase the client speaks to someone from the iSAM team who has already developed, built and put into operation similar equipment. This not only creates additional trust, it also guarantees a smooth transition from the specification to the development phase. This advantage would have been lost if sales representatives had been used and own subsidiaries were not an option at the beginning for cost reasons. First contacts were therefore established using existing networks and links to industry in Germany, and projects were implemented exclusively from Germany.

Today, iSAM products are sold and distributed via its own subsidiaries in the USA, Australia, Hungary and, since 2013, Canada as well. iSAM's intelligent control systems are not just in use in Europe, but throughout the global market. In 2009, turnover had tripled and iSAM had become a global SME.

Business field: Advanced automation and intelligent machines

Clients: Large and medium-sized industrial enterprises; in particular, in the area of bulk material handling and port automation, as well as logistics and transshipping, steel and pipe manufacture, mechanical engineering and aerospace

Special expertise: Innovative solutions. "If it can be done, we will do it. And if it couldn't be done until now, we will at least try."

ONE OF THE NEWEST iSAM R&D PROJECTS:

Advanced 3D anti-collision system for bulk material shiploaders with an option for fully automatic operation

iSAM has developed and implemented a sensor and evaluation system, which enables a shiploader control system to obtain complete information about its own position and also of all other objects in the vicinity. For the first time, this allows for the effective protection of the shiploader boom in manual mode. It also creates the foundation for remote or an even fully automatic operation. To do so, the system integrates data from three main sensor components:

- iSAM 2D laser scanning system for boom protection
- iSAM 3D laser scanning system for ship modelling
- iSAM RTK-GPS system for machine positioning

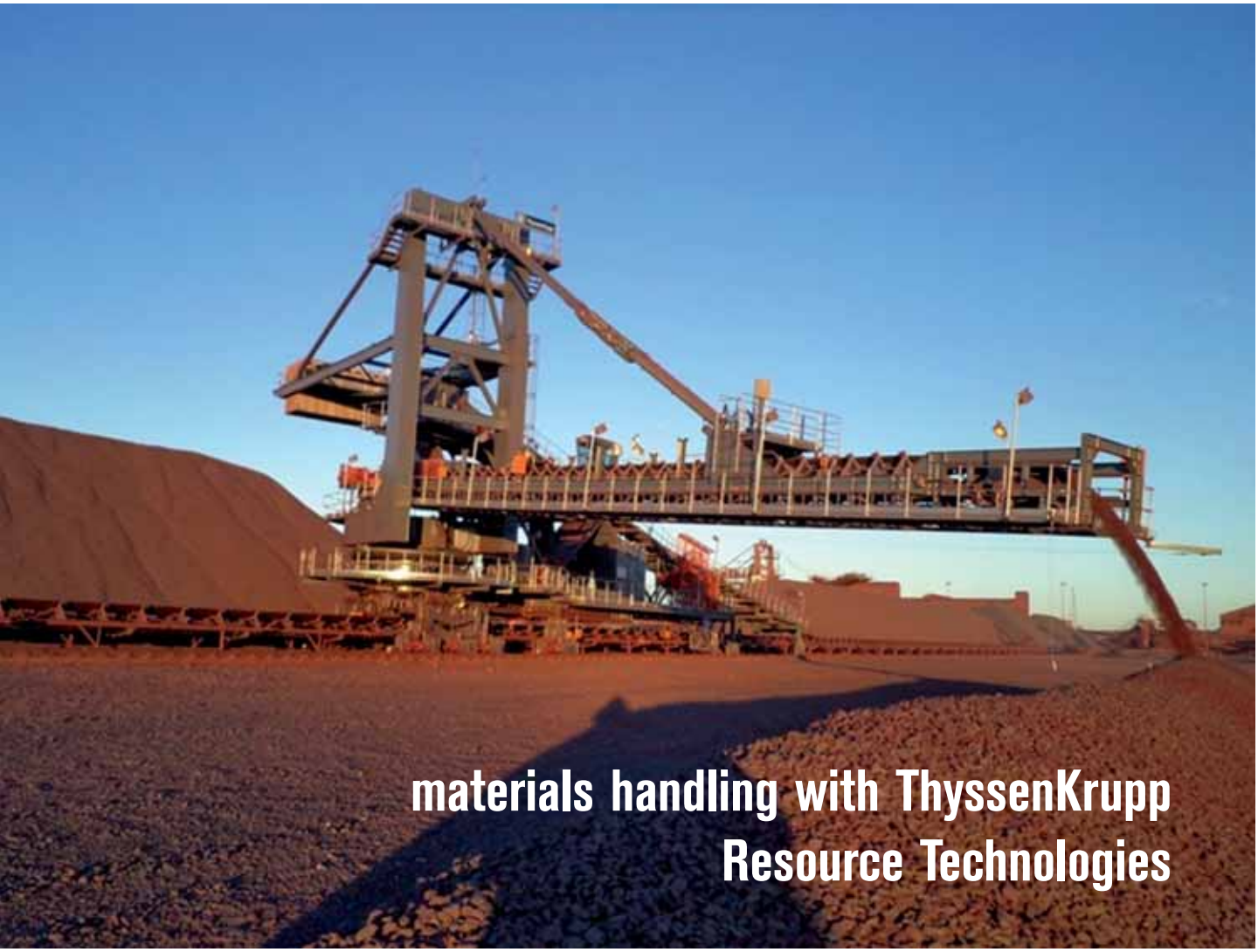
GENERAL OUTLOOK:

iSAM used the last year to move forward with new developments like the fully automated shiploader and unloader. In 2014, iSAM will complete the next reference projects, especially innovative technology for container transshipment. In future, iSAM wants to further expand into the rapidly growing Asian-Pacific and Brazilian market.

ABOUT iSAM:

Year founded:	1983
No. of employees:	50 in Mülheim an der Ruhr, about 100 including subsidiaries
Foreign share of turnover:	>80 %
Presence in foreign markets:	USA, Canada, Australia, Hungary (own subsidiaries)
Patents:	EU, USA, Canada, Australia, Brazil and other countries.

From pit to port



materials handling with ThyssenKrupp Resource Technologies

ThyssenKrupp Resource Technologies (TKRT), a division of ThyssenKrupp Industrial Solutions South Africa (Pty) Ltd, delivers end-to-end equipment solutions for bulk materials handling.

"From extraction at pit side to export at port side, we are positioned to offer best-in-class technology and system design solutions for efficient bulk handling solutions," says TKRT sales manager, Matthias Göing. "Our comprehensive range of bulk materials handling equipment includes excavators, crushers, feeders, conveyors, stackers, reclaimers, transfer cars, as well as train and shiploading and unloading systems."

"An operation is only sustainable if it is profitable," continues Göing. "We fully comprehend the importance for customers to achieve maximum efficiencies through optimum production while keeping input and operational costs to an absolute minimum. Large capital investments made on equipment has to be weighed against operation efficiency and productivity to achieve profitability. So we do not just supply equipment. We look at the operation holistically, from an in-depth analysis of the customer's requirements to the design and development of an optimized system."

According to TKRT engineering manager, Carel van der Merwe, correct equipment selection plays a crucial role. He points out that in order to ensure best equipment choice, numerous interrelated factors such as operation lifespan, mine yield, capacity requirements, material characteristics, blending requirements, equipment compatibility, etc. must first be taken into account. "To ensure that all these factors are dealt with to achieve maximum efficiencies demands extremely detailed planning and organization. This does not commence at the pit face as one might think, but at the end of the process i.e. working backwards from port side to pit side," continues Van der Merwe and explains, "The material quality required by the end user, the shiploading capacities demanded by the port as well as the size and loading requirements of individual ships must all be factored in. Multiple factors along each step in the process must also be analysed to ensure best-fit equipment selection." Van der Merwe adds that during equipment selection one must bear in mind that a mine is not static and is constantly evolving. "As the seam progresses, it moves further away so the equipment must also be able to handle these changing dynamics to ensure continued efficiencies."

Van der Merwe says material types play a crucial role when selecting suitable equipment for the first step in the process i.e. material excavation at the pit face. "Hydraulic excavators are recommended for selective coal excavation and compact mining applications while the higher production efficiencies offered by

bucket wheel excavators make them preferred choice for continuous block mining in larger mines."

"Next comes the choice of transport systems required to move the excavated material to run-of-mine [ROM] crushing stations. "Mine life determines transport system decisions," continues Van der Merwe. "While shiftable and extendable conveyors significantly reduce operating costs, they are less flexible than trucks and more costly. Mobile conveyors are ideal where more flexibility is required but the capital costs are higher. For large operations and long distance materials handling, fixed overland conveyors provide the best solution in terms of both capital and operating costs but limited flexibility is the compromise. In some mining applications such as continuous block mining and where mine life is ten years plus, equipment combinations such as trucks feeding shiftable and extendable conveyors, coupled with fixed overland conveyors to handle the longer distances, will deliver a good balance between flexibility, high production and low operational costs."

Upon reaching the crushing stations, the material is fed into the crushers by feeders at a controlled flow for processing. Best feeder unit choice depends on material composition and required throughput. The TKRT feeder range includes reciprocating plate or push feeders (ideal for large lump sizes and low capacities); rotary plough feeders; grizzly screens (best suited to higher capacities but unsuitable for sticky material) and apron feeders (controlled and continuous feed at high capacities and suitable for feeding very large lumps). "We also supply a wobbler feeder, which, like the grizzly, combines feeding and screening, but it can handle sticky, moist material such as coal at medium to high capacities," notes Van der Merwe.

Göing discusses the advantages of TKRT's various crushing equipment solutions. "We provide stationary crushing plants, semi-mobile crushers which can be moved to a new location as the mine expands and finally, fully mobile options. The fully mobile crushing plant travels behind the excavator and, as it is loaded directly from the excavator and only then onto a truck or transport conveyor, the need for double handling is eliminated."

TKRT roll crushers or sizers are suitable for soft to medium/hard material at high capacities. Jaw, gyratory and jaw gyratory crushers are ideal solutions for hard materials with large in-feed sizes, large reduction ratios and at medium to high capacities. "We also offer a high capacity jaw-gyratory crusher that operates on a progressive crushing principle for handling hard material and very large in-feed sizes. These crushers are similar to gyratory crushers, but with a flared inlet geometry for handling of larger lumps.

Stockpiles are normally required between the mine and the port. Van der Merwe says that the selection of suitable stockyard equipment (stackers and reclaimers) is closely associated with the specific purpose of the stockpile. "Big storage, small buffer stocks and/or blending will determine the stockyard type which includes longitudinal, cone, kidney, circular, bunker, etc. Again it is best to start at the shiploading process where consideration of port storage facilities, product grades/types, reclamation rates required to load the ships and delivery requirements for material from the mine will determine preferred equipment," he adds.

He further recommends to first select the reclaimer before considering the stacker and stacking method. "In addition to the already-mentioned stockyard type, other factors that determine reclaimer selection include lump sizes, material flow-ability, capacity (tons per hour), blending requirements, need for reclaimer to pass over adjacent stockpiles, etc." The TKRT range

of reclaimers include drum, portal, side arm scraper, bridge-type scraper, half-bridge-type and bridge-type bucket wheel and boom-type bucket wheel and plough feeders. "South Africa is the global ThyssenKrupp group's centre of excellence for drum reclaimers. While drum reclaimers cannot pass over stockpiles, they offer high capacities of up to 5,500tph (tonnes per hour), even output, excellent blending and suitability for free flowing, sticky or lumpy materials. For applications which require passing over of stockpiles, portal and side arm scrapers are recommended as well as bucket wheel reclaimers. Bridge bucket wheel reclaimers are more suitable for use with sticky materials and offer high, but fluctuating, capacities. For high capacity reclaiming of several products/grades with no blending requirement — which is typical for ports — ThyssenKrupp offers the boom type bucket wheel, which is suitable for all material types."

Stacker types from TKRT include luffing, slewing and luffing combination, wing, radial and overhead stackers. Van der Merwe says that blending is the dominant criterion for the selection of a reclaimer and stacker combination. "Windrow stacking — which requires a slewing and luffing stacker with a longer boom — can increase the blending efficiency when reclaiming with a boom type bucket wheel machine, but offers no benefit when combined with bridge scraper reclaimers and drum reclaimers. Likewise strata stacking improves blending only when used in combination with portal scraper reclaimers"

Discussing TKRT's train loading solutions, Van der Merwe says that high capacity operations conduct train loading in motion. "The train travels at a slow speed underneath the loading station while a weighed quantity of material is loaded according to each wagon's axle capacity. "We can also offer a less conventional loading solution that uses a conveyor with a tripper moving along the side of a stationary train, filling the wagons one by one. The most suitable loading system is determined by the loading rate that is required. At the mine, a load out station must be selected that can meet the rail operator's cycle time and wagon type requirements. At port side, there are several equipment options available for train unloading including bottom and side discharge wagon tipplers, rotary and tandem rotary wagon tipplers."

Finally moving to shiploading, Van der Merwe says that temporary shiploaders and container tipplers can be used for low to medium capacity shared facilities. "Dedicated systems are preferred for high capacity loading. While construction of radial type shiploaders and their supporting quays are more economical, they are only suitable for single berth quays and a specific ship size. Co-ordinate shiploaders (shiploaders that travel in a straight line, with a luffing and telescoping boom) can serve several berths and ship sizes on the same side of a quay. Travelling shiploaders with luffing and slewing boom offers maximum flexibility as they can be used on both sides of the quay and can load differing ship size requirements."

In closing, Göing points out that TKRT, as an engineering driven company, delivers modern, world class, turnkey solutions which includes not only equipment supply but also excellent service throughout the lifecycle of a project or equipment. "Whether new projects, plant upgrades, refurbishments or improvements, our sophisticated systems are supported by highly trained and qualified service engineers and technicians offering product support, audits, inspections, technical advice, maintenance, repair, spare parts and components. We form a long-term partnership with our customers, working closely with them to optimize plant efficiency so they can reap the benefits of lowest total cost of ownership and a high return on investment." DCi

Kingfisher wins major contract

Deflector plate lined with K-ALOX ceramic lining system.

Yearly inspection project for UK's largest bulk terminal

Inefficiency relates to the handling of abrasive and non-flowing bulk material which causes premature wear to expensive capital plant and equipment.

As material is processed through a number of transportation points being handled, stored and conveyed, a good example of a typical issue is prevalent in a UK integrated steel works. Here, operators handle Norwegian iron ore, which is renowned for its high moisture content and — as the material is conveyed through equipment such as transfer chutes, hoppers and stacker reclaimers — it tends to build up, resulting in blockages within equipment, thus restricting material from flowing through the process.

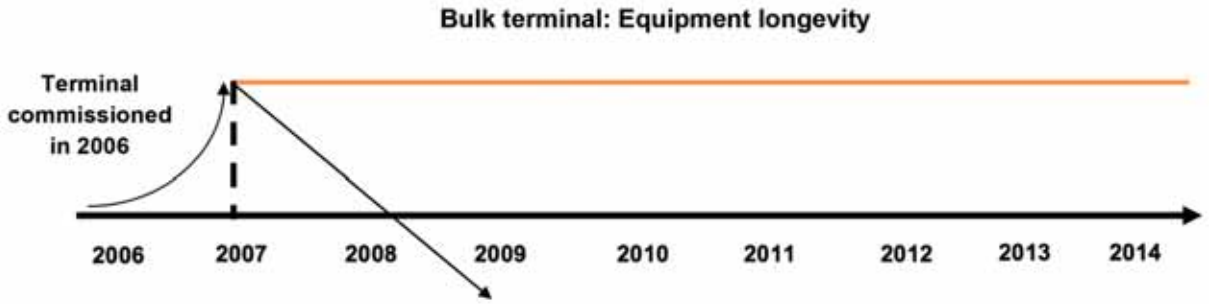
Apart from physical properties of materials, other factors also contribute to the on-going problem, such as weather conditions and portside contamination. As product is transported through different forms and modes of transport, it is left exposed to factors beyond operators' and handlers' control resulting in the need to factor in mechanical aids to assist product flow and the requirement to remove contaminated products.

To protect against such issues, bulk handlers implement specific design measures from the initial build of the plant or equipment along with implementing repair and maintenance regimes during annual plant shut downs.

Kingfisher was recently awarded a contract to provide annual refurbishment to the UK's largest bulk handling ports. The inspection comprises thorough site inspection and examination of equipment used within different points of the plant, including transfer chutes, hoppers, chain conveyors and storage silos.

One such example of note is associated with the Humber International Terminal 2 (HIT2) which was commissioned in 2006. Kingfisher has been active on this site since 2007. It has provided both on-site activities and in-house-built equipment encompassing combinations of its range of ceramic, metallic and polymer lining systems that protect against the abrasive effect of the product handled, and assist with the flow and discharge of product through transfer and storage equipment.

HIT2 was commissioned in 2006. Kingfisher began to re-line chutes and various transfer points in 2007, by replacing the



Existing linings began to fail after 9 months; Kingfisher was called in to offer technical support in identifying mode of failure, leading to recommendation and supply of new equipment to cater for the environment, tonnages handled and long-term objectives of end-user operations.

existing lining system with its own specification as the original lining system started to fail after nine months, whereas lining systems installed by Kingfisher provide a minimum of ten years' life.

The vast majority of transfer points within the plant are now protected with Kingfisher's superior 92P K-ALOX alumina ceramic wear-resistant lining system. The customer can now see the benefit of utilizing specialized companies with a proven ability to implement positive change, guaranteeing the plant's long-term objective of 'trouble free operation'. The relationship has evolved over many years and, after a recent inspection carried out by Kingfisher, project manager Mark Bond commented, "throughout the years, Kingfisher has carried out equipment replacement and maintenance for our client as and when inspections have deemed necessary and as we have now been awarded this annual inspection we are able to provide our customer with on-going suitable and cost-effective solutions throughout the year resulting in minimal breakdown or cleaning activities which were a constant thorn in our customer's side resulting in expensive shutdown, repair and demurrage costs.

"Due to the level of service and the quality of work completed throughout the years, the project was automatically

Coal transfer chute lined with K-ALOX ceramic lining system.

awarded to us based on the annual service provision we offer which eliminates some of the requirement for plant engineers to deal with *ad-hoc* equipment maintenance, annual inspection, report submission, outlining plant conditions, supplier price submission for the project and completion of the work when shipping and rail windows become available.

"Kingfisher is 'beating the drum' both in the UK and internationally, promoting the benefits of and trade-off associated with 'repair v. replace', as well as advising end-users and OEMs of the upside of implementing best available technologies throughout their plant and equipment. One such practice that is now becoming more prevalent is in the import, handling and storage of biomass materials used as an alternative renewable energy fuel source, in place of traditional fossil fuels such as coal and oil. Ports around the world in both developed and emerging markets are having to invest in such infrastructures to cater for materials that meet environmentally driven regulations on the need to enhance green energy production, thus reducing a nation's carbon footprint. This relatively new bulk solid is causing the industry many concerns due to the varying characteristics of the ranges of biomass materials being utilized by power generators. Factors such as eliminating product degradation, dust control, dry conveying and storage, abrasion, flow characteristics and last but not least explosion risk are concerns that can be managed by the use of technologies and practices mention above. By working closely with industry consultants, plant designers and engineers our aim is to provide a service that can help manufacturers and end users stay ahead of the game."

Transfer chute, manufactured from K-CLAD wear-resistant lining material.

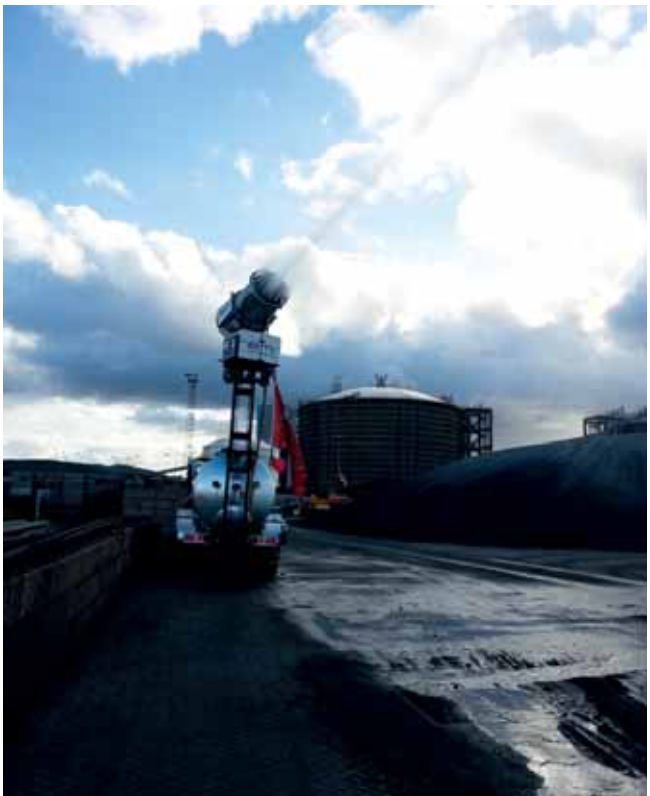
Putting a lid on dust control issues

Dustcruster® proves its worth

Den Bakker Dustcrusting technology b.v., (dbd global), is an expert in dust control and prevention.

Dust is everywhere. It is not always visible, but often creates problems. Ever-more-stringent environmental legislation regarding dust control is creating difficulties for many companies. Den Bakker Dustcrusting technology specializes in the control of dust, not only by cleaning areas that are already dusty, but also and most importantly working to ensure that dust does not become a problem in the first place.

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



Dustcruster liquid®

Dustcruster liquid® is an inexpensive and environmentally friendly (natural) product. After spraying onto coal and iron ore

stacks, it forms a real 'crust'. This crust safeguards the stockpiled product from being lifted by the wind and transporting dust, and lasts for a very long period. Rain barely affects its effectiveness. Only after digging into stockpiles is it necessary to repair the crust by spraying on a new layer at the disrupted area.

Dustcruster liquid® has also proven to be a very effective means to settle large sand areas around infrastructural projects and has successfully been used to prevent the escape of dangerous fumes during soil cleaning operations.

Dustcruster liquid® is mixed in a special installation. It has proven to be a better solution than all other products because of its longer lifetime. Dustcruster liquid® can be transported to most locations all over Europe where it is then transferred into large containers, equipped with stirrers and sometimes even with

heaters to allow work at near zero conditions. The company sells and rents the containers. For the spraying of Dustcruster liquid®, specific spraying trucks are required, mostly agri-tractor towed.

Dustcruster dry®

In order to reduce transport charges and to allow the use of the technology on a world scale, Den Bakker Dustcrusting b.v. has created Dustcruster dry®. Dustcruster dry® is a mixture of different fibres which are crushed into pellets and are transported in FIBC's or containers.

On location, the Dustcruster dry® pellets are dropped in a

special mixing tank with clean water where they transform into a liquid suspension, Dustcruster liquid®, ready for use. Here also, special spraying trucks are required to successfully cover the coal/iron ore stock piles creating a tough and long-lasting crust.

Spray systems

Water plays an important role in controlling dust. Humidity helps dust to settle making it more controllable. Den Bakker Dustcrusting technology b.v. has also developed several systems for stationary spraying equipment.

Best known are large-capacity, far-reaching water spraying guns. These are most suitable along places where there are

frequent loading and unloading activities.

It is, of course, most efficient to use as little water as possible to settle dust, so the company has developed a special system to prevent forming of dust along coal and iron ore conveyer belts.

These jets create a very fine water spray resulting in maximum dust settling with minimal water. An added bonus is that the road alongside the conveyer is sprayed at the same time.

Controlling dust with foam dbd FO 312®

Dust control when handling/crushing wood and stone is

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

The foam is created using special equipment that requires only 98 litres of water for a maximum of 2 litres of foaming agent to make a staggering 5,000 litres of foam. The foam is quite tough and long lasting. Depending on the actual activities performed, the foam can last anything from 3 to 12 days.

Apart from the benefit of less humidity problems there is a huge saving on water.

Wide experience

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

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

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