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FEATURES

■ European Coal Trades

■ Hamburg–Le Havre

■ Self Unloaders

■ Stockyard Equipment

■ Bulk Handling Drives, Systems & Controls

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OCTOBER 2012 issue

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Grain and soya trade prospects worsen

Some favourable signs are still visible among key influences shaping global dry bulk commodity trade. But, over recent weeks, adverse factors or, at least, greater uncertainty about seaborne trade growth became more prominent. A deteriorating outlook for grain and soya movements has added to doubts about prospects for industrial bulks.

The OECD's early-September assessment of the economic scene emphasised a weaker background for trade. Among the OECD group of advanced countries, the loss of momentum in economic activity (GDP) is expected to persist during the second half of 2012. Continuing recession within the eurozone and a subdued performance in Japan are features. Clearer indications of China's slowdown have emerged as well.

GRAIN

Severely curtailed supplies of grain and soya and higher international prices are expected to cause a sharp reduction in this trade during the next twelve months. The latest IGC forecast for global wheat and coarse grains trade in crop year 2012/13 starting July shows a very large 20mt (million tonnes) or 8% decline compared with the previous year, to an estimated 249.0m. Lower US and Black Sea exports are envisaged.

By contrast, soyabeans and meal movements could still increase (marginally), despite greatly reduced US export availability. Recent US Dept of Agriculture figures for marketing year 2012/13 beginning October (table 1) suggest 1% growth in global soya trade, to 149.8m. Rising imports into China, up again by 3% to 59.6m, probably will be the main support.

IRON ORE

In the iron ore sector China is currently seen as the principal positive factor as well, although uncertainty has intensified in recent weeks about whether the trend can be sustained. In the first 8 months of 2012, Chinese imports were 40m or 9% higher, at 487.3m.

Growth of steel production in China during the same period was only about 2%. This relatively small increase has

been accompanied by distinct signs of slowing domestic demand for steel, and reports of high stocks. A renewed emphasis on export markets appears to be under way, as a means of supporting output. Many major new infrastructure projects (consuming steel) have been announced, but the impact in the immediate future may be limited.

COAL

Expectations of growth in coal trade remain largely intact, amid rising import demand in Asia, especially for steam coal. India's potential as a rapidly growing importer was emphasized at the end of July when extensive power blackouts caused massive disruption. Steam coal imports into India more than trebled in the past five years, reaching over 90m in 2011, and could continue upwards.

Despite economic recession and a downturn in steel production and coking coal consumption, European coal import demand seems to be well supported this year. Negative changes in the contribution of other fuel sources, and reduced domestic coal mining apparently are underpinning foreign coal purchases.

MINOR BULKS

A large proportion of the minor bulks sector is comprised of steel products trade. Worldwide seaborne movements are estimated to have reached around 290m last year, and further growth may be seen in 2012. An expansionary influence in the first seven months of the current year was US imports, a key market, totalling 18.3m, up by 17% from last year's same period.

BULK CARRIER FLEET

The global bulk carrier fleet continues to expand very rapidly despite much higher scrapping of old ships. One of the fastest growing elements is the Panamax (60-99,999dwt) fleet.

Calculations shown in table 2 suggest that this sector could see growth exceeding 15% during 2012, faster than last year's strong increase. Much higher newbuilding deliveries this year may be only partly offset by higher demolition sales.

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

	2007/08	2008/09	2009/10	2010/11	2011/12*	2012/13*
European Union	39.2	34.2	33.4	34.2	32.2	32.6
China	38.0	41.3	50.4	52.6	58.1	59.6
Other Asia	23.5	23.1	25.8	27.2	26.9	27.2
Others	32.6	30.3	30.6	31.2	30.6	30.4
World total	133.3	128.9	140.2	145.2	147.8	149.8
% change from previous year	+9.3	-3.3	+8.8	+3.6	+1.8	+1.4

source: US Dept of Agriculture (12 Sep 2012)

Oct/Sep marketing years

*forecast

TABLE 2: PANAMAX (60-99,999 DWT) BULK CARRIER FLEET (MILLION DEADWEIGHT TONNES)

	2007	2008	2009	2010	2011	2012
Newbuilding deliveries	6.7	6.4	7.0	15.5	23.6	31.5
Scrapping	0.2	1.1	2.1	0.7	5.2	7.5
Losses	0.1	0.1	0.1	0.0	0.0	0.0
Plus/minus adjustments	0.1	1.4	1.6	0.5	0.3	-0.1
World fleet at end of year	108.2	114.7	121.1	136.5	155.0	178.9
% change from previous year-end	+6.4	+6.0	+5.6	+12.7	+13.6	+15.5

source: Clarksons (historical data) & BSA 2012 forecasts

*forecast

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Record harvests in Brazil

The Brazilian states of Mato Grosso do Sul, Mato Grosso and Paraná are forecasting a record wheat harvest this year. Yields are expected to rise 21% to 69.4 million tonnes. Mato Grosso do Sul alone projects an increase of 66.7% to 5.5mt. This is resulting in difficulties in finding sufficient storage space. Given the lack of adequate port, rail and waterway transport, farmers are also having to pay higher costs.

Barry Cross

No ban on Russian grain exports this year

Russia's Deputy Prime Minister has stressed that the country has no plans to ban grain exports this year. At present, production and consumption are at equilibrium, thereby enabling some surplus grain to be exported, although the situation is being monitored on a weekly basis. There are no plans to levy duties on grain exports either.

BC

Egypt to lift ban on rice exports

Egypt's agriculture minister has said that the country will resume exports of rice in October, lifting a ban that has been in place since 2008 to protect the domestic market, according to daily newspaper *al-Borsa*.

Egypt, once a major medium-grain rice exporter, banned rice exports in March 2008 and renewed the policy repeatedly to head off local market shortages and cap prices.

"The government has agreed to resume rice exports at the beginning of October. This is after local production rose enough to be able to cover market needs. The availability of a surplus for exports does not affect local prices," Minister Salah Abdel Momen told *al-Borsa*.

Abdel Momen added that the decision to lift the ban will allow Egyptian farmers to benefit from rising global rice prices but that, if local prices increase in a way that harms local consumers, the ban may be enforced again.

Soaring food prices in 2008 caused riots in a number of countries, including Egypt, and droughts in the United States and Black Sea bread baskets have this year sent prices of other grains sharply higher.

In 2007, Egypt exported 1.25mt (million tonnes) of rice and provided around 35% of the medium-grain rice sold on the world market that year. Others, such as Russia, have grabbed Egypt's share since.

The government started procuring rice directly from local farmers in October 2011 in order to build reserves. The move was intended to smooth out the exaggerated price movements that were offered during tenders for local rice.

Egypt needs around 1.1mt of rice a year for its subsidy programme — around a third of its total consumption of 3.34mt.

Thai farmers urge specialized rice zones

Farmers in Thailand have urged the country's Agriculture Ministry to create rice zones so that better breeds can be developed, as the government's high subsidies have emboldened farmers to ignore quality and concentrate on quantity instead, critics say.

"The government should draw up zones and fix the proper type of rice for each zone to serve the market's need and ensure high prices," Prasit Booncheoy, president of the Thai Farmers Association, said recently.

After the government announced a price subsidy for all rice farmers, they have done everything to boost harvests as much as they can to maximize their benefits from the price pledging programme, which is designed to accept all grains offered.

There are also many factors of this scheme that damage rice quality, its critics complain. The rice held in mills or warehouses under the pledging programme is not well taken care of, they say.

The government has subsidised at least two types of rice, so the rice types that come under one roof can be mixed, they

argue. Any delay in the rice-development plan will cause Thailand to lose competitiveness to Cambodia and Vietnam when rice can flow freely in the Asean Economic Community, Prasit said.

Kriengsak Tapananont, secretary-general of the Thai Rice

Millers Association, said the rice-zoning plan would help millers solve the problem of mixed rice quality. Millers have limited storage area but have to serve huge rice stocks under the government's pledging programme, so it is inevitable that different grades of rice would be mixed.

"The zoning plan, which promotes strains based on market needs, would encourage millers to concentrate more on rice quality,"

he said.

However, farmers and other parties are still confused about the pledging scheme, which has many problems such as the participation of rice producers in the programme, rice circumvention among registered farmers, delay of documents, and rice quality, he added.



Poor monsoon does not halt Indian exports of wheat and rice

India will probably continue exports of wheat and rice despite worries over output because of poor monsoon rains, Food Minister KV Thomas said recently, as the country has ample stocks from last year's harvest and wants to stabilize trade policy.

India, the world's second-biggest producer of rice and wheat, has received 8% lower rainfall than average since the beginning of the monsoon season on 1 June in what has turned out to be a drought year.

"We are working on a mechanism to have a stable export-import policy on select farm commodities such as rice, wheat and sugar," Thomas said, adding, the policy will benefit both farmers and the industry.

India lifted a four-year old ban on wheat and common grade rice exports by private traders in September 2011 after the government granaries swelled. The government has also permitted 2mt (million tonnes) of wheat exports from its own warehouses.

India's wheat stocks at government warehouses on 1 August were 47.5mt, more than three times the official target of 17.1mt for the quarter ending September.

Rice inventory for the same period was 28.5mt against a target of 9.8mt.

Poor monsoon rainfall in key oilseeds and pulses growing regions is likely to hit their output, Thomas told reporters on the sidelines of a conference.

The expected drop in output pushed up local edible oil prices

Rice growing in India.



to record highs last month, while prices for summer-sown pulses also surged, helped also by demand ahead of key festivals.

The south Asian country relies on imports of pulses and edible oils to meet local consumption.

India's total edible oil imports in the current year ending 31 October could rise 13% to 9.5mt, while next year it may rise by as much as 10% if the poor monsoon cuts planting and hurts yields of oilseeds, said the country's leading edible oil importer in July.

The country is the world's biggest importer of edible oils and buys most of its requirement in the form of palm oil from Malaysia and Indonesia.

India annually imports around 3mt of pulses, mostly yellow peas, chickpeas and pigeon peas.

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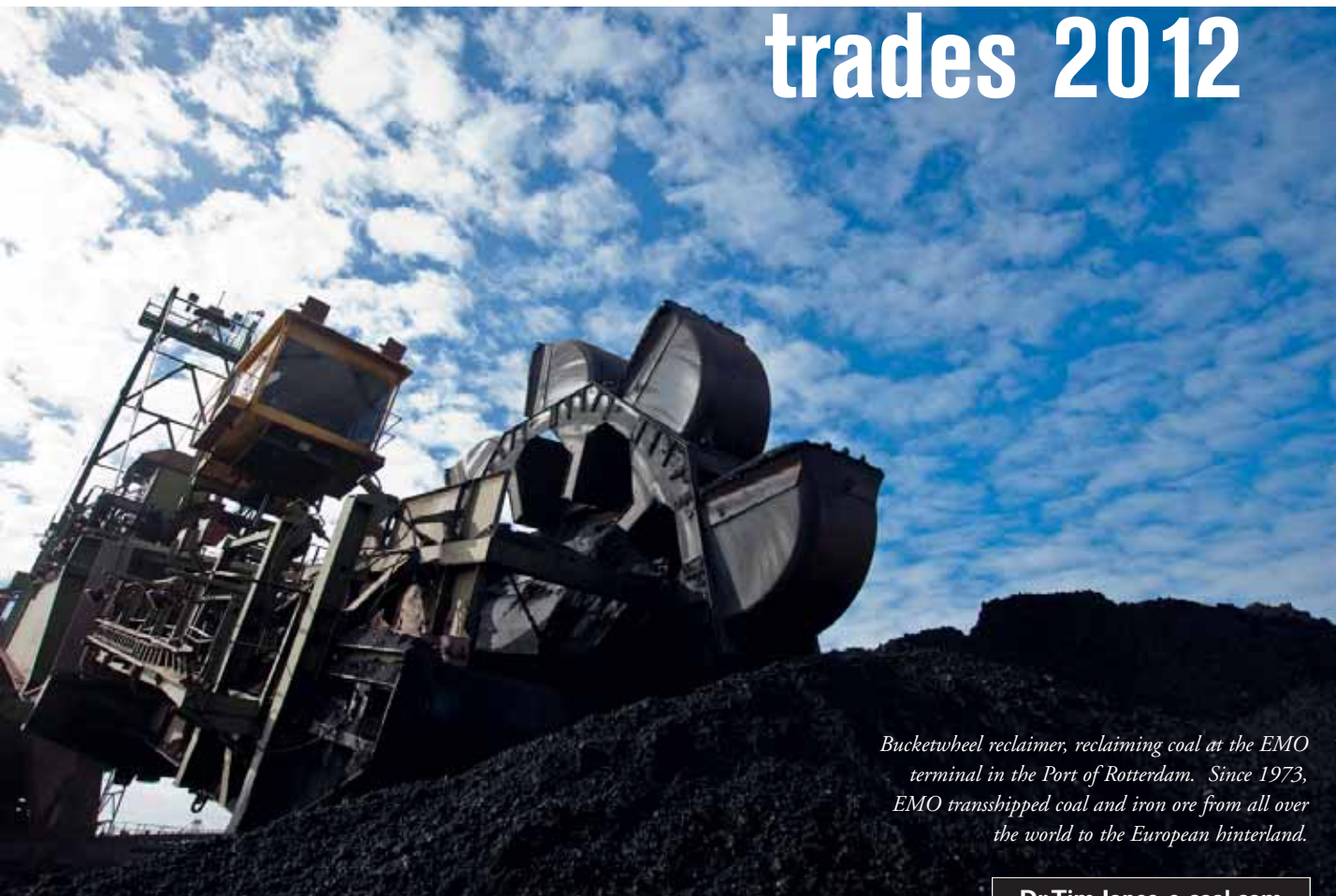
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European coal trades 2012



Bucketwheel reclaimer, reclaiming coal at the EMO terminal in the Port of Rotterdam. Since 1973, EMO transshipped coal and iron ore from all over the world to the European hinterland.

Dr Tim Jones, e-coal.com

This year has been what appears on the surface to be the least active one for European coal trade for many years. While European coal buyers and traders have been less visible than those in Asia and other parts of the world, the consumption of coal for power generation and steel making has been continuing at a subdued level. A year ago we said a similar thing when the European coal markets continued to be less spectacular than those in Asia and the Americas. The economic situation in parts of the European Union had an acute impact on financial markets a year ago, and the impact on the energy and steel markets that was seen then has not been able to recover as further problems have occurred this year. Coal industry professionals are still facing challenging times in Europe, and in addition to the difficult markets there have been unexpected penalties on some. Examples include carbon tax penalties on a coal producer in the United Kingdom which has seen its share price collapse while it seeks to remedy the situation with the government.

The coal industry in Europe has not seen what it might have

expected this year as 2012 got under way. In terms of the global economy, 2012 got off to a better start than had been expected in some aspects, with employment data from the USA showing encouraging improvements. Financial markets had been showing more positive signs during the first week of 2012 and the mining sector took a boost after some positive trade data was published in China. In the coal sector, the wet season in Queensland had so far not disrupted coking coal production significantly, and with lower demand at that time, there was not likely to be much upward impact on prices. Traders had been anticipating a softening trend in the spot price in the first quarter, with some possible change in March if the Chinese picked up demand. The much milder winter in Europe had kept a cap on thermal coal demand, with consumers understood to also have had high stocks of coal on their pads.

In January, little market activity was being seen but there were other issues being reported amid the depressed economic situation. In Bulgaria, there was a dispute at the Maritza East

OCEAN SPOT FREIGHT RATES (US\$/T) 2011

Route	Tonnage	26 Aug	19 Aug	% change
USG/ARA	65,000t	20.20	19.20	5.21
Roberts Bank/ARA	55,000t	25.80	25.10	2.79
HR+RB/Japan 16m	120,000t	30.10	24.90	20.88
HR/Rotterdam	110,000t	11.50	10.65	7.98
Bolivar/Rotterdam	130,000t	12.25	10.20	20.10
Queensland/R'dam	130,000t	17.40	15.80	10.13
Rich'ds Bay/R'dam	130,000t	11.00	9.00	22.22

Source: e-coal.com

OCEAN SPOT FREIGHT RATES (US\$/T) 2012

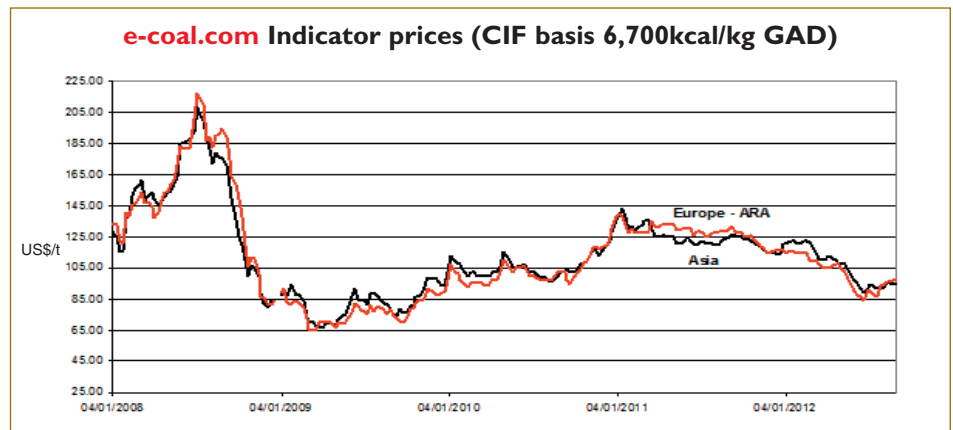
Route	Tonnage	31 Aug	24 Aug	% change
USG/ARA	65,000t	14.55	14.30	1.75
Roberts Bank/ARA	55,000t	20.60	20.25	1.73
HR+RB/Japan 16m	120,000t	24.75	24.50	1.02
HR/Rotterdam	110,000t	8.90	8.70	2.30
Bolivar/Rotterdam	130,000t	8.50	7.80	8.97
Queensland/R'dam	130,000t	11.45	11.05	3.62
Rich'ds Bay/R'dam	130,000t	6.05	6.00	0.83

Source: e-coal.com

coal mine after workers sought to negotiate new wage levels. Production there during 2011 was reported to have been around 33mt (million tonnes) which was 6mt above target. The disruption started on 15 January when the first stop work action was reported. Some countries had seen some growth in coal activities last year, and in Poland coal imports reached a new record in 2011 with around 16mt recorded. The largest supplier was Russia with 7.4mt reported.

Meanwhile in Ukraine, Chinese investors were understood to be looking at assisting the country to reduce dependence on gas for district heating. A switch to coal was being planned, and the country was mindful that it had faced disruption to gas supply from Russia in the past.

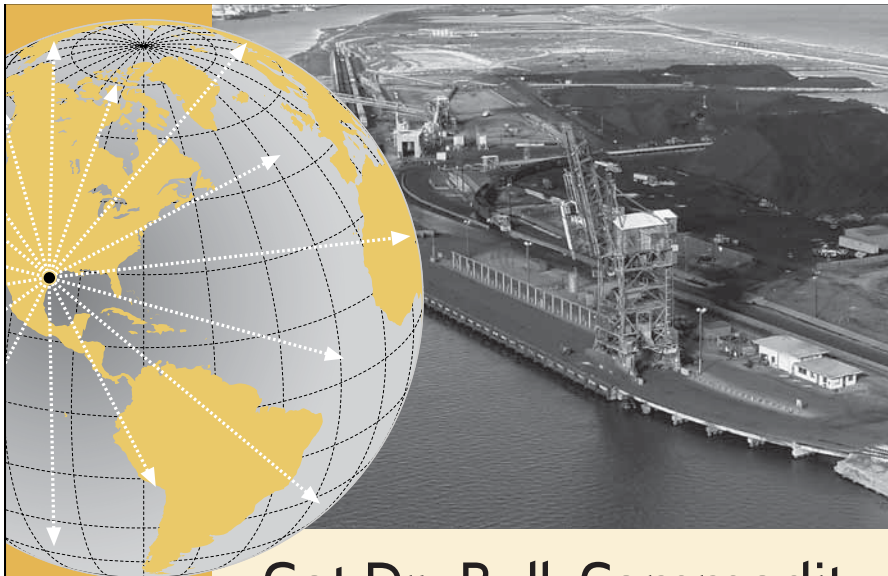
At the start of 2012, the major coal producing companies had begun announcing their performances in 2011 as early data was



published in some countries. Some European coal spot price indices were said to have been impacted by a downgrade in the credit ratings of some European countries, although the effect seemed to have been short-lived at that time.

By mid-January, thermal coal spot prices were generally a little firmer in all the major spot markets, with only a slight decrease being reported for South Africa. The significant movements in freight rates last year had influenced producers' offered prices, particularly into Europe. In January there was little differential between the Colombia – ARA rate and South Africa – ARA rate, although little spot business was being done at that time. Heavy rains continued to disrupt coal exports from Colombia, with delays of more than two weeks being reported at the ports. This was a concern for customers of Cerrejon and Drummond in Europe, and they faced further problems as the year progressed. Colombian shippers were reported to have been discussing supplies with consumers in the eastern Mediterranean over the first couple of weeks of the year, and buyers were believed to have been bidding around US\$100/t FOB (free on board) basis 6,000 kcal/kg NAR (net as received) while the exporters were asking a little over that figure for deliveries during Q1 2012. While this year has seen weakness in the market for thermal coal, the spot market for Colombian coal at the time of writing is not that much different from what it was in January.

In February, in the United Kingdom there were positive attitudes among the major miners based there despite the downturn in the economic outlook. Rio Tinto had announced that it was forging ahead with its 'Mine of the Future' programme with new technologies in underground tunnelling. These could increase tunnelling rates to more than double those normally achieved at present. The company was also deploying the Automated Train System in the Pilbara region of Australia, making it the first automated long-distance heavy-rail network in the world. Anglo American had reported record production of coking coal from its opencut operations during 2011 despite the



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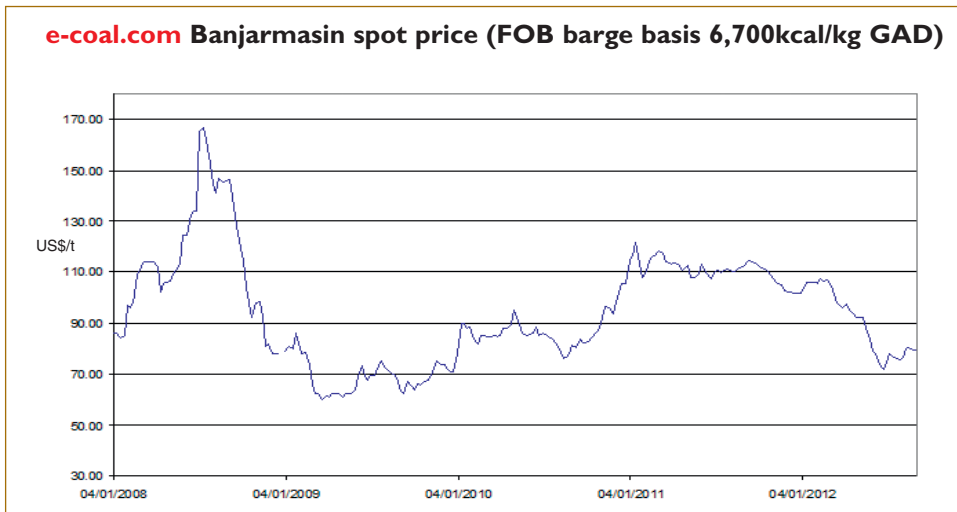


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disruptions due to rain during the first quarter. A record operating profit of US\$1,189m was recorded for coking coal which was an increase of 52% compared to 2010. A record operating profit of US\$1,230m was recorded for thermal coal which was an increase of 73% compared to 2010. Attributable production of thermal coal reached 67.436mt in South Africa and Colombia. This was a decrease of 639kt compared with 2010. Australian thermal coal production was 13.426mt which was a decrease of 1.035mt compared with 2010.

Export coking coal production reached 14.190mt which was a decrease of 1.380mt compared with 2010. More recently in the



United Kingdom, New Age Exploration announced that it is to progress the Lochinvar underground coking coal project in the Canonbie coalfield. More than 400mt of coking coal and PCI (pulverized coal injection) product could be involved in a future operation, with export opportunities through the existing Scottish and northern English coal ports.

The mining sector is believed to have seen almost US\$100bn worth of merger and acquisition deals made in 2011, which was a third more than in the previous year. In February, in Switzerland, one of the most anticipated mergers in the international coal world appeared to be gaining momentum. Glencore and Xstrata had reached agreement on a merger which was valuing the new entity at around US\$90bn. The merger remained conditional on approval by several competition



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

authorities around the world, but has been delayed by shareholder and other concerns during the past six months or so. Xstrata's CEO Mick Davis was to be appointed CEO of the new company, with Glencore CEO Ivan Glasenberg being the deputy CEO. The two companies already have close ties, and in Colombia in particular, they have exchanged ownership of coal assets in the past few years depending on their needs. Xstrata bought Glencore's assets in Australia and South Africa some ten years ago before its IPO (initial public offering) in London. The merger, if it proceeds, is likely to form a key entity controlling much of the coal and commodity production and trading across the globe. Glencore already owned a 34% stake in Xstrata, and when this is taken into account, the value of the new entity has been estimated to be close to US\$80bn. The new company had been forecast to generate net revenue of over US\$10bn this year, and the merger would provide logical cost savings and greater competitive means against the likes of BHP Billiton, Rio Tinto, and Anglo American. Incidentally, Xstrata reported an average price of US\$265/t FOB for its coking coal brands during 2011.

In coking coal and steel market news during the first quarter

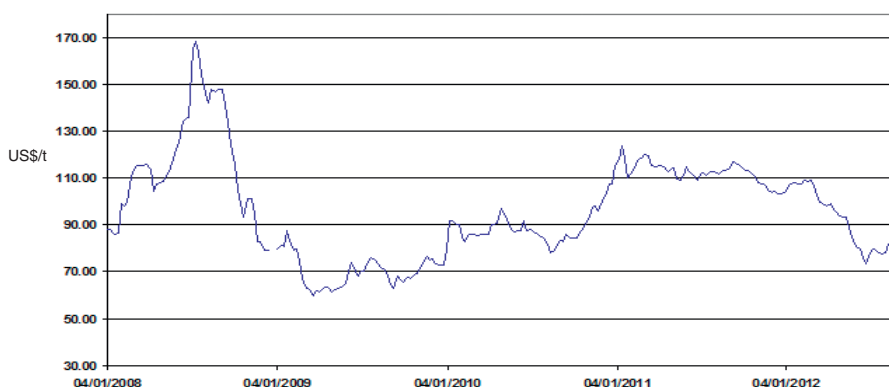
price of around US\$490/t FOB which was pricing the Chinese out of the export market, and no trades had been reported from there. In February, in the United Kingdom, London-listed company New World Resources was reported to have settled the Q1 contract price of metallurgical coke amid a continuing

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

weak steel market. The average price of a variety of coke qualities derived from Polish and Czech coals was reported to be about US\$410/t FOB which is a decrease of around 11% compared to the previous quarter.

As elections loomed in Russia, up to US\$8.2bn could be invested in the coal industry in the Kuznetsk Basin by 2030 according to Vladimir Putin on an election campaign visit to the region. Total Russian coal output in 2011 was reported to be 343mt with 195mt of that coming from the Kuznetsk mines. Vladimir Putin had hinted that development of the ports of Vanino and Posyet could be accelerated as coal exports to the Asian and Pacific markets expand.

In the European thermal coal market at that time, there were reports of a number of new enquiries being made as some thermal coal consumers monitored their coal requirements amid a cold snap across much of the continent.

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



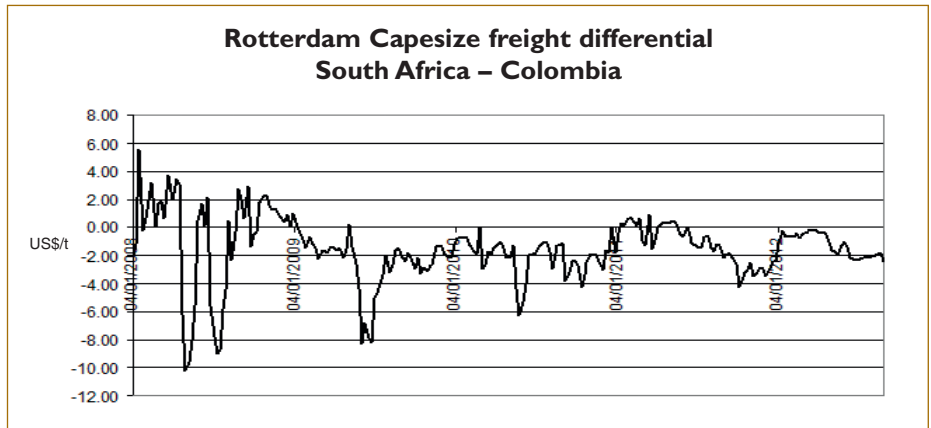
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Russian supply was constrained by the winter freeze, and the wet weather in Colombia was still affecting supply there. US shippers were understood to be hopeful of some new business, but South African tonnage was largely being sent to Asia. The level of delivered prices for European buyers was understood to be around US\$115/t CIF basis 6,700 kcal/kg GAD (gross air dried) for prompt business. Meanwhile, US exporters loaded 3.63mt of coal at Hampton Roads in January for the Atlantic markets. By early March, the long period of lacklustre activity in the European thermal coal market dragged on as spot prices softened further in the Atlantic. South African spot business seemed to be confined to Asia, with the European market having little influence. Prices for coal delivered to Asia in 2013 were about 5% higher than the then current prompt spot price at Richards Bay. US shippers of higher sulphur coal were said to be securing some business in Europe, however, but at a lower price

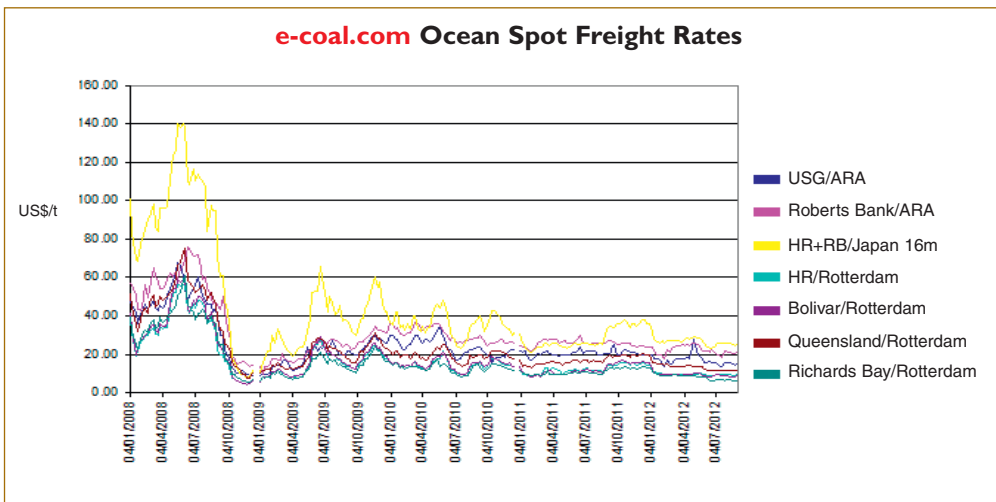


coking coal in Europe for the April quarter at about US\$210/t FOB which was a premium over the previous deals made in Korea at US\$206/t FOB. The European steel mills may have been aiming for a delivered price of around US\$225/t CIF during their negotiations.

In Russia, government statistics indicated that coal production in the Kemerovo region amounted to 45.9mt during Q1 2012. This was an increase of 3.1% compared to the same period last

year. Thermal coal production increased by 6.3% to 33.8mt while coking coal output decreased by 4.7% to 12.1mt. Total export sales increased by 5.9% to reach 21.7mt. Total production of 188mt in 2011 is expected to be higher this year.

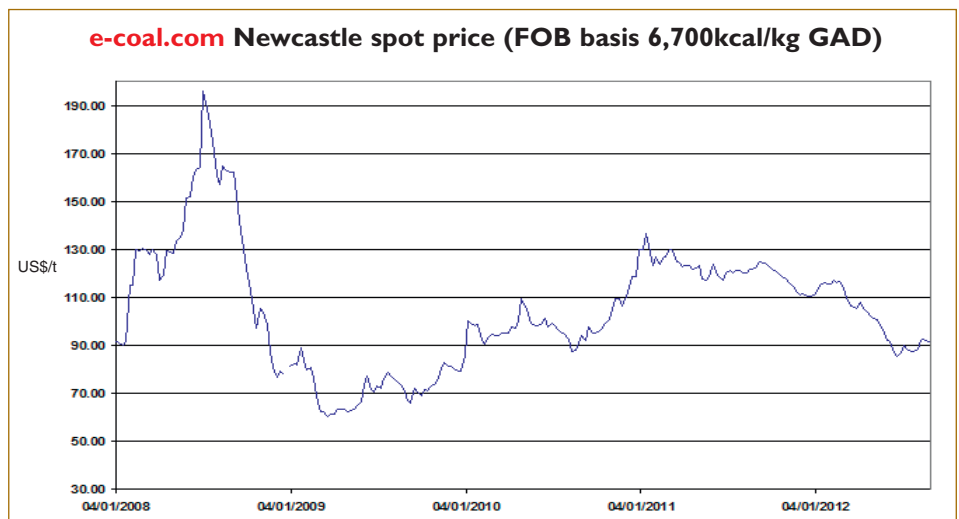
In early April in Italy, US thermal coal was believed to have been purchased by Enel, with delivery during the coming six months. The price has not been confirmed. In the United Kingdom there had been reports that Russian thermal coal suppliers had



in the spot market. High coal stocks were reported on the pads in the Netherlands. The Colombian exporters were not seeing much activity in their traditional markets in the north Atlantic, and appeared to be looking at opportunities in Asia once more.

At the end of the first quarter, unlike the Asian market, spot prices of hard coking coal in the Atlantic were flat, and low vol material was being quoted at just over US\$200/t FOB at Hampton Roads. European demand had shown some signs of a modest increase in interest. On the other hand, high-vol hard coking coal had seen the spot price weaken to just over US\$186/t FOB in late March. The global supply situation for premium hard coking coal was influencing the spot price movements of such material in the USA and elsewhere while most activity was being seen in Australia and Canada. Rumours suggested some deals had been made for contract supplies of Australian hard

received renewed enquiries for tonnage and offered prices in the spot market were around the US\$106.50/t FOB basis 6,000 kcal/kg NAR level. Meanwhile, Russia's export capability appears to be reaching capacity as the target for thermal coal is set at 80mt for 2012. Reports from Russia suggest further increases in exports will be constrained by infrastructure limitations.



Rotterdam Bulk Terminal BV — handy coal handler

ABOUT

Rotterdam Bulk Terminal (RBT) B.V. was founded in 1999 to take over stevedoring activities from the former owners at the Port of Rotterdam's Vulcan Harbour. The terminal specializes in the handling and storage of a wide range of dry bulk cargoes, including coal.

SERVICES & LOCATION

Traditionally the terminal offers loading, unloading, transshipment and storage services. On request, RBT BV is able to arrange screening, crushing and blending. Located in Europe's busiest port, the terminal is ideal for import, export and transit operations.

INFRASTRUCTURE FOR COAL

The draught of 11.35m and quay length of 525m allows vessels of up to Handysize to berth and discharge directly into storage or barge. For this purpose, RBT BV uses two on-shore gantry cranes with total outreaches of 162m (total) and 42m (over the water). A weighbridge and wheel loaders are used for truck deliveries. Needless to say, the RBT team works round the clock.

PERFORMANCE & STORAGE CAPACITY.

The terminal can handle up to 20,000 tonnes on a daily basis, although this volume can be increased for direct transshipments, through the use of floating cranes. For coal,



there are three hectares of open space suitable for the storage of up to 120,000 tonnes.

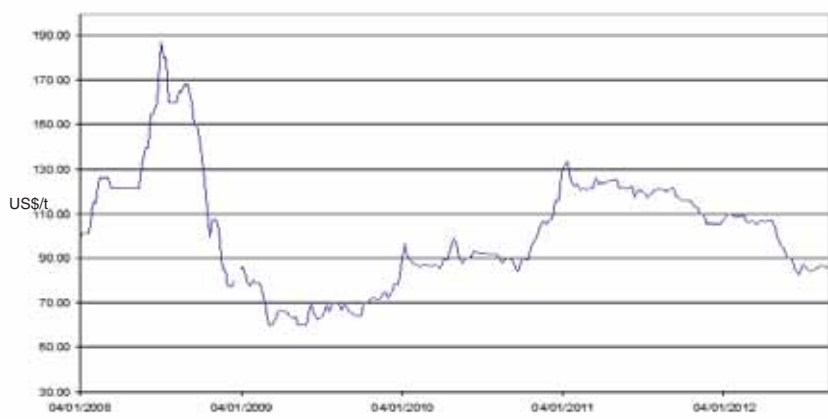
FLEXIBILITY

RBT BV is an independent terminal and works with anyone willing to handle coal and other dry bulk goods in the Port of Rotterdam. Short, medium and long-term storage durations are accepted.

MARKET SEGMENT

RBT BV sees itself as medium-size terminal with maximum service. Be it a regular business or spot inquiry, everything is taken into consideration. RBT stands for clear tariff policy, reliability in operations and open communication with its partners.

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



By the middle of the second quarter of 2012, while thermal coal spot markets were seeing a weak period in all regions, the hard coking coal and metallurgical coke markets appeared to be holding up a little better. The renewed problems in the Eurozone were not helping global sentiment, and the commodities sector had been affected. Until some positive news emerged, the markets looked set to remain uncertain and weaker. Asia remained the more attractive market for coal shippers around the globe, with US exporters still looking more to the east rather than across the north Atlantic to Europe. Reports suggested, however, that availability of US thermal coal for Europe was high, and when required could be readily shipped. The weakening spot prices in Europe had been attributed to this ready supply of US coal at the time. By May, coal



PROMPT SPOT PRICES FOR THERMAL COAL 2011

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

Location	26 Aug 11	19 Aug 11	% change
South Africa	117.90	119.50	-1.34
Colombia	116.85	118.40	-1.31
Venezuela	117.00	118.75	-1.47
Russia Baltic	119.50	120.80	-1.08
Poland	119.75	120.90	-0.95
Newcastle	121.45	121.40	0.04
Queensland	122.30	122.25	0.04
China	125.00	125.00	0.00
Russia East	124.10	124.05	0.04
Banjarmasin	111.40	111.30	0.09
Mahakam	113.25	113.25	0.00

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

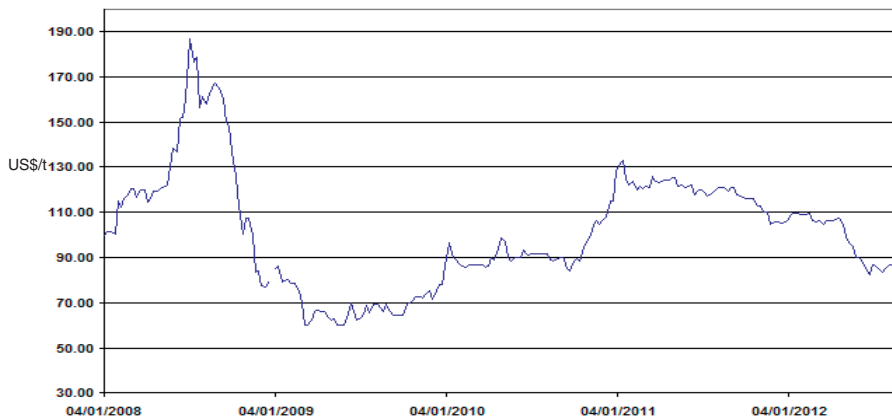
PROMPT SPOT PRICES FOR THERMAL COAL 2012

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

Location	31 Aug 12	24 Aug 12	% change
South Africa	89.85	89.50	0.39
Colombia	92.50	92.60	-0.11
Venezuela	88.50	88.00	0.57
Russia Baltic	86.60	85.95	0.76
Poland	87.00	86.00	1.16
Newcastle	91.25	91.50	-0.27
Queensland	92.00	92.20	-0.22
China	97.50	97.75	-0.26
Russia East	96.75	97.00	-0.26
Banjarmasin	79.30	79.70	-0.50
Mahakam	81.00	81.30	-0.37

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

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



has not helped the market pick up significantly, although there have been some changes when supply of Colombian coal was disrupted by industrial action. In South Africa, coal sales in the Atlantic market reached 1mt in May, with 190kt going into the ARA ports. Low FOB prices were attributed to the recovery in European trade, coupled with low freight rates from Richards Bay to Rotterdam. July was a good month for coal exports from South Africa, with 6.3mt reported shipped through

production in Colombia had been higher, due to improvements in the weather compared to recent years. Exports for the four months to 30 April 2012 reached 27.1mt, but the European thermal coal market looked well supplied and even at that time it was felt that there may be no significant upward change before Coaltrans in Istanbul in October suggesting a rather dull market for the next few months. This proved to be correct, and during the European summer the economic situation

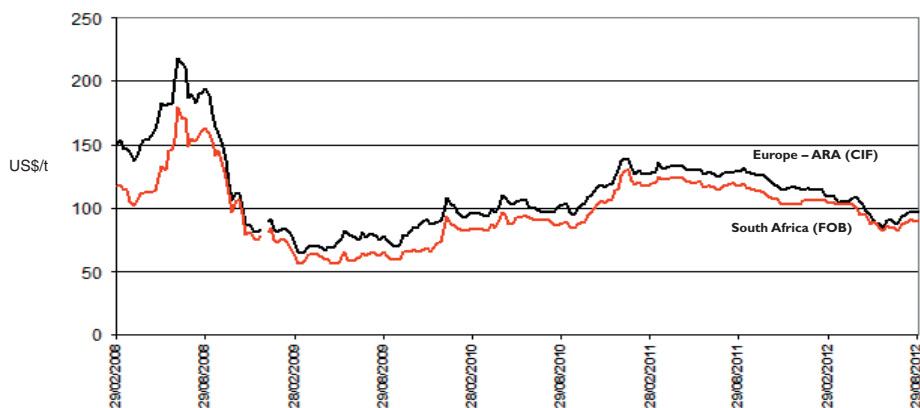
e-coal.com Russia (East) spot price (FOB basis 6,700kcal/kg GAD)



Handling coal at the OBA Bulk Terminal in Amsterdam.



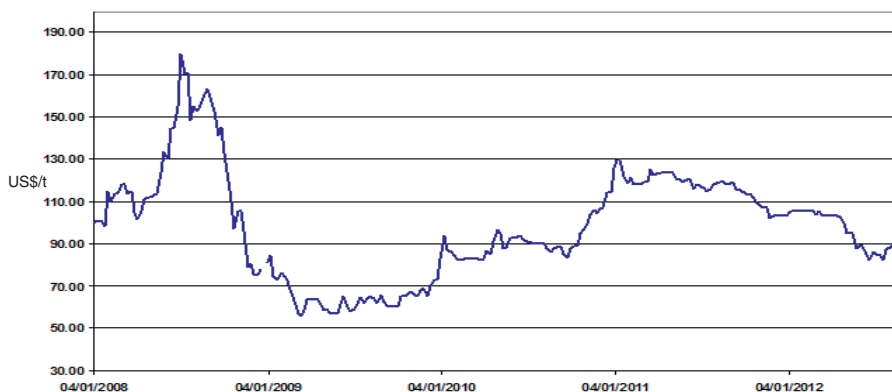
e-coal.com South Africa spot price v Europe — ARA indicator price (basis 6,000kcal/kg NAR)



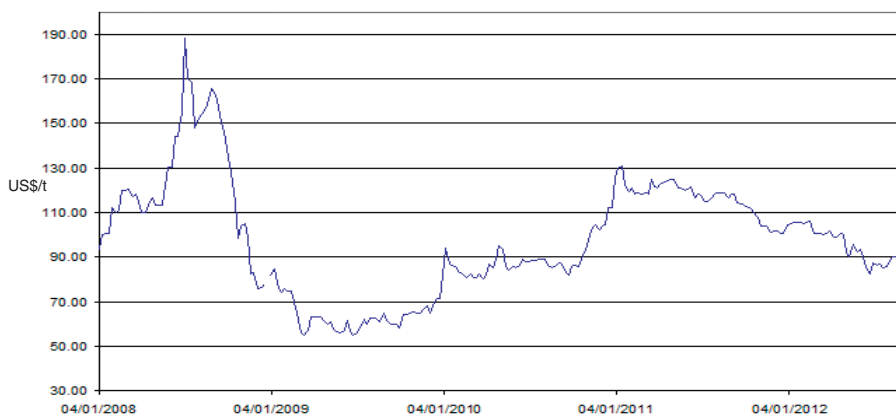
subdued. Up to 600kt of material could be stockpiled on the pads in anticipation of a market firming over the next year, but the operation is believed to have been delayed by the problems in Colombia during the summer. Market rumours this summer suggest the Spanish consumers were discussing purchases of coal with US and Colombian shippers. A number of trial cargoes are understood to have been received by the utilities this year while spot prices have been low.

Richards Bay Coal Terminal. Exports to Europe picked up to reach 1.3mt amid the problems in supply from Colombia, but it was the Asian market which took the majority of the coal at 5mt. In Spain, traders at Goldman Sachs were understood to be looking to transport thermal coal from Colombia to the port of Gijon in the north of Spain while coal and freight prices remain

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



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



The trial cargoes are believed to have been purchased at well under prevailing spot prices as the sellers seek to establish new or larger markets in the Iberian Peninsula.

At the time of writing, the coking coal market in the Atlantic is just as quiet as elsewhere in the world, and no confirmed deals have been reported in the European spot market recently. Rumours suggest some small deals may be going down for lower quality US material in lower quantities from time to time, but demand for the higher quality material is zero at present. The indicator spot price for low-vol hard coking coal is US\$194/t FOB while high vol product is priced at US\$182.50/t FOB but with no confirmed deals.

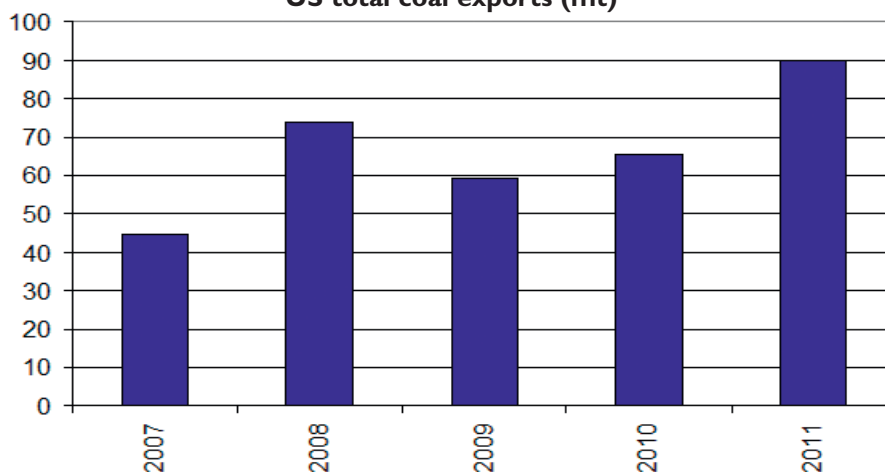
The latest thermal coal market activity indicates that a Capesize cargo of South African coal was reported sold on an electronic trading platform in early August priced at US\$93.70/t DES (delivered ex-ship). Delivery is required at Rotterdam in September. The strike in Colombia appeared to have spooked some market players, and this deal is rumoured to have been done between a trader and a bank as the seller. Electronic platform deals of South African coal to Europe have been thin on

the ground this year as the exporter enjoys the growth in the Asian markets. South African shippers have been offering thermal coal at about US\$88.50/t FOB basis 6,000kcal/kg NAR in early August.

Sentiment in the coal industry has been affected by the European financial situation over the past year, and as we wrote a year ago, nobody can predict the future and the uncertainty in the market is continuing. The usual pick up after the northern summer lull, and in the lead up to Coaltrans

in October may not happen this year amid the different economic conditions in Europe where some countries are facing serious problems. The coming weeks may give some indication about what direction the coal market is going in, but the general

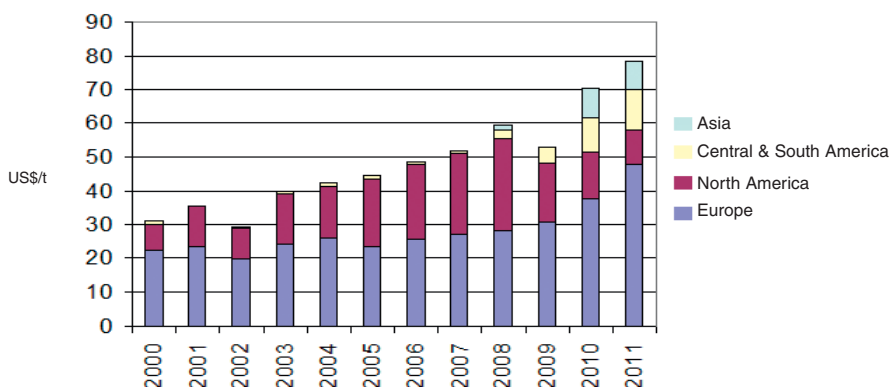
US total coal exports (mt)



consensus is for a rather flat period unless there is a sudden change in the fundamentals. The longer term confidence about Europe being a major consumer of coal has certainly been tested during the past twelve months after a more sustained economic recovery had been anticipated. The international coal industry has been able to work through difficult times in the past, but the length of this recession and the pressure on many

players has been a great strain. This has not been helped by additional taxes and rising costs which has seen some companies struggling to survive in Europe, and the start of a sustained recovery will be very much welcomed. **DCi**

Colombian coal exports by destination (mt)



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.

Furuno-type specific ECDIS training readily available in China

In the middle of July this year, Furuno Shanghai Co., Ltd started providing Furuno-type specific ECDIS (Electronic Chart Display and Information System) training for the very important Chinese market.

Furuno Shanghai is the sixth training facility to join the Furuno NavSkills training network and, with its strategic location, it is strengthening Furuno's provision of type specific ECDIS training to the many end users around the world.

The type-specific ECDIS training provided by Furuno Shanghai is in full compliance with Furuno's training standards and the instructors have been trained in Furuno's INS Training Centre Denmark to ensure that their skills and competences match the requirements for training under Furuno's NavSkills framework.

With the increasing focus on crew competences, Furuno has clarified its stance on crew training and viable training solution that put the quality in teaching and the resulting level of competences achieved by the navigators at the highest priority. It is important to ensure that the navigators can safely and efficiently operate Furuno's ECDIS onboard the vessels they are assigned.

By increasing the crew competences, many ship operators will

experience the better efficiency in operation of the vessels, and the crew will experience the better job satisfaction, because they feel comfortable in operating the ECDIS, which can be a complicated piece of equipment but a very important tool in their daily work.

"Training and crew competences are important to us," says Rick Chen, vice general manager of Furuno Shanghai. "China is one of the very important ship building nations, and as such we believe that it is important to be able to provide our high quality training to the Chinese crews. At the same time we can offer overseas ship owners building vessels in China to have the crew trained inside China on their way to go onboard the newbuildings."

Furuno Shanghai has provided engineering services and education services to the Chinese market for many years and during this period they have also established good knowledge and know-how for onboard familiarization training, which is not equivalent to the type specific ECDIS training, but instead an much-appreciated introduction of the crew to the specific installation onboard the vessel.

MLC ratification will boost seafaring as a career

Ship and crew managers have welcomed the ratification of the Maritime Labour Convention 2006 which is set to protect the rights of millions of seafarers when it comes into force in August next year.

"Establishing minimum standards for the working conditions of the world's seafarers is essential in ensuring best practice across our industry, especially at a time when recruitment is at a low level and the industry is struggling to attract young people," said Alastair Evitt, President of InterManager, the international trade association for the ship and crew management industry whose members represent almost 250,000 seafarers. "Valuing our seafarers is a first step in attracting new recruits to our industry," he said.

He vowed that InterManager members, who already adhere to the association's Code of Conduct and cadet berth policy, would lead the way in complying with MLC 2006 on their vessels.

New general manager to head up the Bridge Shipping Group's Beira facility

Billy Rodrigues has recently been appointed as the Managing Director of the Mozambique and Malawi regions and will be running the Bridge Shipping Group's new facility in Beira, Mozambique. Rodrigues not only has 23 years' experience in the container depot field in South Africa, but he has also been involved in freight forwarding in Beira for the past seven years.

His knowledge of the Beira Corridor, coupled with his experience in the tobacco and commodities markets, makes Rodrigues the perfect choice to head up this new asset to the Bridge Shipping Group.

"The Bridge Shipping Group was one of the first tobacco agents in Beira. The new facility, comprising a 7,200m² warehouse and 8,000m² yard, is close to the Port of Beira. This makes it ideally situated to service import and export customers in Mozambique as well as the neighbouring countries," says Colin Emanuel, CEO of the Bridge Shipping Group

The decision to implement a comprehensive operation for the Bridge Shipping Group in Beira was based on the potential growth of both the Port of Beira and Mozambique as a whole.

"There has been ongoing interest from neighbouring countries regarding the port's capabilities. It is considered as a reliable port and the Bridge Shipping Group believes a permanent presence

there is advantageous to all stakeholders," Emanuel explains.

Rodrigues, who describes his management style as hands-on, says that a company is only as good as the people it employs. "Staff is the key to success. The manager is only as good as the team that works with him. The aim therefore is to source suitably qualified people who have a knowledge of the logistics industry and the local environment.

"The facility in Beira consisting of a warehouse 7,200m² and 8,000m² yard is presently under construction and expected to be operational towards the end of September 2012, we are currently interviewing potential employees and sourcing the equipment required at the facility. There will undoubtedly be challenges involved in implementing a structure that will guarantee a first class service but, with the support of Head Office, these will be overcome," Rodrigues adds.

Emanuel points out that the Beira operation forms part of the Bridge Shipping Group's strategic intent to grow and develop its southern African footprint. "We also recently opened an office in Tete and this will be followed by facilities at Nacala and Pemba in the future. I will be responsible for coordinating these operations and ensuring that all four facilities assure our customers of the best possible service levels."

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Damen Shipyards launches longest pontoon ever and new crane barge 6324 design

Damen Shipyards has launched the first of its newly designed Stan Pontoon (SPo) 12032. The SPo 12032 is the longest pontoon ever built by Damen and part of a series of 34 pontoons currently being built. In addition, Damen Pontoons & Barges has started building a second new design: the Damen Crane Barge (CBa) 6324, a transshipment barge for handling dry bulk and container operations.

The 120m-long and 32.2m-wide Stan Pontoon was launched at Jiangsu Ganghua Shipyard, one of Damen's Chinese partner yards. With a deck strength of 20t/m², its heavy duty deck is suitable for heavy ro/ro operations. The pontoon's ballast system includes Econosto valves and Azcue pumps. Furthermore, the SPo 12032 is equipped with two DMT-winchs, a Van der Leun electrical system (including a Caterpillar generating set), an International Paint system and it is classified under Lloyd's Register. Together with 16 smaller pontoons (varying between 41m x 13m — 91m x 27m), the new pontoon will arrive in the Netherlands in September 2012 on a semi-submersible vessel.

NEW DAMEN CRANE BARGE

Damen's newly designed crane barge is called the CBa 6324. It's a shallow draught transshipment barge (optionally self-propelled) able to on- and offload ship-to-ship and ship-to-quay and vice versa. The CBa 6324 (i.e. 63m x 23.5m) is outfitted with a Liebherr CBG 350 crane with a grab load capacity of 35 tonnes at 12–36m and a hook load capacity of 45 tonnes at 12–36m. The average throughput will be around 20,000 tonnes a day.

There's accommodation for 12 crew, including a pantry, a change room, an office and of course cabins. Several of these new transshipment barges are currently being built, with the first ready for delivery in November 2012 (The Netherlands) and the second in December (China). Crane barges 3 and 4 will be available in Q1-2013.

HULLS IN STOCK

Currently more than 35 pontoons are under construction at Chinese partner yards under Damen supervision. Frank Koppelaar, Product Director Pontoons & Barges, says: "Damen is continuously developing and building new pontoons and new barge types, based on proven design and adapted to changing market circumstances. We're building our full range, from 30m x



Launch of the SPo 12032.

11m barges to 120m x 32m barges, and sell them from stock, so delivery times can be shortened to weeks and in some cases even days." A new series of offshore accommodation barges will get started soon as well.

RHUMB MARITIME



Last but not least, the Damen Stan Pontoon 4113 which was ordered by Australian chartering company Rhumb Maritime has been launched last week and is currently ready for delivery.

DAMEN SHIPYARDS GROUP

Damen Shipyards Group (established in 1927) is a globally operating company with 37 owned shipyards and numerous partner yards. Damen employs over 6,000 people, has built over 5,000 vessels worldwide and delivers up to 150 vessels annually. Based on its unique, standardized ship-design concept and short delivery times, Damen is able to guarantee consistent quality.

Damen's focus on standardization and modular construction leads to short delivery times (Damen keeps vessels in stock), low 'total cost of ownership', high resale value, proven technology and reliable performance. Damen offers a wide range of products, including: tugs, workboats, patrol vessels, high speed craft, cargo vessels, dredgers, offshore support vessels, oil-spill response vessels and even frigates and super yachts. In addition to shipbuilding, Damen offers efficient customer support, customer financing and complete lifecycle service.



The CBa 6324, Damen's newly designed crane barge.

New world record for highest freefall lifeboat



The world's leading lifeboat and davit manufacturer Schat-Harding has set a new freefall lifeboat record with its new generation FF1200 boat. The boat was successfully dropped from a freefall height of 60 metres. The world record drop was conducted as part of the certification tests of the boat.

"The FF1200 managed this height in an excellent way," says Geir Arne Veglo, CEO of Umoe Schat-Harding Equipment AS. "The FF1200 entered the water cleanly and made excellent headway."

The boat was loaded with seven tonnes to simulate the full capacity of 70 100kg people. As part of the test, the engine was started immediately and was left running for four hours along with different manoeuvring tests.

The FF1200 is the only lifeboat that has completed the full-scale tests set by the new requirements for freefall lifeboats on the Norwegian Continental Shelf, DNV-OS-E406 standard. After the freefall test in August, the FF1200 is now the highest certified freefall lifeboat.

The ability to drop safely from greater heights is required as offshore installations get larger. The FF1200 was designed



for that purpose and to meet stringent new standards for performance in heavy seas which will facilitate the evacuation of rigs and installations in the Norwegian North Sea.

"This lifeboat has been well received in the market. Schat-Harding has already secured orders for 47 systems and is now receiving more requests for new projects. We have exciting times ahead as the Norwegian and global offshore markets develop," says Veglo.

The FF1200 boat can carry 70 persons secured in special seats with five-point harnesses. After dropping into the water the boat momentum carries it clear of the rig, after which a high power 280hp engine speeds the boat clear of the rig.

Umoe Schat-Harding is a renowned manufacturer of marine life-saving systems and offers the largest worldwide service network in the industry. When designing, manufacturing and servicing, it provides lifetime support for a wide range of innovative lifeboats, davits, winches and rescue boats which all have one purpose: the safe evacuation of crews, passengers and offshore workers.

ILO Maritime Labour Convention wins widespread approval

The International Transport Workers' Federation (ITF) and the International Shipping Federation (ISF) are united in welcoming the news that the ILO Maritime Labour Convention (MLC, 2006) will enter into force in under 12 months' time, in August 2013, following the announcement that it has been ratified by 30 ILO Member States, the latest being Russia and the Philippines. The tonnage requirement of at least 33% gross tonnage has also been well exceeded and currently stands at just below 60%.

However, the ILO social partners warn that shipowners will need to ensure they are ready before the new regime of global labour standards comes into force. Significantly, the MLC will be subject to port state control, including the potential for more detailed inspections if ships are thought not to comply, and the possibility of detention in serious cases of non-compliance or where hazardous conditions exist.

ITF and ISF emphasize that the MLC, 2006 has been dubbed the 'fourth pillar' of shipping regulation, alongside the IMO SOLAS, MARPOL and STCW Conventions, and as such is likely to be strictly enforced by flag states and port state control.

Dave Heindel, chair of the ITF Seafarers' Section, commented: "The MLC — the seafarers' bill of rights — is a genuine agent for real change. It has the potential to make a real difference to all seafarers, regardless of nationality or the flag of the ship on which they serve. Its entry into force will be the culmination of over 10 years of collective effort by the ILO social partners. At last, we will have a 'one stop shop' for labour standards which we are confident will be genuinely implemented and enforced on a global basis. It means that all seafarers should soon be able to enjoy comprehensive protection of their fundamental rights. It also means good employment practice across the industry so that responsible employers, as represented by ISF, are not disadvantaged by the irresponsible minority."

ISF Labour Affairs Committee chairman, Arthur Bowring, commented: "Governments are to be congratulated for ratifying the MLC so quickly. This is a Convention with a very wide scope, incorporating labour and social security requirements, and therefore requires detailed study and potential amendment of local legislation to bring it into effect. We expect many more countries will ratify the Convention over the coming year, so that entry into force will be backed up by truly worldwide enforcement.

"This Convention is the result of tripartite negotiation over a lengthy period, which means that the labour standards which we have all agreed can be supported by governments, shipowners and seafarers giving us a uniform global framework of sound employment standards that is required by both shipowners and seafarers," Bowring continued.

An important feature of the Convention's enforcement will be the issue of 'Maritime Labour Certificates' by flag administrations following an inspection. There is also a requirement for ships to complete and maintain on board a 'Declaration of Maritime Labour Compliance'

The MLC addresses a wide range of matters, including the obligations of shipping companies with respect to seafarers' contractual arrangements, the responsibilities of manning agencies, working hours, health and safety, crew accommodation, catering standards, and seafarers' welfare.

Under the tripartite ILO process, ITF and ISF were responsible for negotiating the text of the new Convention with governments, on behalf of maritime employers and seafarers' trade unions, prior to its adoption in 2006. ITF and ISF therefore are keen to see the smooth implementation of the MLC, 2006 when it enters into force in 2013.

Bowring added: "The vast majority of companies should have no difficulty complying with the substance of the Convention, since in large part this is derived from existing ILO maritime standards and accepted good employment practice. However, the enforcement mechanism is new, and it will be important to avoid teething problems when some of the more detailed requirements are applied and interpreted. It will therefore be most important for all ship operators to ensure that they are ready."

Heindel concluded: "The shipping industry is almost certainly unique in having such a comprehensive global framework of employment standards, which is supported on all sides. While there will be lot to do to ensure that the standards are properly enforced in a year's time, I think this is a moment when all concerned can take credit for what has been achieved by the adoption of the MLC, 2006, and the really tangible benefits that this will bring both to shipowners and the seafarers they employ."

Operation Atalanta turns the tide on Somali pirates

In late August, the UK House of Lords EU Committee for External Affairs praised the success of Operation Atalanta in curbing piracy off the Somali coast but say that the operation must be extended beyond its current end date of December 2014 if it is to make a lasting difference in combating the threat.

The Committee say that Operation Atalanta has made clear progress in reducing the number of ships pirated with only eight vessels and 215 hostages held in June 2012 compared with 23 vessels and 501 hostages in the same month in 2011. However the report makes clear that it is vital this effort is extended beyond 2014 to show the EU will not walk away from confronting piracy in the Indian Ocean.

Otherwise organizations and individuals that organize piracy will simply wait out the operation before returning to their previous activities.

The report welcomes the increase in trials and imprisonment of pirates and particularly praises the role played by the Seychelles. However the Committee does express concerns about the policy of transferring sentenced pirates back to Somalia for imprisonment and suggest there is a risk of breakouts. It calls on the EU and UN to work together to monitor pirate prisons. It also says efforts should be made to ensure the imprisonment includes some efforts at rehabilitation as well as punishment, particularly for young pirates.

Louisiana Mid-Stream One resolves quality issues during mid-stream transfers

Louisiana Mid-Stream One (LMO) is a unique barge-mounted shiploading system operated by Louisiana Mid-Stream Terminals specifically designed to overcome the quality issues of traditional mid-stream transfers. The LMO provides coal and petroleum coke exporters utilizing the Mississippi River with the quality control features not found in other mid-stream loading operations, such as a magnet, a mechanical sampling system, a belt scale, and a system for water drainage and collection. Working in tandem with a separate barge-mounted feeder crane alongside the vessel, products from barge are directly fed into the LMO's receiving hoppers, up a series of conveyors to a retractable loading boom with a rotational spout which feeds the vessel.



Operating on the Mississippi River (Mile Marker 134) at Cooper/Consolidated's mid-stream buoy system in LaPlace, Louisiana, the LMO allows for the continuous collection of mechanical samples from the entire cargo loading to the vessel, whereas traditional crane-only transfers allow sampling for only a portion of the barge cargo. Located after the receiving hoppers, the LMO's two-stage mechanical sampler (James A. Redding) collects a full stream cut primary increment from the LMO's C2 conveyor belt. These primary increments are then processed through a crusher and a secondary sampler to produce the final laboratory-ready samples. This sampling system conforms to the ASTM D7430 Standard for mechanical sampling and provides a representative sample throughout the cargo and not just from a portion and/or top of a barge. The system is operated and maintained by the independent third party sampling and testing company, SAI Gulf.

The LMO can simultaneously feed and combine product from multiple barges to meet rigorous quality specifications, greatly enhancing the uniformity of export cargo. LMO's two main receiving hoppers have four variable speed feeders that can

homogenously combine different qualities. The two main receiving hoppers have grizzly screens on top to prevent oversized product or large contaminants from entering the system. The hoppers can also provide for water drainage of excessively wet cargo, which is collected and disposed through a pump and collection system. The rotation spout provides the ability to trim vessel hatches without delays and eliminates placing mobile equipment in the holds.

Another value-added service provided by the LMO is tramp metal collection. A self-cleaning magnet is mounted before the mechanical sampler on the C2 conveyor. This magnet removes tramp metal from the conveyor as the product passes under it, thereby reducing contamination and potential damage to the customer's receiving systems.

These unique features of the Louisiana Mid-Stream One greatly enhance the control of quality for mid-stream loaded cargoes by providing more homogeneous combinations of coal qualities, control of moisture, contamination prevention, and the accurate measurement of the true cargo quality when customers specify an ASTM D7430-Part A-Condition B mechanical sampling requirement.



Quality Process for Coal Handling on the Lower Mississippi River

Louisiana Mid-Stream Terminals



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



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NORDEN 

NORDEN vessels to right steam at all times



Fuel — bunker oil — is NORDEN's largest variable cost at sea. Even though bunker oil is a residual product from the refinement of oil, its price continues to increase. For that reason, it is NORDEN's indispensable target that vessels sail at the right speed at all times in proportion to time and costs. NORDEN calls this right steaming.

With more than 140 years of experience, NORDEN knows what it takes getting a cargo to its destination, safely and in a timely manner. NORDEN keeps investing in quality and safety to continuously improve performance and make shipping safe, simple and cost efficient for the customers — as well as to reduce the environmental impact from shipping. The latest initiative on this agenda is the right steaming.

If one of NORDEN's vessels — either owned or on long-term charter — will not be able to start loading until Monday, it makes no sense if it arrives on Friday. The loading process will not begin until Monday anyway. Almost regardless of the character of the voyage, by slowing down, the vessel could have minimized the consumption of fuel, bunker oil, considerably for the benefit of both costs and the environment by way of reduced CO₂ emissions.

NORDEN calls this way of sailing performance-driven operation — or right steaming. This term is considered to be more adequate than slow steaming, which was the term

previously used by NORDEN for the operation of adjusting the speed according to the most profitable time to arrive for next loading or discharge.

Right steaming entails sailing with optimal speed — i.e. that time including all relevant factors are always considered in proportion to costs.

ENVIRONMENTAL GAIN

The environmental gain is a good added bonus of right steaming. However, NORDEN's technical manager, Senior Vice President Lars Lundegaard states that the considerable and increasing



*NORDEN's
technical
manager, Senior
Vice President
Lars
Lundegaard.*

bunker oil costs are the reason behind the company's aim to right steam at all times.

Bunker oil is a residue product from the refinement of oil. However, the new and modern refineries are much more efficient, and this leads to reduced amounts of the residual product bunker oil and consequential price increases.

If a typical vessel reduces speed by 10% compared to normal service speed, it sails 26 nautical miles longer per tonne of bunker oil. With a bunker oil price of approximately US\$700 per tonne, and a daily consumption of 30 tonnes, the reduced speed and consequential reduced bunker oil consumption will have rapid and considerable influence on fleet costs, NORDEN's bottom line and CO₂ emissions.



INTRODUCED IN 2009

Right steaming was introduced to NORDEN in 2009 by Norient Product Pool, which handles the commercial and operational management of NORDEN's product tankers. In 2011, an updated version was implemented in the NORDEN dry cargo fleet of approximately 190 ships.

If a captain on a NORDEN dry cargo vessel or tanker sails faster than planned, and he consequently consumes more bunker oil than necessary, the issue will instantly be flagged and an operator on shore will ask him to explain the higher speed. If there is no reasonable explanation to the higher speed, it must be reduced.

In the weak freight market, which became the order of the day in 2008 with an oversupply of vessels compared to the number of cargoes, it has more or less been necessary for the shipping companies to sail at reduced speed in order to reduce bunker oil costs.

"When times hopefully soon improve — when rates increase again, speed will probably also pick up. But in the future, we will only increase speed following systematic considerations and if it is financially best for NORDEN. Sailing at high speed just for the sake of it is forever over. This will also be beneficial to the environment," says Lundegaard.

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Self-unloaders and transshippers



CSL's new Trillium Class self-unloading Laker, the *Baie St. Paul*, prepares to set sail.



Jay Venter

New Trillium Class self-unloaders reflect CSL's innovative drive

The CSL Group's (CSL) latest-generation Trillium Class vessels will take self-unloading technology several steps forward when they enter the shipping markets in the Americas and the Great Lakes/Saint Lawrence Seaway beginning in November 2012. Two recently delivered Trillium Class gravity-fed self-unloaders — a Panamax and a Laker — are, at time of printing, expected to be sailing on their maiden voyages.

The new vessels reflect a spirit of innovation that is echoed throughout CSL's global activities including the recent conversions of the *CSL Spirit* and the *CSL Whyalla* into transshippers, as well as the advanced top-off solutions devised by CSL International to improve efficiency and reduce costs.

A NEW CLASS OF SELF-UNLOADERS

CSL International, which operates throughout the Americas, will soon be welcoming the *Hon. Paul E. Martin*, a Trillium Class self-unloading Panamax vessel, to be joined in 2013 by two sister Trillium Class ships. The three new Panamax vessels will join the CSLI Pool along with two other ships of the same class and design being constructed for Torvald Klaveness of Norway under CSL supervision.

The *Baie St. Paul* will be the first of four new Trillium Class

self-unloading Lakers and two new gearless bulkers to enter CSL's Canada Steamship Lines fleet between 2012 and 2014. To make possible her ocean passage, the gravity-fed self-unloading Laker will be fitted with temporary reinforcing structures that will be removed upon arrival in the Port of Montreal.

"The new Trillium Class self-unloaders represent the beginning of a new era for CSL and for self-unloader performance in all respects," said Rod Jones, President and CEO of The CSL Group. "Employing state-of-the-art technology and design, the Trillium Class ships will set new standards in operational and energy efficiency, reliability, safety and environmental protection. With their overall superior performance, these vessels will offer our clients a broader spectrum of bulk cargo shipping, handling and transshipping solutions."

As part of CSL's ambitious fleet renewal program, the new Trillium Laker and Panamax vessels are equipped with the most technologically advanced features in bulk shipping today. Equipped with IMO Tier II main engines, the Trillium ships have been specifically designed to increase fuel efficiency and control NO_x and particulate matter emissions. An optimized hull design will also significantly enhance manoeuvrability and fuel efficiency.

To meet customer demands, a VFD-driven self-unloader system will allow for soft starting and precisely adjusting unloading rates. Dust suppression will also be significantly enhanced on the Trillium vessels through feeder gates, boom dust enclosures, dust collectors and a foam spray dust suppression system.

SELF-UNLOADER CONVERSIONS TO BETTER MEET CLIENT NEEDS

Responding to increased customer transshipment and operational flexibility requirements, CSL has recently converted two self-unloaders into transshippers — the *CSL Spirit*, a Panamax self-unloader currently transshipping iron ore at Sept-Îles, Quebec, and most recently, the *CSL Whyalla* of the CSL Australia fleet.

The *CSL Whyalla* will join CSL Australia's transshipment fleet, which includes the transshipment barge *Spencer Gulf* and self-unloading barges *Barngarla* and *Middleback* in Whyalla, South Australia. The conversion will see the *CSL Whyalla* fitted with a transshipment boom for direct loading into Capesize vessels, dust suppression equipment and decant tanks to comply with EPA requirements, and self-warping and automated winches for more efficient mooring during loading operations. Upgrades to the *CSL Whyalla's* unloading system, including mass flow cargo gates, will allow her to handle a range of iron ore grades and achieve transshipment rates of up to 3,000 tonnes per hour.

IMPROVING SUPPLY CHAIN EFFICIENCY THROUGH "TOP-OFFS"

An ocean shipping procedure conceived by CSL International and customer Xcoal has resulted in significant efficiency improvements that optimize the cost per tonne of cargo with fully laden vessels.

The operation begins with the partial loading of 180,000dwt Capesize vessels at the coal export terminal to maximum sailing draught.

A CSL specialized 75,000dwt belt self-unloader is also loaded at the terminal. The two vessels then meet at a protected anchorage where the self-unloading vessel transfers or 'tops-off' its cargo to the large Capesize vessel that then transits en route to discharge ports in Asia — dramatically increasing its cargo to maximum capacity.

Benefits of this procedure include lower ocean freight, which reduces the delivered cost of US origin coal, as well as efficiency improvements and increased capacity from using larger vessels.

The CSL Group is the world's largest owner and operator of self-unloading vessels. Headquartered in Montreal with divisions based in the United States, the United Kingdom, Norway, Singapore and Australia, The CSL Group delivers more than 80 million tonnes of cargo annually for customers in the construction, steel, energy and agri-food sectors. Trillium Class is a trademark of The CSL Group.

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TO SAVE MONEY IS LIKE A MAN WHO
STOPS A CLOCK TO SAVE TIME”**

— Henry Ford

LESSON NO. 27



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OLDENDORFF CARRIERS – optimizing bulk logistics



Over the years German ship owning and operating company OLDENDORFF CARRIERS has built up an excellent reputation in bulk logistics. The company is engaged in several major transshipment operations around the globe, and operates six self-unloading bulk carriers. OLDENDORFF CARRIERS is continuously developing further projects and is expanding its involvement in self-unloading trades, bulk shuttles, transshipment, top-off and lighterage operations, port development and other bulk logistics projects.

The gist of bulk logistics for OLDENDORFF CARRIERS is to assist clients in achieving their goals by designing, building and operating fast, reliable and cost-efficient logistics systems. Increasing throughput requirements combined with draught-limited ports, lack of port loading or unloading facilities and local environmental restrictions are driving shippers and receivers to think in terms of tailor-made logistics solutions in order to achieve freight savings and increase of import/export volumes.

OLDENDORFF CARRIERS operates one of the world's largest floating coal transshipment terminals, the *Isken*, in the Gulf of Iskenderun in Turkey. The client is the 1,300MW coal fired power station at Sugözü, which is operated by Iskenderun Enerji Üretim ve Ticaret A.S. The tailor-made logistics solution was put into operation in November 2002 and has since handled an impressive 30mt (million tonnes) of coal; a benchmark track record in off-shore coal handling. Along with the *Isken* transshipment terminal, OLDENDORFF CARRIERS operates two hopper self-unloading barges used to shuttle the unloaded coal to the shore receiving facility. Self-unloading technology provides continuous, fast and virtually dust and spillage-free delivery of cargo ashore. The movement of the units is assisted by two tug boats, providing efficiency and safety for the whole operation. The critical importance of the unloading facility in the coal supply chain to ensure continuous operation of the power plant is addressed through highest operational standards along with meticulous equipment maintenance. Around 3.0–3.5mt (million tonnes) of coal are discharged by this system each year, mainly from Capesize vessels. The transshipper was delivered at the end of September 2002 from Remontowa Shipyard in Poland. The 40-tonne-bollard pull tugs were constructed at Uzmar Shipyard in Turkey and also delivered in September 2002. The hopper self-unloading barges, each with a deadweight capacity of around 10,000 tonnes, were built in 2000 at Flensburger Schiffbau-Gesellschaft. All units sail under the Turkish flag and all

day-to-day technical and crewing management is done by OLDENDORFF's affiliate Iskolden Tasimacilik ve Ticaret A.S. in Iskenderun. The cargo handling operation is performed by three Liebherr MPG cranes, arranged at the port side of the transshipper deck structure. The SWL is 45 tonnes at 38 metres outreach, capable of discharging the widest Capesize vessels. The cargo is loaded onto the barges via a conveyor belt system, routing the coal to a chute mounted in the center of the transshipper. The barges are guided under the chute and in between the transshipper's twin hulls for loading purposes. To ensure the highest possible standard of environmental protection throughout the operation most parts of the system are enclosed and a highly effective spray system suppresses dust. The loaded barges are pushed by the tugs to the power plants' jetty located around two miles from the transshipment area. Each barge is equipped with a gravity-type self-unloading system (2,500 tonnes per hour capacity), which feeds the coal into a receiving hopper via its boom conveyor. The enclosed belt and boom system as well as a sophisticated hopper construction prevents spillage and minimizes dust emissions helping to protect the environment. Owing to smart equipment design and highly skilled operational staff, a Capesize vessel is normally discharged in around four days.

Since commencement of the operation in Turkey in 2002, OLDENDORFF has commissioned a bauxite barging and loading solution in Guyana (2.0mtpa [million tonnes per annum]).

Also, the joint venture company Eships Oldendorff Logistics (EOL), which was founded in 2007, has successfully launched three bulk logistics operations in the Arabian Gulf (8.0mtpa).

OLDENDORFF CARRIERS combines its 90-year history as a German shipowner with the network of one of the world's leading dry bulk operators.

The company currently controls some 400 chartered and owned vessels of around 26 million tonnes dwt, carrying over 165mt of raw materials and semi-finished products across the Seven Seas each year.

OLDENDORFF CARRIERS' senior vice president Jacob Juncher: "We will continue to actively look for more operations where our expertise and capability in providing tailor-made bulk handling solutions can benefit our customers. By providing highly competitive ocean freight we can offer our clients integrated logistics solutions, almost door-to-door. We aim to continue where others stop."



Built to deliver more

New solutions for your dry bulk commodities supply chain

Rocktree Logistics Pte Ltd provides transshipment, storage, blending and sampling solutions through our specialised Offshore Floating Terminals (OFT) to leading international trading companies and dry bulk commodity producers. We design customised logistics systems that manage the complete transshipment aspect of your supply chain for all dry bulk commodities. Our goal is to get your dry bulk cargo moving on schedule, saving you time and money in the process.

Built to deliver more: business expansion for Rocktree Logistics



Rocktree Logistics, a dry bulk commodities transshipment specialist, makes it a mission to address clients' problems head on and find a solution no matter the obstacles. The result has been business expansion for Rocktree, driven by client demand.

In an economy where quality service is often the only differentiator, Rocktree Logistics Pte Ltd (Rocktree) is committed to delivering solutions to its clients that go beyond that extra mile. Its speciality is customizing solutions for clients based on case-by-case incidences. No task is too big or too small to handle.

ROCKTREE FLEET

OFT — 'Mara'

- ❖ high-speed loading (average net loading rate over 60,000 metric tonnes/day)
- ❖ blending capability with ability to adjust to desired ratio
- ❖ significant storage capacity – up to 60,000 metric tonnes
- ❖ advanced safety and environmental protection systems
- ❖ capable of handling over 10 million metric tonnes/year

OFT — 'Zeus'

- ❖ high-speed loading (average net loading rate over 40,000 metric tonnes/day)
- ❖ blending capability with ability to adjust for desired ratio
- ❖ buffer storage — up to 9,000 metric tonnes for return cargo or pre-loading
- ❖ continuous operations
- ❖ automatic sampling equipment
- ❖ advanced safety and environmental protection systems
- ❖ capable of handling over 7 million metric tonnes/year

With its 'can do' attitude, Rocktree Logistics Pte Ltd, a new rising player in the industry, is making waves in the Asia Pacific region. Supported by its two offshore floating terminals (OFT) *Mara* and *Zeus*, the company provides transshipment, storage, blending and sampling solutions to leading dry bulk commodity producers, end users and international trading companies.

Whilst only in operation since August 2009, Rocktree has quickly become the one transshipment service provider that the majority of its clients turn to as their sole solution for transshipment and offshore storage and blending. The main reason Rocktree has become the supplier of choice, according to founder and CEO Daniele Pratolongo, is its no-nonsense attitude in the way it does business. "Clients don't like to hear it can't be done, and they don't much care how it's done, they just want it done," explains Pratolongo. "And we understand that, because it's how we operate. So we take the problem, and we look at it from all angles until we find a solution." As Pratolongo explains, that solution may not be a part of the company's current arsenal, but in solving the problem for a loyal client, it makes it so.

"We continually seek out new opportunities, identify inefficiencies in the existing supply chain and innovate solutions to meet the demands of clients serving today's rapidly growing global markets," adds Pratolongo. The company's end goal is to get its clients' dry bulk cargo moving on schedule, at minimum cost and time. Its services and solutions are all geared to this simple goal.

HIGH-SPEED LOADING TO SAVE TIME AND COSTS

Rocktree understands that getting its vessels loaded and unloaded on schedule means its clients spend less time at sea or



in port and reduce demurrage claims significantly. Rocktree's fleet was designed to handle today's higher load volumes. Its *Zeus* vessel handles over 40,000 metric tonnes per day. *Mara* matches onshore terminal speeds at over 60,000 metric tonnes per day and can handle up to four barges simultaneously and fully load a Panamax vessel in 36 hours. Rocktree's OFTs are built to be a convenient, moveable offshore terminal for its clients.

HIGH-CAPACITY FLOATING STORAGE TO SOLVE COMPLEX BARGE LOGISTICS

Rocktree established its OFTs off the shores of Indonesia to service primarily the Indonesian mining industry. Having *Mara* and *Zeus* stationed offshore as an integral part of the supply chain solves the common problem faced by barge companies: long barging distances, excess barge fleet and late arrivals. With a combined floating storage capacity of 60,000 metric tonnes, one of the largest in the region, Rocktree clients can make multiple barge trips, offloading their barges into Rocktree's OFTs for their return journey, thereby reducing the need for a large barge fleet and maximizing cargo readiness for loading onto the ocean-going vessel when it arrives.

ADDED VALUE OFFSHORE SERVICES FOR CLIENTS' CONVENIENCE

When Rocktree started noticing that clients were blending different qualities of cargo in a non-homogeneous way, resulting in cargo quality issues, the company proactively devised a solution by installing a special blending conveyor system that allows for adjustment of blend ratios to give clients the flexibility to blend any coal mix to exact, specified qualities. Rocktree identified another shortfall in the supply chain while listening to clients' concerns. When the message of the need to establish the quality of cargo at the loading point kept cropping up, Rocktree decided to install automatic sampler systems on its OFTs. These take a sample of the cargo as it is being transferred for loading onto the ocean-going vessel. For many of Rocktree's clients, this add-

on service reduces instances of disputes on cargo quality at destination.

Rocktree's concern is also to reduce impact on the environment and, to this end, it ensures that both OFTs are equipped with world-class systems aimed at minimizing coal and dust pollution, reducing cargo loss and preventing cargo spillage.

ALL BACKED BY EFFICIENT LOGISTICS MANAGEMENT

For some of its client's, cherry-picking from the above services suffices, whereas for others, handing the whole supply chain operation over to Rocktree makes greater economic sense. Rocktree takes control of the entire operation, scheduling deliveries to maximize barging capacity and reduce waiting times and subsequent demurrage claims for its clients.

EXPERIENCED PERSONNEL IS ROCKTREE'S GREATEST ASSET

Having state-of-the-art equipment and technology as well as innovative ideas mean nothing without the knowledgeable and experienced staff to drive the solutions. Some companies are built around the equipment they possess. Rocktree is built around a core group of experienced personnel with years of industry experience. Though Rocktree is a 'young' company, its experienced staff and the company's 'can do' mind-set makes it a real threat to its competitors.



*Aerial view of the Bulk Wayuù floating storage transfer station.
(photo: ©Coeclerici)*



Coeclerici Logistics, with offices all over the world, offers well-established commercial and project management experience, writes *Capt. Giordano Scotto d'Aniello, Head of Commercial Department at Coeclerici Logistics, Milan, Italy*. The company also has strong technical competence and a high level of expertise, providing its clients with unique service in the field of offshore transshipment of dry bulk materials; it is a major presence in this niche market.

Coeclerici's achievements are due to its dedication and commitment to its clients, by satisfying their requirements. The company has an excellent track record of long-term relationships, tangible proof of Coeclerici's continuous success.

TAILOR-MADE INTEGRATED SOLUTIONS

Thanks to increasing investment in technology and Coeclerici Logistics' established expertise, the group — which is over 100 years old — has been able to provide highly-efficient, tailor-made solutions for its clients. These solutions represent a valid and cost-saving alternative to traditional systems for loading and unloading, transshipment and port and coastal transportation.

Coeclerici Logistics engineered and promoted the use of the 'floating terminal' throughout the world, which carries out all of the same functions as a port terminal, but with far less investment, fewer management costs and a lower environmental impact.

The Bulk Irony geared barge.
(photo: ©Coeclerici)



The Bulk Pioneer.
(photo: ©Coeclerici)



CURRENT EXAMPLES OF COECLERICI PROJECTS WORLDWIDE

- ❖ **Venezuela:** The FSTS (floating storage transfer station) *Bulk Wayuù* working in the Maracaibo lake since 1998 is used for coal transfer and storage, with an average loading rate in excess of 40,000 tonnes per day. Since the commissioning of the FSTS *Bulk Wayuù*, the client Carbones del Guasare has experienced a number of improvements compared with the floating cranes previously used. The FSTS, which is permanently moored in the Maracaibo Lake in Venezuela, is equipped with four cranes, three travelling loaders, conveyor belts and hoppers. The system is in compliance with ISO 9001:2000 and has the IMO BLU Code.
- ❖ **Italy:** the ultra hi-tech floating barge *Bulk Irony* is a geared self-propelled facility, developed and designed by Coeclerici Logistics to lighten vessels up to Panamax size. Since 2003, it has operated three miles from the Piombino coast, helping the Lucchini steel mill to overcome the depth restrictions of the port. The system has an average lightening rate of 27,000 tonnes per day, using two heavy duty cranes and a conveyor system comprising four fully covered belt conveyors. Besides discharging iron ore and coal, the system is also capable of transporting and loading coils for export purposes. The system is in compliance with ISO 14001:2004 and achieved the prestigious Environmental Management Audit System (EMAS) registration in April 2009.
- ❖ **Black Sea:** The FTS (floating transfer station) *Bulk Kremi*. Since the upgrade of this unit and its delivery in 2012, the system has a transshipment capacity of 750tph (tonnes per hour) and the ability to perform loading/discharging operations. The unit has been designed to handle sulphur as well as other main dry bulk materials, and was designed to avoid any dust emissions during operations.

*The upgraded Bulk Kremi,
handling sulphur.*
(photo: ©Coeclerici)



The FTS Bulk Java.
(photo: ©Coeclerici)



❖ **Indonesia:** The FTS *Bulk Pioneer*, designed by Coeclerici Logistics, has been used in Indonesia for Kaltim Prima Coal since 2005 for coal loading operations from barges into ocean going vessels (OGVs). It has an average loading rate in excess of 35,000 tonnes per day.

Latest units

❖ **Indonesia:** *Bulk Java* and *Bulk Borneo* have been duly designed by Coeclerici Logistics to smoothly perform coal loading operations at Muara Pantai East Kalimantan, Indonesia. The FTSs are equipped with two heavy duty cranes and two swivelling shiploaders, along with a combination of hoppers and conveyors, assuring PT Berau Coal a loading rate of about 45,000 tonnes per day.

❖ **Africa:** the twin 53,776dwt transshippers *Bulk Zambesi* and *Bulk Limpopo*, have been fully designed by Coeclerici Logistics to load coal into OGVs off-shore Beira in Mozambique. The units have been operational since 2011 and 2012 respectively, serving the mining giant Vale and overcoming the depth restrictions in the port, permitting the exportation of coal by taking advantages of scale economy in ocean trade market

FOCUSING ON PEOPLE AND ENVIRONMENT

The solutions and services provided by Coeclerici Logistics meet the highest standards of safety for people and the environment. Such standards, which are verified by independent international organizations, attest to Coeclerici's commitment to providing a complete range of high quality services to all its clients. **DCi**

The FTS Bulk Zambesi.
(photo: ©Coeclerici)





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Long Beach clean air programmes cut pollution by 75%

Port of Long Beach clean air programmes have slashed air pollution from port-related sources for the fifth year in a row, including a dramatic 75% reduction in airborne diesel particulates, according to an analysis of key pollutants that compares 2011 to 2005.

The air pollution reductions reflect port efforts to aggressively limit or prevent pollution from the ships, trucks, locomotives, tractors and cranes that move cargo at the port.

“Our clean air programmes are effectively reducing air pollution from port sources — the numbers clearly demonstrate that. But we’re not done. With cleaner fuels, more shore power and other programs, we’re on track to continue to further reduce air pollution from the port,” said Long Beach Board of Harbor Commissioners President Susan E. Anderson Wise.

From 2005 to 2011, all of the key air pollutants from port-related sources were reduced. In addition to the drop in diesel emissions, smog-forming nitrogen oxides and sulphur oxides have been cut 50% and 80% respectively from 2005 levels. Greenhouse gases were lowered by 23%. Meanwhile, containerized cargo activity fell by 10% in the same period.

Each year, the port compiles an ‘emissions inventory’ to calculate the amount of air pollution released from all port-related sources, and compares the data with the baseline year of 2005. The report released in early August is for the 2011

calendar year. The study’s results were reviewed by the US Environmental Protection Agency, the California Air Resources Board and the South Coast Air Quality Management District.

The use of lower-sulphur, cleaner fuels by all waterfront equipment — but especially the oceangoing ships — and the phasing out of the oldest drayage trucks were the primary contributors to the air quality improvements.

On 1 July, the port also implemented the ‘Green Ship Incentive Program’, which offers cash incentives to shipping lines for bringing the newest, cleanest cargo vessels to the Port of Long Beach. The programme is the latest in a long line of efforts to improve air quality locally.

The Emissions Inventory is conducted to monitor progress with implementing the San Pedro Bay Ports Clean Air Action Plan (CAAP). The CAAP is a master strategy for reducing air pollution and emission-related health risks. The plan contains measures to address every mobile source of air pollution stemming from goods movement in and around the ports.

The CAAP was adopted in 2006 and updated in 2010 by the Long Beach and Los Angeles harbour commissions.

The Port of Long Beach recognized for its environmental stewardship worldwide. The more than \$150 billion in trade flowing through the Port of Long Beach each year creates more than 300,000 jobs in the Southern California region.

Vessels queuing at Newcastle

The Australian port of Newcastle has been experiencing long queues of vessels waiting to load coal at the two Port Waratah Coal Services terminals. In part, this is because of the rising number of cargo defaults by buyers in China. Despite agreeing to buy consignments, importers in China had begun to decline them. This has forced owners to seek alternative buyers, which in turn is causing delays in vessels sailing. As a result, coal stocks at Newcastle are on the increase.

Barry Cross



Port Waratah Coal Services.



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STEVEDORING
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FOR U.S. COAL EXPORTS TO EUROPE AND ASIA.



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(RAIL)

CAPE-SIZE VESSEL
CAPACITY

EXCESS STORAGE
CAPACITY

YEAR-ROUND
OPERATIONS

SHORTEST DISTANCE AND TRANSIT TIME
TO EUROPEAN MARKETS

WE HANDLE • WE STORE • WE BUILD • WE INNOVATE • WE INVEST • WE ORCHESTRATE

WE CAN HANDLE IT

Inspectorate improves customer offering by investing in its facilities

There can be no better indication of a company's dedication to an industry than its willingness to invest.

In the past 18 months, Inspectorate (now the Commodities Division of Bureau Veritas) has been making significant investments, the most tangible way of showing its support for customers.

The developments have been global, to meet the needs of the customers in this most global industry.

The company has recently upgraded its laboratory in Tianjin, China and also opened a number of new laboratories in Indonesia the most recent being in Palembang, Sumatra. In Eastern Europe, new facilities have been opened in St. Petersburg, Murmansk and Kerch.

Upgrading and developing is a continuous process. In Western Europe there are three solid fuels facilities in Duisburg, Germany; Rotterdam in the Netherlands and Ghent in Belgium.

Early in 2012, Inspectorate America opened its new facility in La Place, Louisiana, to provide inspection, sampling and survey services for clients focused on coal shipments through the Gulf of Mexico. And to enhance this capability through improved analytical services, solid fuel testing will be set up in Inspectorate's existing New Orleans Technical Center. This is planned to become operational in autumn this year.

Inspectorate is also at the forefront of new requirements from customers. The US East Coast and West Coast divisions



Witnessing unloading operations in Rotterdam.

are seeing steady growth in thermal and metallurgical shipments of coal, as well as the growing biomass market for wood pellet inspection services. This relatively new area of activity is growing in importance and effective inspection is vital.

Colombia has seen consistent growth in coal exploration and production in recent years, and the reserves and projections of Energy and Mines Ministry indicate that this will continue. To develop Inspectorate's leading position here, the company has invested in a brand new laboratory in Cienaga. This facility is located within minutes of the export bases of some of the major shippers and buyers. The 1,200m² laboratory will be fully operational in November 2012. It will feature state-of-the-art equipment and automated instrumentation to meet the demands for quality and turnaround times of its thermal, metallurgical and upstream coal clients.

In South Africa, Inspectorate measures the quality of all coal exported from Richards Bay and also is heavily involved in inspection and testing for major projects in Tete and the ports of Mozambique. The Tete laboratory will be upgraded in the next two years. Planning for this comprehensive upgrade is well underway and implementation will be as swift as possible, but making no compromises on quality.

Quality, service and safety are the hallmarks of Inspectorate operations. The company believes that it is an essential part of its contract with customers to maintain and exceed their expectations.

This has been an exciting year for Inspectorate, and it will develop its network and services in the years ahead so that it continues to deliver on its mission — to check the world's commodities and add value to business through our accuracy and integrity.

Inspectorate will be exhibiting at the forthcoming 32nd Coaltrans World Coal Conference which is taking place in Istanbul, Turkey, from 14–16 October this year.



PT Indonesia Bulk Terminal – natural transport hub for Indonesia's coal trade

PT Indonesia Bulk Terminal (IBT) is the developer and operator of the Pulau Laut Coal Terminal which is a common user terminal situated on the southern tip of the island of Pulau Laut in Indonesia's South Kalimantan Province.

Demand for coal as a major global energy resource is continuing to grow rapidly and the Pulau Laut Coal Terminal offers a secure, reliable and cost effective means of stockpiling, blending and loading Indonesian coal to meet this demand.

IBT handled 11.99mt (million tonnes) in 2007 compared with 9.69mt in 2006. The increase in throughput is due to continuous efficiency improvements in adopting best practices.

Pulau Laut is located adjacent to the Java Sea and the Makassar Strait and lies on major domestic and international shipping routes. This strategic location and the sheltered deep water anchorage of the IBT terminal in the south of the island represent a natural transport hub for Indonesia's significant coal trade.

TERMINAL OPERATIONS

IBT offers shippers the peace of mind operation of consolidating cargo on the stockpile. Furthermore, with an independent



on-site laboratory, IBT allows shippers quick insight on the cargo quality. Shippers can also opt to blend cargo of various qualities, as IBT is equipped for blending multiple cargo quality to the desired quality within good accuracy.

IBT currently has eight stockpile pads capable of storing eight Panamax-size cargoes.

Dry cargo (coal), is discharged from barges using 4 x 750tph (tonnes per hour) luffing /slewing grab cranes into hoppers. From hoppers, coal is fed onto conveyors and is carried to the stockpile or direct loading onto vessels. A fleet of 5 x Caterpillar D10 bulldozers is used for stockpile management and coal reclaiming for shiploading. Shiploading is carried out utilizing two fixed luffing slewing ship loaders with a capacity of 3,000tph.

Blending option adds value to the cargo as shippers can mix and match the available sources to derive at their desired quality. The onsite automatic sampling facility offers a systematic sampling process according to the desired ISO or ASTM standards that shippers may select and coupling with the onsite



laboratory, certificates are issued promptly.

Utilization of the terminal is maintained at 75% and is measured by the ship-loading berth occupancy rate. This is kept at 75% in order to minimize vessel queuing time for shippers shipping through the terminal.

IBT is continuously looking at improvement initiatives to raise the throughput of the terminal. Current evaluation includes future stockpile expansion and a higher cargo handling rate.

INFRASTRUCTURE

The company currently employs in excess of 200 personnel of which 75–80% are recruited and trained from the local area. Onsite housing is available for customers use to supervise loading operations and for Indonesia Bulk Terminal personnel. Catering, cleaning and medical services are provided to personnel through onsite facilities. A medical clinic is also located onsite which is staffed by qualified medical personnel.

Potable and industrial water for the terminal operations comes from a dam located within the site with this water being chemically treated and filtered before use. The industrial water used in stockpile management is recirculated from settling ponds after re-filtration.

Power is provided through an onsite diesel generating station with a capacity of 7MW which includes back-up systems to ensure continuous power supply. Onsite storage tanks provide fuel for the power station, terminal mobile equipment, maintenance equipment and the berthing tugs.

The terminal operates a 1,250-metre certified airstrip located 10km from the site with a regular service now being operated between Banjarmasin and the terminal with 18-seat commuter aircraft.

The government maintains a harbour master's office at the terminal which provides port health, customs and immigration services. These services can be arranged through a number of shipping agents with international links that have permanent offices on site.



Port of Indonesia Bulk Terminal specifications

LOCATION

Country: Indonesia
State: South Kalimantan

CAPACITY

Operations Commencement: 1998
Annual Throughput Capacity: 12 million tonnes

BARGE DISCHARGING

Discharging Wharfs: 2
Discharging Rate (nominal): 1,500tph
Discharging Method: Gear & Grabs

STOCKPILING

Number of Stockpiles: 8
Total Stockpile Capacity: 800,000 tonnes
Stockpiling Method: Overhead conveyor/tripper
Stockyard Equipment: 4 bulldozers

SHIPLOADING

Coal Reclaim Method: Bulldozer into underground stockpile dischargers
Blending: Possible
Number of Shiploaders: 2
Shiploading Rate (nominal): 3,000tph

SHIPPING

Maximum Vessel Size: 80,000dwt
Maximum LOA: 230m
Maximum Beam: 36m
Sailing Draft: 14.5m
Number of Berths: 1
Wharf Length: 288m

SERVICES

Quality Assurance: ISPS-certified
Sampling: During barge discharging & shiploading, on-site independent superintending company
Environmental: Dust suppression/monitoring of coal with water spray management.



PT Indonesia Bulk Terminal

Pulau Laut Coal Terminal
Desa Mekar Putih
Kec. Pulau Laut Barat
Kab. Kotabaru
Kotak Pos 118 Kalsel
Tel: (62 518) 388 00
Fax: (62 518) 388 22

Marketing
Tel: (62 21) 522 9250
Email: marketing@ibt.co.id
Web: www.ptIBT.com/



Pulau Laut Coal Terminal, your secure, reliable and cost effective means of stockpiling, blending and loading Indonesian coal to meet your demand.

INTER BALT – coal forwarding, trading and agency services in Polish seaports



ABOUT INTER BALT

The INTER BALT Sp. z o.o. company, with its headquarters located in Gdansk and Branch Office in Szczecin, began its business activity in 2003 and was created on the basis of the Maritime Offices in Gdansk and Szczecin belonging to the Wegłokoks S.A. Katowice company.

As the representative of the Wegłokoks company in Katowice on the Polish coast, INTER BALT provides comprehensive services in the field of coal forwarding in Polish seaports. Apart from forwarding services for Wegłokoks S.A. Katowice and other operators INTER BALT trades in coal on the domestic market and provide agency services to vessels in seaports.

INTER BALT employs experienced staff originating from the former Maritime Offices of Wegłokoks S.A., which were dealing with coal supply logistics, storage of coal and its dispatch in the ports of Gdansk, Gdynia, Szczecin and Swinoujscie.

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.

ACTIVITIES

- ❖ Provision of comprehensive forwarding and logistic services relating to maritime and land transport,
- ❖ Consultancy, agency and representing other operators relating to cargo handling in international trade,
- ❖ Wholesale of coal,
- ❖ Provision of brokerage services to vessels in Polish seaports and shipyards.

SHIP AGENCY

INTER BALT's shipping agency team provides shipping brokerage services to vessels in all Polish seaports and shipyards.

AT YOUR SERVICE



interBALT

Our port agency network offers round the clock professional services in all Polish ports and shipyards.

Scope of activities:

- logistics and forwarding services via all Polish ports
- consulting on maritime transport
- trading
- port clearance and agency services for the vessels calling Polish ports and shipyards
- shipbroking

Polish Shipbrokers' Association and BIMCO member.

Swinoujscie
Szczecin
Gdynia
Gdansk
Poland

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80-750 Gdansk, POLAND
phone: +48 58 300 96 50
fax: +48 58 346 22 40
email: interbalt@interbalt.pl
www: www.interbalt.pl

New Kandla bulk terminal

Adani Kandla Bulk Terminal in India has signed a BOT (build, own, transfer) contract with Kandla Port Trust for dry bulk terminal to be built and operated in the port. Work will take two years to complete and require investment of \$215

million. It will have a capacity to handle 20 million tonnes a year, making it one of the largest port terminals for dry bulk on India's eastern coast. It will handle coal, fertilizer, salt, minerals and agribulk. *BC*

Iron ore build up at Paradip

Slumping global demand plus restrictions imposed by the Odisha government on the mining and transport of iron ore have resulted in more than 3mt (million tonnes) of iron ore having been accumulated at Paradip Port in India awaiting an end customer. In April-June this year, total iron ore exports at the port amounted to 300,000 tonnes, compared with 2.6mt in the corresponding period last year. Nevertheless, the trade in iron ore pellets is showing an upward trend. *BC*

GMD opens Lazaro Cardenas terminal

GMD opened its new dry bulk terminal at the Mexican port of Lazaro Cárdenas in July. Initially, it invested \$50 million for the construction of a single berth, although it may well double its investment in creating a second berth. The terminal in its present state can handle 5mt (million tonnes) of ore a year. The company has a 30-year concession for what is a 20 ha site.

GMD has two partners in the project: Transenergy, the Noble Group and Clisa.

GMD additionally operates a bulk mineral terminal at Altamira, in which it is invested \$40 million. Capacity is 4mt and the local partner is Cooper T Smith Stevedoring. *BC*

Conveyor system for Callao

Construction of a new conveyor system at the Peruvian port of Callao will allow productivity to rise by a factor of five. The 3km line will allow 2,300 tonnes of copper, zinc and other minerals to be moved on an hourly basis, whereas formerly just 600 tonnes could be shifted. Currently, secondary conveyor systems are used to move minerals, but the plan is to install a hermetically sealed system that will operator the speed of 4.5m/s.

At the same time, the company wants to open an open access

terminal for minerals, which will be served by the conveyor system and where the direct loading of vessels can take place. The aim is to locate this close to the Northern Breakwater, where it will have a quayside of some 200m and alongside water depth of 13.1m. It is expected to come into operation in the third quarter of 2013. Total investment is \$150 million and once all components are up and running 130,000 truckloads of minerals will be made redundant. *BC*

Novorossiysk cuts grain handling tariff

On July 1, the Russian port of Novorossiysk cut its grain handling tariff by 5%, equivalent to \$.91 per tonne as a means of boosting grain exports. The cut has been justified following the ports optimization of production processes. According to its director-general, Rado Antolovich, "We hope that this measure will increase the competitiveness of Russian grain and strengthen its position on foreign markets." *BC*

The Port of Novorossiysk.





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Russian Port of Posiet modernizes coal terminal

Modernization of the coal terminal at the Russian port of Posiet is scheduled for completion in the autumn. The port is currently handling around 4mt (million tonnes), although capacity will be increased to 9mt following the upgrade. The access channel is being dredged as are the berths to enable Panamax vessels to call. A rail wagon dumper and an axle thawing system are also being introduced. The terminal can discharge 300 railway wagons a day at present, but this will improve following modernization. *BC*

Sabetta construction gets under way

Inauguration of construction of the Russian Port of Sabetta took place on 20 July 2012. It is located on the Yamal peninsular in the Arctic. Work is being carried out as a public-private partnership, whereby the state will undertake dredging, construction of the canal and the Vessel Traffic Management Information Systems. JSC Yamal LNG will be responsible for the rest. *BC*

First Capesize bulker calls at Murmansk

The Russian port of Murmansk has handled its first Capesize dry bulk carrier. The *TW Hamburg*, which docked at berth 13, took on board 91,000 tonnes of coal produced by SUEK. Loading took more than four days. *BC*

Unions concerned at decline in Genovese bulk terminal

Port unions in Genova are condemning the current situation at the Dry Bulk Terminal, which they claim is hemorrhaging traffic. The bulk facility is a concession managed by Terminal Rinfuse Italia and by the Pietro Chiesa Port Company. Many vessels no longer call at Genova, claim the unions, pointing out that these have now diverted to other Italian ports.

Although the unions recognize that part of the loss of

volume has been due to the downsizing of demand at the adjacent electricity generating station, the majority of lost traffic, they suggest, is down to the policy of the terminal's owners, which have repeatedly ignored government policy. Upgrading is needed in the actual infrastructure the terminal, claiming unions, and also in the warehousing and handling equipment. *BC*

Barcelona cement and clinker traffic up

In the first two quarters of this year, the Spanish Port of Barcelona exported 684,255 tonnes of cement and clinker, equivalent to a 435% increase over the same period in 2011. Shipments are mostly sent to Africa and South America, with Puerto Rico, Algeria, Nigeria, Ivory Coast, United Kingdom, Uruguay, Togo, Brazil and Guinea being the main importers.

Producers in Spain have adopted a policy of export-led growth, given the decrease in local demand, which has dropped to the level of the 1970s throughout Spain. The port authority predicts that end of year growth in these two sectors will be in the region of 400%. *BC*



*The Port of Barcelona
(photo: Louise Dodds-Ely).*

Dry bulk first half decline in Bilbao

First half traffic at the Spanish port of Bilbao decreased by 21%, which in part was down to the suspension until June of all activities at the ArcelorMittal production plant in Sestao. The port authority remains optimistic that this situation can be reversed over the next six months, although points to improvements in other areas such as general cargo, rather than to a reactivation of dry bulk traffic *per se*. BC

ADM invests in Brazil

US company Archer Daniels Midland (ADM) has acquired an agribulk port terminal in the northern Brazilian state of Pará. This will help it export cereals in the north and west of the country and also help it to expand its fertilizer operation.

The original terminal was designed to handle minerals, but is to be modified for cereals traffic, as well as being adapted to receive Panamax vessels. Storage facilities at the port

terminal will also be doubled to three million tonnes per year.

ADM is already Brazil's biggest exporter of soyabean meal, the second biggest in export soyabeans overall and the Brazilian economy's seventh largest exporter. It has a presence in all major Brazilian ports and owns its own terminal in Santos. BC

Paradip iron ore terminal blows hot and cold

After a severe delay, the project to build an iron ore handling berth at Paradip Port has been given environmental clearance. However, the Hong Kong-based Noble group, which was awarded the concession three years ago, is said to be reconsidering its proposed investment in what will be a 10mt (million tonne) capacity facility. Given the fall in global demand for iron ore, plus a 30% rise in the project cost \$244 million, the proposed

facilities the longer as attractive as it once was.

Should the iron ore berth not go ahead, this will cause a problem for the Essar group, which has a concession for an adjacent 10mt capacity coal berth. This is because dredging across both berths could be done considerably cheaper and if the iron ore berth is not built, this will have the effect of disrupting the implementation timetable for the coal handling facility. BC

Kochi to become Indian cement hub

The increasing importance of the Indian port of Kochi as a major regional cement import hub has prompted both Malabar Cements and Zuari Cements to seek a 30-year deal with the port trust. The port already has in place operators such as Ambuja and UltraTech Cements, which contributed to the 250,000 t of this product were handled in the last financial year.

Zuari Cements, which has leased a 2.4 ha site, plans to be in operation within two years, when it will handle between 300,000 tonnes and 600,000 tonnes of cement, exporting this product to countries such as the Maldives and Sri Lanka. BC

Ningbo to build Valemax berths

The Chinese port of Ningbo-Zoushan has been given permission to build berths sufficiently large to accommodate the 400,000dwt iron ore vessels owned by CVRD. However, a spokesperson for the port said that these will not be ready for at least two years. The problem could be further exacerbated if additional permission for construction to go ahead is not received from either the local government or the central government's National Development & Reform commission. If these berths are completed on time, the port will be the first able to access the so-called Valemax bulk carriers.



ETE: continuing to expand



Operating from all the major Portuguese ports to Africa and South America

HISTORY

E.T.E. Group, created in 1936 with the founding of Empresa de Tráfego e Estiva, S.A. by Captain Luiz de Figueiredo, grandfather of the current shareholders, specialized as a port operator in the offshore loading and unloading of dry bulk.

Since its founding, Empresa de Tráfego e Estiva, S.A. has evolved and economically outperformed the country.

The same innovative spirit and constant search for new solutions to improve business conditions continues to be present today within the group.

It is currently a model company in the maritime and port sectors and related activities in Portugal and the major Portuguese-speaking African countries, and more recently to South American ports, having broadened its scope of activity to related shipping areas such as ship repair, superintendence and crewing and logistic services.

Philosophy

EXPANSION AND INTERNATIONALIZATION

Geographic expansion of the companies that are part of the E.T.E. universe has been driven in line with a number of major guidelines: create a single service that allows undeniable identification of the group's *modus operandi*, preserving its values and the specificities of the locations where the group operates, in order to recover instead of replace, and always promote local assets.

That is why operating in all the main ports of Portugal on the mainland and in the autonomous island regions means being in all of the locations that are crucial to customers, providing a global, integrated service with the efficiency — and the

advantage — of not depending on third parties to provide links among maritime, port and forwarding agent operators.

In Portuguese-speaking African countries like Guine-Bissau, Cape Verde and Mozambique, the group has been a presence for more than 15 years and new challenges have been faced in Uruguay and Colombia where a newly company, ETE Colombia SAS, has recently started its own operations with floating cranes, barges and tugs. The new company is helping with the developmental challenges of the country, as well as, its opportunities for ports, shipping and logistic services.

FINANCIAL STRENGTH

The economic and financial strength of the group is crucial to preserve its identity. In the current economic climate it is absolutely essential to invest in technology, human resources and, above all, in a group strategy, selectively directing investment towards operations and quality of service, financing cohesive growth in order to add value and win in the long run.

Today E.T.E. Group is a proud group of more than 40 companies with a turnover in excess of €200 million organized in three different areas, shipping, ports and other related activities like shipyards, road transportation, warehouses and shared services.

Business areas

FORWARDING AGENTS

The introduction of a new forwarding agent concept with rapid, reliable and efficient service suited to each customer, allows a continuous flow of goods over water, land and air.

E.T.E. Group is equipped with its own infrastructures at the

ETE disembarks in Colombia

ETE the main Portuguese port operations, shipping and logistics group started operating in Colombia with a floating crane loading coal at sta. Marta, one of the country's most important export ports.

At the same time of this operation the group established a local company, ETE Colombia SAS. This development forms part of its international development. The company will operate a pusher tug boat and a container pontoon at Rio Magdalena. The new company helps ETE to look forward to the development of its logistic and shipping operations in the Caribbean and South America.



This venture represents an overall investment of over US\$10 million and the group expects to generate a turnover of US\$50 million over the next five years with the business in this country. This is part of a larger geographical development which includes Uruguay, Mozambique and Cape Verde.

The long-established Portuguese group — well-known in its home country, as a port, barge and floating cranes operator, as well as a ship-owner and logistic solutions provider — embarked on this new venture with a contract to load export coal for Vale/SPRC, the renowned Brazilian company, as part of its activities in Colombia.

main logistical destinations in Portugal and Mozambique. They are instrumental in loading, unloading, warehousing, handling, packing and distributing cargo, as well as providing other services related to shipment and reception of goods.

Aerial cargo is another of the group's specialties. All of the forwarding agents are IATA members.

SHIPPING AND MARITIME TRANSPORT

One of E.T.E. Group's main priorities has been to reinforce the group concept in order to broaden the scope of its activities in all areas of maritime transport.

The group's shipowners are currently the most important players in terms of cargo shipment between the mainland and the Portuguese islands and different African ports. They are thus in a privileged position to guarantee a wide range of integrated services and intermodal connections.

The group's maritime transport operators guarantee a range of services dedicated to the cement industry executed by its own fleet of self-unloading ships specialized in transporting cement in bulk.

The handling of solid bulk cargo is an important specialty of the group's shipowners, who developed worldwide operations for coal transport with departure points all around the globe.

SHIPPING AGENTS

Providing customers with the capability to move cargo from all ports on the Portuguese mainland and its island regions to any destination in the world using its own shipping agent network is the group's main mission.

Representation of liner companies with calls at domestic ports and ship agency services for the respective ships allow the companies of the E.T.E. universe to mediate and organize multimodal transportation that provides flexible and versatile logistical solutions.

Apart from representing and acting as agents of the shipping companies that are part of the group's holding company, the group's shipping agents represent and act as agents of other shipowners with an acknowledged reputation in both domestic and international markets.

The agency network and its connections to other countries like Mozambique, Cape Verde, Guine-Bissau, Uruguay or Colombia offer added value to clients and other stakeholders.

FLEET AND CREW MANAGEMENT

The E.T.E. universe includes companies specialized in fleet and crew management that develop projects and offer services to domestic and foreign shipowners, participating in all types of

technical and maritime actions.

Twenty-four hours a day, 365 days a year, the E.T.E. Group guarantees quality of service in supporting ships during boarding, supplying equipment for port and offshore unloading, managing crews, supplying fuel, provisions and spare parts during docking operations, tank cleaning operations, loading and unloading, supporting traffic and all other services related to maritime and port operations.



LOGISTICS SERVICES

The E.T.E. Group's transport and logistics companies offer a broad range of specific services for both corporate and individual customers.

Co-ordinating and organizing transport, intermediate warehousing, and distribution of goods is part of the group's broad flexibility and response capacity in the supply of complementary logistical services.

The group can supply logistical control and parking of containers in its own depots, complementing this activity with strict maintenance of structural and safety conditions for containers, repairing and replacing them whenever necessary, providing customers with outstanding conditioning for their products.

OTHER BUSINESS

Control and management of capital holdings, supply of administrative services, professional training involving maritime activities, financial and shared services are part of a series of complementary activities that contribute to an increase in the rationalization of resources and the operability of E.T.E. Group.

SHIPBUILDING AND REPAIR

In line with its diversification and innovation strategy, E.T.E. Group's shipbuilding and repair sector operates two shipyards in the Port of Lisbon area.

These infrastructures provide specialized technicians and equipment for repairing, maintaining and modifying container ships, bulk carriers, tug boats, oceanographic ships and navy vessels, among others.

E.T.E.'s constant efforts to use new shipbuilding systems and advanced materials and technology allow it to offer the specialized vessels market objective and innovative solutions for constructing pilot and recreational launches.

Maintenance and repair of port and fluvial equipment constitutes one of the most important aspects of the group's shipyard activities and it has won the confidence of operators.

PORT OPERATIONS

Port operations have been a key sector to building the E.T.E. Group's prestigious reputation.

Since its establishment, this activity has experienced constant growth, sustained by a strategic business vision that has helped consolidate the position the group holds today as the most important port operator in the country.

From a geographical point of view, the E.T.E. Group is

everywhere, operating in all the major ports in Portugal, where the group manages and participates in eight port concessions as well a terminal in the port of Maputo.

Co-ordination among the companies of the group in managing concessions of port terminals permits a more profitable use of structures and, more importantly, offers customers a broader service with significantly more competitive prices.

Operating 365 days a year under all types of adverse conditions, without compromising safety and the environment, maintaining high levels of productivity, meeting deadlines and guaranteeing less docking time for ships, these are only some of the reasons for the success experienced in this business area. **DC**

In Group Guided by the Sea...

Altantaport	Navalprime	TCGL
Autogor	Navex	TCL
Availport	Operis	Transifal
ETE	Portines	Transinsular
ETE Logística	S&C	Transinsular Açores
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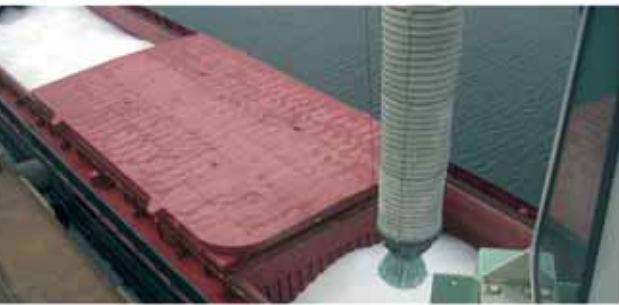
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Major bulk port in Finland

Port of Pori

The port of all size vessels



The strengths of the Port of Pori

- Dust minimized loading and unloading systems in use
- Suitable for large volumes
- Deep fairway (15.3m) and the best ice conditions in Finland
- Uncongested hinterland connections
- Room to expand, free areas available for dry and liquid bulk
- Located far from dense housing areas
- Environmental and work safety as top priorities

Reachability (by truck)

- Within 3 hrs. of Pori
- Within 6 hrs. of Pori

New 12m quay!

For more info go to:
www.portofpori.fi/en



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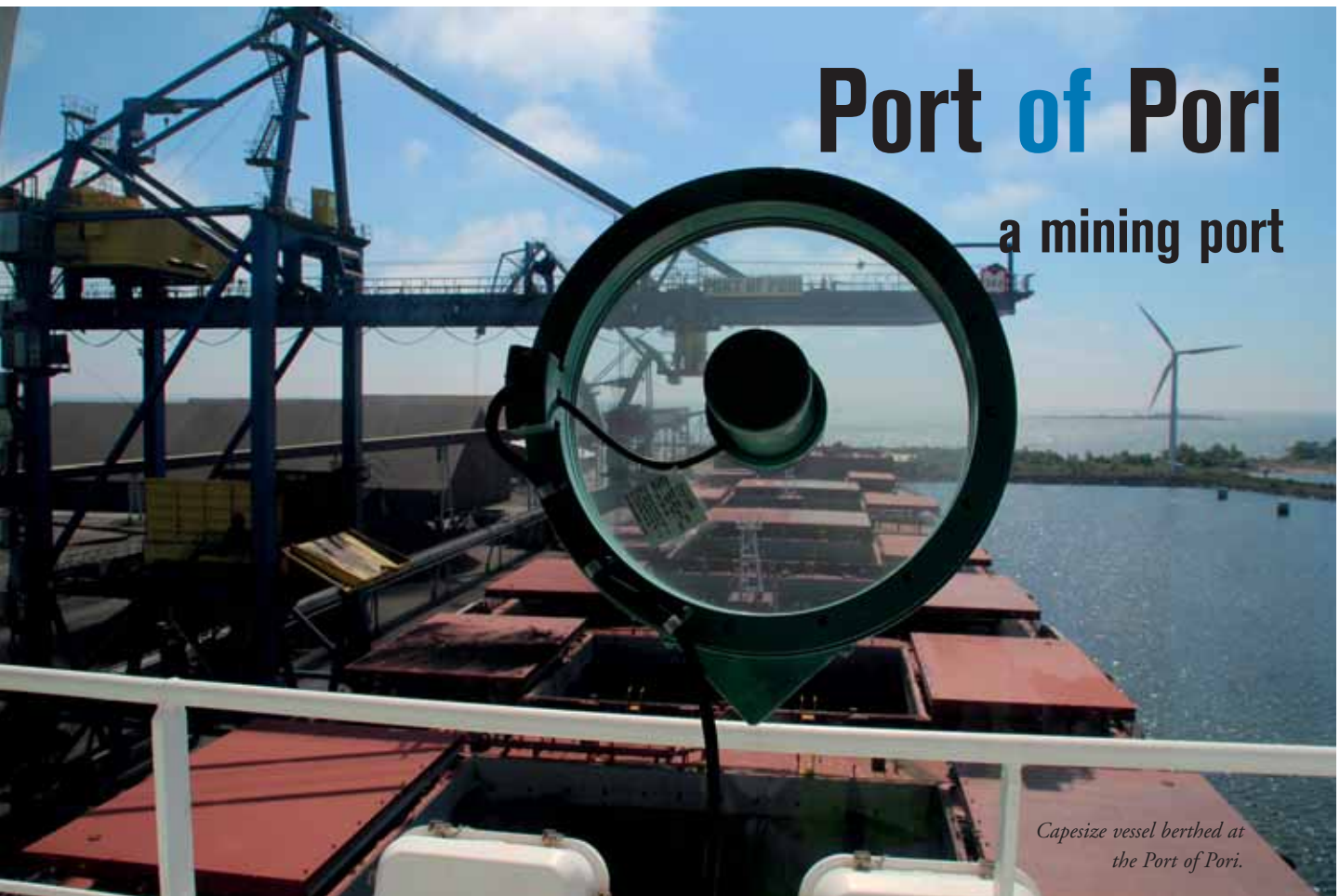
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Port of Pori

a mining port



Capesize vessel berthed at the Port of Pori.

The Port of Pori's vision is to become a mining port of Finland. Deep fairways, the best ice conditions in Finland and on the Gulf of Bothnia area, and great expertise in bulk handling give the Port of Pori a competitive edge. The Port of Pori is also a general port which can serve the needs of the whole mining cluster. The Port of Pori can handle not only ore, minerals and concentrates, but also mining machinery and equipment as well as chemicals.

The mining industry is booming in Finland. New mines have been opened and existing mines have increased production. Many mining projects are in progress and prospecting is continuing. It is estimated that the total volume of metallic ore production will increase substantially by the end of the decade. According to international evaluations, Finland is one of the best countries for mining operations. The country provides a good operating environment for mining activities, and it has well-developed infrastructure and a stable operating environment.

Mining activities are strongly focused on the eastern and northern parts of the country. "There are four options to transport the ore from Lapland to the global and European markets", calculates Jaakko Nirhamo, CEO and port director of the Port of Pori. Ore and minerals can be transported from the northern ports of Finland and Sweden direct to the markets. These harbours have shallow fairways. The Luleå–Narvik railway line with branches is another option, but the capacity of the railway is needed for use by Swedish mining company LKAB. International mining companies have not shown an interest in the alternative of using Russian Arctic Sea ports. There have also been discussions about providing a railway line from the Finnish Lapland to Kirkenes on the Arctic Sea coast of Norway, but that would represent a huge investment and profitability is not guaranteed.

"Actually there is also the fifth option," Nirhamo says. "It is the Port of Pori." The Pori region is one of the most industrialized areas in Finland. For example, a large copper smelter belonging to the New Boliden company is situated about 50km from Pori. Copper concentrate is imported from abroad to Finland via the Port of Pori. In August 2012, the coaster *Chopin*, carrying Finnish copper concentrate, called at the Port of Pori for the first time. Prior to that, vessels had been loaded in the Port of Oulu in northern Finland, and the copper concentrate originated from the newly opened Kevitsa mine in Lapland.

Nirhamo has a vision that this type of operation could become more common. Ores and concentrates could be transported to the Port of Pori by using coasters. Then directly, or after refining the ore, the cargo could be re-loaded to Panamax or even Capesize vessels. The Port of Pori is very familiar with the hub and spoke operation model. Coal and coke arrive at the Port of Pori in Capesize vessels. Some of the cargo is re-loaded to pusher barges and transhipped to a smelter, which is situated about 400km north of Pori.

Ore and concentrates from eastern and northern parts of Finland could also be transported to the Port of Pori by train. There is now one railway line coming to Pori. The Port of Pori is part of a Bothnian Green Logistic Corridor project. The aim of this EU project is to increase integration between northern Scandinavia and Barents regions with the industrial chain and end markets in the Baltic Sea Region and central Europe. The Port of Pori is conducting a feasibility study into the re-opening of a Pori–Parkano–Haapamaki railway line. The line would open a new route to the Finnish mining industry and would also provide a new connection from Pori to Imatrankoski at the Russian border.



The Port of Pori has sufficient draught to handle even Capesize vessels.

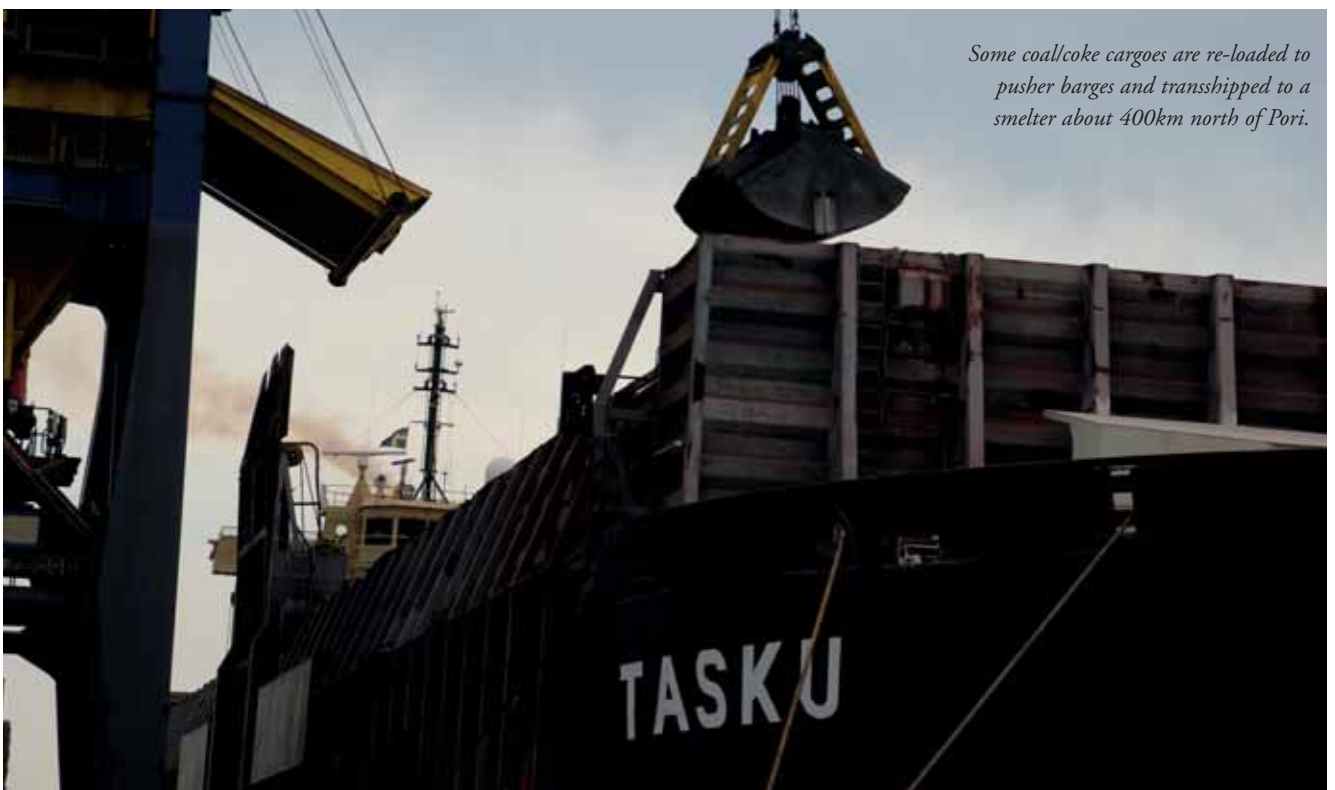
Another interesting project, which the Port of Pori is taking part in, is called Gas to Satakunta-county. In that project a pre-study will be made in order to find out the use of gas and future needs of LNG in industry and in shipping. LNG as a source of energy opens also possibilities to develop the metal industry, which is very dependent on inexpensive energy. In the immediate vicinity of the port there are 200 hectares of available land reserved for the use of industry and logistical companies. The port is situated 25km out of town, which is also a plus from the viewpoint of industry.

The Port of Pori fulfills the logistical needs of the whole mining cluster. Dry bulk, oil, chemicals, project cargo and containerized cargo are handled in the port. The Port of Pori is known for excellent lifting capacities. It has the strongest harbour crane in Finland (200 tonnes). Crane capacity has also been increased. The newest investment is a Liebherr LHM550 mobile crane with a handling capacity of 140 tonnes. The crane is used both in bulk and project cargo handling. Both sea-side and inland connections are excellent.

The Port of Pori also has a firm grip on environmental issues, which is very important for sustainable mining. The Port of Pori is an excellent choice for the mining cluster as it is a first-class choice for many other industries, too.

The geographical location of the Port of Pori offers many advantages. The main economical areas of Finland can be reached in three hours by road. Also, Russian markets are easily accessible due to excellent road and railway connections across Finland. Ice conditions of deep and short fairways (15.3m and 12m) are the best in Finland. The fact that there is no archipelago makes fairways easy to navigate. All ships — even Capesize vessels — sailing through the Denmark Strait can call at the Port of Pori.

The Port of Pori has three harbours: Mäntyluoto harbour and a dry bulk as well as a chemical harbour in Tahkoluoto. Containerized cargo, project cargo, sawn timber and all kinds of breakbulk are handled in Mäntyluoto, where Panamax vessels can also call thanks to large investments in fairway and berths. “The Port of Pori is a port for all sizes of vessel,” stresses Nirhamo. **DC**



Some coal/coke cargoes are re-loaded to pusher barges and transhipped to a smelter about 400km north of Pori.

Hamburg–Le Havre

major focal point for bulk

Aerial view of the Port of Rotterdam.

Netherlands remains at the heart of European bulk cargo

The Netherlands is a major link in the bulk handling supply chain, and boasts some of the largest ports in the Hamburg–Le Havre range.

Notable ports in the Netherlands include Amsterdam, Rotterdam, Dordrecht, Moerdijk, Terneuzen and Vlissingen (Flushing).

THE PORT OF ROTTERDAM

The Port of Rotterdam is one of the main ports of Europe. The port is the gateway to the European market of more than 350 million consumers. It is one of the most important junctions of good flows of the world, and boasts an annual throughput of about 430mt (million tonnes).

Rotterdam boasts excellent accessibility via the sea, and also has exceptional hinterland connections. The port stretches out over 40km and is about 10,500 ha (excluding Maasvlakte 2).

The Port of Rotterdam Authority has a long-term vision — Vision 2030. It plans, by the year 2030, to be Europe's most important port and industry complex. It plans for this strong combination of global hub and Europe's industrial cluster to be a leader in efficiency and sustainability, and for the Port of Rotterdam to be closely connected with other North West European industrial and logistics areas.

Modern facilities are key to the success of the Port of Rotterdam. Leading companies invest in modern facilities. Cooperation between companies, government and universities results in a high quality labour market, good quality of life and accessibility.

The port in figures

- ❖ some 34,000 seagoing vessels a year call at the port of Rotterdam, as do 133,000 inland vessels;
- ❖ all told, some 86,000 Dutch people work in the port;
- ❖ Rotterdam is the largest port in Europe. Yearly 420 million tonnes of cargo is handled;

- ❖ Rotterdam's port and industrial area is 40 kilometres long, including the construction (started in September 2008) of Maasvlakte 2;
- ❖ 100mt of crude oil a year passes through the port;
- ❖ with the 10 million TEU (unit measurement) containers handled annually in Rotterdam you could circle the globe;
- ❖ the most westerly part of the port can accommodate the very largest seagoing vessels. These have a draught of up to 24 metres, which equals an eight-storey block of flats;
- ❖ one of the biggest ships calling at Rotterdam is the *Berge Stahl*, which is 360 metres long (three and a half football fields) and 65 metres wide. The ship carries iron ore and sails between Brazil and Rotterdam;
- ❖ Rotterdam is the most important European port for imports of coal, the fuel used in many Dutch and German power stations;
- ❖ every day, some 200 trucks leave Rotterdam laden with fresh fruit and vegetables, which arrived by seagoing vessel, destined for every corner of Europe;
- ❖ one in every two Europeans drinks fruit juice that entered via Rotterdam;
- ❖ from Rotterdam, 270,000 American, European, Japanese and Korean cars a year find their way to dealers throughout Europe.

Growth in throughput for Port of Rotterdam

In the first half of 2012, 222mt of cargo was handled in the port of Rotterdam, 3.2% up on the first half of 2011. Incoming trade rose by 1% to 155mt and outgoing trade by 8% to 66mt. Bulk throughput increased by 5% to 147mt and container throughput was 2% up at 63mt. Less general cargo was handled: down 8% to 12mt. Less agribulk (-11%), iron ore and scrap (-15%), other dry bulk (-9%) and other general cargo (-25%) were imported and exported. The other types of cargo were up: coal (+2%), crude oil (+10%), mineral oil products (+14%), other liquid bulk



Bulk Terminal Amsterdam

Your partner for dry bulk cargoes into the main European Markets

- MAIN TERMINAL: quay length 1.2km with two berths/separate belt systems for simultaneous discharge of two large coal vessels at high capacity to the various stacking installations (3250 and 3850tph).
- TERMINAL NORTH: quay length 350 meters/ one berth for up to Capesize coal vessels.
- Maximum vessel size: 17.80 meters draft swek, max beam 45 meters.
- 3 gantry cranes (1 x 50 tons / 2 x 30 tons) / 50 tons floating crane.
- Coal storage capacity 3 mio tons on 650.000m².
- Railcar loading facility; 25,000 tpd.
- Two large ship (spout)loaders; 60,000 tpd at the Sonhaven for (push)barge combinations and seagoing vessels.
- Grab loading into barge/seagoing vessels at Main Terminal and Terminal North
- In total 8 heavy-duty magnetic separators installed in the various belt systems for the removal of tramp metal (also possible on a board/board basis).
- Screening/crushing/blending
- Total covered storage capacity at Main Terminal in various sheds directly under reach of the grabs; total 25.000m² (for agribulk, biomass and minerals)
- NEW 60TONS GANTRY CRANE, COMMISSIONING Q4 2011.

OBA Bulk Terminal Amsterdam

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Manager Commercial Department: Hans Mattheyer; (hans.mattheyer@oba-bulk.nl) +31 20 5873750

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Maasvlakte 2: extending Rotterdam's reach

Rotterdam is the largest port in Europe, and it handles an ever-growing volume of goods each year. However, it is quickly running out of space, so expansion is essential if it is to continue to meet the rising demand of its customers.

Maasvlakte 2 will be a direct extension of the existing Maasvlakte and will have access to all its connections with the European hinterland. Maasvlakte 2 will create a new top location in the heart of the European market, with 1,000 hectares of space for deepsea related container transshipment, distribution and chemical industry. These sectors have a great interest in the industrial sites on the deep waterways of Maasvlakte 2. Nowhere else in Europe will the largest ships in the world be able to moor 24 hours a day.

Naturally, the future of the port depends not only on its position on the market. The quality of life and concern for the environment are just as important as strengthening Rotterdam's position as a mainport. Expanding the port and improving quality of life go hand in hand. This dual objective has been anchored in the Rotterdam Mainport Development Project (PMR) from day one. PMR consists of three sub-projects, including Maasvlakte 2, improvement to the Existing Rotterdam Area (BRG) and the construction of a 750-hectare recreation area and sites of natural interest. Furthermore, the nature that is lost as a result of the construction of Maasvlakte 2 will be extensively compensated with the creation of a sea bed protection area reservation (formerly sea reserve) and the enlargement of the dune area.



(+6%), roll on/roll off (+1%) and containers (+2%). In numbers, container throughput fell by close on 2% to 5.9 million TEU (20-foot units).

Hans Smits, Port of Rotterdam Authority CEO, says: "The port of Rotterdam got off to a good start, with slightly higher than expected growth in throughput. This is in line with the recent report from Statistics Netherlands, in which the economic growth is attributed primarily to exports outside the EU. By far the majority of this travels via the port of Rotterdam. The national picture also corresponds with that of the port when it comes to products: an increase in the refining and handling of crude oil and oil products, as well as container throughput is benefiting from the good export performance of Dutch and German industry. I expect throughput over the year as a whole to show modest growth of around 1%.

Like throughput, the construction of the Second Maasvlakte is developing well. One of this year's two critical moments, the closure of the seawall, went perfectly. I have every confidence that the same will apply to the rerouting of the infrastructure and the start of the digging through of the Yangtsehaven in October. The construction on the RWG and APMT container terminals marks the actual beginning of corporate investment on the land expansion. In the existing port area there is ongoing investment, with large projects in refining, chemicals, tank storage and energy. In total, the business sector will be investing almost €11 billion in the port area during the period 2011 up to and including 2015. This is evidence of confidence in the port of Rotterdam, and also positive expectations regarding the economic developments and integration of Europe. It is crucial for us all that some quick, clear political decisions are made on these aspects."

Dry bulk

The total amount of dry bulk fell by 8.7% to 39.4mt. Agribulk (grains, seeds, animal feed ingredients) throughput was down by a tenth to 4.1mt. Due to increases in the price of products on the world market, customers utilized their stocks. Also, a few packages won from Amsterdam last year were lost again.

A total of 12.9mt of coal (+1.9%) were handled. Despite the declining flow of ores, imports of cokes coal were up, due to the closure of a coke mine in Germany. ThyssenKrupp also focused European coke imports on the EECV terminal. Weak imports of coal for energy in the spring will probably continue in the summer. As a result of the increasing availability of sustainable energy, coal is becoming more season-bound. Demand will probably increase again later in the year.

Throughput of ores and scrap fell by 15.1% to 16.4mt. The production of raw steel is falling due to a decrease in demand as a result of the ailing economy. Utilization of the blast furnaces in the hinterland is expected to decline this year to 85%. Two steel plants have already closed and Arcelor does not rule out more shutdowns. At ThyssenKrupp, a furnace is being overhauled. Exports of scrap rose in the first half of the year due to the persistently high demand from the Turkish steel industry.

Throughput figures for other dry bulk (mainly minerals for the production of glass, paper, steel and chemicals) were 8.8% down at 5.9mt. Metal-related industry, cars and machinery, in Germany and the Netherlands, and the chemical industry continue to produce at a reasonable level. However, steel production is on the decline and the construction sector remains in a bad way for the time being. In combination with a number of incidental factors, this leads to less demand for minerals and special ores.



Quality in Bulk



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- **Draft: 16.50 m sw**

OVET announces plans to install train loader to widen transportation capability



(photo: ©Aerolin.)

OVET Dry Bulk Terminal in Vlissingen has announced expansion plans, with the addition of a new coal train loader by mid-2013.

OVET Dry Bulk Terminal in Vlissingen will be able to load coal trains as from the middle of 2013. Trains to German and French power and steel plants will be able to be loaded within 2.5 hours by this new rail loading facility.

In 2011, OVET has already increased its storage and transshipment capacity in Vlissingen in anticipation of the expected growth in demand for coal handling. Capesize vessels up to 16.50m draught, as well as Panamax vessels, can be serviced in Vlissingen. According to the terminal, “Commissioning of the railway loading fits into our programme in order to facilitate the security of supply to German and French plants. The stronger positioning to the dry bulk market is a strategic step of OVET. The ‘Zeeland Seaports’ Port Authority has invested €35 million in a new quay.”

TRANSPORT BY RAIL

Investment in the new rail loader is budgeted at €3.5 million and will make it possible to load a full train in less than two-and-a-half hours. The railway infrastructure from Vlissingen to the German, French and further European hinterland is secured by an extensive railway infrastructure. Several railway companies are active in the transport of coal by rail, and they have

announced that they will connect Vlissingen to their networks. Amongst them are DB Logistics, HHPI International, Captrain, NIAG, TX Logistics and Rurtalbahn.

CAPACITY INCREASE

The new rail loading facility will be able to load three full trains on a daily basis, which therefore expands OVET’s loading facilities by more than 3mt (million metric tonnes). OVET has a deep-sea quay, with a draught of 16.50m, a total length of 650 metres, as well as a second quay of 300 metres.

OVET

OVET Dry Bulk Terminal in Vlissingen is a joint venture of Dutch HES Beheer NV and French Manufrance SA. OVET has been active in the ARA (Antwerp, Rotterdam, and Amsterdam) range, covering the ports of Zeeland for over 50 years. It uses almost 50 hectares of land in the southern Dutch Delta. There is room to store over 2mt of bulk products — mainly coal, minerals, ores, solid fuels and biomass. In Vlissingen, OVET operates 32 hectares of land, mainly covering coal handling. The 16 hectares in operation in Terneuzen are utilized for value-added activities such as screening, micro-screening, after-screening and crushing. OVET also offers magnet treatment at its Vlissingen operation.



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Rotterdam Bulk Terminal (R.B.T.) BV – ready for new challenges

ABOUT

Rotterdam Bulk Terminal (R.B.T.) B.V. was founded in 1999 and specializes in the handling and storage of a wide range of dry bulk cargoes. Located in Europe's busiest port, the terminal continues to improve its operations and service range.

MORE CARGOES

Anticipating new areas of demand, RBT BV is expanding its list of more than 50 cargo types — which it has environmental permission to handle — to include further industrial minerals, agricultural commodities and biomass types.

RAIL/TRUCK WEIGHBRIDGE

RBT strongly believes in added value by providing train loading services, and is therefore planning to increase the terminal's weighbridge capacity to 160 tonnes, from 70 tonnes at present. This will ensure the faster handling of delivered cargoes and the swifter departure of trains.

SAFETY

Safety improvements, without affecting performance, will remain the key operational challenge. There are 92,000m³ of covered storage suitable for grains and wood pellets. All seven storage units are loaded via a gantry crane, using a conveyor belt. Both for RBT BV and for its customers, it is important to avoid metal particles in the cargo. For this reason, a new magnetic system has been installed above the belt, which allows RBT to remove



metal particles, without hindering the speed of the discharging operations.

TERMINAL

RBT BV offers loading, unloading, transshipment and storage services for more than 50 different bulk cargoes. A draught of 11.35m allows up to Handymax vessels to berth and discharge. There are three hectares of open storage and 157,000m³ of covered storage fully dedicated to bulk. The terminal can handle up to 20,000 tonnes on a daily basis, although this volume can be increased for direct transshipments, through the use of floating cranes.

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EMO: in business for 40 years and fully equipped to meet customers' expectations



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 it never ceases to look to the future and plan ahead – now more than ever. In 2012, it has significantly

increased its storage and transshipment capacity and efficiency by commissioning five new, state-of-the-art projects: its seventh stacker reclaimer (please see p133 for details), its fifth unloader, a 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 it is fully equipped to enhance its safety, efficiency and sustainability performance, and to continue to serve its customers as a reliable partner in dry bulk transshipment in the coming decades.



Brand new coal terminal in Gdansk



Under construction, operational 2nd half of 2013

Permissible draught: 15,00 M Baltmax

2 cranes of 60 MT lifting capacity

Conveyor belts: 4.000 MT / hour

Reloading to train: 2.400 MT / hour

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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 transshipment 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 transshipment in the coming decades.



Magnets 1 and 2, board-to-board circuit from ocean vessel into coaster/barge (—),
Magnets 1, 2, 3 and 4 from vessel onto storage circuit (—),

5. EBS Laurens haven Terminal, new site “West 4” fully operational

European Bulk Services Rotterdam



European Bulk Services (E.B.S.) B.V.

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European Bulk Services: stevedoring specialist at the Port of Rotterdam



The EBS terminal at the port of Rotterdam with, inset, the new 'West 4' site.

European Bulk Services (EBS) B.V. is an internationally respected stevedoring company with a focus on the storage and transshipment of dry bulk goods. EBS operates from two strategically located terminals in the Port of Rotterdam and has its own fleet of crane vessels. EBS is a wholly owned subsidiary of H.E.S. Beheer N.V.

TERMINALS

European Bulk Services (EBS) B.V. conducts its business operations from two strategically located areas in the Rotterdam port area, namely the EBS Europoort terminal (at the Capesize dolphins), and the EBS St. Laurens haven terminal, a Panamax terminal. The terminals have excellent connections to deep seaways, hinterland by inland waters, railways and trucks by highways. The terminals can be reached without having to pass a single lock. All types of ships can be handled at these terminals, from Capesize to coastal and river barge. The Europoort terminal is one-and-a-half-hours' sailing time to/from the pilot station and the St. Laurens haven terminal is three hours' sailing time to/from the pilot station.

MAGNETIC SEPARATORS OF IRON PARTS OF COAL

In order to meet the special requirements of the coal import market, EBS has invested in several

(electro) magnet systems for cleaning contaminated coal with iron parts. The St. Laurens haven terminal, with a depth of 13.85m, is perfectly equipped to handle and store, amongst others, coal from Russian load ports. These load ports have a similar maximum draught to the St. Laurens haven.

Receivers of Russian coals can be extra sure of the quality of their coal if their product is cleaned for metals via the EBS de-ironing installation. The electro magnets are installed in such a way that the coal can be cleaned either via storage or via board to board discharge operations.



Magnetic separators.

SOLUTIONS, SERVICES AND ACTIVITIES

EBS strives to provide tailor-made services in consultation with its clients and offers:

- ❖ transshipment of Capesize and Panamax carriers into coastal vessels and river barges by means of floating cranes and gantry grab cranes;
- ❖ open and covered storage facilities;
- ❖ blending facilities and weighing services;
- ❖ excellent transshipment facilities via road river and sea; and
- ❖ SKAL, USDA-NOP certificates and GMP+, BLU Code, ISPS and ISO certified administration procedures.

NEW DEVELOPMENTS

The new 'West 4' area is now fully operational. The new area is equipped with a new conveyer belt system and a mobile loading system.

West 4 provides EBS with an extra 300,000 tonnes of storage capacity, bringing the total storage capacity at the Laurenshaven Terminal to 1.6 million tonnes.

In the future, EBS plans to install extra magnetic separators



The new loading system in the West 1 area.

for contaminated coal for the Laurenshaven Terminal.

EBS has also invested in a new mobile loading system on the West 1 site in order to give more flexibility for the reclaiming of the cargo. The contract for the new equipment was awarded to N.M. Heilig B.V. in Heerhugowaard. The mobile loaders are operating satisfactorily.

Among new developments at EBS is a temperature control system for stored goods, to be used to monitor coal and to prevent it self-combusting. The infrared operating method enables EBS to detect high temperatures in the stockpiles.

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New floating crane operational at ZHD Stevedoring

In the last week of August this year, a new self-propelled 50-tonne floating crane — the *Ahoy 50* — became operational at ZHD Stevedoring. At ZHD's terminal in the Port of Dordrecht, the *Ahoy 50* discharged the *Levante* bulk carrier of approximately 30,000 tonnes of wood pellets.

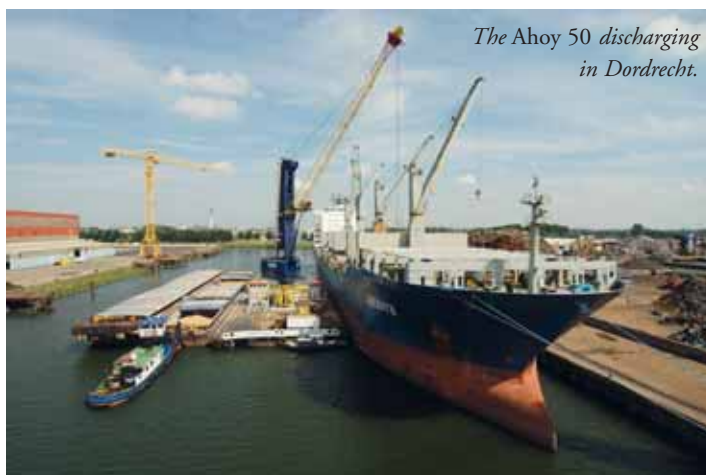
The maximum lifting capacity of this new crane handling bulk-products is 50 tonnes. For general cargo, the maximum lifting capacity is 100 tonnes. With a 51m-wide spread and the high tower construction (which means that the crane driver's position is 6m higher than normal), the crane ensures efficient and fast transshipment for all ship sizes.

In order to install a brand new Gottwald crane (HPK 6400, high tower) on an existing self-propelled crane-pontoon, ZHD Stevedoring modified and engineered the pontoon itself. The pontoon is equipped with remote-controlled mooring winches and two Voith-Schneider propulsion engines, which make it extremely manoeuvrable.

This new floating crane, as well as ZHD's existing self-propelled floating cranes *Ahoy 16* and *Ahoy 25* will be used for (bulk) transshipment throughout the whole Rotterdam-Rijnmond port area, including Rotterdam, Dordrecht and Moerdijk.

ZHD Stevedoring believes that this new floating crane, and other recent investments it has made at its terminals in Dordrecht and Moerdijk (for example, new quay wall, 50-tonne mobile shore cranes and warehouses) will further strengthen its position in the Rotterdam-Rijnmond area.

During Rotterdam's annual 'World Port Days', the *Ahoy 50* was moored at the 'Westerkade' in Rotterdam. It also had a



The Ahoy 50 discharging in Dordrecht.

starring role in the nautical demonstrations that Saturday night.

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



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Amsterdam's hinterland connections key to its ongoing success

The port of Amsterdam sees inland connectivity and investment as the twin pillars of a successful future, writes *Michael King*.

The city of Amsterdam is widely famed for its stunning canals. The Port of Amsterdam also prides itself on its waterways and the critical link they provide to the wider European industrial hinterland beyond. With multiple daily barge services to Rotterdam, Antwerp, a slew of German industrial centres and, via the River Rhine, as far south as Basel in Switzerland, Amsterdam leans heavily on the extra reach and affordable on-shipment options its inland navigation access offer bulk cargo owner customers.

"In the European bulk sector there are two big ports that are able to reach a wide hinterland via waterways and barges — Amsterdam and Rotterdam," said Lex De Ridder, commercial manager for bulk cargoes at the port. "Of the other two big ports in the Northern Range, Hamburg has hardly any water connections, so cargo must move by rail, and from Antwerp access is limited and not easy.

"So that's our advantage because for bulk cargoes barge is the cheapest method of transport. That's why Amsterdam and Rotterdam get two-thirds of the bulk cargo shipped via ports in the ARA range."

Comparing Amsterdam to its larger Dutch neighbour, De Ridder believes the two rivals — which also co-operate in a number of areas (see box) — offer shippers, ship owners and port operators differentiated propositions.

For example, most of Rotterdam's terminals provide fixed handling gear and can receive the largest bulk carriers without lightering, unlike Amsterdam which only can take fully loaded Capesize vessels after lightering at present.

"But," said De Ridder, "Amsterdam is more flexible with most of our terminals using floating cranes which can be moved around to suit demand.

"Not all cargo goes in bigger ships anyway. We're a bit smaller but we're used to going the extra step to attract customers.

"Rotterdam might at the first look be the obvious path, but for custom-made solutions, Amsterdam is sometimes more suitable."

He cites the port's pioneering role in handling Russian coal as one example of Amsterdam's flexibility in action. While other ports balked at the 'dirty' nature of the coal, Amsterdam's stevedores installed separating magnetic equipment at the port to clean the coal of metal parts picked up in transit before the cargo was on-shipped to power stations for use in electricity generation. "We were the first in Europe to do this, everyone else followed," said De Ridder.

The port has also forged a unique role in the agribulk trades by encouraging the handling of parcel services by the likes of Cargill. This system enables smaller volumes to be transported

Dutch ports bond

Rotterdam and Amsterdam ports increasingly co-operate as well as compete.

Most famously both ports take part in exploiting the Betuweroute rail line which now carries the large majority of bulk shipped by rail to the German border direct from terminals at Amsterdam.

But Dutch ports, including the big two, are also now working more closely together in a range of other areas both to cut investment costs and improve services for customers. One key emerging area of co-operation is in information and communications technology systems.

For example, Portbase now acts as neutral information fulcrum for all logistics information at the ports of Rotterdam and Amsterdam, which jointly own the non-profit company. This system is a key element in a nationwide strategy to gain competitiveness by rendering the supply chain more efficient.

De Ridder said that not only does this help share the cost of building IT systems, it also means that shareholders, agents, forwarders, tramper companies and cargo owners need only plug into one system, which saves them time and investments cost by removing the need to purchase specialist software to ensure compatibility with lots of different port systems.

"We promote ourselves together sometimes and Holland ports and we all compete," said De Ridder. "Portbase is great for shipping agents, stevedores and others who work with a lot of Dutch ports because it's a one-stop-shop with a standard system."

without impacting the economies of scale of shipping in bulk because a number of cargo owners can use the same ship and storage facilities simultaneously. Port managers worked diligently with stevedores and shippers to ensure the complex logistics entailed in this type of shipping solution was facilitated across the port, with every detail covered including tariffs, storage facilities and the handling systems used before shipment to the hinterland.

De Ridder said that while Rotterdam had the lead in steel sector cargoes such as petcoke and iron ore, Amsterdam was ahead elsewhere, most recently in the handling of building materials.

"European building material production is going down," he said. "It's like coal, it's too expensive and reserves are limited to





produce in Europe now, so increasingly it's imported via seaports and we have been very successful in getting this business. A lot is produced in Scotland and Scandinavia. The seafloor is also being mined for all types of materials."

In the first half of this year, Amsterdam increased total volumes by 5.4% compared with a year earlier to over 38mt (million tonnes). Dry bulk products accounted for 15.1mt, up 1.4% year-on-year. Grain and fertilizer throughput increased by 31.5% and 8.2%, respectively, although this was offset by a drop in cattle feed and oilseeds. Coal volume rose 19.3% year-on-year to almost 7mt, and scrap metal throughput jumped 64% in the period.

The first half of 2012 also saw almost 2.5mt of building materials and industrial minerals passing through Amsterdam. The port's role in the construction industry will be expanded later this year when a major player in the industry is expected to confirm its commitment to operate a terminal in the Australiahaven part of the port. The terminal will have annual transshipment capacity of 1mt.

Maja Stuwadoors will also open a new multi-purpose terminal later this year operating floating cranes on Pier Azië in the Coenhaven area of the port to handle vessels up to Panamax class. The terminal will target agribulk industrial minerals, biomass and other dry bulk cargoes shipped as bulk or breakbulk.

Maja is already operating at the terminal by making use of the public quay on Pier Azië and two warehouses — Loods 7 and Loods 8 — both of which offer 7,500m² covered storage. But negotiations with the port to ensure dedicated access to the quay are now in their final stages and are due to be signed off in the coming months.

Once fully operational the 37,000m² terminal will be able to handle up to 1mt of cargo each year.

"There is also a coaster/barge mooring of 90 metres and open storage of around 5,000m²," said De Ridder. "The existing rail connection is being refitted and should be fully operational in 2013."

The port has also now received the green light to move forward with a number of major projects that have been in the

pipeline for some time.

Most significantly, the City of Amsterdam has now approved the €700 million investment in a new locks system at IJmuiden. This will allow direct access to the port of Amsterdam for Capesize vessels within the dimensions of around 17 metres draught, 65–70 metres beam and 500 metres in length. Although approval is for completion of the locks by 2019, De Ridder is confident this will be brought forward and will now happen in 2017/18.

Bulk shippers will also soon benefit from a new lightering facility which has now also finally won €80 million funding and is forecast to be available in 2015. The lightering station, to be located at a harbour on the North Sea at IJmuiden, will allow two Capesize vessels to be handled simultaneously, doubling current capacity.

Port managers' long-term aim of winning more control of the port's commercial manoeuvrability and potential was also secured in July when city officials said the port could be corporatized.

This will see the port, which is currently registered as a municipal company and owned by the City of Amsterdam, become a governmental limited liability company operating under the name NV Haven Amsterdam. All shares will be retained by the City, but the new structure will enable the port to enter more commercial arrangements with port companies and attract investors without loading risk on to the City.

Corporatization will also create opportunities to link the ports of Amsterdam with its North Sea neighbours of Beverwijk, IJmuiden and Zaanstad. In the future this could even see the ports combined under one management structure.

De Ridder said corporatization will enable managers to embark on more entrepreneurial relationships, both locally and internationally. "It would boost competitiveness and help us win more cargo currently being moved via other Northern Range ports," said De Ridder.

"The port region will growth through all these initiatives. The port of Amsterdam is located in densely populated area, so we have to make choices. But the region definitely wants a growing port and this is evidence of that."

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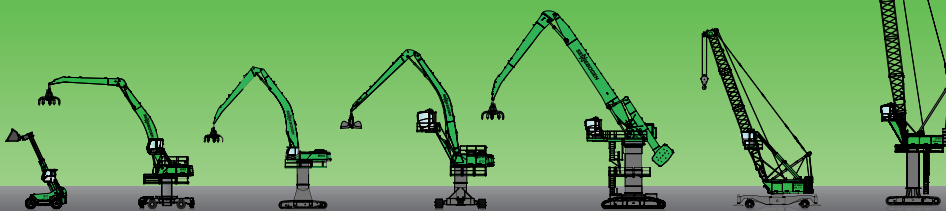
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German dry bulk makes slight gains in tonnage



Weserport terminal in Bremen
(photo: ©Weserport).

In 2011, the German ports of Bremen and Bremerhaven handled a combined 8mt (million tonnes) of dry bulk, which was 3% higher than the 7.8mt reported for 2010, writes Barry Cross.

In the first five months of 2012 around 3.4mt were handled, which was up 12% compared with 2011 (3mt). Robert Howe, managing director of the port authority, suggests that, if dry bulk traffic continues to develop, this could reach 8.5–9mt by the end of the year.

As for commodities, grain and feed stuffs (12% of all dry bulk traffic in 2011), ore (50%) and coal/coke (19%) are the main ones handled in and around Bremen's harbours. In the first five months of 2012, grain/feed stuffs were up 39% compared with 2011, while ore had increased by 12%. In contrast, coal/coke tonnage had slipped by 6%.

"The recession in 2009 resulted in a 19% (down to 6.5mt) decrease in dry bulk traffic, whereas in 2008 we handled 8.5mt," notes Howe.

It tends to be terminals in Bremen, rather than Bremerhaven, that handle most dry bulk. Dependent on tidal conditions, Bremen is accessible to vessels drawing no more than 10.7 metres of water. Once deepening of the River Weser is completed, draught will be 11.1 metres.

"Vessel size is clearly dictated by the maximum draught. The largest vessels we see are used to carry ore to the harbour at Bremen, where there are currently five dry bulk terminals," says Howe.

TRAFFIC AT WESERPORT BROADLY SIMILAR TO LAST YEAR

Weserport, which is a joint venture between the Rhenus Group and ArcelorMittal Bremen, operates four terminals within the port of Bremen. In 2011, overall it handled 8.2mt of cargo, of

which 6.4mt was dry bulk, which was broadly similar to traffic in 2010. In the first half of the current year, throughput amounted to 3.1mt dry bulk, suggesting that volumes in 2012 will be about the same, too.

According to managing director, Michael Appelhans, bulk traffic at the Weserport facilities is directly affected by developments in the market for steel, influenced above all by the production planning of the ArcelorMittal group.

"Steel-related dry bulk traffic follows other rules than agribulk/building materials, who depend on corresponding local buyer/user markets," he says.

Indeed, the vast majority of its traffic is steel-related, encompassing iron ore, ore pellets, coke, coal, scrap and slabs, as well as minerals/building materials, manganese, peat moss, fertilizers, fish meal, phosphates, recycling material and mineral salt.

"These materials are sourced worldwide and arrive at our terminal via a number of routes. Some come from sources like Australia in transit via Rotterdam, although we also get direct shipments from the Baltic, Mediterranean Sea, Norway and even South Africa. Finally, steel products are exported not just to European customers, but also to destinations around the globe."

Draught varies from 9.45 metres at the terminals behind the lock gate to 10.7 metres on the river berth where the iron ore terminal is located. Panamax vessels can move beyond the locks, but due to draft limitations cargo capacities usually range around 45,000 tonnes per vessel, depending on the vessel type/construction.

Coke and coal sourced from ports around the Baltic is usually shipped in Handysize vessels or coasters of 5,000–8,000dwt, while all other commodities are shipped in a

large variety of vessels, from inland waterway barges to coasters to Panamax bulkers in line with the volume of the consignment being moved.

Handling equipment at the Weserport terminals consists of four 35-55-tonne jib cranes, four 22-45-tonne gantry cranes, one 45-tonne Gottwald harbour mobile crane and one Liebherr 954 high-rise excavator.

“Our loading and unloading productivity is very good,” says Appelhans, “but of course depends on the exact handling equipment deployed and storage areas utilised.”

Asked whether any of the dry bulk currently handled by Weserport could be diverted to any competing terminals, he says the majority cannot, since the bulk is destined for/or originated by the local ArcelorMittal steel mill.

“We don’t look at our hinterland in terms of geography, but rather as something defined by the cost effectiveness of the supply chain. The total logistics costs determine whether you can win a contract or not,” he stresses.

AFTER 10% RISE IN 2011, BRUNSBÜTTEL PORTS FORECASTS CONSOLIDATION FOR 2012

Brunsbüttel Ports GmbH operates two dry bulk terminals: one at Brunsbüttel (Elbehafen) and another one in Hamburg (Aurubis). They handled a total amount of 4,655,868 tonnes of dry bulk in 2011, which was 10.1% more than the amount in 2010. In the first half of 2012, volumes amounted to 2,360,570 tonnes, prompting managing director Frank Schnabel to comment that end-of-year forecasts are expected to be similar to last year, all other things being equal.

Quizzed about the recent impact the downturn in market conditions has had on business in general, he says, “Due to our putting the focus on being a multi-purpose port, we are able to react with total flexibility to all changes within the market. Even during the major economic crisis in 2009, our handling figures grew by 3.9%.”

Major dry bulk commodities handled are copper concentrate (inbound from South America, Asia and Australia), building materials (from Scandinavia) and coal.

Elbehafen at Brunsbüttel has a draught of 14.8 metres, which



(photo: ©Weserport.)

Frank Schnabel comments is sufficient for all regular dry bulk vessel sizes.

Elbehafen is equipped with four cranes, allowing loads of up to 120 tonnes to be handled. Also available are several wheel loaders and bobcats, as well as a Multidocker crane. Bagging machines are also provided.

At the Aurubis-Terminal in Hamburg, dockside lift consists of two cranes, with a bobcat available and also a bagging machine.



Bulk handling at Brunsbüttel (Elbehafen).



Ports of Lille.

In respect of whether the Brunsbüttel Ports terminals are the end-of-the-line or whether they serve an extensive hinterland, Schnabel explains that Elbehafen is a trimodal terminal, served by water, road and rail, with consignments forwarded to clients using all three modes of transport.

As to whether any of its current traffic could be considered as being 'captive' to its two terminals, Schnabel says that all bulk goods theoretically could be handled by other ports, although the copper concentrate traffic had involved the setting up of a complex logistics system, which had only been viable through the signing of a 20-year contract with the customer.

MIXED RESULTS IN NORTHERN FRENCH PORTS

At the inland waterway complex centred around the northern French city of Lille, Ports of Lille reports traffic of 6,159,061 tonnes of dry bulk last year, which commercial manager Dominique Drapier notes was 17% better than the 5,264,591 tonnes handled in 2010.

"It was quite a good result," he remarks, adding that, in 2012, traffic has continued to rise, albeit slowly. "Given the poor economic situation overall, we would be satisfied with a similar level of traffic to last year's."

Asked about the overall impact of the recession, he says it has made it more difficult to make forecasts about the future. Terminal operators in the port have no clear idea of where markets are going and so are having to be cautious. Nevertheless, he believes the market as a whole bottomed out in 2009–2010.

In terms of commodities handled, Ports of Lille is especially strong in building materials, industrial waste, iron/steel products and cereals.

"A large part of our dry bulk traffic comes from (or goes to) coastal ports. This is the case of sand, for the majority of other building materials, coal and for metallurgical goods," he says.

Because of the loading gauge of the canal linking Lille with the

coast — which is limited to 3,000 tonnes — most consignments are conveyed by individual barges, rather than by barge-trains. However, Drapier stresses that, given that Lille is an inland port, consignment size is not significant anyway.

A maximum draught of 3 metres also precludes the use of larger craft. However, this is not usually a problem, as most companies using the port are well aware of its limitations and adapt consignment size accordingly. Low water is not a problem, either, given that river serving the port have been fully canalized. As a result — and particularly because of heavy rain throughout 2012 — there have been only very small variations in the water level.

Interestingly, the port itself has not invested in dry bulk terminal infrastructure, since consignments are invariably handled directly by customers and not by port stevedores.

"Lille is not the end of the line, but rather a part of the overall logistics chain. We also see our function as trying to persuade as much traffic as possible to move from the road to the waterways and railways," Drapier says.

Quizzed whether there is scope for existing dry bulk traffic to move either to other modes or other ports, he concedes that there is.

"Our main competitor is the road haulage industry," he stresses. "We are very close to coastal ports and sometimes shippers find it is easier or cheaper to use road transport instead of rail or inland waterway. In these types of cases, we lose traffic."

DUNKERQUE STRUGGLES TO CONSOLIDATE 2011 TRAFFIC GAINS

In 2011, dry bulk traffic at the Port of Dunkerque rose 4.8% to 23.79mt. Of this, mineral traffic — 11.32mt — posted a slight increase, which the port authority regards as a "satisfactory result" given the provisional closure of the Lorraine blast furnace. Coal traffic of 7.56mt was a 17.8% increase over 2010

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Ship at the Western Bulk Terminal, Dunkirk.

thanks to strong demand from power stations in the UK.

In terms of the July 2010 to June 2011 cereals harvest, the 2.34mt handled was a new record. This was reflected in the 2011 calendar year, when cereals increased by 18.6% to 1.98mt.

As for minor bulks (sugar, oil, lime, scrap, slag, etc) these declined by 14% to 2.87mt.

However, the overall positive 2011 performance has not continued into 2012. Traffic to the end of June was down by 6.8% to 11.52mt compared to last year.

Ore traffic slowed considerably, with 5.62mt handled in the half year. Coal, while down in June, was nevertheless up 15% overall to 4.06mt. Minor bulks have also continued to decline, down 16% in the first two quarters to 1.3mt.

However, grain traffic to date has been unable to match last year's exceptional result, falling 56% to 524,000 tonnes. Despite

this, the grain terminal has moved to upgrade quayside lift, acquiring a 400-tonne in November 2011 from the Port of Le Havre. The grain terminal on Grande-Synthe quay is now equipped with two gantry cranes, which is a strong indication of its policy of developing cereals traffic across its hinterland encompassing the Nord-Pas de Calais, Picardy and Champagne-Ardennes.

VOLUMES AT BRUSSELS RETURN TO 2008 LEVELS THANKS TO BOOST IN BUILDING MATERIALS

The Port of Brussels handles around 24mt of cargo each year, of which one-third is water-borne traffic.

In 2011, transhipped cargo rose by 13%, while goods loaded and unloaded in the port went up by 13% to 4.855mt, returning traffic levels of those to the previous highs recorded in 2008.

Traffic simply transiting the port increased sharply, by 18%. Overall traffic amounted to 7.2mt, up 13%.

The port authority calculates that, thanks to port usage, some 670,000 movements by road were eliminated in 2011, a saving of 100,000 tonnes of CO₂.

And it is the port that functions as the city's main gateway for construction materials. Both sand and gravel increased in volume, as did cement and palletised building materials. Excavated earth also amounted to 220,000 tonnes.

Construction materials increased by 24% to 2.836mt, agribulk declined by 18% to 316,000 tonnes, animal feed was down 20% to 154,000 tonnes, minerals and scrap increased 1% to 118,000 tonnes, while metal products rose by 82% to 53,000 tonnes.



Minor bulk terminals, Eastern Port, Dunkirk.

Investments in the future



(photo: Rhenus AG
& Co. KG)

Rhenus significantly increases capacity at Wilhelmshaven after rebuilding work

The logistics services provider Rhenus and its business centre in Wilhelmshaven now offers one of the most efficient bulk commodity terminals between Le Havre and Hamburg thanks to the upgrading work that has taken place on the Niedersachsenbrücke jetty, writes *Matthias Arnhold*. The centre has become an important addition to the existing capacity on the North Sea coast, particularly for handling coal, in view of the energy mix that is still required in Germany and all over Europe.

The Niedersachsenbrücke jetty, which Rhenus Midgard has operated for almost four decades, has developed into a significant transshipment site for bulk commodities since the mid-1970s. Coal plays a particularly important role in this process. The port logistics company, which belongs to the family-managed Rhenus Group with its global operations, or rather its predecessor company handled the first coal-carrying vessel, the *Kopainia Zoflowka*, at the Niedersachsenbrücke jetty on 22 April 1976. Rhenus Midgard broke through the 50mt (million tonne) record for imported coal 35 years later, when it unloaded the cargo on board the *Key Action* at the beginning of 2011.

Cars and trucks were banned from the roads in Germany on certain Sundays in the mid-1970s during the first oil crisis, for example — and the issue of energy supplies is still a major concern in the second decade of the 21st century. As a result of its amendment to the German Renewable Energy Act (EEG) in the summer of 2011, the German government set the goal of increasing the share of renewable energy supplies to 35% by 2020. Other countries in Europe and beyond share similar ambitions. Germany's Environment Minister, Peter Altmaier, who has been in office since the spring of this year, pointed out in an interview with a German weekly publication at the end of July 2012 that “65% still has to be generated in other ways for the time being.”

ENERGY MIX

Providing energy supplies solely from renewable or regenerative resources may sound very promising, but only a mix of renewable and fossil energy sources can guarantee the needs of

private households and the business world at the moment and in the near future. Two other factors play a significant role in Germany and have a great effect on the change in national energy policy and the desire for clean, affordable electricity that is available at all times: firstly, the decision taken by the German government to abandon nuclear power by 2022 following the tsunami disaster and its effects on the nuclear power station at Fukushima in Japan — and secondly the shutdown of black coal mining by 2018.

As a result, three quarters of the black coal used in the country already comes from abroad. The Association of Coal Importers says that only 12.3mt used in 2011 came from domestic mines according to its provisional figures, but adds that 47.5mt were transported to Germany from other countries in order to cover domestic needs. Sea-going vessels primarily handle these imports, and this underlines the importance of the ports for the smooth logistics operations that support these processes.

EXPANSION AND REBUILDING WORK

“Ships from the Russian Federation, the United States of America and Columbia in particular dock here, and we unload the contents at the Niedersachsenbrücke jetty,” says Matthias Schrell, managing director of Rhenus Midgard in Wilhelmshaven, commenting on the countries of origin of the imported coal. Now that the berth has been deepened, it is possible to handle fully loaded Capesize-class bulk carriers — i.e. vessels with a draught of up to 18.50 metres — at the long-standing bulk commodity transshipment facilities.

“As a result, we're on a par with the ARA ports — i.e. Antwerp, Rotterdam and Amsterdam — and other North Sea coast ports, which specialize in the bulk commodity business. In comparison with Hamburg or Brunsbüttel, the Capesize vessels no longer have to be lightened beforehand,” Schrell adds. “Then there are the investments in the transport and storage capacity associated with the pier jetty and in our transshipment equipment.”

While the state's own infrastructure company, Niedersachsen

Ports, deepened the mooring basin in front of the Niedersachsenbrücke jetty as part of the building work for the adjacent Jade Weser Port and set up a sheet pile wall using pile drives, the Rhenus Group has introduced powerful cranes and conveyor belts and increased the facilities for providing intermediate storage for bulk commodities. The new gantry slewing cranes are almost 75 metres high and have a reach of 55 metres. They can lift loads weighing up to 63 tonnes and can unload 4,000 tonnes of coal per hour from the Capesize vessels, which can hold up to a quarter of a million tonnes of the fuel.

A second, new conveyor belt will come into operation by the beginning of 2013, and it will be able to transport 4,000 tonnes per hour from the pier jetty to the storage areas on land. One storage area for 450,000 tonnes has already been completed, a second with the same capacity will follow during the next few months and a third one is being prepared. The logistics company can efficiently feed the new wagon loading station with two bucket wheel machines in order to achieve shorter loading times for the trains.

“The new conditions are unique in Germany, and we also provide the very best facilities at the Niedersachsenbrücke jetty compared to our rivals and in terms of the whole region between Le Havre and Hamburg,” Schrell emphasizes. The managing director of Rhenus Midgard in Wilhelmshaven talks about the possibility of transshipping between 8mt and 10mt of bulk commodities per annum at the site that is steeped in tradition once it has reached its full productive efficiency. At the



(photo: Rhenus AG & Co. KG)

same time, the logistics services provider is seeking to contain the emissions associated with transshipping coal with an extensive package of measures so that the emissions are kept as low as possible.

Two coal-fired power stations in the immediate vicinity belong to the Rhenus customer network at Wilhelmshaven; one power station is still being constructed, and Rhenus will also be responsible for its coaling facility at a later date. The logistics specialist has built mixing silos with a capacity of 15,000 cubic metres for this task, and Rhenus will operate these once the station has been finished as part of a services agreement. Rhenus also works for purchasers of power station coal located all over Germany and in neighbouring countries, and they are supplied using the optimized wagon loading station.

The first coal train set off on its journey from the new facility in August this year. Rhenus' own rail services or those ordered by the customers will benefit from the commissioning of a second set of railway sidings between Wilhelmshaven situated on the Jade Bay and Oldenburg located further inland in future.



(photo: Rhenus AG & Co. KG)

A WEALTH OF EXPERIENCE

Coal is an extremely important source of business, not just for the Niedersachsenbrücke jetty, but also for the Rhenus Midgard seaport group and the entire Rhenus Port Logistics business area. The logistics services provider, which is celebrating its centenary this year, can look back on many years of experience in transshipping and storing this fossil fuel. It has had excellent relations with energy supply companies in Germany



(photo: Rhenus AG & Co. KG)

and Europe for decades, as the services provider has become a reliable partner in guaranteeing energy requirements with its transshipment operations at seaports and inland waterway ports, its professional storage services, its in-factory logistics and its transport services by inland waterway vessels or by rail.

“We’re pursuing a multi-port strategy, particularly in cooperation with the branch in Nordenham, which is only 30km away from Wilhelmshaven as the crow flies and where Rhenus operates the largest publicly accessible private port in Germany. That means, for example, that the key account management department looks after the two ports as a joint project in operating terms. We look at what our customers require and orient our concepts by the conditions available at the most suitable site. We don’t lose sight of the Rhenus bulk commodity terminals at Hamburg or Bremen either, which can be reached by seagoing vessels, when trying to meet the needs of our customers from a logistics point of view,” says Michael Appelhans, managing director of

Rhenus Midgard, with the logistics services provider’s network in mind.

The city port at Nordenham, for example, has links with the inland waterway network, which do not exist in Wilhelmshaven, and this makes it much more efficient to provide transport services for black coal bound for some power station customers from there.

ENERGY HUB

Using capital-intensive port facilities in a flexible manner is one goal of the Rhenus Group in a general sense. But hardly any other business centre operated by Rhenus typifies the energy mix as Wilhelmshaven does. There are believed to be enough global reserves of coal for a further 200 years, and imports of coal from many different parts of the planet dominate the picture at the Niedersachsenbrücke jetty. At the same time, Rhenus Midgard is improving its facilities at the northern port at least six kilometres away, where one manufacturer of offshore foundations will set up in business and make use of the logistics expertise of the services provider in its project.

The knowledge gained in the past about storage (pre-) assembly processes and transshipping particularly heavy or large components — for example, for the building site logistics for the power station being built in the immediate vicinity — serve here as a valuable

experience base for future tasks too. Wilhelmshaven will continue to increase its importance as Germany’s leading energy hub because of these local conditions. **DC**



(photo: Rhenus AG & Co. KG)

Loading expert at Turkish port: the SENNEBOGEN 6200 HCC Electro

One of the largest steel producers in Turkey, Colakoglu Metalurji produces around 3,000,000 tonnes of steel for the global market each year. A SENNEBOGEN 6200 HCC is used at the Çolakoglu port in the city of Gebze at Diliskelesi area for handling scrap and finished steel products.

Located on the Gulf of Izmit, the Turkish industrial town of Gebze Dilovası Diliskelesi is just a few kilometres away from Istanbul. This is where one of the largest steel companies in Turkey, Colakoglu Metalurji, has one of the steel works. Supplies need to be constantly replenished for continuous operation and many tonnes of steel products leave the plant each day. The plant's own port is therefore a major hub in this process.

Scrap as a raw material is delivered to the steel plant by water and in trucks. A large proportion of the finished steel is then transported on by ship. There is therefore plenty of loading work at the port for the SENNEBOGEN 6200 crawler crane. Around 4,000 tonnes of scrap and 10,000 tonnes of steel rolls have to be loaded onto and unloaded from the waiting ships. Construction steel and slabs are lifted and positioned effortlessly on the ships in bundles of up to 30 tonnes.

Equipped with a 2 x 200kN heavy-load winch and rigid wide gauge undercarriage, the SENNEBOGEN 6200 HCC is ideally suited to the challenging tasks at the port. Thanks to the powerful electric motor, the

machine is not only environmentally-friendly and economical to run, but is also highly efficient. Smooth running, zero emissions and operation without refuelling breaks are guaranteed.

The electric version also offers longer maintenance intervals combined with the usual low service costs and long service life. Electricity supply boxes for the machines are located every 50–80m at the Colakoglu Metalurji port. With its robust and powerful crawler chassis, the SENNEBOGEN 6200 HCC can be moved flexibly along the dock, offering a significant advantage over stationary or railbound solutions. A motor cable drum ensures that the supply cables are wound up safely.

For the driver, the spacious elevated Portcab cab not only offers ergonomic controls and a pleasant sense of space, but also provides an optimal overview of the work area with a floor



A SENNEBOGEN 6200 HCC Electro handles scrap and raw materials at the Colakoglu Metalurji port.

window and excellent all-round visibility at all times — an important safety feature. The machine unloads ships up to 60,000 tonnes effortlessly with the 60m boom. The drivers can switch between the orange peel grab for scrap to the load hook or C-grab depending on the goods to be handled. Steel rolls weighing up to 30 tonnes can be lifted, and the SENNEBOGEN 6200 HCC also regularly handles bulky goods such as flat steel between 17 and 25 tonnes. The simple and intuitive controls help the drivers during everyday operation and help to speed up the processes. The ideal machine was designed and realized for the customer in intensive consultation with the sales and service partner Forsen Machinery Services & Trading Inc. Forsen delivered the machine in December 2011 and provides regular service on-site.

ABB wins \$18 contract to supply electrification systems to Indian cement plant

Major power and automation technology provider ABB has won an order worth \$18 million in India to design, engineer and supply integrated automation and modern electrification systems for Century Cement's Manikgarh Cement plant in central India.

Manikgarh Cement is located in the State of Maharashtra, in central India, and provides high-quality cement products for building construction, road and bridge infrastructure and other commercial uses. ABB's delivery is part of a two-line expansion and plant modernization project that will add production capacity of 2.8mt (million tonnes) of cement per year, more than doubling its current production. The project also includes a 60MW thermal power plant onsite.

ABB will provide state-of-the-art manufacturing technology to expand production capacity and maintain high product quality while providing a reliable on-site power supply that will improve energy efficiency.

"Our proven experience in executing large and complex projects, minerals and cement industry expertise and leading automation and power technologies helped us to secure this important order," said Veli-Matti Reinikkala, head of ABB's Process

Automation division. "This modernization and expansion project will help the customer meet increasing the local demand for its product, while improving the overall efficiency of its production process, and stability of its electricity supply."

ABB will deliver integrated power and automation systems using a plant-wide 800xA automation system to control, connect, and optimize the performance of all processes and systems. The scope of supply includes medium-voltage switchgear, distribution transformers and other electrical equipment and power systems, intelligent low-voltage motor control centres, variable speed drives, instrumentation, and collaborative production management systems. ABB will also provide design, engineering, project commissioning, and other site services.

The turnkey project is scheduled to be completed within 18 months.

ABB is an expert in power and automation technologies that enable utility and industry customers to improve performance while lowering environmental impact. The ABB Group of companies operates in 100 countries and employs about 145,000 people.

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FQM invests in Hitachi AC drive technology

First Quantum Minerals Ltd. (FQM) is investing in a new trolley assist system for Hitachi dump trucks at the Kansanshi copper and gold mine, near Solwezi in Zambia. The massive project includes the installation of a new fleet of 23 electric EH3500ACII models as part of a four-year \$370 million expansion programme.

Three project phases are planned to increase annual copper production capacity from the 230,000 tonnes achieved in 2011 to 400,000 tonnes by 2015. The trolley assist package commenced in March 2012 with the installation of a 750m test track and overhead line for trials by Hitachi engineers.

The new EH3500ACIIs have started to arrive on the site and will be ready for full operation with the new trolley line by March 2013. The design of these electric dump trucks has become a more simplified process since the turn of the century. Technological innovation has opened the door for the powerful AC drive to replace the traditional DC drive.

The assembly co-ordinator for the Hitachi machines at Kansanshi is Hugo Truter of Hitachi Construction Machinery (Zambia), Ltd. (HCMZ), who says: "The trials have been going well and the trolley line will be extended by 2km to run from the base of the existing line to the bottom of the main pit."

SMB Shiploading



SMB: the right solution for every bulk and bag

Furthermore **SMB International GmbH** is specialised in shiploading systems for the coal industry, port terminals and Stevedoring Companies alike. Depending on customer requirements we engineer stationary and mobile bulk shiploaders with suitable loading chutes. The different loading heads can be combined with various ship loading methods such as mobile and stationary loaders, or combination loaders. In addition to the above, the selection criteria include the quantity of the product or whether a product easily absorbs moisture, together with the size of the ships to be loaded and their characteristics.

Bulk goods and bagged goods systems have a long tradition at SMB. This engineering company from Quickborn produces high performance transport and handling solutions designed for smooth, long-term operation and minimum energy requirements. Numerous projects all over the world have convinced

shipping lines, port operators and industrial companies of German engineering quality. Current projects in the Middle East, South-East Asia and Europe speak for themselves.



Highlight of the month

Depending on the product, for example its fragility, inflammability or dust emission and ambient conditions such as wind, cold, heat or the risk of earthquakes, engineers design ship-loaders with different loading heads. Convenient loading of bags is ensured by the loading head for bag loading with telescopic conveyor. At the end of the spiral chute is a rotating plate with bag guide, which can turn up to 270°. Up to three telescopic conveyors take the bags from here to the ship within a radius of seven metres. A telescopic rotating spiral chute can also be used, giving the loading head a full 360° capability.

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Heyl & Patterson signs alliance agreement with Torrefy Corporation

In mid-August this year, Heyl & Patterson Inc., a renowned supplier of thermal processing, industrial furnace technology and bulk material handling systems, announced the signing of an exclusive alliance agreement with Torrefy Corporation, a marketing and business development company based in Research Triangle Park, NC, USA.

Founded in 1887, Heyl & Patterson has long been a major presence in the design and manufacture of thermal processing systems, calciner technology and bulk material handling equipment. This agreement combines Heyl & Patterson's world class engineering and manufacturing skills with Torrefy Corporation's sales and marketing expertise in the representation and selling of Heyl & Patterson's Biomass Torrefaction Systems.

The exclusive, worldwide agreement between Heyl & Patterson and Torrefy Corporation is expected to increase alternative energy industry awareness of the torrefaction process, by which raw wood biomass is converted into energy rich and compact 'bio-coal', and interest in the Heyl & Patterson Biomass Torrefaction Systems. The alliance agreement provides focused and dedicated sales and marketing resources for these bio-coal producing machines.

"Torrefy Corporation is pleased to enter into this partnership with Heyl & Patterson and to be given the opportunity to take these proven torrefaction products to market," said Joe Schmitz, CEO and president of Torrefy Corporation. "We believe that combining Heyl & Patterson's high-quality and innovative technology with Torrefy Corporation's expertise in marketing and selling in the alternative energy field will offer large benefits to our shared customers. Schmitz added, "With guaranteed torrefied wood results from Heyl & Patterson's standard 7tph [tonnes per hour] unit, with three-year 'amortized capital costs' of less than \$12 per finished tonne, and with low and efficient operating costs, we know that these systems will match or exceed the requirements for many situations. The reality of immediate availability adds another strong positive to the situation."

"This agreement opens the door for many new opportunities

for Heyl & Patterson," said John Edelman, president of Heyl & Patterson. "Torrefy Corporation provides a knowledgeable and experienced sales team. Their abilities will expand our market reach, while we will serve an important role in the engineering support area. This new alliance allows us to exploit an exciting and fast-developing new market while concentrating on our core competencies."

"This arrangement offers Heyl & Patterson the opportunity to strategically leverage Torrefy Corporation's capabilities to market and deliver Heyl & Patterson's proven solution to this world-wide problem," said Edelman. "Torrefy Corporation's broad geographic and commercial presence enhances the opportunity for Heyl & Patterson to make a larger and more positive impact on the burgeoning wood torrefaction field, which is hungry for workable solutions."

ABOUT HEYL & PATTERSON INC.

Founded in 1887 in Pittsburgh, PA, Heyl & Patterson Inc. provides high quality, custom engineered solutions for thermal processing and bulk material handling applications around the globe. Thermal processing products and services include some of the largest high-efficiency dryers and coolers in the world, as well as calciners, bulk material processors and pilot plant laboratory testing systems.

Heyl & Patterson is the innovator the rotary railcar dumper and offers a wide range of bulk material handling equipment, including railcar & barge movers and barge unloaders.

ABOUT TORREFY CORPORATION

Torrefy Corporation was established in February 2012 for the sole purpose of representing Heyl & Patterson's Torrefaction Units to an alternative fuels market eager to have access to proven torrefaction technology. The company's managers and affiliates combine many decades of experience in the forest products, biomass, and alternative energy fields. Currently, the company is involved in the expansion of its sales representation team and intends to license its exclusive, worldwide rights to qualified allies in key foreign markets.

CST International names president

CST Industries, Inc., a major manufacturer of factory coated metal storage tanks, aluminium domes, specialty covers and reclaimer systems, has named Tony Thill president of CST International, the division responsible for operations outside of North America.

"Tony's leadership experience in global business development makes him an ideal candidate to assume this role. His knowledge of CST's products and his experience working with CST's companies and divisions to develop aggressive growth strategies will be extremely beneficial leading our International group. CST products have significant growth potential in multiple industries throughout the world," said Declan McLaughlin, president and CEO of CST Industries, Inc.

Prior to joining CST Industries in 2006, Thill served in multiple executive roles with GE Energy and the former BHA

Group, Inc., leading the dry filtration business unit, developing international markets, accelerating product development and implementing marketing, sales and corporate strategy worldwide.

CST Industries, Inc. is the complete storage system provider for engineering and manufacturing professionals in thousands of different industries and applications throughout the world. CST's existing company portfolio consists of CST Storage, CST Covers and CST International. Manufacturing facilities and technical design centres are located in Parsons, Kan.; Winchester, Tenn.; DeKalb, Ill.; Conroe, Texas; Gardena, Calif.; Rincon, Ga. and the United Kingdom. Regional sales offices are located throughout North America and in Mexico, Argentina, Brazil, United Kingdom, India, Singapore, Vietnam and Dubai. Currently more than 275,000 CST tanks and covers have been installed in 125 countries.

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CoaLogix partners with Martin Engineering for innovative solution to SCR ash buildups

CoaLogix and its subsidiary SCR-Tech LLC, (Charlotte, NC) have reached an agreement with Martin Engineering to market unique systems for clearing ash buildup from selective catalyst reduction (SCR) used in power plant emissions control. Under the agreement, CoaLogix and its representatives will provide Martin Engineering technologies (including sonic horns and air cannons) for applications in SCRs and other pollution control systems in coal-fired power facilities across North America.

“Martin Engineering’s proprietary sonic horn and air cannon designs will complement CoaLogix’ expertise in SCR management to deliver effective technologies for improving pollution control and raising power plant operating efficiencies,” observed Scott Hutter, Martin Engineering president and CEO.



Bill McMahon, CEO of CoaLogix said, “We believe this combination of industry-leading technologies will provide unique strategies for our customers. We are very pleased to team up with Martin Engineering. This addition of Martin’s ash cleaning products will strengthen CoaLogix’ catalyst management services to its customers and enables us to offer more comprehensive solutions to their issues with pollution control equipment.”

Coal-fired power plants employ SCR reactors to remove nitrogen oxides (NO_x) from the plant exhaust gases to reduce air pollution and comply with federal regulations. Over time, the catalyst inside these reactors is subject to the buildup of fly ash from the exhaust gases, reducing its efficiency.

For more than 40 years, Martin Engineering has been a leader in innovative applications for air cannons, which use the controlled discharge of compressed air to reduce blockages and improve material flow. The firm has pioneered a new technology employing air cannons in combination with sonic horns to more completely prevent fly ash accumulation in SCRs.

CoaLogix is a renowned leading provider of SCR management services and catalyst regeneration technologies used by coal-fired power plants to reduce NO_x emissions. The company is focused on providing innovative services to coal-fired generating facilities to reduce their environmental footprint through technology, equipment optimization and efficiency improvements.

CoaLogix is owned by Energy Capital Partners (ECP), a private equity firm with offices in Short Hills, New Jersey and San Diego, California.

Founded in 1944, Martin Engineering is a major supplier, making bulk materials handling cleaner, safer and more productive. The firm is headquartered in Neponset, IL, offering manufacturing, sales and service with business units in Brazil, China, France, Germany, Indonesia, Mexico, South Africa, Turkey, India and the UK.



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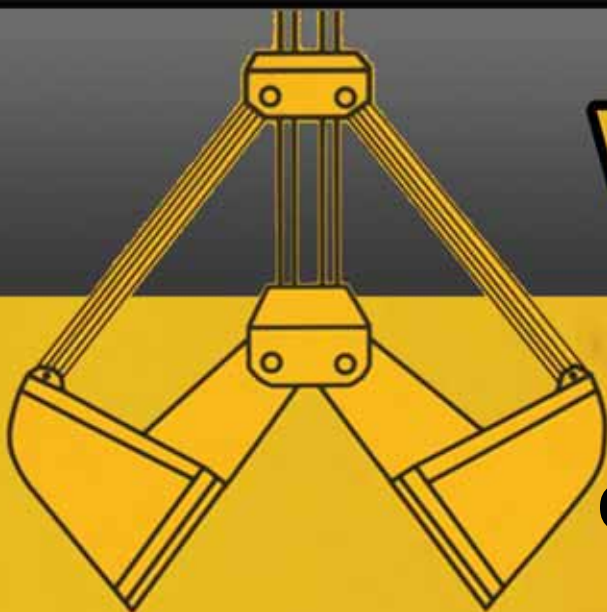
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Veracruz cargo handler uses customized dust

An innovative stevedore and bulk distribution centre in Veracruz has developed a customized dust management system, with onboard generator, water tanker and high-efficiency atomized misting unit. Pulled by a conventional semi truck, the fully-mobile system delivers excellent particle suppression. Yet the rig is so versatile that one driver can quickly relocate it virtually anywhere on the property to allow for shifting winds and changing jobsites, saving valuable manpower and time.

Servicios Especiales Portuarios S.A. (SEPSA) handles more than a million metric tonnes of bulk cargo per year, including shredded and structural scrap, pig iron, hot briquette iron, petcoke and fertilizer. Dust suppression is an integral part of the company's environmental stewardship, and the firm has been using a DustBoss® DB-60 since early 2011 to effectively control ground level dust and airborne particles.

During that time, employees found the port's geographic location presented some unique challenges to effective dust suppression. With its sudden shifts in wind and weather, crews were forced to relocate the DustBoss frequently to allow for drift over the company's five-hectare property.

"We have a large facility, and our location is prone to wind storms from the north, known as 'Los Nortes' in Spanish," explained Director Andrew Gillespie. "When we have operations running and the wind picks up, we need to relocate the DustBoss to accommodate that. It has to happen quickly and easily."

The dust suppression rig was designed by SEPSA's in-house maintenance team, with collaboration from Dust Control Technology (Peoria, IL). Starting with a used tanker truck that was originally built to haul cement, SEPSA engineers obtained detailed information on the DustBoss unit from DCT, including dimensions, weight, flow rates and generator recommendations.

DCT is no stranger to this type of project. "We specialize in customized solutions for specific applications," observed president Laura Stiverson. "With dust management, there are so many variables that an off-the-shelf product often isn't the optimum choice. Each set of operating conditions and work requirements is unique, and the best way to maximize dust suppression is to tailor the solution to the individual environment."

Armed with the necessary input, the SEPSA crew obtained a diesel-driven generator and mounted it on top of the tanker at one end, placing the suppression unit at the other end. The unit was supplied by DCT with a special corrosion-resistant paint on all exposed parts to protect metal surfaces from the corrosive effects of the salty air and high humidity. All piping and electrical connections were completed by the SEPSA team. Finally, they



SEPSA developed its own version of a self-contained dust management system, complete with water tanker, onboard generator and DustBoss® DB-60.

installed catwalks and safety railings around both the generator and the DustBoss, and fabricated a ladder that is welded down one side of the tanker to access the top level.

The atomized mist suppression unit is the flagship of DCT's product family. The standard design features a manifold of 30 brass nozzles that create millions of water droplets per minute within a range of 50–200 microns, the optimum size for particle attraction and coverage area, then launches them with a powerful 25 HP (18.6KW) fan. Delivering a range of more than 200 feet (~60 metres) under calm conditions, a DB-60 equipped with full oscillation can cover more than 125,000 square feet of area (approximately 2.8 acres or 1.1 hectares) with a fine, dust-trapping mist. Throw angle elevation is adjustable from 0° to 50°.

Unlike most dust suppression equipment suppliers, DCT offers a wide range of nozzles and spray manifolds for different applications, providing the ability to customize the spray pattern and droplet size to suit the specific type of dust being addressed. To maximize ground-level suppression, SEPSA's machine also has an optional metering pump built in that allows precise application of a water/cellulose mixture to coal stockpiles, which forms a thin crust and eliminates dust migration during periods of high winds.

All of the DustBoss fan-driven models are available with patent-pending Variable Particle Sizing™ technology, providing customers with a wide selection of different nozzles to suit individual applications. VPS can be used to control dust outside the typical 50-200 micron range, such as odour-causing vapours or solids that may be as small as a micron in diameter. It can also be an advantage for customers seeking to maximize control of a specific particle size, as when suppressing dust from a single type of material.

The rig is primarily used in storage areas to control dust during vessel unloading and material distribution to rail cars and trucks. SEPSA also moves the DustBoss to the pier occasionally, depending on wind conditions and the material being unloaded.

The entire dust suppression rig can be quickly relocated by a single driver to accommodate rapidly shifting winds.



suppression rig

Typical turnaround times are two to four days per ship.

For monitoring the dust levels, SEPSA employs a high-volume air sampling system from Tisch Environmental to measure total suspended particulates. "We're subject to close environmental scrutiny," continued Gillespie. "The Port Authority of Veracruz (APIVER) monitors our stockyard daily, and we also hire a third-party monitor to come several times a year to report their findings."

Though only in service for a few months so far, the tanker is expected to reduce the manpower requirements and transition time whenever there's a need to relocate the dust suppression system. "We know it's manoeuvrable, and the DustBoss has proven its effectiveness," Gillespie concluded. "Now that we have this rig, the dust suppressor is an even bigger asset in our arsenal against fugitive dust."

"Because of our decision to be a specialist manufacturer, focused solely on atomized mist technology, DCT delivers a depth of experience in dust suppression that more diversified equipment suppliers can't equal," Stiverson concluded. "Whether it's matching nozzles to particle sizes or helping customers build mobile suppression units for specific environments, we have a large network of expert resources to address virtually any dust management application."

SEPSA is a leading-edge stevedoring and bulk cargo distribution company based in the port of Veracruz. The firm was conceived as a highly specialized port terminal handler of bulk minerals and metal products, with optimized loading and off-loading manoeuvres and storage within the port. SEPSA offers high productivity in the discharge of vessels, minimizing costs for the importer. The company specializes in solving performance problems and meeting ecological challenges, with due regard to all standards and regulations proposed by the Port Authority of Veracruz (APIVER) within its Master Development Plan.

Dust Control Technology is a global leader in dust and odor control solutions for ports and shipping, slag handling, material recycling, coal and demolition. The company specializes in atomized mist technology, with its entire focus on customized equipment for dust suppression and evaporation. All of the firm's R&D, experience and expertise is centered completely around those applications, and its staff helps customers analyze particle sizes, working environments and other factors to ensure effective performance under real-world conditions. The units are far more effective and efficient than manual spraying, with some customers realizing payback in less than six months. DCT equipment carries the industry's longest warranty, and can be purchased outright or rented from an extensive fleet of dust suppression equipment.



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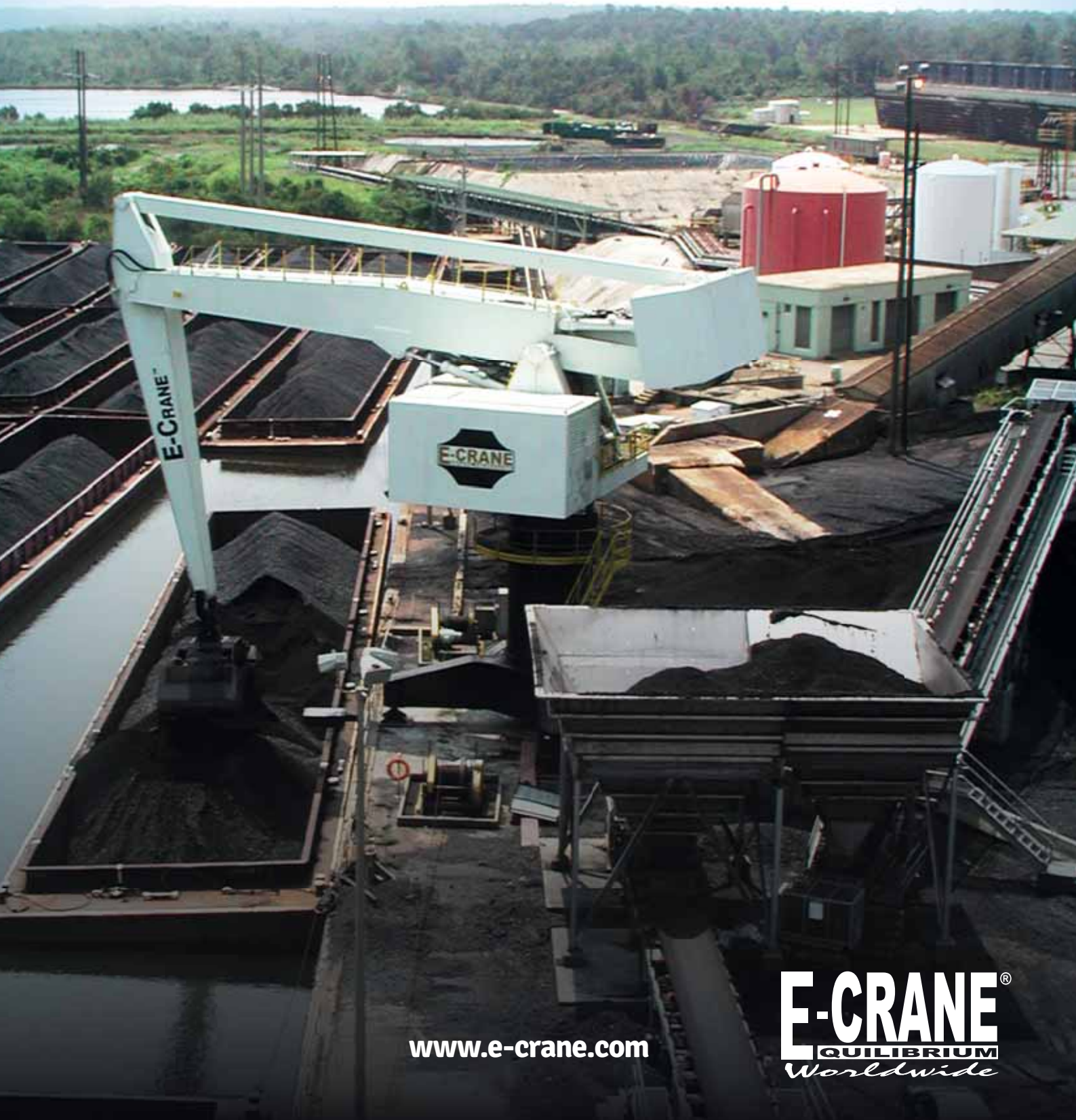
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E-Crane replaces cable crane at PPG Natrium for coal unloading

E-Crane International USA commissioned a pedestal mounted 1000 Series, Model 7317 E-Crane for the PPG Natrium industrial chemical company in West Virginia, located approximately 30 miles south of Wheeling, West Virginia. This 10-metric-tonne (11 US ton) capacity E-Crane has a maximum outreach of 32 metres (104 feet).

The PPG Natrium plant produces industrial chemicals using steam and electricity from its own local power station. For nearly 70 years previously, PPG had used a wire rope clamshell crane to unload coal out of barges from the Ohio River. This cable crane was built just before World War II and had been in continuous service since. It was believed to be the oldest working crane of its type in operation.

When it was time to replace this cable crane, PPG researched the best solution, and selected a balanced hydraulic crane from E-Crane International USA in Galion, Ohio. The E-Crane was designed with a custom lower to fit onto the same concrete pedestal that had supported the original cable crane. E-Crane International USA was given turnkey responsibility for removing the cable crane unloader, installing the new E-Crane, as well as testing, training, and commissioning services.

The E-Crane installation crew prepared well. The new E-Crane came to the site, pre-assembled into five subassemblies on a deck barge. After just one day of setup and preparation, the old cable crane was lifted off of its foundation with perfect balance based on an engineered lift plan prepared by E-Crane engineers. After two days of concrete foundation preparation,

assembly of the E-Crane began. Four days later the E-Crane was completely assembled and ready for power-up. The crane is currently in use unloading coal used in on-site power production and steam processes.

PROVEN SOLUTION FOR COAL HANDLING

Specifically designed for barge and ship unloading, E-Crane is a proven and trusted solution in the coal handling industry. E-Crane has proven itself at ports and terminals, offering complete solutions that ensure high efficiency and productivity as well as fast, efficient solutions for midstream transfer operations. E-Cranes provide longer outreach ranges than some typical material handlers, from 24.8 to 47.8 metres (82 to 157 feet). This outreach allows for unloading any type of barge or ship with minimum clean-up. E-Crane duty cycle capacity ranges from 5 to 50 metric tonnes (5.5 to 55 US tons). Although E-Cranes are compatible with any type of grab, E-Crane's clamshell buckets are designed with a powerful closing force affording maximum fill and eliminating spills and carry-back. E-Crane cabs are equipped with a state-of-the-art control system for easy machine operation which builds operator confidence, reduces, cycle times, and maximizes productivity.

'E' FOR EQUILIBRIUM

The 'E' in E-Crane stands for Equilibrium. The E-Crane design is based on an ingenious parallelogram style boom that provides a direct mechanical connection between the counterweight and



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MADE IN GERMANY



The new E-Crane in place with, inset, the old cable crane that had been working for nearly 70 years.



the load. This unique four-bar mechanism system ensures that the E-Crane remains in near perfect balance throughout its working range. Compared with conventional cranes that require as much as 80% of their available energy just to move the boom, stick, and grab, the E-Crane makes gravity work for you instead of against you, reducing horsepower requirements and power consumption by up to 50% and significantly reducing maintenance and operating costs. Flow-on-demand hydraulics also play a part in lowering power consumption, along with the modular design. This simple, balanced design with modular

construction allows for off-the-shelf components for longer service life, but also enables custom solutions.

SIMPLE MAINTENANCE

Maintenance on the E-Crane is fast and straightforward due to the innate, simple design of the E-Crane. Since the machine is always in a near-perfectly balanced state, there is less wear and tear on the main pins and components compared to a typical material handler. E-Cranes are serviced using a pit-stop style preventative maintenance system, which the operator can complete in minutes, minimizing downtime and keeping the E-Crane unloading 24/7. E-Cranes also all include the innovative EMM (Electronic Machine Management) system, remote access equipment which allows E-Crane engineers and service technicians to remotely diagnose and fix problems. Utilizing this advanced troubleshooting system saves customers time and money associated with downtime and maintenance.

DCi



Construction - Earthmoving

Agriculture - Forestry

Mining - Quarrying - Cement

Material Handling - Utilities

Marine - Port Installations

Water - Chemical - Recycling

Energy - Petrochemical

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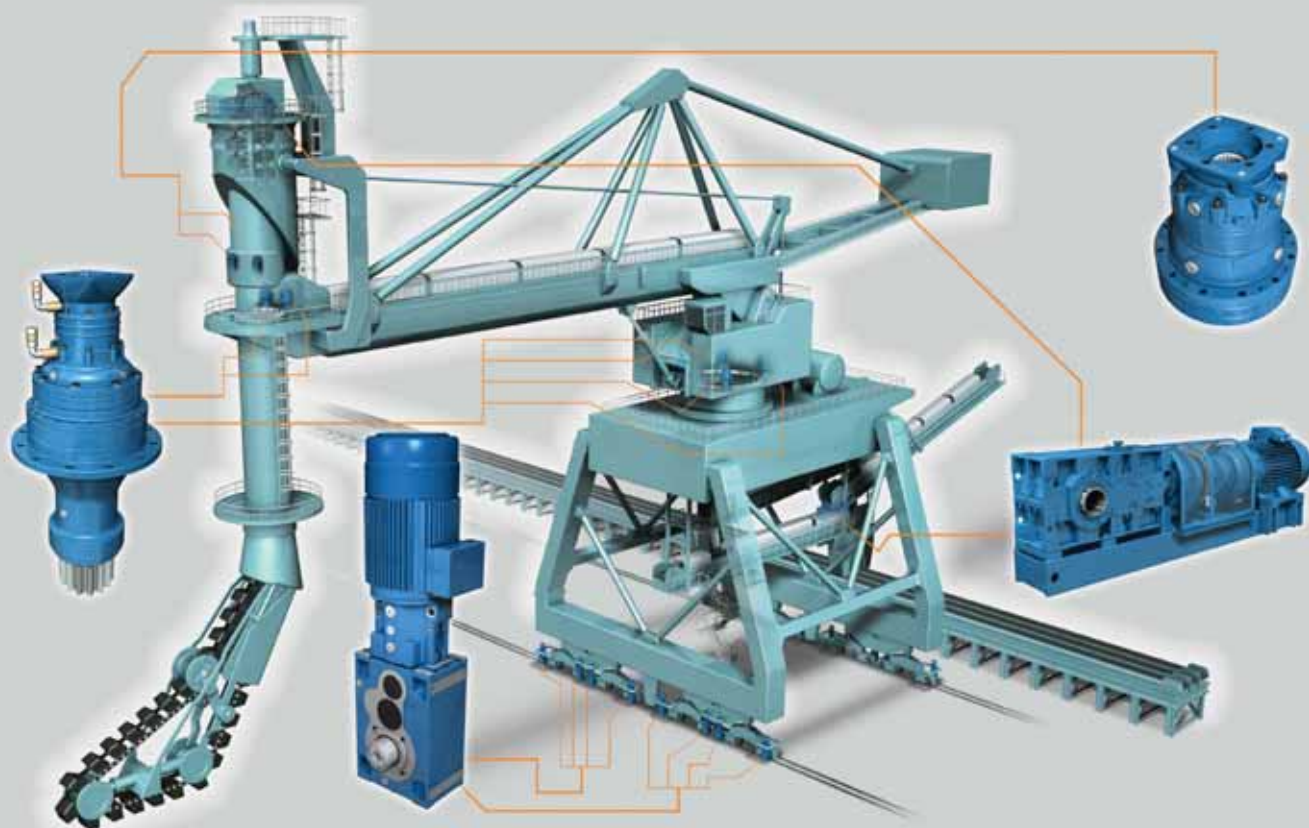


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Bulk handling drives, systems & controls



Jay Venter

ABB belt conveyor systems – reliable operation under the toughest conditions

Conveying is critical to all mining operations. To haul maximum loads over long distances under the toughest conditions expert solutions are required. More than 700km of belt conveyor systems operating worldwide are testimony to ABB's expertise in this field. The company helps clients meet the challenges of long distances in extreme environments and transportation conditions as well as ever increasing belt loads.

The new ABB gearless conveyor drive (GCD) combines all the company's know-how in conveyor drive solutions to match the highest demands for minimum wear, maximum efficiency and controllability.

COMPETENCE IN CONVEYOR SYSTEMS

Since the early sixties, ABB engineering solutions have served to improve electrical control, automation and drive units for large-scale conveyors, such as the 13km overland belt conveyor at the high-altitude copper mine in Collahuasi, Chile with downhill conveyor design and electric power regeneration.

Selection of the right instrumentation, automation and electrical equipment directly impacts performance, flexibility of operation, efficiency, reliability and overall life cycle costs of any conveyor system.

ABB's vast experience in the field allowed to develop a comprehensive portfolio of conveyor solutions featuring integrated systems for a variety of conveyors and their respective geometric configurations within the mining industry:

- ❖ conveyor drive systems;
- ❖ conveyor interlocking, automation and production optimization solutions;
- ❖ conveyor material tracking solutions;
- ❖ conveyor instrumentation;
- ❖ containerized drive and control systems;
- ❖ conveyor scanning solutions; and
- ❖ solutions to increase energy efficiency and reduce carbon footprint.

COMPLEX CONVEYOR SYSTEMS

Designing a control system for a range of successive conveyor belts (flights) with highest availability, calls for exceptional knowhow. Especially, if you factor in starting sequences, mass flow separations, ascent-/descent angles, bulk weight/distribution, fluctuating operational conditions, emergency and repair modes and various other critical aspects into the design. ABB combines state-of-the-art simulation techniques with cutting-edge drive and motor technology — like frequency converter driven AC motors — providing the client with solutions that fulfill the highest expectations for maximized energy efficiency and minimal wear.

CONVEYOR DRIVE SYSTEMS

- ❖ variable-speed drives (medium and low voltage);
- ❖ MCCP* drive load sharing software;
- ❖ mining drives and motors;
- ❖ resistor starters (binary, electronic); and
- ❖ simulations.

CONVEYOR INTERLOCKING, AUTOMATION AND PRODUCTION OPTIMIZATION

In normal operation your conveyor system will run in an interlocked mode via central control. This ensures that the conveyor system starts with each individual flight being co-ordinated with the conveyor belt next to it. The idea is to control the effects of both belt slip detection and operation at torque or load limit on the interlocking behaviour of the conveyor belts.

Variable-speed drives allow operation at any speed. This helps to maintain a constant filling level of the material being transported on the conveyor belts so as to match upstream volumes and other relevant process requirements. Additional effects are energy savings while also extending the life cycle of customers' applications.



CONVEYOR MATERIAL TRACKING

Material tracking is vital to both material quality and conveyor load tracking as it provides input data for stockpile management and optimum conveyor load control.

INSTRUMENTATION

The instrumentation comprises all sensors, switches and actuators vital to protecting the mechanics as well as the costly belts of your conveyor system. Important features include tramp metal detection, belt misalignment detection, slip detection/control, belt wear monitoring, belt rip and splice damage detection and chute overfilling prevention.

CONTAINERIZED SOLUTIONS FOR ALL CLIMATE CONDITIONS

Electrical systems such as power distribution, drives, switchgear, control systems and auxiliary components all require proper protection from the harsh conditions common to any mining environment. Dust, shock, vibration, extreme temperatures and high altitudes necessitate a containerized E-house — fully air-conditioned and dust-sealed.

CONVEYOR SUPERVISION

Remote access to the conveyor control system is crucial for keeping maintenance costs low, reducing process downtime and using 'pro-active' service. Conveyor supervision combines conventional conveyor monitoring with asset monitoring for failure prediction and reduced stress loads on a conveyor belt system by providing important alarm functions for the operator or control system.

Mining conveyor solutions

MINING CONVEYOR CONTROL PROGRAM (MCCP)

The choice of drive solution directly impacts performance, flexibility of operation, total efficiency, reliability and overall life cycle of a conveyor system.

ABB's mining conveyor control program (MCCP) for conveyor applications allows one to set essential conveyor functions and manage the critical and high-speed conveyor communication requirements on multi-motor conveyors.

ADVANTAGES

- ❖ pre-engineered solution;
- ❖ faster commissioning;

- ❖ overall maintenance reduction;
- ❖ reduced costs; and
- ❖ repeatability.

The MCCP is a software package developed by ABB to be loaded onto the control board of its medium or low voltage variable-speed drives.

The software is specifically configured for conveyor applications, allowing for setting (by parameter) of the essential conveyor functions. The MCCP was developed to manage the critical and high-speed conveyor communication requirements on multi-motor conveyors.

The conveyor start/stop control, acceleration and deceleration profiles, mechanical brake control, alarm processing, over and under speed limits and torque limits are all set by parameters in the MCCP — thus becoming the speed regulator or Master for the entire conveyor. The Master sends torque reference signals to all individual drives, which then act as Followers. Each of the Followers transmits information back to the Master, that in turn is used as input for the speed regulator. The communication cycle time is less than 5ms.

Traditionally, every conveyor required these functions to be custom developed for each application in the over riding PLC programme. With the use of the MCCP, these functions are no longer required in the PLC, which provides savings in time and overall cost.

ADVANTAGES AND BENEFITS

Pre-engineered solution

The pre-engineered solutions reduces the amount of engineering time required for PLC programming.

Faster commissioning

Communication between multiple drives is easily and simply achieved with this 'out of the box' approach.

Reduced maintenance needs

Conveyor parameters (e.g. start and stop times) can be altered without needing specialized maintenance staff on site.

Reduced cost

Interconnecting cabling is reduced to a single fibre optic connection between each variable-speed drive, resulting in lower costs.

Repeatability

Every conveyor will operate in exactly the same manner within the entire process.

Bosch Rexroth launches the world's most powerful direct drive

The new Hägglunds CBM hydraulic motor from Bosch Rexroth creates powerful opportunities. Taking over from the tried-and-true Hägglunds Marathon motor, the Hägglunds CBM packs 50% more torque into a motor that is smaller and up to 50% lighter than its predecessor. That gives it the world's highest torque-to-weight ratio.

For Bosch Rexroth customers, the new motor opens up new possibilities. The Hägglunds CBM not only handles heavier workloads, but also takes up less space and places less weight on the driven shaft. This means that customer machines, and in some cases the facilities that house them, can be smaller, lighter and simpler.

The motor's reduced installation requirements, combined with the higher productivity it allows, can mean lower overall investments and increased 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 and four-quadrant operation.

POWER FOR GROWING DEMANDS

The Hägglunds CBM motor was developed in direct response to customer requests. Greater power is increasingly needed in many industries, and it is a prerequisite for a number of new applications, such as wind and tidal energy. The Hägglunds CBM provides power for these applications and many others.

Based on the Hägglunds CB platform, the Hägglunds CBM has internal advances that allow it to supply 6,000Nm/bar of specific torque. "The Hägglunds CBM satisfies the toughest new demands on the market," says Lars Andren, one of the key members of the Hägglunds CBM development team. "With its introduction, we can provide the unique advantages of a hydraulic direct drive to a broader range of applications than ever before."

TESTED TO MEET HIGH EXPECTATIONS

In replacing a successful and trusted motor like the Hägglunds Marathon, Bosch Rexroth has left nothing to chance. Many years of R&D have gone into the Hägglunds CBM, as well numerous

hours of testing to verify performance and quality. In fact, the Hägglunds CBM has undergone more lab testing than any other Hägglunds motor.

A SMOOTH TRANSITION TO GREATER POWER

Those looking to upgrade from the Hägglunds Marathon will be pleased to know that direct retrofit kits are available. These make exchanging the motor both quick and simple in existing machines.

All customers, however, will benefit from the ease of installing the Hägglunds CBM, since it has splines that simplify attachment to the driven shaft.



(Shrink-disc adapters are also available.)

Retrofitting or newly installed, the Hägglunds CBM makes it easy to meet the

growing need for power.

Bosch Rexroth AG is a specialist in the field of drive and control technologies. Under the Rexroth brand name, the company supplies more than 500,000 customers with tailored solutions for driving, controlling, and moving. Bosch Rexroth is a partner for mobile applications, machinery applications and engineering, factory automation and renewable energies. The company provides customized solutions tailored to the needs and specifications of each individual market.

As The Drive & Control Company, Bosch Rexroth develops, produces, and sells components and systems in over 80 countries. As part of the Bosch Group, Bosch Rexroth and its 34,900 associates generated approximately €5.1 billion in revenue in 2010.

Richmond Engineering Works completes stacker/reclaimer and shiploader modernization using Conductix-Wampfler motor-driven cable reels

Conductix-Wampfler mag coupler motor driven reel on stacker/reclaimer. Monospiral spool with 700 feet of cable to handle 5kV power and 12 optical fibres.



Given the rising demand for coal exports, major coal export facilities in the Americas are finding it advantageous to modernize their bulk handling systems with newer control technologies. Most of the machines at work in these facilities were built decades ago. At that time, it was common to power bulk machines using two cables, one for power and one for controls. Each of these cables required a separate cable reel. But today, modern composite cables allow a single cable to have medium voltage power conductors, control conductors, and fibre optics. This single cable can be managed by a single reel.

A good example of bulk handling modernization was recently completed at the coal yard for a major coal exporting facility in Baltimore, MD. During an eight-day outage in August 2012, Richmond Engineering Works (Pittsburgh, PA) replaced six old cable reels with three new ones. Two stacker/reclaimers received a reel each and a third went on a ship loader. The control systems were converted from radio control to fibre optics and ethernet communication.

"Richmond engineers provided the electrical, mechanical and structural design scope for the project", reports Daren Fetcko,

Sales Manager with REW. "We purchased the cable reels from Conductix-Wampfler in Omaha, NE., since they have extensive experience in the bulk handling industry. Their engineers did a great job providing the right reels for the job."

Fetcko further stated that: "Our REW engineers' are also knowledgeable with other bulk material handling systems such as clamshell/grab bucket unloaders, continuous barge unloaders, and rotary car dumpers."

Mark Zuroske, market development manager for Conductix-Wampfler, added that: "Each reel used for the coal yard modernization incorporated a composite cable consisting of 5kV power along with 12 optical fibres."

The composite cable allowed the two reel systems to be replaced by a single reel. The ship-unloader reel handles a 1,100 foot cable. Each of the two reels for the stacker/reclaimers handles 700 feet of cable."

"Conductix Wampfler US is seeing a strong backlog of cable reel orders extending well into 2013 in the bulk handling market", reports Zuroske. "We are seeing continued growth in orders for the mining sector as well."

KABELSCHLEPP cable carriers supply travelling cranes with energy

RELIABLE AND EXTREME RESILIENT

Inside an 'ideal factory' all processes are integrated and synchronized. Even a travelling crane is essential to reducing work time, optimizing the process and increasing profit. However simple a crane may be, reliability of machinery and equipment is crucial. In travelling cranes made by the Italian manufacturer, CO.MAS KABELSCHLEPP cable carriers ensure reliable operation.

CO.MAS was founded in 1983 in Castagnole. Today the company is a specialist in the lifting sector and mainly builds travelling and trestle cranes. CO.MAS has built a reputation in the market for extreme flexibility and customer focus, constant endeavour for quality, and for the use of state-of-the-art technologies. Up to this date the company, with its 50-strong workforce, has been divided into two main branches: production and service.



Robust energy management in demand: the steel plant's crane have to move materials continuously at various stages of the production process.

subsequently better profits, as well as keeping down time to a minimum.”

INDIVIDUAL SOLUTIONS FOR THE STEEL INDUSTRY

CO.MAS produces its crane to meet the individual needs of each client. They are designed to be used seven days a week, and to support very frequent movements, always guaranteeing maximum reliability. Typical applications of CO.MAS machines are in the steel and iron industry in general, or in the prefabrication sector. “We don't make machines that lift huge loads only once in a while. Our machines guarantee a high frequency of operations without problems,” says Simone Carrer. For example, in a line that produces thousands of tonnes of raw material, it is essential to have a tool that is able to handle the assigned loads according to the



For this application COMAS installed the KABELSCHLEPP Totaltrax system consisting of a MC 1250 chain, with cross frames over a length of 4ms and an internal height of 168mm, complete with dividers, sliders, customized spacers and pre-installed 700 series cables.

“When one thinks of a crane, one imagines a product that is not technologically advanced,” states Simone Carrer, managing director of CO.MAS, “and in fact this is the case: advanced automation, which is also included in our machines, is linked mainly to the operator. In general it is a pretty simple product, which must perform a simple task.” However, the task must be performed well. He adds that it is often difficult for a buyer to choose the right product at the right price from the wide choice available on the market. Carrer suggests: “Lifting machines should be seen in the same way as other production machines, that is as active parts of the production cycle. By assessing the entire process more carefully, it is often possible to make a purchase that allows better working time margins, and

assigned timescale without unpleasant ‘surprises’: a breakdown would prove very costly.



For this application on a COMAS winch crane, where the cable chain is a side running design, the company chose a KABELSCHLEPP product.



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With the Totaltrax complete system, TSUBAKI KABELSCHLEPP provides preassembled cable carriers fully equipped with cables that just need to be installed and connected on site.

The latest solutions designed by the company from Treviso is a winch truck rotating by 360°, with a capacity from 12.5 + 12.5 tonnes, which is placed on the girders of a bridge crane. This solution is designed to operate in a steel plant where materials are handled at various stages of production and processing, up to the loading of finished products onto trucks for shipment. All used components were selected and dimensioned precisely for situations, which involve a large number of machine operations. The machine was built according to Class A8 M8 (5 m), i.e. according to the European standard classification for lifting equipment (FEM 1,001 and 9,511). This top-of-the-range machine was built to ensure a particularly high number of operational cycles with only minimum maintenance requirements.

For the cable carrier system of the winch truck CO.MAS chose a KABELSCHLEPP product. "Before deciding, we carefully evaluated several samples of chains from other manufacturers," explains Carrer. "The deciding factor, given the

type of high-performance machine on which it is installed, was the strength, which was substantially higher than the one of all other tested samples."

To ensure the 360° rotation of the winch truck, the energy management system must be installed accordingly. This was solved by a rotating system where the cable carrier is installed on its side. It runs inside a custom-made circular guide channel, which ensures a movement free from wear. For this particular application, the Totaltrax system by TSUBAKI KABELSCHLEPP was chosen. It consists of a MCI250 cable carrier with frame stays over a total length of four metres and an internal height of 168mm, complete with dividers, sliding pads, bespoke spacers, and Series 700 cables already installed. The chain has a bend radius of 1,350mm, allowing it to slide in a simple circular channel. This ensures movement without wear.

To guarantee such performance, CO.MAS takes particular care in the selection of the materials and components used in the production and attached great importance, as well as guaranteeing an excellent maintenance service.

The M Series KABELSCHLEPP cable carriers are robust and designed for use in harsh environments. They are available with different variants of frame stays and dividers. All M series chains are multivariable with nylon sidebands and aluminium frame-stays. The chain links are very solid and feature an efficient enclosed stop system. Locking bolts makes cable installation as



Wide choice in any case – cable conveyors made of steel, plastic and hybrid materials combining GRP and aluminium offer the right solution to any application problem.



Plug-and-play: with cable carriers in its Totaltrax version TSUBAKI KABELSCHLEPP provides preassembled cable carriers fully equipped with cables as an efficient alternative to time-, work- and cost-intensive in-house construction.

well as shortening and extending very easy. The M Series can be opened on the inside and outside for cable laying. Thus time can be saved during assembly and maintenance processes. In addition tensile and thrust forces are reduced by an optimized link design — the 'two-disc principle' — reducing wear of the link bosses and thus maximizing the service life.

The chain band also has a high load capacity. The wide range of KABELSCHLEPP Systems allows realizing bespoke solutions quickly, and tailored to the specific needs. Following these diverse requirements, TSUBAKI KABELSCHLEPP has offered the Totaltrax complete system for several years now. The system covers pre-assembled cable carriers with cables, as well as highly systems. Every customer can choose from a wide range of cable carriers in steel, plastic or hybrid materials with most diverse options for compartment layout, together with a broad range of connectors, highly flexible cable and other components. DCi



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Stock in trade



Louise Dodds-Ely

Aumund Group: focusing on low cost and low carbon footprint

The Aumund Group is a major manufacturer of bulk handling equipment, and has great expertise in stockyard systems.

In the case study below, Aumund gives details of a whole system that it has supplied, which covers all the bulk handling equipment requirements, all the way from the mine to the cement plant.

INNOVATIVE SOLUTIONS FROM MINE TO CEMENT PLANT

The fundamental principles of surface mining have remained unchanged for hundreds of years involving the use of explosives to blast the rock from the face, mobile plant to transport the as-mined rock and a primary crusher to reduce the material size to allow transfer now by conventional belt conveyor.

However, within the general parameters of the drill-blast-load-haul concept in recent years the Aumund Group has developed innovative solutions enabling operators to take maximum advantage of all available transportation modes combining the benefits of mobile plant and belt conveyor haulage to achieve the lowest cost per tonne with the smallest carbon footprint reflecting present sustainability obligations.

Using traditional solutions, mining can be a highly energy intensive operation with a large carbon footprint and high operating costs requiring a huge investment in expensive mobile equipment including often multiple large haul trucks where the

working bench may be several kilometres from the primary crusher.

In a traditional quarrying operation the rock is blasted and hauled using large dump trucks often over 100 tonnes capacity to a central crusher within the pit itself. The primary crusher, typically of the gyratory design for example, requires a substantial installation with primary feeder, conveyor and screening equipment to generate temporary stockpiles before the sized material is transported to the cement plant.

Almost invariably the crusher will be mounted in a dedicated building and often the design utilizes the relative height differential between the upper and lower quarry benches to minimize civil works costs. However, this arrangement has ongoing operating cost implications in that the as-mined rock must be hauled up to the primary feeder level and the crushed material conveyed from the lower level back up to the surface requiring a high energy input for both operations.

The as-mined material may be up to 1.5-metre lumps and creates a huge impact load on the primary feeder which must not only absorb the impact load but also provide a buffer holding capacity and controlled feed rate to the crusher to optimize the crusher performance.

Irish Cement has a typical primary crusher station where shale is sized using twin rotary sizers and then conveyed to

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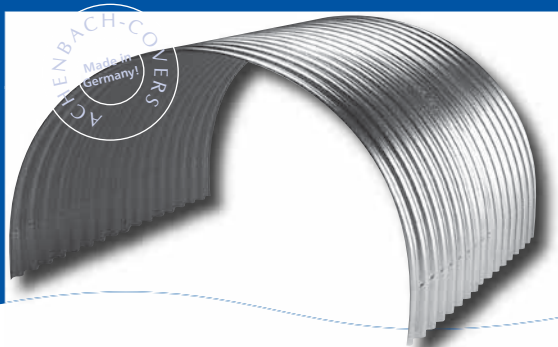
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Samson regulates shale discharge.



the screen house.

In this case the rotary crushers are relatively compact but with a gyratory or jaw design the equipment would be substantially higher demanding an even greater height differential.

This is a unique installation where the final feed rate to the ongoing conveyors is controlled by a Samson™ feeder acting as a reservoir to absorb peaks in the flow rate.

Utilizing the Samson™ deflected chassis design reduced the excavation depth and provided the fine feed rate control demanded by Irish Cement.

In all primary crusher operations the primary feeder is exposed to the maximum loading and must convey these huge lump sizes generally inclined from the tipping point to the crusher inlet.

Illustrated below, the Aumund BPB Series feeder is available with a variety of specifications and chain and apron plate designs.

The BPB-SF Series design utilizes tracked vehicle type chains and supporting rollers with milled apron plates up to 80mm thick designed specifically for this operation.

For a cement plant where the mine is relatively close to the kiln the central primary crusher concept remains the most popular and flexible solution.



Aumund primary crusher feeder.

However, there are alternatives combining the benefits of short distance truck haulage with long distance belt conveying.

The Samson™ Surface Feeder can be combined with an integral rotary sizer to receive as-mined limestone from small articulated dump trucks and provide a controlled flow rate and material size to the ongoing overland quarry field conveyors.

Whilst the limestone is not a particularly hard grade the lump size and impact duty remains the same as for any primary material feeder.

The advantage of this concept is that the whole equipment remains mobile, with the Samson feeder on rubber tyres and the rotary sizer on rails the complete feeding and sizing station may be easily moved along the field conveyor to remain close to the working bench.

To provide a stable mounting for the equipment and for the truck access interlocking concrete blocks are employed which may be easily dismantled and used again when the equipment is re-positioned.

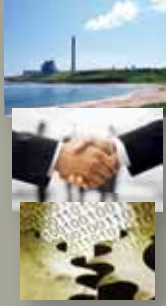
In this manner the whole plant limestone demand (chalk) of 600tph (tonnes per hour) may be met using just two 35-tonne-capacity articulated trucks. Also, since the trucks operate always at the same general level and there is no need to raise the material from the quarry floor the total energy input is significantly reduced.

The key issue in any mining system that involves explosives is the absolute need to remove all of the plant clear of the working face for safe blasting; a clear advantage for truck haulage. However, this is not the only solution and in many new working locations the mobile face crusher concept is becoming more popular.

With this system the primary crusher is mounted to a tracked carriage complete with primary feeder and discharge conveyor as an independent fully autonomous unit with its own onboard diesel gen-set.

B&W, part of the Aumund Group since 2002, pioneered the development of highly mobile 'Link Conveyors' for this purpose.

These Link Conveyors include self-propelled wheel drive and steering units allowing the conveyor to be rapidly moved



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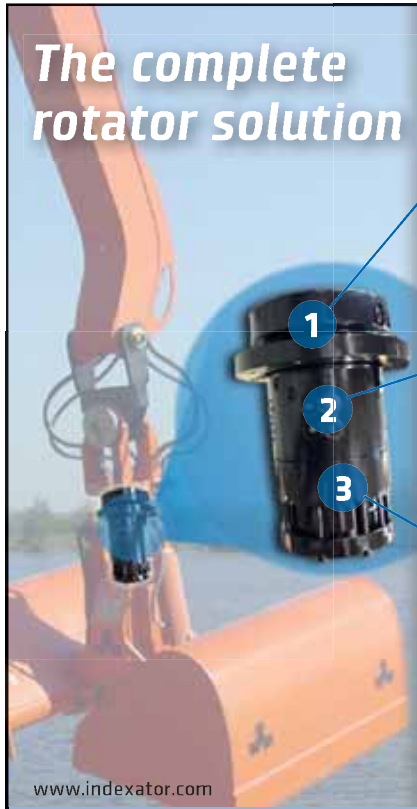
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between working areas and away from the face for blasting. In general the complete equipment including digger, crusher and conveyors may be moved clear in 20 minutes such that the total time lost during the blast may be less than one hour.

From the Link Conveyors the crushed rock is transferred to a fixed in-pit conveyor system and raised to the secondary crusher and screening system before despatch.

Using this concept no truck haulage is required thus reducing the operating cost and absorbed energy enormously and in so doing reducing the plant carbon footprint.

After the crushing and screening operations at the mine or quarry the sized material must be stored and generally blended to achieve a consistent supply for the kiln.

Schade, part of the Aumund Group since 2001, has delivered many different solutions for automated stockpiling and blending for the cement industry based on its long-established range of chain scraper designs.

Schade was formed in 1879 and entered the reclaimer market in 1949 with equipment first for the fertilizer industry and latterly for power plants. It was in 1975 Schade supplied its first system for the cement industry at Ketton Cement in the UK, now part of



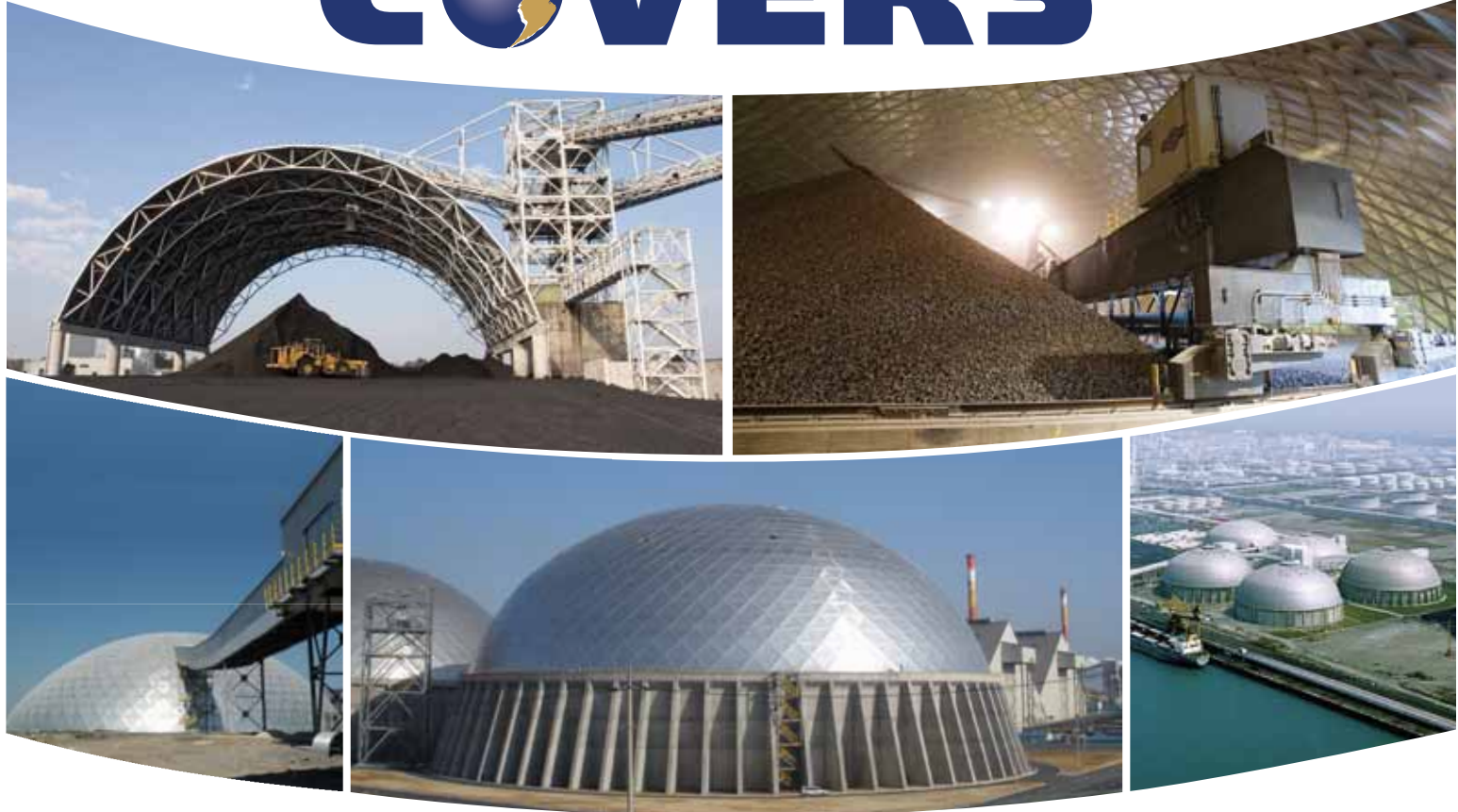
As-mined chalk intake to Samson 1600

Link conveyors to mobile face crusher.



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Circular storage radial boom stacker.

the Heidelberger Group.

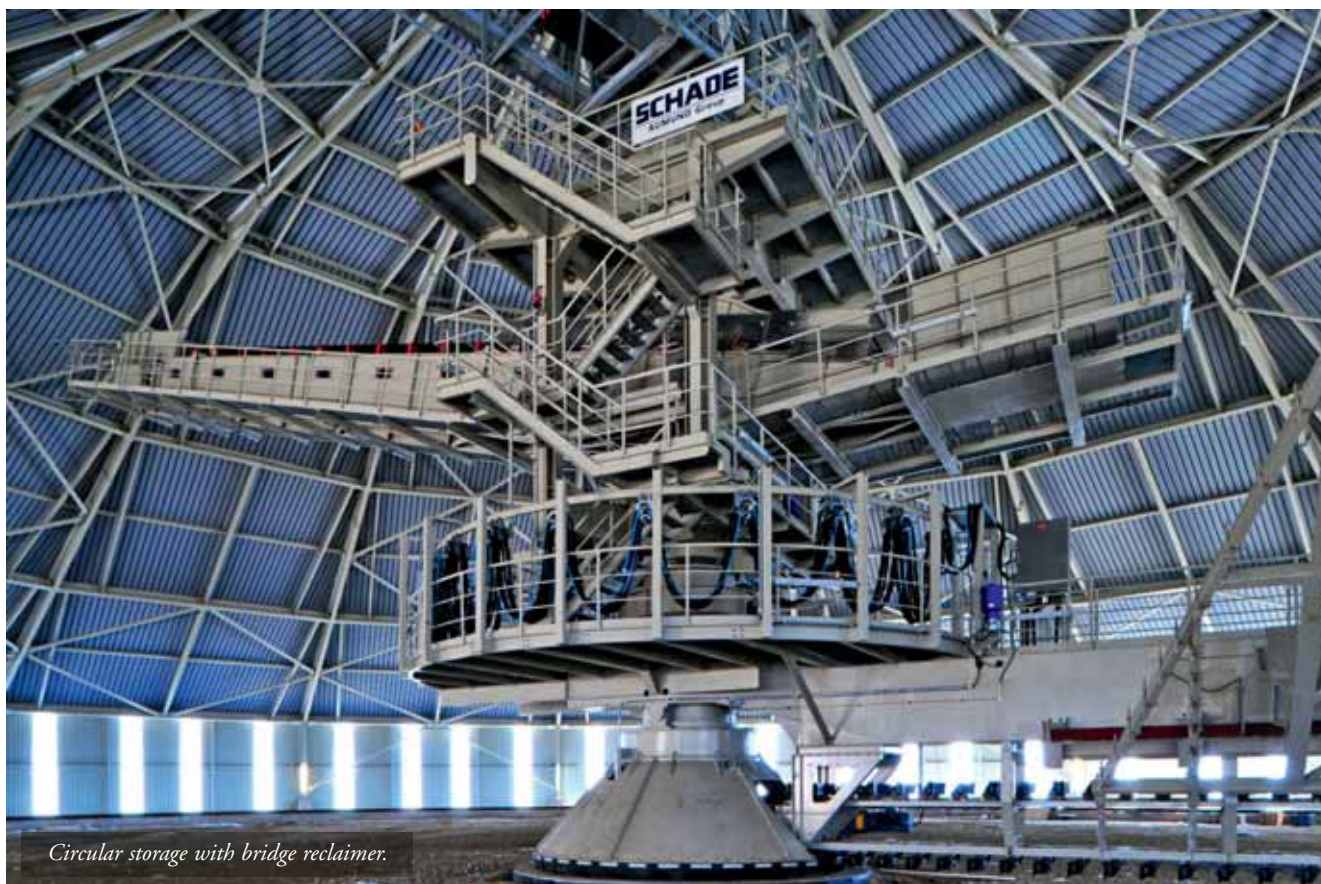
Since 1950 in total Schade has supplied over 600 installations worldwide including recently a total of 50 vast circular storage systems for the Chinese power industry.

A recent installation at the Holcim (Sueddeutschland) GmbH plant in Dotternhausen, Germany is perhaps more typical of the systems supplied in the cement industry. This plant was

delivered in 2008 and has a design reclaiming rate of 200tph hour handling limestone.

With the circular storage system, the complete equipment is mounted to a central column that is extended to carry the incoming conveyor system also thus eliminating any loads from the enclosure structure.

The stockpile is generated using the luffing radial stacker



Circular storage with bridge reclaimer.



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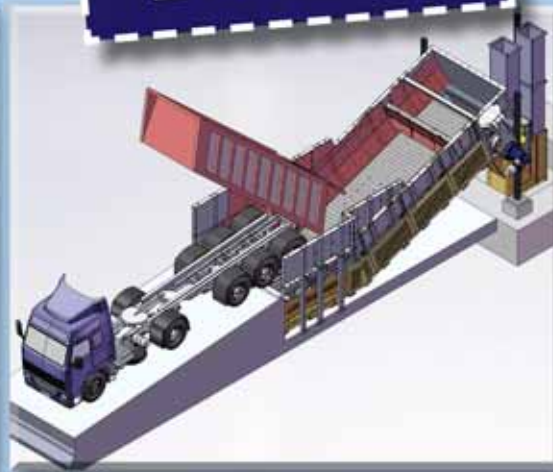
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Bridge reclaimer chain scraper.

creating incremental layers using the 'Chevcon' stacking solution such that at any point a section through the stockpile will include layers of every grade of material. Thus as the material is recovered by the bridge reclaimer the final output is fully homogenized.

Illustrated above the chain scraper reclaimer system comprises close pitch shovels that scrape the material from the stockpile to the central outlet. Note also the outboard roller conveyor chain which provides reduced running resistance and quiet operation plus extended chain life.

The bridge reclaimer concept may be more easily seen in this

longitudinal storage facility recently commissioned in Romania at the Holcim Campulung plant (illustrated below).

Mounted to rails on the bridge structure and set to follow the material natural repose angle the reciprocating harrow is fitted with sharpened steel tines which move through the stockpile surface dislodging material throughout the full stockpile depth.

The longitudinal bridge reclaimer is generally supplied with a deflected conveyor to raise the discharge enabling the collecting conveyor to be set at the same level as the stockpile.

To generate the stockpile, a rail-mounted travelling stacker is



Bridge reclaimer — longitudinal storage.



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*Semi-portal reclaimer at
Salonit Anhovo.*

included with a luffing boom allowing the stockpile to be generated in discrete layers.

To achieve this the stacker traverses the set stockpile zone continuously moving back and forward with an incremental increase in discharge height after each pass generating thin layers.

This stockpiling system is known as the Chevron profile and is similar in principle to that used for the circular storage as illustrated in Dotternhausen except with the circular storage the stockpile is wrapped around the central column.

In an ideal world the stone would be transferred from the quarry to the cement plant by belt conveyor but in some circumstances that is not a practical option and truck haulage cannot be avoided.

In this case, limestone is transferred from the local quarry to the cement plant of Salonit Anhovo in Slovenia using

60-tonne-capacity heavy mining trucks.

The trucks discharge direct to a Samson™ 1600 Series surface feeder with a holding capacity of 120 tonnes providing a controlled discharge rate to the ongoing conveyor system and in this case a travelling shuttle conveyor discharges the materials direct to storage bays. From the storage bays the limestone and other fuels and additives are recovered using a Schade semi-portal reclaimer.

These combinations of truck and conveyor haulage are ideal when the quarry or mine is relatively close to the cement plant.

However, there are a growing number of instances where the raw materials for cement and aggregates for concrete and other construction uses must be sourced many hundreds of kilometres from the point of final distribution.

For inland haulage barge traffic is the ideal answer with around 15% of the cost of road haulage and similarly reduced



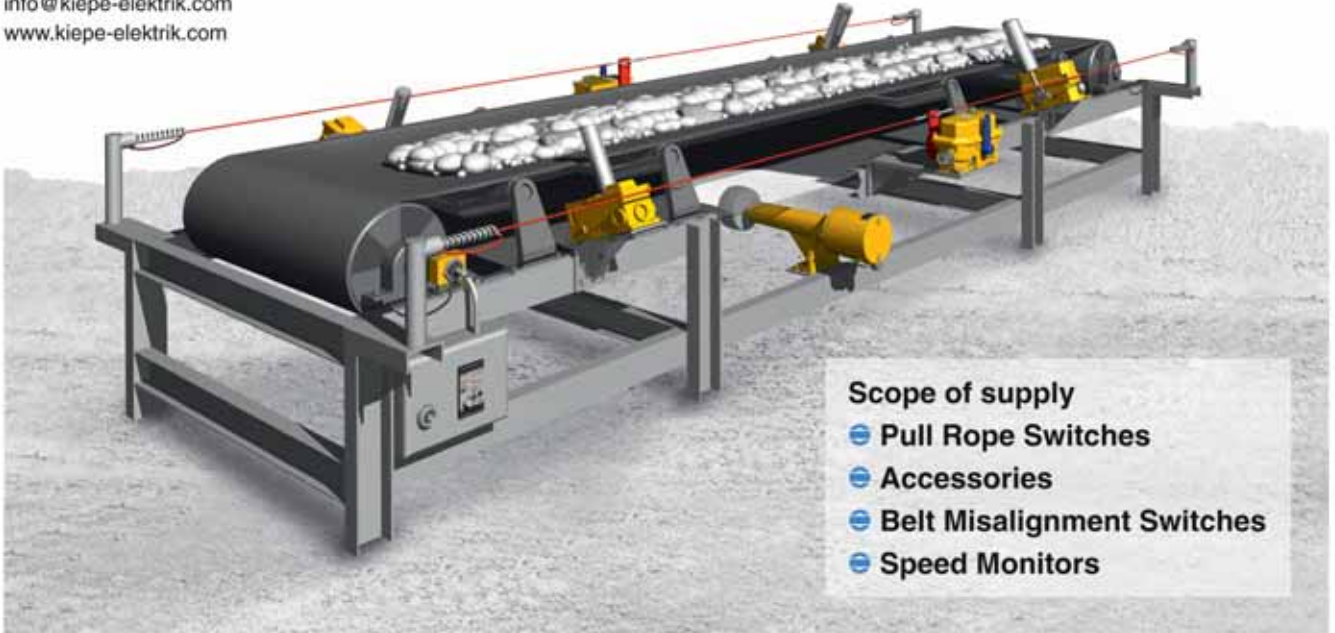
*Barge loading basalt
on Lake Onega.*

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*Imported additions
material intake.*

carbon footprint. Furthermore barges may be hauled almost silently and safely into major urban conurbations with little disturbance and minimum risk of protest.

Illustrated on p117 on the Volga in Russia barge traffic is commonplace...

However, bulk shipment requires loading and discharge facilities that are often either not viable as a permanent installation or subject to a lengthy permissioning process.

In this situation the B&W (Aumund Group) Stormajor is an attractive solution being mobile and with a cantilevered outloading boom that can operate on a lake or river berth with the minimum of permanent infrastructure.

For the economic discharge of barges and deep sea vessels generally grabs are the only viable option. Either used with ships own deck mounted cranes or using mobile harbour cranes from a suitable berth there is one common problem — dust and pollution control — particularly with dry aggregates such as limestone.

At Cementos Panama, for example, a purpose-built jetty was constructed and two Eco-Hoppers and the associated conveyor system supplied by the Aumund Group.

The Eco-Hopper concept provides dust-controlled discharge by grab using integral reverse jet filters combined with the 'Flex-Flap' one-way valve system to minimize the air extraction demand.

For maximum flexibility the Eco-Hopper may be supplied fully mobile on pneumatic wheels with a dust-controlled truck loading chute to minimize the overall fugitive dust escape and consequent environmental pollution for the operation as a whole.

Once on wheels the raw or additions material may be transported directly to the cement plant and in this situation for imported materials the Aumund Samson™ has also proven very popular.

Illustrated here at a Lafarge cement plant in Morocco the

Samson receives additions material from tipping trucks and discharges to an Aumund type BWZ central chain bucket elevator.

Surface mounting eliminates the deep pits and expensive foundations and underground hoppers and feeders associated with conventional truck discharge facilities. Furthermore, since the material free fall from the truck is greatly reduced the associated dust generation is almost eliminated requiring a much reduced extraction volume to maintain the installation substantially dust free.



*Intake and vertical elevation
by Aumund.*

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Telestack installs fully customized system as part of LMC investment

Telestack has recently installed a custom design mobile truck unloading, stockpiling, reclaiming and barge loading facility in Sierra Leone. Installation commenced towards the end of 2011 and has been completely commissioned and signed over in early 2012.

The turnkey solution was delivered as part of London Mining Company's (LMC) Phase I investment and Telestack's sales engineers worked closely with LMC management and LMC consultant on the project, Ausenco, to deliver the bespoke turnkey solution.

LMC choose a logistic system which sees material coming from its Outotec beneficiation plant (8,000 tonne per day), being trucked 40km from the mine site in Marampa into the barge loading facility in Thofeyim on the river Loko. From this point, the material is loaded onto 8,000dwt barges at a rate of 1,500tph (tonnes per hour). The barges then form part of a transshipping process, where they are unloaded via grab cranes onto Handymax vessels ranging from 37,000–55,000dwt.

The project consists of various stages (see Fig 1), which ensure maximum operational flexibility for the operator, this includes:

TRUCK UNLOADING

From the beneficiation plant, truck and dog units are loaded with 2 x 40 tonnes of iron ore fines with typical FE content of 65%+. The trucks then travel to LMC's purpose built road to the

stockpiling and barge loading site. On arrival the trucks pass over a wheel wash before driving over the Telestack grid hopper where each trailer is unloaded. The unloading hopper has a capacity of 150t (54m³) and is fully lined with low friction liners. The trailers are bottom discharge and can unload their 80-tonne cargo in less than five minutes. The unloading hopper regulates the feed at between 800–1,000tph from the surge by means of a robust apron belt feeder with a variable height gate outlet, all custom designed and manufactured by Telestack for this project.

The heavy duty apron belt feeder module is 1,200mm wide and incorporates an 800kN chain. The apron belt feeder incorporates all the strength of a normal apron pan feeder but has much better sealing properties as it can be sealed like a traditional belt feeder, therefore optimizing both spillage prevention and robust feeder characteristics all to cater for the heavy surge of iron ore at 2.8t/m³ (see Fig 2 and Fig 3).

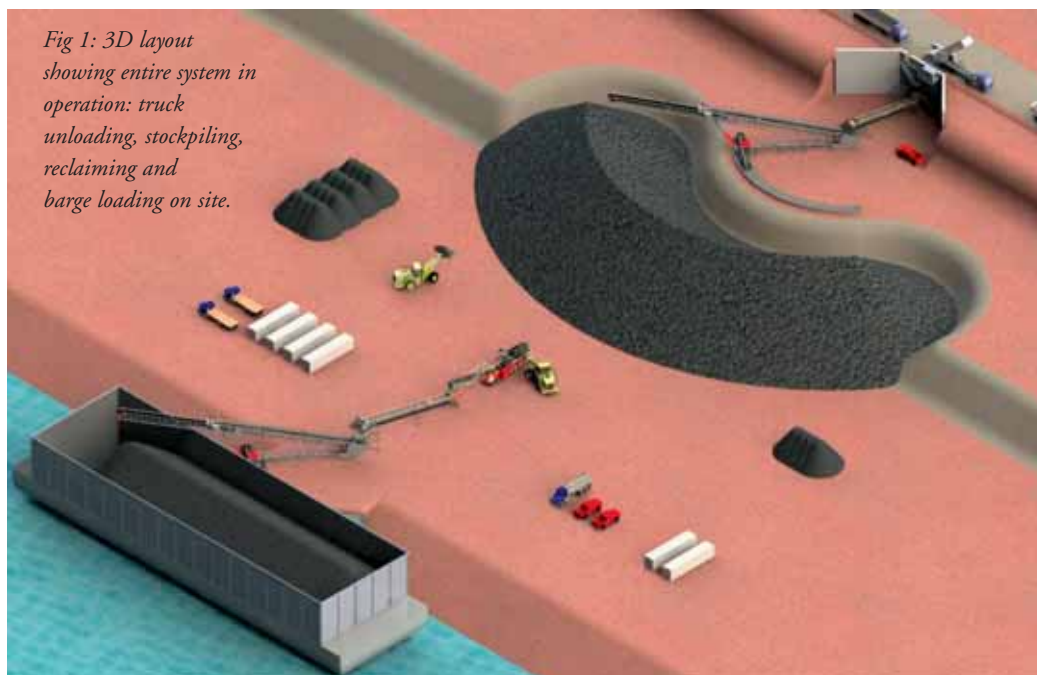


Fig 1: 3D layout showing entire system in operation: truck unloading, stockpiling, reclaiming and barge loading on site.

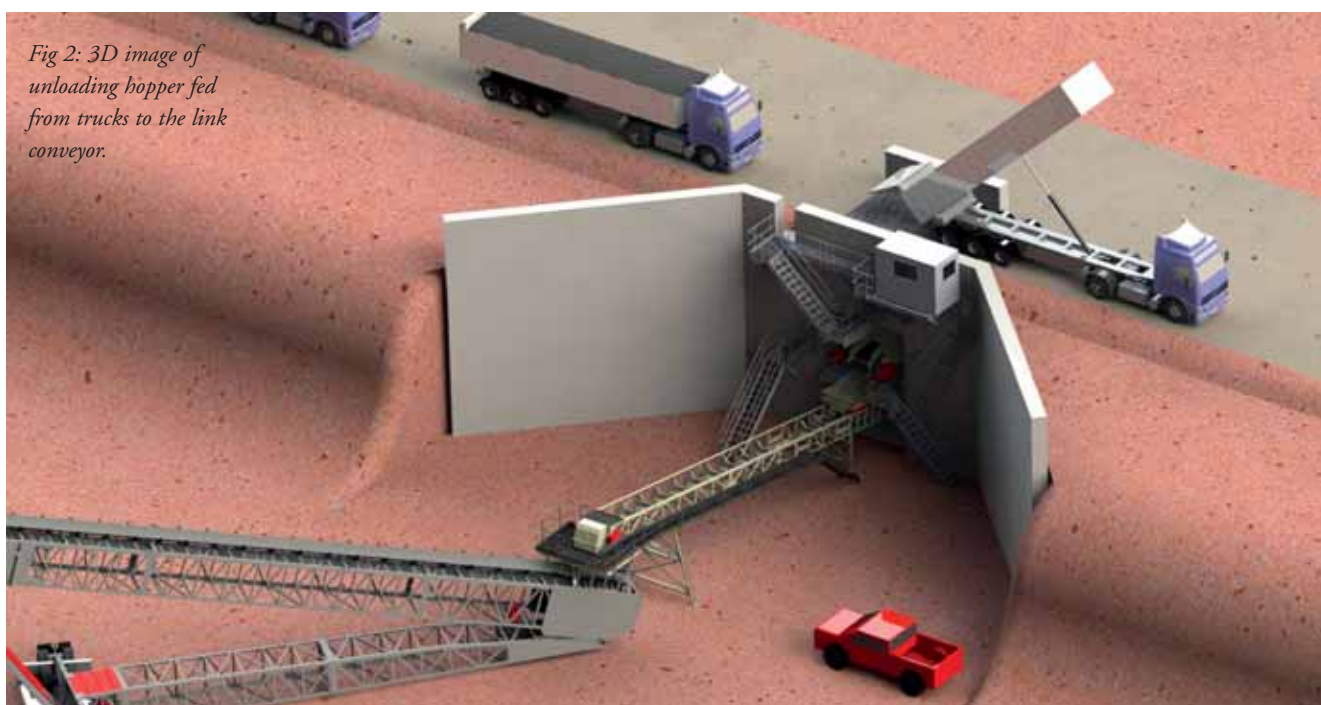


Fig 2: 3D image of unloading hopper fed from trucks to the link conveyor.

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Fig 3: fully customized 150-tonne hopper fed from truck and dog units to 20m link conveyor.

STACKING SYSTEM

From the hopper the material is transferred onto a Telesstack 20m link conveyor which weighs the material by means of a dual idler belt weigher. This is used to keep records of daily, weekly, monthly and annual capacities and to monitor stocks of iron ore

in the stockpile. The 20m link conveyor discharges into the feed-boot of the Telesstack 850, a mobile radial and telescopic stockpiling conveyor all in one chassis which can peak at 1,000tph and has a total length of 51.2 metres. The TS 850 has been positioned on an 8-metre-high plinth which utilizes the natural



Fig 4: view of stacking system from operator's cabin, showing 20m link conveyor and TS 850 radial telescopic stacker.

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Fig 5: TS 850 radial telescopic stacker stockpiling over plinth at 1,000tph.



topography of the site and therefore allows a total stockpile height of 25 metres to be achieved. This gives LMC approx 350,000 tonnes of material within a 180° radial axis. Material is stacked at approximately 8,000 to 10,000 tonnes per day which means the stockpile has maximum between 35–44 days' complete production without any shipments. All maintenance is carried out via access walkways and all transfer points are lined and incorporate high valley angles to minimize blockage potential especially in the rainy season (see Fig 4 and Fig 5). The operator

cabin is located at the optimum point to allow best viewing points for truck unloading and stacking. Also, strategically placed metal halide flood lights allow for 24 hour operation.

RECLAIMING SYSTEM

From the stockpile a WA 600 Komatsu wheel loader reclaims material from the pile and feeds a Telestack track mobile hopper feeder with an 18m³ apron belt feeder. The apron belt feeder (50 tonnes) regulates the feed of the heavy surge from the

Fig 6: Komatsu WA 600 wheel loader reclaiming iron ore from the stockpile to the Telestack mobile reclaiming hopper.





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Fig 7: reclaiming material from stockpile to 27.5m link conveyor to TS 1550 radial telescopic shiploading conveyor loading the 8,000dwt barges at 1,500tph.



Fig 8: TS 1550 radial telescopic shiploader loading the 8,000dwt barges at 1,500tph.



28-tonne dump (10m³) bucket of the WA 600. Both apron belt feeders are designed to be started under full load condition.

The reclaim hopper is located in the centre line of the stockpile to minimize the load and carry distance. The single WA 600 can comfortably deliver between 1,200–1,500tph. The feeder then transfers the material onto a Telesack 27.5m link conveyor which weighs the material and also takes a sample using an ISO 308-certified standard sampling unit.

The ESSA sampler is a reverse spoon type design and takes a cut from the falling stream as per iron ore best practice sampling procedure. Sampling can be done: a) manually; b) set intervals on a timing basis; or c) set intervals on a tonnage basis (see Fig 6 and Fig 7).

BARGE-LOADING SYSTEM

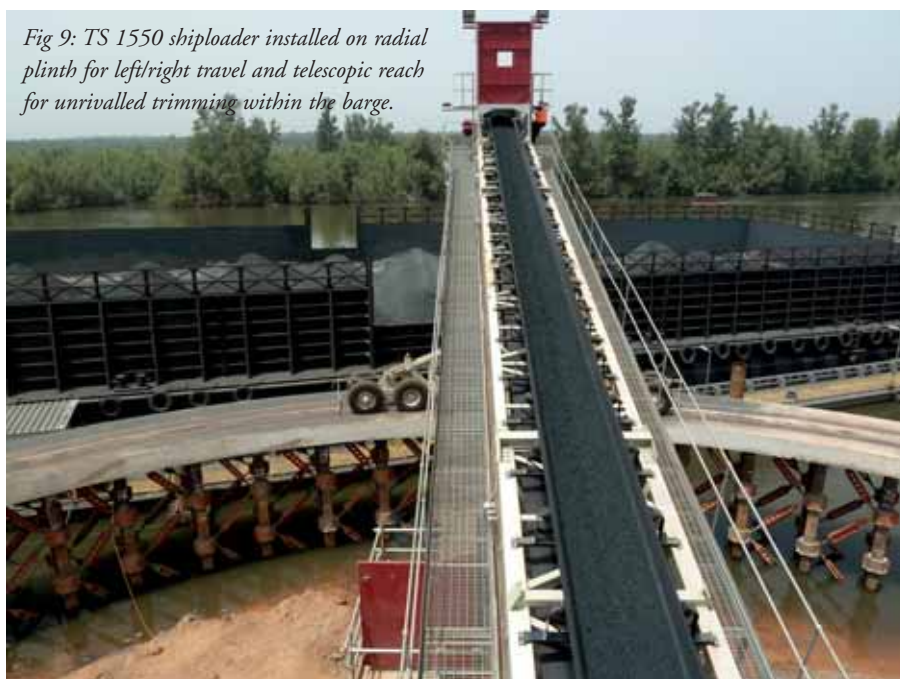
From the link conveyor the iron ore is transported to a Telesack TS1550, a mobile radial telescopic shiploading conveyor operating at 1,500tph. The TS 1550 has an operating cabin located at the end of the outer conveyor to ensure maximum visibility when loading the barge. The operator trims the barge by means of the TS1550 barge loader's radial telescopic and luffing capabilities. This technology ensures they can trim the entire barge from one feed-in position to enhance production rates and limit down-time in comparison with other designs. The range of discharge points allow the 8,000dwt barge to be

loaded without having to move the barge in any way (see Figs 8, 9 and 10).

Loading is carried out in linear heaps which gives optimum efficiency further down the logistic chain when grabs pick up material and transfer onto the Handymax vessels via the transshipping process.

This fully customized system shows Telesack's commitment to its customer base, in designing, manufacturing and installing heavy duty mining specification units to meet the needs of the application. This system can be utilized for all mining companies

Fig 9: TS 1550 shiploader installed on radial plinth for left/right travel and telescopic reach for unrivalled trimming within the barge.





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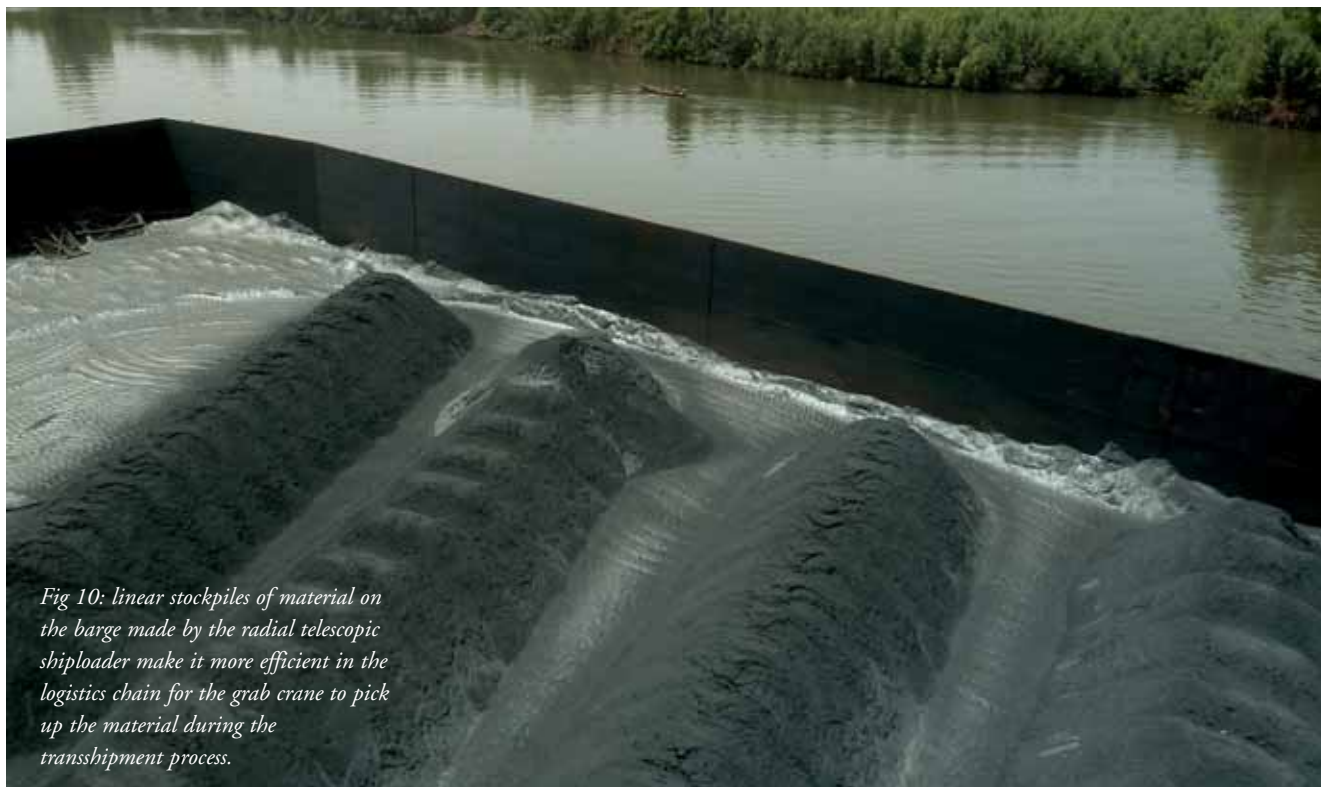


Fig 10: linear stockpiles of material on the barge made by the radial telescopic shiploader make it more efficient in the logistics chain for the grab crane to pick up the material during the transshipment process.

in existing mines or new mines that are opening up, especially in remote locations for typical phase one of installations globally to start the mining process. The main advantages over large fixed stackers/reclaimers and fixed installations include:

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- ❖ in 3–5 years' time, when the production is increased and fixed conveyor systems installed, equipment can still be used as an:

- ❑ emergency back-up system if fixed system fails and during planned maintenance;
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Telestack will be exhibiting at the forthcoming 32nd Coaltrans World Coal Conference which is taking place in Istanbul, Turkey, from 14–16 October this year.

Fig 11: TS 1550 radial telescopic barge loader complete with operator's cabin during barge loading operations.



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Recent stockyard system developments at ThyssenKrupp Fördertechnik

Giant bucket wheel stacker/reclaimer at EMO, the Netherlands.



ThyssenKrupp Fördertechnik (TKF) has given Dry Cargo International details of a few of the company's latest developments in stockyard systems.

NEW BUCKETWHEEL STACKER-RECLAIMER AT THE EMO TERMINAL IN THE NETHERLANDS

In 2009 Electrabel, Netherlands, began the construction of a coal-fired power station at Maasvlakte. With the EMO terminal being in the direct vicinity of this future power station, it was an obvious solution to use the EMO infrastructure for feeding the power station with coal from the EMO terminal. To handle the increased volume of coal, it was decided to install a further combined stacker/reclaimer on the EMO premises (see picture above). This machine will be the seventh bucket wheel stacker/reclaimer (KB7) and will be an exact copy of the stacker/reclaimer No. 6 (KB6), which is the largest one of its kind in Europe.

During reclaiming, the material can be transported either to the EMO terminal or to the power station. To this effect, the stockyard conveyor has been fitted with a reversible drive unit. The upstream material flow, coming from the EMO terminal, can either be stacked by KB7 onto the stockyard or can be bypassed directly to the Electrabel power plant. To achieve this, the machine has been equipped with a retractable tripper car which either feeds the intermediate conveyor during the stacking operation or by-passes the machine either during reclaiming or during direct feeding to the power plant.

KB7 as well as all the other EMO stacker/reclaimers have been designed to mainly handle coal and iron ore. Although the respective material properties are quite different, the machines have been designed to reclaim and to stack each of these materials at the same capacity. This is achieved by using variable

conveyor and bucket wheel speeds.

The cell-type bucket wheel with nine buckets and a diameter of 9m is driven by a slow-running hydraulic motor and reclaims the material at up to 4,500tph (tonnes per hour).

During the stacking operation, up to 6,000tph of coal or iron ore can be conveyed to the stockpiles. With a boom length of 60m, the machine is able to stack piles up to 60m wide and 24m high.

Besides the bucket wheel, the slewing mechanism is also driven by a slow running hydraulic motor in order to be able to control the slewing speed while protecting the mechanism from peak loads.

The geometry of the bucketwheel boom and the counterweight boom, as well as those at the tie rods, have been arranged to form a parallelogram. In comparison with other systems, this C-Frame system offers the advantage of a minimum displacement of the centre of gravity while lifting and lowering the bucketwheel boom. This results in a more uniform distribution of the load onto the slewing roller bearing and onto the travel mechanism.

AUTOMATION OF STOCKYARD OPERATION

In 2010, TKF was awarded a follow-on order contract for automation of the bucketwheel stacker/reclaimer at the ILVA steelworks in Taranto, Italy, which belongs to the RIVA group. This second order was placed with TKF in a co-operation with German stockyard automation specialist iSAM-imma GmbH, after the successful start-up of fully automatic operation of the first two TKF bucketwheel machines in 2008.

The success story began in January 2004, when TKF had to overcome strong national and international competition to win the order for the turnkey supply of a combined

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Drum (barrel) reclaimer in operation at Taranto Plant.



stacker/reclaimer. It continued in October 2004 when the company was awarded the contract to supply an identical machine and, as the co-operation between the two companies has continued to flourish, and TKF has now been rewarded by being chosen to supply a new drum reclaimer for the same steelworks.

The stacker reclaimers were ordered to replace two machines previously supplied by a local competitor. They will either stack the incoming iron ore at 10,000tph, or reclaim it at 2,500tph and, with their boom length of 60 metres, they will rank among the highest-capacity stacker reclaimers installed in Europe. The machines were commissioned at the end of July and during December 2005, and have been in commercial operation since 2006.

In 2005, TKF was chosen to supply two new drum reclaimers for the same steelworks. Both machines, which were put into commercial operation in August 2006, are used to homogenize, blend and feed the iron ore to the steelworks at a rated capacity

of 2,000tph (maximum 2,100tph).

Due to design improvements, the new drum reclaimers feature reduced wear, weight and power consumption, while still achieving the optimum homogenization and reclaiming process.

In particular TKF's drum reclaimers have the following special features:

- ❖ very large steady flow of materials;
- ❖ large capacity reserves;
- ❖ low weight of the drum body;
- ❖ low power consumption;
- ❖ low wear;
- ❖ extremely short period for initial cut into the stockpile;



Unmanned automatic operation of bucket wheel machines



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- ❖ optimum mixing and blending effects;
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- ❖ automatic operation; and
- ❖ short maintenance and down time

Back to the automation of bucket wheel stacker-reclaimers; the goal is to achieve an automated stockyard and material management system for the iron and steel plant, to increase the availability and efficiency of the stockyard operation, as well as to reduce machine downtime.

The very high technical standard of the design and construction has made it possible for the machine to be equipped with an unmanned control system — using a 3D scanner and GPS device. This allows for fully automatic operation from a remote control and monitoring station in the port. In this way, not only are operational costs reduced to a minimum level, but it also means that capital investments costs are amortized in the shortest possible time.

Installation works are currently under way, with full implementation of the automation system for unmanned operation to take place soon.

ILVA's decision to award all its important contracts to TKF represents continuity in the long-standing relationship and demonstrates the client's appreciation of and satisfaction with TKF's performance to date. The choice went in favour of TKF after strong international competition.

HANDOVER OF 'KOHLELOGISTIK' TO HKM/DUISBURG

Recently TKF handed over the new 'Kohlelogistik' to its client, HKM Hüttenwerke Krupp Mannesmann at Duisburg. This means that the existing coke oven plant, built in 1984 to produce about 1.1mt (million tonnes) of coke per year, has been equipped with a new belt conveyor and storage system which will allow the supply of coking coal to the coke oven plant, whose future

production extension is planned to reach over 2.3mt of coke per year when it is in automatic operation.

The design concept for the plant construction had to comply with very demanding specifications in respect of noise emissions and explosion protection (ATEX guidelines). The acoustic design of the plant had to take into account sound power levels which were very low in connection with normal industrial installations. This is in order to avoid any risks to the environment due to sound emission from the new coal logistics plant, combined with the noise emissions from the existing steel works. In order to comply with the specifications, the individual plant components were assessed in sound-intensity tests both prior to and during the construction stage.

In detail, a sound-intensity measurement test was carried out, and a study of the conveyor belt idlers prior to selecting the respective supplier, and provision was made for considerable sound insulation measures on the belt drives and large machines. The most important target was to avoid the causes of sound formation as far as possible by using appropriate primary measures.

At the same time, it was necessary to ensure the required explosion protection of the plant. Therefore, cladding the towers helped to achieve both a sufficient sound insulation and an adequate ventilation of the building to prevent coal dust explosions.

The following individual example will serve to clarify the level of complexity resulting from a simultaneous adherence to sound insulation and explosion protection specifications. In order to reduce the noise from the running idlers and the transmission of noise to the surrounding steel structure, the idler axles have been supported in steel holders equipped with rubber caps. During production, metal fibres were added to the rubber compounds used for the cap fabrication, in order to create a conductive support suitable for removing electrical charges and to fulfil the specifications for the explosion protection.



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Coal stockyard (stacker with two portal scrapers) in fully automatic operation.

The scope of supply for the new 'Kohlelogistik' also included a building which is intended to be retrofitted with a coal mill at a later stage. This building was installed as a steel girder structure and was filled with sand-lime bricks for sound insulation purposes. To protect the coal mill against increasing wear, in the feed area to the mill, TKF has installed a roll sizer in tower ES004 to keep oversize material and foreign matter out.

During the concept and design stage of the new installation in the existing steel works area, the original plant — including foundations, track systems, supports and buildings — had to be taken into account, as well as a future extension of the plant. During the realization of the extensive erection works, it was

essential to maintain the regular operation and to further ensure the coal supply to the existing coke oven group. Demolition of the old installations and construction of the new ones had to be exactly co-ordinated with each other.

The two sections 'Kohlelogistik A and B' were completed in 2009 and tested each for their reliability and availability over the course of a three-month full-shift operation. Finally in December 2009, it was possible to prove an availability of more than 99% for the whole plant. After submitting the proof of compliance with the officially fixed sound emission levels, and fulfilment of the requirements with respect to the explosion protection, the whole plant was taken over in full working order

by the coking division of HKM.

It should be noted that at all times, it was necessary to have a reliable coal supply to the steel works. Therefore, the new construction and the retrofitting of the existing coal systems could only be carried out in very close co-operation between ThyssenKrupp Fördertechnik and the Hüttenwerke Krupp Mannesmann team.



Coal stockyard (stacker with two portal scrapers) in fully automatic operation.

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Grain - 1,500 t/h



Grain - 2,500 t/h / wood chips



Kaolin 1,100 t/h



Grain - 1,500 t/h each tower



Dust trap - Upgrading

Bedeschi reports stockyard system contracts



Bulk material handling is an engineering field that is centred around the design of equipment used for the handling of dry materials such as ores, coal, etc. in loose bulk form.

Bulk material handling systems are typically composed of stationary machinery such as conveyor belts, stackers, reclaimers, bucket elevators, shiploaders, hoppers and various mobile equipment such as loaders, shuttles, combined with storage facilities such as stockyards, storage silos or stockpiles. Advanced bulk material handling systems feature integrated bulk storage, conveying, and discharge.



The purpose of a bulk material handling facility may be to transport material from one of several locations (i.e. a source) to an ultimate destination or to process material such as ore in concentrating and smelting or handling materials for manufacturing.

Providing storage and inventory control and possibly material blending is usually part of a bulk material handling system.

In ports handling large quantities of bulk materials continuous ship unloaders are replacing gantry cranes.

Thanks to experience gained during countless projects, Bedeschi has developed equipment that contribute to making the use of raw material more efficient and sustainable.

DOMINION ENERGY VIRGINIA CITY HYBRID ENERGY CENTER

In 2009, Bedeschi won a contract to supply a key coal handling facility to Dominion Energy Virginia City Hybrid Energy Center.

The contract called for the supply of two identical coal storages facilities, with twin linear STK 31/1200 coal stackers with a nominal capacity (for both) of 860tph (tonnes per hour), and one PAL P 260 22+12 portal reclaimer with a nominal capacity of 860tph for each section.

Dominion is one of the US's largest producers and transporters of energy, with a portfolio of approximately 28,200 megawatts of generation, 11,000 miles of natural gas transmission, gathering and storage

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The stacker is formed by one tripper and one stacker, connected by means of tie rods. The tripper, which lifts the belt for incoming material to feed the stacker belt, is formed by a ramp with idle drums for the belt and by supporting bearings. The stacker and the tripper are complete with service walkways and stairs.

The stacker, which stocks the material and forms the pile, is made up of one supporting trolley and one boom.

The belt towing drum is in the back part of the boom and is driven by a motor with a reduction gear unit. Located at the end of the boom there is the belt idle drum.

The belt idle drum is located at the end of the boom. The stacker and the tripper move together along the piles and travel on the separate runways.

The material is stacked continuously during the longitudinal traveling of the stacker.

At each end of the pile the machine reverses its traveling direction; the pile end is signaled by limit switches on the machines operated by cams on ground.

The reclaimers are portal reclaimers with double boom blade type formed by rigid strong steel portal structure.

Commissioning of the plant has been successfully completed and the production operation will started with success.

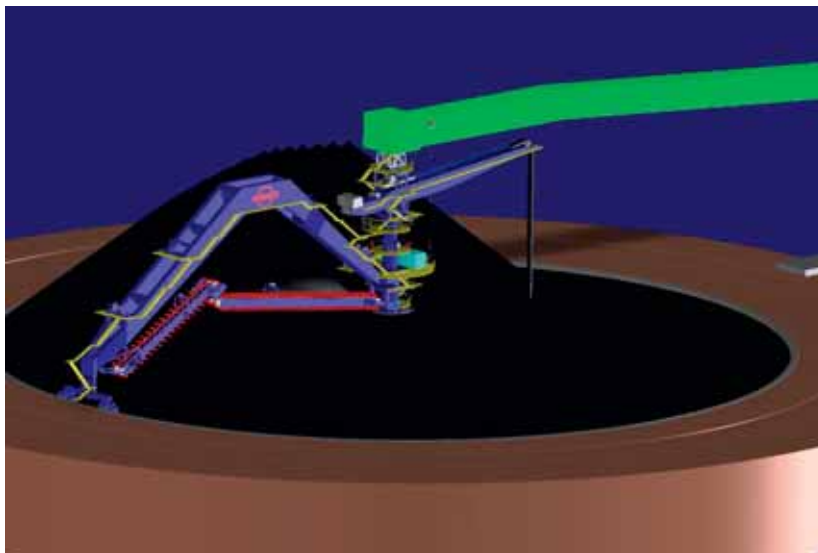
ENEL BRINDISI ITALY

Another great success for the Bedeschi company was achieved in the second half of 2011.

Enel is Italy's largest power company, and Europe's second listed utility by installed capacity. It is an integrated player, active in the power and gas sectors. Enel today operates in 40 countries worldwide, has over 97,000 MW of net installed capacity and sells power and gas to more than 61 million customers

Bedeschi will supply to Enel (Brindisi Sud power plant) three circular coal stockyards systems (combined CSR coal stacker reclaimer stacking and reclaiming).

Material stockpiling will be realized by a STKR 35/2000 stacker.



The material will be reclaimed using a PAL P300/36+240/24 portal reclaimer type.

The stacker and reclaimer machine, will be composed of the following main equipment having the characteristics indicated below:

- ❖ the stacker and reclaimer machine will perform a circular coal and non-homogeneous stacking and reclaiming. The stacker will be lifting type.
- ❖ the stacker will be fed from the hopper located on top of the central column by means of inlet belt conveyor. The coal will be reclaimed into the hopper located on the bottom of the central column for outlet belt conveyor feeding.
- ❖ the stacker and reclaimer machine structure will be a self-standing type. Only the external loads from the inlet belt conveyor gallery will be supported by the stacker and reclaimer machine column.

ENEL BRINDISI PROJECT DATA

Material:	coal
Stacking capacity:	3,000tph
Reclaiming capacity:	150–1,500tph
Engineering is completed and shipping operations are under way.	





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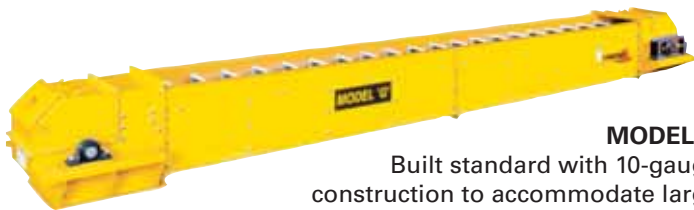
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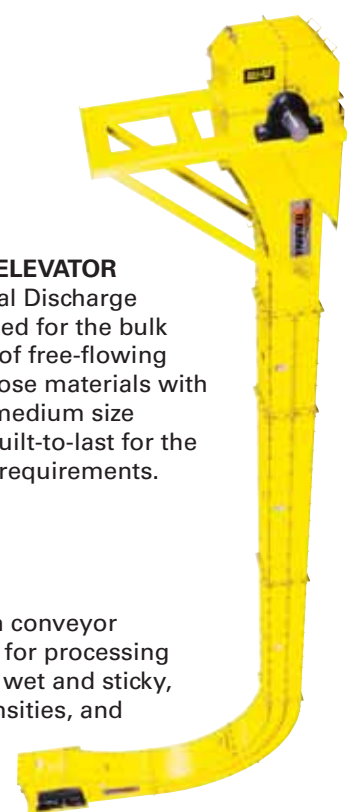
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Improving material handling in coal yards

Whether it is a coal preparation plant, power plant or a shipping terminal, a coal yard is a busy place where several material handling operations occur, write *Dr. Jayant Khambekar and Brian H. Pittenger*¹, Jenike & Johanson, Inc. Coal stockpiles, reclaim hoppers, bunkers, silos, crusher bins and feeders are typically used for coal handling/storage to provide a controlled feed of coal for various processes. Belt conveyors and transfer chutes are used to convey coal from one location to another. For an operation to be profitable, the entire coal handling system must be reliable. However, the handling system components don't always perform as expected, and handling problems related to material flow occur. These problems can cause flow stoppages, limited live storage capacity, erratic flow as well as plugged feeders and transfer points, all of which can result in lost time, lost production, excessive maintenance, safety issues, and even equipment failure.

Flow problems and their solutions can be best appreciated by first understanding how bulk solids flow. As bulk solids discharge by gravity from storage/handling equipment, such as a bunker, hopper or a silo, primarily two types of flow patterns can develop: funnel flow and mass flow. In funnel flow only some of the material is in motion during discharge while the remaining part is stationary, as shown in Figure 1 (above). In mass flow, all of the stored material is in motion, whenever any material is discharged. Thus, in mass flow, there is no stagnant material during discharge.

Flow problems can occur in coal handling and processing operations in equipment such as stockpiles, reclaim hoppers,

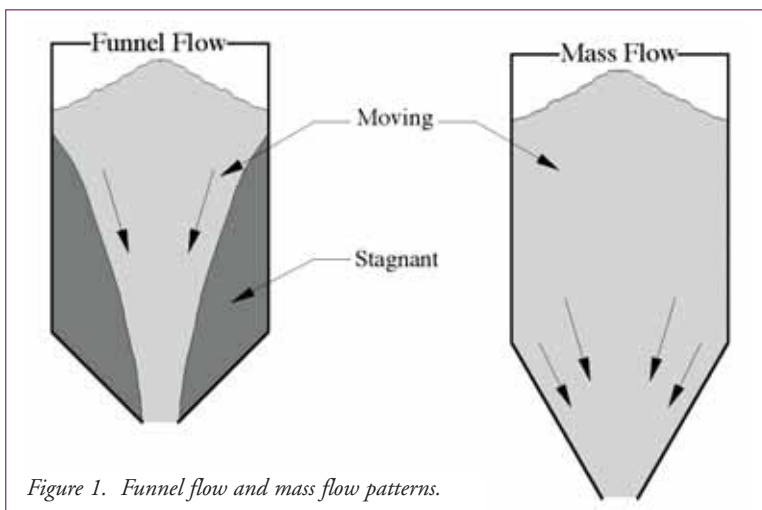


Figure 1. Funnel flow and mass flow patterns.

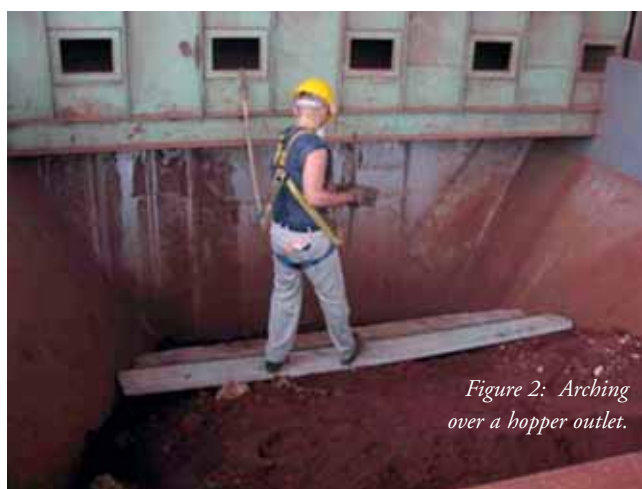


Figure 2: Arching over a hopper outlet.



Figure 3: Formation of a rathole in a stockpile.

silos, feeders and transfer chutes. One of the most common flow problems is no-flow. A no-flow condition can result either from arching (also known as bridging) or ratholing. Arching occurs when an obstruction in the shape of an arch or bridge forms over the hopper/silo outlet. Arching can occur in both mass flow and funnel flow; however, funnel flow is more prone to arching than mass flow. Figure 2 shows an example of the effect of an arching problem.

Ratholing occurs only in funnel flow. In funnel flow, material moves towards the hopper outlet through a funnel-shaped flow channel surrounded by stagnant material. As the level of

material in the flow channel drops, layers of material from the top surface of the stagnant region may slide off into the flow channel. However, if stagnant material fails to slide off, the flow channel becomes empty and a rathole forms. Ratholing also results in a no-flow condition. Figure 3 shows an example of ratholing in a stockpile.

Whenever stagnant material is present in a hopper, silo or stockpile, it will result in limited live storage capacity. Such stagnant material can be a result of ratholing. This material cannot discharge by gravity and will occupy valuable storage space, thus, limiting the available storage/surge capacity. This

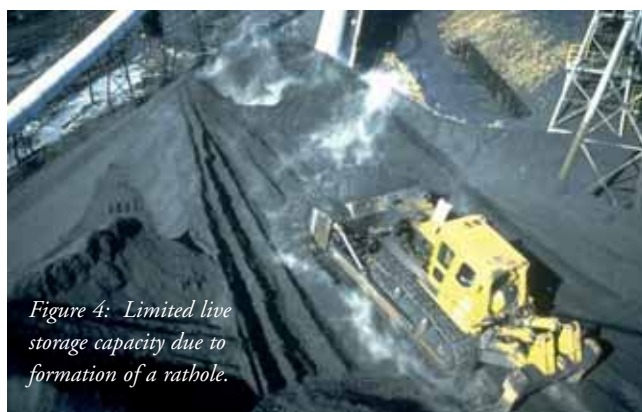


Figure 4: Limited live storage capacity due to formation of a rathole.

¹ Dr. Jayant Khambekar is a power industry specialist and Mr. Brian H. Pittenger is senior consultant at Jenike & Johanson, Inc. in Tyngsboro, Massachusetts, USA.

problem only occurs for a funnel flow storage system. Figure 4 shows an example of limited live storage capacity as a result of



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stagnant material outside the flow channel in a stockpile.

The presence of stagnant material can pose even more serious problems. If a rathole collapses due to an external force, the impact of this falling mass can damage the downstream equipment. Furthermore, if the coal is low rank (i.e. sub-bituminous or lignite), the stagnant material may undergo oxidation and spontaneously ignite, causing a fire.

As a result of these flow problems, valuable production time is lost, maintenance costs are incurred, and sometimes, even equipment failure can occur. Furthermore, unsafe practices used to address the flow and handling problems (see Figs. 2, 3 and 4) could also result in safety hazards.

Properly designed equipment can reliably handle difficult-to-flow coals, whereas poorly designed equipment may not be able to reliably handle even a free flowing coal. The key to reliable handling of coal from hoppers, silos, stockpiles, feeders and transfer chutes is to design equipment by taking into account the flowability of the coal.

Flowability can be characterized by running flow properties tests on a representative sample of coal to be handled. Important tests include cohesive strength, wall friction, compressibility, chute and permeability tests. These tests must be run at representative handling conditions. In particular, the particle size, moisture content and maximum possible storage time that can occur in the equipment must be matched during flow properties characterization.

This flow properties data can then be analyzed to design a new handling system or to modify the existing equipment to achieve reliable flow. The outlets of hoppers and silos must be

large enough to prevent arching and ratholing. The handling equipment must discharge coal in a mass flow pattern when the material being handled is cohesive or when limited live storage capacity is a problem. For mass flow to occur, the hopper walls must be made steep and smooth enough for flow to occur along them. Achieving mass flow may require a new liner in an existing silo to provide a smooth enough surface. The outlet must be large enough to provide the desired discharge rate.

One of the most important considerations in designing transfer chutes is the velocity of the material stream. A flowing stream loses velocity at impact points and if the velocity reaches zero, material starts building up on chute surface. Hence, chutes must be steep enough to prevent plugging. Discrete Element Method (DEM) can be used to analyze flow in transfer chutes. Wear can be minimized by controlling the material stream velocity and impact pressure, in addition to selecting a proper chute surface. The structural design of bunkers and silos must take into account the material induced loads due to initial fill and flow of coal. These loads cannot be calculated using hydrostatic methods, but must follow load calculation procedures for solids flow, requiring information provided by the cohesive strength, wall friction and compressibility tests.

Coal handling and flow is an important operation, and at the same time, one of the least appreciated. Technology is available for designing hoppers, silos, stockpiles, feeders and chutes to eliminate or minimize flow problems in existing facilities and to avoid such problems in new installations. Flow properties characterization is essential to ensure reliable storage and flow of coal.

N.M. Heilig B.V. delivers hoppers and conveyor system



N.M. Heilig B.V. is manufacturer of durable installations and components for the bulk handling industry. The company offers equipment to satisfy almost every need related to the transshipment and storage of material in dry bulk terminals, and includes high-quality stockyard equipment in its product offering. In-depth knowledge, ingenuity and over 30 years of practical experience mean that the company is able to supply high-quality

technical products.

N.M. Heilig B.V. is a specialist in the design and construction of elaborate installations. It offers equipment for loading, unloading, transporting, crushing, categorizing, washing, sieving, separating and processing dry bulk materials.

About 250 highly skilled and enthusiastic employees divided over five subsidiaries within Europe serve the company's clients.



Most installations are supplied as turnkey solutions, but individual components are also supplied to many leading companies in the bulk handling industry. The company delivers both mobile and fixed-position systems.

Typical machines offered by N.M. Heilig B.V. include all types of (long) conveyor belt systems, hoppers, (mobile) loaders, train loading systems, shiploaders, screens, feeders, crushers, washers etc. Also, when necessary, one of N.M. Heilig B.V.'s subsidiaries can provide installations for the covered storage of materials, as it specializes in the construction of steelworks clad with metal sheetings.

Recently Heilig BV has developed and delivered two mobile self-propelled hoppers and a conveyor system with a travelling head and a stacker mounted on top of the conveyor frame.

The hoppers consist of an undercarriage, well accessible engine room, a 35m³ hopper with a grid and conveyor and a conveyor to transport the material towards the unloading point.

These machines are fitted for two purposes, they can be used for loading of fixed and or mobile conveyors, also they can be used for loading of small ships and barges.

The capacity of these machines is 2,500tph (tonnes per hour). The hoppers are designed to be loaded by a CAT 988/990 series wheel loaders total weight of the machines is approximately 80 metric tonnes.

In the design stage special precautions are taken so the machines can be used for different products, such as coal, iron ore, bentonite and perlite, among others.

Special features of these machines are:

- ❖ the load in the hopper is weighed to prevent a weight overload in the system;
 - ❖ a radiographic control unit is used for the machine, so the machine settings can be adapted from the wheel loader and also the machine can be moved from a safe distance with good overview;
 - ❖ the installation is driven by a self-propelled diesel engine on tracks for low ground pressure and easy movement;
 - ❖ the installation is completely hydraulic for a low power-to-weight ratio with maximum torque at lower speeds; and
 - ❖ the installation is started and stopped through a WiFi connection so no cables have to be attached for operation.
- The conveyor system, commissioned in May 2012, consists of a 550-metre-long conveyor with a moveable head for unloading on to different conveyors. The conveyor is bi-directional and therefore can be used for loading and unloading of the terrain with a capacity of 2,500tph.
- For unloading, the conveyor system is fitted with a stacker which travels on the frame of the conveyor for a length of approximately 400m.
- The stacker can be lifted in angle to a height of 15m for the stacking of different products, such as coal, iron ore, bentonite, and perlite, etc.
- Special features of this conveyor system are:
- ❖ bi-directional conveyor including moveable head section and integrated tripper;
 - ❖ a radiographic control unit is used for the machine, so the discharge height and position can be changed from the wheel loader and also the machine can be moved from a safe distance with good overview. Start-up and stopping of the installation can also be done from the wheel loader; and
 - ❖ the return part of the conveyor is turned to prevent any spillage from the conveyor. This is to reduce maintenance costs and labour.

NBE handling and packaging system cuts cost of ownership

NBE has unveiled an automated, bulk material handling and packaging system built on the NBE integrated construction and controls infrastructure. The complete process sequence, including: pallet/base supply, slipsheet pick-and-placement, bulk material infeed, packaged contents isolated densification, NTEP-certified weighing, and finished-package accumulation conveyance operates on paired, process-specific structural framework chassis with all automation and control functions centralized to a single, menu-driven HMI (human-machine interface) to enable standardized and system-wide data reporting. The NBE integrated construction and

controls infrastructure provides the basis for reduced total cost of ownership, relative to the common systems integration concept of bolt-together, divergent 'islands' of equipment, while also improving process performance and the accuracy of production data shared throughout the enterprise.

The NBE automatic pallet dispenser phase eliminates manual handling of pallets. The pallet stack, delivered by forklift, is conveyed into the dispenser where the stack is automatically formed and each pallet is aligned and staged to advance into the slipsheet dispenser. The slipsheet dispenser magazine can hold up to 2,500 lbs. of sheet. Sensors and automated controls guide the dispenser lift carriage along horizontal and vertical flanged cam rollers to provide highly accurate pick-and-place of up to 30 slipsheets per hour. The bulk bag filling stage of this NBE bulk packaging system uses a cantilevered fill head/bag hanger carriage design with pneumatic actions to bring the fill head and rear bag hooks to well within the operator's reach; eliminating the need



for the operator to step or lean into the equipment. This physical ergonomic design maintains optimal operator posture for safe and efficient operation. The 8 GPM hydraulic lift carriage easily and safely lifts bag capacities up to 4,500 lbs.; this far exceeds the lift speed and capacity of ball screw designs. The NBE NTEP-certified (Cert. No. 07-108) hang-weigh system provides valid, accurate, and repeatable weighing of the bulk bags to an accuracy of $\pm 0.05\%$ of the 4,500-lb bag weight. The NBE bulk bag densification platform uses 3 Gs of high-speed, low-intensity vibration to settle material in the bag to a dense, stable, and safe load. The vibratory action is isolated from the deck and focused on the bulk package to ensure precise package weight accuracy.

This NBE automated, bulk material handling and packaging system was built to be compliance-ready at start-up and to conform to the specific, regulated processes and practices of the Class II, Div. 2, process area; including Type Z purge.

Close co-operation between business and science in Oelde

Joint research cooperation between HAVER & BOECKER and the Institute for Innovation of the South Westphalia University of Applied Sciences

In mid-April a joint research agreement between HAVER & BOECKER and the affiliated institute of the South Westphalia University of Applied Sciences (WGS Scientific Association of South Westphalia) was signed at the Institute for Innovation in Oelde.

The South Westphalia University of Applied Sciences and HAVER & BOECKER have been successfully co-operating in extra-occupational and educational courses of study in Oelde for five years. Now through joint research and development projects, business and science can dovetail even further. HAVER & BOECKER will apply the scientific findings to new products for the markets of tomorrow.

The first research order involves the field of measurement and control technology and encompasses a period of two

years. Specifically, the mid-size manufacturer of packing machines aims to develop intelligent filling systems that can regulate themselves during the filling process. In addition to technical solutions, the focus is also on business advantages. What is special about the project is that work-and-study students in Oelde are involved, and thus are able to benefit from practical experience. The student is accompanied by a scientific worker on site.

This joint research co-operation is another investment in research and development by HAVER & BOECKER, and thus in the company's future, which this year looks back at 125 years of success.

The resolute expansion of innovation management and more employees with special skills are the answers to the increasingly complex customer requirements and the economic necessity to make production processes more productive and efficient.



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Surge in breakbulk at the Port of Duluth

Duluth's Clure Public Marine Terminal — this port's only breakbulk terminal — has seen a surge in general cargo shipments this year, attributable in large part to companies rushing to complete wind energy development projects before the possible sunset of federal production tax credits at year-end.

Berths 1 and 4 at the terminal have seen heavy inbound — and outbound — traffic. However, energy shipments are only part of the breakbulk story. Duluth has become a designated route for shippers of all kinds of dimensional and project cargo. And it seems



Grinding equipment for Essar Steel is offloaded at Lake Superior Warehousing.



Specialized equipment for potash mining arrived in Duluth on 25 July on the Federal Maas. The gear was quickly discharged and safely dispatched to its final destination in Saskatchewan, Canada.

the cargoes being handled at the Port Authority dock are as distinctive as the visiting vessels themselves.

Crews from Lake Superior Warehousing Co. have discharged and/or loaded everything from huge, heavy-lift steam turbines and generators to mining machinery, pallets, containers, crates and baled wood pulp. In the weeks ahead, they will be offloading even more machinery, wind components, supersacs and steel.

GRINDERS ARRIVE FOR ESSAR STEEL

The Port of Duluth had to cope with unusual cargoes in June this year, when massive grinding-mill shells for the Essar Steel Minnesota project in Nashwauk, on Minnesota's famed Iron Range, moved through the port (above).

Grinding mills reduce taconite rock (in which iron is embedded) from a few inches in size to a fine powder before pelletizing. The shells arrived from Spain on 19 June aboard the Dutch-flagged *Alamosborg*. Start-up of the operation is expected in mid-2013.

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BLUG CREDEBLUG S.L.



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BLUG has over 40 years experience, more than 5,000 grabs delivered worldwide and offers a wide grab catalogue. BLUG solutions - from single-rope operated radio controlled and automatic grabs, to 4-rope and electro-hydraulic high volume grabs - to fit any crane, material and production requirements.

BMT TRANSPORT SOLUTIONS GMBH

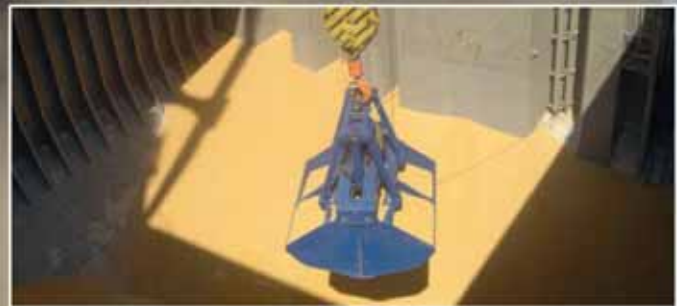
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Beco Grabs

Bulk Grabs



We are one of the world's leading specialists in grabs for the bulk-market and are certified in accordance with ISO 9001:2008. This fact of course is, largely due to our grab construction experience, innovation and world-wide supply through matching the bulk,- and dredging requirements. Let us prove that our solutions meet your highest demands.

OUR PROGRAM OF GRABS:

- Mechanical clamshells
- Electro-hydraulic clamshells
- Booms and Fronts
- Hydraulic clamshells
- Orange Peel grabs

From within our group of companies we can supply



Dump trailers
Earth moving
machine-equipment



BOGAERT TRANSMISSION (GEHA)

Industriepark
Neringstraat 5
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Belgium
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T: + 32 52 31 23 55
F: + 32 52 30 01 98
E: info@bogaert-transmission.com
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Specialists for over 30 years in supplying, engineering and manufacturing high quality chains and sprockets as well as for bucket-elevators en masse conveyors, apron conveyors etc and for cement, coal, fertilizer, steel, ore, minerals and other plants and factories.

BOSCH REXROTH B.V.

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W: www.boschrexroth.nl
Has a worldwide responsibility for turnkey projects and the development and production of Hydraulic Cylinders. Core competence is the development of engineered-to-order products, mostly one-off solutions for specific applications.

BOYNE AREA MANUFACTURING

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Boyne Area Manufacturing designs and builds bulk material handling equipment for ship, barge, railcar, & trailer loading & stockpiling. Over 40 years experience. We build loading spouts, positioners, gates and valves, diverters, air flow conveyors, wet or dry dust collectors, hopper feeders, and bag filters.

BRELKO CONVEYOR PRODUCTS

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Development, production and marketing of an exclusive range of products for the bulk materials handling industry backed-up by a comprehensive installation and maintenance service, including 24-hour call out. BRELKO products assist in the control of spillage, carryback and dust, as well as promoting trouble free

flow of material at belt conveyor transfer and load points. Other equipment: Air Cannons.

BRETRY GAMMATECH LTD.

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BRIDON INTERNATIONAL LTD

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BRUKS Rockwood INCORPORATION

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W: www.bruks.com
Machines and complete plants for processing, storing and handling bulk materials in Bulk Terminals - including Tubulator conveyors, various storage solutions and ship loaders as core products. BRUKS supplies complete stockyard equipment and systems which range from the smallest semi-automated systems to the largest fully automated systems including open storage and closed or covered storage configurations.

BUCKET MART INC.

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BULK CARGO HANDLING BVBA

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BULK LOGISTIC LANDMARK



Bedeschi (leading supplier of machinery and services for bulk material handling and minerals industries), Liebherr (experienced world-class crane manufactures) and Logmarin Advisors (specialized in shipping and maritime logistics) have formed a strategic business alliance profiting from the individual strengths and networks of each of the three partners, together generating value-added solutions and providing the most complete range of logistical services, creative advice and cargo handling equipment linking shipping with industry.
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BV BECO



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One of the world's leading specialists in grabs for the bulk market. For more than 20 years BV Beco has been providing high-end, ready-to-run technological solutions. We have a big scale of products: Grabs - Wheel loaders, excavator and demolition equipment - Tipping Trailers - Hooklift carriers - Harbour- and industrial trailers.

C. CHRISTOPHEL GMBH

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CABLE ARM INC

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As well as offering environmental dredging expertise, Cable Arm manufactures a range of equipment for bulk handling. Its buckets incorporate special features for moving nearly any granular material. Utilizing a patented level-cut bite, its buckets are faster and more efficient in

bulk handling, eliminating extra cleanup equipment.

CACHAPUZ BILANCIAL GROUP

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CALIM GRAB INDUSTRY

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CAPOTEX

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CARBONER, S. A. DE C. V.

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Carboner is a company owned by Techint Group for the construction and operation of the 6 million tpa Petacalco Coal Terminal in the Pacific shore of Mexico. The installation includes two CSU manufactured by Techint Technology and is able to unload cape size vessels up to 150,000dwt.

CARGOTEC SWEDEN AB, MARINE SELFUNLOADERS



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Cargotec offers dry bulk handling systems for ship operators worldwide. Through the MacGregor brand, we provide complete self-unloading/loading systems for dry bulk carriers, integrated transloading solutions and bulk handling systems for offshore supply vessels - all designed to ensure efficient, flexible and environmentally-friendly operation. The systems are tailor-made for each customer's particular requirements. Virtually any dry bulk material can be handled.

CARGOTEC SWEDEN BULK HANDLING AB



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E: bklsales@cargotec.com
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For dry bulk handling, Cargotec offers high-capacity, efficient and environment-friendly systems under their brand name Siwertell. Products include ship loaders, ship unloaders, bulk terminal systems, horizontal and vertical screw conveyors and storage systems. Deliveries are uniquely tailor-made to suit each customer's specific requirements.

CARLSEN

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CATERPILLAR (UK) LTD.

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CATERPILLAR INC

100 NE Adams Street
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IL 616-6335
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Contact: Mrs Sharon Holling
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F: + 1 309 675 4757
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 W: www.cat.com
 Offers five models of wheeled material handlers and six models of tracked material handlers. The diesel powered, hydraulic machines feature efficient Caterpillar engines, powerful hydraulics, fast cycle times and great mobility and versatility. Capacities range from a few tons to more than 20 tons

CATERPILLAR SARL

Industrial Markets
 76, Route de Frontenex
 Geneva 1206
 Switzerland
 Contact: Mr Nicolas Gomez
 Job Title: Segment Specialist
 T: + 41 22 849 4085
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 Other equipment: Bulldozers, Wheel dozers, Wheel Loaders

CAVOTEC SA

Via S. Balestra 27
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 Job Title: Director, Investor Relations & PR
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 Other Equipment: Electrical Equipment. Cavotec is a global engineering group that enables industries worldwide to improve productivity, safety and sustainability. Cavotec delivers power transmission, distribution and control technologies that form the link between fixed installations, in for example airports, ports and mines, and mobile equipment such as aircraft, ships, mining equipment and cranes.

CDM SYSTEMS, Inc

430 Main Street
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 MN 55330
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 Contact: Mr Steve W Parker
 T: + 1 763 428 9700
 F: + 1 763 428 9701
 E: steve@cdmsys.com
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 Over 30 years experience offering a comprehensive range of bulk conveying systems, components and engineering/design services. Provide conveying and bulk handling solutions for materials from Ash through to Zinc, including marine applications as well as those in hostile, severe or high-temperature environments.

CERTEX UK

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 Certex provides a complete solution for Wire Rope and lifting products from product supply, repair and maintenance, inspection and test, contract hire,

training, certification management through to complete management systems. Certex has locations throughout the UK and Europe.

CFS srl.

Unità Operativa
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CHANGSHA KAIYAN INSTRUMENTS Co. LTD

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CHINA HUADIAN ENGINEERING Co., Ltd.(CHEC)

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 China Huadian Engineering Co., Ltd. is one company in China integrating the consultant works, design and engineering works, equipment supply and service works both for the machinery and bulk material handling system.

CHINA SONANGOL INTERNATIONAL (S) PTE LTD

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CHL EQUIPMENT LTD (INCORP. VERSTEGEN GRABS UK)

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CIMBRIA A/S



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 Cimbria is one of the world's leaders within handling and storage of grain & seed and other products. The business areas cover project engineering and process control - and development, production, sales and installation of equipment, special installations and complete turn key projects.

CIMBRIA BULK EQUIPMENT



Drejervej 10
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 Contact: Mr Lars Noergaard
 Job Title: Managing Director
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 Develops and markets a line of loading chutes and screw conveyors within dust-free bulk handling. Supplies solutions for all types of dry bulk materials and for all loading tasks - ship loading, warehousing, road and rail. Chutes are supplied with or without integrated filter and made of modularly-structured components, all kept in stock.

CLAUDIUS PETERS TECHNOLOGIES GmbH

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 Product lines include grinding systems, storage and mixing silos, pneumatic conveying systems, ash removal systems, self-unloading vessels, packing and palletising systems, pulverised coal injection systems for blast furnaces.

CLAUDIUS PETERS TECHNOLOGIES S.A.S

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 E: technologiessa@claudiuspeters.com
 W: www.claudiuspeters.com
 Claudius Peters Technologies SAS is a company of Langley Holdings. Specialised in Stockyards and Belt Conveying systems we develop all kind of projects with stackers, reclaimers, including side stackers, tripper, shuttle type stackers; bridge, portal or side reclaimers; linear or circular, open or covered.

CLEVELAND CASCADES LTD

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 Designs and constructs the Cleveland Cascade bulk loading chute for shiploading, silo filling, truck and railcar loading and for conveyor transfer points. The chute minimises dust emissions and reduces product degradation and segregation.

CLOUGH LIMITED

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 A service provider of Project Management, Engineering and Construction Contracting services in the oil and gas (onshore and offshore), petrochemicals, mining and minerals processing industries, infrastructure (including power and harbour works) and manufacturing sectors.

CNBM INTERNATIONAL ENGINEERING Co., Ltd.

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COBRA EUROPE SA

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 E: emphone@cobra-cs.com
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 The COBRA group is specialized in the manufacturing and distribution of conveyor components for the material handling industry. COBRA group combines five businesses: Conveyor belts (Depreux, Transco, Indi), Components for conveyor (Go Smart) and Vulcanising presses (Mossier). Headquartered in France with the following sales subsidiaries: Russia and Central Asia (Kazakhstan, Ouzbekistan, Tajikistan): COBRA EURASIA Tel: 73 84 25 85 598, Email: cobraeurasia@bk.ru North and Central America: COBRA AMERICA Tel: 1423 968 9700, Email: bambi@cobramerica.com Australia & New Zealand: COBRA SOUTH PACIFIC Tel: +61 2 4722 5633, Email: info@cobrasp.com.au

COECLERICI LOGISTICS S.P.A.



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 T: + 39 02 6246 9451
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 W: www.coeclerici.com
 Additional equipment: Offshore transloading operations. One of the best known and most reputed companies in the field of offshore transloading operations. This achievement is based on the dedication and commitment of the company towards its clients as well as being an integral part of the production chain with a view to long term relationships.

COFELY EXPERTS BV

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COLES ASSOCIATES

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 Specialising in acquisition, divestment and relocation and of pre-owned mining and

infrastructure equipment worldwide.

CONDUCTIX-WAMPFLER AUSTRALIA

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Conductix-Wampfler is a manufacturer and supplier of Power and Data Transfer equipment including conductor bar, festoon, cable and hose reels, Kabelschlepp cable chain and flexible cable, slip ring assemblies, radio controls, Kiepe conveyor belt monitoring equipment, UEE high voltage connectors and buffers.

CONDUCTIX-WAMPFLER

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In addition: Mobile electrification systems

CONDUCTIX-WAMPFLER AG

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Conductix-Wampfler's core competency is in the development, production, consulting, and installation of tailor made, engineered solutions like festoon systems, conductor rails, cable chains, slip ring assemblies or spring and motorized cable reels that provide energy supply and data transmission for moving machinery. Other equipment/services: Energy & Data Transmission Systems

CONTINENTAL CONSTRUCTION (MEMPHIS)

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Continental Construction Company, Inc. is a general contractor specializing in slip form concrete construction, pile driving, structural steel erection, millwright work, marine construction, heavy concrete foundations, industrial buildings, and material handling systems.

CONTINENTAL CONVEYOR & EQUIPMENT Co INC

PO Box 400
438 Industrial Drive
Winfield
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35594
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Manager/Engineered Systems
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W: www.continentalconveyor.com
The company's High Angle Conveyor (HAC) system employs standard conveyor components and belts to utilise a simple but unique 'sandwich belt' approach to steep and even vertical conveyor elevations.

CONTITECH TRANSPORTBANDSYSTEM E GmbH

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W: www.contitech.de
ContiTech Conveyor Belt Group is a leading development partner, manufacturer and system supplier of steel-cable and textile-ply conveyor belts, service materials and special products. In addition, ContiTech provides a worldwide installation and maintenance service.

CONTROL SYSTEMS TECHNOLOGY PTY LTD

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CPS PROJECTS (PTY) LTD

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*Port related services offered by CPS Projects as ff: -Maintenance Contracts (including labour supply)
-Electrical and automation services
-Structural repairs, equipment overhauls and upgrades
-Ad-hoc repairs (accident damage and component failure)
-Supply of Spare Parts
-Erection and Commissioning of new equipment*

CST COVERS



CST Industries
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President
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Founded in 1964 the company designs, manufactures and erects architectural and environmental enclosures. These are primarily clear-span domes and related space frames fabricated mostly from aluminium. Structures are used for covering tankage and bulk storage facilities of all types and shapes.

CST STORAGE

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E: sales@cst-storage.com
W: www.cstindustries.com
Formerly Columbian TecTank, the world's largest manufacturer of factory-coated bolted and welded tanks for dry bulk storage, as well as integrated and stand-alone Weaver reclaimers. Flat-bottomed tanks and hopper bottom silos with capacities up to 13,200 cubic meters. ISO Certified.

CULLEN GRUMMITT & ROE

126 Wickham Street
Fortitude Valley
Queensland
QLD 4006
Australia
Contact: Mr Marco Necchi
T: + 61 7 3252 8400 / +61 39 533 3208
F: + 61 7 3252 5775
E: cgrqld@cgrgroup.com
W: www.cgrgroup.com
Civil and structural engineering consultants with experience in coal facilities and port and harbour engineering with offices in Brisbane, London and Buenos Aires. Coal industry projects include conveyor structures, workshops, ROM structures, reclaim tunnels, bin structures, roads, retaining structures, equipment foundations.

DALIAN HUARUI HEAVY INDUSTRY INTERNATIONAL

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China
Contact: Mr Lixiang Shi
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F: + 86 411 86852398
E: congzy@dhdicw.com

W: www.dhdicw.com.cn

DBIS

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Doncaster
South Yorkshire
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UK
Contact: Mr David Trueman
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T: + 44 1302 330 888
F: + 44 1302 724 731
E: david.trueman@dbis.biz
W: www.dbis.biz

DCC GRABS

Markerkant 14-30
Almere
Flevoland
1314AS
The Netherlands
Contact: Mr Rudy van Leeuwen
Job Title: Director
T: + 31 36 533 12 49
F: + 31 36 529 85 94
E: Info@dcc-grabs.nl
W: www.dcc-grabs.nl

DCL, INCORPORATED

PO Box 125
Charlevoix
MI
49720
USA
Contact: Mr Kyle Smith
T: + 1 231 547 5600 Ext 3124
F: + 1 231 547 3343
E: sales@dclinc.com
W: www.dclinc.com

Provides full dust control loading systems and partial components to the bulk material handling industry and designs custom equipment. A complete Research/Development team is located on site. Single source manufacturing from ship loading systems to valves and dust collectors can be provided.

DE REGT CONVEYOR SYSTEMS

Ijzendijkseweg 5
Bievlvliet
Zeeland
4521 GX
The Netherlands
Contact: Mr Peter De Regt
Job Title: Director
T: + 31 115 481238
F: + 31 115 481234
E: peter@deregt.com
W: www.deregt.com
De Regt is a company specialized in developing, building and installing conveyor systems and structures needed to achieve a partial or total project.

DEARBORN MIDWEST CONVEYOR Co.

4220 Shawnee Mission Pkwy
Suite 301B
Kansas City
Kansas
66205-2513
USA
Contact: Mr Sudy L Vohra
Job Title: Executive Vice
President & General Manager
T: + 1 913 261 2406
F: + 1 913 261 2470
E: sudyv@dmwcc.com
W: www.dmwcc.com
Products include motorized trippers, telescopic chutes, rotary plow feeders, barge loading and unloading systems, pipe conveyors, air supported conveyors, Euro silo storage

reclaiming. Materials handling systems are furnished for terminals, power plants, cement plants, fertilizer plants and mines.

DEMARCO INDUSTRIAL VACUUM CORPORATION

PO Box 1138
Crystal Lake
IL
60039-1138
USA
Contact: Mr Thomas DeMarco
Job Title: President
T: + 1 815 344 2222
F: + 1 815 344 2223
E: Sales@DeMarcoVacuums.com
W: www.DeMarcoVacuums.com
Manufactures a complete line of heavy duty DEMARCO Industrial Vacuum Systems and for all flowable materials, wet or dry, etc. Units are available in portable, stationary, towable, central turnkey installed systems, canister vacuums, and custom engineered systems.

DEMCO TECH

Modderhouse
Moddercrest Office Park
1 High Street
Modderfontein
South Africa
Contact: Mr Paul van der Vyver
T: + 27 11 608 4355
F: + 27 11 608 4251
E: info@DemcoTECH.com
W: www.demcotech.com

DMN-WESTINGHOUSE

Gieterij 3
PO Box 6
Noordwijkerhout
Zuid-Holland
NL-2210 AA
The Netherlands
Contact: Mrs Tonneke Krempel
Job Title: Manager Marketing
Services and PR
T: + 31 252 361 800
F: + 31 252 375 934
E: dmn@dmn-nwh.nl
W: www.dmnwestinghouse.com
Other equipment: Rotary Valves, Diverter Valves. Designs and manufactures rotary valves, diverter valves and other components. Optionally pressure shock resistant to 10 bar, flame proof also suitable for handling St2 powders, ATEX compliant to Directive 94/9/EC. Extensive sales and distribution network, ensures global service and support.

DOME CORP OF NORTH AMERICA

5450 East Street
Saginaw
Michigan
48601
USA
Contact: Mr Ross Lake
Job Title: President
T: + 1 989 777 2050
F: + 1 517 777 3477
E: sales@dome-corp-na.com
W: www.dome-corp-na.com

DOME TECHNOLOGY

3007 East 49th Street North
Idaho Falls
Idaho
83401
USA
Contact: Mr Lane Roberts
Job Title: Sales Manager
T: + 1 208 529 0833
F: + 1 208 529 0854

SPECIFY QUALITY



SPECIFY DOMTEC®



DOMTEC
International

Highest Quality Concrete Domes

Tel: +1-208.522.5520, Fax: +1-208.522.5344

Web: www.domtec.com, Email: mhunter@domtec.com

4355 N. Haroldsen Dr., Idaho Falls, Idaho, 83401, USA

E: lane@dometech.com
 W: www.dometech.com
 Other equipment: Engineered tunnels and Drive-through dome silos. Serve the biomass, power, mining, cement, fertilizer, and grain markets. We provide geotechnical analysis and deep foundation solutions. Integrate material handling safety protocols with dome design. Concrete domes are designed to contain volatile products as well as cover products.

DOMTEC INTERNATIONAL LLC



4355 North Haroldsen Drive
 Idaho Falls
 Idaho
 83401
 USA
 Contact: Mr Mike Hunter
 Job Title: General Manager
 T: + 1 208 522 5520
 F: + 1 208 522 5344
 E: domtec@domtec.com
 W: www.domtec.com
 World class, high quality concrete dome builder for storage of a multitude of dry bulk materials, including coal. DOMTEC has broad experience with reclaim systems. Projects are delivered around the world on time and within budget.

DONALDSON FILTRATION DEUTSCHLAND GmbH

Büssingstraße 1
 Haan
 42781
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 Contact: Mrs Susanne Fulko
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 E: IFS-de@donaldson.com
 W: www.donaldson.com

DOOSAN BENELUX SA

Drève Richelle 167
 Waterloo
 B-1410
 Belgium
 Contact: Mr George Schmalzried
 Job Title: Public Relations Manager
 T: + 32 2 371 6811
 F: + 32 2 371 6900
 E: george.schmalzried@doosan.com
 W: www.bobcat.eu;
 www.doosanequipment.eu
 World leader in compact loaders. Offers a line of skid-steer and compact-tracked loader models used in shiptrimming, shiphold and railroad box car unloading operations. The compact loaders have rated operating capacities ranging from 343-1600 kg and operating weights from 1.2 - 4.6 tonnes.

DOPPELMAYR TRANSPORT TECHNOLOGY GmbH

Holzriedstrasse 29
 Wolfurt
 6922
 Austria
 Contact: Mrs Stefanie Reis
 T: + 43 5574 604 ext 1206
 F: + 43 5574 604 1209
 E: dti@doppelmayr.com
 W: www.doppelmayr-mts.com

Doppelmayr Transport Technology solves all transport issues in the field of bulk materials and unit loads with a range of sophisticated material transport systems - from well-proven material ropeways to innovative long-distance conveyor systems for high capacities.

DOS SANTOS INTERNATIONAL, LLC

531 Roselane Street
 Suite 810
 Marietta
 Georgia
 30060
 USA
 Contact: Mrs Amy D. Duncan
 Job Title: Marketing Manager
 T: + 1 770 423 9895
 F: + 1 866 473 2252
 E: info@dossantosintl.com
 W: www.dossantosintl.com
 Other Equipment: DSI ExConTec - conveyor analysis software. Dos Santos International is the world's foremost authority on high-angle conveying technology. We offer the DSI Snake, the most reliable high-angle and vertical conveying means for your high tonnage, high lift requirements. DSI also offers engineering consulting and provides in house software for load analysis.

DOSCO OVERSEAS ENGINEERING LTD

Ollerton Road
 Tuxford
 Newark
 Nottinghamshire
 NG22 0PQ
 UK
 Contact: Mr Phillip Adrych
 Job Title: Export Sales
 T: + 44 1777 870 621
 F: + 44 1777 871 580
 E: padrych@dosco.co.uk
 W: www.dosco.co.uk
 Manufacture twin roll crushers. The range can process from 100-5000 tph with installed powers of 100kW-500kW. Manufacture economic and environmentally friendly pipe conveyor.

DOUBRAVA GES GmbH

Industriestrasse 17-20
 Attnang-Puchheim
 A-4600
 Austria
 Contact: Mr Dietmar Holezius
 T: + 43 7674 6010
 F: + 43 7674 601499
 E: office@doubrava.at
 W: www.doubrava.at

DUNLOP CONVEYOR BELTING

Oliemolenstraat 2
 PO Box 14
 Drachten
 9200 AA
 The Netherlands
 Contact: Mr Andries Smilda
 Job Title: Sales & Marketing Director
 T: + 31 512 525555
 F: + 31 512 524599
 E: marketing.drachten@dunlopcb.com
 W: www.dunlopconveyorbelting.com
 Manufactures a full range of textile, aramid and steelcord conveyor belting systems.

DURO FELGUERA PLANTAS INDUSTRIALES, S.A.

Centro de Ingeniería, I+D+i y calidad
 Parque Científico Tecnológico
 C/ Ada Byron 90
 Gijón
 Asturias
 33203
 Spain
 Contact: Mr Angel Pelegray
 Job Title: Ph. D. Mining Engineer.
 Sales Manager
 T: + 34 985 199 201
 F: + 34 985 199 059
 E: dfpi@durofelguera.com
 W: www.durofelguera.com
 Duro Felguera Plantas Industriales (DFPI), member of DF's group, provides high quality services within two main areas of business MINING & MINERAL PROCESSING and BULK MATERIALS HANDLING. We are offering today a very strong know-how, that combined with our proven capability to develop engineering and further project execution, makes DFPI an excellent opportunity for projects conceptualized as EPCM or EPC.

DUST CONTROL TECHNOLOGY



1607 W. Chanute Rd.
 Peoria
 Illinois
 61615
 USA
 Contact: Ms Laura Stiverson
 Job Title: General Manager
 T: + 1 309 693 8600
 F: + 1 309 693 8605
 E: info@dustboss.com
 W: www.dustboss.com
 The DustBoss dust and odour control system combines an oscillating ducted fan with high pressure mist to create a virtual dust/odour barrier. Proprietary technology delivers superior results, blanketing up to 125,000 square feet with a fine mist of water droplets that are the optimal size for trapping dust particles.

DUST SOLUTIONS INC.

14300 N.E. 20th Ave.
 D102-185
 Vancouver
 Washington
 98686
 USA
 Contact: Mr David Gilroy
 Job Title: Sales Manager
 T: + 1 360 546 0072
 F: + 1 360 546 0073
 E: d.gilroy@nodust.com
 W: www.nodust.com
 Manufacturers Dry Fog (TM) Dust Suppression Systems for conveyors, truck & rail dumps, hoppers, feeders, crushers, ship loaders/unloader. Modular systems produces fog droplets that attach to like size airborne dust particles. Functions in below freezing temperatures DustTamer (TM) Windfence Systems for stockpiles.

E BUTTIMER & Co. Ltd

Carrigen Industrial Estate
 Cahireen
 Co. Tipperary
 Republic of Ireland

Contact: Mr Eddie Buttimer
 Job Title: Director
 T: + 353 52 744 1377
 F: + 353 52 744 1087
 E: info@buttimer.ie
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E-CRANE INTERNATIONAL USA



1332 Freese Works Place
 Gallion
 Ohio
 44833
 USA
 Contact: Mr Mark W Osborne
 Job Title: President
 T: + 1 419 468 0090
 F: + 1 419 468 0074
 E: mark.osborne@e-crane.com
 W: www.ecrane-usa.com
 E-Crane International USA offers the E-Crane (Equilibrium Crane) in capacities ranging from 5.5 to 39 (metric) tons and outreach ranging from 24.8 to 47.8 metres (82 to 157 feet) for efficient offloading of bulk commodities.

E-CRANE WORLD WIDE



Koekoeklaan 53
 Adegem
 B-9991
 Belgium
 Contact: Mr Bas Tolhuizen
 Job Title: International Sales Manager
 T: + 31 165 320100
 F: + 31 165 320759
 E: bas.tolhuizen@ecrane.eu
 W: www.e-crane.com
 Main activity is the sale and support of the E-Crane, a multifunctional crane designed for bulk material handling, storage, process feeding at ports etc.

EIFFEL ETABLISSEMENT SOMDEL

80 bis rue Jean Jaurès
 Quievrechain
 F-59920
 France
 Contact: Mr Gérard Pellez
 Job Title: (see ed notes)
 T: + 33 32 714 1516
 F: + 33 32 714 1515
 E: contact.somdel.eiffel@eiffage.com
 W: www.eiffel.fr
 Specialised in the provision of tailor made lifting and handling equipment. The range of products extends from EOT for steel plants, nuclear power plants and gantry cranes to ship loaders, ship unloaders, stackers and reclaimers, conveying systems and turnkey installations.

ELECON ENGINEERING COMPANY LTD

Post Box # 6
 Anand Sojitra Road
 Vallabh Vidyanagar
 Gujarat
 388 120
 India
 Contact: Mr B J Babaria
 Job Title: Vice President
 T: + 91 2692 237016 / 227131

F: + 91 2692 236457
 E: bjbabaria@mhe.elecon.com
 W: www.elecon.com
 Elecon since established in 1951, apart from Power Transmission Products, provides engineered solutions, manufactures and supplies Bulk Material Handling Plants and Equipments for the core sector industries which includes power, steel, cement, fertilizer, port mechanisation and open cast mines in India and Abroad.

ELECON SINGAPORE PTE Ltd.

10, Anson Road
 #24-03
 International Plaza
 Singapore
 079903
 Singapore
 Contact: Mr Keyur Parikh
 Job Title: Director - VP
 T: + 65 6227 8258
 F: + 65 6227 8942
 E: keyur@singapore.elecon.com
 W: www.elecon.com

ELGIN ENGINEERING AND CONSTRUCTION

Suite 1800
 222 South Riverside Plaza
 Chicago
 Illinois
 60606
 USA
 Contact: Mr Bob Williams
 Job Title: Marketing Director
 T: + 1 312 236 8100 ext: 340
 F: + 1 312 726 2872
 E: soros@elginindustries.com
 W: www.elginindustries.com
 An international consulting engineering firm specialising in conceptual development, planning, feasibility studies, design engineering, project management, construction supervision, rehabilitation and expansion of port facilities.

EMS-TECH Inc

699 Dundas Street West
 Belleville
 Ontario
 K8N 4Z2
 Canada
 Contact: Ms Gail Carl
 Job Title: Executive Assistant, Sales & Marketing
 T: + 1 613 966 6611
 F: + 1 613 966 6710
 E: gail.carl@ems-tech.net
 W: www.ems-techinc.com
 A multi-task, multi-discipline company specialising in the design and supply of dry bulk material handling equipment, both mobile and stationary; including custom designed conveyors, elevators, receiving hoppers, storage/load-out systems, environmental controls, shiploaders, stackers and reclaimers, and self-unloading ships.

EMS-TECH Inc.

Robijnstraat 92
 Alkmaar
 1812RB
 The Netherlands
 Contact: Mr Luke Huitema
 T: + 31 251 291 340
 F: + 31 251 291 344
 E: europe@ems-tech.net
 W: www.ems-techinc.com
 A Multi-task, multi-discipline company specializing in design and supply of dry bulk material

handling equipment, both mobile and stationary; including custom designed conveyors, belt elevators, receiving hoppers, storage/loadout systems, environmental controls, shiploaders, stackers and reclaimers, self-unloading ships.

EMTICI ENGINEERING Co Ltd

68 Sarat Bose Road
Calcutta
West Bengal
700025
India
Contact: Mr D Sen
T: + 91 33 24761861
F: + 91 33 24761831
E: dsen@calemtici.elecon.com
W: www.elecon.com

ENCO ENGINEERING Inc

4410 13th Street
Wyandotte
MI
48192
USA
Contact: Ms Bobbi Lang
T: + 1 734 407 2400
F: + 1 734 676 3436
E: enco@encoeng.com
W: www.encoeng.com
Provides a broad spectrum of services ranging from conceptual studies through detailed engineering and supply of shiploaders/unloaders and related bulk materials handling equipment.

ENGICON NV

Broelstraat 20
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Belgium
Contact: Mr Pieter Van Acker
Job Title: Sales & Marketing Director
T: + 32 56 73 21 21
F: + 32 56 73 40 40
E: sales@geldof.be
W: www.geldof.be
Offers complete solutions in bulk handling systems. Product range includes silos with extraction systems, discharge hoppers, pressure vessels and storage tanks, conveyor belts, screw conveyors, chain conveyors, bucket elevators.

EQUIPO LLC

Salahudeen Road
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64624
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Contact: Mr Mohamad Yasar Aboobackar
Job Title: Operations & Sales Manager
T: + 971 506 408 626
F: + 971 426 822 17
E: yasararafat@gmail.com
W: www.equipo.ae
We are one of the suppliers of grabs in PG & Indian Subcontinent. All our grabs are radio remote controlled varying from 5 to 12 cbm. Grabs can be supplied on short term and long term rentals.

ERIEZ MAGNETICS EUROPE LIMITED

Bedwas House Industrial Estate
Bedwas
Caerphilly
CF83 8YG
UK
Contact: Ms Danielle Lloyd
Job Title: Marketing Executive
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E: danielle.lloyd@eriezeurope.co.uk
W: http://en-gb.eriez.com

ESI EUROSILO BV


www.eurosil.com
Newtonstraat 26-28
Purmerend
1446 VR
The Netherlands
Contact: Mr Jaap P J Ruijgrok
Job Title: Managing Director
T: + 31 299 630 730
F: + 31 229 630 737
E: esi@eurosil.com
W: www.eurosil.com
Other Equipment: Mammoth silo systems. Active in the field of design construction and/or turnkey delivery of large scale enclosed storage systems for coal, FGD-gypsum, limestone and fly ash. Storage capacity of this flat bottom mammoth silo system (Eurosil) can range from 1,000 up to 100,000 m³ per unit.

EUROMECS SRL

EUROMECS
Via Visano
78/80 Isorella
Brescia 25010
Italy
Contact: Mr Ricardo Segala
Job Title: Sales and Marketing
T: + 39 030 9958 151
F: + 39 030 995 2223
E: sales@euromecsrl.info
W: www.euromecsrl.com
EUROMECS, born from the merger of companies Eurohydromec and Isomec, has years of experience in the material handling field and the production of products such as lifting equipment, electrohydraulic and mechanical grabs and buckets.

EURO-TRAMCO BV

Space-shuttle 8G
Amersfoort 3824 ML
The Netherlands
Contact: Mr Hans Plekkenpol
T: + 31 33 4567033
F: + 31 33 4558149
E: hans@tramco-europe.com
W: www.tramcoinc.com
Manufactures chain, screw and bucket conveyors and 'Aerobelt' air-supported belt conveyor systems.

F E SCHULTE STRATHAUS GMBH & Co KG

Runttestrasse 42
Werl
D-59457

Germany
Contact: Mr Andre Hanke
T: + 49 2922 9775 0
F: + 49 2922 9775 75
E: ha@schulte-strathaus.de
W: www.schulte-strathaus.de
Accessories for Conveyors: Starclean Conveyor Belt Scrapers, Belt Trackers, Spillex transfer point seals, Friflo impact tables and bars.

F L SMIDTH A/S

Vigerslev Alle 77
Valby
DK-2500
Denmark
Contact: Mrs Camilla Travis
T: + 45 3618 1000
F: + 45 3645 4427
E: ctr@flsmidth.com
W: www.flsmidth.com
FLSmidth offers products and solutions to handle any type of bulk material: lumpy, powdery, sticky, wet or dry. We supply process design and equipment for all materials handling applications for the cement industry, pulp & paper, fertiliser and related industries.

FAIRPORT ENGINEERING

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PR7 2QP
UK
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W: www.fairport.co.uk



ESI EUROSILO
ULTIMATE STORAGE SOLUTIONS FOR BULK SOLIDS
COAL STORAGE UP TO 100,000 m³ PER UNIT



ESI Eurosil[®]
WWW.EUROSILO.COM

P.O. Box 1047
1440 BA Purmerend
The Netherlands

Newtonstraat 26 - 28
1446VR Purmerend
The Netherlands

Tel.: +31(0)299 - 630730
Fax.: +31(0)299 - 630737
Email: esi@eurosil.com

FEL is the UK market leader in the successful development and delivery of major projects for the coal, quarrying & aggregate and building and concrete product sectors is a company and is continually enhancing its position within the power, alternative fuels and recycling markets.

FAM FOERDERANLAGEN MAGDEBURG

Sudenburger Wuhne 47
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Germany
Contact: Mr Ulrich Schneider
Job Title: Director Sales and Marketing
T: + 49 391 6380 10 1 01
F: + 49 391 6380 10 1 99
E: sales@fam.de
W: www.fam.de
An independent company (head office in Germany; more than 1000 employees worldwide) whose scope of services includes: consulting, project management, scheduling, monitoring of dates, development, project planning, design, fabrication, construction, commissioning, quality management and supervision, maintenance, modernization, trainings as well as after-sales-services for turnkey bulk materials handling systems.

FAMAK SA

Machinery and Equipment Company
Fabryczna Street 5
Kluczbork
PL 46-200
Poland
Contact: Mr Wojciech Staszak
Job Title: President and CEO
T: + 48 77 40 70 100
F: + 48 77 418 15 45
E: famak@famak.pl
W: www.famak.pl
Over 60 years experience as manufacturers of transport-hoisting equipment. Highly qualified technical engineering staff have interdisciplinary knowledge and experience and design-development base, implementing the highest technical level of offered products. Products designed according to individual needs and installed on-site. Full service after installation.

FANTUZZI REGGIANE S.P.A.

Via Cisa Ligure 51/A
Lentigione di Brescello (RE)
42040
Italy
Contact: Ms Francesca Alfieri
T: + 39 0522 680 221
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W: www.fantuzzi.com

FELD MASCHINEN-UND INDUSTRIEBAU GMBH

Winkelfeld 3
Oer-Erkenschwick
D-45739
Germany
Contact: Mr Andre Stueckradt
T: + 49 2368 98890
F: + 49 2368 9889 27
E: Andre.Stueckradt@Maschinenbau-Feld.de
W: www.maschinenbau-feld.de
High standards, qualified and

creative employees, the right technology to meet customers' demands. High-Tech for preservation of our resources.

FENNER DUNLOP CONVEYOR BELTING EUROPE

Marfleet
Hull
Yorkshire
HU9 5RA
UK
Contact: Mr Jim Jones
T: + 44 1482 785450
F: + 44 1482 785438
E: jim.jones@fennerdunlop.com
W: www.fennerdunlop.com
Fire-resistant, solid-woven conveyor belting, with rubber or PVC covers, is manufactured to all major national safety standards. Supplied to all major underground materials handling and extraction industries and to other coal handling operations where safety and economy are major criteria.

FIGEE CRANE SERVICES BV

PO Box 235
Zaandam
1500 EE
The Netherlands
Contact: Mr Henk van Til
Job Title: Business Manager,
Harbour Cranes
T: + 31 75 6810 413
F: + 31 75 6315 996
E: h.vantil@figee.com
W: www.kenz-figee.com
Merger of Kenz offshore cranes and Figee harbour cranes. Founded in 1836, Figee designs and manufactures a complete range of bulk handling cranes including the unique and well proven Lemniscate floating grab cranes with capacities from 16-50 tonnes, gantry grab unloaders, single- and double boom cranes, kangaroo cranes.

FLEXCO

2525 Wisconsin Avenue
Downers Grove
IL
60515-4200
USA
Contact: Ms Jayne Dore
Job Title: Sales Manager
T: + 1 630 971 6476
F: + 1 630 971 1180
E: jdore@flexco.com
W: www.flexco.com
Manufactures conveyor belt fasteners, installation tools and conveyor belt accessories. A broad line of products is marketed through a worldwide network of distributors under the brand names of Alligator, Clipper, Flexco, Tatch-A-Cleat, Eliminator and Flex-lag.

FLEXOVEYOR CONVEYOR

3795 Paris St., Unit D
Denver
Colorado
80239
USA
Contact: Mr Bill Priddy
T: + 1 303 375 0200
F: + 1 303 373 5149
E: billpriddy@conveyind.com
W: www.flexoveyor.com

FLSMIDTH GMBH

Alfred Leiner Strasse 3
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Contact: Ms Susanne Stidl
T: + 43 2235 4751011
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E: susanne.stidl@flsmidth.com
W: www.flsmidth.com

FLSMIDTH MINERALS PVT. LTD

FLSmidth House
34 Egatour
Kelambakkam
Old Mahabalipuram Road
Chennai
Tamil Nadu
603 103
India
Contact: Mr Sivalingam
Santhakumar
Job Title: Library
T: + 91 44 47484795
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E: indiainfo@flsmidth.com
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FLSMIDTH SPOKANE, INC.

605 E Holland Ave
Suite 300
Spokane
WA
99218
USA
Contact: Mr Dennis Medina
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Manager
T: + 1 509 467 0770
F: + 1 509 466 0212
E: Dennis.medina@flsmidth.com
W: www.flsmidth.com
FLSmidth has developed a worldwide reputation for supplying innovative, fully-mobile material handling equipment solutions including mobile conveyors, stackers, loaders and unloaders, stockyard systems, and crushing and sizing equipment.

FLSMIDTH WADGASSEN GMBH



Karl-Koch-Strasse 1
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Saarland
66787
Germany
Contact: Mr Romuald Hartmann
Job Title: CEO
T: + 49 6834 470 0
F: + 49 6834 470 339
E: wadgassen@flsmidth.com
W: www.flsmidth.com
Other equipment: KOCH Pipe Conveyor, Drag Chain Conveyor, Pneumatic Ship Unloader. Custom-made systems; solutions jointly developed with clients. Certified to ISO 9001. Work includes mines, beneficiations, ports, power plants, cement plants and industrial facilities.

GAMA ENDUSTRI TESISLERI IMALAT VE MONTAJ AS

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Ankara
06540
Turkey
Contact: Mr Mehmet Artun
Job Title: General Manager
T: + 90 312 248 42 00
F: + 90 312 4094360
E: industry@gama.com.tr

W: www.gama.com.tr
Austria
Other Equipment: Apron feeders, Air slides, Scrapers. One of Turkey's most prestigious leading contracting companies, with experience in constructing industrial and power plants, dams, pipelines, infrastructures and similar. Established in 1959, with clients worldwide, has completed more than 200 significant sized projects internationally.

GAMBAROTTA GSCHWENDT



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Manufactures bucket elevators, pan conveyors, drag chain conveyors, extractors and feeders, palletised product loaders, gate valves, cell feeders, flap valves and screw conveyors used in petrochemical, cement, coal, waste to energy plants and for power generation, steel and heavy industry applications.

GANZ DANUBIUS TRADING CO LTD

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Suppliers of mechanical shiploaders and unlaoders, level luffing harbour grab cranes, floating grab cranes and other bulk handling equipment.

GARWOOD CONSULTING LTD

Garwood Lodge
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Ely
Cambridgeshire
CB6 3QG
UK
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F: + 44 1353 777315
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Advice and consultancy on the design and implementation of fuel intake and storage systems in cement, power or CHP plant including the use of alternative fuels and Biomass plus Ship Loading and Discharge systems at Port and Terminal.

GENERAL KINEMATICS CORP.

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General Kinematics specializes in vibrating and rotary equipment and solutions for bulk processing of material in the founding, recycling, scrap, mining, minerals, food, chemical, and wood industries. Each piece of GK equipment is custom engineered to your specifications to meet your process objectives.

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GEOMETRICA INC

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GGT GOLDENGRAIN TRADING SA

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GORDINNE & Co NV/SA

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Mechanical shiploaders and unloaders of screw conveyor type for capacities up to 1800 t/h and ship sizes up to Panamax.

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HANSEN INDUSTRIAL TRANSMISSIONS NV

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HEYL & PATTERSON INC



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W: www.heypatterson.com
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Manufacturers of Steel, Plastic & Aluminium Idler rollers, Conveyor Belt Scrapers and Conveyor Components & Equipment.

HOSCH-FÖRDERTECHNIK RECKLINGHAUSEN GmbH

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HYUNDAI HEAVY INDUSTRIES Co

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IBAU HAMBURG



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IMPERIAL TECHNOLOGIES, Inc.

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J & B GRABS B.V.



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 Designs, engineers and manufactures mechanical and hydraulic grabs for all kinds of bulk material.

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JOY MINING MACHINERY

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 Other: Wear-protection solutions. Planning, production, working and worldwide installation of highly wear-resistant linings made of ceramic, metallic and plastic materials for protecting pneumatic and hydraulic pipe systems as well as plant components.

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KOCKS KRANE INTERNATIONAL GmbH



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 T: + 358 20 427 2740
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 E: kimmo.nyman@konecranes.com
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 F: + 49 511 7704 477
 E: info-hafentechnik@konecranes.com
 W: www.konecranes.de
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 04179
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 F: + 49 3 41 49 53 125
 E: juergen.kuehn@kirow.de
 W: www.kranunion.de

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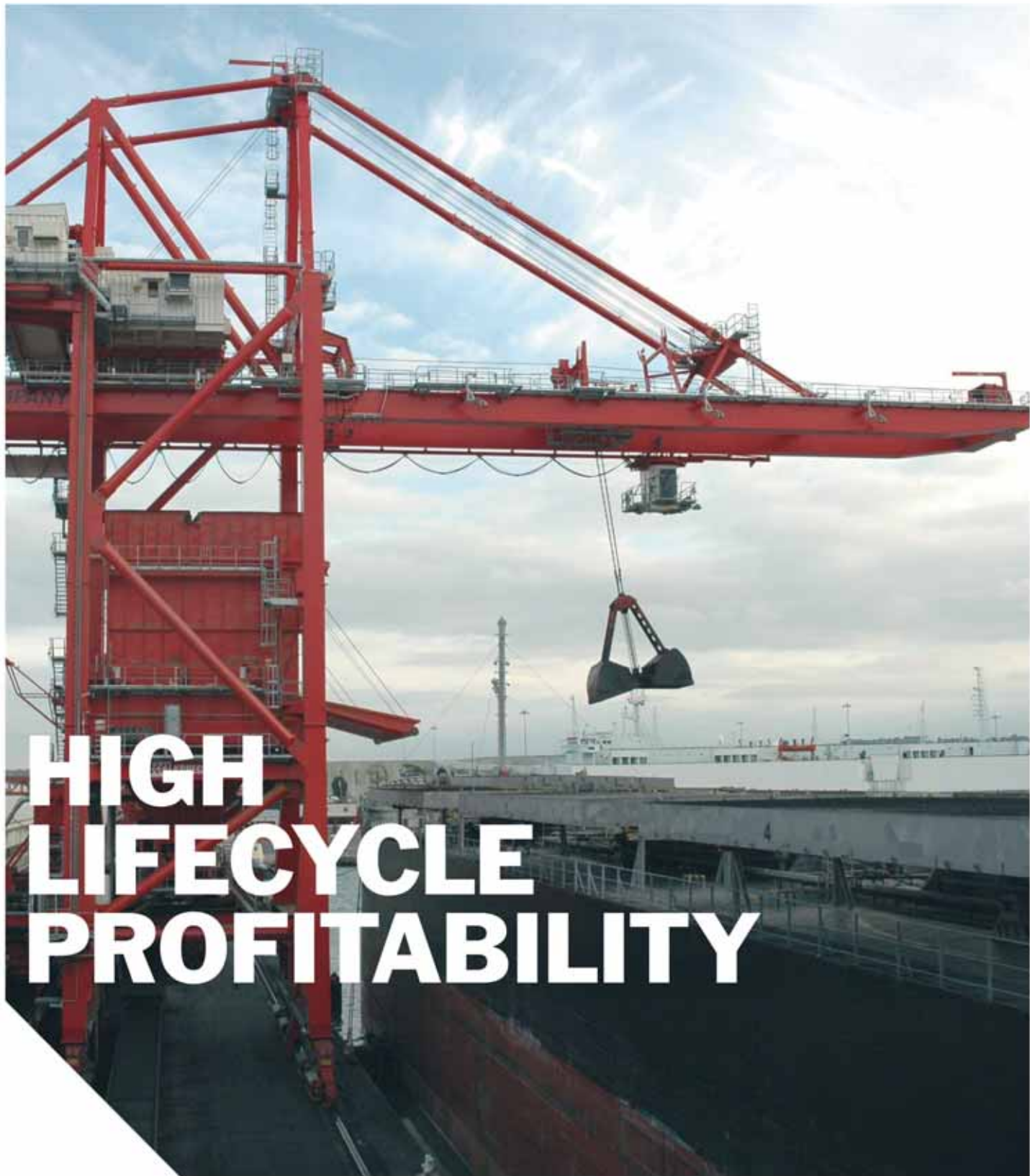
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 Germany
 Contact: Dr Philipp Diekmann
 Job Title: Managing Director
 T: + 49 2838 3750
 F: + 49 2838 3729
 E: info@kroeger-greifertechnik.de
 W: www.kroeger-greifertechnik.de
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 F: + 91 44 22526993
 E: kvikram@intecc.com

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 W: www.libranengineering.com

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 F: + 43 50809 41447
 E: mobile.harbour.crane@liebherr.com
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 F: + 49 7152 509050
 E: c.lohr@listenow.com
 W: www.listenow.com
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 W: www.logmarin.net
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 Contact: Mr Etienne Leneveu
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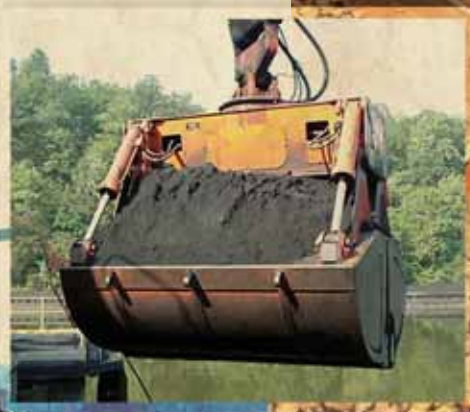
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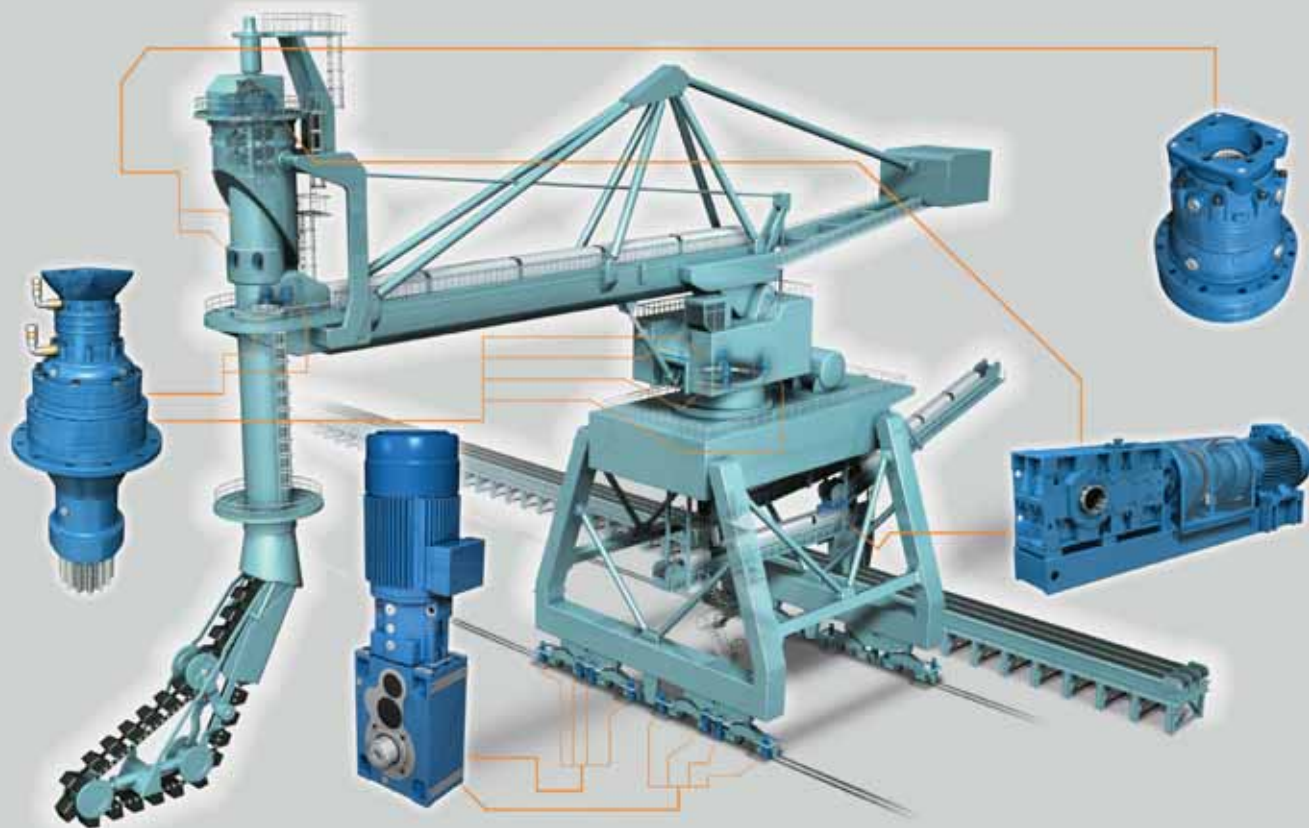


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delivering high quality equipment
that is robust, low maintenance
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PARKER PLANT LTD

Viaduct Works
Canon Street
Leicester
Leicestershire
LE4 6GH
UK
Contact: Mr Richard Fothergill
Job Title: Marketing Manager
T: + 44 116 266 5999
F: + 44 116 261 0812
E: sales@parkerplant.com
W: www.parkerplant.com
Manufactures a complete range
of conveyor systems and
components.

PEBCO®

PO Box 7506
225 North 4th Street (42001)
Paducah
KY
42002-7506
USA
Contact: Mr Mark Kettler
Job Title: Director of Sales and
Marketing

T: + 1 270 442 1996 ext 202
F: + 1 270 442 5214
E: sales@pebco.com
W: www.pebco.com
PEBCO® is acknowledged
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PETERSON AGRICARE & BULK LOGISTICS BV

Boompjes 270
Rotterdam
3011 XZ
The Netherlands
Contact: Mr Arno Maehlmann
T: + 31 10 282 3333
F: + 31 10 282 3282
E: info@peterson.nl
W: www.peterson.nl

PFISTER WAAGEN BILANCIAL GmbH

Linker Kreuthweg 9
Affing-Mühlhausen
D-86444
Germany
Contact: Ms Susanne Geller-Dür
Job Title: Marketing Manager
T: + 49 82 07 9 58 99 28
F: + 49 82 07 9 58 99 29
E: marketing@pfisterwaagen.de
W: www.pfisterwaagen.de
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PHB WESERHÜTTE, S.A.



Parque Científico y Tecnológico
de Gijón
C/Luis Moya Blanco 82
Gijón
Asturias
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Spain
Contact: Dr Jose Ramón Prado
Job Title: Technical Commercial
Director
T: + 34 985 13 41 71
F: + 34 985 13 42 22
E: joseramon.prado@pwh.es
W: www.pwh.es
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types of bulk solids such as coal,
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cargo, with different solutions for
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PHOENIX CONVEYOR BELT SYSTEMS GmbH

Hannoversche Strasse 88
Hamburg
21079
Germany
Contact: Mr Bernd Kuesel
T: + 49 40 7667 2205
F: + 49 40 7667 2773
E: info@phoenix-cbs.com

W: www.phoenix-conveyor-
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PINTSCH BUBENZER GmbH



Friedrichshüttenstraße 1
Kirchen-Wehbach
RLP
57548
Germany
Contact: Mr Arno Weil
Job Title: Director of Sales
T: + 49 27 41 9488480
F: + 49 27 41 948844
E: arno.weil@pintschbubenzler.de
W: www.pintschbubenzler.de
PINTSCH BUBENZER is focused
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dynamic applications which
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small to very large amounts of
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Justus-von-Liebig-Straße 3
Bad Homburg
D-61352
Germany
Contact: Mr Bernard Rensinghoff
Job Title: Marketing Manager
T: + 49 6172 102 648
F: + 49 6172 102 380
E: bernard.rensinghoff@brevini.com
W: www.piv-drives.com or
www.brevini.com
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4 Wold View
Caistor
Lincoln
Lincolnshire
LN7 6UU
UK
Contact: Mr Bob Harrison
Job Title: Director
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832 741
F: + 44 1472 852 498
E: ptag.dev@talktalk.net
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PLM CRANES B.V.



Sluisweg 21-25
Heijningen
4794 SW
The Netherlands
Contact: Mr Pieter Pulleman
Job Title: Managing Director
T: + 31 167 528510
F: + 31 167 524444
E: info@plmcranes.com
W: www.plmcranes.com
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2404 Center Street
Tacoma
WA
98409-7638
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F: + 1 253 272 1457
E: bryan@ultrapoly.com
W: www.polymerindustries.com
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PORTASILO LTD

New Lane
Huntington
York
YO3 9PR
UK
Contact: Mr Paul Scott
Job Title: Business Development
Manager
T: + 44 1904 624 872
F: + 44 1904 611 760
E: bulk@portasillo.co.uk
W: www.portasillo.co.uk
Designs, manufactures and
installs bulk handling equipment
for the storage and handling of
powdered and granular materials.
Equipment supplied includes
silos, hoppers, mechanical
conveyors, lean phase and dense
phase pneumatic conveying
systems. Full turn key solutions
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PORT-TRADE APS

Karetmagervej 9
Fredericia
DK 7000
Denmark
Contact: Mr Peter J Muller
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T: + 45 7628 0102
F: + 45 7628 0103
E: peter.muller@port-trade.com

W: www.port-trade.com

POWERSCREEN INTERNATIONAL

200 Coalisland Road
Dungannon
Co Tyrone
BT71 4DR
UK
Contact: Mrs Michelle Killen
Job Title: Marketing
T: + 44 288 77 18500
F: + 44 288 77 47231
E: sales@powerscreen.com
W: www.powerscreen.com
Manufacture a complete range of
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This is made up of 30+ products
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PRECIA-MOLEN BV

Franse Akker 1
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The Netherlands
Contact: Mrs Monique Kuijter-
Heessels
Job Title: Communication &
Marketing
T: + 31 76 524 2513
F: + 31 76 522 8039
E: monique.heessels@
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PRIMASONICS INTERNATIONAL LIMITED

North Lakes Business Park
Flusco
Penrith
Cumbria
CA11 0JG
UK
Contact: Mr Donald Cameron
Job Title: Managing Director
T: + 44 17684 80372
F: + 44 17684 80374
E: sound@primasonics.com
W: www.primasonics.com;
www.quattrosonics.com
Primasonics Audiosonic Acoustic
Cleaners are air operated devices
which produce high energy, low
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significantly aid material flow and
eliminate particulate build up
wherever soot, dust, powders or
granular materials are processed,
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PROCON ENGINEERING LIMITED

Vestry Estate
Offord Road
Sevenoaks
Kent
TN14 5EL
UK
Contact: Mr Joe Naylor
Job Title: Sales Manager -
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T: + 44 1732 781 300
F: + 44 1732 781 311
E: joe.naylor@proconeng.com

W: www.proconeng.com
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 16820
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 Contact: Mr Achmad Kalla
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 F: + 62 21 823 2323
 E: bdv@bukaka.com
 W: www.bukaka.com

**PT JAKARTA PRIMA
 CRANES**

Wisma JPC
 Jl. Mampang Prapatan Raya No.
 20
 Jakarta
 12760
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 Contact:
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 W: www.jpc.co.id

**PT PAMAPERSADA
 NUSANTARA**

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 Kawasan Industri Pulogadung
 Jakarta

13930
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 Job Title: President Director
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 F: + 62 21 460 1916
 E: busdev@pamapersada.com
 W: www.pamapersada.com

**PT THIESS
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Ratu Prabu 2 Ratu Prabu 2
 Jl. TB. Simatupang Kav. 18
 Jakarta
 12560
 Indonesia
 Contact: Mr. Matahara
 Job Title: Business Development
 Manager
 T: + 62 21 2754 9999
 F: + 62 21 2754 9800
 E: thiess@thiess.co.id
 W: www.thiess.co.id

PT. BANDO INDONESIA

Wisma Hayam Wuruk, 6th floor,
 Suite 600
 Jin. Hayam Wuruk No. 8
 Jakarta
 10120
 Indonesia
 Contact: Mr Budi Widjaya
 Job Title: Mining Division
 T: + 62 21 3517590
 F: + 62 21 3517591
 E: vbelt.div@bandoindonesia.com
 W: www.bandoindonesia.com
 PT. Bando, established in 1987, is
 one of the leading automotive
 and industrial power transmission
 belt manufacturers in Indonesia. It
 has one main plant located in

Tangerang and its marketing
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 PA
 19612
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 E: bradley.seibt@qplas.com
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 Engineering designs, fabricates
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 Wetherill Park
 Sydney
 NSW
 2164
 Australia
 Contact: Mr Peter Taylor
 Job Title: Project Manager
 T: + 61 2 9756 1921
 F: + 61 2 9756 4212
 E: ptaylor@qhs.com.au
 W: www.qhs.com.au
 Specialists in the design and

supply of mechanical sampling
 systems for bulk materials. The
 company can also assist in the
 design and specification of new
 sampling systems and review
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R & S S.R.L.

Via del Cmapo Sportiuo 40
 Mezzana
 48123
 Italy
 Contact: Mr Silvio Banzi
 Job Title: Head of Advertising
 T: + 39 0535618 205
 F: + 39 0544411 099
 E: s.banzi@wam.it
 W: www.roncuzzi.com
 Designs and builds green
 hoppers, belt conveyors and
 transhipment plant for coal,
 cereals, mineral.

RBL-REI FRANCE

11 Boulevard Brune
 Paris
 Cedex 14
 75682
 France
 Contact: Mr Sébastien Bouhours
 T: + 33 2 41 21 19 40
 F: + 33 2 41 21 19 59
 E: s.bouhours@rbl-france.com
 W: www.rblrei-france.com
 Designs, builds and supplies
 continuous bulk handling belt
 conveyor systems and associated
 equipment, stackers up to 10,000
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RC INSPECTION B.V

Gustoweg 66
 Rotterdam
 NL 3029
 The Netherlands
 Contact: Mr Kees
 Maarschalkerweerd
 T: + 31 10 4250240
 F: + 31 6 20741355
 E: kees.maarschalkerweerd@rc-inspection.com
 W: www.rc-inspection.com/

RDS TECHNOLOGY LTD

Cirencester Road
 Minchinhampton
 Stroud
 Gloucestershire
 GL6 9BH
 UK
 Contact: Mr Mark Evans
 Job Title: Business Development
 Manager
 T: + 44 1453 733300
 F: + 44 1453 733311
 E: info@rdstec.com
 W: www.rdstec.com
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 E-Mail: peiner@smag.de
 Internet: www.peiner.de

REMA TIP TOP GmbH

Business Unit Industrie
Gruber St. 63
Poing
Bavaria
D-85586
Germany
Contact: Mr Lorenz Appel
T: + 49 8121 707 234
F: + 49 8121 707 222
E: info@tiptop.de
W: www.rema-tiptop.com
Materials developed and manufactured by REMA TIP TOP are installed and maintained by its service facilities around the world. It provides a full range of conveyor belt repair and splicing products, corrosion and wear protection products, modern vulcanising materials/methods and full laboratory testing and technical assistance.

RISUN TECHNOLOGIES

357 West 6160 South
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Utah
84107
USA
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Business Development
T: + 1 801 305 4241
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E: andyw@risuntech.com
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RIVER CONSULTING

445 Hutchinson Ave
Suite 740
Columbus
OH
43235
USA
Contact: Ms Carli Kessler
Job Title: Marketing Assistant
T: + 1 614 890 3456
F: + 1 614 890 1883
E: ksmith@riverconsulting.com
W: www.riverconsulting.com
River delivers EPCM material handling experience, including project management, design/supply of conveying systems, and engineering. With 5 offices and 28 years of experience, we provide proven solutions including blending, conveying, silo and stacking tubes, automation and controls, and marine structures.

ROBERTS & SCHAEFER COMPANY

222 South Riverside Plaza
Chicago
Illinois
60606-3986
USA
Contact: Mr Ike Miller
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Mgr
T: + 1 312 236 7292
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E: rs@elginindustries.com
W: www.r-s.com

ROCKTREE LOGISTICS PTE. LTD.

ROCKtree

3 Church Street
#24-01/02
Samsung Hub
Singapore
049483
Singapore

Contact: Mr Daniele Pratalongo
T: + 65 6622 65 10
F: + 65 6622 65 11
E: info@rocktree.sg
W: www.rocktree.sg
RockTree Logistics Pte. Ltd.
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3068 AX
The Netherlands
Contact: Ms Berte Simons
Job Title: Director Advisory Group
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F: + 31 10 443 3688
E: info@rotterdam.royalhaskoning.com
rotterdam.royalhaskoning.com
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Studies on marketing/distribution/feasibility/management handling/storage/environmental impact. Design, procurement, tender evaluation, contract aware, on-site supervision. Has carried out projects in over 70 countries.

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Via A Toscanini 1
Almè
Bergamo 24011
Italy
Contact: Mr Carsten Spanggaard
Job Title: Group Sales Director
T: + 39 035 430 0111
F: + 39 035 545 700
E: rulmeca@rulmeca.it
W: www.rulmeca.com
Specialises in the production of rollers, motorized pulleys and components. Rulmeca Group means: wide distribution networks; close relationships with customers and complete service; manufacturing flexibility; continuously expanding and evolving product range; constant improvement in technical, design and sales service; global market reach and a network of skilled agents.

SABS - MINING & MINERALS

PO Box 413
Richards Bay
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South Africa
Contact: Ms Audrey Ndlovu
Job Title: Operations Manager
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F: + 27 35 797 7212
E: ndlovua@sabs.co.za
Provides a holistic range of sampling, analytical and product certification services to the solid-fuel and mineral industries. In addition to its core values of Accredited Quality (ISO 17025), integrity, accuracy and speed, also offered is a very competitive pricing structure resulting in product samples for analysis

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SALZGITTER MASCHINENBAU AG/PEINER GRABS



Windmühlenbergstrasse 20-22
Salzgitter
D-38259
Germany
Contact: Mr Arnulf Köhnemann
T: + 49 5341 302 613
F: + 49 5341 302 424 or 606
E: arnulf.koehnemann@smag.de
W: www.smag.de
Manufacturer and supplier of a complete range of grabs, i.e., (electro-hydraulic) motor grabs, single-rope grabs, two- and four-rope grabs, hydraulic grabs as well as rotators (slewing units) and special grabs for all kinds of bulk materials for various applications and purposes.

SAMMI

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Narni Scalo
Terni 05036
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Contact: Mr Daniele Bellezza
Job Title: Engineer
T: + 39 0744 733832
F: + 39 335 5313331
E: daniele.bellezza@sammi.it
W: www.sammi.it
In addition: Lime kilns equipment, Ceramic casting equipment
Sammi is a leading company in design, supply and installation of industrial plant, able to resolve customer's needs with a wide range of application, such as:
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SAMPLING ASSOCIATES INTERNATIONAL

PO Box 338
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F: + 1 757 928 0482
E: preagan@samplingassociates.com
W: www.samplingassociates.com

SANDVIK MINING



Sandviken
SE-81181
Sweden
Contact: Mr Stefan Doetsch
Job Title: Product Area Manager
T: + 43 3842 2077 230
E: info.mining@sandvik.com
W: mining.sandvik.com
Other equipment: Open pit mining systems (bucket wheel excavator, beltwagon, spreader, transport crawler); rotary, DTH and topammer drills and tools. One of the leading suppliers of drilling, crushing and turn-key bulk material handling equipment using continuous material handling technologies to stack, load/reclaim and haul bulk material. Integrated solutions and products are designed to specific customer requirements and engineering, project management and operation services are offered worldwide.

SANDVIK MINING AND CONSTRUCTION



Materials Handling GmbH & Co KG
Vordemberger Strasse 12
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Austria
Contact: Dr.-Ing. Stefan Hotz
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Projects & Systems
T: + 43 3842 2077 550
F: + 43 3842 2077 501
E: stefan.hotz@sandvik.com
W: www.sandvik.com

Sandvik has the long term experience to design and install virtually any kind of bulk materials handling system. From continuous opencast mining systems to integrated stacking and reclaiming systems for mines, terminals, power plants and port facilities, we offer total solutions and turnkey installations and services. Other equipment: Continuous Mining Equipment e.g. bucket wheel excavators, belt wagons, spreaders, transport crawlers, fully-, semi-mobile and stationary crushing plants, mine- and overland conveyors.

SANDVIK MINING AND CONSTRUCTION (CHINA) CO., LTD.

No.986, Baota Rd
Jiading District
Shanghai 201821
China
Contact: Mr Zhang Jianyuan
Job Title: Vice President, Surface Mining
T: + 86 21 6916 6050
F: + 86 21 6916 6025
E: jianyuan.zhang@sandvik.com
W: www.sandvik.com
Continuous open pit mining systems, including bucket wheel excavators, belt wagons, spreaders, transport Crawlers.

SCANTECH INTERNATIONAL



PO Box 1485
Springwood
Queensland
4127
Australia
Contact: Mr Henry Kurth
T: + 61 7 3710 8406
F: + 61 7 3710 8499
E: sales@scantech.com.au
W: www.scantech.com.au
World leader in process control solutions for conveyed bulk materials. On-belt analysers with proven technologies. Reliable, accurate and dependable ash, moisture and elemental measurement minute by minute. Control quality through blending or monitor specification compliance. Over 1,000 installations.



SCHADE LAGERTECHNIK GmbH



Dorstener Strasse 360
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D-44653
Germany
Contact: Mr Karl-Heinz
Fiegenbaum
Job Title: Managing Director
T: + 49 2325 58740
F: + 49 2325 587474
E: info@schade-lagertechnik.de
W: www.schade-lagertechnik.de
SCHADE Lagertechnik GmbH is a leading supplier for stockyard technology including longitudinal and circular stockyards, blending beds, tripper cars, bridge- and portal-type stackers and reclaimers as well as wagon unloading systems. Founded in 1879, the company has been part of the Aumund Group since 2001.

SCHENCK PROCESS UK LIMITED

Carolina Court
Lakeside
Doncaster
South Yorkshire DN4 5RA
UK
Contact: Mr Paul Markwell
Job Title: Marketing Manager
T: + 44 1302 321 313
F: + 44 1302 554 400
E: enquiries@schenckprocess.co.uk
W: www.schenckprocess.co.uk
Designers, manufacturers and suppliers of materials handling solutions including all forms of pneumatic conveying systems and pneumatic process injection systems for fuels or additives.

SCHENCK PROCESS UK LTD T/A REDLER

Redler House
Dudbridge
Stroud
Gloucestershire GL5 3EY
UK
Contact: Mr Gordon Gardiner
Job Title: Senior Proposals
Engineer - Power Division
T: + 44 1453 763 611
F: + 44 1453 762 602
E: power@redler.com
W: www.redler.com
Other equipment: Coal feeders. Truck unloaders with capacities up to 500 tph, en masse conveyor systems handling most minerals up to 300 tph, chain and bucket elevators up to 300 tph and belt conveyors to 200 tph. Power Station Coal Feeders up to 200 tph.

SCORPIO ENGINEERING PVT. LTD

Scorpio House
132 Wheeler Road
Cox Town
Bangalore 560 005
India
Contact: Mr Jacob P.
Job Title: VP - Marketing & Application
T: + 91 99801 625 39
F: + 91 80 2548119
E: jacob@scorpioengg.com
W: www.scorpioengg.com
In addition: fly ash conveying, liner container filling & discharging equipment. The company is a 25-year-old manufacturing

organisation in the areas listed and the capacities of the equipment are custom specified and built. The average range is from 100 tph to 1000 tph.

SEA TRANSPORT CORPORATION

PO Box 1043
Southport
QLD 4215
Australia
Contact: Mr Stuart Ballantyne
Job Title: Marine Consultant
T: + 61 7 5529 5777
F: + 61 7 5529 5177
+ 61 433 766 139
E: SAB@seatransport.com
W: www.seatransport.com
Sea Transport Solutions Pty Ltd (STS) offers specialist marine design and consulting services and has extensive experience working with commercial, military and pleasure vessels. STS is part of the Sea Transport Corporation group which own, operate and construct commercial vessels. We pride ourselves as designers with 'real experience', with our staff having a diverse range of skills and a unique understanding of technical, commercial and operational aspects of ship design, construction and operation. Operating since 1976, STS has a proven record of successful, innovative designs currently operating in 45 countries worldwide.

SEABULK SYSTEMS INC



Suite 150
10271 Shellbridge Way
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British Columbia
V6X 2W8
Canada
Contact: Mr Sidney Sridhar
Job Title: President
T: + 1 604 273 1378
F: + 1 604 273 1358
E: sbs@seabulk.com
W: www.seabulk.com
Involved in 'design and build' projects in the marine bulk transportation industry. Ports, self unloaders and shipper developed by Seabulk have improved bulk transportation logistics significantly.

SELPECO RESOURCES INC.

14150 NE 20th Street
F1, PMB342
Bellevue
WA 98007
USA
Contact: Mr S E (Steve) Laccinolo
Job Title: President
T: + 1 425 952 4463
F: + 1 425 822 1235
E: selpeco@selpeco.com
W: www.selpeco.com
Selpeco is a project, program and construction management company for all types of bulk material handling projects. The company has particular skill at development of material handling terminals, cost analyses, project plans and creating teams of companies to design and build turnkey material handling facilities.

SEMPERTRANS FRANCE BELTING TECHNOLOGY SAS

Sempertrans Marketing
10 rue des charretiers
Argenteuil Cedex 95104
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Contact: Ms. Catherine Filchy
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THE GRAB SPECIALIST B.V.

Draaibrugweg 1
Almere
1332AA
The Netherlands
Contact: Mr Emiel Bleyenbergh
Job Title: Director
T: + 31 365 32 88 22
F: + 31 365 49 99 22
E: info@tgs-grabs.nl
W: www.tgs-grabs.nl
We supply all types of bulk handling grabs like clamshells in single line/remote control/electro-hydraulic/2-line and 4-line. Grabs can be supplied in standard design or to clients specification. We stand for good advice, quality, short delivery times and good service.

THE RARING CORPORATION

12007 NE 95th St
Vancouver
WA
98682
USA
Contact: Mr David L Raring
Job Title: President
T: + 1 360 892 1659
F: + 1 360 892 1624
E: draring@raringcorp.com
W: www.raringcorp.com

THERMO FISHER SCIENTIFIC

501 - 90th Avenue NW
Minneapolis
MN 55433
USA
Contact: Ms Paula Frisk
Job Title: Product
Manager/Marketing
T: + 1 800 445 3503
F: + 1 763 783 2525
E: Sales.bulk.us@thermofisher.com
W: www.thermoscientific.com/bulkweighing
Thermo Scientific branded products are a specialty line of industrial in-motion weighing, inspection, monitoring and control equipment. These products, formerly branded as Ramsey, are used for process control, production monitoring and automation in the coal and minerals mining, cement, construction and aggregates industries, among others.

THYSSENKRUPP CANADA

1177-11th Avenue SW
Suite 500
Calgary
Alberta T2R 1K9
Canada
Contact: Mr Steve Harrington
Job Title: Vice President
Marketing
T: + 1 403 209 4431
F: + 1 403 245 5625
E: infocanada@thyssenkrupp.com
W: www.krupp.ca
Involved for many years in the design and supply of turnkey, environmentally sensitive mining and material handling projects. Product range: conveying systems; crushing systems; stackers; ship loaders and ship unloaders; storage and reclamation design and supply.

THYSSENKRUPP FÖRDERTECHNIK GMBH



Business Unit Materials Handling
Ernst-Heckel-Strasse 1
St Ingbert-Rohrbach
Saarland D-66386
Germany
Contact:
T: + 49 6894 599 0
F: + 49 6894 599 468
E: info-mh@thyssenkrupp.com
W: www.tk-materialshandling.com
Beside individual items listed, the company designs and supplies complete material handling plants turnkey to thermal power plants, the fertilizer industry (for handling of urea, phosphates etc), the cement and mining industry as well as complete port handling solutions.

THYSSENKRUPP MATERIALS HANDLING

71 Nanyuki Road
Sunninghill
Johannesburg
Gauteng
2191
South Africa
Contact: Mr Klaus Peter Müller

Job Title: Managing Director
T: + 27 11 236 1243
F: + 27 11 236 1235
E: info.tknh@thyssenkrupp.com
W: www.thyssenkrupp-materialshandling.co.za

THYSSENKRUPP ROBINS, INC.

7730 E. Belleview Ave
Suite #404
Greenwood Village
Colorado
80111-5820
USA
Contact: Mr Bill Halley
Job Title: Mechanical Engineer
T: + 1 303 770 0808
F: + 1 303 770 4522
E: bill.halley@thyssenkrupp.com
W: www.krupprobins.com
Design and supply turnkey, environmentally sensitive mining and material handling projects. Product range includes: conveying systems; crushing systems; stackers; ship loaders and ship unloaders; storage and reclamation design and supply.

TIDEWORKS TECHNOLOGY - EUROPE

Maaswijkweg 7
Spijkenisse
3203 LG
The Netherlands
Contact: Mr Rik Verspeek
Job Title: Business Manager
T: + 31 181 668668
F: + 31 181 668668
E: info@tideworks.com
W: www.tideworks.com

TMEIC

1325 Electric Road
Roanoke
Virginia
24018
USA
Contact: Mr Don Samsa
Job Title: Marketing
T: + 1 540 283 2000
F: + 1 540 283 2001
E: don.samsa@tmeic-ge.com
W: www.tmeic.com

TMSA TECNOLOGIA EM MOVIMENTAÇÃO S/A



Bernardino Silveira Pastoriza, 710
Bairro Sarandi
Porto Alegre
RS
91160-310
Brazil
Contact: Mr Mathias Elter
Job Title: CEO
T: + 55 51 2131 3318
F: + 55 51 2131 3330
E: mathias.elter@tmsa.ind.br
W: www.tmsa.ind.br
Design, manufacturing, assembling and representation of mechanic, pneumatic and electrohydraulic equipments for handling and processing solid bulk materials (ore, cereals, sugar, flour, etc.), for port terminals or industries and agricultural facilities.

TRAMCO, INC



1020 East 19th Street
Wichita
KS

67214
USA
Contact: Mr Steve Cloud
Job Title: President
T: + 1 316 264 4604
F: + 1 316 264 7965
E: sales@tramcoinc.com
W: www.tramcoinc.com
Manufactures enclosed belt, drag chain and bucket elevators for industrial markets. The JetBelt conveyor is a belt supported by a cushion of air between the belt and the pan and offers an entirely new level of operating efficiency for dry bulk handling of coal.

TRANS-GLOBAL SOLUTIONS, INC

11811 East Freeway
Suite 630
Houston
Texas
TX 77029
USA
Contact: Mr Dan Orsini
T: + 1 713 453 0341
F: + 1 713 453 2756
E: dorsini@tgsgroup.com
W: www.tgsgroup.com

TRANS-GLOBAL SOLUTIONS, INC.

5255 N Twin City Hwy
Nederland
TX
77627
USA
Contact: Mr William Scott
Job Title: Vice President
T: + 1 409 727 4801
F: + 1 409 729 1132
E: wfscott@tgsgroup.com
W: www.tgsgroup.com

TRF LIMITED (TATA)

11 Station Road
Burma Mines
Jamshedpur
Jharkhand
831 007
India
Contact: Mr D.C. Jha
Job Title: Sr. Divisional Manager
(Marketing)
T: + 91 657 2345728
F: + 91 657 2271 075
E: dcjha@sr.trfltd.com
W: www.trfltd.com / www.tata.com/trf
Other equipment: Port crane, Special duty crane, SDL, Steep Inclined Conveyor. A TaTa Group of company producing service to all sectors in bulk material handling & processing system on epc basis.

TRIODETIC

10 Didak St
Amprrior
Ontario
K7S 0C3
Canada
Contact: Mr Glenn Kohut
Job Title: Vice President,
Business Development
T: + 1 613 822 2922
F: + 1 613 822 1375
E: info@triodetic.com
W: www.triodetic.com
Designs, manufactures and constructs dome roofs and longitudinal bulk storage enclosures for medium-large clear span applications.

TRIPLE POINT TECHNOLOGY

PO Box 92
Hunter Region Mail Centre
NSW 2310



With **1,200** machines sold in more than **80** countries over **43** years, **VIGAN** is your experienced partner for loading and unloading the most precious commodity on earth. **Grain deserves reliability**

Australia
 Contact: Mr Steve Maxwell
 Job Title: General Manager
 T: + 61 2 4908 2222
 F: + 61 2 4968 2043
 E: info@qmaster.com
 W: www.qmaster.com
 QMASTOR provides specialist software systems and services to the mining, port and power generation industries. We specialise in bulk commodity supply chain, quality management and advanced planning and scheduling solutions. Our flagship products include: Pit to Port, PortVu and Horizon.

TSUBAKIMOTO BULK SYSTEMS CORPORATION

4-1
 Terauchi 2-Chome
 Toyonaka
 Osaka
 561-0872
 Japan
 Contact: Mr Y. Horii
 Job Title: Manager, Overseas Operations
 T: + 81 6 6862 2329
 F: + 81 6 6862 8516
 E: info@tsubakimoto.com
 W: www.tsubakimoto.com
 Produces bulk handling systems equipment, bucket, flow and pan conveyors.

TTS HUAHAI SHIPS EQUIPMENT

18th Floor
 3255 Zhou Jia Zui Road
 Shanghai
 200093
 China
 Contact: Mr Lian Zhou Yang
 Job Title: Business Development Manager
 T: + 86 21 6539 8257
 F: + 86 21 6539 7400
 E: info@tts-huahai.com

TTS MARINE ASA

Laksevegneset 12
 Laksevag
 Bergen
 5847
 Norway
 Contact: Mr. Peter Klasson
 Job Title: Marketing Coordinator
 T: + 47 55 94 74 08
 F: + 47 55 94 74 01
 E: info@tts-marine.no
 W: www.ttsgroup.no
 TTS is a global company that develops and supplies equipment for the maritime and offshore industry, organised in five divisions: Marine Cranes, Drilling Equipment, Dry Cargo Handling, Deck Machinery and Port & Material Handling. TTS has 25 operational units in 12 countries.

ULRICH BREHME GMBH

Hauptstraße 137-143
 Osterode am Harz
 37520
 Germany
 Contact: Mr Wolfgang Noreik
 Job Title: Marketing Manager
 T: + 49 5522 9008 0
 F: + 49 5522 9150 0
 E: info@brehme-ubo.com
 W: www.brehme-ubo.com

V D D B (Pty) Ltd

PO Box 16985
 Lyttelton
 Gauteng
 0140

South Africa
 Contact: Mr Leonard van der Dussen
 T: + 27 12 664 2300
 F: + 27 12 644 2902
 E: admin@vddb.co.za
 W: www.vddb.co.za
 Manufactures air-supported belt conveyors. Low-pressure air is blown in, replacing roller-idlers on the carrying side. The aeroconveyor is a bulk solid conveyor and is suitable for a wide range of products. It can be totally enclosed protecting the product from the environment and vice versa.

VEENSTRA MACHINEFABRIEK B.V.

De Holwert 10
 KC Coevorden
 7741
 The Netherlands
 Contact: Mr Paul Kuiper
 T: + 31 524 599 333
 F: + 31 524 599 330
 E: mach@veenstra-coevorden.nl
 W: www.veenstra-coevorden.nl

VEMEKEP DEUTSCHLAND GMBH

Gebrueder Kerkmann Platz 4
 Ahlen
 D-59229
 Germany
 Contact: Mr Karl-Heinz Fiegenbaum
 Job Title: Managing Director
 T: + 49 2382 9689683
 F: + 49 2382 9689685
 E: info@vemekep-deutschland.de
 W: www.vemekep-deutschland.de
 Specialized in: Bulk Materials Handling Plants, Raw Materials Preparation Plants, Machine Building and Steel Construction, Revamping, Repair, Service, Erection, Commissioning, we are the German independent branch of the 1983 established VEMEKEP Volos/Greece, running relevant own large state-of-the-art workshops. www.vemekep.gr.

VENTYX

193 Turbot Street
 Brisbane
 Queensland
 4000
 Australia
 Contact: Mr Greg Clark
 Job Title: CEO
 T: + 61 7 3303 3333
 F: + 61 7 3303 3232
 E: info@mincom.com
 W: www.ventyx.com

VERSTEGEN GRIJPEERS BV



PO Box 1014
 Nieuwegein
 3430 BA
 The Netherlands
 Contact: Mr Eric Visser
 Job Title: Managing Director
 T: + 31 3060 62222
 F: + 31 3060 60657
 E: info@verstegen.net
 W: www.verstegen.net
 A leading manufacturer, specialising in developing, designing and constructing all kinds and types of grab units. Its product range includes single/two/fore rope grabs and hydraulic grabs.

VIBRAFLOOR

Les Pièces Bourgeoises
 Giury
 71640
 France
 Contact: Mr Jean-Claude Poncet
 Job Title: President
 T: + 33 3 85 44 06 78
 F: + 33 3 85 44 06 79
 E: jc.poncet@vibrafloor.com
 W: www.sillexport.com
 Vibrafloor supplies the automatic reclaimer VIBRAFLOOR. Independent vibrating modules laid on slight inclines, typically 8 to 12°, remove efficiently most bulk products, free flowing or cohesive, out of ship holds, silos, storage platforms, railway cars etc.... No personnel, maintenance free, totally safe, negligible operating cost are major advantages.

VIGAN



Rue de L'Industrie 16
 Nivelles
 B-1400
 Belgium
 Contact: Mr Nicolas Dechamps
 Job Title: Managing Director
 T: + 32 67 89 50 41
 F: + 32 67 89 50 60
 E: info@vigan.com
 W: www.vigan.com
 VIGAN manufactures bulk materials handling systems mainly Pneumatic Continuous Ship Loaders & Ship Unloaders, Barge Loaders & Barge unloaders as well as complete storage systems.

VOLLERT ANLAGENBAU GMBH

Stadtseestr. 12
 Weinsberg
 74189
 Germany
 Contact: Mr Juergen Schiemer
 Job Title: Vice President
 T: + 49 7134 52 232
 F: + 49 7134 52 222
 E: juergen.schiemer@vollert.de

W: www.vollert.com
 Other equipment: Shunting Systems. Vollert shunting systems are the ideal solution for rail-bound in-plant loading and shunting operations handling all kinds of materials (bulk cargo, liquids etc) - ranging from stationary shunting systems to free-moving shunting robots with diesel or electric drive.

VOLVO CONSTRUCTION EQUIPMENT SA

Hunderenveldlaan 10
 Brussels
 B 1082
 Belgium
 Contact: Mr Bill Law
 Job Title: Director of External Communications
 T: + 32 2 482 5021
 F: + 32 2 675 1777
 E: bill.law@volvo.com
 W: www.volvo.com
 Other equipment: Articulated Haulers. Manufactures a wide range of wheeled front end loaders and payloaders for heavy duty/high capacity loading and reloading work.

VOSSLOH KIEPE GMBH



Kiepe-Platz 1
 Düsseldorf
 D-40599
 Germany
 Contact: Mr Manfred Grünwald
 Job Title: Head of Sales Industrial Components
 T: + 49 211 7497 270
 F: + 49 211 7497 420
 E: m.gruenwald@kiepe-elektrik.com
 W: www.kiepe-elektrik.com
 Vossloh Kiepe is a leading supplier of pull wire switches, belt drift switches and speed monitoring devices for the control of belt conveyor systems. The trade mark KIEPE is worldwide a synonym for proven products of highest quality.

VSR INDUSTRIETECHNIK GMBH

Am Alten Schacht 6
 Duisburg
 D-47198
 Germany
 Contact: Mr Wolfgang Schlabach
 Job Title: Foreign Sales Department
 T: + 49 20 66 99 66 40
 F: + 49 208 933 3062
 E: info@vsr-industrietechnik.de
 W: www.vsr-industrietechnik.de
 Products have been proving themselves in the bulk handling business for more than 20 years. Due to the specially designed and patented products, they have achieved a name for their high effectiveness and dependability.

WIRTECH AG

Zelgstrasse 86
 Uetendorf
 CH-3661
 Switzerland
 Contact: Mr K Buehler
 Job Title: Marketing
 T: + 41 33 346 5050
 F: + 41 33 346 5059
 E: info@wirtech.ch
 W: www.wirtech.ch

WORLEY PARSONS CANADA (WESTMAR)

400-233 West First Street
 North Vancouver
 BC
 V7M 1B3
 Canada
 Contact: Mr Stanley Cowdell
 Job Title: President
 T: + 1 604 985 6488
 F: + 1 604 985 2581
 E: info@westmar.com
 W: www.westmar.com

VERNAUX-PASAGE

Zone Industrielle Beraugard PB 552
 Brive Cedex
 19107
 France
 Contact: Mr Willy Banc
 Job Title: Marketing Department
 T: + 33 475 66 4600
 F: + 33 555 860 563
 E: willy.banc@preciamol.fr



	Shipladers	Ship-unloaders	Grab Loaders	Grab Unloaders	Grabs	Continuous Ship Unloaders	Barge Loaders	Barge Unloaders	Self-Unloaders & Equipment	Belt Conveyors/Loaders	Stackers	Reclaimers	Stacker Reclaimers	Conveyors & Accessories	Hoppers	Crushing	Screening	Blending	Weighing	Sampling & Inspection	Dust Control & Suppression	Drives, Controls & Automation	Enclosed Storage	Stockyard Systems	Railcar Loaders/Unloaders	Engineering Consultants	Other
4B BRAIME Elevator Components																											
A. Friedr. Flender AG																											
ABB AB																											
Abbey Rollers Limited																											
Achenbach GmbH Metalltechnik																											
AE AntiEmission GmbH																											
AE Automation (M) Sdn bhd																											
AFM Industries																											
Agrico Sales, Inc.																											
Akerbergs Maskiner AS																											
Alex Stewart (International) Corporation																											
AMECO SA																											
Anker-Flexco GmbH																											
Anvil Attachments																											
Arlona Engineering																											
ATIC Services																											
ATC Services																											
Atlas Manufacturing Co. Inc																											
AUMUND Foerdertechnik GmbH																											
Aurecon																											
Aurecon																											
Aurecon Hatch																											
Ausenco Sandwell																											
B & W Mechanical Handling Ltd																											
Bedeschi SpA																											
Bekaert NV																											
BELTANA Trading EK																											
Benetech GmbH																											
Benetech, Inc.																											
Beumer Group GmbH & Co KG																											
BGS Holland																											
Binder + Co AG																											
Birrus International Pty Ltd																											
BLUG Credeblug S.L.																											
BMT Transport Solutions GmbH																											
Bogaert Transmission (GEHA)																											
Bosch Rexroth B.V.																											
Boyne Area Manufacturing																											
Brelko Conveyor Products																											
Bretby Gammatech Ltd.																											

Company	Shiploaders	Ship-unloaders	Grab Loaders	Grab Unloaders	Grabs	Continuous Ship Unloaders	Barge Loaders	Barge Unloaders	Self-Unloaders & Equipment	Belt Conveyors/Loaders	Stackers	Reclaimers	Stacker Reclaimers	Conveyors & Accessories	Hoppers	Crushing	Screening	Blending	Weighing	Sampling & Inspection	Dust Control & Suppression	Enclosed Storage	Stockyard Systems	Railcar Loaders/Unloaders	Engineering Consultants	Other
Bridgestone Industrial Limited	✓																									
Bridon International Ltd																										
BRUKS Rockwood Incorporation	✓																									
Bucket Mart Inc.																										
Bulk Cargo Handling BVBA																										
Bulk Logistic Landmark																										
BV Beco																										
C. Christophel GmbH																										
Cable Arm Inc																										
Cachapuz Bilancial Group																										
Calim Grab Industry																										
Cambelt International Corp																										
Capotex																										
Carbonser, S.A. DE C.V.																										
Cargotec Sweden AB,																										
Marine Selfloaders																										
Cargotec Sweden Bulk Handling AB	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Carlisen	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Carsurin																										
Caterpillar (UK) Ltd.																										
Caterpillar Inc																										
Caterpillar SARM																										
Cavotec SA																										
CDM Systems, Inc	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Certex UK	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CFS srl.																										
Changsha Kaiyan Instruments Co. Ltd																										
China Huadian Engineering Co., Ltd.(CHEC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
China Sonangol International (S) Pte Ltd																										
CHL Equipment Ltd (incorp. Versteegen Grabs UK)																										
Cimbria A/S	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cimbria Bulk Equipment																										
Claudius Peters Technologies GmbH	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Claudius Peters Technologies S.A.S																										
Cleveland Cascaes Ltd																										
Clough Limited	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CNBM International Engineering Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

	Shiploaders	Ship-unloaders	Grab Loaders	Grab Unloaders	Grabs	Continuous Ship Unloaders	Barge Loaders	Barge Unloaders	Self-Unloaders & Equipment	Belt Conveyors/Loaders	Stackers	Reclaimers	Stacker Reclaimers	Conveyors & Accessories	Hoppers	Crushing	Screening	Blending	Weighing	Sampling & Inspection	Dust Control & Suppression	Drives, Controls & Automation	Enclosed Storage	Stockyard Systems	Railcar Loaders/Unloaders	Engineering Consultants	Other
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Coal & Mineral Technologies (SABS)																											
COBRA Europe SA																											
Coecierici Logistics S.p.A.																											
Cofely Experts BV																											
Coles Associates																											
Conductix -Wampfler Australia																											
Conductix-Wampfler																											
Conductix-Wampfler AG																											
Continental Construction (Memphis)																											
Continental Conveyor																											
& Equipment Co Inc																											
ContiTech Transportbandsysteme GmbH																											
Control Systems Technology Pty Ltd																											
CPS Projects (Pty) Ltd																											
CST Covers																											
CST Storage																											
Cullen Grummitt & Roe																											
Dalian Huarui Heavy																											
Industry International																											
dbis																											
DCC Grabs																											
DCL, Incorporated																											
De Regt Conveyor Systems																											
Dearborn MidWest Conveyor Co.																											
DeMarco Industrial																											
Vacuum Corporation																											
DemcoTECH																											
DMN-WESTINGHOUSE																											
Dome Corp of North America																											
Dome Technology																											
Domtec International LLC																											
Donaldson Filtration																											
Deutschland GmbH																											
Doosan Benelux SA																											
Doppelmayr Transport Technology GmbH																											
Dos Santos International, LLC																											
Dosco Overseas Engineering Ltd																											
Doubrava Ges GmbH																											
Dunlop Conveyor Belting																											

Company	Shiploaders	Ship-unloaders	Grab Loaders	Grab Unloaders	Grabs	Continuous Ship Unloaders	Barge Loaders	Barge Unloaders	Self-Unloaders & Equipment	Belt Conveyors/Loaders	Stackers	Reclaimers	Stacker Reclaimers	Conveyors & Accessories	Front-End Loaders	Hoppers	Crushing	Screening	Blending	Weighing	Sampling & Inspection	Dust Control & Suppression	Drives, Controls & Automation	Enclosed Storage	Stockyard Systems	Railcar Loaders/Unloaders	Engineering Consultants	Other
Duro Felguera Plantas Industriales, S.A.	✓																											
Dust Control Technology																												
Dust Solutions Inc.																												
E Buttmer & Co. Ltd	✓																											
E-Crane International USA	✓																											
E-Crane World Wide	✓																											
EIFFEL Etablissement SOMDEL	✓																											
Elecon Engineering Company Ltd	✓																											
Elecon Singapore PTE Ltd.	✓																											
Elgin Engineering and Construction	✓																											
EMS-TECH Inc	✓																											
EMS-TECH Inc.	✓																											
EMTICI Engineering Co Ltd	✓																											
Enco Engineering Inc	✓																											
Engicon nv	✓																											
EQUIPO LLC																												
Eriez Magnetics Europe Limited																												
ESI Eurosilco BV																												
Euromec Srl																												
Euro-Tramco BV																												
F E Schulte Strathaus GmbH & Co KG																												
F L Smidth A/S	✓																											
Fairport Engineering	✓																											
FAM Foerderanlagen Magdeburg	✓																											
Famak SA	✓																											
Fantuzzi Reggiane S.p.a	✓																											
FELD Maschinen-und Industriebau GmbH																												
Fenner Dunlop																												
Conveyor Belting Europe	✓																											
Figee Crane Services BV	✓																											
Flexco	✓																											
Flexveyor Conveyor																												
FLSmidth GmbH																												
FLSmidth Minerals Pvt. Ltd																												
FLSmidth Spokane, Inc.	✓																											
FLSmidth Wadgassen GmbH	✓																											
Gama Endustri Tesisleri	✓																											
Imalat Ve Montaj AS	✓																											

	Shipladers	Ship-unloaders	Grab Loaders	Grab Unloaders	Grabs	Continuous Ship Unloaders	Barge Loaders	Barge Unloaders	Self-Unloaders & Equipment	Stackers	Reclaimers	Stacker Reclaimers	Conveyors & Accessories	Hoppers	Crushing	Screening	Blending	Weighing	Sampling & Inspection	Dust Control & Suppression	Drives, Controls & Automation	Stockyard Systems	Railcar Loaders/Unloaders	Engineering Consultants	Other
Gambarotta Gschwendt	✓																								
Ganz Danubius Trading Co Ltd	✓	✓																				✓			
Garwood Consulting Ltd	✓																					✓			
General Kinematics Corp.																									
Geométrica de México, S.A. de C.V.																									
Geometrica Inc																									
Gertech Handling Systems cc																									
GGT Goldengrain Trading SA																									
Golden West Industries																									
Goodman Conveyor Company																									
Goodyear Tyre & Rubber Co																									
Goodyear Tyre & Rubber Co																									
Gordinne & Co NV/SA																									
Gottwald Port Technology GmbH	✓	✓	✓	✓	✓	✓	✓	✓																	
Greiferbau-Und																									
Verschleisstechnik GmbH																									
Guttridge Ltd																									
Guyen Grab and Machine Ltd. Co																									
HW Carlsen AB	✓	✓																							
Hagglunds Drives AB																									
Hans Turck GmbH & Co. KG																									
Hansen Industrial Transmissions NV																									
Hansen Transmissions Ltd																									
Hasel Machinery Inc																									
Hasler International SA																									
HAUGEN System AB																									
Heyl & Patterson Inc	✓	✓	✓	✓	✓	✓	✓	✓																	
Hitachi Construction Machinery (Europe) NV																									
Horizon Conveyor Equipment																									
HOSCH-Fördertechnik																									
Recklinghausen GmbH																									
Hycontrol Limited																									
Hyundai Heavy Industries Co																									
IBAU HAMBURG	✓	✓																							
Igus GmbH																									
IHI Transport Machinery Co., Ltd. (IUK)	✓	✓	✓	✓	✓	✓	✓	✓																	
IMASA																									
Imperial Technologies, Inc.	✓	✓	✓	✓	✓	✓	✓	✓																	
Incolab																									
Inspectorate International Ltd																									

Company	Shipladers	Ship-unloaders	Grab Loaders	Grab Unloaders	Grabs	Continuous Ship Unloaders	Barge Loaders	Barge Unloaders	Self-Unloaders & Equipment	Stackers	Reclaimers	Stacker Reclaimers	Conveyors & Accessories	Hoppers	Crushing	Screening	Blending	Weighing	Sampling & Inspection	Dust Control & Suppression	Drives, Controls & Automation	Enclosed Storage	Stockyard Systems	Railcar Loaders/Unloaders	Engineering Consultants	Other
International Bulk Handling Technology BV	✓																									
Intersystems																										
iSAM AG Gesellschaft fuer angewandte Kybernetik																										
Isomonte SA																										
Italgru S.r.l.																										
J & B Grabs b.v.																										
Jenike & Johanson Inc.																										
Jim Way Enterprise Co Ltd																										
Joy Mining Machinery																										
KABELSCHLEPP GmbH																										
Kalenborn Kalprotect GmbH & Co. KG																										
Kardesler Grab & Machine																										
KCT Grab Industry																										
Kinergy Corporation																										
Kingfisher Industrial Ltd																										
KIROW ARDEL GmbH																										
Kleemann GmbH																										
Knight Energy Services Limited																										
Kocks Krane International GmbH																										
Konecranes (France)																										
Konecranes Finland Corporation																										
Konecranes Hafentechnik GmbH																										
Kranunion																										
Kröger Greifertechnik GmbH & Co. KG																										
Laing O'Rourke																										
Larox Flowsys Oy																										
Larsen & Toubro Limited																										
Lassing Dibben Consulting Engineers Ltd																										
Libran Engineering and Services																										
Liebherr-Hydraulikbagger GmbH																										
Liebherr-Werk Nenzing GmbH																										
Listenow GmbH & Co.																										
Logmarin Advisors Srl																										
LogSys NV																										
Loibl Allen-Sherman-Hoff GmbH																										
Macawber Engineering, Inc																										

Company	Shipladers	Ship-unloaders	Grab Loaders	Grab Unloaders	Grabs	Continuous Ship Unloaders	Barge Loaders	Barge Unloaders	Self-Unloaders & Equipment	Belt Conveyors/Loaders	Stackers	Reclaimers	Stacker Reclaimers	Conveyors & Accessories	Hoppers	Crushing	Screening	Blending	Weighing	Sampling & Inspection	Dust Control & Suppression	Drives, Controls & Automation	Enclosed Storage	Stockyard Systems	Railcar Loaders/Unloaders	Engineering Consultants	Other	
Mack Manufacturing Inc																												
Mactenn Systems Ltd.																												
Mantsinen Group Ltd Oy																												
Martin Engineering GmbH																												
Maschinen und Mühlenbau																												
Erhard Muhr GmbH																												
Matador as																												
Mentor Dynamics																												
Merrick Industries																												
METSO																												
Metso Minerals (UK) Ltd																												
Midwest Industrial Supply Inc																												
Midwest International																												
Standard Products, Inc.																												
Mitsui Miike Machinery Co., Ltd.																												
Mole-Master Services Corporation™																												
Motherwell Automation																												
Morrival SpA																												
MRS Greifer GmbH																												
NAVCO (National Air Vibrator Co)																												
Negrini Srl																												
Nemag BV																												
NERAK GmbH Fördertechnik																												
Neuero Industrietechnik GmbH																												
NILOS GmbH & Co KG																												
NKM Noell Special Cranes GmbH																												
NM Heilig BV																												
Nordströms Konstruktionsbyrå																												
Nordstrong Equipment Ltd																												
North American Crushing & Screening, LLC																												
Orthos Projects Ltd.																												
ORTS GmbH Maschinenfabrik																												
PAGE & MACRAE LIMITED																												
Parker Plant Ltd																												
PEBCO®																												
Peterson Agricare & Bulk Logistics BV																												
Pfister Waagen Bilanciai GmbH																												
PHB Weserhütte, S.A.																												
PHOENIX Conveyor																												

Company	Shipladers	Ship-unloaders	Grab Loaders	Grab Unloaders	Grabs	Continuous Ship Unloaders	Barge Loaders	Barge Unloaders	Self-Unloaders & Equipment	Belt Conveyors/Loaders	Stackers	Reclaimers	Stacker Reclaimers	Conveyors & Accessories	Front-End Loaders	Hoppers	Crushing	Screening	Blending	Weighing	Sampling & Inspection	Dust Control & Suppression	Enclosed Storage & Automation	Stockyard Systems	Railcar Loaders/Unloaders	Engineering Consultants	Other
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Movimentação S/A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tranco, Inc	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Trans-Global Solutions, Inc	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Trans-Global Solutions, Inc.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TRF Limited (Ta Ta)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Triodetic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Triple Point Technology	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tsubakimoto Bulk Systems Corporation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TTS HuaHai Ships Equipment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TTS Marine ASA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ulrich Brehme GmbH	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
V D D B (Pty) Ltd	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Veenstra Machinefabriek B.V.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VENEKEP Deutschland GmbH	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ventyx	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Verstegen Grippers BV	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vibralfloor	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vigan	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vollert Anlagenbau GmbH	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Volvo Construction Equipment SA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vossiloh Kiepe GmbH	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VSR Industrietechnik GmbH	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wirtech AG	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Worley Parsons Canada (Westmar)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Yernaux-Passage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



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