



DRY CARGO

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FEATURES

- EU Coal Trades
- Hamburg–Le Havre Port Range
- Self Unloaders
- Bulk Handling Drives, Systems & Controls
- Stockyard Equipment

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A view of Bulk Zambesi at the port of Beira (Mozambique) specifically designed to overcome

logistical constraints inherent to the port and optimize Vale's coal handling process from the Moatize mine to worldwide importers.

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OCTOBER 2014 issue

featuring...



TRADE & COMMODITIES

Mixed prospects for grain and soya imports	2
Galilee basin coal development project given go ahead	4
EUROPEAN COAL TRADES	7



SHIPPING & TRANSPORT

MOL receives environmental awards	13
Dangerous times: fire fighting at sea	13
Thome earns green award from Long Beach	15
BULK CARRIERS: SUSCEPTIBILITY AND LOSS PREVENTION	25
GEARED & SELF-UNLOADING BULK VESSELS	30



PORTS, TERMINALS & LOGISTICS

Collateral damage to Indian ports	45
Argentina to make use of Chilean ports	47
Trafigura continues South American expansion	49
HAMBURG-LE HAVRE RANGE	51
CANADA FINALLY GETS NEW COAL EXPORT TERMINAL	79



ENGINEERING & EQUIPMENT

Bulk product commodity management solutions	89
MacGregor MacRacks installed on bulkers	93
High-performance Hitachi wheel loader saves on costs	97
E-CRANE: THE ULTIMATE BULK BALANCING ACT	107
MORE THAN JUST A STOCK ANSWER? BULK STOCKYARD SOLUTIONS	117
DRIVING THE BULK INDUSTRY: SYSTEMS AND COMPONENTS	131
THINKING 'INSIDE THE BOX': LOW-CAPITAL, DUST-FREE ORE EXPORTS	145

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Mixed prospects for grain and soya imports

A few elements of commodity import demand seem to be turning negative. Elsewhere, uncertainties (usually implying possible adverse changes) have become more prominent. Nevertheless, prospects for global seaborne dry bulk trade as a whole still look healthy, with clear signs of expansion.

According to OECD calculations, economic growth (GDP) in the G20 group improved to 3.2% annualized in the 2014 second quarter, above the 2.4% rate seen in the previous three months. This is a broad grouping, including China, India and a number of other emerging economies as well as the major advanced countries of Europe, USA and Japan. It is a modest performance, although there are hopes of further improvement ahead.

GRAIN

Within the grain and soya sector, contrasting influences are evident. Global wheat and coarse grains trade in crop year 2014/15 ending June 2015 could be down by almost 5%, to 292mt (million tonnes), based on International Grains Council estimates. A reduction in China's import demand comprises a large part of the expected decline, while lower purchases Iran, North African countries and the European Union are also likely.

By contrast, soya trade could expand. In the 2014/15 year ending September, US Dept of Agriculture figures (summarised in table 1) show a 4% increase in global soyabeans and meal trade to 173mt, after growth of 11% in the previous period. The main positive factor for the year ahead is expected to be China's continuing upwards trend, amid rising meal and oil consumption.

IRON ORE

Additional steel production by several key raw materials importers is providing solid support for iron ore and coking coal trade. There is uncertainty about how these influences will develop, however. In some countries, including in Europe, Japan and China, economic activity — which is reflected in demand for steel from manufacturing and construction industries — has shown signs of faltering.

During the first seven months of 2014, crude steel production was mostly higher than seen in the same period a year earlier. China's vast output was 3% higher at 480.8mt. In the European Union, a similar 3% increase to 100.7mt was seen, while Japan saw a marginal 1% rise to 64.5mt. Also among large raw materials importers, steel production in South Korea was 9% up at 42.0mt.

COAL

Amid less confidence that a strong upwards trend in China's import demand for coal will be sustained this year, more attention focuses on India's needs. These two countries together comprise about two-fifths of global seaborne imports in this sector.

After rising rapidly again last year to reach over 180mt India's imports, about three quarters of which are steam coal, mostly for power station usage, could be sharply higher in 2014. A total exceeding 200mt seems likely. Recent news has emphasised further problems at domestic coal mines, restricting output and there have been reports of very low stocks at many Indian power plants, potentially boosting short term coal import demand

MINOR BULKS

Growing global movements of steel products (coil, sheet, plate and many other items) are foreseeable. In this complex market, where numerous countries perform as both importers and exporters, the overall picture is sometimes hazy. One positive indicator is that imports into the large US market apparently rose by 34% in first half 2014 (compared with the same period of last year), reaching just over 19mt.

BULK CARRIER FLEET

The Panamax (65–99,999dwt) bulk carrier fleet is still expanding at a brisk pace. As shown by table 2, newbuilding deliveries could be lower in 2014, but scrapping may decrease as well. Deadweight capacity over the current year as a whole is estimated to rise by about 7%, reaching 199m dwt, probably followed by a sizeable increase in the next twelve months.

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

	2009/10	2010/11	2011/12	2012/13	2013/14*	2014/15*
European Union	33.6	34.3	32.9	29.5	31.4	32.6
China	50.4	52.6	59.3	59.9	69.0	74.1
Other Asia	25.8	27.2	27.5	27.8	29.5	31.0
Others	30.5	31.5	30.7	32.5	36.7	35.6
World total	140.3	145.6	150.4	149.7	166.6	173.3
% change from previous year	+8.8	+3.8	+3.3	-0.6	+11.3	+3.9

source: US Dept of Agriculture (11 Sep 14) Oct/Sep marketing years *forecast

TABLE 2: PANAMAX (65–99,999 DWT) BULK CARRIER FLEET (MILLION DEADWEIGHT TONNES)

	2009	2010	2011	2012	2013	2014*
Newbuilding deliveries	6.7	14.4	22.2	27.9	20.2	18.0
Scrapping	2.1	0.7	5.2	8.7	4.8	4.0
Losses	0.1	0.0	0.2	0.0	0.0	0.0
Plus/minus adjustments	1.6	0.8	0.3	-0.1	-0.1	0.0
World fleet at end of year	120.2	134.7	151.8	169.9	185.2	199.2
% change from previous year-end	+5.4	+12.0	+12.7	+12.0	+9.0	+7.5

source: Clarksons (historical data) & BSA 2014 forecasts *forecast

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



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Galilee basin coal development project given go ahead

The government of Queensland, in Australia, has given the go-ahead for the \$15.46 billion coal development in the Galilee basin, which will be taken forward by India's Adani Group. The Carmichael coal mine and rail link are expected to produce 60 million tonnes of coal annually, with coal transported to the coast along a 189km railway line. However, the project now needs final approval from the federal government.

Once operational, the coal mine will be the largest in Australia and one of the world's largest.

Barry Cross

Mozambique coal hit by low prices

The Brazilian company Vale has a 25-year concession to extract coal from mines at Moatize, in Tete province, Mozambique. Since it was awarded the concession in 2007, the company has invested \$4.5 billion in its integrated mine/railway/port project. The railway line linking the mines to the port of Nacala will be 912km long. Once expansion of the Moatize mining concession is completed at the end of 2015, Vale will have invested \$8.5 billion.

However, the investment in Mozambique is now under scrutiny, given that world coal prices are at their lowest levels for some years. To make matters worse, it costs more to extract coal in Mozambique than it does in Australia. Vale has therefore opened up a dialogue with the government and with suppliers in an attempt to drive down costs, or otherwise end up losing money. At the end of the first quarter of the current year, for example, it reported losses of \$44 million in Mozambique.

Mozambique is hoping to ramp up national production of coal to 100mt (million tonnes) within a space of five years. Currently, capacity at Tete is just 40mts, with Vale, Rio Tinto and India's Jindal extracting coal there. Only with the introduction of a new companies will the 100mt target be achieved, although even this is now in doubt.

BC

Brazil gives thumbs up to sugar merger

Brazil's competition authority, CADE, has approved without restrictions the joint-venture between Cargill and Copersucar, allowing the two companies to combine their global commercialization of sugar. The tie-up between them was first announced in March. Copersucar, which has almost 100 sugar production plants in Brazil, is considered to be the biggest sugar ethanol producer in the world. Cargill, which is based in the US, has annual revenues of \$137 billion across various businesses. In Brazil, Cargill operates Terminal de Exportação de Açúcar a Granel (TEAG), in conjunction with several other companies, in the Santos port complex. Combining both businesses should result in economies of scale for both companies, which have complementary businesses.

BC

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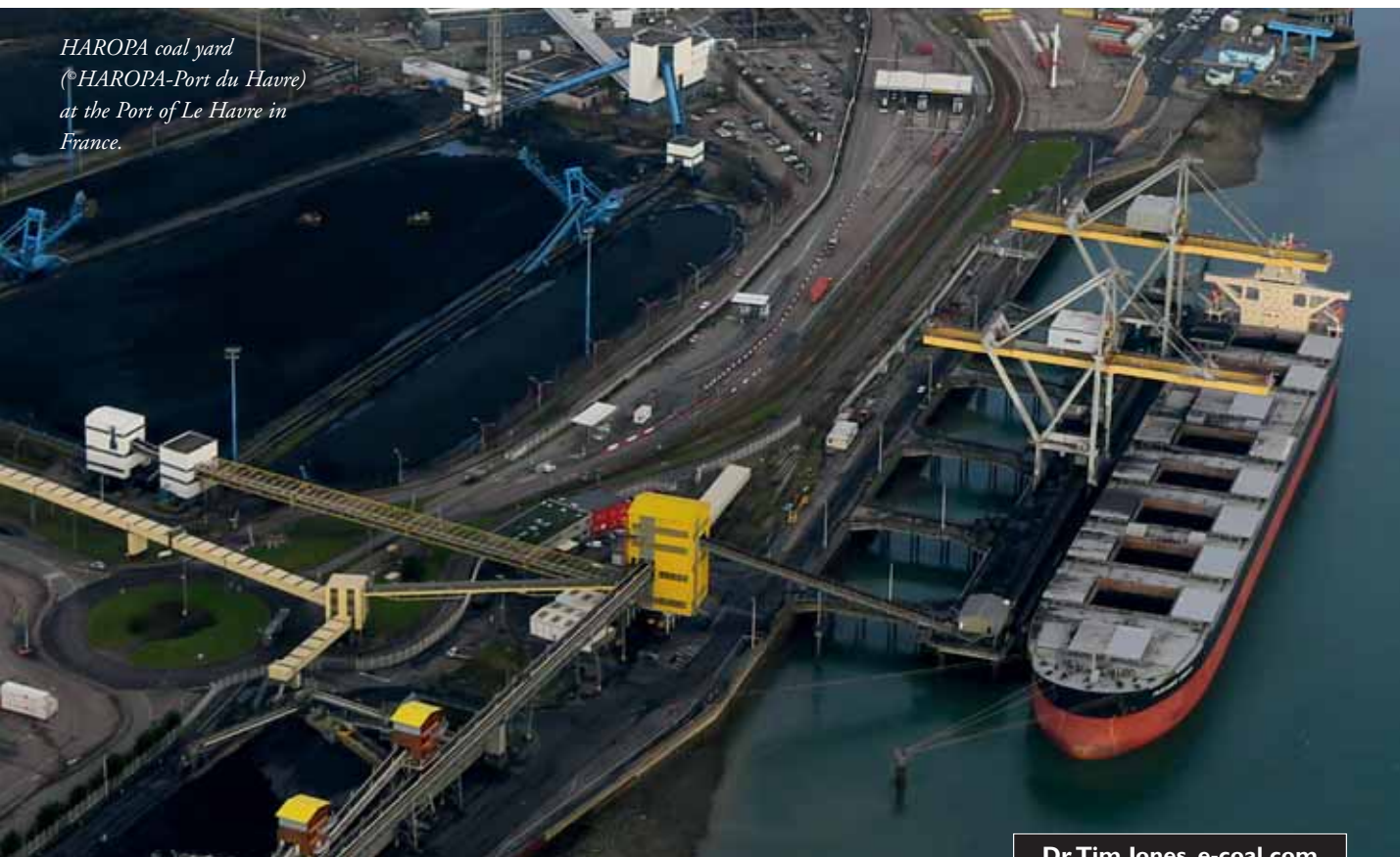
Correction

The very interesting article, 'Grain trades: burgeoning grain and oilseed supplies weigh on feed prices in 2014,' which appeared on pp7-16 of the September issue of *Dry Cargo International* was unattributed. The article was written by Maria Cappuccio, and we would like to apologize to Maria for not including her name.

European coal trades



HAROPA coal yard
(©HAROPA-Port du Havre)
at the Port of Le Havre in
France.



Dr Tim Jones, e-coal.com

The main potential for larger coal consumption has been in Germany, The Netherlands, and Turkey over the past year, with increased power generating capacity in place and planned. The United Kingdom remains a major consumer of coal as well. Purchasing of imported coal in the international market has been evident in those regions over the course of 2014, while some other major coal consuming countries have been quieter. This is notable for Portugal and Spain. Despite the quietness in the spot market, Spanish consumption is forecast to increase by about 1mt (million tonnes) this year to reach around 11.5mt. The highest increase in consumption is expected to be in the Netherlands and Turkey, with an additional 2mt taken in each country to reach about 12.8mt and 22.8mt respectively. Alternative sources of power generation have been available in some cases, while the loss of production capability has affected the United Kingdom in particular. Germany and the United

Kingdom remain the largest consumers of coal in Europe this year, forecast at about 39mt and 38mt respectively. This year, total coal demand in Europe is expected to remain firm at around 190mt which will be close to the level recorded last year.

Russia had been hopeful of higher coal exports in 2014 following the lower rail freight rates affecting the producers there, with Germany being a major customer. The situation in Ukraine has, however, been a concern since the start of this year and Russian trade to the west is less secure now. The uncertainty remains at the time of writing, but economic sanctions appear to be having an effect on the leadership. The situation for Russian exporters to the east is less serious, but production in the Kuzbass is being impacted. The forecast had been for growth again this year, but this will likely be amended downwards over the next few months. Prices are also not in the Russians' favour due to high production costs there, and

OCEAN SPOT FREIGHT RATES (US\$/T) 2013

Route	Tonnage	23 Aug	16 Aug	% change
USG/ARA	65,000t	14.00	15.60	-10.26
Roberts Bank/ARA	55,000t	20.00	19.85	0.76
HR+RB/Japan 16m	120,000t	28.05	26.60	5.45
HR/Rotterdam	110,000t	11.30	10.60	6.60
Bolivar/Rotterdam	130,000t	10.50	9.85	6.60
Queensland/R'dam	130,000t	16.50	15.40	7.14
Rich'ds Bay/R'dam	130,000t	10.25	9.25	10.81

Source: e-coal.com and Simpson, Spence & Young

OCEAN SPOT FREIGHT RATES (US\$/T) 2014

Route	Tonnage	22 Aug	15 Aug	% change
USG/ARA	65,000t	12.11	12.20	-0.74
Roberts Bank/ARA	55,000t	19.06	19.90	-4.22
HR+RB/Japan 16m	120,000t	28.09	28.05	3.03
HR/Rotterdam	110,000t	9.45	8.65	9.25
Bolivar/Rotterdam	130,000t	9.70	9.60	1.04
Queensland/R'dam	130,000t	14.95	14.15	5.65
Rich'ds Bay/R'dam	130,000t	11.30	9.65	17.10

Source: e-coal.com and Simpson, Spence & Young

PROMPT SPOT PRICES FOR THERMAL COAL 2013

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

Location	23 Aug 13	16 Aug 13	% change
South Africa	72.10	72.10	0.21
Colombia	72.20	72.00	0.28
Venezuela	72.40	72.30	0.14
Russia Baltic	73.00	72.85	0.21
Poland	73.00	72.90	0.14
Newcastle	78.70	79.20	-0.63
Queensland	79.25	79.25	-0.63
China	84.60	85.00	-0.47
Russia East	82.65	83.00	-0.42
Banjarmasin	72.00	72.50	-0.69
Mahakam	73.55	74.00	-0.61

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

PROMPT SPOT PRICES FOR THERMAL COAL 2014

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

Location	22 Aug 14	15 Aug 14	% change
South Africa	71.00	72.80	-2.47
Colombia	70.80	71.25	-0.63
Venezuela	72.00	72.50	-0.69
Russia Baltic	73.00	73.80	-1.08
Poland	73.20	73.95	-1.01
Newcastle	69.85	70.10	-0.36
Queensland	70.55	70.80	-0.35
China	91.00	91.15	-0.16
Russia East	71.25	71.50	-0.35
Banjarmasin	66.50	66.75	-0.37
Mahakam	68.00	68.25	-0.37

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

economic sanctions are forecast to further devalue the rouble against the dollar. Some coal market players have completely lost contact with trading partners in Ukraine without an explanation over the past few months, and this has affected business outside the country in other parts of Europe.

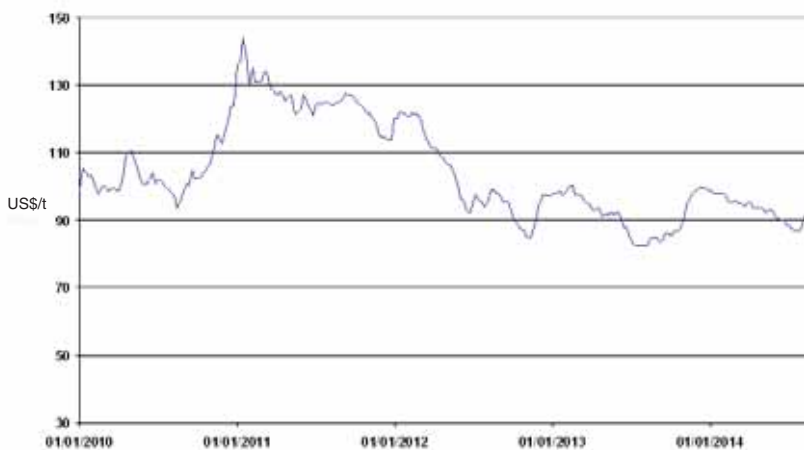
The accompanying charts indicate the trend in the spot price of thermal coal in the international markets this year, with a decrease being seen until recently. The bottom of the market may have been reached at last, with producers struggling to remain in business in many cases. Increased production and sales have been the strategy of the major suppliers, but greater supply does little to put upward pressure on the price unless demand increases substantially. The general oversupply in the market is continuing at the time of writing, but there are indications that European demand for coal could pick up in the coming months. Weaker demand in China is likely to have an influence on shipments from Indonesia and Australia, and this combined with decreasing exports of US coal could lead to

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



some tightening in the availability of material in the international markets and consequently Europe. This change in the supply/demand balance would have an effect on prices, and recently there have been gradual increases in the price for coal delivered to Europe. The buyers there have had some challenges over supply from Colombia as well this year, with the ban on coal loading affecting Drummond early on, and threats from industrial action also impacting the European coal market. This also happened last year, with industrial action affecting

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



production so much that total exports decreased over the course of 2013. It could be expected that such disruptions are likely in the future, so the European buyers will need to ensure their supply sources are diverse enough to cope with these incidents from time to time. Russian coal is still in demand, particularly from the United Kingdom, but recent events in Ukraine have cast uncertainty over the future of trade with Russia which could affect coal in the United Kingdom.

The troubles in Ukraine are showing an impact on coal trade after several months of conflict. The latest data indicate that production reached 3.9mt in

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



Looking more closely at the main coal importers in Europe, the United Kingdom had taken about 1mt more thermal coal from Russia during the first four months of 2014 alone. This took the total from Russia to more than 6mt and the United Kingdom became more reliant on Russia for its thermal coal supplies. The US shippers lost 1mt of thermal coal trade during the period as Russia gained this 1mt, reducing the American total to about 2.9mt. The political situation has changed since then, and the rest of the year could show a different result than had

July, which was 26% less than in the same month last year. Output was almost 15% lower than in June as the situation worsened. Some coal market players have reported losing contact with coal industry professionals in Ukraine altogether, and without explanation.

One recent development that could interest European steel makers is that the Colombian government has granted new approval for the dredging of the Magdalena River. This is expected to reduce transport costs substantially to the port, and coking coal prices could be reduced — or the producers will maintain prices at market levels and reap the benefits of better margins.

been expected with Russia back in March. Supply issues in Colombia may have also contributed to this extra interest in Russian coal during the first quarter of this year. Thermal coal imports from there reached about 2.8mt which was a decrease of some 500kt compared to the same period in 2013. South African tonnage reached less than 100kt during the period, reflecting a steady and substantial decline over the past few years. Domestic coal production in the United Kingdom declined over the first months of 2014, and the latest statistics indicate that about 4.5mt was produced in the five months to 31 May. This was only 75% of the level recorded in the same period in 2013. A number of coal mines have been closed in



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



recent years, with more to follow. Not all of these have been for economic reasons. On the other hand, a new drift mine is planned in Yorkshire which could produce up to 200kt of coal per year based on current plans. This new Crofton mine could begin operation by the end of next year and continue to supply major coal-fired power stations in England for more than 15 years. More coal-fired generating capacity is due to be closed in the coming year, reducing demand for thermal coal, but much of this will still need to be obtained through imports. The total tonnage imported by the United Kingdom in a couple of years is nevertheless expected to remain over 35mt.

Germany has plans to commission an additional 6,500MW of coal-fired generating capacity over the next four years, increasing

the demand for imported coal to those new operations. Most of this additional capacity is expected to be commissioned by the end of 2015. Although the country has plans to close some power stations, coal is not likely to be negatively affected overall and the coming years appear to be promising for coal trade in the country. Germany's coal production reached only about 2mt during the first quarter of 2014 which was down slightly compared to the same period in 2013. Output is forecast to reach about 8mt this year, but domestic production will decrease in a couple of years after one of the last three remaining mines is closed. Germany's thermal coal imports have been growing steadily over the past few years, and passed 30mt in 2011. Last year the total reached 38.6mt and this year the total is expected to be slightly higher at around the 39mt mark. The latest statistics showed that thermal coal imports during the first four months of 2014 increased by almost 1mt compared to the same period last year to reach almost 13.1mt. Shipments from South Africa more than doubled during that period to reach almost 2.2mt as the buyers needed to find alternative sources during the coal loading problems in Colombia. The flow of coal to Europe from Richards Bay has since eased off, and the Colombian exporters have been able to ship more steadily over



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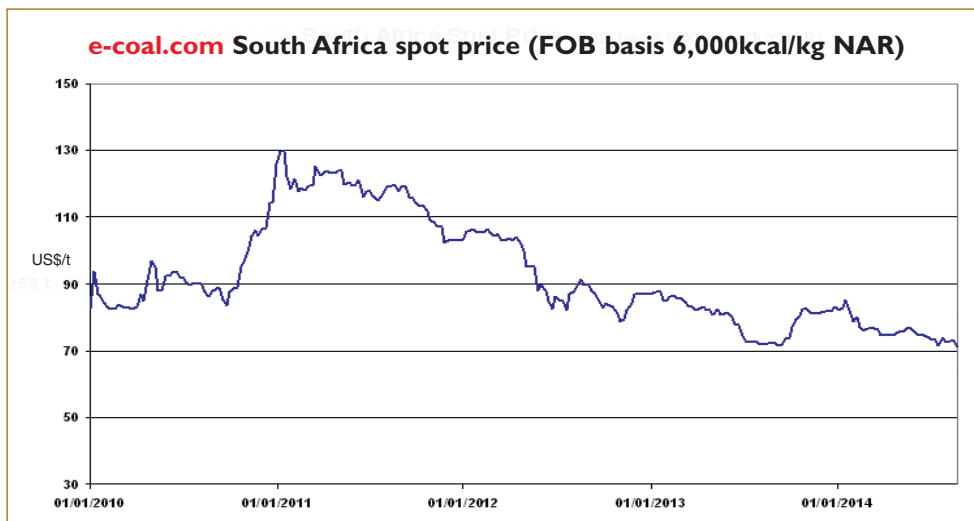
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when the workers voted to go to arbitration and end the industrial action. European traders reported a mixed market during the middle of August, with limited activity in the ARA markets early on. This picked up after developments in Colombia as players began to absorb the news that the mechanics' strike would be likely to have no impact on supply. On the demand side, there were rumours of some new interest in Turkey, Germany, and the United Kingdom. Spanish and Italian consumers have been

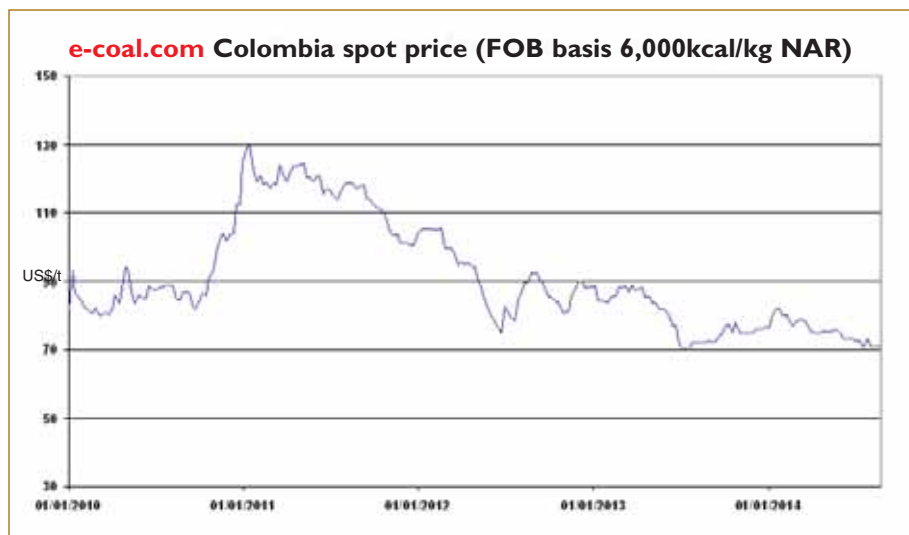


the past few months despite some industrial disruptions. The total for thermal coal imports into Germany for the rest of the year is forecast to reach about 26mt.

At the time of writing, electronic trade in Europe was

quiet for some time, but there were also some indications of interactions between suppliers who happened to have conversations over the summer break.

In recent market news, in Turkey, Nuh Cimento has been in

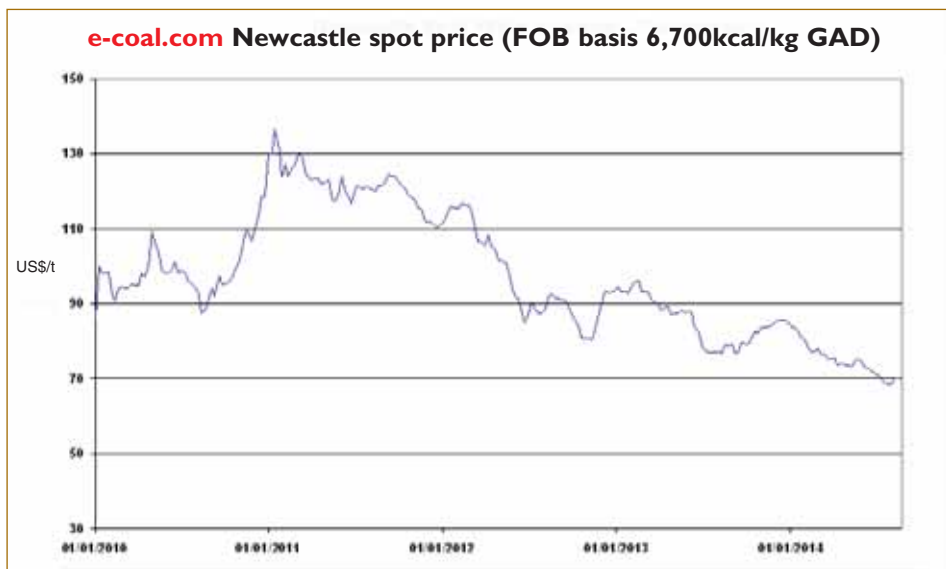


showing little change in the spot price of thermal coal. Richards Bay shippers noted a decrease in interest from the Atlantic in the middle of August, although Indian buyers were still visible. The strike by mechanics in Colombia saw some positive moves

the market seeking 100kt of coal for delivery during September to December. Cargoes are required at the port of Kocaeli. There is believed to be some difficulty with Russian and Ukrainian supply in the Black Sea now, and other sources may be

of interest. The cement maker can take coal with sulphur content of up to 1.5%.

Back in May, a cargo of Ukrainian coal was seen purchased for the Turkish steel sector. The political situation in both countries at the time did not appear to be affecting coal trade that much, with Turkey relying on the Black Sea suppliers. There had been no reports of shippers from other countries selling thermal coal to a Turkish steel maker around that time. The price is believed to have been about US\$75/t FOB (free on board) basis 6,000kcal/kg NAR (net as received). Cement maker, Kipas was seeking a Panamax cargo of



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



thermal coal for delivery to Iskenderun in June. Russian or Ukrainian shippers were the likely suppliers with the most competitive delivered prices. These are believed to have been in the high US\$70s per tonne basis 6,000kcal/kg NAR. Turkey suffered a tragic mine disaster when 283 coal miners were confirmed dead, with at least another 140 missing after an explosion at the mine in Soma on 13 May. The disaster led to mass protests against the government and mine operator. It was the worst mining disaster in Turkey's history.

The European market has shown limited physical spot trade done for South African tonnage lately. The thermal coal spot market at Richards Bay has seen prices slump to the lowest level since 2010 during August 2014. Indian buyers are reported to have had coal offered for US\$68.50/t FOB basis 6,000kcal/kg NAR for loading in

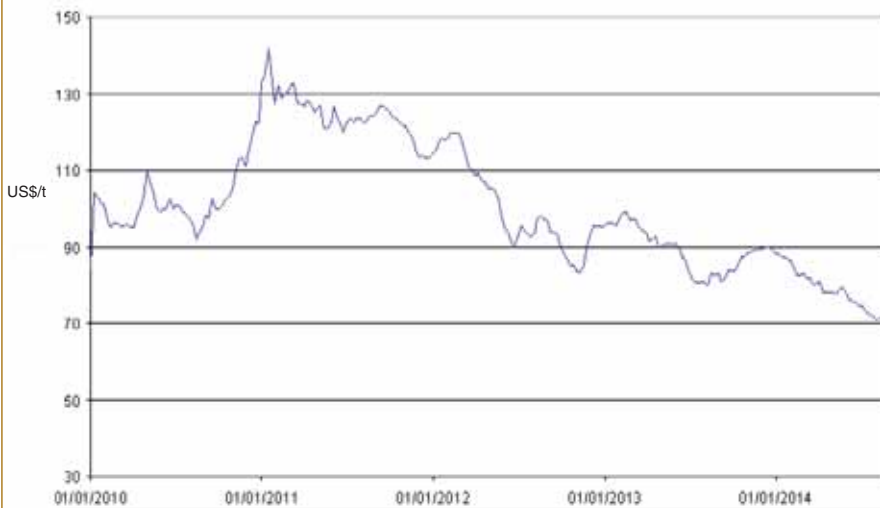
specifications included CV 6,000kcal/kg NAR and sulphur 1% (max). Meanwhile, in a lacklustre European spot market for thermal coal during Q2, the forecast for the Italian consumers at

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



the time suggested the total for coal imports this year could reach 16.5mt. The Italians have not been visible in the spot

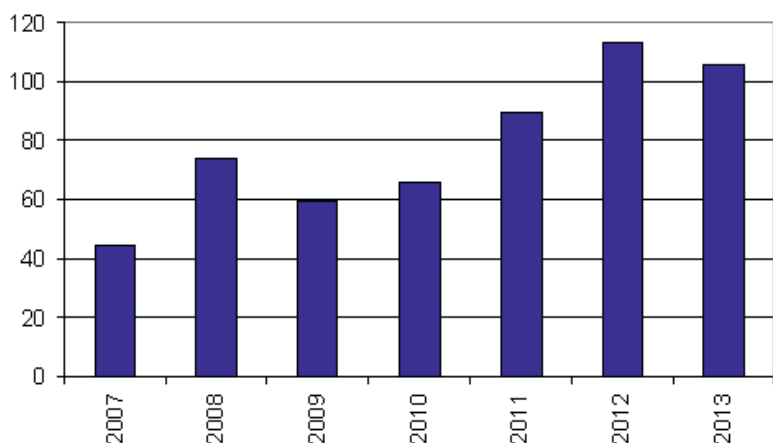
e-coal.com Russia (East) spot price (FOB basis 6,700kcal/kg GAD)



market lately, but contract deliveries are understood to be fairly solid for the rest of the year. Market players and some analysts are also predicting an increase in coal imports to Spain during 2014.

In corporate news, Glencore Xstrata has reported from Switzerland that coal production increased by 5% to 71.2mt during the first half of 2014 compared to last year, mainly due to productivity improvements and ongoing expansion projects in Australian thermal coal, and a 32 day strike at Cerrejón which impacted Q1 2013. The company reported an average price of US\$123/t FOB for its Australian hard coking coal sales during the period. This was a decrease of 21%

US total coal exports (mt)



This was a decrease of 13% compared to the US\$83/t reported last year. Cerrejón's export thermal coal from Colombia recorded an average price of US\$68/t FOB during the period which was a decrease of 11% compared to the US\$76/t reported last year. Export Colombian Prodeco thermal coal recorded an average price of US\$78/t FOB during the period. This was a decrease of 11% compared to the US\$88/t reported last year.

In the United Kingdom, a new coking coal project is to be developed by West Cumbria Mining in Whitehaven. Stage 1 of the project is to develop a new mine next to the existing Haig Colliery which is now closed. Current estimates suggest there are 750mt of coking coal in the area, and the

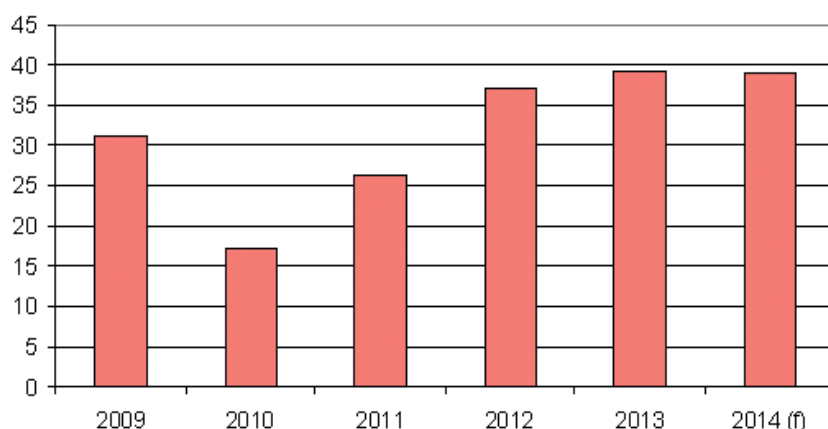
project has received financial backing from EMR Capital Resources, an Australian private equity fund. A total of 10.04mt of thermal coal was imported by the United Kingdom during Q1 of this year. This was an increase of

compared to the US\$155/t reported last year. An average price of US\$98/t FOB was reported for its Australian semi-soft coking coal sales during the period. This was a decrease of 17% compared to the US\$118/t reported last year. Export Australian

thermal coal recorded an average price of US\$75/t FOB during the period. This was a decrease of 13% compared to the US\$86/t reported last year. Export South African thermal coal recorded an average price of US\$72/t FOB during the period.



United Kingdom thermal coal imports (mt)

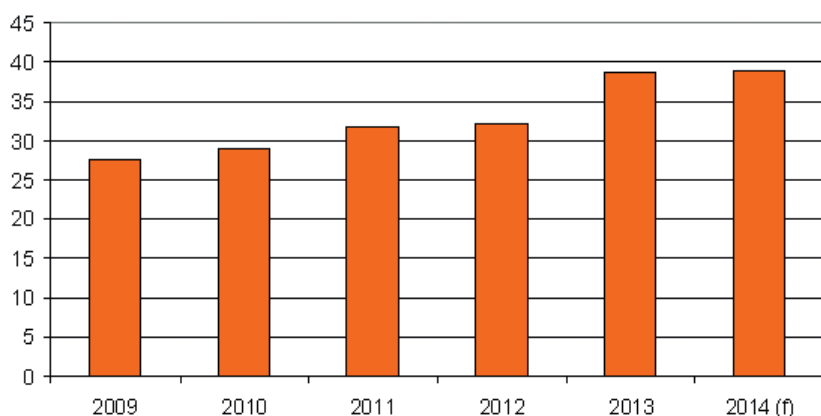


thermal coal recorded an average price of US\$75/t FOB during the period. This was a decrease of 13% compared to the US\$86/t reported last year. Export South African thermal coal recorded an average price of US\$72/t FOB during the period.

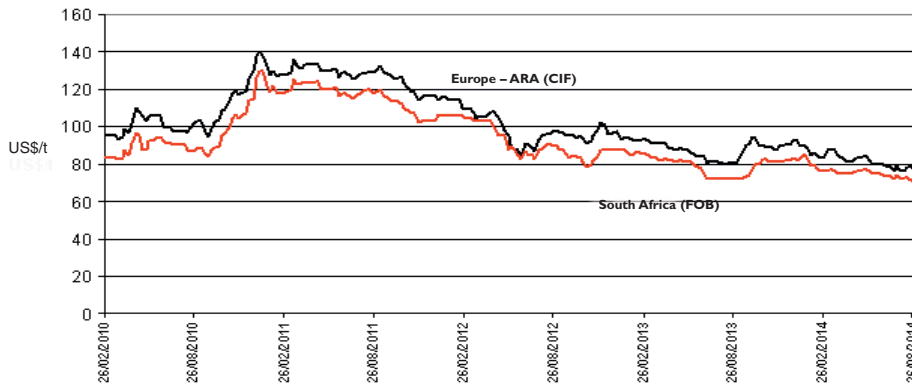
340kt or 4% compared to the same period in 2013. Russia was the main supplier during the quarter, with 5.15mt recorded. This was an increase of 1.33mt or 35% compared to the same period last year. The Colombian shippers saw a decrease in supplies to

the United Kingdom during the quarter amid the loading ban on Drummond, and other constraints. The total reached 2.36mt which was decrease of 300kt or 11% compared to the same period in 2013. Overall, coking coal imports increased during the quarter to reach 1.35mt compared to 1.14mt in the first quarter in 2013. The USA was the main supplier with 700kt shipped compared to 440kt in the same period last year. Meanwhile, Anglo American reported an increase of 45% in total coal exports during Q1 2014 compared to the same period last year. Coking coal exports from Australia and Canada totalled 6.1mt which was an increase of 31% compared to the same quarter last year. Thermal coal exports

Germany thermal coal imports (mt)



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



United Kingdom look set to be the main trading countries for coal within Europe, while Turkey and The Netherlands are also expected to import significant tonnage. Turkey increased its coal-fired electricity generation by almost a quarter during the first five months of this year, with new plants being commissioned this year. The future of Russian and Ukrainian coal trade is more uncertain at present, and while the general media has been reporting about the reliance on Russian gas in some European countries, there

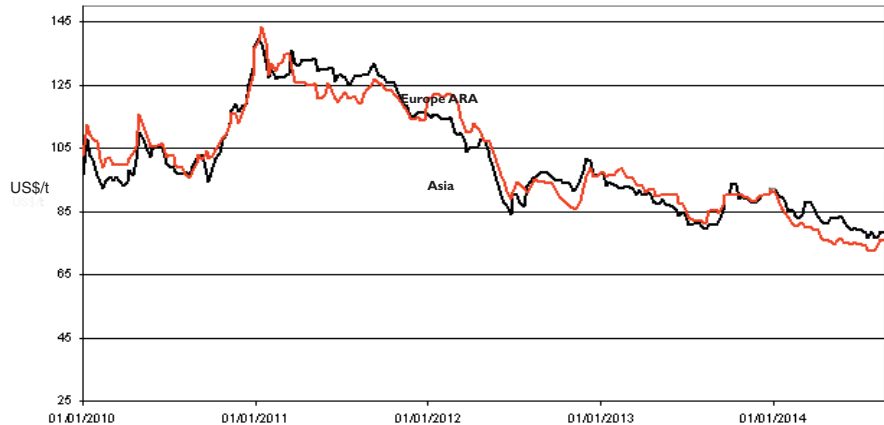
from South Africa increased by 6% to reach 4.1mt. The company has an export target across its coal operations of about 50mt in 2014.

In Russia, Baltic Coal Terminal is reported to have exported 2.03mt of coal during the five months to 31 May this year. This is a decrease of 1.5% compared to the same period in 2013. The 6mtpa (million tonnes per annum)-capacity facility mainly exports thermal coal from Kuzbass to the main customers in northern Europe.

In the coming decade and beyond, coal demand in Europe is forecast to decline as legislation favours other fuels due to restrictions on emission levels. This legislation has already forced the closure of domestic coal mines in some regions. For the time being, however, overall demand is expected to remain firm at over 190mt in the current year. In the past couple of years, environmental legislation has led to the closure of a mine in Scotland, but coal demand has still had to be satisfied by imports from elsewhere including Russia, Colombia, and Poland. With prices staying so low, the US exporters are less keen to trade in the international market, and that country's role as swing supplier is being fulfilled at present. Germany and the

has not been much reporting on the impact on the coal sector. The situation in Ukraine has had an impact on the coal trade, and associated businesses have been affected in other parts of Europe. These first impacts appear to have been largely due to the conflict rather than the economic sanctions imposed subsequently. A large proportion of the population is

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

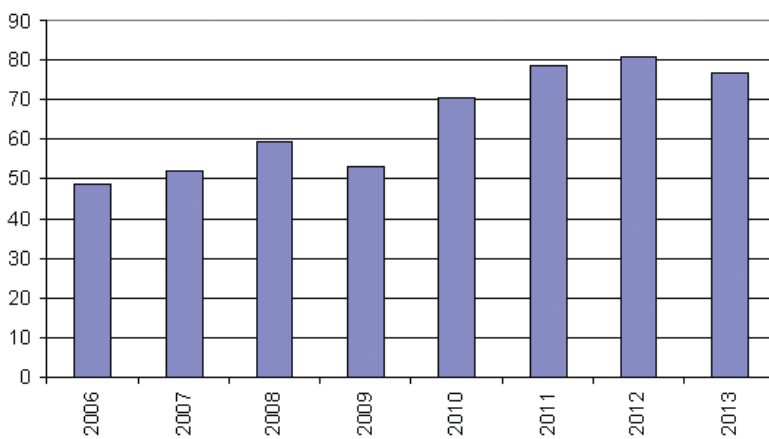


understood to have moved away from some towns and cities in the coal producing region, and this is bound to have an adverse effect on coal trade.

For the rest of Europe the coming year looks set to be another challenging one for various reasons including this, but with improved economic performance now being seen after the long recession the demand for electricity and fuel will be firmer overall. There will be the usual short-term variations in coal demand such as the current preference for cheaper gas in the United Kingdom power mix, and higher stocks of coal on the pads there over the summer. There will, as always, be plenty to watch in the European coal market, with players now starting to gear up for the coming winter and the buying and trading over the autumn months.

DC

Colombian coal exports (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.

MOL receives environmental awards

In early August, Mitsui O.S.K. Lines, Ltd. (MOL; President: Koichi Muto) announced that the company has earned recognition from the ports of both Long Beach and Los Angeles, California, for its efforts to ensure compliance with standards that call for vessels to slow down within 40 nautical miles (nm) of the shore.

The Port of Long Beach introduced the Green Flag Program and Port of Los Angeles the Vessel Speed Reduction Program. The programmes urge vessel operators to slow down to 12 knots or less within a certain range of the ports to reduce emissions of carbon dioxide (CO₂), nitrogen oxide (NO_x), and sulphur oxide (SO_x) in coastal areas to conserve coastal environment, and offer annual rewards to vessel



operators that achieve extraordinary compliance percentages.

Every year, a total of 250 MOL Group-operated vessels including containerships calling at MOL's TRAPAC container terminal, as well as car carriers, tankers, and bulkers, navigate through the area covered by the speed standards. The ports have clearly appreciated the company's efforts to comply with the programme and contribute to a cleaner coastal environment. MOL continually contributes to environmental conservation not only in this area, but also at other ports all over the world, and takes proactive environmental steps on a global scale.

Dangerous times: fire fighting at sea

Fighting a fire at sea is one of the greatest dangers facing seafarers. As a result, Videotel, a provider of in maritime e-Learning and part of KVH Industries, Inc., has launched an updated five-part series: 'Fire Fighting At Sea', with the support and expertise from marine fire specialists and industry experts.

This essential training includes scenes filmed on board the *Vectis Osprey* and aims to give seafarers basic and refresher training on how fires start, how to prevent them, and their respective role in combatting a fire on board ship.

Nigel Cleave, CEO of Videotel, explains: "A fire on board a vessel at sea can be highly unpredictable and extremely dangerous. Fire Fighting at Sea is designed to educate all crew and help them to take immediate and life saving action."

The five-part programme covers the following topics required under Standards of Training Certification & Watchkeeping (STCW):

- ❖ **Part 1 — Fire Prevention:** looks into the theory behind fire and examines how fires start. It introduces the various categories of fire, common problem areas such as the galley and engine room, and difficult situations that arise through smoking on board and hot work.
- ❖ **Part 2 — Basic Fire Fighting:** provides an overview of fire fighting techniques. Each type of fire requires a different response and this module offers practical guidance that will support the on board training.
- ❖ **Part 3 — Command and Control at the Incident:** covers the responsibilities of officers and crew, including selecting and training emergency parties, the duties of each, and the

importance of fire drills. It also examines a realistic incident from start to finish.

- ❖ **Part 4 — Command and Control by the Master:** highlights the need for a rapid response and covers the Master's options. It similarly follows another realistic incident from start to finish, seen this time from the Master's perspective.
- ❖ **Part 5 — Machinery Space Fires —** tackles the specific area of engine and pump room fires, and includes ways to reduce the risk of fire and how to stage effective fire drills.

Fire Fighting at Sea is available through Videotel On Demand (VOD), VOD Online, DVD and e-Learning CBT — all with accompanying workbook. Videotel, a provider of training films, computer-based training and e-Learning, is part of KVH Industries, Inc., a manufacturer of solutions that provide global high-speed Internet, television, and voice services via satellite to mobile users at sea, on land, and in the air. KVH is also a leading news, music, and entertainment content provider to many industries including maritime, retail and leisure.



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ISS celebrates ISO accreditation in Middle East and Africa

Inchcape Shipping Services (ISS), a leading maritime services provider, is celebrating the awards of ISO 22000:2005 — Food Safety Management System and ISO 9001:2008 for the company's supply chain operations in Dubai, Mombasa and Mogadishu. Ceremonies recently took place at its global headquarters in the UK and in its regional Head Office in Dubai.

As a pre-requisite to fulfilling the requirements of a three-year (plus two-year option) contract with the United Nations to supply the African Union Mission in Somalia (AMISOM), ISS had to meet a number of operational criteria relating to the procurement, supply chain management, transportation, warehousing and distribution of food to the Mission.

To enable the ISS (United Nations Support Office in Africa — UNSOA) team to demonstrate its operational competence and its commitment to ongoing continuous improvement, it initiated the ISO certification process in August 2013 and set itself a very short time frame of only six months to achieve full accreditation.

Key to the success of the project was the erection and development of a warehouse facility within the Mogadishu International Airport site into a hub for effectively managing the supply chain to the peacekeeping forces in the country, initially numbering 12,000 troops but today significantly more.

The construction of the ISS warehouse, built from the ground up in very challenging conditions, was completed in September 2013. The facility includes dry, frozen and chilled capacity in excess of 4,000m² and enables the delivery of provisions, water and fresh bread to the Mission.

Concurrently an additional warehouse in Mombasa was leased to support ISS commercial and NGO efforts in Mogadishu, with an operating capacity of over 1,200m². Combined, both of these facilities position ISS as the largest volume container management company in the region.

On receiving the ISO certificates from David Riggs, Group Chairman of the URS Group who supported ISS through the accreditation process, ISS Group CEO Capt. Claus Hyldager said: "It gives me great pleasure to accept these certificates on behalf of the ISS UNSOA project team. This is a fantastic achievement which reflects the hard work and dedication of our staff in Mogadishu, Mombasa and Dubai. ISO 22000:2005 is a prestigious certificate and to achieve this in a normal operating environment would be challenging enough, but to do this in an area of conflict is remarkable."

Ian Tombs, Head of ISS Corporate Compliance echoed Capt. Hyldager's remarks and added: "Being the first UN contract of its type for ISS meant it was a steep learning curve for the project team. Successfully gaining certification so rapidly in such a challenging and dangerous location, such as the war zone in Somalia is an endorsement of ISS's commitment to quality, continuous improvement, and a highly customer-focused approach to business. Our staff should be very proud of their unique achievements."

Inchcape Shipping Services has some 300 proprietary offices in 66 countries, and a workforce of over 3,800, the company's diverse global customer base now includes owners and charterers in the oil, cruise, container and bulk commodity sectors as well as naval, government and inter-governmental organizations.

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

Thome earns green award from Long Beach

Thome Ship Management has been awarded a Green Environmental Achievement Award by the Port of Long Beach, California, for high standards in performance during 2013.

Yatin Gangla, Chief Operating Officer Bulk Division said: "This award is presented to operators whose vessels call at the Port of Long Beach and who have demonstrated that 90% or more of the vessels have complied with the Voluntary Vessel Speed Reduction Programme. In recognition of this achievement, Thome has received a green flag and a 25% discount on the dockage dues payable by all our managed vessels to the Port of Long Beach during 2014.

Announcing Thome's award, Donald B Snyder, Director of Trade Development at the City of Long Beach Harbor Department, said: "Thank you for your commitment to reducing air pollution in Southern California."

The Port's Green Flag Program is a voluntary vessel speed reduction programme which rewards vessel operators for slowing down to 12 knots or less within 40 nautical miles (nm) of Point Fermin, near the entrance to the harbour. The Port says that because ships emit less when they travel more slowly, the programme has been highly successful in reducing



smog-forming emissions and diesel particulates from ships.

Vessels that dock at the Port of Long Beach can also earn the coveted Green Flag environmental achievement award for extraordinary compliance with the programme for a 12-month period. The speed of every vessel in the speed reduction zone is measured and recorded by the Marine Exchange of Southern California. The programme prevents more than 1,000 tonnes a year of air pollution.

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Billion dollar challenge for ship operators and insurers as Panama Canal expands

As the Panama Canal prepares to celebrate its 100th anniversary, insurers are warning of the increased risks that will arise from its plan to double the cargo-carrying capacity of ships transiting one of the world's most important waterways.

In a new report entitled *Panama Canal 100: Shipping Safety and Future Risks*, leading marine insurer, Allianz Global Corporate & Specialty (AGCS) identifies that the value of insured goods transiting the canal zone may increase by over US \$1 billion per day following completion of the 'Third Set of Locks Project', which will see two new sets of locks constructed, creating a third transit lane for larger ships.

Every year, over 12,000 oceangoing ships navigate the canal, a figure which could increase significantly following the anticipated opening of the new locks in 2015. It is forecast the expansion will enable between 12 and 14 larger vessels per day (approximately 4,750 additional ships per year) to pass through the canal.

EXPANDING CAPACITY BRINGS NEW RISKS

With approximately 3% (\$270 billion) of world maritime commerce (\$9 trillion) already transiting the Panama Canal every year, the safe passage of vessels is critical. However, AGCS experts warn the increased traffic and larger vessels may challenge the Panama Canal's improved safety record over the past decade with the risks exacerbated through the initial period of the canal opening.

Captain Rahul Khanna, AGCS's Global Head of Marine Risk Consulting, explains the potential risk management impact of this expansion: "Larger ships automatically pose greater risks. The sheer amount of cargo carried means a serious casualty has the potential to lead to a sizeable loss and greater disruption. For example, a fully-loaded new-Panamax 12,600 TEU container ship is as long as four football fields with a beam of up to 49 metres and could have an insured cargo value alone of \$250 million."

If operating at its full projected capacity following expansion, AGCS estimates that this could result in an additional \$1.25 billion in insured goods passing through the canal in one day, with larger ships playing a critical role in increasing throughput capacity.

However, such vessels can pose serious salvage challenges in a congested shipping environment, even potentially leading to blockages. In the event of an accident there may be an insufficient number of qualified experienced salvage experts available to handle the new Panamax ships.

REGIONAL IMPACT GROWS

The potential impact of any shipping incident is much wider than just impeding progress through the Panama Canal. With more larger ships on the move in the surrounding region, an incident could also affect traffic at major ports in the United States and elsewhere, resulting in a potential increase in business interruption and insurance losses.

In addition, a number of US ports and terminals on the East and Gulf Coasts are exposed to hurricanes. Larger ships carrying higher concentrations of insured goods will spend more time in these ports, posing an increased risk. For example, a large portion of *Superstorm Sandy* losses in 2012 were due to storm surge that flooded ports in the Northeast region of the US.



To cater for the larger ships changes are also needed at global ports along the canal's supply chain, posing a number of further challenges. Additional infrastructure upgrades will be needed in the form of larger gantry cranes to work these larger ships and to handle the increase in volume. Processing capability will need to be improved to avoid bottlenecks at choke points in ports. Navigability is critical: air and water drafts need to be sufficient to allow safe passage of the larger container ships.

Another major challenge is the actual handling of larger vessels. Port operating procedures will have to be reviewed with regard to wind and weather constraints given the tight operating margins that these ships will be facing.

Conversely, an expanded all-water route from Asia to the US East/Gulf Coast could actually lead to a risk reduction in another area, as Captain Allan Breese, Senior Marine Risk Engineer at AGCS, explains: "The longer you can keep a container on a ship and are not making multiple transloadings on to trains and various other modes, the better."

QUALITY TRAINING KEY TO RISK MITIGATION

AGCS believes training is key to mitigating the new risks involved, both in the canal region itself and in affected ports.

As Khanna explains: "The expansion of the Panama Canal will represent a new shipping environment for many mariners. Due to the increase in the number of larger vessels passing through this important waterway the level of training provided to pilots will be extremely important. Attempting to manoeuvre one of these vessels through such a restricted space in itself creates a much bigger hazard."

The Panama Canal Authority has invested heavily in training including plans to charter a post-Panamax ship to practise manoeuvres through the new lane.

However, training cannot prepare mariners completely for the live environment as Khanna points out: "It is extremely important that the processes and systems in place are dynamic and that the industry learns from mistakes as it goes along, because inevitably a few will be made. Although much training will be done, this can only be done on a few vessels. But when the canal is opened for real, a whole host of different vessels with different characteristics will be passing through. That will be challenging."

LOSSES IN FOCUS

However, AGCS analysis identifies that the Panama Canal region has a steadily improving safety record over recent years, with the relatively small total of 27 shipping casualties from over the past decade including just two 'total losses'.

This accident rate of around one in every 4,000 transits compares favourably with other major waterways such as the Suez Canal (1: 1,100) and the Kiel Canal (1: 830). As the most frequently transiting types of vessel, bulk carriers (11), cargo ships (9) and container ships (9) dominate the canal's casualty list, collectively accounting for over 75% of all incidents since 2002.

In a relatively controlled shipping environment the most common cause of incidents since 1993 is contact with walls (53) and collisions involving vessels (50), accounting for almost 60% of the incidents analysed by AGCS. Machinery damage/failure is ranked third (41), accounting for over 20%.

Damen announces strategic partnerships with ballast water treatment system suppliers

Damen Shipyards announced in early September that it has established three strategic partnership agreements with major ballast water treatment (BWT) system suppliers. It complements the worldwide One Stop BWT Retrofitting Service offered by Damen. This one-stop-service gives ship owners peace of mind in their challenge to comply with ballast water regulations in the most cost-effective and timely way. With over 60,000 vessels to be retrofitted in the near future there is a need to coordinate and ensure cost-effective implementation and life cycle support. With the large number of vessels to be retrofitted, there will be subsequent supply problems for BWT equipment, engineering and class in a booming market. Damen is dedicated to providing a total turnkey package to vessel owners.

PARTNERS

Damen has chosen to include BWT systems manufactured by its strategic retrofit partners: Trojan Marinex, Bio-UV, and Evoqua Water Technologies. All BWT systems of these partners are IMO type-approved and are USCG AMS accepted.

Trojan Marinex delivers BWT systems purpose-built for the marine environment, providing filtration + UV in a single, compact unit having an industry-leading low power draw requirement due to its innovative Solo lamp technology and has been tested to operate in all water qualities, including freshwater.

Bio-UV designs and manufactures, with high marine quality components, the BIO-SEA® BWT system. This is a reliable, innovative, modular and cost efficient UV based system.

Evoqua Water Technologies provides its SeaCURE™ BWTS (ballast water treatment system) operable in all salinities based on proven, widely deployed Chloropac® electrochlorination technology. Based on the vessels characteristics, operational requirements and customers preference Damen BWT experts will select the most appropriate BWT technology for retrofitting. By working with the selected partners, Damen can provide high-quality competitive retrofit packages for all vessel types.

ONE-STOP-SHOP

Damen BWT experts use 3D scan techniques to create a customized engineering package. Installation of a BWTS can be done at one of the Damen Shiprepair & Conversion shipyards conveniently located worldwide. Systems can also be installed at a customer selected non-Damen yard or during operation.

FIRST TIME RIGHT

By using 3D scan techniques to create a custom engineering package, Damen is able to modify the vessel with the most economic, high-quality type approved BWTS. Therefore Damen assures the system is ready on time. Due to the co-operation with selected preferred BWTS suppliers, competitive efficient total retrofit packages can be guaranteed.

DAMEN SHIPYARDS GROUP

Damen Shipyards Group operates 32 ship- and repair yards, employing 8,000 people worldwide. Damen has delivered more than 5,000 vessels in more than 100 countries and delivers approximately 180 vessels annually to customers worldwide. Based on its unique, standardized ship design concept Damen is able to guarantee consistent quality.

Damen's focus on standardization, modular construction and keeping vessels in stock leads to short delivery times, low 'total cost of ownership', high resale value and reliable performance.

Furthermore, Damen vessels are based on thorough R&D and proven technology.

Damen offers a wide range of products, including: tugs, workboats, naval and patrol vessels, high-speed craft, cargo vessels, dredgers, vessels for the offshore industry, ferries, pontoons and super yachts. For nearly all vessel types Damen offers a broad range of services, such as maintenance, spare parts delivery, training and transfer of (shipbuilding) know-how. Finally, Damen offers a variety of marine components, especially nozzles, (flap-type) rudders, steering gear, anchors, anchor chains and steel works.

DAMEN SHIPREPAIR & CONVERSION

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

ABOUT TROJAN MARINEX

Trojan Marinex is part of the Trojan Technologies group of businesses which is the largest UV water treatment company in the world. Trojan Marinex designs and engineers ballast water treatment systems. These systems are purpose-built for the marine environment and provide filtration + UV in a single, compact unit. In addition to the rigorous certification and testing methodologies employed, the Trojan Marinex BWT system is differentiated in that custom-designed filtration and UV is integrated into in a single, compact unit. TrojanUV Solo Lamp™ Technology was utilized to ensure the lowest installed power draw of other systems in the market. This extremely low power draw means that larger vessels, such as bulkers and tankers, can effectively choose a UV-based solution.

ABOUT BIO-UV

BIO-UV, the French ultraviolet water treatment specialist, is an innovative industrial SME created in May 2000 with a subsidiary in the USA (Delta UV in California). The BIO-UV Group designs, manufactures and markets systems and concepts of disinfection by ultraviolet light (UV-C) adapted to a large number of applications. BIO-SEA® by BIO-UV is the first only system developed and manufactured in France for treatment of ballast water. The complete ballast water treatment system BIO-SEA® combines mechanical filtration and UV disinfection, without any chemical treatment whatsoever. BIO-SEA®, with high marine quality components, is a reliable and innovative UV ballast water treatment disinfection system.

ABOUT EVOQUA WATER TECHNOLOGIES

Evoqua Water Technologies is a leader in water and wastewater treatment products, systems and services for industrial, marine and municipal customers. Its comprehensive, cost-effective and reliable treatment systems and services reduce fresh water demand, ensure uninterrupted quantity and quality of water, and enable regulatory and environmental compliance. With a wide range of proven product brands and advanced water and wastewater treatment technologies, mobile and emergency water supply solutions and service contract options, Evoqua helps cities provide clean water and industrial plants to maintain productivity and profitability.

New ship agency 'to revolutionize industry'

The shipping industry is set to see an unprecedented paradigm shift with the launch of Wave Shipping. Through a fresh approach to meeting customers' challenges and by introducing new technologies, Wave Shipping has set its sights on revolutionising the industry and becoming a global provider of port agency services.

On board to steer the agency is a team of industry veterans from leading maritime services companies and leaders across all business disciplines. Lars Rosenkrands, founder & CEO of Wave Shipping, said: "We are making a bold promise; to bring change to an industry that is traditionally averse to changes. Our goal is to provide a significantly improved customer experience in port agency by combining a truly competent and experienced team with a unique approach to digital information delivery, which offers a higher level of convenience, transparency and service consistency for clients and partners."

With more than 1.4 million port calls recorded in 2013 and US\$6 billion in estimated potential agency revenue, Rosenkrands sees great potentials and opportunities for Wave Shipping in the market.

Wave Shipping has offices in Australia and Singapore that are now in operation. The agency has plans to expand its operations in the Middle East and other parts of Asia in the later part of the year. Its target is to establish presence in 20

countries over the next three years and acquire a more significant market position with 13,000 to 14,000 port calls a year within five years.

*Lars Rosenkrands, founder
& CEO of Wave Shipping.*



ABS opens Beijing office

ABS, a leading global provider of classification services to the marine and offshore industries, announces the opening of a new office in Beijing. This move shows ABS' determination in expanding best-in-class service for the Chinese market. This new office will allow further collaboration with government, industry, academic institutions and research organizations and is part of ABS' continued commitment to serving the growing marine and offshore industries in China.

"Since we opened our first China office in Shanghai in 1993, ABS has been committed to bringing in the necessary resources and skills to help support the growing Chinese maritime industry," says ABS Greater China Division (GCD) Vice President of Operations Kwok Wai Lee. "Our Beijing office will be central to our operations as we seek to expand our presence and service offerings throughout China."

ABS has led offshore classification since its inception, classing the world's first mobile offshore drilling unit (MODU), first floating production system, first spar and first tension leg platform. ABS classes 86% of the world's MODUs — including 67% of the drillship market, 43% of the world's floating production units and 95% of the world's jackups. China has been an essential strategic growth area for ABS. Through restructuring and transformation, the Chinese shipbuilding industry is upgrading to be able to quickly develop in the gas and offshore sectors, two areas where ABS excels. As the centre for shipbuilding, the leader for ship repair and an important manufacturer of marine machinery and equipment, China has played an increasingly critical role in the global maritime industry,

and ABS has reacted to this by increasing its efforts in China in the areas of classification, certification, engineering and type approval.

ABS continues to expand its high-end technology and professional services for the Chinese market and over the last two years has broadened its offshore organizational structure in the Greater China Division and established a China Offshore Technology Centre that is working on joint research projects with Dalian University of Technology, Shanghai Jiao Tong University, China Ocean University and others. ABS also has set up an Offshore and Engineering Vessels department to help China make the move from shipbuilding to offshore.

Among the milestone projects in the Chinese offshore industry is the first self-designed and built, sixth generation deepwater semisubmersible drilling platform *Hai Yang Shi You 981*, which was dual classed by CCS and ABS. ABS has contributed to China's LNG transportation industry by classing six membrane-type LNG carrier newbuilds and has been selected to class eight LNG carriers under construction in China.

Beijing was selected as the site for the new office because of the city's role as a political, educational and cultural centre and its leadership position in offshore and energy. ABS understands the importance and tremendous growth potential in Beijing and recognizes that the city already is home to a large number of marine and oil and gas companies. The Beijing office will focus on business relationships and expanded offerings that strengthen its collaboration with local enterprises, universities and research institutions.

INTER BALT Poland – more than a decade of satisfying customers

PRIMARY SCOPE OF BUSINESS:

- ❖ logistics and forwarding services related to sea and land transport;
- ❖ ship agency – covering all Polish ports;
- ❖ owners protecting agency;
- ❖ chartering and shipbroking; and
- ❖ consultancy, agency and representation of other entities of international cargo transshipment.

INTER BALT, POLAND – SHIP AGENCY

Locations: Polish seaports of Gdansk, Gdynia, Szczecin, Swinoujscie.

INTER BALT provides comprehensive services to principals at any Polish seaports and shipyards and represents a ship owner's interests from the moment a ship enters the port/shipyard until the moment it leaves to meet all the ship's needs, including:

- ❖ clearance in and out of the ports;
- ❖ ordering pilots and tugboats;
- ❖ bunker fuel and lubricants' delivery;
- ❖ organizing and coordinating cargo handling on behalf of owners/charterers and on and off-hire survey;
- ❖ all crew formalities, transportation, hotel bookings, medical assistance etc.;
- ❖ spare parts, parcels, mail and any documentation clearance and delivery to and from the vessel;
- ❖ concluding shipping agreements and collisions on behalf of



Coal operations at the Port of Gdynia.

- the ship owner; and
- ❖ shipping consultancy.

INTER BALT ships agency's activity is characterized by its flexibility and diversification.

INTER BALT specializes in bulk carriers transporting coal, coke, biomass, magnetite ore and from this year scrap for steel producers, steel products, liquid products and crushing stones.

The company's experience in the shipping business, good relations with the companies, institutions and offices dealing with port traffic guarantee that its customers' expectations are met.

INTER BALT's shipping agency branch serviced nearly 400 vessels in 2013 and in the first half of 2014 almost 200 vessels calling Polish ports and shipyards, which proves that it is one of the leading Polish bulk ship agencies.

"More than a decade of INTER BALT's ships agency operations allows it to state that it is able to meet the expectations of its customers and it currently is a respected partner in this field." said Marek Kowalski, the chief executive officer of INTER BALT Poland.

INTER BALT is an active member of BIMCO, the Baltic and International Maritime Council as well as the Polish Shipbrokers' Association.



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ABS Announces Ballast Water Management Systems selection service

ABS, a leading provider of classification services to the maritime industry, has announced the launch of its Ballast Water Management Systems (BWMS) Selection Service to assist designers, shipyards, owners and operators in selecting the solution suited to the unique needs of each vessel.

This service builds upon ABS' position as a leading provider of classification, regulatory and technical services related to BWMS.

"As the maritime industry continues to adjust to the regulatory landscape impacting ballast water and as new technical solutions are brought to the market, the industry is looking for a trusted advisor who understands ballast water treatment solutions available in the marketplace," says ABS Senior Vice President for Asset Performance Management Howard Fireman. "The ABS Ballast Water Management Systems Selection Service provides an in-depth analysis of available options to help owners and operators make better informed decisions when selecting their BWMS."

The ABS BWMS Selection Service is a multi-step process. This begins with the ABS Operational and Environmental Performance (OEP) team gaining an understanding of vessel design and characteristics, trading patterns and specific regulatory requirements.

This information is then matched to an extensive database of available BWMS and original manufacturer support networks, allowing ABS technical specialists to recommend systems that meet regulatory requirements and are feasible for installation in


specific vessel designs. ABS also provides a comparative review of operational and maintenance considerations for each potential BWMS, allowing the vessel owners and operators to weigh all factors in selecting the solution that best suits their needs.

"Our team has spent considerable time with ballast water management system manufacturers and conducted extensive research on the design and performance of these systems. This allows us to prepare an in-depth analysis of potential options to allow owners and operators to select a system that is best suited for their vessel or fleet," says Fireman.

The BWMS Selection Service builds upon ABS' position as a leading provider of classification and regulatory compliance assistance related to the complexities of ballast water. In August, ABS released the third edition of its industry-leading Ballast Water Treatment Advisory. The updated advisory touches on many new developments impacting regional and global ballast water treatment requirements. This includes additional requirements contained within US EPA Vessel General Permitting (VGP). The Advisory is a critical part of the overall ABS BWMS Selection Service.

ABOUT ABS

Founded in 1862, ABS is a leading international classification society devoted to promoting the security of life, property and the marine environment through the development and verification of standards for the design, construction and operational maintenance of marine-related facilities.



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Achieving commercial advantage with AIS

AIS is now firmly embedded in the dry cargo sector with commercial operators relying on tracking and information services to gain competitive advantage, writes *Argyris Stasinakis, Business Development Director, MarineTraffic.*

Once the tool of ship spotting enthusiasts, Automatic Identification Systems (AIS) have now taken on a wide range of commercial applications. AIS systems consist of a transponder aboard a ship with a GPS and VHF transmitter. The VHF transmits GPS information to coastal or space-based (satellite) receiving stations; it is then interpreted by software, enabling it to be visually displayed. All ships over 299GT must carry an AIS transponder, meaning the world's fleet of dry cargo ships can be located and tracked.

Businesses and the public have been able to access vessel tracking services thanks to the advent of AIS websites, some of which have been around for several years. Of these, the most prominent is *MarineTraffic.com* which has the largest network of coastal receiving stations around the world — 1,800 stations in 140 countries.

Recently *MarineTraffic* undertook a survey of some of its five million monthly visitors to see how the use of such services had matured. The results confirmed that AIS services were no longer being thought of as a 'nice-to-view' website. Instead, information was being extracted and used for solid commercial reasons. A diverse range of uses across the maritime sector were reported, but all users were united in their need to have AIS available on



their computers, phones and tablets. Users expected to be able to access AIS information wherever they were located and needed to feel sure of its accuracy and timeliness. This was because an increasing number of commercial users were now basing decisions with direct cost implications on the AIS information presented.

For example, one US ship owner-operator of a local bulk fleet was using AIS to closely monitor his own vessels and those of his competitors to avoid port delays. AIS is a more convenient way of monitoring vessel movements than obtaining information from agents and it provides a real time, visual representation of ships' positions to aid decision making. This owner also tracked competitors to identify if they were operating different routes and working local ports so he could investigate and pitch for new





*Density chart
supplied by
MarineTraffic.com
showing world
Panamax bulk
activity from January
to May 2014.*

business in areas not currently serviced.

A shipper of woodchips based in Uruguay was using the AIS app to track vessels arriving at Montevideo so he could arrange ocean transport for his cargo as well as suitable cargo surveys. Information gained from local agents was considered to be less up to date and the real time configuration of the app was important for managing frequent passage delays.

The up-to-date information aspect of AIS systems was also emphasized by a timber trader from Norway who found the facility extremely convenient for obtaining the most accurate ETA forecast to ensure follow-on operations remained on schedule.

Interestingly, brokers and agents themselves are turning to AIS information to update clients when called upon. A port agent/ broker based in Brazil was using vessel tracking to identify the whereabouts of a vessel once a charter had been confirmed and would then relay this information to his client with up-to-date information on ETAs and early notification of any delay. The agent thought that the AIS service was significantly enhancing the service he was providing for his clients.

In Mexico, a minerals logistics and trading business reported using the app to check vessel positions and ETAs provided by owners. Once vessel positions were ascertained, brokers were then approached to charter the most appropriate vessel. According to this firm, using AIS in the first instance was a much less resource intensive process than approaching the market through brokers — although brokers were still used to handle the fixture.

In addition to AIS information relayed from coastal receiving stations, some suppliers offer a combination of terrestrial and satellite tracking options, meaning ships can be tracked in real time when in mid ocean. The ability to overlay weather conditions and wind speeds on charts, including current and forecast conditions a vessel might encounter enables increasingly accurate ETA prediction and is a good basis from which to make business decisions and inform clients.

Systems accurately forecasting the estimated arrival time of

ships and giving reliable route forecasts will become more and more valuable to ship owners and port authorities. They will enable financially astute decisions to be made, for example whether to increase ship speed and burn fuel in order to reach a berth or not. If the route and ETA of a rival berth-holder can be accurately predicted and it is evident they will reach port first, tonnes of fuel can be saved. Port authorities will be able to more accurately favour the vessels of long-standing clients and with a longer ETA forecasting range, strategically allocate berths to enable maximum loading and offloading efficiency.

In order to do this, AIS systems providing this kind of information service will need the ability to interpret the 'free text' format that ships currently use to report their destination. When a ship's AIS transmits 'rdam' or 'boniyy' the AIS system

must be clever enough to interpret this as Rotterdam or the port of Bonny in Nigeria. This requires a vast bank of historical data coupled with an ability to combine this with current position, speed and status information to create an accurate route forecast. Only the most sophisticated AIS services can deliver this.

AIS services have come of age. They are no longer a domain for enthusiasts but are increasingly being viewed as a business tool with the capability of streamlining current processes and enhancing both customer service and competitive advantage. That said, in general AIS is being used at an individual level within most companies to provide the individual with an additional tool to complete his or her job more effectively. Only a handful of shipping companies have embraced AIS at a corporate level to benefit from the company-wide advantages this service can evidently offer.

As AIS providers continue to deliver ever more sophisticated services that enhance the traditional location and tracking data, it won't be too long before big business wakes up and exploits this innovative service for the benefit of its customers and its own bottom line.

"Using AIS in the first instance was a much less resource-intensive process than approaching the market through brokers"

Recovery in sight for bulk shipping market

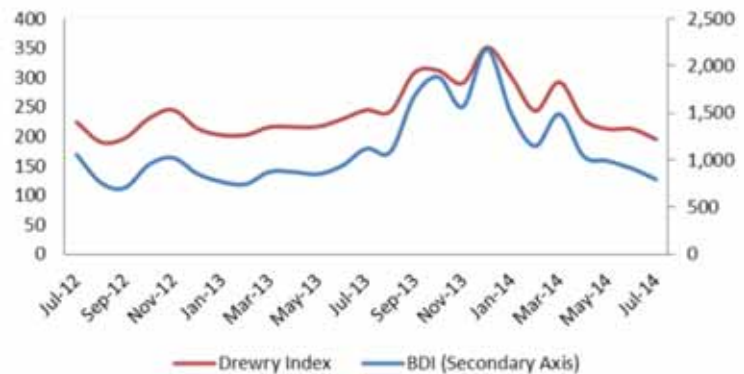
Despite weak freight rates so far this year, Dry Bulk shipping earnings are forecast to recover as demand for both major and minor bulk commodities rises, according to the *Dry Bulk Forecaster* report published by shipping consultancy Drewry.

Freight rates have been depressed due to a continuing oversupply of vessel capacity, despite recent moderation in the growth of the fleet. Drewry's Dry Bulk Freight Rate Index, a weighted average of earnings across multiple trades, declined 39% in the six months to June.

Drewry estimates that the dry bulk global fleet grew at an annual rate of 1.3% in the second quarter of 2014, down 0.4% on the first quarter. Some of this growth was the result of declining inactivity as vessels previously laid up due to bankruptcy proceedings came back onto the market. But much of the damage relates to over ordering of previous years, which has left the industry with an operating surplus of over 240 million dwt.

Despite this, activity in the newbuilding market has increased, due largely to demand for eco-vessels. Ordering for Capesize and VLOC (very large ore carrier) vessels has increased on a positive outlook for coal and iron ore trades. The current overall orderbook represents around 23% of the

Drewry's Dry Bulk Freight Rate Index & Baltic Dry Index



global fleet.

On the demand side, strong growth in Chinese iron ore imports were partly offset by a contraction in coal and grain shipments. Chinese imports of iron ore grew 12% quarter-on-quarter, driven by domestic smelters' preference for high quality and low cost imports. Grain shipments were impacted by adverse weather conditions and geopolitical issues in Eastern Europe. Chinese steam coal imports declined around 4% in the year to June, reducing earnings of Capesize and Panamax vessels. Chinese imports of iron ore are expected to slacken off through the remainder of the year due to large stockpiles, but demand is forecast to grow at an annual rate of 6% in the period to 2019.

"The immediate outlook for bulk shipping is positive," said Rahul Sharan, Drewry's lead dry bulk shipping analyst. "Despite weak market conditions through the first half, average time charter rates for 2014 are expected to be higher than 2013 as Drewry expects rates to increase in the second half."

Driving much of this recovery will be increased demand for both major and minor bulk commodities.

"Looking further ahead, we expect earnings to recover gradually across all vessel segments over the next few years," added Sharan.

Dry Bulk Forecaster is published quarterly by Drewry Maritime Research.

Drewry is an international firm of shipping consultants that provides advice and research to maritime industry stakeholders. It provides these services via four established business units: Drewry Maritime Advisors provides advice to shipping and financial institutions; Drewry Supply Chain Advisors provides advice to retailers and manufacturers; Drewry Maritime Research publishes research on shipping markets; and Drewry Maritime Equity Research provides equity research on selected shipping companies.

Drewry has over 40 years' experience in the maritime sector, employing over 100 specialists across an international network of offices in London, Delhi, Singapore and Shanghai.

Drewry empowers its clients with the necessary information and knowledge to make informed business decisions. The company is renowned for the quality of its work, with analysis that brings clarity to complex markets and enables clients to get ahead of the competition.



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Bulk carriers

susceptibility and loss prevention

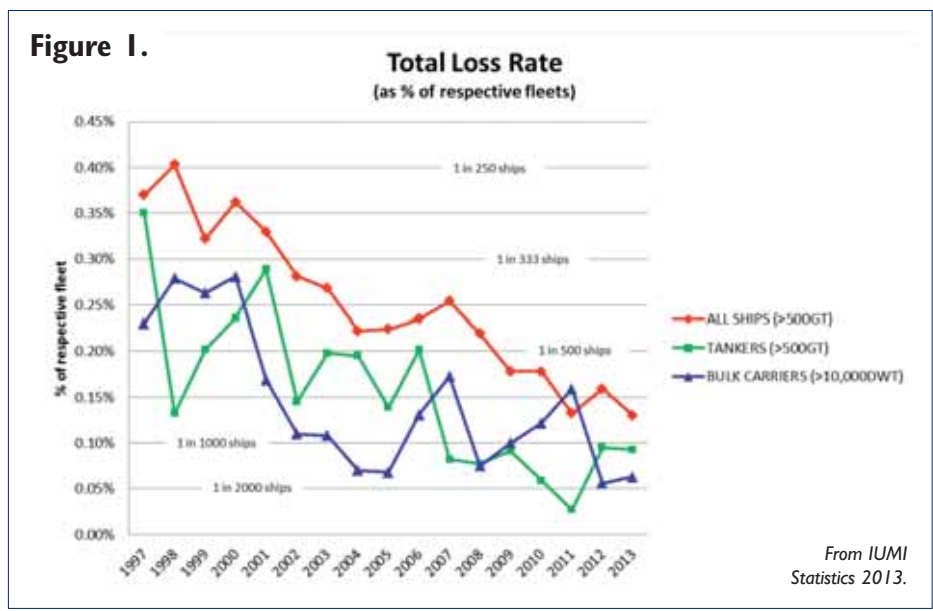
**David Duffield MNI, Marine Consultant,
Braemar (Incorporating The Salvage Association)**

Bulk carriers tend to get a bit of a raw deal. There is little glamour attached to them and they are often perceived to be the dirty old work-horses of the merchant fleet. They have a bit of a reputation, too, for being generally ill-cared for, rusty and prone to sinking. However, just as with general impressions of large groups of people such as politicians and students, ships' reputations, too, are often based on a relatively small number of bad experiences, and this does not always lead to a fair assessment.

For example, back in the 1980s and 90s, when corrosion was causing ships' sides to fall out, many even within the industry were under the impression that it was mainly a bulk carrier problem. In fact, the more glamorous tankers were much worse in this respect. However, because bulk carriers were much more prone to rapid sinking as a result (and indeed did on a regular basis), they got more tarnished with the rusty reputation because of the loss of life that was involved. Tankers, as we all know, though, can break up and sink too, but it is true that they have tended to do so at a slower rate, giving the crew a better chance

of getting off. Tankers have also been more prone to blowing up (and indeed some still do), and it is interesting to note from the total loss rates reported by IUMI (International Union of Marine Insurance) that tankers have regularly been worse than bulk carriers in terms of numbers of ships lost over the past few decades — see Figure 1 below. However, even though it could be argued that tankers are worse in terms of loss of property and environmental impact, there is no getting away from the fact that sinking bulkers have tended to kill of the order of three times as many crewmen per incident than tankers over the years².

Figure 1.



1. See the IUMI [International Union of Marine Insurance] Statistics www.iumi.com

2. See 'Casualties and Loss of Life in Bulk Carriers from 1980 to 2010', Roberts, Pettit, Marlow, *Marine Policy* 42, 2013

From IUMI Statistics 2013.

Formulating and implementing effective worldwide regulation for enhanced safety is horrendously difficult. Trying to get a consensus, on the perception of risk, battling against the economic pressures against change, fighting the potential 'lowest common denominator' compromises to enhanced standards, and implementing grace periods in a fair but sensible way, are not tasks for the faint-hearted. Despite such difficulties, the last decade has seen very positive improvements in international regulations governing the safety of bulk carriers. One compartment damage stability is certainly better than none, as was required before, and the increased strength of bulkheads to withstand flooding of a hold without the bulkheads collapsing is clearly a good and consistent measure. Strengthened topside structures against green seas, hold and bilge water level detector/alarms, and enhanced bilge pumping systems clearly better defend against water ingress and accumulation. With regard to structural integrity, there is now a raft of measures aimed to keep the hulls in better shape than before: greater restrictions on cargo loading in holds to avoid overloads of the hull girder; improved methods of handling cargo to avoid localized damage (from bulldozers, grabs and jack hammers, etc.); hull stress monitoring; modern strength and stability computers on vessels; plus enhanced programmes of inspections. So do they work? *Dry Cargo International* asked Braemar (Incorporating The Salvage Association), often referred to as Braemar SA, to address a few questions regarding the tangible benefits of all this.

HAS THE INCREASE IN SCRAPPING AND NEWBUILDING MEANT THAT BULKERS ARE GETTING SAFER?

With an increasing proportion of the bulker fleet that should now have been built to the full enhanced standards, we would

have certainly expected that to be the case. Logically, the many individual ships that have been well built and are being well operated must be safer. However, short-sighted business trade-offs (as always) conspire to negate any such benefits. There is still significant concern within marine insurance and casualty surveying circles regarding new-build construction quality, particularly, but not exclusively, within Chinese tonnage. Horrors of structural misalignments, the filling-in of badly fitting plating with oversized welds, the often poor quality of cast components, and so on, can mean that vessels may have weak points and are significantly less able to withstand even the normally expected high sea conditions at times, let alone extreme conditions. The general trend of the total loss rates for bulk carriers shown in the graph on p25 clearly show an overall improvement, so the well-found vessels still have the upper hand; however, niggling questions remain as to whether the improvements should have been better than this and whether loss rates will start to increase significantly again. Before leaving this question you could ask are bulkers getting safer (in principle at least) in all respects, and the answer would probably have to be no. For example, the graph shows some peaks in the bulker losses during the period 2006 to 2012 superimposed on the declining trend and these are likely a reflection of the vessels lost from cargo liquefaction, an old lesson learned that had been forgotten again, perhaps, and still not well guarded against in the enhanced regulations for design.

WHAT, IN YOUR OPINION, IS THE GREATEST REASON FOR BULKERS TO FAIL?

A total loss or structural failure occurring in the open sea without an obvious preceding event such as a grounding or

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collision, in our opinion, will usually be, primarily, as a result of poor construction, as above, or through-life structural deterioration due to corrosion, fatigue induced cracking, and/or accumulating hull deformations from rough cargo handling on loading or discharge that can reduce the buckling resistance of structural members. Sudden catastrophic structural failure of the hull is probably the less common immediate result: rather, partial failure leading to the ingress of water will usually be the starting point, and the consequential additional adverse loads on the hull can then lead to a more major structural failure or total loss.

However, seldom will a total loss be due to just one factor. Usually there will be other influences at work such as high (though not necessarily extreme) sea conditions and/or, perhaps, incorrect loading of cargo that puts higher than expected 'still-water' loads on the hull. Weak and poorly secured hatch covers may also contribute to the loss of a vessel. It may surprise people but there is a right and wrong way to close and secure a hatch such that even a hatch in apparently good condition may not be weathertight when the crew have battened it down.

Misconceptions and ignorance of some operational personnel on-board or on-shore undoubtedly plays a part as well, in some cases. For example, the terminal operators in a loading port might think bulk carriers look big and strong, and find it hard to imagine breaking them: but if they were to understand the principles and do the sums they would find that it is relatively easy to get a loading configuration on a large vessel that exceeds the maximum allowable bending moment. If the ship survives the loading in port and then goes to sea in that condition, there may be little reserve strength left for wave action before catastrophic collapse occurs.

IS HUMAN ERROR A SIGNIFICANT FACTOR IN SHIPWRECKS?

For bulkers ending up on the rocks, we would tend to agree that in most cases the proximate cause is still human error.

Navigation or watch-keeping errors are often found to have played a significant role. Recently, with the rushed onset of ECDIS (Electronic Chart Display and Information System) we can see what were once 'Radar Assisted Incidents' being replaced by 'ECDIS Assisted Incidents'.

However, if you dig down to the root of the cause, you will often find that crews are younger and inexperienced, having been given far less supervised training than they should have had, considering the value of the vessel they are operating and the value of cargoes carried on board. We have witnessed a continuing decline of the standards of crew practical training and experience over the years. This is more to do with cost-cutting on the part of owners and operators — a symptom of the economic pressures of our times — a known factor that can hardly be described as human error. On top of this, the crew are often obligated to work long hours during cargo loading and subsequently, following the vessel's departure on voyage, are required to immediately carry out navigation watchkeeping duties without sufficient rest periods despite regulations. Indeed, tiredness of the navigating officers is often the root cause of navigational incidents.

DO LOSSES OCCUR OVER THE WHOLE AGE RANGE, OR DOES IT TEND TO BE MOSTLY OLDER VESSELS THAT ARE LOST?

Casualty statistics of bulk carrier total losses over the last ten years show that losses occur over the whole age range, almost uniformly over the first 20 years, but with significantly increasing frequency for ships over twenty years old. The latter increase is likely to be a combination of the ships' structures being worn out plus, perhaps, a lack of investment for reasons of "economy" if a vessel is perceived as being close to her end of life. The absence of a clear correlation with age within the normal expected life of these vessels is actually a bit disturbing as you would expect some level of structural degradation with age, and the total losses occurring within the first five years probably

point to the new problems of construction quality mentioned earlier.

DOES MORE STRINGENT REGULATION MEAN THAT FEWER CARRIERS ARE IN NEED OF SALVAGE?

We have not found that to be the case. The new regulations are addressed more towards ship survivability rather than normal casualty avoidance. The vessels are just as prone to collisions and groundings and cargo liquefaction, for example, as they were before. Human error is a factor against which you cannot legislate. Perhaps they are even more prone to such events considering the introduction of new technology such as electronic charts with economic cut-backs in crew training as a result of the cost of the new safety measures in the ships.

Our experience is that the incidence of serious incidents (short of total loss) is not significantly reducing. Part of the problem may be that more owners appear to be looking for loop-holes in the regulations. For example, it has been reported that some owners are converting container vessels to bulk/breakbulk carriers: but the worry here is that the original hull design was based around a relatively small GM (metacentric height) to keep the roll motion as small as possible. When a heavier ore type cargo is stowed in such a vessel the GM will be significantly increased subjecting a vessel to greater potential roll motion and increased stress for which the vessel was not originally designed. In other instances, it is reported that top-side ballast tanks that are no longer in good condition are declared to be void spaces. This reduces inspection requirements and significantly affects the vessels' ballast capacity and safety on ballast passages³.

WHAT LOSS-PREVENTION MEASURES DO YOU RECOMMEND?

Routine testing and inspection of structure, hydro testing of ballast tanks and UT (Ultra Sonic) testing of hatch covers and deck vents for P+I interests are essential weapons in the fight to maintain standards. However, even here the use of cheaper, less qualified/inexperienced surveyors, and in some cases, surveyors lacking integrity, can negate the value of a survey. The loss prevention methods are the joint responsibility of class, owners and operators.

The continual monitoring by class survey is vital but this is under the control of the owners. We believe, though, that this can be enhanced by the carrying out of 'Joint Hull Committee' condition surveys at the behest of underwriters to protect their interests.

The enhanced survey programme onboard must be exercised by the crew with due diligence for such loss prevention assessments to be effective. Critical structural areas such as corrugated bulkheads in cargo holds are often the Achilles heel with respect to transverse bulkhead integrity following any ingress of water via the side shell plating where, in high seas, the frames may have tripped from the plating allowing flexure, continued frame welding fatigue, and leakage or eventual loss of the side shell section due to wave motions and variable forces imposed on the plating. Sloshing of flood water set up by the vessel's pitching motion may then lead to a loss of watertightness of the transverse bulkhead, fatigue fracture, and tearing of the bulkhead at the top and /or bottom. Ballast holds are particularly susceptible to increased corrosion and require

3. See 'In Service Container Carriers Converted to General Cargo Vessels Classed to Carry High Density Break Bulk Cargoes Structural and Operational Risks'. P.D. Contratos and D. Whittaker, SNAME, 2012.



Even highly maintained hatches can be susceptible to leaks if they are not properly secured by crew members.

increased maintenance. Of course the ability of a crew to exercise due diligence is dependent upon the number of available crew on board.

Similarly, ballasted holds, if not fully ballasted and 'pressed up' on voyage can experience abnormal loadings on the hatch lids, bulkheads and side shell plating due to 'sloshing effects'.

Cargo load plans and correct procedures for load rotation/deballasting rates and careful stress monitoring to be strictly adhered to.

Accurate details of the cargo must be obtained from the shipper. The crew must have a thorough awareness of all hazards and correct certification, knowledge and use of the IMSBC code, IMDG code, SOLAS Cargo Manual — The 1997 'Blue Book' (Cargo Packing) — thankfully soon to be replaced by a new version. Moisture limits, etc., of nickel ore/iron ore fines have caused significant recent concern for liquefaction. DRI (direct reduced iron) is another cargo with spontaneous heating when wet, to name but a few.

Improved fire detection and fixed extinguishing systems for all cargo spaces.

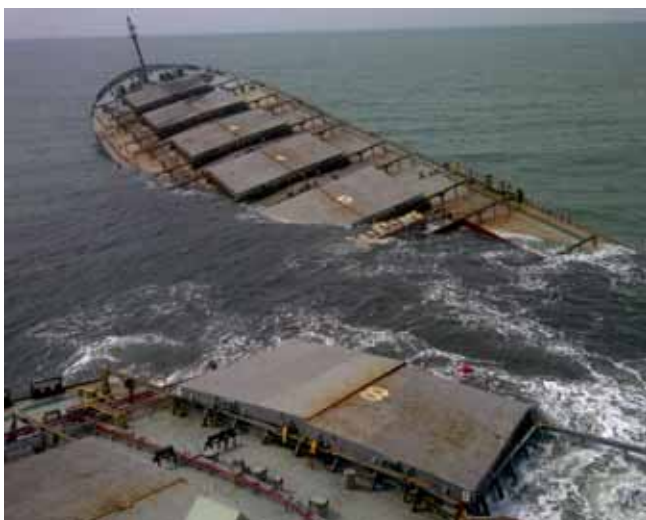
COULD YOU GIVE DETAILS OF YOUR MARINE CASUALTY INVESTIGATION SERVICE? WHO EMPLOYS YOU TO CARRY THESE OUT?

We undertake casualty investigations on behalf of Hull and Machinery interests, P&I clubs, owners, the legal fraternity and Flag State interests. In the UK we do work for the MAIB (Marine Accident Investigation Board) and also with the DfT (Department for Transport). Braemar SA has a large resource of expertise including marine engineers, master mariners, naval architects, SCRs (Special Casualty Representatives), cargo specialists and pollution control experts. These experts cover the marine consultancy and surveying spectrum and are strategically located around the world to ensure minimum

response time combined with local knowledge.

DO YOU CARRY OUT A LOT OF PREVENTATIVE WORK, ADVISING OPERATORS HOW TO MINIMIZE THEIR RISKS? WHAT FORM DOES THIS WORK TAKE?

Braemar SA carries out loss prevention condition surveys for P&I insurers, typically at the Members' pre-entry to the P&I Club, in addition to their requirements for annual or interim condition surveys. Within the hull and machinery market, we carry out JH 2013 / 007A, B, C and D type condition surveys in order to technically assess the insurers' risk of underwriting such tonnage. The 7A, 7B, 7C and 7D surveys relate to engine room machinery and bunker fuel risks, condition survey, crew and office management assessment audit (to ensure owners are fully compliant with the ISM Code), and a full structural condition survey, respectively.



Loaded bulker grounded and split.

world, giving the company a genuine global coverage. Braemar SA sits within the technical division of Braemar Shipping Services Plc and has access to the significant expertise within its sister companies who also have multiple locations worldwide.

WHAT PROPORTION OF YOUR WORK RELATES TO BULK VESSELS? DOES THIS PROPORTION FLUCTUATE?

This is a variable figure as such work is often fluctuating due to casualties occurring in adverse weather conditions for example. It would be reasonable to say that within Braemar SA we have bulk carrier surveys and issues being responded to regularly, but not significantly different in terms of a pro rata frequency from casualties involving other types of vessel.

WHAT ARE YOUR PLANS FOR THE FUTURE?

Braemar SA will continue to provide expert services worldwide to its clients with emphasis on loss prevention and will expand

WHO ARE YOUR MAJOR CUSTOMERS? DOES THIS CUSTOMER BASE REMAIN FAIRLY STABLE, OR DOES IT CHANGE SIGNIFICANTLY FROM YEAR TO YEAR?

Primarily our major clients are all of the leading Hull & Machinery insurers, P&I Clubs and admiralty lawyers around the world, with the London Insurance Market remaining our largest customer base. The instruction levels are stable throughout the years. However, a particular casualty may trigger off a focus on a particular risk element with consequential increased surveys in such sectors being required by insurers

HAS THE ECONOMIC DOWNTURN HAD AN EFFECT ON OWNERS/OPERATORS IN TERMS OF 'CUTTING CORNERS'? IF SO, HAS THIS RESULTED IN SIGNIFICANTLY INCREASED NUMBERS OF CASUALTIES?

We do not have sufficient data to give an answer to this. What we can say is that we notice in some cases a reduction in general cosmetic maintenance which can, over time, cause issues due to corrosion and maintenance periods of peripheral but essential equipment being extended which can increase risk to the equipment and/or the vessel itself.

In addition now, due to fewer crew and/or a lack of crew ability, maintenance is often reliant upon shore assistance. This again is often left until a cheap option in say, the Far East, becomes available.

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its global survey network coverage to meet our clients' service requirements. We are dedicated to the provision of high quality, independent surveying, consultancy, and risk assessment services to the marine industry with the same objectives as class, shipowners and operators with regard to putting more focus on vessel condition and reliability. Our services are there to help to ensure that the vessel operators maintain and comply with statutory and Flag State regulations and the ISM Code, including with regard to the safety of the crew safe cargo loading and secure stowage.

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DCi



Geared & self-unloading bulk vessels

An artist's impression of Ecoships' Eco-Smart Greenlotus 32.



New bulk carrier design puts Ecoships in the lotus position

Ecoships, the technical ship management arm of Newport Shipping Group, has introduced a next-generation bulk carrier design, developed to set the standard in ecologically compatible marine transportation.

Inspired by the low friction to water flow and self-cleaning properties of the lotus flower — a symbol of purity and beauty in Buddhist and Hindu philosophy — Ecoships' *Greenlotus 32*, is a 32,500dwt geared, wide hatched, Handysize bulker, designed to meet existing and future CO₂ (carbon dioxide) NO_x (oxides of nitrogen) and SO_x (oxides of sulphur) emissions regulations.

Captain Aykut Yilmaz, Newport Shipping's General Manager, said: "The *Greenlotus 32* is a proven eco-friendly bulk carrier that builds on the success of two earlier designs delivered in 2011. From cost and energy efficiency perspectives, it makes a lot of sense for shipowners to reconsider their ageing Handies in favour of the *Greenlotus 32*. The return on investment is very attractive due to its extremely low fuel consumption and it meets the most stringent emissions reduction requirements."

The 170.90m-long, 27m-wide hull form, optimized for energy-

efficient operation using computational fluid dynamics and finite element analysis, has a propulsion arrangement based around a de-rated, Tier III compliant MAN B&W SG50ME-B9 two-stroke main engine driving a large diameter, fixed pitch propeller.

"This configuration provides a heavy fuel oil consumption of just 15.6t/day at a service speed of 14 knots and 7.6 t/day at 11 knots. Compared to the daily fuel oil consumption of comparable Handy-size designs, the *Greenlotus 32* can generate daily fuel savings of more than US\$6500 on a bunker price of \$650t, operating at 14 knots," Yilmaz added.

The *Greenlotus 32* is also equipped with built-in technology for voyage and weather routing, trim optimization and a system to provide real-time analysis of ship data, including bunker quality and emissions.

Additional emissions abatement can be achieved through the optional installation of an exhaust gas scrubbing system and/or a selective catalyst reduction unit.

Exhaust gas recirculation and waste heat recovery systems, available with the standard *Greenlotus 32* design, add to the

GREENLOTUS 32

Principal particulars

LOA:	170.90m
LBP:	163.70m
Breadth:	27.00m
Service speed	14 knots
Draught:	10.50m
Cargo Capacities (Grain/Bale):	44,000m ³ /36,500m ³
Ballast:	8,920m ³
Classification	ClassNK

vessel's arsenal of ecologically friendly measures.

"It really does minimize the environmental impact of bulk shipping," said Yilmaz.

Suitable for the carriage of a variety of cargoes, including coal, grain, ore, direct reduced iron, cement, bauxite and steel coil, across five double skin cargo holds, the 'Eco-Smart' design features wide, steel-covered hatches in conjunction with the absence of hoppers and lower bulkhead stools to facilitate optimal loading and discharging operations.

Fuel tanks, coffered against cargo Hold 5 to reduce the risk of pollution and to protect heat sensitive cargoes, have been prepared for low sulphur fuel operation.

Fulfilling IMO requirements for permanent means of access for close up survey work and ease of maintenance, service piping and electrical cables run along two side pipe tunnels within the double hull. The arrangement serves as a safe conduit between the superstructure and foredeck during inclement weather.

Ballast and bilge piping has been similarly arranged in a pipe duct running through the double bottom of the vessel.

The tank top has been strengthened to 20t/m² on top of all cargo holds. The vessel is equipped with four sets of deck cranes each with a 30t safe working load and 36m outreach. Each crane is supplied with a frequency converter system to ensure optimum energy efficiency.

Harald Lone, CEO, Newport Shipping, said: "Vessels built to this new design will feature advanced energy-efficient technologies making them very cost effective to operate. We have already partnered with shipyards in China, Korea and Turkey to offer competitive pricing structures."

"The *Greenlotus 32* is a real game-changer," he said.

ABOUT NEWPORT SHIPPING UK LLP

Newport Shipping UK LLP is a ship management company, registered and headquartered in London, UK and provides a complete and comprehensive range of commercial and technical ship management services both for its own fleet and third party owners of dry cargo, tanker and chemical tanker tonnage.

Its commercial management service covers all aspects including chartering & operations, accounting, research & consulting, and demurrage & claims.

Newport Shipping's fully owned subsidiary Ecoships A.S offers full technical and ship management services with focus on dry cargo ships, container vessels, and product and chemical tankers.

Its senior management team has extensive shipowning, ship broking and finance industry experience having spent decades in leading companies in Oslo, Istanbul, New York, Singapore, Hong Kong and Jakarta.



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Floating terminals: offshore cargo handling made easy with Coeclerici

The FTS Bulk Borneo.



Coeclerici Logistics, the logistics division of Coeclerici Group, is one of the world's leading bulk commodities transshipment companies with a history of more than 40 years in this specific field, writes *Capt. Giordano Scotto d'Aniello, the Head of the Commercial Department at Coeclerici*. Technical innovations, cross-disciplinary expertise, skill optimization, long-standing direct operational experience and a proven track record are the main strengths of Coeclerici's logistics branch.

Coeclerici has engineered and promoted the use of 'floating terminals' throughout the world designing and developing different types of floating transshipment stations capable of lighterage/top-off operations, cargo transfer and self-unloading of many different dry bulk materials. These carry out all the same functions as a port terminal but with far smaller investments, lower management costs and less environmental impact.

The solution is based on a floating system which is able to load and/or discharge large ocean-going bulk carriers offshore, with an exceptional daily rate. The system can also be self-propelled so that it can be moved easily from one location to another without the need for tugs and pilots. The versatility of the system is such that it is able to overcome draught restrictions, vessel size restrictions, lack of port facilities, environmental restrictions etc. And yet it should be simple enough to adapt to the local prevailing conditions and be operable with the local crew.

The flexibility of the system should allow it to handle all kinds of dry bulk cargo. Last but not least, the time of implementation of this system should be such as to minimize the losses being incurred by the end-users.

As regards self-unloaders in particular, we refer to vessels equipped with onboard cargo-handling systems, able to discharge its cargo without shore-based unloading equipment. For cargo we consider any dry-bulk commodity such as coal, iron ore, etc.

MAIN ADVANTAGES

- ❖ self-unloaders deliver more usable product than conventional vessels by virtually eliminating waste and contamination;
- ❖ self-unloading vessels can discharge dry-bulk cargo at an

unimproved dock without assistance from any shore-side equipment or shore-side personnel — they do not require any land-based assistance;

- ❖ self-unloaders can provide offshore transshipment operations, topping up or offloading into larger vessels.
- ❖ self-unloading vessels can reduce a cargo's overall delivered cost per ton because they are fast, efficient and less capital- and labour-intensive than on-shore based systems;
- ❖ the new generation of self-unloader is equipped with advanced dust suppression systems. Dust suppression units are situated throughout the cargo handling areas, and the discharge booms are enclosed and fitted with water sprayers to further reduce dust during off loading; and
- ❖ finally they can also be used for seaborne trading, over dry material handling.

SOME EXAMPLE OF SUCCESSFUL COECLERICI'S PROJECTS

INCLUDE:

- ❖ FTSs (floating transfer stations) *Bulk Java/Bulk Borneo* and *Bulk Sumatra*: the FTSs are non-propelled barges of 11,838dwt (*Bulk Java* and *Bulk Borneo*) and 11,855dwt (*Bulk Sumatra*), duly designed to smoothly perform coal transloading operations at Muara Pantai anchorage in Indonesia. The FTSs are equipped with two heavy duty cranes and two swivelling shiploaders, along with a combination of hoppers and conveyors. The FTSs are designed with a minimum air draught of 18.5m at maximum draught that makes it possible to transship and to guarantee from 2,000tph (tons per hour) to 2,400tph from barges to Ocean Going Vessels (OGVs) up to Capesize.

The systems are environmentally friendly and designed to meet the requirements of international classification societies and Coeclerici standards. Any coal spillage and pollution are prevented by anti spillage hoppers, spillage free grabs and closed conveyors belts.

- ❖ FTS *Bulk Celebes*: custom-designed by Coeclerici for the specific needs of offshore coal transloading operations in Indonesia, this self-propelled FTS is suitable for both loading

The FTS Bulk Limpopo.



and unloading and for blending operations to manage different coal grades.

- ❖ *Bulk Zambesi and Bulk Limpopo*: the twin 53,776dwt transshipment units (TUs) have been fully designed and built by Coeclerici to load coal into OGVs, by means of sophisticated loading systems installed onboard, at Beira in Mozambique. The units have each been equipped with five heavy duty cranes, grabs, a belt conveyor system capable of transshipping at a peak loading rate of 5,500tph and state-of-the-art gears enabling a throughput of around five million tons of coal per year for this specific project. The vessels are in compliance with the latest international code resolutions for ship's safety and security, protection of crew and of the environment.
- ❖ *FTS Bulk Irony*: 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 26,000 tons 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 ISO14001:2004 and achieved the prestigious Environmental Management Audit System (EMAS) registration in April 2009.

Each of the above systems has been tailor-made according to customers' technical and operational requirements, ensuring high performances (over contractually guaranteed parameters) and long lasting working lives, that guarantee to the clients a reliable solution for their needs.

The FTS Bulk Irony.



Wear protection systems for self-unloading vessels



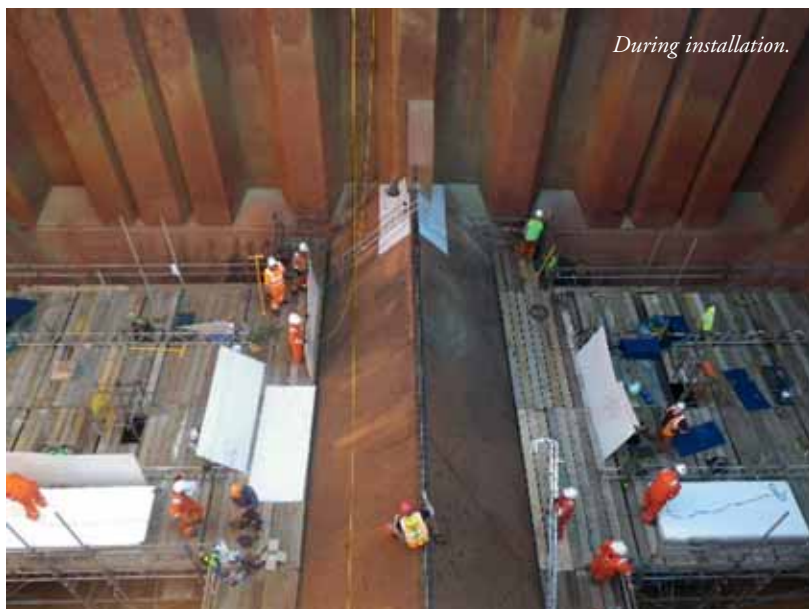
Vessel hold before the installation of Kingfisher K-PLAS and K-ALOX material on top of the A frame.

Wear-resistance specialists were approached by a global shipment management service provider, responsible for fleet and gravity type self-unloading vessels to provide a solution which would help reduce material build up, increase material flow and promote an easier cleaning regime along with an effective wear-protection system.

Kingfisher was approached by the global provider whose self-unloaders are expected to operate 24 hours a day without the need for stevedores or trimming crews, as this speeds up cargo handling, and further reduces port and demurrage costs. These types of vessels are capable of handling material up to 20,000 metric tonnes per hour, therefore effective equipment and continual process performance is a must.



K-PLAS and K-ALOX being installed on top of the A frame in the vessel hold.



During installation.

The company's technical superintendent stated, "Our core business is the shipment of iron ore. As the material is transported from 'A' to 'B', material is affected by a number of factors which contaminate the material and increase the moisture content within the ore, leaving the material lumpy and exceedingly sticky, which then builds-up on top of the A-frame inside the cargo hold.

The process of transporting material from 'A' to 'B' then becomes more difficult as it becomes extremely hard for it to be transported from one point to another without it sticking or building up within the unloading and loading points; likewise the lumpy material tends to cause considerable wear and abrasion within the pocket conveyor discharge chute.

Project manager Mark Bond commented, "Handling sticky iron ore is always a challenge for bulk material handlers as material characteristics can be extremely unpredictable especially where environmental factors are concerned. During such



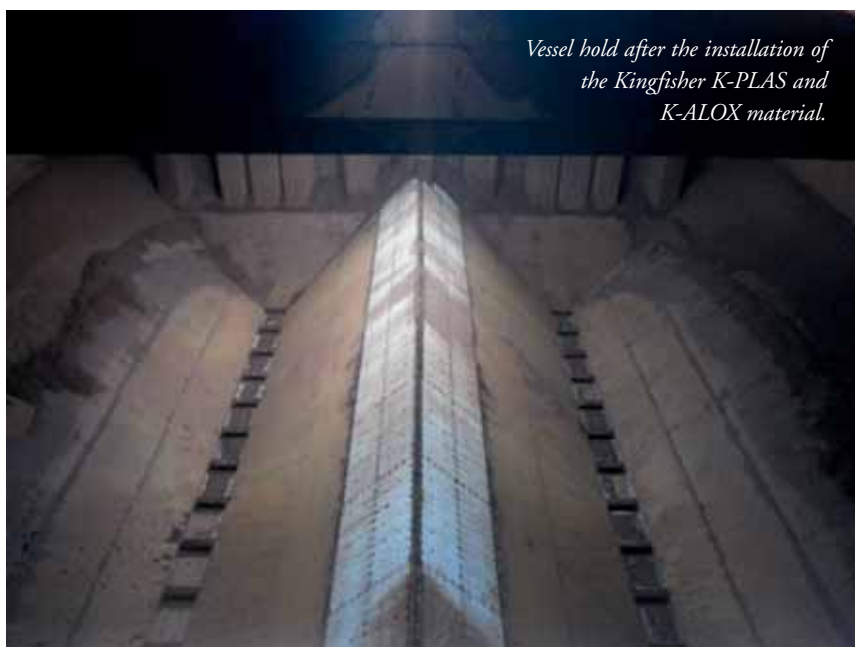
Vessel hold after the installation of the Kingfisher K-PLAS and K-ALOX material.

circumstances, end users do not have many options available, therefore maintenance engineers are then required to add in measures to help protect their systems and contribute to the on-going process and product output.

The technical superintendent added, "We approached Kingfisher as we required a solution which would reduce the material hang ups within the cargo holds and ease the cleaning process within the pocket elevator feed chute, as it is very important for us to keep our equipment material free and likewise eliminate the extra resources required to strip the cargo holds or implement additional cleaning regimes within the cargo holds and conveyor chute."

After reviewing the issues, material flow and quantities, Kingfisher recommended to install a combination of wear resistant lining systems. Kingfisher K-PLAS material was to be installed top of the A frame, as the polymer material promotes material flow, its smooth surface will allow material to

slide down the system without causing material to 'hang up' on top of the A-frame, along with Kingfisher K-ALOX



Vessel hold after the installation of the Kingfisher K-PLAS and K-ALOX material.

lining system 50mm and 25mm-thick 92P ceramic liners to offer protection to the main wear areas of the conveyor chute.

"The installation procedure involved cleaning and preparing the surfaces of the cargo holds, before our K-PLAS liners were installed," stated Mark Bond. "Our aim is to offer the customer with a service which fits in with their requirements as Kingfisher's service provision comprises full design, manufacture, surface protection and installation service."

Operations director Graham Bailey commented, "Since the installation in July 2014, the customer has been reviewing the process and has confirmed the project has been a success. The results have been touchable, the hang-ups on top of the A-frame are now reduced to a minimum quantity and the pocket elevator feed chute now has less material build up, resulting in fewer wear areas."



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

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with advanced systems, which are fully automated and able to achieve high loading and unloading rates. Unique for the IBAU concept is the space saving midship tunnel design that integrates the discharge equipment and divides the holds into a port side and starboard compartment. The midship tunnel eliminates an

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Shaking things up: self-unloaders use VibraFloor's reclaiming system



VibraFloor's innovative reclaimer has been used by several industrial sectors, seduced by the efficiency and simplicity of the technology which has been developed over the past three decades, writes Ivanny Salinas of VibraFloor.

The VibraFloor system is a major change brought into bulk ship design to optimize the reclaiming process, improve its efficiency while reducing the operation cost. The VibraFloor technology offers a number of valuable benefits, such as:

- ❖ 100% automatic discharge;
- ❖ no damage to ships' structures nor handled products;
- ❖ low energy consumption;
- ❖ very high discharge rate;
- ❖ automatic, safe and secure operation;
- ❖ no need for personnel or ancillary equipment (loaders); and
- ❖ no maintenance

Amongst recent projects, a woodchip barge is in operation in



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Chile which offers an unloading rate of 1,000m³/h; a second barge is under construction. Several ships have been put in operation along the coasts of Norway, distributing fish feed.

The VibraFloor company is now working on orders for four additional Norwegian self-unloaders, ranging from 2,000dwt to 5,000dwt. These orders will be completed by the end of this



year. More self-unloaders projects are under way in South America and northern Europe.

TECHNOLOGY AND OPERATION

VibraFloor is a reclaiming system, comprising independent modules laid side-by-side, end-to-end to cover the bottom of storage facilities and ship's holds.

The system works by creating a wave in the flexible top plate of each module, instigated by a low-energy motor. This causes material (that has not already fallen by gravity) to collapse and be evacuated from the storage area.

High quality components and extensive research and development guarantee the efficiency and durability of the system. The design is flexible, customized to be fitted in ships' holds regardless of their shape, and tailored to suit the stored product(s), conditioning and reclaim rate.

When required, ventilation ducts are provided to monitor

storage parameters, temperature and hygrometry. All electrical components are ATEX certified to avoid the risk of explosion. Food grade and corrosion resistant standards are currently available.

All types of dry bulk product can be handled without human intervention, including sugar, flour, animal feed, seed grains, soya bean meal, wood chips, wood pellets, potash, urea, etc...

VibraFloor's teams of technicians and engineers offer a high level of experience, and are available worldwide throughout the installation process to ensure smooth commissioning and efficient operation of the system.

Customers include sugar operators, fish feed distributors in Norway, biomass operators in Chile and Brazil, river operators in northern Europe.

VibraFloor is wholly committed to successful projects and clients' satisfaction. Research and development in new sectors are consistently underway. The innovative VibraFloor technology with all its advantages is now available to the fertilizer industries and operators. It is expected to be made available shortly to the coal industry.



Customized transshipment and self-unloading solutions from Oldendorff



Most people within dry cargo circles would probably know Oldendorff Carriers. The German private company has been in existence since 1921 and today owns and operates more than 500 ships. It is considered to be one of the largest dry cargo carriers and has 19 offices around the world.

One area of the business which is perhaps lesser known to people is the 'Oldendorff Project Department' which provides tailor made transshipment solutions to clients that are in need of specialized logistical services and equipment.

The department has grown to over 700 people counting office staff and people actively on board various types of marine crafts and transshipment units.

Oldendorff currently manages transshipment activities in Guyana, Trinidad, Turkey and the Arabian Gulf. The commercial and technical management teams are situated in Lübeck Germany in the company headquarter and in Singapore.

Common for these transshipment projects are that they run for multiple years and sometimes include ocean freight contracts



**“A man who stops
advertising to save
money is like a man who
stops a clock to save
time”**

- Henry Ford

which means Oldendorff provides an all-inclusive logistical and transportation solution to the client.

'Our clients are industrial companies which need a reliable long term partner guaranteeing their offshore logistics and transportation requirements are taken care of with utmost diligence — the relationships with our customers are very close for that reason' says Managing Director, Projects Jacob Juncher.

Oldendorff has been engaged in self-unloading vessels for two decades and has several vessels committed to the CSL Pool which mainly operates in the Americas. "Our self-unloaders are employed and commercially handled by the pool whilst technical management is done by Oldendorff — the pool has offered a great way for us to differentiate and explore others types of



ships than standard bulk carriers," says Juncher. "A lot of experience in handling specialized equipment has been gathered over the years — experience we have been able to utilize elsewhere."

The first transshipment project in which Oldendorff engaged is situated in close proximity to Iskenderun in Turkey. To guarantee timely and efficient coal supply to a new power plant, Oldendorff designed and constructed one of the world's largest

floating coal terminals. The *Isken* was delivered in 2002 and handles more than 3mt (million tonnes) of coal per year. "We have a team of 94 highly experienced people in Turkey. We are very pleased with the operation," says Max Zentgraf, Manager Projects. "The *Isken* is a piece of bespoke equipment — it is the only one of its kind and has worked flawlessly since the beginning. We can fully discharge a Capesize in four days which is better than many shore installations can achieve," says Zentgraf.

Oldendorff's second project commenced in 2006 with the establishment of a barge and transshipment operation in Guyana handling bauxite for one of the world's leading Alumina producers. "We employ 250 people in Guyana and have committed a large amount of equipment to service our customer. The operation is highly complex since we transport bauxite in our barges down a 250km-long stretch of the Berbice river which has very narrow bends — it requires special skillsets to navigate safely. Luckily we got very good people," says Mia Gerritzen who is the project manager for the Guyana operation. Oldendorff is completely self-sufficient in Guyana having built a compound with living quarters close to the transshipment basin





in New Amsterdam. There is even a jack-up dry dock which is used to maintain the 20 x 3,000 tonnes barges, tugs, crew boats and pilot boats. The transshipment is done by a Figee Lemniscate floating crane.

Oldendorff has specialized in transshipment and lightering operations in the Arabian Gulf since 2009. It currently operates a number of Panamax transshipment vessels with heavy duty side mounted cranes and conveyor boom systems which discharge at fast rates in to shore. There are also three self-propelled barges in operation in Abu Dhabi that services a large steel mill situated next to a channel with limited draught. "We are currently servicing a number of clients in the region with our transshippers and we believe there is still potential for growth," says Linda Kongerslev, General Manager of EOL, an Oldendorff joint venture company based in Abu Dhabi. "Our view is long term — it has to be. Our clients invest and build for the future. Transshipment is needed in many places due to lack of adequate water depth for large bulk carriers. We have the equipment that can safely and efficiently deliver the product to the clients and reduce the time that the bulkcarriers are tied up for discharging," says Kongerslev.

Oldendorff has two new customized 94,000dwt post-Panamax transshippers delivering in 2015 which will complement the on-going operations in the Arabian Gulf.

Oldendorff's most recent transshipment project is located in Trinidad. The operation has been on-going since 2012 and primarily deals with transloading of iron ore from Handymax to Capesize vessels. A 120-man strong team runs two floating cranes in the Gulf of Paria which is naturally sheltered and enjoys calm weather all year around. "We haven't had a single day of downtime due to winds or swell," says Scott

Jones, Director Projects. Our operation is very versatile and besides from iron ore we have also handled coal and bauxite. The savings the customers enjoy are significant when they compare the all in rates Oldendorff offers — to the rates they would have to pay sending small ships far away," says Jones.

The Oldendorff Project team has also been involved in design and implementation of new off shore equipment which is tailor made for clients that decide to operate themselves. "We look at anything that can provide the customer savings and efficiency improvements. "Says Juncher, "it is like working in a Research and Development company where there are no limits — it is fun!"

In 2013, Oldendorff started a project team in Singapore. The team is headed by Jason Baird who has a long background in commodity trading companies. The aim is for Oldendorff to start offering their transshipment and logistical services to their customers in the Asia-Pacific and Indian ocean region. **DCi**



Collateral damage to Indian ports

Contrary to its professed 'official' commitment to free trade across all non-farm commodities, the Indian government succumbing to relentless pressures by domestic steelmakers went on raising export duty on iron ore till it made the locally mined mineral uncompetitive in the world market. As the export-disabling 30% tax on lump ore and fines has done much harm to the country's iron ore industry, it has at the same time caused collateral damage to quite a few ports designed to handle dry bulk cargoes. This could not be otherwise. Seeing India's progress in production and exports of iron ore in earlier years, some new ports, including Dhamra on the east coast, were designed to handle large quantities of the mineral for export shipments.

Similarly, a surge in exports led some corporate entities like a joint venture between Sical Logistics and government owned trading house MMTC to build iron ore berths in major ports like Ennore — since renamed Kamarajar — and Paradip. Their investments in ports and special berths turned sour with the country's iron ore exports collapsing to 15mt (million tonnes) in 2013/14 from the record amount of 118mt in 2009/10. During the same period, iron ore production fell from 226mt to 140mt. In the prevailing situation, builders and operators of iron ore berths could make attempts to redeem their investments by making suitable changes in the said berths to make them ready to handle coal of which India is becoming an increasingly big importer.

India's coal imports rose to 168.5mt in 2013/14 from 145.78mt in the previous year. This is because, in the face of rising demand from coal-fired power plants, domestic coal production rose marginally to 565.64mt in 2013/14 from 556.4mt in the previous year. Slow production growth is because of strict enforcement of environmental regulations and the Supreme Court declaring as many as 218 coal block allocations since 2003 as illegal. The port operators have taken note of predictions by International Energy Agency and research houses that the uninspiring state of India's coal sector and continuing rapid rise in demand for electricity would make India overtake Japan, European Union and China as coal importer.

"Strangeness of the scene involving two major commodities iron ore and coal will not be missed. India is sitting on the world's third-largest coal reserve of over 301 billion tonnes. But bad planning, favouritism in coal block allocation and poor project execution are leaving the country with no option but to import more and more coal. Similarly even while India owns iron ore reserves in excess of 30 billion tonnes, its exports shrank at

incredibly fast rate in the past few years. And as the sector is in total disarray, coast based domestic steelmakers will end up importing up to 15mt in 2014/15," says RK Sharma, director general of Federation of Indian Mineral Industries.

What is encouraging is that a major government owned all season port Kamarajar has responded positively to Sical-MMTC JV to convert its iron ore berth into a coal handling facility. But the board of Kamarajar port accepting the proposal of the JV that it be allowed to convert the iron ore berth, which has remained idle since it was made ready in the second half of 2011 needs ratification by the shipping ministry. There just was no iron ore available for export. The JV owned 74% by Sical and 26% by MMTC has built a highly mechanized 12mt capacity iron ore berth at an investment of over Rs5 billion (\$82m). It has the mandate to operate the berth for 30 years.

The changeover of the JV iron ore terminal into a coal berth of identical capacity, however, will hinge on its sharing revenue with the port at the same rate that the already operating Chettinad International Coal Terminal is paying. Moreover, as is the norm the JV will have to commit to a minimum assured revenue to the port which will yearly rise over the 30-year operational period. Assuming that the shipping ministry will vet the Kamarajar board decision on changeover, the JV will be allowed to handle coal instead of iron ore only after February 2016 when an exclusive five year coal handling right granted to Chettinad for handling coal cargoes for clients other than Tamil Nadu Generation & Distribution Corporation will end.

Interestingly, the port will not have any exclusivity coal handling arrangement with the JV. Informed circles believe this is because the port may allow other parties to build coal terminals in future keeping in view the growing demand for imported coal. "Indian coal is at least \$10 a tonne cheaper than Indonesian fuel. Australian coal commands a still higher price premium over Indian coal. This is the reason why many power plants here and captive power units of several industries will rather let some capacity remain idle than import big amount of coal," says an official of Confederation of Indian Industry.

Apart from an 8mt coal terminal built and operated by Chettinad, Kamarajar Port itself owns two coal berths of combined capacity of 12mt. These two berths are for exclusive use by Tangedco. In view of growing requirements of coal by the power company the port will be building two more coal berths for Tangedco's use only. For other Indian ports, Kamarajar will stand an example of the correct way of bailing out stranded investors like Sical-MMTC JV.

Kunal Bose

China moots transshipment terminal for Valemax ships

Although China is continuing to refuse access to its ports by Valemax vessels, the Chinese ambassador to Brazil has noted that his country is interested in an association with Vale in respect of the transshipment of minerals from its bulk carriers to smaller vessels. The ambassador conceded that using the bigger vessels would help to drive down transport costs and that the transship cargo could then access Chinese ports.

In addition to an existing transfer station that Vale has established on the Philippines, it is currently building another in Malaysia.

Currently, it costs Vale \$22 to transport one ton of iron ore; moved directly from Brazil to China using Valemax vessels would help to save seven dollars per tonne. At present, Australian producers are \$10 cheaper compared to Brazilian output.

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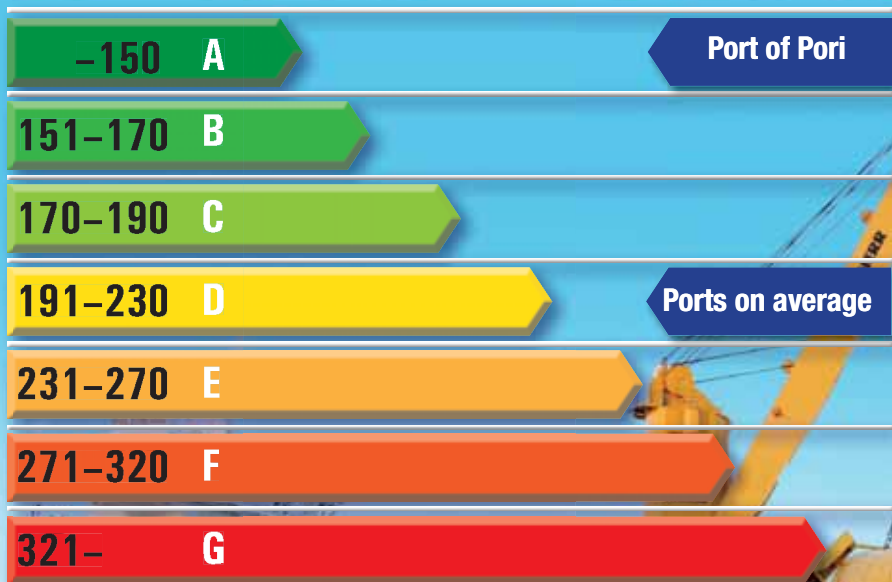
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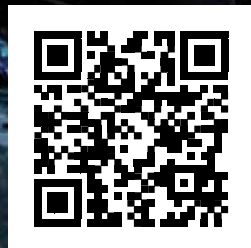
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New grain and wood chip terminal for Montevideo

In Uruguay, Obrinel has begun construction of a new grain and wood chip plant at the port of Montevideo. The work is costing \$100 million and will allow up to 210,000 tonnes of grain and 7,000 tonnes of wood chip to be stored at any one time. Currently, the port lacks a truck loading and unloading area close to stockpile zone.

In 2015, up to 1,000,000 tonnes of grain is expected to be stored at the port, a figure which is expected to do double by 2020. The new terminal is slated to commence operation in April 2015, just in time for the grain harvest.

It is viewed as being complementary to an existing facility at nearby Nueva Palmira port, although the 12-metre draught is 20% better, allowing fully laden vessels to sail from the port. There will be a quay dedicated to barge traffic, which will allow grain to be moved from the north to deep sea facilities on the coast. A minimum of 20 deep sea vessels is expected to use the terminal each year, although this could eventually rise to 50 vessels.

BC

Paita still too expensive

Agribulk exporters using the Peruvian port of Paita continue to complain about overcharging for various services in the five years that Terminales Portuarios Euroandinos (TPE) has been operating privately as a concession. However, the concessionaire is soon to finish modernization work, which includes a new container quay and the putting into operation of mobile harbour cranes, which could cut prices.

BC

Argentina to make use of Chilean ports

By the end of the current year, agricultural production from the north of Argentina will be dispatched from ports in Chile, with consignments moved by train via Salta. The rail concessionaire Belgrano Cargas is to renovate a 27km section of track, allowing rail services to financially compete with road haulage in that area. Consignments bound for Asia could, in future, make use of Antofagasta and Mejillones ports, in Chile.

BC

Transshipped soya commences at Nueva Palmira

At the Uruguayan port of Nueva Palmira soya transshipment has been undertaken at the deep sea quay, which consists of a pier with loading bays extended to the North and to the South, forming an effective 'T'. Stevedoring was undertaken by the Calmadon company, which has installed a state-of-the-art conveyor system there specifically for this. Inbound trucks, with consignments of around 30 tonnes, can offload directly onto a conveyor, which will then take the soya directly to a waiting vessel.

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New 1km quay wall in the Port of Ghent

Ghent Port Company is building a new quay wall at the Moervaart canal in port of Ghent. Adjacent businesses will be able to make use of this new port infrastructure in the course of 2015, which will enhance the safe and smooth loading and unloading of vessels. The Port Company will invest €8.7 million in the wall.

The quay wall will be built over a length of 1km from the corner of the Ghent–Terneuzen Canal with the Moervaart up to the bridge over the R4-East. The new quay wall will consist of steel sheet pile walls and will be constructed two metres in front of the existing one. The current quay wall is very dated, due to corrosion. Work has previously been carried out on this part of the Moervaart to keep the floor level and the present quay wall stable. In the future, the fairway will also be broadened.

The work will cost €8 million in all. For the Port Company, this is the biggest investment it will make in 2014 from its total port infrastructure budget of €19 million. Investing in, and maintaining, the port infrastructure is one of Ghent Port Company's tasks.

The companies in the vicinity of the Moervaart quay are active in the sectors of food, animal feed, kerosene, biofuels and building materials, among others.

LIMITING NUISANCE

The work started on 1 September 2014, and will take until the end of 2015. During the first three months, preparations will be made on the construction site so that the construction of the quay wall can start at the end of 2014. Its execution will be carried out in several phases in order to keep the hindrance for the adjacent companies to a minimum. The work will be executed by the Hye construction company.

THE MOERVAART

The Moervaart canal is 22km long and connects the Ghent–Terneuzen canal with the river Durme. Economically speaking, the canal has but little importance left. Only 1.5km is used for port activities, for the rest it is a haven for pleasure cruising between Ghent and Lokeren.

New minerals terminal for Matarani

The Peruvian port of Matarani is to open a new minerals terminal in the second quarter of 2015, which will be used to handle export consignments. It will be operated by Terminal Internacional del Sur (Tisur), which has invested \$230 million in the project. The loading capacity will be in the order of 2,300 tonnes per hour.

In particular, it will handle copper concentrates generated by Xstrata Copper at its Las Bambas mine. In addition, it will also handle output from the Cerro Verde mining company.

Tisur was granted a 30 year concession to operate Matarani in 1999 and has so far invested \$7 million in upgrades.

Trafigura continues South American expansion

Several ports in South America have opened new dry bulk facilities. The most recent is the mineral concentrates terminal at the Peruvian Port of Callao, in which \$163 million was invested. It is



Port of Callao.

being operated as a concession for the next 30 years and can handle up to 2,000 tonnes of mineral concentrates per hour. The terminal consists of a 3.5km conveyor network, which connects to a shiploader.

Terminal Porto Sudeste do Brasil is also due to open shortly, handling export iron ore from Brazil. It will be able to handle 50 million tonnes of iron ore annually when it begins operations in August, although this could increase to one hundred million tonnes per year over the lifetime of the concession.

The terminal is connected to Minas Gerais by rail, with services provided by MRS.

Both facilities belong to the multinational Trafigura group, which is present in Argentina, Bolivia, Brazil, Colombia, Chile, Ecuador, Paraguay and Peru. According to the company, it is prepared to invest a further \$200 million in the Peruvian port of Salaverry, which should open in 2016.

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*Moving breakbulk cargo at the Port of Antwerp
(© Antwerp Port Authority).*

Barry Cross

Belgian dry bulk market stagnant

A survey of Belgium's four leading ports indicates that business during the first two quarters was either stagnant or actually in decline, with forecasts suggesting little in the way of change for the year overall compared to 2013.

Belgium's leading port of Antwerp handles a wide variety of dry bulk commodities and has more than ten dedicated terminals given over to this type of traffic. Even so, in the first

six months of 2014, it reported a total of 6,870,625 tonnes of dry bulk, which was a decrease of 5% compared to the first half of 2013.

"Once again, the decline is mainly due to the amount of coal handled," says press spokesperson Annik Dirckx. She notes that, during the last six months, coal volumes fell by 30.5% to 839,642 tonnes. Part of the reason for this is that the port does not

have a coal power plant. A recent initiative to build such an installation was rejected, due to ecological and political reasons. Since the presence of coal traffic often attracts more coal traffic, the lack of the power plant is seen as a disincentive for other importers.

In addition, Antwerp has had a price setting issue with some railway operators in Belgium. Competitors in the Netherlands, however, were able to offer better prices for the transport of

coal by rail, so this caused Antwerp to lose some contracts. Subsequently, although the price setting issue has been resolved, short-term recovery of contracts has not yet taken place.

In contrast, ore traffic rose 9.2% to 1,361,762 tonnes and sand and gravel went up 23.9% to 646,062 tonnes. "These commodities registered significantly better figures than in the first half of 2013," she adds. "We don't give forecasts, but we hope to continue growing at the same pace for the rest of the year."

Her colleague, business development manager Wim Dillen says that there is more than sufficient capacity to handle existing dry bulk traffic. In addition, potential exists to grow facilities to cope with any anticipated increase in commodities.

As for the type of vessel accessing the port, he notes that, thanks to the large and wide locks on the Scheldt River, even Capesize vessels can be docked, since there is a maximum draught of 15.56 metres. However, the Port of Antwerp is



Bulk loading at the Port of Antwerp
(© Antwerp Port Authority).



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(© Antwerp Port Authority).

Significantly, half of the 1.3mt (million tonnes) of sugar exported annually from Europe is handled by Antwerp. CEO Thomas Hubbuch of the sugar company Tiense Suiker notes that the port serves practically all destinations in the world and has the best terminal operators for storing and transshipping sugar.

Jan Bruyneel, terminal manager of the Manufert division of Euroports Terminals Antwerp explains that Antwerp is centrally located within the European sugar belt. "The loamy ground and the climate with just the right amounts of rain and sun make this region ideal for sugarbeet," he says, noting that this is the main reason why Antwerp has become the main European port of export for sugarbeet.

Indeed, the Manufert terminal remains one of the largest sugar handlers in Antwerp, with a storage capacity of 260,000 tonnes of refined bulk sugar. Bruyneel believes that it is the flexibility of the port that naturally attracts sugarbeet traffic, because this allows sugar operators to react very quickly and to get shipments to their destination efficiently. "Not only are there good transport connections by rail, road and barge between the port and the European hinterland, but also the port of Antwerp has the highly trained personnel with the necessary

located alongside a tidal river, so the maximum draught at any given time depends on the tides, too.


"After realization of the new lock on the left bank, it will have draught up to 17.4 metres," says Dillen, adding that major bulks, such as coal and iron ore, are invariably carried in Capesize vessels, while minor bulks, such as industrial minerals, grain, scrap, concentrates and so on, tend to be loaded in smaller Panamax vessels.

On the land side, most dry bulk consignments are moved by inland waterway, although rail also plays an important role. Wherever possible, the preference is not to move commodities by road.

"The Port of Antwerp actively promotes modal shift in favour of barge and rail," says Dillen.

He points out that Antwerp is famous for its high productivity which results in shorter handling times and therefore lower handling costs. Additionally, storage costs are very favourable compared to other neighbouring ports. Overall, port dues are competitive, even though 'river costs' — pilotage and the use of tugboats — are an extra cost for a river port like Antwerp compared to coastal ports, such as Rotterdam in the neighbouring Netherlands.

"Luckily, thanks to the advantages mentioned earlier, together with more favourable hinterland costs and the cargo generating factor of being so close to the large industrial and commercial centres of Europe, these allow us to be very competitive indeed," says Dillen.



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*Scrap at the Port
of Ghent.*



technical qualifications to create clear added value,” he says.

In the first half of this year, Belgium’s second largest port, that of Ghent, whose traffic mainly consists of various dry bulk commodities, handled a combined 24mt of traffic, broadly similar to the figure posted last year. Deep sea and coastal volumes increased by 5.8%, although inland waterway traffic was down 6.4%.

However, during the vibrant second quarter, almost 12.4mt was handled, being the best result for almost two years, with 720,000 tonnes more reported than for the first quarter of the year. Indeed, for April–June 2014, there was a total of 6.8mt of sea cargo (up 6.3% increase), while inland waterway traffic amounted to almost 5.5mt, down 7.7%.

According to Daan Schalck, CEO Port of Ghent, there was an increase in seaborne agricultural products, solid mineral fuels, ores and metal residues, and chemicals. However, metallurgical products, among others, were down.

As for inland navigation, raw minerals and building materials rose notably, which was offset by a drop in the amount of agricultural products and solid mineral fuels moving inland by barge.

“Overall, the amount of dry bulk handled by deep sea and coastal vessels increased,” said Schalck.

Significantly, in July, Belgian Eco Energy (BEE) announced that it was to build a new biomass power station — Bee Power Gent — on the Ghent Coal Terminal site on the Ghent–Terneuzen Canal. As part of the deal, BEE has entered into a long-term agreement with both the SEA-invest stevedoring company and with Ghent Port Company. SEA-invest will acquire the necessary cranes, conveyor belts and storage silos.

“The vicinity of the water is necessary because the biomass (short-rotation wood chips and agro-waste flows) will be supplied on board seagoing vessels, both via transatlantic and European transport. The biomass used will be 100% sustainable and checked every two years by external parties,” noted Schalck, adding that residual heat produced by the plant will be used by companies in the port and also in neighbouring residential areas.

The plant, which is slated to open in the third quarter of 2017, will also meet the strictest emission standards as to dust, nitrogen and sulphur.

As for other investment, of the €12 million profit posted in

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2013, €5 million has been allocated to the project to build a new sealock in Terneuzen, while the remaining €7 million has been set aside for further infrastructure development.

Flanders and the Netherlands have jointly decided to build the new, larger sea lock in Terneuzen by 2021. Last year, an engineering firm was contracted to draw up the plans for this lock, with a Draft Route Resolution to be published by early 2015.

Another important investment is being made in a single, cross-border, integrated port information system. As of next year, ships calling at Ghent or at the Dutch ports of Vlissingen and Terneuzen, which are administered by Zeeland Seaports, will be able to transmit all their data electronically via one and the same system. "This will be more efficient and less expensive than the two individual systems that are currently in use, and it will also be a major step towards coordinating the flow of shipping traffic through the planned sea lock in Terneuzen," notes Schalck.

Ghent port operators also continue to invest in installations. In May this year, Belgium's oldest stevedoring company, Stukwerkers Havenbedrijf, opened a new, €6 million warehouse. The facility, which has been built on Grootdok quay on the site of a former, smaller warehouse, is aimed mainly at accommodating rising fertilizer traffic. It covers an area of 8,000 square metres and can hold up to 60,000 tonnes of dry bulk at any one time.

Stukwerkers subsequently announced it had signed a contract with an existing customer, OCI Nitrogen, for the storage and transshipment of artificial fertilizer thanks to having the new facility. Consignments arrive at Ghent by barge from the Netherlands, from where they are exported to mainland Europe, the UK and further afield by either barge or ocean-going vessel. The aim is to handle 300,000 tonnes annually, although this could be further enhanced when shipments are moved from barge to sea transport.

Ghent is unusual in that half of all cargo that it handles is transported on board inland waterway vessels.

A study, carried out in 2012, found that inland waterways carried 50% of all cargo, while road accounted for 42% and rail 8%. The original target was for inland waterways to handle half of all traffic by 2020, with road dropping to 35% and rail rising to 15%.

Schalck observes that road haulage is slowly decreasing, while inland navigation is on the rise. Rail, however, remains a concern, with traffic down by more than 2% and predicted to diminish even further.

For the past few years, the combined total of liquid bulk, dry bulk and break bulk traffic at the Belgian coastal Port of Oostende (Ostend) has remained steady at around 1.5mt. This type of cargo is mainly handled in the lock-protected inner harbour, but also at the deep water quay, which is located in the tidal outer harbour.

In first six months of 2014, Oostende handled 770,000 tonnes, representing growth of 2.4%, prompting port authority spokesperson Jan Allaert to forecast end-of-year traffic similar to

last year's figure.

In terms of investments, the various port operators have financed construction of additional storage facilities in recent times, but otherwise have sufficient capacity to accommodate future growth.

"Oostende is essentially a short sea port, which means that we almost only handle cargo coming from or going to Europe. Most of the general cargo, which includes dry bulk, is transported via coasters to our port. Therefore, the biggest cargo vessels we receive tend to be sand dredgers," says Allaert.

Land side, most consignments are moved by road or inland waterways. Although there is a rail link, operators are only interested in rostering block trains, since otherwise they would not be profitable to operate.

"At present, the quantities we generate are not big enough to justify complete trains," says Allaert, who also notes that some cargo arriving at Oostende is also used immediately in production facilities or factories actually located in the port.

He points out that, while overall volumes handled at Oostende do not vary from one year to another, the various commodities have diversified greatly.

Three companies (NHM, Sagrex and Deme Building Materials) are now active in the sand and gravel market, with all three unusually having terminals in the tidal area of the port. This gives them a major advantage over other Belgium ports in terms of vessel turnaround times.

Import consignments of ferro-silicium ore, inbound from Scandinavia, mainly Norway, also pass through the port. The product, which is mostly used by the construction industry, is calibrated, broken and finally stuffed in containers within the port before being exported to end customers worldwide.

Two years ago, Oostende opened a dedicated salt depot, which holds consignments imported via inland barges and coasters. However, volumes are influenced greatly by the severity of winter weather and can therefore vary significantly from one year to the next.

Imported timber is another feature of the port's dry bulk traffic. Logs are regularly imported, with the majority sourced in the Baltic States. These go to factories located within a radius of 300km from the port. Allaert says that the port authority is trying to increase this kind of traffic, but the forestry products sector is known to be highly volatile.

Like several other European ports, Oostende has also moved into the wood pellets sector, receiving its first import consignment at the start of the year. The mild winter meant that traffic was relatively weak, but those companies involved want to develop the port as a hub, with more shipments due to arrive at the end of the year.

Sepeolite, one of the major ingredients in cat litter, was first imported some 15 years ago and Oostende is still used as a main distribution hub. Significant added value — calibrating and stuffing — takes place in the port, with the final products exported to Benelux supermarkets.



The Port of Ghent.



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*Port of Oostende
(Ostend).*



In 2013, the port opened a dedicated storage facility for fodder, including obtaining all the necessary health certificates. There is now an irregular trade in this commodity, too.

Despite its small size, Oostende receives a monthly call from a vessel conveying coal exports from the UK. The coal is then stuffed into 5–10kg bags and exported to northern France, where a lot of houses still use coal as a major source of heating.

In addition, Oostende also sees shipments of both orthoxylene and sodium silicate.

The Port of Zeebrugge reported handling 596,242 tonnes of dry bulk in the first six months of this year, which was a decrease of 14.9%. This was the result of less imported sand and gravel.

According to port spokesperson Joke Swyngedouw, total traffic at the port should amount to 43.61 mt for the year as a whole, an increase of 3%, although dry bulk is expected to be significantly less than last year.

In terms of investment in dry bulk infrastructure, both the outer port and inner port have seen an expansion in capacity thanks to private sector funding of new facilities.

“The port currently has sufficient capacity to handle existing and expanding traffic. However, any major new projects would be looked at with keen interest, with the port authority willing to consider matching investment,” says Swyngedouw.

As for draught, this is 16 metres in the inner harbour, falling to 8 metres at Brugge, which is more than sufficient for all large bulk carriers currently using the port.

At present, the largest dry bulk carriers seen at Zeebrugge specialize in forestry products, drawing up to 13 metres of water.

“Obviously, we see a variety of different vessel sizes. Sand and gravel, for example, are carried by much smaller vessels, which require a draught ranging from five to seven metres,” says Swyngedouw.

Most dry bulk nowadays leaves the port by truck, some as transshipment; some consignments also go by rail or via inland waterways, although the quantities involved are not as great.

“It is all a matter of logistics cost and reception possibilities at the other end as to whether rail or barge are used. Sometimes, rail heads are not close enough to the end customer, while other cannot always receive barges,” he says.

Dry bulk commodities handled are mostly sand, gravel, forestry products, fodder and grain. However, Zeebrugge is not limited to these, since Swyngedouw points out that, nowadays, handling and storage technology is such that the port can guarantee a clean operation, with safeguards concerning this written into the port authority’s clean port policy.

Being a coastal port, port fees charged by Zeebrugge are simple and easy to calculate, he adds. As a result, the cost of accessing port service are both moderate and competitive compared to regional rivals.

Moreover, as a mid-size port with available capacity, Zeebrugge can also accommodate customers wanting to set up a strategic hub operation.



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Port of Amsterdam eyes the container market

Amsterdam aims to develop its role as a multipurpose hub for Northern Europe by making more use of idle container berths.

The Port of Amsterdam is looking to diversify its cargo portfolio by attracting project and breakbulk traffic to Amsterdam Container Terminal (ACT).

Port of Amsterdam helped fund the building of a state-of-the-art container terminal in the late 1990s on a 54 hectare site. It was launched in 2000 and featured an 'indented' berth to enable cranes to work on ships from both sides. The idea was to offer shipping lines a real alternative to Rotterdam's array of container terminals. But, despite a series of ownership changes, the facility never really gained a foothold in the box market and ceased operations in 2012.

Now Amsterdam's management intend to redevelop ACT as a multipurpose hub facility for breakbulk, roll-on roll-off and project cargoes. "We never attracted the container volume we'd hoped for," admitted Marcel Gorris, head of cluster Agribulk, Minerals and Recycling. "But it's a beautiful terminal so we are now looking to work with other port companies to add project, breakbulk and ro-ro cargo to the container traffic. Two companies have the intention to start operations soon, so we're expecting a lot more business in the future."

So far it has been confirmed that MEO, a stevedoring company already active in Velsen near IJmuiden, will transfer its activities to the ACT terminal in Amsterdam. It will focus on containers, project cargo, offshore wind, breakbulk and conventional cargo including steel, wood and pipes. Talks are ongoing with a second un-named party, but a range of potential operators have expressed an interest in using ACT.

"There are lots of large offshore wind projects at various stages of development in Holland, the UK and other countries and the new operators will try and get into these markets," said Gorris.

The re-opening of the terminal will further boost already thriving traffic at the port. In the first six months of 2014, port of Amsterdam volume rose by 5.4% to 51mt (million tonnes). Energy-related cargoes, particularly coal, proved to be the prime generator of throughput growth.

Coal volumes were up significantly compared to a year earlier to reach 10.3mt in the first half of the year. However, after such an explosive start to 2014, slower growth in coal handling is expected in the second half of 2014.

Gorris explained that the rapid expansion in coal throughput in the first six months had been down to consumers in Germany and the Netherlands restocking inventories that had been run down in late 2013. "We don't think the increases of the first half will continue," he said. "The stocks in Amsterdam and stocks held by end users are full now, so the increases will slow."

Volumes will also be affected by the shutdown of one Amsterdam power plant which is undergoing maintenance. "It has been closed for four months and should reopen in a few months," he said. "This has meant 1mt less of coal coming through the port in 2014 than we would normally expect to handle. So, considering that, we're having a good year."

Indeed, even with the slight slowdown in growth forecast in the second half, coal volumes are still expected to rise above the record 18.5mt handled in 2013. "We're already a long way ahead of last year so even when it slows we're still anticipating a small increase," said Gorris.

EU sanctions imposed against Russia as punishment for its actions in Ukraine have not translated into any concrete changes in coal sourcing, with Colombia still the main supplier but Russia and the US also providing options for importers. However, US supplies received by Amsterdam have fallen away this year due to higher domestic coal prices in the US and bearish global prices. "Coal prices are low so this is encouraging the use of coal instead of gas in Europe, but low prices are not helping US exporters," explained Gorris.



Rail — the way forward

Amsterdam has always tried its utmost to encourage the use of rail for the onward shipment of cargo arriving at its multiple terminals.

At present, 80% of bulk cargoes are forwarded by barge and around 10% by rail with the balance trucked. A link from OBA's terminal to the Betuweroute rail track to Germany has boosted coal volumes onward shipped by rail in recent years.

Last year a new rail shuttle to Berlin started and this is now boosting the volume of cargo arriving at the port in bulk and railed out.

"This cargo is mainly cocoa beans which the shipper containerizes and then rail to one of their factories near Berlin," said Marcel Gorris, head of cluster Agribulk, Minerals and Recycling at Port of Amsterdam.

He said the weekly shuttle to Berlin was just one part of a multi-faceted strategy to boost the proportion of cargo leaving the port by rail. "In future a lot more cargo will go by rail," he said.

"The main reason is to do with climate change. The water levels of the River Rhine are often lower now than they used to be so sometimes during the year companies want to use rail as an alternative to barge. If cargo is destined for Austria or Eastern Europe customers want a rail option for when the cost of barge rises or when there is too much or too little water.

"I think about 10% of the cargo that currently moves by barge could eventually move to rail."



Agribulk volumes including fertilizers fell by 2.7% in the first six months to 4.7mt, a decline Gorris said was down to a natural slowdown after major gains last year. "We had a very good year in 2013 when problems in large export ports in Brazil early in the year and in late 2012 then resulted in a huge surge in volumes of soybeans and soya derivatives in the second half of the year," he said. "After that big wave of imports there are now ample stocks so that's why volumes are down a bit this year. The big companies expect that at the end of this year Brazil's exports will increase again, probably in the last quarter. But until then it will be a bit slower. Overall agribulk volumes will be about the same as last year — we expect about 8.2mt."

Elsewhere at Amsterdam's numerous wharves, the opening of Alba's new scrap terminal has been a major positive. "Scrap exports have been strong and we're expecting to handle about 1.1–1.2mt this year compared to 0.9mt in 2013," said Gorris. "A lot of the exports are going to Turkey, but smaller volumes are also now being shipped to India."

He said tighter European regulations on household waste disposal regulations had also proven a positive for the port. "The regulations are stricter on how waste can be dumped," he said. "So now we're seeing an influx of waste, mainly from the UK, to Holland, Scandinavia and Germany — countries which have spare capacity to incinerate waste, unlike the UK which has large taxes on waste that is dumped in landfills.

"We'll handle almost half a million tonnes of imported waste this year. It is used as an energy source for the Amsterdam waste-fired power station (AEB)."

Amsterdam is also gaining from investments made by its leading stevedores. The deal which saw OBA acquire

Rietlanden's 9-hectare enclave has now been pushed through and will boost the operating efficiency and capacity of the former's facility. The stevedore has also now installed a new 60-tonne gantry crane which replaces a 30-tonne gantry crane built in 1954. The new crane and associated conveyor belt system cost €15 million and means that OBA, Europe's second-largest coal terminal and storage facility after Rotterdam's EMO, now has at its disposal the three largest bulk handling cranes in Amsterdam.

"The new gantry crane, which is capable of lifting 60t at once, is among the largest and fastest cranes in the world for loading and unloading dry bulk cargoes," said HES Beheer, the majority stakeholder in OBA. "It has a peak capacity of 3,500 tonnes per hour when handling coal. This represents a substantial increase in unloading capacity and efficiency,

Biomass is also expected to be a major boon for the Port of Amsterdam in the coming years. Gorris said that volumes of biomass had been stable for much of the last five years, but new plans to reduce emissions in the Netherlands will see volumes increase.

"We are expecting power stations in Amsterdam and elsewhere in the Netherlands to switch from coal to biomass so we hope next year or the year after we will get more biomass. By 2016 or 2017 these volumes will be coming into port and we're expecting about one to two million tonnes per year, most of it probably to be imported from the US and Canada."

And a final decision on the construction of a new sea lock near IJmuiden which managers hope will give the port and its users a major boost will now be taken in November. Gorris said the locks would be crucial to ensuring Amsterdam sustains its growth and position as Western Europe's fourth largest port.

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- ❖ one floating crane, 36 tonnes lifting capacity;
- ❖ seven fully automated stacker reclaimers;
- ❖ three barge loaders;
- ❖ one sea shiploader;
- ❖ three fully automated coal wagon loaders, two for coal, one for iron ore;
- ❖ 160ha stockyard; and
- ❖ high-tech operations centre.

EMO FIGURES 2013

Unloading	35mt
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Trainloading capacity	22 trains daily

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Managing Director: Hans Fylstra (hans.fylstra@oba-bulk.nl) +31 20 5873701

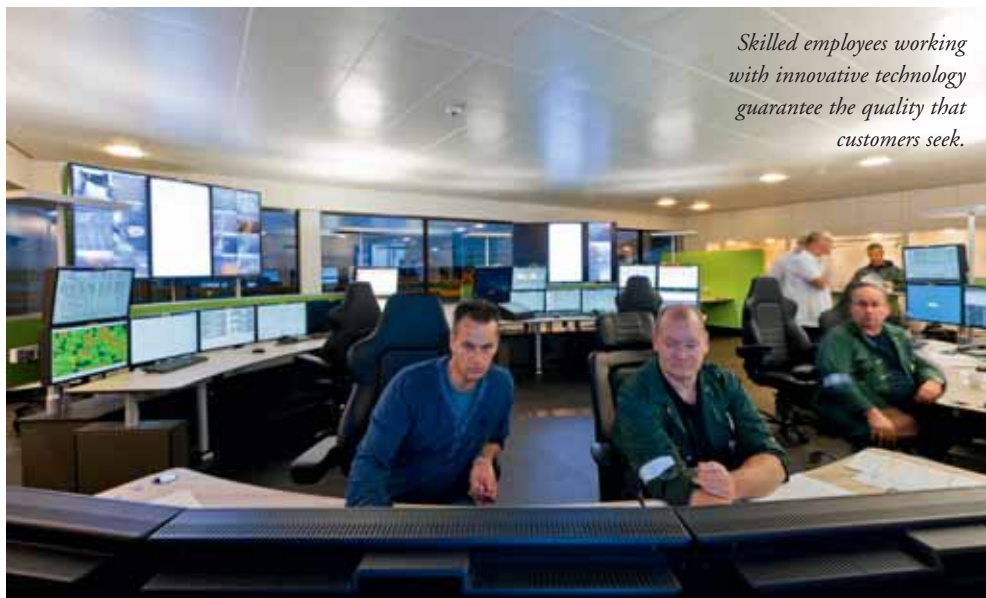
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New plants E.ON en GDF Suez in Rotterdam

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

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Traffic up at Rouen and Calais, but down in Bordeaux



Port of Rouen.

The French river port of Rouen is Europe's largest grain exporter, welcoming 3,000 deep sea vessels annually and double that number of river barges.

For the half year to the end of June, it handled 5.8mt (million tonnes) of dry bulk, compared to 5.41mt in the first six months

of 2013, which is an increase of 7%. According to port spokesperson François Henriot, three main areas are responsible for the upswing in traffic: cereals, which increased from 3.9mt to 4mt; aggregates, which grew from 302,000 tonnes to 454,000 tonnes; and fertilizers, climbing from 188,000 tonnes to 307,000

Port of Rouen.



tonnes. Coal, however, was down from 214,000 tonnes in 2013 to just 131,500 tonnes.

According to Henriot, "In the first six months, both wheat and barley performed well. Indeed, the whole 2013–2014 harvest generated traffic of 7.45mt, which was an increase of 12.4% over the corresponding 2012–2013 campaign. When Rouen does well, it is usually the result of both good quality and quantity of the grain harvest in our hinterland, which allows us to be globally competitive."

He notes that aggregates had benefited from new highway construction in the region, with a part of an expected total traffic of 800,000 tonnes dedicated to this particular project. Furthermore, the port recently re-opened a marine aggregates unloading station.

The decrease in coal he attributes to the mild winter in the Île-de-France region.

In terms of investment, Rouen is nowadays reaping the benefit of having very good quality grain terminals, which are used by five operators; these are capable of housing 1.3mt of agribulk products. Capacity, notes Henriot, is now more than sufficient to handle future growth in dry bulk traffic.

The main upgrade to the Port of Rouen involves improving its maritime access. In total, €175 million is being spent to deepen the draught by one metre to 11.7 metres along the entire 120km access channel from the sea, with full implementation slated for the beginning of 2018. For the current year, the second phase, which includes the extension of the Hautot-sur-Seine turning circle, is being undertaken. Once fully functional, the port will be able to load consignments of up to 54,000 tonnes of cereals, compared to 45,000 tonnes at present.

Currently, Rouen does receive visits from Capesize vessels,

although these cannot sail fully laden given draught restrictions. In December 2009, for example, the 290-metre long *Royal Accord* docked, conveying 77,784 tonnes of imported coal, while in July 2013, the *Ocean Clarion* offloaded a 77,000-tonne consignment of coal.

As for land side transport of dry bulk, around 70% of cereals movements are undertaken by road in the main hinterland, comprising the regions of Beauce, Picardie and Normandie. Rail has a market share of 9–10%, while inland waterways account for 20–21% of this traffic, the large percentage being down to the fact that all operators have recently renewed their river discharge equipment to help boost market share.

Quizzed as to whether Rouen's charges make it an attractive port to do business with, Henriot concedes that additional pilotage charges for vessels coming up the Seine do have to be taken into account. Having said that, these also cover river access as far as the western boundary of the Paris Basin, France's most important in terms of the number and wealth of its consumers.

In contrast to Rouen, for the first five months of 2014, the French Port of Bordeaux handled 1,283,616 tonnes of dry bulk traffic compared with 1,742,933 tonnes in the comparable 2013 period. This represented an overall drop of 26.4%. Of total dry bulk traffic, 59.4% was imported and 40.6% exported.

According to port development officer Sylvie Saint-Vignes, there were several factors influencing the decline in traffic, with the quality of the grain harvest and the world market price depressing demand. Scrap metal exports to Spain were also hit by the poor state of the economy in that country, prompting logistics companies to switch consignments elsewhere, while coal volumes have also been undermined by economic factors.

"Our forecasts suggest we will have handled in the region of

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8.5–8.7mt of dry bulk by the end of the year,” says Saint-Vignes. She anticipates increases in construction materials, aggregates, recycled crushed glass and wood chip, with decreases in tropical timber, wood pulp, grains and coal.

In terms of port layout, Bassens Harbour is a multi-purpose hub; Blaye concentrates on grain and liquid bulk, with some heavy-lift cargo; and Le Verdon can accept industrial bulks. These will be joined by the new mid-river development at Grattequina in 2015. Today, a total of four dedicated terminals handle dry bulk, consisting of aggregates, clinker, industrial sand, quartz, coke, fertilizer and constituent raw materials, and cereals. The Port of Bordeaux is a major export hub in south-west France for cereals.

In terms of dry bulk investment, Bordeaux has two important projects scheduled for 2015. At Le Verdon, a new private operator, Europorte, is due to start operations. While ostensibly a container handling area, Le Verdon’s deep water berth will also provide additional capacity for handling industrial dry bulk.

In addition, a new terminal, Grattequina, is due to open on the left bank of river Garonne. A total of €14 million has been invested by the port authority and its partners, with the terminal specializing in out-of-gauge components for the wind energy sector and in the supply of aggregates for the Aquitaine region.

Capacity for dry bulk at Bordeaux will therefore increase to around 4.2mt annually, spread out over seven dedicated terminals, of which three handle industrial bulk. Services are provided by two private stevedoring companies, with storage mostly provided at the Bassens multimodal terminal or at Le Verdon, where more than 200 hectares are available.

At Bassens, a maximum draught of 10.5 metres allows bulk carriers of up to 45,000 tonnes to be accommodated, while in Le Verdon this increases to 12.5 metres, sufficient for 60,000-tonne vessels to call. Saint-Vignes also points out that the port’s access channel has also been recently upgraded to improve navigation safety.

The largest ever bulk carrier to call at Bordeaux was the post-Panamax *Yeoman Bridge*, which loaded up to half of its nominal 96,000-tonne capacity in order to comply with the maximum draught at Bassens, where it discharged 55,000 tonnes of aggregates. However, depending on the commodity being handled, vessel sizes can vary considerably. Cereals, for example, are shipped out on 5,000–25,000dwt vessels, while aggregates require bigger ships of up to 30,000dwt. In contrast, wood pulp and chips make use of smaller, 3,000dwt bulk carriers.

Landside movement of dry bulk involves inland waterways, as well as more traditional road and rail. Saint-Vignes points out that all the port rail infrastructure is being renewed on a step-by-step basis.

Quizzed as to whether Bordeaux is regionally competitive in terms of fees and

Handling soya at the Port of Bordeaux.



costs, Saint-Vignes points out that, given a record year in 2013, when more than 9mt was handled, it appears that the port’s clients are satisfied with its tariffs and services.

The French Port of Calais, which mainly handles short sea

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Bulk vessel unloading at the Port of Calais.

and ferry services to and from the UK, handled 192,000 tonnes of dry bulk during the first half of 2014, which is a 1% increase over the comparable 2013 period. Main dry bulk commodities handled at the port are pet coke, titanium ore, aggregates, stones and sand.

Port Development Head of Studies, Frank-Edouard Tiberghien, notes that titanium ore volumes have doubled to 56,000 tonnes, thanks to the completion of revamping work at the nearby Tioxide plant. Aggregates, in contrast, have decreased

in volume, reflecting the crisis in France's construction industry.

"We don't generate end-of-end forecasts as such, but we believe that volumes handled in 2014 should be broadly similar to those of last year," says Tiberghien.

In terms of investment, as part of the construction of the Railmotorway Terminal along the Deepwater Quay, some dry bulk activities there might be re-developed, with operations switched to Bassin Carnot, which is a lock-protected basin. Future investment might also be made in a further hopper.

"As for capacity, we now have sufficient to handle any predictable growth in this sector," he says.

The Port of Calais presently offers a maximum draught of 12.5 metres at its Deepwater Quay, which has handled vessels of up to 200 metres in length in the shape of Federal Hudson Class.

"There is no inland waterway connection at Calais, so all consignments leaving or entering the port do so by road," says Tiberghien.

Asked about Calais' pricing policy as a means of attracting traffic, he notes that the port's duties are competitive and in line with what other ports in the region charge.

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Entrance to the Port of Calais.



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A Cat 966 being loaded on a Panamax vessel in Gdansk (Poland).

Originally from Belgium and based in Ghent, SEA-INVEST has grown into one of the world's largest terminal operators for dry bulk, fruit and liquid bulk. Its core activity is loading and unloading cargo vessels. With an annual tonnage turnover of 100mt (million tonnes), the company is active in 25 ports spread across two continents and eight countries: Belgium, France, the Netherlands, Poland, Ivory Coast, Senegal, Cameroon, and Tunisia.

SEA-TECH

SEA-TECH was created as a subsidiary of SEA-INVEST in 2001 and is dedicated to port and handling engineering. Historically, dedicated to the design and implementation of handling port activity, SEA-TECH has grown with the projects it has been entrusted with for almost ten years, both in and outside of the group SEA-INVEST. Thanks to its experience, the company can respond to all issues of planning and ports logistics. SEA-TECH has established a team of engineering and maintenance specialists dedicated to technical missions to assist its customers in daily monitoring of equipment installed on site.

SEA-TECH has structured its organization and its methods of work around engineering and maintenance to fulfil requests from terminal operators and contractors and to solve their engineering problems and to offer technical assistance in the

field of cargo handling and port logistics. SEA-TECH has established a team of specialists dedicated to technical projects to assist its customers in daily monitoring of equipment installed on the site.



Sébastien Ghesquière, President of SEA-TECH (Martigues, FRANCE). "When it comes to dry bulk equipment for ports applications SEA TECH responds to diverse issues and port logistics working closely with Cat dealers"



A Cat 914 working inside the hull of a ship.

A technical management presence on each monitored site allows SEA-TECH to enjoy great feedback on the solutions implemented in their operating environment. Different from a classic engineering office, Sea-Tech has distinguished itself particularly in projects that are better adapted, durable and more economic in the short-, medium- and long-term perspectives.

THE KNOW-HOW

SEA-INVEST's leading expertise includes port handling and storage of liquid or solid bulk. SEA TECH is in charge of designing and realizing most of SEA-INVEST's terminals as well as those of private customers. SEA-TECH developed many solutions for the handling, the storage and the logistics of terminals throughout the world. The company enjoys a privileged relationship with port authorities, which enables them to optimize their activities. Whether for handling coal, bauxite, cement, aggregates, scrap metal, biomass, or other dry bulk

cargoes goods each solution is based on the expertise and know-how of SEA-TECH.

The company has equipped its terminals with nearly 200 Cat® wheel loaders, from 914 compact wheel loaders to 988 large wheel loaders. Mainly 966 and 988 on big vessels in Europe, and 950 and 980 on smaller vessels in Africa, to handle dry bulk. Cat dealers support SEA-TECH in responding to the group and its clients' needs.

PORT ACTIVITIES

The clinker terminal of Abidjan, Ivory Coast

This terminal is designed to receive 200,000 tonnes per month of clinker or fertilizer and export minerals. Ships are unloaded in 48-72 hours by a mobile crane on tyres. The dry bulk products are directly fed into a hopper which filters the dust. It is then loaded on trucks or connected on mobile conveyors band. Cat 950 supports cranes to load and unload vessels between 25,000 and 40,000 tonnes, and feed bagging machines



A Cat 950 stockpiling fertilizer in Abidjan.



A Cat 988 stockpiling iron ore in Gdansk (Poland).

for fertilizer. Cat 980 works on different stockpiles and support cranes during loading minerals.

The bulk terminal of Gdansk, Poland

Located on the Baltic Sea and originally designed for coal, the port of Gdansk now handles products for the steel and civil work industries such as iron ore and aggregates. Ships are unloaded with a crane directly linked to a 15-ha stockyard. Stacker reclaimers and conveyor belts automatically feed the trains and vessels loading systems. This terminal is equipped with three Cat 966 with bucket capacities of 2.5–9.2m³, that go in the ship hold and load the vessels of Capesize. Three Cat 988 with bucket capacities of 6.4–7.6m³ help manage the stockpiles of cargoes. One Cat 262 skid steer and a Cat 914 wheel loader pick-up the spills and sweep the areas to keep the terminal clean.

Cat wheel loaders are equipped with high performance engines and efficient hydraulics, especially effective when working at the bottom of the pile, to move large volumes of materials in fewer passes. With salt and humidity, the marine environment is rough on the equipment. Corrosive products such as fertilizers and coal can further impact the machines condition and components life. For such environments, Caterpillar offers an anti-corrosion package which provides extensive protection to vital machine components and surfaces typically affected by corrosive materials. In addition, the anti-corrosion paint process provides a paint thickness that is more than twice the standard thickness for extra resistance.

THE SEA-TECH FLEET OF CAT WHEEL LOADERS

In Europe:

Cat 988 K series marks the 50th anniversary of the 988 delivering reliable, profitable performance for worldwide customers. Designed as an optimum dry bulk handling equipment for port applications, the Cat 988 features enhanced loader linkage; meets various emission standards, drive train improved cab and enhancements in safety and serviceability. For added safety there is a remote panel, which houses a stairway light switch, engine shutdown switch, and lockouts for the

transmission and engine starter. A second panel provides convenient access to the battery disconnect switch and a jump-start receptacle. A rearview camera system provides crisp images via the in-cab monitor. Routine maintenance points are easily accessed, including hydraulic pressure taps and oil sampling ports.

Cat 966 model is commonly used in aggregates, sand and gravel, batch plants and industrial applications where Cat machines help in poor underfoot conditions to respond to challenging job deadlines. With its ability to engage on-the-go and to transfer 100% of the torque to the wheel with traction, the disc-type differential locks will improve tractive ability in these applications thereby increasing productivity. The Cat Fusion™ coupler allows to quickly adapt bucket size to the density of material without impacting the performance of the machine since the centre of gravity of the load remains almost unchanged. In this confined working environment, operators also enjoy the comfort and ease of operation of the light effort seat mounted controls for steering and hydraulic implements. Additional high efficiency lighting and guards customize the machines to this severe application.

In Africa:

The Cat 980 model offers performance with the capability to work in the most demanding applications. But it also offers an unmatched operator comfort and efficiency in a world class cab. Revolutionary electronics and hydraulics are integrated for low-effort operation. Cat 980 increases productivity with equates lower owning and operating costs.

Cat 950 is well-suited for stockpiling, truck loading, material handling, hopper charging and load-and-carry work in applications such as sand and gravel stockpiling, coal operations, storage yards, concrete for job-site preparation and general cleanup. The loader also is an exceptional choice for governmental bids, offering agencies a well-designed, durable machine that fits the budget. The result is a machine of exceptional value.

Caterpillar and its dealership organization are focused on bringing solutions to SEA-TECH

EU Stage IV engine regeneration system

SEA-TECH voiced concerns about regeneration and interruption of the work cycle, but Caterpillar explained its after-treatment regeneration strategy for both Stage IIIB and Stage IV is transparent to the operator and does not interrupt the operation of the machine. "A 966 & 988 can work for three consecutive days thanks to the engine regeneration." However, apart from during the shift change, the machines are run continuously for approximately eight hours. This allows the Cat 966 and 988 to operate without regeneration needed during their full shift, up to approximately 32 hours. This operation can also be carried out manually when the operator is having a break. Indeed, the regeneration process doesn't affect the machine performance; once working in normal conditions the Diesel Particulate Filter (DPF) hardly builds-up soot. The Cat 950 is even easier to use since it needs passive regeneration only.

Cat wheel loaders achieve a better fleet efficiency

SEA-TECH's investment strategy is to rationalize the configuration of its wheel loaders. The main objectives are to simplify the investment process and to increase fleet efficiency, utilization and management. A standard configuration can be used on multiple jobs with multiple work-tools. In addition, the Cat next generation Vital Information Management System VIMS™ provides extended features to the operator, including real-time fuel consumption and fuel efficiency (material loaded per unit of fuel) data through an interactive touch screen. These new technology and service provide an increasing ability for customers to monitor, manage and enhance operations. The main objective is to improve control over their operation reducing their cost and increasing their profit.

It's the reason why, as the next step SEA-TECH would like to deploy VisionLink® web interface to manage fleet effectiveness and increase productivity.

Global Cat dealer network

Another critical aspect to port applications product offering is Caterpillar's ability to support its machines with an active dealer network throughout the world. In addition, the local dealer has a real impact on SEA-TECH choice of machines and maintenance options. The comprehensive product support solutions helped convince SEA-TECH to choose Cat equipment to maximize uptime and to benefit from the highest return on their equipment investment. With the ability to handle a multitude of materials such as aggregates, fertilizers, minerals, coal, ores, woods and vegetables, machines are in operation



A Cat 988 managing iron ore stockpiles in Gdansk (Poland).

across two continents in the harshest environments. From the blistering summer heats of the Ivory Coast to the chilling winter winds of Netherlands, the local dealers are helping from choosing the right machine to knowledgeable support.

Operator's safety

Mobile equipment manufacturers are playing a vital role in helping to increase safety for workers through the design and development of new machinery. Additional protection features like window guards, the integrated rear view camera or the advanced filtration system removing most particles before they even reach the cab filter are now common place, enhancing both operator safety and helping to minimize damage to machines, even when working in difficult environments and with corrosive products.

SEA TECH operators are highly satisfied with Cat machines because they are safe and comfortable, but the most significant aspect for them is that the machines are stable. Ensuring operators are safe, confident in control of their machines and have clean, comfortable and quiet operating environments with controls that are intuitive and low effort, all contribute to lower operator fatigue and better performance. In addition, the Cat 988 and 980 wheel loaders are equipped with high-performance engines and efficient hydraulics. These are effective when used at the bottom of a stockpile or in order to move large volumes of materials in fewer passes. The key feature is its stability, especially when working on uneven grounds.

SEA-TECH has chosen Caterpillar and its dealer network to improve machine reliability, durability and to increase fleet efficiency and management in demanding corrosive environments.

Cat dealers help customers choose advantageous dry bulk handling equipment for port applications and offer comprehensive local support adapted and fit to these customer needs.

Canada finally gets new coal export terminal



Ray Dykes

Port Metro Vancouver has approved a new coal export terminal ending a tough run for about seven such proposals on the Pacific Northwest.

Several have failed, at least two remain in Washington State, but the first to get the green light is Fraser Surrey Docks in the Port of Vancouver known as Port Metro Vancouver.

The 4mtpa (million tonnes per annum), \$15 million proposal at Fraser Surrey Docks on British Columbia's Fraser River, will bring coal in by rail from the Powder River Basin in the United States, load it on barges, and tow the coal to Texada Island in the Strait of Georgia where it will be stockpiled for loading onto Panamax sized vessels, largely bound for Asian ports.

Texada Quarrying, a Lafarge company, recently received provincial approval to stockpile up to 800,000 tonnes of coal at its existing terminal such as that likely from Fraser Surrey Docks. It has been shipping coal for the past 20 years for Quinsam Coal of Campbell River on Vancouver Island, as well as its own limestone and aggregates.

Once it is up and running by the fall of 2015, Fraser Surrey Docks could apply to increase its coal throughput to 8mtpa, but that will take another Port Metro Vancouver project and environmental review.

The permitting process was a grind lasting 26 months and clouded in controversy as environmental groups and health officials worried about the safety of moving coal, seemingly disregarding that coal has been shipped through the port for over 44 years without any serious incident or health ills.

As a multi-purpose terminal established in 1962, Fraser Surrey Docks wanted to simply add coal as a product to help

compensate for slumping container shipments over recent years — all without adding to its shore footprint on the river.

"It was a long and arduous process, but we're genuinely pleased to win approval," says Jeff Scott, Fraser Surrey Docks President & CEO. "We worked hard to prove the analysis, we listened carefully to stakeholders, and we changed and enhanced the project after listening to their concerns.

"Now we can get on with designing and constructing the facility," adds Scott who lives in the area with his "young kids" and wanted to reassure "my family and friends that it was safe" to move coal through the area.

Scott and his team dropped plans mid permitting process to have a coal stockpile on the facility's 63-hectare site and instead will bottom dump the incoming coal rail cars into a gravity-fed receiving pit and carry the coal onto waiting barges via conveyor and a shiploader, mixing a binding agent into the coal during loading to satisfy environmental critics.

Coal hauler, Burlington Northern Santa Fe has agreed to build a second re-spray facility to apply a dust suppressant half way on the journey to Fraser Surrey Docks.

Port Metro Vancouver has imposed 81 conditions on Fraser Surrey Docks in granting permit approval, but Scott says "all are manageable and not unexpected," and most would have been dealt with in the normal course of the project such as spill prevention, dust suppression, and air quality management issues.

"Overall, we are very pleased and are committed to ensuring the project is safe and of no significant risk to the public," adds Scott.

Port Metro Vancouver, which runs Canada's busiest port with

The Northern Corridor for U.S. coal exports to Europe and Asia.



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total throughput of 135mt (million tonnes) in 2013, ships more coal than any other port in North America. Led by Westshore Terminals (shipments of 30.1mt last year), Neptune Bulk Terminals (about 8mtpa), and occasional trial shipments through Pacific Coast Terminals, the port totalled over 38mt in 2013 and is ahead of that pace this year despite global coal markets being soft.

In British Columbia, environmentalists remain concerned that Port Metro didn't take into account the global warming effects of burning the export coal overseas, something the port insists is well outside its mandate and likely a stipulation that no other coal export port application in the world has had to factor in to the permitting process.

The Fraser Surrey Docks approval came just three days after the State of Oregon denied Ambre Energy's request for a construction permit to build a coal export terminal at Boardman on the Columbia River, saying the project was not in the best interest of the state's water resources.

Australia-based Ambre was the front runner up until then amid a host of coal export terminal projects, several of which have fizzled because of huge environmental concerns, or more simply because of the depressed world coal prices.

"The project definitely is not dead," says Liz Fuller, a spokeswoman for Ambre Energy, which is evaluating its options including an appeal for what it termed "an environmentally friendly proposal to barge coal down the Columbia River" to the Port of St. Helens. Previously, the company had won three permits from the Oregon Department of Environmental Quality for air, wastewater and storm water and had a draft permit for 401 water quality certification, with a final permit on that still pending.

The world's most abundant coal country, the US currently has no export outlet on the West Coast and is largely shipping through Westshore Terminals in Port Metro Vancouver. At one stage about three years ago there were six or more coal export terminal projects on the books with a combined capacity of well over 100mtpa, but these have been thinned to about three, including the stalemated Columbia River project of Ambre Energy.

Ambre and SSA Marine have a much bigger coal project known as the Gateway Pacific Terminal near Bellingham half an hour south of the Canadian border, which is planned to have a



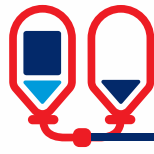
throughput capacity of 48mtpa, making it the largest on the coast. Westshore Terminals is currently amid a \$275 million four-year equipment replacement and site upgrade project that will take its throughput capacity to 36mtpa.

However, the Gateway project is mired in the environmental and permitting process and at last report was a couple of years away at least while some experts says it is five years away ... if it wins approval at all.

At least two other US projects are still deeply mired in the environmental and permitting process — in one Kinder Morgan dropped a proposal to rail Power River Basin coal to Port Westward in Oregon after protracted public opposition to the project.

That makes the Fraser Surrey Docks barge proposal the first to actually emerge out the winning end of what is proving to be a highly involved and emotionally charged process. DCi





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Martin Engineering co-sponsors orphanage fundraiser

Martin Engineering (Neponset, IL, USA) has co-sponsored the fourth annual fundraiser to support the children of Casa Hogar de Cabo San Lucas, an orphanage dedicated to providing active care and personal well-being for boys in need in Baja California Sur. With the theme of 'Healing Hearts, Building Futures', the benefit was held at Las Ventanas al Paraiso ('windows to paradise'), one of the premier luxury resorts in all of Los Cabos. The significant support from Martin Engineering and its shareholders helped raise more than \$500,000 for the boys of Casa Hogar, by far the organization's most successful event ever.

With a capacity for 60 residents, Casa Hogar is currently home to 41 boys between the ages of three and seventeen. Although most are received from state or federal agencies, the facility receives no government support.

Opened in February of 2008, the registered non-profit organization is privately-funded, maintained solely by donations, fundraisers and special projects. A staff of 18 covers three shifts, 24/7.

Orphanage officials say the funds come at an especially critical time, as the organization continues its planning to establish a girls' facility to support additional children in the

community. Among the other developing projects at Casa Hogar is a "Post-18" program to help all residents find their way to a rewarding future.

Amy Abbott has been one of the co-chairs responsible for organizing all four of the events through her company, Amy Abbott Events. "The first fundraiser was held at a private home in 2011," she recalled. "We were able to raise \$100,000 as a result of that effort, and it has turned into an annual affair that has grown each year."

"We help support all of the regions where we do business," observed Martin Engineering Global Business Development Director Alvaro Chacon Prieto. "Our corporate philosophy has always emphasized community service and civic responsibility, right from the company's founding in the 1940s."

Martin Engineering has been an employer and supplier of bulk material handling technology for more than a quarter-century in Mexico, and is a frequent patron of such fundraisers. The company supplies bulk material handling equipment around the world for a wide variety of applications, including mining and coal handling, biomass, cement, aggregates and other materials.

New and improved igus chainflex cables

EASIER TO INSTALL, REDUCING ASSEMBLY TIMES BY 30%

Energy chain and cable specialist igus has expanded and improved its chainflex CF211 and CF111.D series of measuring cables developed for dynamic equipment applications. The cables feature an enhanced core and shield structure that offers a much longer service life and makes them easier to install, reducing assembly times by as much as 30%.

Specifically for use in analogue and digital measuring systems, such as DRIVE-CLiQ*, igus offers the CF211.028, CF111.028.D and CF113.028.D — each representing a different level of mechanical properties.

The CF211 has a PVC outer jacket, which allows a range of operating temperatures from -5 to +70°C; it is well-suited to applications in warehouse storage and handling systems, processing tools and packaging machines. The CF111.D features a halogen-free, flame-resistant PUR outer jacket; this cable is specially designed for short travel applications. At the high-end, the CF113.D boasts a PUR inner jacket and an extremely bend resistant braiding of tinned copper wires with an optical coverage of 90%; this cable structure is ideal for use in fast, handling, clean room and low temperature applications down to -20°C.

The CF211 and CF111.D series comes in a variety of sizes and follow the DESINA colour coding. igus' chainflex cables also conform to, and are in accordance with, various cable industry standards. Like all other igus chainflex cables, the CF111, CF111.D and CF113.D data cables are available ex-stock within 24 hours or the same day, without cutting costs or minimum order quantity.



Correction

In the article 'RHC Heavy Machinery: offering a range of barge and rail handling equipment', on p97 of the July issue of *Dry Cargo International*, pictures belonging to E-Crane were incorrectly used. The use of these pictures falsely implied a relationship between E-Crane and RHC Heavy Machinery.

The photographs that were used on p97 were of genuine E-Crane machines, sold by, manufactured and installed by E-Crane Worldwide, headquartered in Adegem, Belgium.

E-Crane has asked us to make it quite clear that there is absolutely no connection between RHC Heavy Machinery and E-Crane Worldwide.

Dry Cargo International would like to apologize unreservedly for the use of the photographs, and for the embarrassment caused to E-Crane Worldwide.

Floating cranes: reliable and flexible

Floating cranes are playing an increasingly important role in ship-to-ship and ship-to-shore bulk loading, unloading and transshipment of numerous cargoes. Because they require no port infrastructure, floating cranes are flexible and can operate within or outside of ports. The importance of floating cranes is particularly being driven by port charges and bulk carrier size. Higher port charges are generally causing operators to reconsider their loading and unloading operations, moving them away from the quayside. Larger bulk carriers and the resultant deeper draughts mean that the ports need to be deepened or the bulk carriers must lighten their cargoes before entering port. Due to their flexibility and high throughput capacity, NKM Noell's lemniscate floating cranes are increasingly used in the Netherlands to unload grain but also to transship cargo from bulk carriers into barges for further shipment.

For handling light and free-flowing materials grabs are used with high enclosed shells to minimize material loss and environmental pollution. The grabs can be equipped with overlapping under knives to minimize spillage even further for the finest materials. The enclosed scales are minimizing the influence of the wind on the material inside the grab. The upper side of the scales are provided with steep plates that are open at the top. The advantage of the steep plates is that materials are not compressed against these plates that are open at the top.

The open upper side of the grab ensures the crane operator of a good view into the grab. By doing so he can check the filling of the grab. This is especially important during cleaning up.

In contrast with a crane designed as mobile crane in NKM Noell's crane the operator has always and in any circumstances a direct view on the grab. The operator does not have a look at a screen to see into the hold. Also due to the lemniscate concept the rope sheaves at the top of the jib are a lot lower, the rope length is therefore shorter. This reduces grab

swinging. This both results in very short cycle times and high capacities. Especially during bad weather conditions (fog, rain) and during night time and joint operations with shovels in the hold. The excellent operator visibility results in a lower capacity drop in adverse conditions.

In general reliability, availability and the crane's lifetime are key aspects in the design.

Essentially, the crane must be economical to operate and be environmentally friendly. In this respect, one optional design feature of the NKM Noell floating crane is the use of a flywheel to 'charge' the generator-sets located in the pontoon. The flywheel itself is 'charged' using regenerated energy from the movement of the grab.

This feature reduces energy consumption and smoke emissions.

PRINCIPLE DESIGN

The design of the advanced crane concept is derived from the classical lemniscate crane and incorporates the lessons learned from the above.

This has resulted in a crane design that includes:

- ❖ electrical drives, the NKM Noell lemniscates do not have hydraulic drives. The installed electrical drives need less maintenance and are more reliable. Also an electric drive is more energy efficient than a hydraulic drive resulting in lower fuel consumption;
- ❖ a strong and stiff steel structure;
- ❖ a low centre of gravity;
- ❖ redundancy in the slewing and luffing mechanisms;
- ❖ a fully balanced luffing system;
- ❖ optimized slewing speed;
- ❖ optimized luffing speed;
- ❖ PLC control;
- ❖ semi-automatic grab control;
- ❖ a comfortable cabin with sophisticated suspension and optimized view;
- ❖ a safe escape route (no need to enter the machinery room);
- ❖ low fuel consumption;
- ❖ low smoke emissions;
- ❖ low exhaust emissions;
- ❖ a minimum design life of 25 years;
- ❖ elevator access (optional); and
- ❖ use of flywheel (optional).

THE PRODUCT

Based on the principles described above, NKM Noell designs and builds cranes to customer specification. Each crane is tailored to the customer's specific needs.

NKM Noell can also supply the pontoon on which the crane is installed and can arrange the installation. Life-time maintenance is available via a Service Level Agreement (SLA) and any delivery is backed by the comprehensive NKM Noell guarantee. Even though custom-built floating cranes are complex, NKM Noell's continuous improvement approach is continually driving down delivery times.

NKM Noell Special Cranes GmbH is a leading supplier of special cranes and special handling equipment. In addition to advanced special cranes, it can also supply R&D, consulting, feasibility studies, design, engineering, manufacturing, shipping, installation, commissioning, training and after sales service.





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PSLT coal grabs: efficient and environmentally friendly

For more than 60 years, PEINER SMAG Lifting Technologies GmbH — PSLT for short — with its product, PEINER grabs, has been renowned for quality and customer satisfaction in the field of bulk goods handling.

The wide range of products allows PSLT to provide the right answer to every customer request in the field of coal handling. Owing to its many decades of expertise in development and construction of grabs, PSLT's customers have put their trust in the company and relied on PEINER grabs — particularly in the difficult market situation of recent years. To further develop this expertise, the company makes above-average investments in the research and development of products. Thus new designs and alternative materials are continuously brought into serial production.

At PSLT, the customer is always the centre of attention. The size, shape and dead weight of grabs may vary and, therefore, be tailored in every respect to the needs of customers. PEINER grabs are adapted both for lifting devices and for each application to always find an optimal solution.

PSLT offers a wide range of grabs suitable for coal handling. PEINER Four-Rope Dual Scoop Grabs (VSG) achieve maximum efficiency through the optimum balance between dead weight and crane capacity and also require low maintenance. Ideal for loading and unloading coal of ships are PEINER Scissor Grabs (SCG). Based on the scissor principle and the double reeving of the closing ropes, the SCG is the fastest and most efficient grab for coal handling. It goes without saying that electro-hydraulic grabs from PSLT are a good choice when it comes to coal handling as well. This year PSLT manufactured various grabs for coal handling projects in Asia, Europe and South America.

A well-proven alternative to motor grabs, especially for countries with weak infrastructure, is the PEINER radio-controlled single rope grab. It is particularly suitable in this case because it is not only compatible with many lifting devices (a simple crane hook is enough), but also impresses with its user-friendliness and versatility. Using spill and kick plates, the grab can be adapted for a variety of bulk materials and therefore is suitable for handling coal, too. Thus, within a very short time, any crane can be used for bulk goods handling without additional equipment. An external power supply is not required.

Maintenance is kept to a minimum thanks to the use of high-quality materials such as HARDOX and WELDOX in combination with an optimized design. This keeps the life-cycle costs as low as possible. A modular design enables the use of standard parts in



different grab models, which greatly simplifies the storage and results in faster response times in the production of new machines and after-sales management. Thanks to the intelligent design, PSLT is also able to match up high grab capacities with low dead weight.

Apart from the quality of PEINER grabs, PSLT is notable for its global service and dealer network that offers the customer a round-the-clock customer service. In addition to the assembly and start-up provided by its technicians, the company also offers training for the operating personnel. Thus the customers of PSLT get everything from one source.

A very important factor in the entrepreneurial thinking are the issues of environmental protection and sustainability. Environmental protection does not begin only when the grab is finished. Both at the work preparation stage and in the production process, care is taken to reduce the impact on the environment.

In addition, PSLT strives to keep the environmental impact associated with the use of grabs as small as possible. Especially when it comes to coal handling, an environmentally friendly solution is very important. A number of features make it possible to minimize the loss of bulk materials and dust. In addition to dust covers, these include special sealing systems on the side and bottom lips. The use of steel sealing strips, rubber-sealed lips, overlapping bottom and side lips or special side toothing prevents bulk materials from trickling down. In contrast to the competitors, PSLT's four-rope dual scoop grabs are also designed with just one, rather than two scoop pivot points. This results in such movement of scoops that ensures a synchronous closing and excludes any offset between scoops.





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Dust trap - Upgrading

The future is bright (and smart) for bulk product commodity management solutions

A storm is brewing for companies that farm, originate, produce, trade, manufacture, or purchase commodities; these companies are facing a raft of significant new business issues and technical challenges. An increasingly aggressive and invasive regulatory regime looms large. Meanwhile, a bewildering array of new trading instruments and exchanges have exploded onto the scene, causing the variety and volume of data collected and processed to balloon. And all of this is happening within the overall context of an ever-more competitive business environment and (at least within agricultural and soft commodities) notoriously complex supply chains.

But as the old adage goes, challenges are opportunities in disguise. So with this in mind, what is the forecast for the industry as it begins to grapple with today's business issues?

MOVE FORWARD OR FALL BEHIND

These changes, though diverse, all lead to one common remedy: greater visibility across all aspects of a business underpinned by a modern, next-generation Smart Commodity Management platform like Eka's. Market awareness is more important within these sectors than it has ever been. Formulating effective business and trading strategies increasingly relies on the ability to glean meaningful trends from a vast and growing mountain of complex data.

As a result, there is an increasing need for real-time visibility and analysis of data — money is made and lost according to daily decisions that require accurate and timely position management, risk management and business intelligence. Being on top of the regulatory agenda is also important, given that falling afoul of the latest edicts can land a business with substantial fines and poor publicity. Developing a culture of compliance and improving visibility for regulators is key to avoiding such damaging enforcements.

Recent years have also seen highly volatile prices for agricultural and soft commodities. Due to our ever-growing, ever-urbanizing global population, this is expected to remain a permanent feature of the market. And so businesses must adapt by ensuring they have the capability to measure the impact of price fluctuations on business operations. They must be ready to thrive on volatility. The chances of succeeding in such a market are increasingly reliant on the deployment of sophisticated technology in service of various functions, from data aggregation through to trading, business intelligence and reporting.

FEW SOFTWARE VENDORS WILL MAKE THE GENERATIONAL SHIFT

It is these same challenges that are driving product development within the software vendor space serving these sectors. Big data and business intelligence needs are generally recognized but can only be addressed by vendors that have adopted next-generation technology platforms such as Eka Software Solutions. Vendors on older technology platforms will first need to upgrade their technology, typically a three- to five-year process and investment, prior to being able to address big data challenges. Yet areas such as regulatory compliance create a different type of challenge as the rules are often unsettled until the last minute. As a result, vendors need to ensure that they build a certain level of adaptability and agility into their solutions, so as to future-proof them against the barrage of complex new rules. The good news is that the next-generation technology platforms designed to handle big data and advanced analytics also have the flexibility to be quickly updated as regulations are finalized.



What end users in the current environment really need, in order to profitably meet these challenges, is a next-generation, smart commodity management software solution like Eka's that can provide them with an analytics-driven, end-to-end platform. To be considered a best-of-breed solution, the commodity management software solution must manage: commodity trading, procurement, logistics, storage and handling, processing, enterprise risk and compliance. The software becomes a platform for customers to accelerate growth, increase profitability, improve operational control, and manage risks and exposures.

THE WAY FORWARD

To recap: the modern and smart commodity management solution will help users turn big and complex data into descriptive and prescriptive decision making information. It will increase visibility, assisting businesses with a whole host of daily decisions. Smart commodity management solutions ensure that opportunities are exploited and risks properly addressed. And through a comprehensive approach to regulatory compliance, these solutions will help businesses engender a real culture of compliance. In short, smart commodity management allows users to respond to the business challenges of today and tomorrow.

Smart commodity management solutions will utilize next-generation technology architectures that are web-based and highly modular to provide real-time, fully auditable information with configurable workflows and controls. In an ever-increasing complex, volatile, and fast moving business and commodity environment, a next-generation smart commodity management solution, like Eka's, is the platform for success.



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Spain's Duro Felguera (DF) supplies coal handling equipment

DF, the Spanish industrial group, has been a public listed company on the Madrid Stock Market since 1905. Since it was founded, the company has been continuously evolving to adapt to market changes and increasing requirements on its projects with faster delivery times and higher performance.

The company's engineering department is based at its headquarters in the north of Spain, which facilitates the development and design of the material handling machines and conveyors for all projects.

In recent years the company has been focused on the international market; taking advantage of its worldwide presence, it has maintained its competitive level of prices without compromising quality. Three new subsidiaries have been opened recently in key areas in the world to take care of new markets: the Middle East, Indonesia and Australia.

PT Duro Felguera Indonesia is a licensed Mining Services Company in Indonesia, to supply material handling solutions for mining companies on a turnkey basis. It also assists DF projects in other countries by sourcing commercial supplies in Indonesia for material handling projects.

DF Mining & Handling is specialized in project development on an EPC basis, in areas such as bulk material handling, mining and mineral processing. DF M&H carries out the complete process to develop a project: engineering, procurement, manufacture, erection, commissioning, operation and maintenance.

LATEST PROJECTS

Coal and coke shiploader for Kinder Morgan Terminals, USA

This is DF's latest commissioned machine, in May 2014, and the second shiploader DF has successfully installed in the USA.

This state-of-the-art loader was designed at DF's headquarters in Gijón and manufactured and assembled in China, with all commercial items supplied from Europe.

It is a travelling, luffing and slewing shiploader equipped with a shuttle boom, boasting a nominal rated capacity of 5,000stph (short tonnes per hour) of coal and also designed for coke.

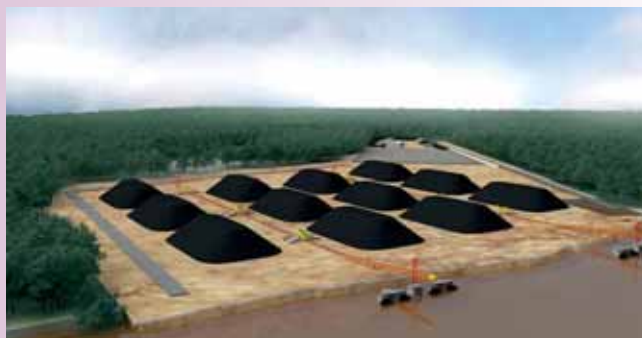
The machine is designed to be capable of loading bulk carriers



ranging in size from 40,000dwt to 118,000dwt. It has the latest dust suppression system design to comply with environmental regulations.

The final destination of the shiploader is Kinder Morgan's existing Deepwater Terminal at Pasadena, Texas. Due to the fast track delivery time, the machine was fully assembled and tested in the workshop and transported on large pieces to minimize the down time of the existing terminal in Texas.

Jambi Coal Terminal, Indonesia



Jambi Province is one of the coal mining areas on the Indonesian Island of Sumatra. Coal from mines located in remote areas is transported by truck to the main port in the city to load ocean barges to send the coal to the mother vessel.

In January 2014 the regulations concerning coal transportation by truck in this province established that truck coal transportation is no longer permitted, in order to reduce the damage caused to roads by the continuous queues of trucks.

PT Bara Ria Sukses has contracted PT Duro Felguera Indonesia to develop the Jambi Coal Terminal on an EPC basis at the limits of the area where coal transportation by road is no longer allowed, roughly 80km up the Batanghari River.

The complete terminal is designed to receive and stock coal from different clients, before loading it onto the barges that then transport the coal to the vessel at the anchor point in the ocean.

Turnkey supply of river barge loading terminal, consisting of:

- ❖ two barge loading conveyors with a capacity of 800tph (tonnes per hour) per hour each;
- ❖ loading hoppers with variable-speed belt feeders; and
- ❖ complete civil works including the marine jetties.

Jambi coal is very soft with low calorific properties, and due to the logistics in the area it was necessary to design a system capable of loading large pieces of coal in order to minimize degradation.





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MacGregor MacRacks installed on bulkers



The first units of a 672-strong MacRack orderbook are now being installed; current levels of interest strengthen MacGregor's firm belief that MacRack will become the standard system for side-rolling hatch covers.

MacGregor, part of Cargotec, has announced that the first units of a 672-strong MacRack orderbook are now being installed. The units are destined for a total of 38 ships for various owners; 35 of which are for 180,000dwt bulk carriers and the remaining three are for 87,000dwt bulkers. Each of the larger vessels will be fitted with 18 MacRack units and the smaller vessels will each feature 14 units.

MacRack is an economical, competitive and environmentally friendly electric-drive system for side-rolling hatch covers. "Current levels of interest in MacRack systems strengthen our firm belief that they will become the standard system for side-rolling hatch covers," says Torbjörn Dahl, senior naval architect for bulk ships at MacGregor.

MacRack uses variable frequency drive (VFD) technology, which delivers high torque with low speed and allows for the optimized use of electric power. "MacRack units deliver a number of advantages," adds Dahl. "They unite the 'lift' and 'drive' operations and so make separate hatch cover lifters obsolete. This reduces maintenance work for the shipowner,

and the shipyard's installation work is also simpler because fewer components need to be installed on the coaming.

"Also, unlike hydraulic pump units, there is no continuous running of motors and there is no need to warm the oil in advance, so MacRack delivers energy savings and is also not as sensitive to a cold climate as hydraulic systems," adds Dahl.

MacGregor offers world leading engineering solutions and services for handling marine cargoes and offshore loads. The scope of its integrated packages is growing and now also includes Hatlapa, Porsgrunn, Pusnes and Triplex products.

MacGregor serves the offshore, maritime transportation and naval logistics markets in ports and terminals as well as on board ships and rigs. MacGregor solutions combine load and cargo access, stowage, care and handling functions to optimize lifetime profitability, productivity and environmental sustainability. MacGregor is part of Cargotec. Cargotec's sales totalled approximately €3.2 billion in 2013 and it employs approximately 11,000 people.

CDM Systems mobile ship unloaders and conveyors

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Mobile ship unloaders — superior technology for efficient port operations

Productive port and terminal operations are critical to growing and maintaining profitable logistics contracts. CDM Systems' mechanical unloaders are extremely efficient unloading systems, due to the continuous column of product flow using the proven en-masse conveying principle and the company's exclusive drop-forged chain. A CDM mobile leg unloader is not susceptible to horizontal or lateral misalignment as bucket style units are, and will operate at angles from horizontal through vertical. In addition, a CDM unloader also provides;

- ❖ vessel shifting is minimized when compared to fixed tower stationary units;
- ❖ mobile legs in eight standard sizes with capacities from 150–700tph (metric tonnes per hour) peak digging;
- ❖ multiple units working one vessel provide a more even draw-down of the vessel, which translates into better hourly unloading averages than larger single stationary units;
- ❖ the unloading legs are completely mobile and can be moved to different locations



Trusted partner in bulk handling

CDM en-masse conveyors for potash milling.



CDM Systems, Inc. has been designing and building marine leg unloaders and en-masse conveyors for over 40 years. The company started as a design consulting business in the 1970s, helping bulk transport and processors effectively move material by engineering complete conveying systems. The knowledge of various conveying technologies and the experience in their application is the reason CDM transitioned the business to focus on the design and manufacturer its own equipment. The company's founders and engineers understand the full power of the en-masse technology and work to capture the advantages in recommended layouts. CDM Systems' marine legs and en-masse conveyors are the highest-rated equipment for

heavy-duty industrial applications, as noted by hundreds of repeat customers from across commodity industries. Its drop-forged chain assembly is an industry standard and is used by many other en-masse conveyor providers because of the high reliability and integrity. Today CDM is wholly-owned by KMC Global, a corporation that holds a group of industrial manufacturing companies brought together to maximize buying power and breadth of material handling capabilities all over the world.

CDM Systems works with its customers to understand their specific material handling requirements and goals and provides them with an optimum material handling system to meet their needs.

either on board the vessel or by truck;

- ❖ designed to be handled by auxiliary shore cranes or the ship's gear. In many cases, several units can be applied to the customer's operation and will not exceed the initial investment of one single larger stationary tower unit.

En-masse conveying: efficient material movement technology

En-masse conveyors are an extremely efficient form of high volume material handling. This is why CDM Systems uses the en-masse principle in both its conveyors and marine leg unloaders. Where other technologies have failure points due to misalignment, carry-over, and other material transfer challenges, the en-masse technology is reliable, efficient, and requires little maintenance.

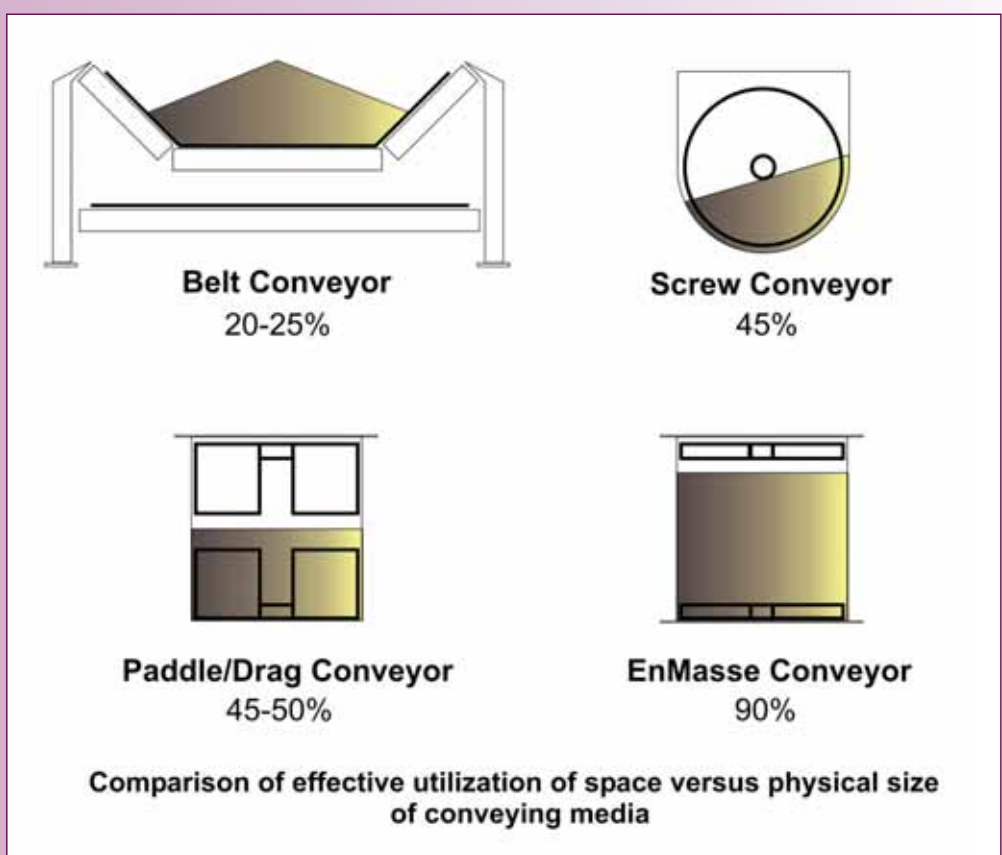
In horizontal applications the en-masse chain conveyor can handle up to 90% of the cross sectional area, resulting in a smaller piece of equipment to handle the same or greater capacities over other conveying technology. These chain conveyors also provide very efficient horsepower consumption keeping operating costs low. The en-masse conveyor is often known as the en-masse chain or drag conveyor, although very different in principle from a standard drag conveyor.

CDM Systems offers a wide range of horizontal, inclined, vertical, or combinations of both in its totally enclosed conveying systems.

Other notable features and application benefits include;

- ❖ single and dual pit truck receiving;
- ❖ inline shallow pit hopper rail car receiving conveyor — allows for the positioning of the entire rail car once;
- ❖ bin/silo distribution conveyors — can be equipped with multiple intermediate gates that provide a positive mechanical sealed separation between the customer's bins/silos;
- ❖ several inlet designs can be incorporated on CDM's bin/silo draw-off conveyors;
- ❖ CDM provides its standard top flanged inlets for transfer areas where the product is metered and fed into the conveyor;
- ❖ capacities in excess of 800tph (capacities of over 1,000tph are available);
- ❖ CDM's conveyors are designed to operate on a 24/7 350 day/year schedule, while producing durability, dependability, and reduced maintenance costs; and
- ❖ optional self-metering style inlets that prevent flooding of the en-masse conveyor.

CDM Systems' material handling experience allows it to provide its customers with multiple style conveyors that include its normal single strand units, double strand, twins, or multiple



strands for extreme widths. These conveyors have the ability to convey on the conventional bottom, top, or combination of both simultaneously.

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High-performance Hitachi wheel loader saves on costs

One of the first Hitachi ZW370-5s in Europe has been delivered to a quarrying company in the Eifel region of Germany. Trasswerke Meurin ordered the large wheel loader to handle lava, pumice and basalt materials in the quarry, where it started working over 150 years ago.

FROM THE QUARRY TO THE HOUSEBUILDER

These materials are common to the area — due to an eruption approximately 12,900 years ago that created the Vulkaneifel volcanic field — and the exploitation of the volcanic rock dates back to Roman times. An ancient mine on Trasswerke Meurin's site at Kruft, near Koblenz, was awarded the European Union Cultural Heritage Prize in 2003 in the category for “education, instruction, training and consciousness building”.

Trasswerke Meurin was founded in 1862 – when it also started work in the quarry – and today its team of 100 workers produces bricks for the housebuilding industry. The new Hitachi ZW370-5 is used in the excavation and loading process that transports the materials from the quarry floor to a crusher.

The aggregates are then mixed together with cement (also produced at the site) and water, before the bricks are prepared and packed on pallets, ready for onward distribution. The high-quality products are sold to builders merchants within a 400km radius of the quarry, including exports to The Netherlands, France, Belgium and Luxembourg.

ZW370-5: BUILT FOR PURPOSE

The ZW370-5 has been fitted with a large 5.6m³ bucket that has been customized by German Hitachi dealer Kiesel with a blade below the teeth to suit the demands of the site. The teeth are suitable for penetrating into the rock, while the blade is used for



cleaning up the stockpiles and levelling the ground for trucks.

In addition, Kiesel supplied the large wheel loader with a 48-month, 6,000-hour HELP extended warranty. The machine also benefits from a double cab air intake filter, central lubrication and load indication systems, as well as heated mirrors, a belly guard and additional lights.

FOURTH GENERATION OF FAMILY BUSINESS

Phil Meuser-Schaede is the owner of Trasswerke Meurin and the fourth generation of his family to manage the quarry since the company's inception. “Our energy-efficient products are developed and produced for building high-quality houses,” he says. “We are very proud of being one of the leading companies in the market, and with the current low interest rates, there is an increase in the supply of house-building materials.”

His responsibilities include the purchase of new machinery and he adds: “We are very happy with the quality and low cost of ownership of the Hitachi wheel loader. The decision to buy this machine was due to the high level of service that we've received from our supplier in the past and the excellent value for money that it represents.

“We check the fuel consumption on a regular basis and the ZW370-5 is already showing a significant one-third saving over the previous model — which was another brand of wheel loader. The extended warranty is also an important part of the package as we bought the machine outright and plan to keep it for its entire life.”

IMPORTANCE OF OPERATOR OPINION

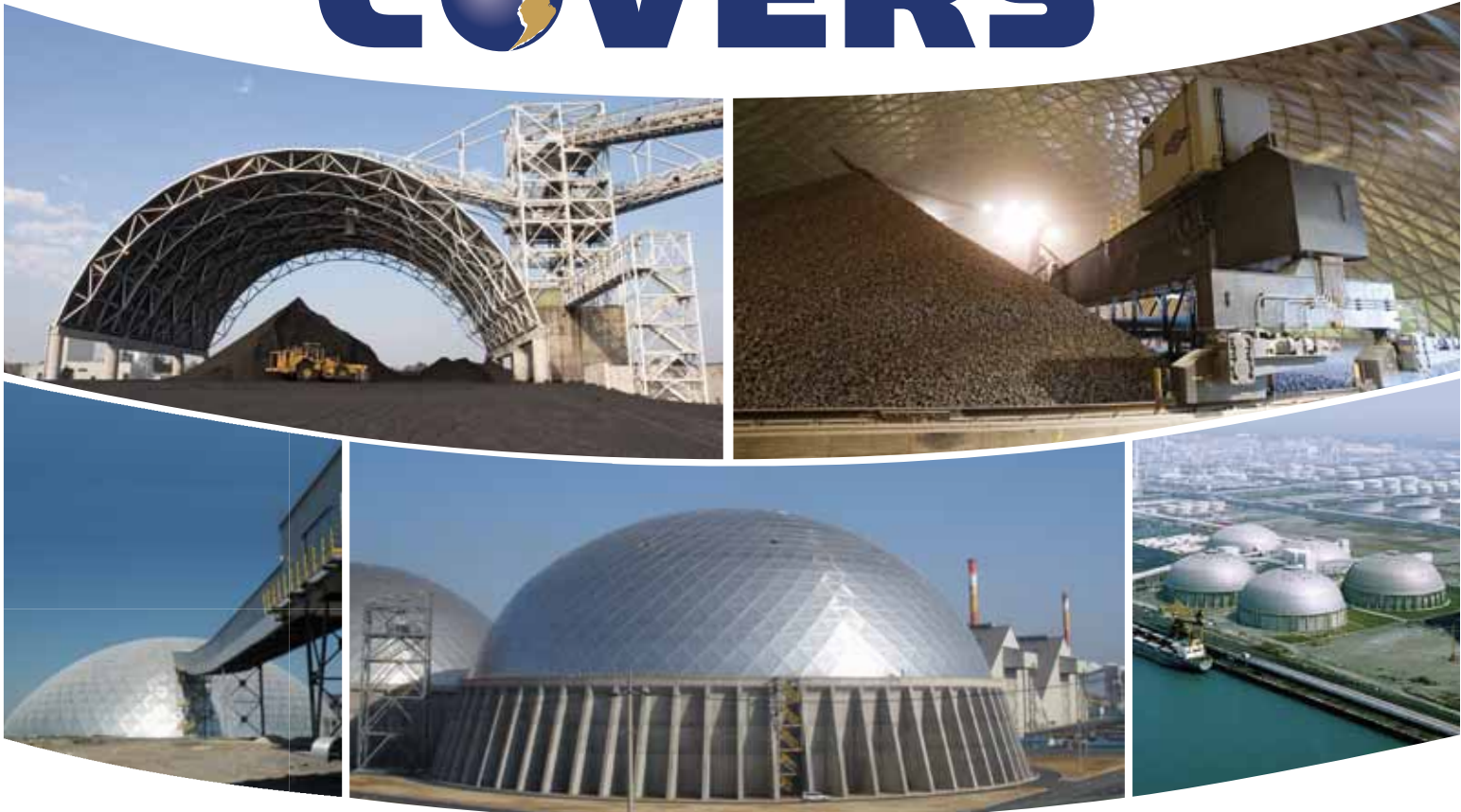
Phil also considers the opinion of the operator to be very important, especially an experienced employee such as Markus Hoffman. He has worked for Trasswerke Meurin for his entire 22-year career and says: “I recommended that we should buy this machine because of the engine capacity, tipping height and overall design in comparison with other wheel loaders.

“The cab is very comfortable, especially because of the pop-up steering column, fully adjustable seat and quality of the audio system. The speed of the arm and the bucket, traction force and fast loading cycle results in optimum productivity. The large fuel tank and low fuel consumption enable me to work long shifts on this site — without compromising on performance.”



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SENNEBOGEN Maschinentechnik GmbH lays the cornerstone for new workshop in Wackersdorf

INVESTMENT IN THE FUTURE

“Long-range thinking over generations, this is what characterizes us as a family-run company”, points out CEO, Walter Sennebogen, as he explains the new investment in the Wackersdorf location. On the existing factory premises, by the end of 2014 a new production hall will be constructed with a total useable area of 4,000m², including a roofed-over material delivery zone and additional break rooms and office space. The objective is to relocate all welding tasks and to enlarge the roofed-over finish assembly areas.

At the cornerstone laying ceremony, the acting district administrator of the Schwandorf district, Joachim Hanisch, and Wackersdorf's mayor, Thomas Falter, recognized the loyalty and the bonds that the machine manufacturer has to the region. Almost 25 years to the day after deciding against a reprocessing facility and the step into an uncertain future, today both politicians are convinced that a company is better positioned in the region than ever before. This is primarily due to the pioneer, Erich Sennebogen Sr. who at the time was one of the first who dared to take the step to Wackersdorf, stated Falter.

Together with plant manager, Alexander Scherer, Sennebogen, Hanisch, and Falter the cornerstone to conclude the ceremony. A cylinder with current documents, a set of coins, a newspaper, the current corporate brochure, and also a photo of employees was professionally immured in the cornerstone that weighs approximately 750kg, with the hope that if it possible it would always be the cornerstone of a flourishing enterprise.

A spacious 1,200m² uppercarriage welding shop will be built in the new steel construction hall. A separate painting area with wash bay and drying zone on a total of 550m² is directly adjacent. Thus in the future the uppercarriages can be painted directly after they are welded. The new steel construction hall will be equipped with a modern welding gas extraction system with efficient heat recovery and hall crane systems with load bearing capacity up to 20 tonnes. In the future, the large machines and special machines will be prepared for shipment in the second nave of the hall, in the new finishing area. Previously in some cases these machines, with

operating weights up to 100 tonnes, had to be set up and dismantled outdoors. A large storage area and office and break facilities round out the extension. The objective of the investment is to offload the previous assembly stations and processing stations, and to provide room for further expansion and more efficient work.

The new building's energy supply is ensured for the future through a modern wood-chip heating system and a large-area photovoltaic system. Thus over the long-term, the existing buildings on the Wackersdorf site can also be heated in manner that is carbon neutral.



The cornerstone for further expansion of the SENNEBOGEN Group in Wackersdorf was laid jointly: Plant Manager Alexander Scherer, Mayor Thomas Falter, District Administrator, Joachim Hanisch, and CEO Walter Sennebogen lowered a cylinder with current documents.



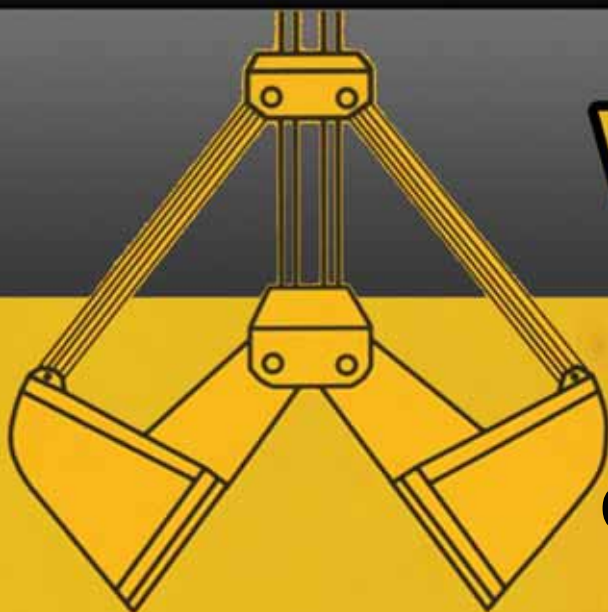
Group photo of the entire staff in front of the construction site. The new production hall should be finished by the end of 2014.



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Tenova TAKRAF awarded contracts from Mauritania



Open pit mining and underground solutions provider Tenova TAKRAF, has completed the supply and installation of a 10,000tph (tonnes per hour) shiploader for the Port of Nouadhibou in Mauritania, as part of a contract awarded by Société Nationale Industrielle et Minière (SNIM), which also covers the associated conveying system. Tenova TAKRAF is part of the global total technology solutions provider, Tenova Mining & Minerals.

The contract is part of an expansion to the existing iron ore stocking and loading facility at the port and was the first contract that Tenova TAKRAF had received from SNIM. It was also the company's first project in Mauritania. Since the contract was awarded, Tenova TAKRAF has received a further contract from SNIM for mobile overburden stacking bridges.

The contract, commencing in June 2010 and with completion of the entire plant due for by December 2014, covers the design, supply, transport and on-site installation of a travelling, luffing and shuttling shiploader and the complete conveying system. The latter includes transfer towers, a sampling tower, belt scales, dust suppression and metal detection and extraction systems, as well as modification of the existing conveyor system.

The shiploader, supplied by Tenova TAKRAF Italy, was custom designed to meet the client's requirements. A crucial requirement of the conveyor system component, supplied by Tenova TAKRAF Germany, was modification of the existing conveyor system during operation to reduce production downtime. As a result, shutdown was limited to only four days, minimizing any loss of production. The state-of-the-art high capacity automatic sampling system is also an important feature of the conveying system.

Logistics was a challenging consideration, due to the remoteness of the site and the fact that the shiploader was completely assembled in Portugal, after which it was transported to site fully erected using special ocean cargo shipping. In addition, the potential risk of dust due to fine ore material being handled and the strong winds endemic in the region, required strict focus on dust control, with the systems having proven highly effective since installation.

"Tenova TAKRAF's ability to accommodate such challenging logistics, combined with our extensive experience in the design of shiploading equipment and conveying systems, as well as our competitive pricing, positioned us well to win this award, says

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- TRAMCO conveyors offer solutions for delivering product for various industries such as chemical, coal, food and grain, mining, plastic, pulp, rubber and paper, or solid waste and recycling.
- Our philosophy is to produce high quality, reliable equipment that meets specific customer needs. Our production facility offers cutting, machining equipment and robotics which allows for complete in-house production.
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Alberto Dardano, managing director of Tenova TAKRAF Italy.

In line with Tenova TAKRAF's commitment to uplift the communities and industries in the countries in which it carries out contracts, a local company was used for construction, with supervision and logistical support provided by both Tenova TAKRAF offices in Italy and Germany. A global procurement strategy was used to optimize cost effectiveness, without compromising high quality standards synonymous with Tenova TAKRAF.

Tenova TAKRAF is a key supplier of equipment and systems for open pit mining & underground solutions and bulk handling, having provided hundreds of complete systems, as well as individual machines to clients all over the world in all climatic conditions. Globally sourced air pollution control, specialized handling equipment, and technology for the cement and fly ash industries ensure selection of optimal processing options.

Tenova Mining & Minerals is a total integrated solutions provider to the global mining, bulk materials handling and



minerals beneficiation and processing sectors, offering innovative technological solutions and full process and commodity knowledge across the mining industry value chain.

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

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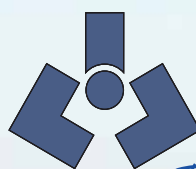
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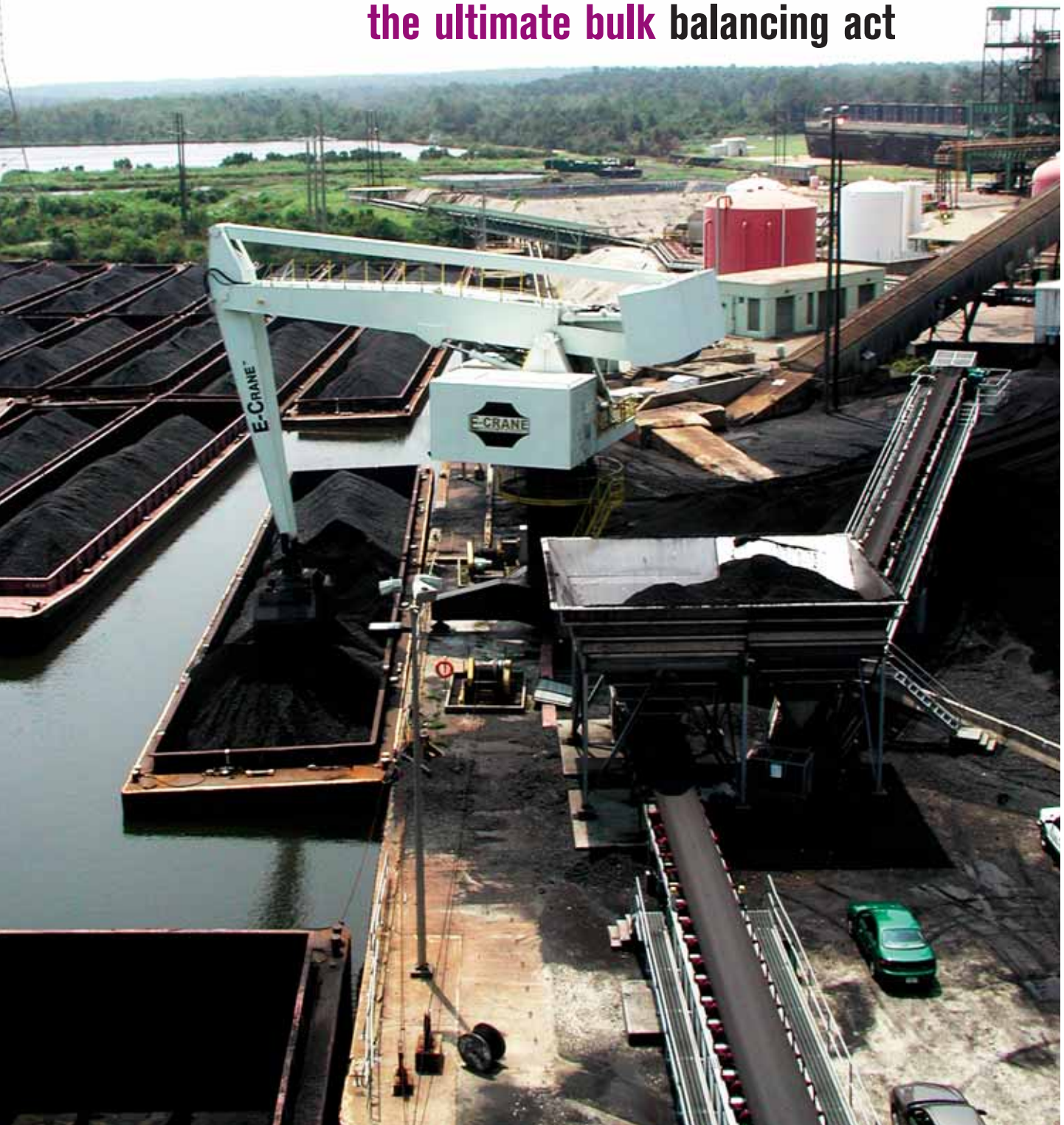


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PIRS SAS, the leading European builder of reinforced concrete domes, launches new website so check it out :

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This is a unique portal dedicated to information on **Agridome®** and **Domeconcept®** technologies. The new site sets out to highlight and reflect PIRS expertise in two markets : **Industrial bulk Storage** and **Architectural facility**.

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Sherwin Alumina: handling bauxite and alumina

When Sherwin Alumina needed to find a replacement for its old continuous ship unloaders (CSUs), research showed E-Crane to be the perfect and reliable solution for its bauxite ship unloading needs. While the CSUs are impressive mechanical designs, the reality experienced by Sherwin of constant and high cost of maintenance along with poor reliability has caused major unloading delays and brought about huge demurrage costs.

The two E-Cranes were purchased fully assembled ready for pick-up at an offsite location for less than half of the cost of one of the old CSUs new in the 1980s. The average cycle time of the E-Cranes is 60 seconds, and peaks of over 1,000 wet metric tonnes per hour are reached. The fully customized E-Cranes were delivered to the customer's dock exactly one year after the initial down payment. A special heavy lift shipping method was utilized to minimize downtime at the customer's dock.

Immediately, the E-Cranes proved to be reliable and cost effective ship unloaders. No more demurrage costs, low maintenance costs, minimum downtime. Port manager at Sherwin Alumina, Bally Kisson, says, "I wish all our equipment was working like the E-Cranes!"

TECHNICAL SPECIFICATIONS

Type	2 x 18450 GA-E
Location	Gregory Texas, USA
Application	Offloading bauxite from Handymax and Panamax ships
Mount	High gantry on rail
Lift Capacity	32 US tons/29 metric tonnes each
Reach	147.5ft/45m
Attachment	17yd ³ /13m ³ clamshell grab
Power source	800hp/600kW electric motor



WHY A BALANCED DESIGN IS BETTER FOR BUSINESS

Balance is one of the key factors for any crane in the industry. Without the right balance, a crane will lose its stability. To avoid this, all cranes know the principle of the 'counterweight'. In most cases, this counterweight is at a fixed point on the crane. On an E-Crane, however, the counterweight is linked to the stick, so it can automatically compensate for the lifted load.

The balance crane provides a fail-safe system which guarantees that the crane will always be in balance. The link between the stick and counterweight creates a four-bar mechanism, which ensures that the counterweight continuously balances the total weight of the steel structure along with half of the operational load. As the lifting radius is varied, the change in the load moment is automatically equalized by the moving counterweight.

ENERGY SAVINGS THANKS TO BALANCED DESIGN

Lower energy consumption means lower costs. With traditional hoisting machinery, the payload, working tool, and steel

construction have to be raised, but the E-Crane's balance compensates for all but the payload. It goes without saying that this results in important energy savings.

To be balanced at any given position, the counterweight has to continuously compensate for the load. As the load increases, the counterweight must also increase in weight. Alternatively, instead of increasing the counterweight, it could be moved further rearward from the centre of rotation to compensate for the increase in the load.

For example, a one-tonne load at a 20ft radius gives a forward load moment of 20. This load moment would then be equalized or counterbalanced by a 4-tonne counterweight at a distance of five feet, having rearward load moment of twenty ($20 \times 1 = 4 \times 5$).

Since adding counterweight is often neither practical nor, in some cases, recommended, true balance of a fixed counterweight crane can only be achieved at one specific radius. Any variation caused by changing the radius at which the load is lifted, destroys the balance.



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PROVEN SOLUTION FOR BULK HANDLING

Designed specifically for barge and ship unloading, E-Crane is a proven and trusted solution in many bulk material handling industries. Most dedicated systems for offloading coal, limestone and other bulk materials are costly, inflexible and require an expensive, hard to maintain infrastructure. The versatile, flexible E-Crane is just the opposite. E-Crane's modular design and custom solutions make it the ideal equipment for any bulk

handling application.

The E-Crane is purpose built for a range of dedicated tasks including:

- ❖ offloading Panamax/Handymax-sized vessels;
- ❖ barge loading/unloading;
- ❖ shiploading/unloading;
- ❖ feeding hoppers; and
- ❖ stockpiling.

Lowman Power Plant: coal and limestone cargoes

When PowerSouth Energy Cooperative upgraded its Lowman Power Plant on the Tombigbee River for flue gas desulphurization (FGD), E-Crane offered a turnkey solution to the increased material unloading and river level problems: an E-Crane floating terminal consisting of two barges (2000 Series E-Crane and conveyor back-up), a hopper, a barge-haul system, and a barge-breasting system.

"E-Crane maintenance is simple, quick and easy. The E-Crane is much safer and more reliable than the old gantry rope crane. And the E-Crane system is easy to operate, so the fatigue factor is less. With the floating terminal, the barges are always at the same level as the E-Crane making it easy to bring them into position, unload them, and move them on," says Mike Barton, Utility Supervisor at PowerSouth Energy.

"The E-Crane system has cut our unloading time in half, cut our maintenance time dramatically, and just generally simplified our lives and reduced our costs substantially," adds Tom Noble, Department Supervisor at PowerSouth Energy.

TECHNICAL SPECIFICATIONS

Type	18264 PD-E
Location	LeRoy, Alabama, USA
Application	Offloading coal and limestone from barges
Mount	Barge-mounted
Lift capacity	30 US tons/27 metric tonnes
Reach	86.6ft/26.4m
Attachment	25yd ³ /19m ³ clamshell grab
Power source	600hp/450kW electric motor



Co-operation between AEP and E-Crane continues

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

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

In 2012, the latest E-Crane for AEP was installed at the Clifty Creek Power plant near Madison



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

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

CLOSE CONSULTATION: SIMULATIONS ENHANCE CUSTOMER EXPERIENCE

In close co-operation with clients, E-Crane's engineers understand the project goals and lend suggestions from extensive past experiences.

Utilizing state-of-the-art 3D software, animated 'real-time' examples of a working machine at the customer's facility can be produced.

This can be done from multiple viewpoints, simulating views in the ship or barge. For optimum productivity with the E-Crane, a wide variety of attachments are available, tailored to the specific job requirements.

E-Crane International produces and sells a large family of attachments including:

- ❖ low-headroom hydraulic clamshell grabs;
- ❖ hydraulic clamshell grabs;
- ❖ hydraulic pig iron grabs;
- ❖ hook attachments;

- ❖ spreaders; and
- ❖ quick disconnects.

The E-Crane product line offers exceptional all-round flexibility and versatility. Using a 'Series Built' family of standard components adds value to its client partners.

Low-ers are available in fixed or freestanding pedestals, rail, crawler and rubber tyre models with high or low portal carriers. The upper is built around a wide range of boom and stick combinations, allowing for a tailor-made 'custom' material handling solution at off-the-shelf-prices.

FLOATING TERMINALS

Ten years ago, E-Crane delivered the first barge- and ship-mounted E-Cranes to offload barges and small ships. E-Crane has adapted this great concept for the offloading of ships up to Panamax-class and has more than 15 units successfully operating worldwide.

These barge- or ship-mounted E-Cranes have been developed



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in close co-operation with the company's clients. The concept of a floating bulk handling terminal is well suited for both port operations (ship-to-shore) as well as midstream transfer (barge-to-ship and ship-to-barge).

The E-Crane organization is always open minded when it comes to solving clients' special needs and requirements. This renowned 'can-do' attitude has resulted in cutting-edge solutions that have successfully served E-Crane's customers world-wide. The development of the E-Crane® Floating Bulk Terminal is another logical step in the evolution of this unique material handling concept.

Floating transloading terminals address a host of material handling needs that are present in today's rapidly changing environment. This concept offers the following benefits:

- ❖ the complete terminal can be built and tested and then floated to its final destination;
- ❖ the terminal can be located at the closest possible location to the mine at the preferred transfer point near the end-user;
- ❖ all this with limited local regulatory requirements;

- ❖ the complete terminal can be relocated quickly and cost effectively if required;
- ❖ the minimum investment combined with a short delivery time provides for an excellent return of investment; and
- ❖ the option to have a floating buffer storage to smooth out any peaks and valleys between inbound and outbound material deliveries.

These advantages combined with the state-of-the-art, proven E-Crane technology result in excellent productivity and an extremely versatile; fully integrated solution for today's bulk handling industries.

TURNKEY BULK MATERIAL HANDLING SOLUTIONS

E-Crane offers more than just the crane. It also offers turnkey bulk material handling solutions to optimize entire operations. It can help to streamline facilities by working with customers to provide other services and equipment including:

- ❖ hoppers (can be attached to the E-Crane);
- ❖ barges; and
- ❖ barge haul systems.

Midema Midstream Transfer Facility

This client required a floating E-Crane designed for ship-to-quay discharging of Handy and Handymax vessels with ship-to-ship and midstream transloading capabilities of breakbulk commodities on the Congo river.

E-Crane supplied a 400tph (tonnes per hour) midstream breakbulk transfer station for Seaboard's MIDEMA grain terminal in Matadi, Democratic Republic of Congo.

As in many ports in Africa there are major port congestion problems. This, combined with the lack of new and reliable dockside equipment, was a major bottleneck in



MIDEMA's grain supply chain.

The new floating terminal has greatly improved the capacity, efficiency and flexibility of the ship unloading operations.

Conceptual design studies were carried out in close co-operation with the customer to determine the optimum floating terminal concept with particular emphasis on the optimum placement of the E-Crane. Crane and barge fit together 'hand in glove'.

The advantage over other floating crane concepts is the fact that the counterweight moves not only up and down but also back and forward resulting in a very small tipping moment. This means less barge movement and the result is less friction between the floating terminal and the vessel, more precise and faster grab positioning as well as more comfort for the operator and the crew working on board of the floating transfer station.

With this new E-Crane floating terminal, Seaboard offers the owners, operators, and charterers of cargo vessels a very competitive alternative to traditional shore side terminals and berthing. In addition, it offers comprehensive assistance with all facets of cargo movement through its terminal.

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More than just a stock answer?

bulk stockyard solutions

Expansion to the manganese export facility at Assmang Limited's Cato Ridge Alloys plant in KwaZulu Natal, South Africa.



DemcoTECH: optimizing stockyard performance

The overall performance of the bulk minerals export chain is restricted, inevitably, by the poorest performing element in the chain, which could be any one of a number of processes, including transportation, the mining operation or port stockyard export facilities, says DemcoTECH engineering general manager, Paul van de Vyver.

The major function of stockyards is to cater for the cyclical nature of the incoming and outgoing product, combined with the requirement to blend material in some cases. The main problem is the need to accommodate a disparity between the rate of incoming and of outgoing materials — often a result of relatively continuous mine production and scheduled transportation, with the more cyclical nature of the export process, adds van de Vyver.

“Understanding the entire system is therefore required through a holistic design approach, which considers a number of parameters including partitioning to eliminate material contamination, material size, shape of the stockpiles, terrain

limitations, stacking methodology, stockyard layout and equipment selection.

“Only then can a solution be provided that is customized to the client’s requirements, whether it be a stockyard for a mine, process plant, power utility, port or terminal — and one which will limit the possibility of the stockyard being the bottleneck in the overall transportation chain.”

Johannesburg, South Africa-based, DemcoTECH Engineering has a successful track record in designing, engineering, refurbishing and supplying stockyards and/or portions of stockyards, both in South Africa and internationally.

DemcoTECH, working jointly with Kantey & Templer Engineers, completed an expansion to the manganese export facility at Assmang Limited’s Cato Ridge Alloys plant in KwaZulu Natal, South Africa.

The project commenced with a concept study and covered the complete range of project services through to implementation of the works. It consisted of three major





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components, namely refurbishment of the existing tippers, refurbishment and upgrading of the existing conveyors and, lastly, the supply of a greenfields stockpile and reclaim facility, with an automatic truck loading system.

“The changes to be made to the system were fully evaluated in a feasibility study beforehand, which included a time and motion study on the wagon tippers,” says van de Vyver.

The stockpile included a new elevated tripper feeding the stockpile with a dust suppression system to providing a safe and environmentally friendly operation. The wagon tippler was supplied with a new side arm charger to eliminate the positioning of rail wagons using a locomotive.

In a major contract award, DemcoTECH was appointed as the materials handling engineering design and engineering company on Vale’s expansion project to establish a regional iron ore distribution centre in Lumut, Perak, Malaysia.

“Work started on the facility in 2010 and the first two 400,000dwt vessels carrying ore to the Malaysian Terminal were off-loaded early in 2014,” notes van de Vyver.

The distribution centre includes an ore storage yard and a marine terminal, capable of handling more than 60 million metric tonnes per year. Iron ore is received from Vale’s mines in Brazil for distribution to customers across the Asia Pacific region.

Through a separate contract, DemcoTECH also provided operational readiness services, including operational and maintenance training modules.

“Our success has been based both on our design and engineering expertise and experience, as well as our ability to provide the client with fit for purpose, reliable stacking, reclaiming and blending stockyard layouts and equipment. This



Rendering of Vale's regional iron ore distribution centre in Lumut, Perak, Malaysia.

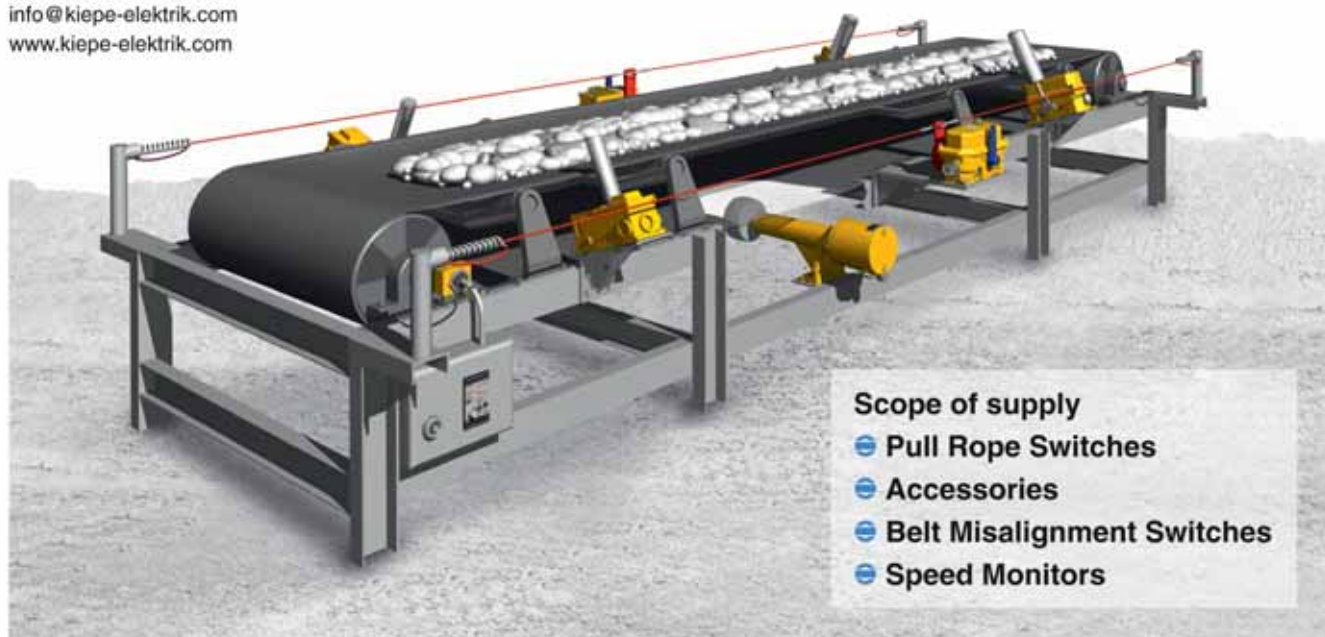
includes rail tippers, versatile conveyor systems for the relevant stockpile configurations for blending, pipe conveyors for enclosed environmentally clean conveying and the selection of the correct stacking and reclaiming equipment. DemcoTECH also designs and supplies sampling plants for these applications.

“When designing a stockyard layout, DemcoTECH uses a number of tools, including simulation modelling, animations which allow the client to visualize the stockyard in terms of real life operating and maintenance conditions, finite element analysis (FEA) to review and audit complicated stress areas on these large machines and also material flow analysis to ensure optimum chute design,” says van de Vyver.

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Bedeschi Group: the value of a team approach



Picture 1: Bedeschi circular storage.

Bedeschi supplies machinery and services to the bulk material handling and mining industries with a specific focus on handling difficult materials, such as sticky clay and coal/lignite, or dry mining and abrasive materials, such as iron ore and other minerals. Furthermore, through its subsidiary, CTP Team Srl, based in Milan, Bedeschi also works in air pollution control.

In the last few years, Bedeschi and CTP have commissioned several stacker, reclaimer and filtration plants in Turkey. Some

projects are related to the conversion of electrostatic precipitators into bag filters while others involve new equipment in existing plants or installation in new cement productions lines. The company has also been awarded a range of contracts related to gas filtration systems.

All the supplied bag filters are equipped with SWAP technology (Sonic Wave Acceleration Pulse) for bag cleaning.



Picture 2: additive storage.

TABLE 1: PROJECT DATA

PREMIX STORAGE		
Material	Limestone/Premix	
Bulk density (t/m ³)	1.4	
Grain size (mm)	95% < 80 100% < 100	
Moisture (%)	5–10 max.	
Resting angle (°)	38	
Pile external diameter (m)	94.5	
Diameter of rails (m)	95	
Pile internal diameter (m)	6	
Pile height (m)	17	
Pile section (m ²)	369	
Total storage volume (tonnes)	55,000	
Reclaiming useful volume (tonnes)	42,000	
Stacking max capacity (tph)	2,000 each	
Reclaiming max capacity (tph)	700 each	
ADDITIVE STORAGE FOR RAW MILL		
Material	Clay ^(*)	Iron ore
Bulk density (t/m ³)	1.4	1.8
Grain size (mm)	0–100	0–100
Moisture (%)	10	3
Resting angle (°)	38–40	
Total stored volume (tonnes)	10,000	10,000
Number of piles	1	1
Section of piles (m ²)	190	190
Total length of piles with retaining walls (est.) (m)	40	30
Width of piles (m)	22	
Height of piles (m)	14	
Stacking capacity (tph)	2,000 max	
Reclaiming capacity (tph)	250	
ADDITIVE STORAGE FOR CEMENT MILL		
Material	Additives	Gypsum
Bulk density (t/m ³)	1.4	1.4
Grain size (mm)	0–100	0–100
Moisture (%)	5	5
Resting angle (°)	38	
Total stored volume (tonnes)	10,000	10,000
Number of piles	1	1
Section of piles (m ²)	190	190
Total length of piles with retaining walls (est.) (m)	40	45
Width of piles (m)	22	
Height of piles (m)	14	
Stacking capacity (tph)	2,000	
Reclaiming capacity (tph)	250	
COAL AND PETCOKE STORAGE		
Material	Coal + petcoke	
Bulk density (t/m ³)	0.8	
Grain size (mm)	0–50	
Moisture (%)	15	
Resting angle (°)	35–38	
Total stored volume (tonnes)	12,500 + 12,500	
Number of piles	2 + 2	
Section of piles (m ²)	190	
Total length each pile (m)	85 + 85	
Width of piles (m)	22	
Height of piles (m)	22	
Drag chain capacity (each) (tph)	100	
Weight feeder capacity (each) (tph)	100	
Stacking capacity (tph)	500	
Reclaiming capacity (each) (tph)	100	

TABLE 2: TECHNICAL DATA OF DEDUSTING PLANT

Normal operation 100% coal

Flow rate:	740,000Nm ³ /h
Temperature:	180–220°C
Dust inlet:	72g/Nm ³

Normal operation with natural gas

Flow rate:	820,000Nm ³ /h
Temperature:	180–220°C
Dust inlet:	72g/Nm ³

Combined operation

Flow rate:	900,000Nm ³ /h
Temperature:	95°C
Dust inlet:	70g/Nm ³

CASE STUDY: MADENCILIK VE YAPI MALZEMELERİ SAN.VE TIC. A.Ş

Bedeschi and CTP are taking part in the construction of a new greenfield cement plant in Turkey for a production capacity of 10,000 tonnes per day (approximately 3.3mt [million tonnes] of clinker). Bedeschi will supply all the machinery for raw materials handling, as outlined below and in Table 1.

Premix storage

This comprises two circular pre-homogenization plants with luffing, slewing stacker and bridge, each with a total storage capacity of 50,000 tonnes of limestone and premix for a total capacity of 100,000 tonnes of raw materials.

Additive storage (raw mill)

An additive storage facility comprising 4 × 10,000-tonne areas will store materials for both the raw mill and the cement mill (iron ore, clay or sand at one side and gypsum and additives on the other).

Stacking will be carried out via a first belt stacking system with a capacity of 2,000tph (tonnes per hour). Iron ore and clay (or sand) will be reclaimed by a 250tph side semi-portals reclaimer. From the additives storage plant, 300tph belt conveyors will transport the iron ore, clay or sand to the raw mills' feed hopper. Dust filters will be installed.

Additive storage (cement mill)

Gypsum and additives will also be stored in the additive storage plant. A 250tph side semi-portals reclaimer and 300tph belt conveyors will be used to transport gypsum and additives to the cement mills' feed hoppers. Again, dust filters will be installed for dedusting.

Coal preblending plant

The plant will have a 25,000-tonne-capacity coal preblending plant equipped with two feed hoppers, two drag chain conveyors, two dosing belt weighers and belt conveyors. The belt conveyors will transport coal from the crushing plant to the preblending plant at a rate of 500tph. Once there, a 500tph tripper car will be installed to stack the coal, which is then reclaimed by two 100tph side semi-portals reclaimers. Transportation to the coal mill is via 100tph belt conveyors, and a belt weigher will be installed. To protect the coal mill from metal parts, a tramp iron removal system, metal detector, permanent magnet and a feed

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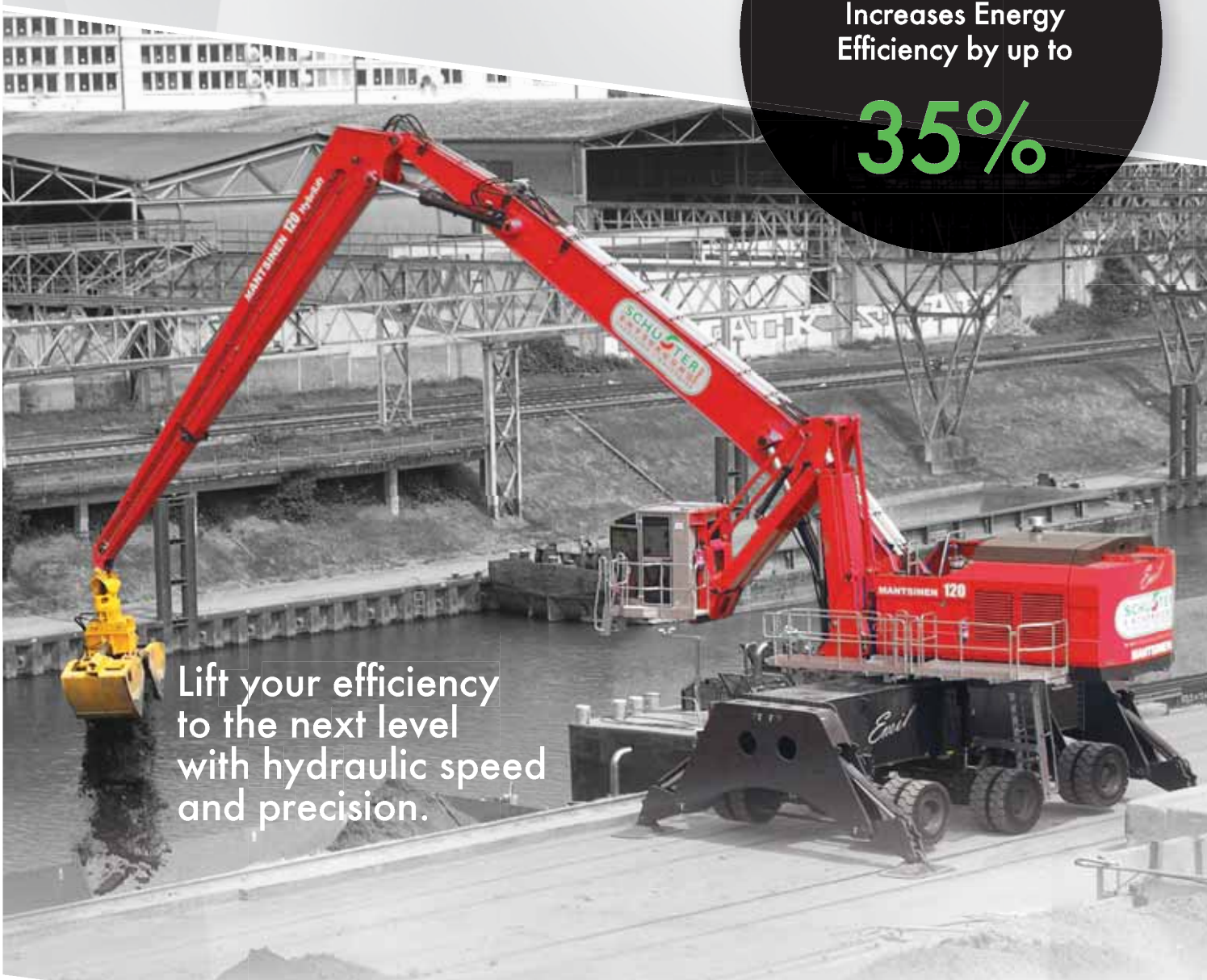
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Picture 3: bag filter.



hopper with slide gate will be installed.

Dedusting

CTP Team will supply the following: common bag filters for dedusting exhaust gases, evaporation coolers including screw conveyors, rotary gate, control flaps, pipes and ducts, and complete engineering of duct arrangement and the final chimney.

Dedusting system technical highlights

The MKPR low pressure bag filter will be designed with a filtering surface of 21,714m², incorporating 8m-long filter bags in fibreglass, with PTFE (Teflon) membrane. Cooling water is injected in the evaporation tower at 67m³/h. The fan electrical motor is designed at 2x750kW = 1,500kW. Compressed air consumption for cleaning all the filtering bags 350Nm³/h at 2.5 bar.

Thanks to CTP advanced ECO3 technology, the dust guarantee at the stack will be less than 10mg/Nm³.

Conclusion

Furthermore, ONT Spa, a leading company in the production of bulk material handling systems had been recently incorporated in the Bedeschi Group.

With over 55 years of history and a track of success in different fields, the company is large enough to be able to sustain complex projects, and flexible enough to satisfy customer requests.

The new collaboration between Bedeschi and ONT will guarantee more efficient and reliable solutions for customers in the bulk materials handling sectors. As a result of this, and of CTP's expertise, Bedeschi is able to meet customer requirements and carry out environmentally friendly, energy-saving projects.

STM Conveyor Systems: flexible solutions for the bulk handling market



Ulu Jelai dam – Malaysia.

STM specializes in the engineering and supply of belt conveyor systems for bulk materials handling facilities. Since 1975, when it started as a family business, STM has provided worldwide innovative integrated solutions that increase efficiency, reliability and cost savings for its customers' production processes.

Today, STM is able to offer its customers a full range of project services: engineering, fabrication and commissioning. Throughout, STM develops flexible, individual and effective solutions to find the ideal implementation for each customer: this enables it to remain viable in a highly competitive market, with differentiated competitors in every field.

In the STM factory, the quality and the continuous improvement in line, with the best industry practices and standards, are the drivers to meet and even exceed customer expectations.

STM usually performs complete installations in a wide range of industry fields such for example:

MINING

Based on a modular concept that greatly facilitates relocation or expansion as the mine develops, STM's systems can expedite, optimize and economize the process of overburden removal, processing (crushing/screening),

redistribution and stacking. Conveyors for this kind of application are designed for a lifetime greater than 30 years, with solutions to minimize extraordinary maintenance and downtime risk. STM approaches mines as '24-hour production plants', and is committed to delivering high-value performance and meet customers needs in terms of:

- ❖ excellent reliability;
- ❖ investment cost;
- ❖ delivery time;
- ❖ lower operating costs; and
- ❖ high standards of safety and sustainability.



Basalt mine – Ukraine.

Claudius Peters wins reclaimer contract

Since its founding in 1906, Claudius Peters has become one of the world's most respected engineering houses and an innovative world leader. Its German engineering excellence continues to set benchmarks for the design, manufacture and commissioning of materials handling and processing systems for the gypsum, cement, coal, alumina and bulk-handling industries.

From conception and installation through to commissioning and after-sales support, Claudius Peters provides world-class service to the world's biggest bulk materials producers.



The company is part of the Claudius Peters Group GmbH, headquartered in Buxtehude near Hamburg, Germany, with regional offices in the Americas, Asia and Europe.

In May 2012, Claudius Peters Technologies SAS, CP office in France, specialized in bulk material handling and stockyard equipment, including stackers, reclaimers, belt conveyor systems, etc, was awarded a contract by DOOSAN Heavy Industries & Construction Co. Ltd for the engineering and the supply of two coal reclaimers to be installed in the Muong Duong II coal-fired power plant in Vietnam. The first machine has already been commissioned, and the second is currently under erection, with commissioning expected in late 2014.

Machine characteristics:

- ❖ stock capacity: 2 x 152.000 tonnes, 347m length
- ❖ pile width: 48m
- ❖ rail span: 56m
- ❖ output: 1,200tph
- ❖ chains drives: 250/55kW (main/secondary)
- ❖ Particularities: ATEX — air pressured control cabin including inert gas firefighting system — dust suppression system for discharge chute, etc...

These two machines are representative of what Claudius Peters Technologies SAS is able to supply, whatever its customers require, regardless of the bulk product to be handled, or the machine size.

STM's flexibility makes it possible to manage a wide range of different plant configurations, both for sizes and for typology, including mobile plants. This configuration is one of the latest trends in a sector in which the plant owner wants to have freedom to move the plant after a limited time usage in

determined area.

CONCRETE PLACING (RCC CONVEYORS)

STM developed a specific system for concrete placement, both for conventional concrete and for RCC concrete. Roller-



Ulu Jelai dam – Malaysia.

compacted concrete, or RCC, is placed with conventional or high-density asphalt paving equipment, then compacted with rollers. RCC has the same basic ingredients as conventional concrete: cement, water, and aggregates, such as gravel or crushed stone. However, unlike conventional concrete, it's a drier mix — stiff enough to be compacted by vibratory rollers. Typically, RCC is constructed without joints. It needs neither forms nor finishing, nor does it contain dowels or steel reinforcing. RCC concrete is mainly employed for gravity dams. To reduce the entire duration of the construction site, to meet operative, financial, environmental benefit and to deliver as soon as possible such important infrastructure to the local community, contractors are increasingly looking for equipment able to guarantee them continuous feeding with flexible use mode. This application in fact provide a conveyor line able to follow the dam growing, with special devices as elevation tools for conveyors and distribution devices as swingers, crawler placers, tripper conveyors.

In this field STM was awarded for the supply of the belt conveyors package at Ulu Jelai DAM — Malaysia: the line is designed to follow the dam grow up, with special elevation devices, in a strongly efficient and effective distribution system. The project is located approximately 200km north of Kuala Lumpur in the state of Pahang. The main component is the construction of the dam on the Bertram River, more than 80 metres high and constructed entirely using the advanced technology of RCC (roller compacted concrete).

TECHNOLOGICAL DEVELOPMENTS

In order to carry out in the most efficient way the concrete distribution on the dam floor, for the Ulu Jelai Dam Project STM has developed a special device to load trucks at continuous rate: the so-called 'swinger' makes it possible to supply RCC up to the end of the conveyor line with the flexibility of a 360° rotation, without downtime for the material flow. The swinger has a specific elevation tool that allows it to follow the dam growing as well as the modification of the conveyors configuration along the slope.

BATCHING PLANTS

Often belt conveyors are employed in the handling of inert



Boyabat dam – Turkey.

materials such as gravel, sand and mixed granules for the preparation of concrete. The belt conveyors allow for the extraction and the automatic weighing of granules needed for the preparation of concrete mix. The installation plan usually includes a silo for storage and segregation of inert materials as well as a system belt conveyors system for dosing and feeding the inert materials to the concrete mixing plant. Based on customer needs, STM designs and develops the specific handling system for automatic flows management in the concrete mixing plant.

THERMOELECTRIC

A thermal power generation plant is the most conventional source of electric power. Conventional plants produce electricity by burning fossil fuels, such as coal, in order to have pressurized high temperature steam and to use it to rotate a turbine, with consequent electricity production. Biomass is biological material widely used as an alternative energy source in thermal power generation. The main advantage of using is that the CO₂ produced during the process is the same gas that the material has absorbed from the atmosphere in previous years. This avoids any release of new CO₂ into the atmosphere, with consequent benefits for the environment. To handle those kinds of materials in a complex power plant, it is necessary to design a system with exceptional reliability in order to avoid any kind of shutdown for tens of years. STM provides a complete engineering including specific back-up solutions, limited maintenance devices, best-in-class components manufacturers



Ulu Jelai dam – Malaysia.

Tuxpan power plant – Mexico.



WASTE TO ENERGY

Belt conveyors are usually inserted into complex and articulated systems in which every single element is fundamental for the overall functioning of the whole industrial plant — or stockyard. In a plant for electricity production from waste, STM usually carries out the complete engineering for flows exchanges, paths for personnel, access points, maintenance areas, load bearing structures, pylon towers, and conveyor switching. Even if the material is not so difficult to process or to transport, the low density makes it necessary to change the design approach to handle a high material volume but at the same time to guarantee high values of tonnes per annum to feed adequately the processing machines.

OTHER APPLICATIONS

Other areas in which STM has increased its expertise in conveying systems include heavy clay, refining, tunneling and bitumen plants.

MATERIALS

Working in such a range of fields, the variety of materials transported is even broader: coal, petroleum coke, RCC, gravel, sand, pellet, hot ash, clinker, municipal solid waste — each with particular behaviours along the process, and a need to find a solution to handle it in the most effective way.

COMPANY

STM is an Italian company, with headquarters and plant in Tito Scalo, Italy.

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Lomellina power plant – Italy.

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systems and components



Jay Venter

Large-scale igus energy chain

BREATHING NEW LIFE INTO THE PORT OF FELIXSTOWE'S GIGANTIC RAIL TRAVERSER

An igus energy chain system has recently been designed into the largest capacity rail traverser in the UK. Built by heavy rail lifting manufacturer Mechan Ltd, the traverser moves freight locomotives between eight lines at the Port of Felixstowe's new North Rail Terminal. With its pivotal role within the port's rail network, the traverser's reliability is paramount, while its environment presents a number of challenges.

The traverser has a capacity of 170 tonnes, weighs 90 tonnes

and measures 30 metres in length. It runs on eight wheels, six of which are powered each with a 15kW electric motor; the entire motor set being fed by a 200A 415V three-phase power supply. The traverser also has an on-board PLC (programmable logic controller)-based system that monitors the status of the traverser's sensors and activates lights and signals accordingly. It can also activate wheelstops, which prevent a locomotive overrunning the traverser's rail track.

The power to the motors is not controlled directly by the controller. Instead, the PLC transmits data via a Profibus field



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bus to a ground-based control and switching unit, which acts on the Profibus data to switch power to the electric motors. Therefore, the motors' power cables, the Profibus data cable and an emergency stop cable must be routed between the moving traverser and fixed ground station. This requires a cabling installation that can reliably withstand repeated flexing during continuous 24/7 operation in an extremely challenging outdoor environment.

During the initial design phase, a cable reeling drum solution was considered. Martin Berry, Mechan's engineering director, explains "Felixstowe wanted an extremely reliable product, a reeling drum would have involved sliding contacts and this is not good for communication signals."

After deciding that energy chains offered the secure and reliable comms network needed, Mechan turned to cable carrier specialist igus. Mechan took advantage of the project-oriented design, build and installation capability of igus to obtain a complete, installed energy chain solution — and igus certainly had to call on its specialist experience and expertise to overcome the challenges presented. At 30 metres, the energy chain's size was no problem, as igus has previously installed chains of up to 615 metres. Instead, the issues related to the environment, and to some practical aspects of the installation.

The environment was a concern because of several environmental factors. As Felixstowe is a marine port, its rainfall has a high salt content and is corrosive, while protection from wind-born debris was also necessary; freedom of movement could be impeded by a build-up of debris.

Construction - Earthmoving

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Material Handling - Utilities

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Energy - Petrochemical

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Industrial Equipment

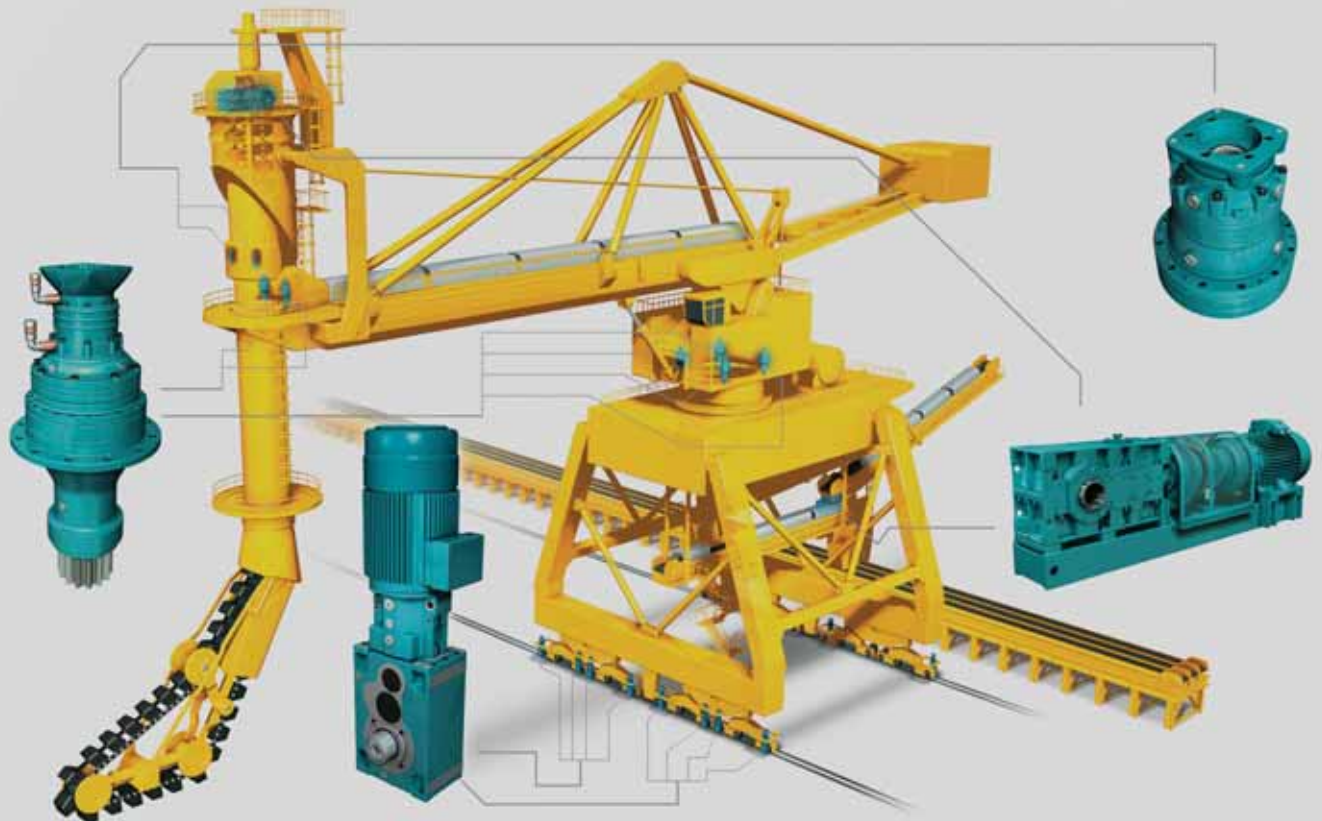


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Also, in winter, freezing temperatures and ice are encountered and the robust design of the system allows this to be overcome.

The installation challenge was that the concrete bed for the traverser rails had protruding plinths at eight-metre intervals, preventing any cable trough being laid directly along the length of the main bed — yet a suitable trough would need two-metre fixing centres to allow a fast and robust installation. Installing an I-beam to provide mounting points was also not an option as this would have interfered with the traverser travel path.

The igus project team's response comprised a customized FLIZZ® covered trough system. The FLIZZ is manufactured from stainless steel to provide corrosion resistance, and contains an E4 gliding e-chain®. This energy chain carries a set of chainflex® power and data cables with special properties to survive many flex cycles, high speeds and accelerations while offering EMC safety and compliance with relevant standards.

The complete solution, including the FLIZZ, E4.I e-chain and chainflex cables, was installed by igus into the traverser. Steelwork comprising unistruts and braces was designed, manufactured and used by igus to mount the system to the concrete while clearing the plinths.

“This project's success has been due to both igus' project

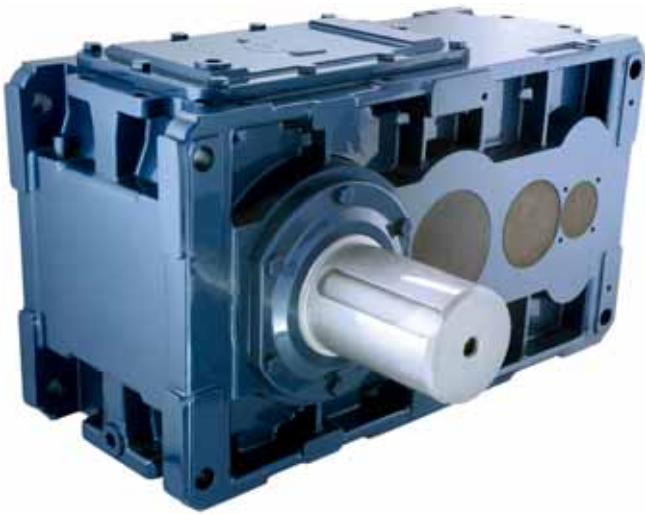
capabilities and its products,” concludes Berry. “These challenges were highly project-specific, yet overcome very effectively. An acceptance test was passed in which 100 moves were made without issue. The energy chain is proving to be a more robust and compact solution than festoons or reeling drums, and the igus product has been perfectly matched to the traverser's environment.”

ABOUT IGUS

Based in Northampton in the UK, and with global headquarters in Cologne, Germany, igus is the largest producer of injection moulded polymer bearings and reinforced plastic cable carriers in the world. Product lines include industry-leading e-chain cable carriers, chainflex continuous-flex cables, iglidur plastic plain bearings, igubal spherical bearings, drylin linear bearings and guide systems. The company has 26 subsidiaries across 31 countries and employs more than 2150 people worldwide.

With plastic bearing experience since 1964, cable carrier experience since 1971 and continuous-flex cable since 1989, igus provides solutions based on 100,000 products available from stock with between 1,500 and 2,500 new product introductions each year.

Gearing up - making the right choice for gearbox design



Selecting the correct design of gearbox for your application can be a crucial decision that will affect performance, efficiency, reliability and cost. So, having a good understanding of the basic principles and suitable applications is essential.

Dave Brown, Sales Manager at Brevini, offers some technical guidance.

Gears have been in use since the times of Archimedes and Aristotle, and they continue to play an essential role in mechanical systems across the world. While the basic principles remain the same, the technology has advanced considerably; with different gear arrangements offering a variety of benefits for the right application.

A gearbox is most commonly designed to provide a reduction in speed from a prime mover, such as an electric motor, and deliver the necessary speed and torque for a particular application. The gear ratio is the relationship between input and output speed, with output always defined as unity.

For example, if we consider an electric motor as the prime mover — with a speed of 1,500rpm — and a driven machine at 500rpm, the ratio is as follows;

$$\text{Input:Output or } 1,500:500 = 3:1$$

In simple terms, three revolutions of the input shaft will produce one revolution of the output shaft.

Gearboxes may use a variety of gear arrangements in order to achieve the desired output in terms of speed, torque, efficiency, size, noise, lifetime and maintenance requirements. The type of gear arrangement is defined by the design of the gear teeth and how they mesh together.



Examples of the planetary gearbox design.

STRAIGHT CUT GEARS

The most basic type is the spur, or straight cut gear, which has teeth that are parallel to the axis of rotation. This design offers economical performance and is equally good for both high and low ratio applications. The spur gear can also be used in combination, or multiple stages, to achieve high gear ratios.

However, the straight cut design means that the point at which the gears mesh occurs along one tooth at a time which can cause increased wear and noise, especially at higher speeds. The noise is caused by the single point of contact between the drive and driven gears at the start of gear mesh. This is in contrast to the rolling or sliding type of contact associated with other gear technologies.

A refinement of the spur gear is to slant the teeth in relation to the axis of rotation, which allows a more gradual engagement of the meshing teeth for multiple teeth to be engaged simultaneously. This provides a smoother motion with reduced noise. This design has a greater tooth contact area, which increases the amount of torque that can be transmitted by 10–15%, while still maintaining very good efficiency.

However, the design of a helical gear induces axial thrust in the gearbox that has to be accommodated either by installing thrust bearings or changing the gear design to incorporate twin helix stages, which will counteract the axial forces, or a more complicated double helix gear. This is a gear with the teeth set in a herringbone arrangement — but this design of gear is more complicated to manufacture as well as assemble and so will carry a price premium compared to the spur gear.

BEVEL GEAR ARRANGEMENTS

So far, the gear arrangements have transmitted power in parallel axes, but a common requirement is to redirect the rotational axis by 90°, which usually involves bevel gear sets or worm drives. The latter have seen significant improvements in efficiency, especially for reduced torque applications at lower ratios and they can still represent good cost efficiency in some applications.

The orientation of the teeth in bevel gear sets can be straight cut, but the more common style is a spiral cut gear which offers improved noise levels and efficiency. The most common styles are Gleason or Klingenberg and in terms of costs, the spiral bevel gear option becomes more attractive when the application requires more than 7.5kW with a ratio above 20:1.

PLANETARY DESIGNS

The final main group of gear arrangements is the planetary gearbox, which takes its name from the normal gear arrangement consisting of a central sun gear, the orbiting planet gears and the outer ring gear, or annulus.

By splitting the loads through multiple contacts between the planet gears (typically 3), the torque capacity of a planetary gearbox is very favourable against other solutions. Additionally, the symmetry of the design means that most of the gear separation loads associated with other solutions are self cancelling in the planetary design. These factors combined mean that the planetary solution can be significantly more compact and more cost effective in many applications.

The benefits of the planetary gearbox can be combined with a bevel or helical gear system which then offers the benefits of both designs. This enables the advantages and benefits of the different technologies to be combined to optimize the solution for the demands of a specific application. This type of compact

gearbox is common in many of the heavier industries where reliability, efficiency and total cost of ownership are important factors.

CRUCIAL DUTY CYCLES

Many factors influence the design of a gearbox for a particular application. The key is determining as many of the crucial factors as possible before the selection process begins. Specific information regarding the reduction ratios, input speed and torque are critical. However, it is also important to define the real duty cycle for the equipment, defining frequency and details of the start/stops, variations in the running torque and speed, and so on. Only with a full duty cycle can you accurately select and design a solution that will perform for the required life of the machine.

The location of the application is also important as the design may have to consider ambient and environmental conditions, space requirements, mounting arrangements, weight, noise and maintenance requirements. In addition, the backlash, which is the space between two meshing gears may need to be specified for particular applications. Every gearbox will have some backlash designed into it, to allow lubrication of the gears and prevent the gearbox from locking up.

Finally, there are the more specific design characteristics such as shaft alignment, efficiency and expected lifespan, which can influence certain design choices.

Having gained a basic understanding of the more common gearbox designs, it is possible to appreciate the alternatives for a particular application. The next step is to discuss more specific requirements with design engineers who specialize in this field. Brevini has always used experienced technical sales engineers to



Brevini engineers are able to design gearbox units that last the machine's total design life.

assess each unique application to offer advice and technical knowledge in order to help customers define the correct gearbox for every application.

ABOUT BREVINI

Brevini UK headquarters are located in Warrington, Cheshire, at the heart of the motorway network. Its facilities include 900m² of offices, manufacturing and warehousing for the Brevini products in Warrington and 800m² of offices and manufacturing for the PIV Drives helical products in Scunthorpe, Lincolnshire. Brevini UK has enthusiastic staff with long experience in power transmissions and the company offers a 'solutions based' approach. Using advanced software, its engineers are able to select gearbox units to last the machine's total design life. Its UK stock of standard parts, thanks to Brevini's modular construction, allows short lead times for a larger number of variants and sizes. All of these units are supported by extensive UK technical expertise.

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Tribo makes all the difference

Rob Dumayne, Director at igus, reviews the latest developments in plastic bearings, and how industrial manufacturers can use them to produce cost savings while increasing their environmental credentials.

The history of the plastic plain bearing goes back a long way, spurred on by the discovery of the lower friction properties of nylon in around 1860. But in the last few decades, the composition of plastic materials has been refined considerably; in the last 30 years igus has developed 35 different tribologically optimized materials, which offer a lower coefficient of friction than conventional metals or composite materials — from the economical iglidur G all-rounder to the FDA-conforming iglidur A180 material. In addition to being lubricant-free, plastic bearings are maintenance-free, impervious to dirt, water, chemicals, heat and shock loads; and because they have essentially the same dimensional structure as conventional bearings they are relatively straightforward replacements.

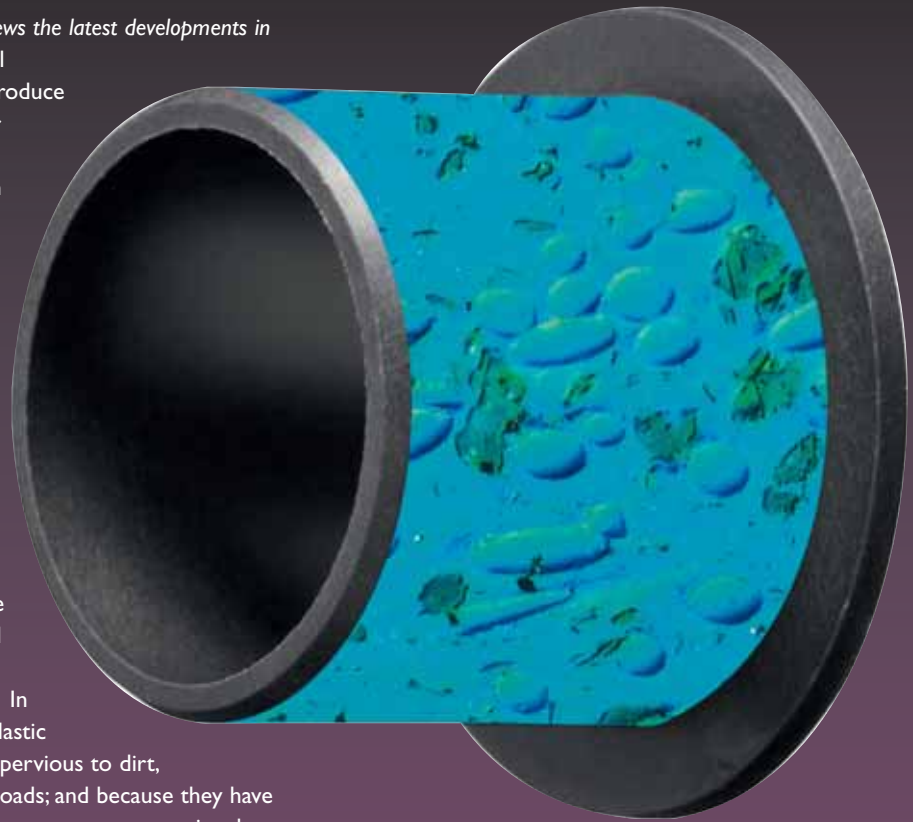
The base of each polymer bearing is, depending on specific requirements, a carefully selected and blended thermoplastic matrix material. To increase the compressive strength of the bearing, reinforcing fibres are embedded within the material during the moulding process, as well as solid lubricants that optimize resistance to wear and reduction of friction. The solid lubricants are very important for the dry-running performance of bearings between the running surface, usually a shaft and the bearing, where they sufficiently lubricate the immediate area.

The great advantage of this type of homogeneous construction is its lack of layers; during the transition to the next layer, there is a distinct change in material properties which can cause wear with traditional composite bearings, this usually means the end of the bearing, since the huge increase in rates of friction and wear lead to catastrophic failure. With an injection-moulded iglidur plain bearing however, this does not occur, and the friction and wear rates are constant over the entire wall thickness and therefore life of the bearing.

REPLACING METAL BUSHINGS

igus self-lubricating and maintenance-free plastic plain bearings are today replacing millions of metal bushings that require oiling or greasing. They increase the safety of the machinery, reduce costs and protect the environment; and because igus rigorously tests its plastics continuously — over 8,000 tests per year for durability, friction and wear — their lifespan can be reliably predicted.

igus' online tool, the 'Product Finder', helps engineers find the most appropriate iglidur polymer material that matches



specific requirements (highest service life in dry run operation, dirt-resistant, vibration-dampening, resistance to chemicals, good for edge pressure, etc) and state the allowed static surface pressure, as well as upper and lower temperature information.

Every year igus develops many new and innovative plastic bearing materials; this interdisciplinary research involves mechanical engineers, materials scientists, physicists and chemists working closely together to meet industry demands. By investing in plastic bearings, engineers can reduce production and maintenance costs whilst their equipment and machinery operate with total reliability in a more environmentally-friendly way.

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With plastic bearing experience since 1964, cable carrier experience since 1971 and continuous-flex cable since 1989, igus provides the right solution based on 100,000 products available from stock with between 1,500 and 2,500 new products introduction each year

Clip-on guide rings from igus, instead of elaborately punched PTFE tapes



Place, clip on and ready: Maintenance-free iglidur piston rings from igus are mounted with just one hand. Ready for installation, they are increasingly replacing the expensively produced PTFE tapes. (Source: igus)

LUBRICATION-FREE PISTON RINGS AVAILABLE IN NEW DIMENSIONS

Where PTFE tapes have to be expensively customized and fitted, the iglidur piston rings from igus can be simply clipped on the piston or bolt. This affordable option from igus is now available in a variety of sizes and materials.

Whether in driving elements in the packaging and medical systems or in construction and agricultural machinery, the lubrication-free piston rings from igus have proved successful for years. The igus customers can select from the entire iglidur catalogue range with 45 different materials and even configure their piston ring themselves.

Particularly predestined materials here are iglidur J350 for high-temperature applications, the FDA-compliant iglidur A180 or the wear-resistant all-rounder iglidur J. These are also available now from stock in 24 special piston ring sizes.



Customers can choose from the entire iglidur catalogue range and configure their desired piston ring. (Source: igus)

EASY AND QUICK ASSEMBLY

The clip-on piston rings allow long-term use without external lubrication, maintenance or replacement of the polymer rings. Where PTFE tapes have to be punched in a complicated procedure and assembled in several steps, the piston rings from igus are simply clipped onto the piston rod or in the housing, they can be pushed to the desired position and already have the piston ring captively mounted and the assembly of the entire unit can continue.

The iglidur piston rings are suitable for linear and/or rotary and pivoting movements and are ideal not only for “clean” applications in medical and packaging technology, but also for “rugged” applications in construction or agricultural machines due to their freedom from lubrication, chemical resistance and corrosion resistance. By their low cost and durability, they are a cheap alternative to PTFE tapes.

Massive chain and bucket elevator project completed



One of the largest chain and bucket elevator projects ever undertaken by Schenck Process and Redler has been recently completed and despatched ready for export and installation overseas. The multiple quantities of huge elevators are for the use in the transportation of fertilizer at high capacity rates within the port and required the manufacture of bulk materials handling equipment that was significantly

outside the normal operating design parameters.

The specialized design utilized the extensive knowledge and expertise that the company has developed in the handling of bulk materials within the grain and heavy process industries



around the world.

The project has been co-ordinated from the company's Stroud based mechanical conveying office and production facility which includes the detailed engineering design, manufacture and assembly of the terminals and components to a very exacting customer specification. The project illustrates the flexibility and capabilities of Schenck Process to provide tailor made chain and bucket elevator or belt and bucket elevator solutions for a wide number of industry applications that complement the Redler branded mechanical conveying and elevating product range that has been provided by the company for over 90 years.

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Abmessungen: 28 m Ausleger
Bauweise: auf Schienen
Schiffsgrößen: Handymax
Bemerkungen: 12 Tonnen Hilfswinde

Design

Capacity: 400 t/h
Products: Alumina
Dimensions: 28 m Boom
Type: on Rails
Ship size: Handymax
Remarks: 12 ton Auxiliary Winch

Doosan unveils DA40 ADT



Doosan unveiled its DA40 ADT at the Steinexpo exhibition, which took place from 3–6 September 2014 in Homburg, Germany.

The Doosan Construction Equipment stand and working demonstration at Steinexpo 2014 included the very latest products for quarrying, mining, construction and recycling markets from Doosan Heavy, Bobcat, Doosan Portable Power and Montabert.

The stand display featured the Doosan Heavy range of excavators, wheel loaders and articulated dump trucks; Bobcat compact loaders and compact excavators; portable compressors, generators and portable lighting equipment from Doosan Portable Power and Montabert hydraulic breakers and hydraulic drifters for drilling applications.

DOOSAN HEAVY

The Doosan stand display included a number of Stage IIIB compliant models being shown for the first time at Steinexpo, namely the DX380NLC-3 crawler excavator equipped with a Montabert breaker, the DX530NLC-3 52 tonne crawler excavator, the DL420-3 wheel loader and the DA30 articulated dump truck (ADT).

In the demonstration area, visitors were able to see the first appearance at an international show of the new Doosan Stage IV/Tier 4 Final compliant DA40 ADT, which worked together

with the Stage IIIB compliant DX490NLC-3 excavator and the top-of-the-range DL550-3 wheel loader.

Launched in June 2014, the new Stage IV/Tier 4 Final versions of the DA30 and DA40 ADTs go far beyond just meeting the latest emission standards and incorporate many additional features and product improvements to establish a new benchmark in load carrying performance, fuel efficiency, enhanced controllability and high operator comfort, together with improved reliability, durability and reduced maintenance and servicing costs.

The 'best-in-class' fuel consumption of the new Doosan ADTs is down to a combination of features including new Scania Selective Catalytic Reduction (SCR) and Exhaust Gas Recirculation (EGR) diesel engines and a new ZF EP transmission, improving the transfer of power from the engine to the wheels for outstanding traction. When this is coupled with the enhanced rear differential system which reduces engine rpm and further increases machine durability, customers are ensured of an improved cost per tonne carried with the new Doosan ADT range.

BOBCAT COMPACT EQUIPMENT

Bobcat showed the company's new generation S450 skid-steer loader for the first time at Steinexpo. The new S450 model builds on the success of the S130 loader it replaces, by



combining the advantages offered by a truly compact loader with many of the new features and improvements found on the larger Bobcat new generation models.

As well as its compactness, the S450 skid-steer loader can be supplied with a comprehensive choice of 48 different product families of approved attachments (with more to come), offering solutions for a very wide range of applications and providing a perfect illustration of the Bobcat Tool Carrier concept common to all Bobcat compact loaders.

Another new Bobcat product is the E85 8-tonne excavator, powered by a Yanmar 4TNV98C-VDB8 Stage IIIB compliant diesel engine providing 44.3kW of power at 2,100rpm. The new Bobcat E85 excavator offers one of the best fuel efficiencies for

this size of machine on the market. At Steinexpo, the E85 model was equipped with a Montabert hydraulic drifter.

DOOSAN PORTABLE POWER

The products shown by Doosan Portable Power included the large 21/220 Stage IIIB compliant compressor and the G100-IIIA Stage IIIA compliant generator, the V9 Light Tower and the B2000 Balloon Light.

The 21/220 model is part of a family of large Doosan portable compressors based on a common platform that also includes the new 9/275, 9/305, 12/250 and 17/240 models and offers free air deliveries from 21.5 to 30.0 m³/min at operating pressures from 8.6 to 21.0 bar. The 21/220 compressor and the others in the

range are 31cm shorter than the previous Stage IIIA models, meeting a customer preference for both compact size and easy serviceability. The reduced size also offers advantages for truck-mounted configurations for the compressors.

Like the 21/220 compressor, the G100-IIIA (100kVA prime power) generator offers robustness and reliability, high performance and a wide choice of features. Of particular interest is the innovative fuel tank frame system offering a containment base integrated as standard in the frame to ensure 110% fluid containment capacity. The G100-IIIA generator has a standard fuel capacity offering a minimum of 12 hours of autonomous operation (at 75% of the load), while a 24-hour onboard fuel tank configuration is available as an option. **DCi**



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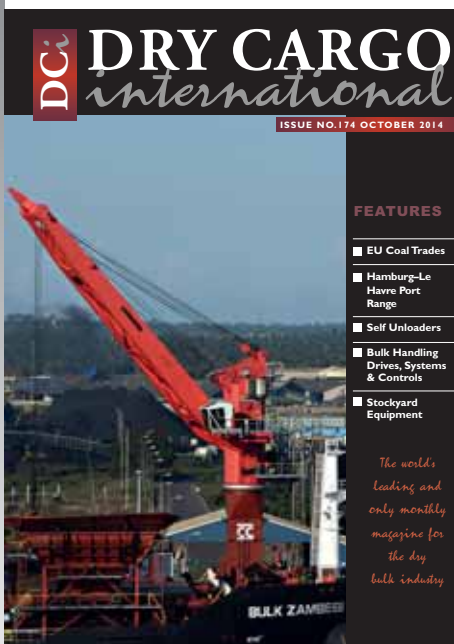
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Thinking ‘inside the box’

Low-capital, dust-free ore exports



Patrick Ports and Stevedoring's revolver from RAM Spreaders.

Australian case study: ore exporting system

ENVIRONMENTALLY ‘BEST PRACTICE’ FOR LOW CAPITAL INVESTMENT.

In 2013, Adrian Howard – General Manager, Business Development at Patrick Ports and Stevedoring was focused on winning more business for Patrick. A tender to export copper concentrate in tough economic times required some lateral thinking.

Challenged by a competitive market, Howard needed to ‘think inside the box’ to win the contract. Based on the success of containerized bulk handling (CBH) projects in Adelaide and Africa, he decided to explore innovative loading solutions, as opposed to traditional bulk methods.

Howard devised a new ultra-low-capital proposal that won the business, providing the customer with the use of new technology, the best dollar per tonne rate and an environmentally friendly solution. To date, Patrick has delivered an increase in productivity and cost savings for the customer.

STATE-OF-THE-ART SHIPLADING

To implement the new solution, Howard selected specially designed containers with lockable lids to integrate with a

revolving spreader. The new system means that containers are stored at the port until vessel arrival. Copper concentrate is then loaded by the revolver into the ship’s hold, removing the



Patrick's specially designed containers stored at the port.



need for a traditional concentrate storage shed and shiploader.

The sealed container system provides the customer with cost savings through reduced material losses, which is important considering the product is worth several thousand dollars per tonne.



Patrick's Revolver at Patrick Stevedoring, Port Kembla.

ENVIRONMENTALLY FRIENDLY

By securing the concentrate in sealed containers, this means bypassing several transfer points between open stockpiles and conveyors, only exposing the material to the air at the bottom of an 18m-deep hatch with a gentle tip.

The clean process reduces employee and community

exposure to potentially harmful dust emissions, whilst also adhering to strict environmental guidelines that ensure reduced spillage in sensitive marine ecosystems.

Patrick has successfully delivered copper concentrate at Port Kembla for over a dozen vessel calls loading in excess of 150,000 tonnes, alongside other products such as steel, wind turbines and coke handled at the berths. The flexible CBH process also enables loading to be conducted at multiple berths operated by Patrick.

Patrick's unrivalled integrated logistics business offers a seamless trucking-rail-storage-port solution. This combined with low capital investment enables Patrick to offer a differentiated customer solution, when competitors provide traditional bulk solutions.

ADRIAN HOWARD, GENERAL MANAGER, BUSINESS DEVELOPMENT AT PATRICK PORTS AND STEVEDORING Q & A:



Q: What was the main benefit to your customers?

AH: Put simply the CBH process

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allows us to offer a dust free, environmentally friendly solution. The customer loves that the concentrate is controlled and contained from the pit to the ships hold.

Q: Why did you choose the CBH process instead of traditional bulk?

AH: We didn't have the infrastructure in place for traditional bulk loading, and it's not often that the lowest-cost solution is also the best practice environmentally.

Q: What flexibility does the system have vs. traditional bulk?

AH: It's ready to go quickly. We started the contract four months after order placement. A new bulk



Lid lifted by Revolver from 20ft specially designed container. Rotation begins.



Safe working load of 38 tonnes capable of up to 15 lifts per hour.

operations and Patrick's ports, stevedoring and logistics businesses. With an annual turnover of \$3.7 billion and 8,800 full time employees across Australia and New Zealand, the Asciano group of companies forms the backbone of Australia and New Zealand's trade, handling and hauling the millions of tonnes of agricultural and resource commodities, retail goods, manufacturing products, construction and other materials that keep the region's economy, businesses and households running.

RAM Spreaders, part of the NSL Ltd group, has been one of the leading manufacturers and suppliers of container handling equipment for over 40 years. It developed its environmentally friendly RAM Revolver® for dust free containerized bulk handling solutions. **DCi**

terminal takes years to construct and gain the necessary approvals.

Q: Why did you choose RAM & ISG containers?

AH: They had a track record in delivering the first CBH system in Australia which has demonstrated reliability for nearly five years, and in many locations globally.

COMPANY PROFILES

Patrick is a part of the Asciano group of companies operating in over 40 ports across Australia and New Zealand with a national road and rail footprint in Australia. Asciano Limited (ASX:AIO) is the region's largest combined rail and ports operator, bringing together the strength of Pacific National's rail



Increasing productivity and reducing material losses with the dust free Containerized Bulk Handling Solution.

INDEX OF ADVERTISERS

Company	Page	Company	Page
Achenbach GmbH Metalltechnik	149	Liebherr-Hydraulikbagger GmbH	170
Alex Stewart International	151	Loibl Allen-Sherman-Hoff GmbH	7
Anvil Attachments	150, Inside Back Cover	Mack Manufacturing Inc	172
Ardelt	134	Maja Stuwadoors Rotterdam	71
Associated Terminals LLC	48	Mantsinen Group Ltd Oy	124, 173
Beltship Management Limited	39	Marcor Stevedoring BV Rotterdam	55
BLUG Credeblug S.L.	153	Maritime Bulk Terminal Gdynia Ltd	49
Bulk Logistic Landmark	26	Negrini Srl	175
Buttimer Bulk Engineering	113	Nemag BV	143
BV Beco	105	Neuero Industrietechnik GmbH	140
BV Zeehavenbedrijf Dordrecht (ZHD Stevedoring)	52	NKM Noell Special Cranes GmbH	176
CDM Systems, Inc	95	NM Heilig BV	177
Chief Industries UK Ltd.	110	OBA — Bulk Terminal Amsterdam	66
Cimbria Bulk Equipment	143	ORTS GmbH Maschinenfabrik	100, 101
Coaltrans Conferences Ltd	74	Ovet BV	72
Coeclerici S.p.A.	Front Cover	PEINER SMAG Lifting Technologies GmbH	178
Conductix-Wampfler AG	92	PINTSCH BUBENZER GmbH	134
Cooper/Consolidated	Outside Back Cover	Pirs SAS	108
CST Covers	98	PIV Drives GmbH — a Brevini Power Transmission Co.	113
Dampskibsselskabet NORDEN A/S	21	Poço Bispo Multipurpose Terminal — TMPB	47
DAP Barging BV	14	Port of Amsterdam	60
DCL, Incorporated	114	Port of Kokkola	69
Doppelmayr Transport Technology GmbH	158	Port of Pori	46
Dos Santos International, LLC	159	Port-Trade AS	180
Duisburger Hafen AG	70	Quebec Stevedoring Company Inc	80
DURO FELGUERA, S.A.	90	RAM Spreaders	146
ESI Eurosilo BV	160	RBL-REI France	156
European Bulk Services (EBS) BV	58	RC Inspection B.V.	182
Europees-Massagoed Overslagbedrijf (EMO) BV	64, 65	Rhenus Midgard GmbH & Co. KG	53
Fednav Ltd	16	Rotterdam Bulk Terminal (R.B.T.) B.V.	54
FLSmidth Wadgassen GmbH	120	Schade Lagertechnik GmbH	185
Gambarotta Gschwendt	96	SIBRE - Siegerland Bremsen GmbH	137
Gans Cargo Operations	8	Swire CTM	31
Geometrica Inc	162	TAKRAF GmbH	87
Grindrod Management Services (Pty) Ltd	3	Telestack Limited	123
Guyen Grab and Machine Ltd. Co	164, Directory Cover	Terex Fuchs GmbH	116
Heyl & Patterson Inc	166	Thiele GmbH & Co KG	118
Hudig & Veder BV	24	TMSA Tecnologia em Movimentação S/A	88, Directory Cover (Back)
IBAU HAMBURG	36, 37	Tramco, Inc	104
Igus GmbH	131	Van Aalst Bulk Handling BV	82
IHI Transport Machinery Co., Ltd. (IUK)	85	Verbrugge Terneuzen Terminals	Inside Front Cover
Indexator Rotator Systems AB	130	Verstegen Grijpers BV	119
INTER BALT Sp. z o.o.	20	Vossloh Kiepe GmbH	56
J&B Grabs b.v.	168		
Laidig Systems Inc	106		



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Güven Grabs manufactures a wide range of grabs. The company custom-designs grabs especially for new-generation bulkers. Seen here, Güven's grabs are handling coal in the hold of a bulk vessel.

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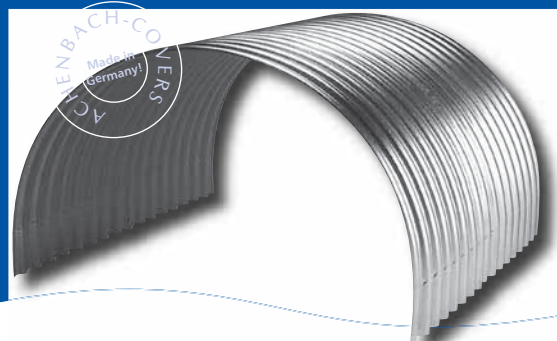
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Coal & Mineral Technologies (SABS)

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E: sales-australia@conductix.com
W: www.conductix.com
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 AG



Rheinstrasse 27 + 33
Weil am Rhein
79576
Germany
T: + 49 7621 662 0
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E: info.de@conductix.com
W: www.conductix.com
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

Conductix-Wampfler Americas

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Job Title: Market Development
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T: + 1 402 952 9300 ext 225
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E: mark.zuroske@conductix.com
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Leading global supplier of
motorized cable reels, cable
festoon systems, energy chains,
conductor bar, and slip rings to
the bulk materials handling and
mining industries. We specialize
in reliable, customized
electrification systems for the
most demanding applications.
ISO9001:2008 certified.

Continental Construction (Memphis)

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38134
USA
Contact: Mr Brian Morphis
Job Title: Marketing
T: + 1 901 382 4070
F: + 1 901 388 2534
E: mail@continentalconst.com
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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

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T: + 1 205 487 6492
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www.rblrei-france.com

BULK UNDER CONTROL



Overland Conveyor



Hopper

Stacker



Loader / Unloader

Process



CONTACT US /

Z.A Les Landes
CS 50159 49481 S' Sylvain d'Anjou
Tél : + 33 (0)2 41 21 19 40
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HEAD OFFICE /

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Tél : + 33 (0)1 53 90 22 40
Fax : + 33 (0)1 53 90 22 24

contact@rbrei-france.com

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.

CONTINENTAL MATADOR RUBBER, s.r.o.

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One of the biggest companies in the chemical and rubber industry in the Slovak Republic. Up to 85 % of its production of tyres and conveyor belts is exported. Producer and supplier of textile and steel cord conveyor belts for the mining and construction industries worldwide.

ContiTech Transportbandsysteme GmbH

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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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Revesby North
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CST design and manufacturer high accuracy belt scale systems designed to provide the customers specified accuracy "in conveyor". CST say "Different Scales for Different Conveyors to achieve the Same Accuracy". Since 1984, CST has remained committed to high integrity, shunning short term commercial game for long term customer satisfaction.

CPS Projects (Pty) Ltd

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Durban
KZN
4023
South Africa
Contact: Mr Banzi Majola
Job Title: Managing Director
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F: + 27 31 466 4399
E: banzi@cpsprojects.co.za
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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Lenexa
Kansas
66219
USA
Contact: Ms Kimberly Mathis
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F: + 1 936 539 5355
E: kmathis@cstindustries.com
W: www.cstcovers.com
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.

CWA Engineers

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Dalian Huarui Heavy Industry Group Co. Ltd

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Dbis (Software and Automation) Ltd

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DBIS provides real time terminal management systems to over 25 terminals around the world.

DCL, Incorporated



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49720
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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
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4521 GX
The Netherlands
Contact: Mr Peter De Regt
Job Title: Director
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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.

8245 Nieman Road
Lenexa
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66214
USA

Contact: Mr Sudy L Vohra
Job Title: Executive Vice President
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, Silo storage and reclaiming systems. Materials handling systems are furnished for terminals, power plants, cement plants, fertilizer plants, steel mills and mines.

DeMarco Industrial Vacuum Corporation

PO Box 1138
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60039-1138
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Contact: Mr Thomas DeMarco
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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.

DemcoTECH Engineering

Modderhouse
Moddercrest Office Park
1 High Street
Modderfontein
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South Africa
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Den Bakker Dusterusting Technology b.v. (dbd global b.v.)

Christiaan Huygensweg 2
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3225 LD
The Netherlands
Contact: Mr J.A.A. den Bakker
Job Title: CEO
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E: j.d.bakker@denbakker.nl
W: www.dbdglobal.com
Den Bakker Dusterusting technology b.v. (dbd global b.v.), is an expert in dust control and prevention. dbd global b.v. specializes in the control of dust, not only by cleaning areas that are already dusty, but also and most importantly working to ensure that dust does not become a problem in the first place.

DMN-WESTINGHOUSE

Gietenrij 3
PO Box 6
Noordwijkerhout
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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 SI2 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
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W: www.dome-corp-na.com

Dome Technology

3007 East 49th Street North
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Idaho
83401
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Contact: Mr Ashley Sterland
Job Title: Chief Marketing Officer
T: + 1 208 529 0833
F: + 1 208 529 0854
E: ashley.sterland@dometechnology.com
W: www.dometechnology.com
Other equipment: Serve the biomass, power, mining, cement, fertilizer, and grain markets. We provide geotechnical analysis, deep foundation solutions, engineered tunnels. Integrate material handling safety protocols with dome design. Concrete domes are designed to contain volatile products as well as cover products.

DOMTEC International LLC

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Contact: Mr Mike Hunter
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T: + 1 208 522 5520
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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

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Dülmen
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E: IAF-de@donaldson.com
W: www.DonaldsonToritDCE.com
Donaldson is a leading worldwide provider of filtration systems that improve people's lives, enhance our Customers' equipment performance, and protect our environment. We are committed

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Doosan Benelux SA

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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



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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



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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
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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
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Dunlop Conveyor Belting

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T: + 31 512 585 446
F: + 31 512 585 433
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W: www.dunlopconveyorbelting.com
Manufactures a full range of textile, aramid and steelcord conveyor belting systems.

DURO FELGUERA, S.A.



Centro de Ingeniería,
Parque Científico y Tecnológico de Gijón
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DF Mining & Handling is the DF division specialised in turnkey projects for Mineral Processing and Bulk Material Handling Facilities, mainly Concentration Plant and Loading and Unloading Terminals at Ports. The company assists customers and investors in all phases of a project: feasibility studies, design, detailed engineering, procurement, construction, commissioning and operation and maintenance of the facility and it's recognised on a global scale as a reputable EPC contractor.

Dust Control Technology

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T: + 1 309 693 8600
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E: info@dustboss.com
W: www.dustboss.com
The DustBoss dust and odor control system combines an oscillating ducted fan with high pressure mist to create a virtual dust/odor barrier. Proprietary technology delivers superior results, blanketing up to 280,000 square feet with a fine mist of water droplets that are the optimal size for trapping dust particles.

**THINK THIS IS NEW TECHNOLOGY?
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Australia
Titanium Ore – 50°
Mobile shiploader – 1000 t/h



Canada
Diamond ore – 50°
3 units – small footprint



Spain
Green Pet Coke – 90°
"S"- Shape



Canada
Pebble Ore – 90°
Ability to fit in tight space



DSI Snake Sandwich High Angle Conveyor
elevating coal at a 75° angle for a steel plant in Northern Spain.

Dos Santos International is the world's foremost authority on high angle conveyor applications and design of sandwich belt high angle conveyors. With more than thirty years of materials handling and engineering experience, we offer the most advanced high tech conveying solutions. **BUT THE TECHNOLOGY ISN'T NEW.** DSI's high angle solutions have been proven time and time again to be the most reliable and economical solution in the industry.

The DSI Sandwich Belt High Angle Conveyor offers many advantages. It's **PROVEN** in over 100 installations worldwide. It's **RELIABLE** for rugged mining conditions, yet gentle enough for friable materials. It's **ECONOMICAL**, fitting into tight spaces and small footprints. Elevating millions of tons of material at various installations all around the world, users have agreed it's the most reliable, low cost and low maintenance conveyor system available. **Let us prove it to you.**

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- THE HIGHER THE LIFT •
- THE BETTER WE LOOK •

Dos Santos International
531 Roselane Street NW Suite 810
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T: +1 770 423 9895
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http://www.dossantosintl.com



Dust Solutions Inc.

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Contact: Mr David Gilroy
Job Title: Sales Manager
T: + 1 360 546 0072
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E: d.gilroy@nodust.com
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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-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@e-crane.com
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.

E-Crane World Wide / E-Crane International USA



5 E Long St., Suite 1201
Columbus
Ohio
43215
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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.

Edge Innovate

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Edge Innovate are a blue sky thinking, imaginative and creative equipment manufacturing company. With our ethos of "Innovation at Work" EDGE persist in pushing the boundaries of design and manufacturing to

produce hard working, quality machinery to fit any materials handling requirement from recycling, material handling to quarrying.

EIFFEL Etablissement SOMDEL

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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.

Elaborate Communications

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Elecon Engineering Company Ltd

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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.

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Elgin Engineering and Construction

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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

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Contact: Ms Gail Carl
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T: + 1 613 966 6611
F: + 1 613 966 6710
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W: www.ems-techinc.com
A multi-task, multi-discipline company specialising in design and supply of dry bulk material handling equipment, both mobile and stationary; including custom designed conveyors, belt elevators, receiving hoppers, storage/load-out systems,



ESI Eurosilos[®]
WWW.EUROSILO.COM

P.O. Box 1047
1440 BA Purmerend
The Netherlands

Newtonstraat 26 - 28
1446VR Purmerend
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Tel.: +31(0)299 - 630730
Fax.: +31(0)299 - 630737
Email: esi@eurosilo.com

environmental controls, shiploaders, stackers and reclaimers, self-unloading ships.

EMS-TECH Inc.

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1976 AS
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T: + 31 251 291 340
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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

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E: dsen@calemici.elecon.com
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Enco Engineering Inc

4410 13th Street
Wyandotte
MI
48192
USA
Contact: Ms Bobbi Lang
T: + 1 734 407 2400 x 202
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

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Belgium
Contact: Mr Pieter Van Acker
Job Title: Sales & Marketing Director
T: + 32 56 73 21 21
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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.

Enviro Abrasion Resistant Engineers Pvt. Ltd

"ENVIRO HOUSE", Sector-27
Plot No. F/12
Near Sambhaji Chowk
Pradhikaran
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411044
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Contact: Mr Milind Dixit
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EQUIPO LLC

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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 Europe

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Bedwas
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T: + 44 29 20 868 501
F: + 44 29 20 851 314
E: sophie.comelli@eriezeurope.co.uk
W: www.eriez.com
Eriez, a world authority in separation technologies is a one-stop solution thanks to its range of magnetic separators, metal detectors, feeders, wet drums and other processing equipment, particularly suited to the mining, aggregate and coal processing sector.

ESI Eurosilco BV

 **ESI Eurosilco**
www.ESI-EUROSILO.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@eurosilo.com
W: www.eurosilo.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, minerals, basic chemicals and potato starch. Storage capacity of this flat bottom mammoth silo system (Eurosilco) can range from 1,000 up to 100,000 m3 per unit.

Euromec Srl

Via Visano 78/80
Isorella
25010
Italy
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E: sales@euromecsr.info
W: www.euromecsr.com
Our deep knowledge and 60 year's experience in the process of handling all materials guarantees our presence in the most important ports and plants all over the world. Euromec pays particular attention to the simplicity of the manufacturing processes so that it can keep

production costs low, improve final quality and reduce maintenance. As a result, our electrohydraulic and mechanical equipment are economical, reliable, long-lasting and with very low maintenance costs. Equipment is built with respect to the most rigorous certifications worldwide, both NEMA, ATEX and NEC 500 regulations for dangerous environments and GOST laws.

Euro-Tramco BV

Spacelab 47 D
Amersfoort
3824MR
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Contact: Mr Hans Plekkenpol
T: + 31 33 4567033
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W: www.tramcoinc.com
Manufactures chain, screw and bucket conveyors and 'Aerobelt' air-supported belt conveyor systems.

F E Schulte Strathaus GmbH & Co KG

Runtestrasse 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
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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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W: www.fairport.co.uk
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

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Job Title: Director Sales and Marketing
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F: + 49 391 6380 10 1 99
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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
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Contact: Mr Wojciech Staszak
Job Title: President and CEO
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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
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FELD Maschinen-und Industriebau GmbH

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E: Andre.Stueckradt@Maschinenbau-Feld.de
W: www.maschinenbau-feld.de
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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.

Fenner plc

Hesslewood Country Office Park
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Figeo Crane Services BV

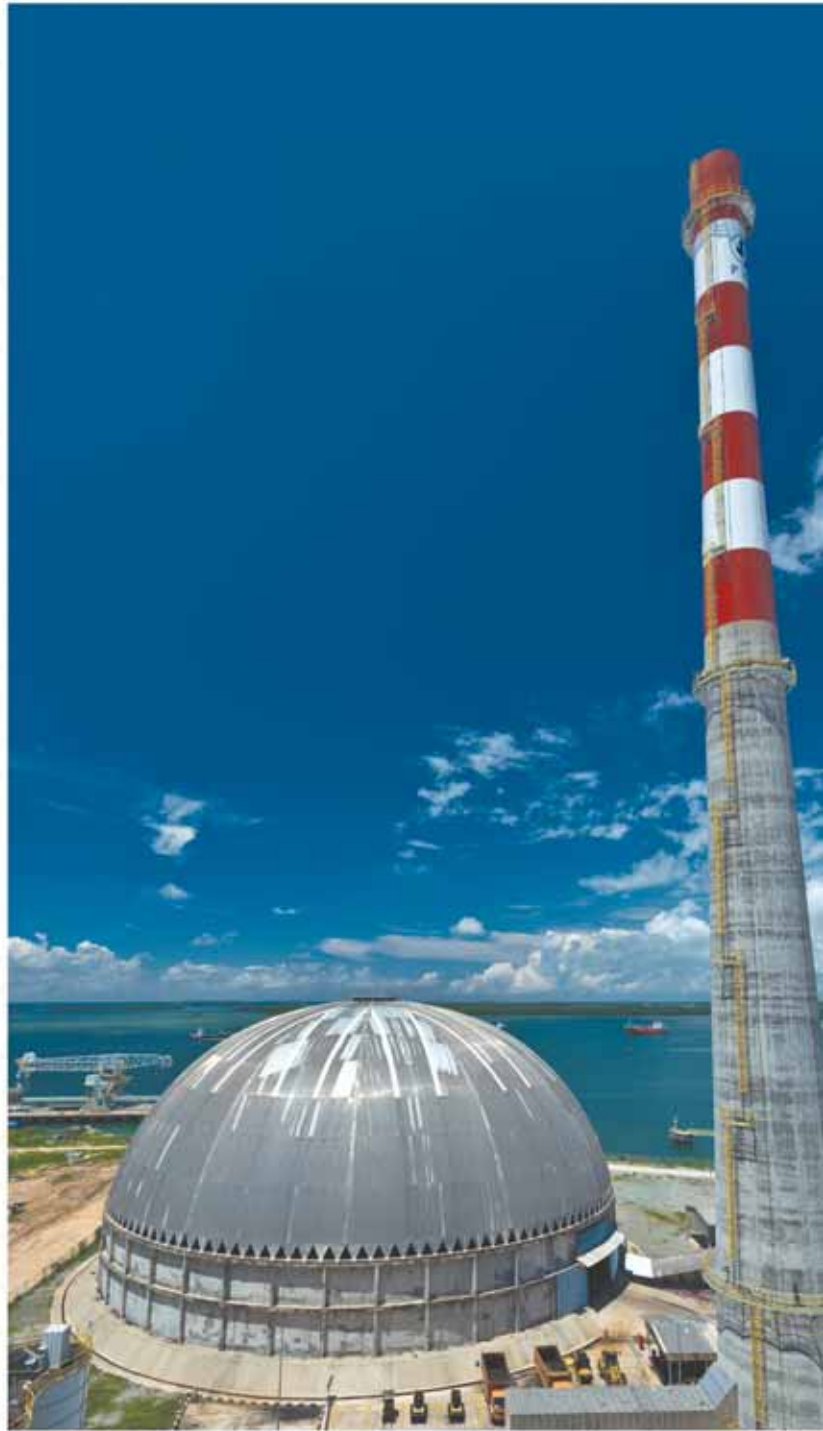
PO Box 235
Zaandam
1500 EE
The Netherlands
Contact: Mrs Babette Sloven
T: + 31 75 6810 410
F: + 31 75 6315 996
E: b.slovan@kenz-figee.com
W: www.kenz-figee.com
Merger of Kenz offshore cranes and Figeo harbour cranes. Founded in 1836, Figeo designs and manufactures a complete range of bulk handling cranes 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

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IL
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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.

Flexco Europe GmbH

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W: www.flexco.com



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Flexicon Corporation

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Bethlehem
PA
18020-8006
USA
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F: + 1 610 814 0600
E: sales@flexicon.com
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Flexoveyor Conveyor

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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



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T: + 49 6834 470 0
F: + 49 6834 470 339
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Other equipment: KOCH Pipe Conveyor, Drag Chain Conveyor, Pneumatic Ship Unloader .
Custom-made systems; solutions jointly developed with clients.
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Frigate Technologies Private Limited

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Block 5, Eros Garden
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Gama Endustri Tesisleri Imalat Ve Montaj AS

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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.

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Hungary
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E: gdtco@hu.inter.net
W: www.ganztrading.hu
Suppliers of mechanical shiploaders and unloaders, 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
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F: + 44 1353 777315
E: barry@garwoodconsulting.com
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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IL 60014
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W: www.generalkinematics.com
General Kinematics specializes in vibrating and rotary equipment and solutions for bulk processing of material in the foundry, 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.

Geo - Chem Laboratories Pvt. Ltd

Geo - Chem House
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India
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Geometrica Inc



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USA
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E: sales@geometrica.com
W: www.geometrica.com
Specialists in the design, fabrication and installation of bulk storage domed structures requiring large, column-free interiors, utilizing low maintenance galvanized steel or aluminum. Structures can cover any shaped area, can span over 300m, and can be erected even over operating stockpiles.



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Phn:+90 262 743 88 58 pbx
Fax:+90 262 743 11 41
info@guvengrab.com

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Gertech Handling Systems cc

PO Box 4014
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Cape Town
Western Cape 7551
South Africa
Contact: Mr Gerrit De Hoog
T: + 27 21 914 5333
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GF MHS Srl

Via Guido Rossa, 11
Paderno Dugnano (MI)
Milan 20037
Italy
Contact: Mr Francesco Tummillio
Job Title: Managing Director
T: + 39 0 2 91 08 20 02
F: + 39 0 2 91 84 31 47
E: info@gfmhs.it
W: www.gfmhs.it
Other Equipment: Pipe
Conveyors. Please contact us
with any Handling System
problems, such as lay-out or
pollution of your handled product.

GGT Goldengrain Trading SA

Via Capelli 28
Lugano
6900

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Contact: Ms Cornelia Riep
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T: + 41 91 971 40 20
F: + 41 91 971 40 21
E: cgriep@ggt.ch

Golden West Industries

332 West Railroad Ave
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UT
84501
USA
Contact: Mr Ellis Pierce
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T: + 1 435 637 3211
F: + 1 435 637 6628
E: pwynny@gbis.com
W: www.goldenwest-industries.com
17 years experience providing
dust control and anti-freeze
solutions to the mining and
material handling industries.

Goodman Conveyor Company

U.S. Route 178 South
PO Box 866
Belton
South Carolina
29627
USA
Contact: Mr Carter Matthews
Job Title: VP Sales & Marketing
T: + 1 864 338 7793 x 102

F: + 1 864 338 8732
E: info@goodmanconveyor.com
W: www.goodmanconveyor.com
Provides a wide selection of belt
conveyor idlers and components,
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equipment and components. Belt
conveyors available in belt widths
14"-96"; screw conveyors
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Centrifugal and continuous
discharge bucket elevators also
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Gordinne & Co NV/SA

Belgian Ports Operation
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Guttridge Ltd

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**Güven Grab and Machine Ltd.
Co**



Nazim Hikmet Cad 536. sk. No: 9
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Established in 1984, with it's own
manufacturing facilities, Guven
Grab and Machine supplies it's
range of grabs all over the world.
These include radio remote
control grabs, electro hydraulic
clamshell/orange peel grabs,
mechanical double wired grabs
and mechanical clamshell/orange
peel touch down grabs.

Hans Turck GmbH & Co. KG

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**Hansen Industrial
Transmissions NV**

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hansenindustrialgearboxes.com
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Hansen Industrial Transmissions is at the pinnacle of innovation and durable drives for a wide range of industrial applications throughout the world, especially in sectors where low noise levels, minimum weight and high reliability are essential (including cooling towers, material handling, water treatment, etc.)

Hansen Transmissions Ltd

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F: + 44 1484 431426
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hansentransmissions.com
W: www.hansenindustrialgearboxes.com
Hansen Transmissions design, manufacture, install and service industrial gearing. Our range spans from 80 Nm to 800 KNm (0.12 KW to 12MW) and is available in many configurations and drive packages.

Hasel Machinery Inc

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Haskoning India Pvt Ltd

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HAUGEN System AB

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Heyl & Patterson Inc



PO Box 36
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PA
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President
T: + 1 412 788 9810
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E: info@heylpatterson.com
W: www.heylopatterson.com
Design and manufactures bulk material handling equipment. A complete line of railcar unloading and moving equipment is offered. Additionally offered: barge unloaders, both the grab type and CBU continuous bucket unloader.

Hitachi Construction Machinery (Europe) NV

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E: marketing@hcme.com
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Hitachi Construction Machinery (Europe) NV's (HCME) main products are hydraulic crawler and wheeled excavators, crawler cranes, wheel loaders and rigid dump trucks. HCME provides a broad product line-up that has earned an excellent reputation for performance, reliability and safety.

Horizon Conveyor Equipment

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West Midlands
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E: info@horizonconveyors.co.uk
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Manufacturers of Steel, Plastic & Aluminium Idler rollers, Conveyor Belt Scrapers and Conveyor Components & Equipment.

HOSCH-Fördertechnik Recklinghausen GmbH

Am Stadion 36
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F: + 49 2361 5898 40
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HOSCH has been manufacturing and distributing Sprung Blade Scrapers and accessories for high precision belt cleaning for more than 30 years. The innovative design principle of its C-series, which is patented world-wide, utilises modular components and guarantees total belt cleaning efficiency for all types of installations.

Hycontrol Limited

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Hyundai Heavy Industries Co

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W: www.hhi.co.kr/

IBAU HAMBURG



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IBAU HAMBURG supplies installations and components for the transfer, storage and conveying of dry products, including among others fly ash and coal. Our scope includes the engineering and supply of plant components such as ship loaders and unloaders, as well as storage silos.

Igus GmbH



Spicher Str. 1a
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T: + 49 2203 9649 0
F: + 49 2203 9649 222
E: cranes@igus.de
W: www.igus-cranes.com
Products include E-ChainSystems - in operation on Ship to Shore

Cranes, RTGs, RMGs, Goliath Cranes, Spreaders, Reach Stacker etc. More than 3.000 port equipment applications are running world-wide with igus® E-ChainSystems.

IHI Transport Machinery Co., Ltd. (IUK)



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Akashi Cho
Chuo-Ku
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104-0044 MZ
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W: www.iuk.co.jp
In addition: Multi-purpose gantry cranes IUK has supplied a lot of coal handling equipment and systems with cutting edge technology for world-wide customers and has had a world leading delivery record of the continuous ship unloaders.

IMASA

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IMGS

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Imperial Technologies, Inc.

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Incolab Services BV

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Inspectorate International Ltd

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Inspectorate offers a full range of inspection, analytical and specialist testing services to the solid fuels industries and has coal-handling coordination offices and ISO 17025 accredited laboratories in all the major coal producing/consuming countries worldwide.

Intermodal Solutions Pty Ltd

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International Bulk Handling Technology BV

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Intersystems

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isAM AG Gesellschaft fuer angewandte Kybernetik

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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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Jenike & Johanson Inc.

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Kalenborn Kalprotect GmbH & Co. KG

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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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Crane manufacturer (designing, fabrication, assembling, commissioning, training and after sales service in one hand for harbour cranes, shipyard cranes, balancer cranes - refurbishment, inspection, repair services for own and third party cranes). Former member of TAKRAF group, now member of KRANUNION GmbH (together with KOCKS KRANE GmbH and KIROW ARDELT GmbH).

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Development, engineering and supply including erection and commissioning of handling equipment as well as related consulting and other services.

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KPI-JCI and Astec Mobile Screens

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KPI-JCI and Astec Mobile Screens, Astec companies (NASDAQ: ASTE), is a worldwide leader in manufacturing equipment for the aggregate, construction, paving and recycling industries. KPI-JCI and Astec Mobile Screens proudly manufacture its products in Yankton, South Dakota, Eugene, Oregon and Sterling, Illinois.

KRANUNION GmbH

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Kröger Greifertechnik GmbH & Co. KG

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Manufacturer of grabs of all types since the year 1962. Main products - two and four rope grabs, hydraulic grabs, electro hydraulic grabs from 0.5-25m3.

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Larox Flowsys Oy

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Lassing Dibben Consulting Engineers Ltd

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Liebherr Maritime Cranes

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Listenow GmbH & Co.

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Other equipment: loading equipment, filters.

Logmarin Advisors Srl



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LogSys NV

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Lycopodium

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Macawber Engineering, Inc

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Mack Manufacturing Inc



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Manufactures all types of grabs and grapples, both wire rope and hydraulically operated, as well as radio-controlled and diesel operated systems.

Mactenn Systems Ltd.

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Martin Engineering

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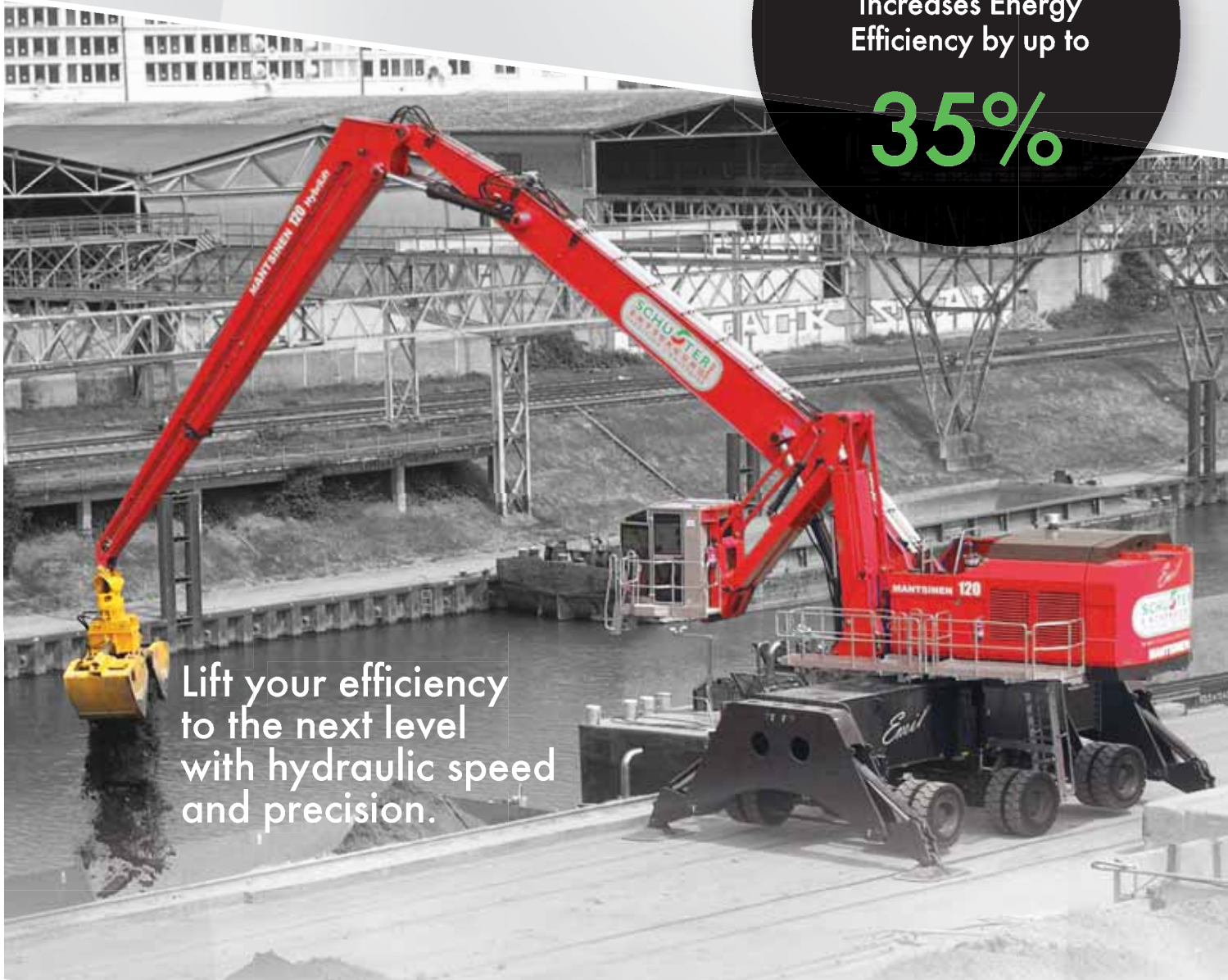
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Mentor Dynamics

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Merrick Industries

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15317
USA
Contact: Mr Tom Lippencott
Job Title: VP Mining Capital Sales, USA & Canada
T: + 1 412 269 5137
F: + 1 412 269 5212
E: Tom.Lippencott@metso.com
W: www.metso.com
Products include stacker/reclaimers; railcar dumpers/wagon tipplers; grab, continuous and balance unloaders; barge/ship loaders; barge and train positioning systems; mechanical ash

handling systems; coal preparation equipment; apron feeders and overland conveyor systems.

Midwest Industrial Supply Inc

1101 3rd St. SE
Canton
Ohio
OH 44707
USA
Contact: Ms Liz Campbell
Job Title: Marketing
T: + 1 330 456 3121
F: + 1 330 456 3247
E: liz.campbell@midwestind.com
W: www.midwestind.com
Provide a complete line of dust control, erosion control, soil stabilization lubricants, anti-icing and de-icing products that are developed by the company staff of chemists and backed by a complete range of services, equipment, expertise and technical support since 1975.

Midwest International Standard Products, Inc.

105 Stover Road/ PO Box 438
Charlevoix
MI
49720
USA
Contact: Mr Walter Pair

Job Title: Director of Operations
T: + 1 231 547 4000
F: + 1 231 547 9453
E: sales@midwestinternational.com
W: www.midwestmagic.com
Founded in 1967, the company focuses on dust free loading and stockpiling of dry bulk with products including The Paragon Series and the Heavy Duty Mining Series. The Chokefeeder® dust free shiploading systems are used by governments and industries in over 50 countries.

Mitsui Miike Machinery Co., Ltd.

Nihonbashi-Muromachi 2-1-1
Chuo-ku
Tokyo
103-0022
Japan
Contact: Mr Hachiro Naito
Job Title: General Manager,
Material Handling Machinery
T: + 81 3 3270 2001
F: + 81 3 3245 0203
E: soumu@mitsuimiike.co.jp
W: www.mitsuimiike.co.jp

Moffatt & Nichol

Fifth Floor
35 Great St Helen's
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EC3A 6HB
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Job Title: Office Manager
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F: + 44 203 2061061
E: eserrao@moffatnichol.com
W: www.moffatnichol.com

Mole-Master Services Corporation™

27815 State Route 7
Marietta
Ohio
45750
USA
Contact: Mr David Laing
Job Title: General Manager
T: + 1 740 374 6726
F: + 1 740 374 5908
E: contactus@molemaster.com
W: www.molemaster.com
In addition: Silo cleaning services and equipment. Silo, bin, bunker, transport and process vessel cleaning, clearing and unlogging services and equipment.

Motherwell Automation

10 Sangiorgio Court
Osborne Park
West Perth
Western Australia
6017
Australia
Contact: Mr Chris Watson
Job Title: Marketing Manager
T: + 61 8 9212 4444
F: + 61 8 9212 4479

E: townsend@motherwell.net.au
W: www.motherwell.net.au

Motridal SpA

Via Pietro Bubba 17
Piacenza
Piacenza 29122
Italy
Contact: Mr Giampietro Calvi
Job Title: Sales Manager
T: + 39 0523 59 66 11
F: + 39 0523 59 01 28
E: motridal@motridal.com
W: www.motridal.com
Specialist, with over 50 years experience, in heavy-duty, high-capacity machines, intended for operating under severe conditions in cement factory, steel works, power plant, aluminium smelter... Product line includes screw, chain, belt and pipe conveyors, bucket elevators, stackers. Worldwide operation.

MRS Greifer GmbH

Talweg 15-17
Helmstadt-Bargen
D-74921
Germany
Contact: Mrs Karin Greulich
Job Title: Export Manager
T: + 49 7263 912 915
F: + 49 7263 912 912
E: export@mrs-greifer.de
W: www.mrs-greifer.de
Approaching more than 40 years experience in producing all types of grabs. The company's product range includes mechanical grabs, radio-controlled, hydraulic and electro-hydraulic grabs. MRS has an excellent after-sales and repair service, provides spare parts from

stock and supplies parts for a long period after delivery.

NAVCO (National Air Vibrator Co)

PO Box 40563
Houston
TX
77240-0563
USA
Contact: Mr Ann Hutchinson
T: + 1 832 467 3636
F: + 1 832 467 3800
E: ben@navco.us
W: www.navco.us

Negrini Srl



via E. Torricelli n.4
Castelfranco Emilia
Modena
41013
Italy
Contact: Mr Rossetti Alessandro
T: + 39 059 923110
F: + 39 059 920378
E: info@negrini.org
W: www.negrini.org
Engineers and producers of state-of-the-art grabs, clamshells and buckets.

Nemag BV



Deltastraat 15
PO Box 110
Zierikzee
4300 AC
The Netherlands

Contact: Mr Riny Stoutjesdijk
Job Title: Sales Manager
T: + 31 111 418 900
F: + 31 111 416 154
E: sales@nemag.com
W: www.nemag.com
Specialized in the sales, engineering and construction of rope operated grabs for large scale dry bulk handling. The company has a vast record of worldwide deliveries and is recognized as one of the leading grab manufacturers worldwide. Other equipment: NEMAG Quick Release Links and Rope Pear Sockets.

NERAK GmbH Fördertechnik

Brigitta 5
Hambühren
D-29313
Germany
Contact: Mr Edgar Bleeker
Job Title: Marketing
T: + 49 50 84 944 0
F: + 49 50 84 944 222
E: bleeker@nerak.de
W: www.nerak.com
NERAK Continuous Bucket Conveyors are designed for combined horizontal and vertical conveying. Each bucket is securely attached to adjacent buckets and located between two steel reinforced rubber block. The assembly with no moving parts is capable of high conveying rates.

Neuero Industrietechnik GmbH

Neuerostrasse 1
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Job Title: Sales & Project Manager
T: + 49 5422 9503 26
F: + 49 5422 9503 50
E: ha@neuero.de
W: www.neuero.com
NEUERO designs and manufactures a wide range of pneumatic and mechanical ship/barge unloaders, ship/barge loaders and pneumatic conveyors, with high capacities and gentle handling of materials.

NILOS GmbH & Co KG

Reisholzstrasse 15
PO Box 970
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40709
Germany
Contact: Mr Jens Hamacher
Job Title: Export Manager
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F: + 49 2103 951 209
E: jens.hamacher@nilos.de
W: www.nilos.com
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NKM Noell Special Cranes GmbH



Postbus 638
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2130AP
The Netherlands
Contact: Mr Enno Kramer
Job Title: Director Product Unit
Offshore Cranes
T: + 31 20 655 0030
F: + 31 20 655 0040
E: enno.kramer@nkmnoell.com
W: <http://www.nkmnoell.com/>
Company is specialized in special cranes. For the bulk industry the knowledge is concentrated on floating lemniscate cranes and terminals.

NM Heilig BV



Newtonstraat 17
Heerhugowaard
1704 SB
The Netherlands
Contact: Mr Peter Fontein
T: + 31 72 571 6688
F: + 31 72 571 6020
E: info@heiligbv.com
W: www.heiligbv.com
Heilig Holding is a company group based in Europe specialized in manufacturing bulk handling and recycling systems. - Custom design and engineering - High quality manufacturing facilities - Experienced Assembly and service staff We are 35 years on the market, privately owned family company with over 250 employees. Other Equipment: Mobile (on tracks) stackers, conveyors and feeders

NMH s.r.o

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W: www.nmh-sro.com

Nordströms Konstruktionsbyrå

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Sweden
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Job Title: Marketing
T: + 46 90 1136 4500
F: + 46 90 1330 69
E: arletun@nordstroems.se
W: www.nordstroems.se

Nordstrong Equipment Ltd

400 Ambassador Drive
Mississauga
Ontario
L5T 2J3
Canada
Contact: Mr Bill Van Duyn
Job Title: Sales Manager
T: + 1 289 562 6402
F: + 1 289 562 6445
E: wmvanduyn@nordstrongequipment.com
W: www.nordstrongequipment.com
Product range: screw conveyors/feeders; belt conveyors/feeders; pipe conveyors; flexible wall conveyors; drag conveyors; apron conveyors/feeders; bucket elevators; idlers. Every endeavour will be made to provide clients with an efficient and honest assessment of their needs.

North American Crushing & Screening, LLC

322 Lafayette Street
New Orleans
Louisiana LA 70130
USA
Contact: Mr Gilbert Wright
T: + 1 504 866 0014
F: + 1 504 866 0016
E: gwright@nacslc.com
W: www.nacslc.com
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117 Dalhousie St
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NSW
2045
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Contact: Mr Cameron Hay
Job Title: Sales & Marketing Manager
T: + 61 297 972054
F: + 65 626 11300

E: cameron@ramspreaders.com
W: www.ramspreaders.com/

Orthos Projects Ltd.

Fernie Road
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LE16 7PH
UK
Contact: Mr Nick Hall
Job Title: Director
T: + 44 1858 462806
F: + 44 1858 464403
E: Nick.Hall@orthosprojects.com
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D-23611
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E: soj@orts-gmbh.de
W: www.orts-grabs.de

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E: mina@mitrask.com
W: http://www.mitrask.com/

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Job Title: Cargo Handling
Equipment Manager
T: + 64 7 575 5079 Ext 810
F: + 64 7 574 8594
E: brucee@page-macrae.co.nz
W: www.page-macrae.co.nz
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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 David Finke
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T: + 1 270 442 1996
F: + 1 270 442 5214
E: sales@pebco.com
W: www.pebco.com
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PEINER SMAG Lifting Technologies GmbH



Windmühlenbergstrasse 20-22
Salzgitter
D-38259
Germany
Contact: Mr Arnulf Köhnmann
T: + 49 5341 302 613
F: + 49 5341 302 424 or 606
E: arnulf.koehnmann@peiner-smag.com
W: www.peiner-smag.com
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.

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 Bilanciai GmbH

Linker Kreuthweg 9
Affing-Mühlhausen
D-86444
Germany
Contact: Ms Susanne Geller-Dürr
Job Title: Marketing and Sales
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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Parque Científico y Tecnológico
de Gijón
C/Luis Moya Blanco 82
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Director
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W: http://en.grupotsk.com/
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PHOENIX Conveyor Belt Systems GmbH

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Contact: Mr Bernd Kuesel
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W: www.phoenix-conveyor-belts.com
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57548
Germany
Contact: Mr Arno Weil
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E: arno.weil@pintschbubenzler.de
W: www.pintschbubenzler.de
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Pirs SAS



ZI St Hermentaire
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Var
83300
France
Contact: Mr Fikri El Mourabet
Job Title: International Sales
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F: + 33 4 98 10 6768
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Justus-von-Liebig-Straße 3
Bad Homburg D-61352
Germany
Contact: Mr Bernard Rensinghoff
Job Title: Marketing Manager
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E: bernard.rensinghoff@brevini.com
W: www.piv-drives.com or
www.brevini.com
PIV Drives, a company of Brevini Power Transmission, has over 80 years experience in providing quality power transmission solutions for every industry sector. PIV Drives developed modular concepts for its comprehensive product range, providing the flexibility to deliver high-quality optimised solutions, both standard and bespoke, quickly and at competitive cost.



PLM Cranes B.V.

Sluisweg 21-25
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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 We build hydraulic and electric cranes from 50 to 2000 tm with a transhipment capacity up to approx. 2000 ton/hour. We are specialized in shipboard cranes, mobile cranes and harbour cranes for dredging, transhipping, hoisting and pile-driving.

Polymer Industries - Ultrapoly Division

2404 Center Street
Tacoma
WA
98409-7638
USA
Contact: Mr Bryan Olin
T: + 1 253 272 1217
F: + 1 253 272 1457
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Huntington
York
YO3 9PR
UK
Contact: Mr Steve Stannard
Job Title: Proposals Manager
T: + 44 1904 624 872
F: + 44 1904 611 760
E: bulk@portasilo.co.uk
W: www.portasilo.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 can be offered.

Port-Trade AS

PORT-TRADE
cargo handling systems

Karetmagervej 9
Fredericia
DK 7000
Denmark
Contact: Mr Peter J Muller
Job Title: Sales Manager
T: + 45 7628 0102
F: + 45 7628 0103
E: peter.muller@port-trade.com
W: www.port-trade.com
Port-Trade is a Danish company with more than twenty years of experience with cargo handling systems, including mobile harbour cranes, container spreaders, bulk handling grabs, and loading equipment. Port-Trade provides analyses of customer requirements and proposes and delivers complete equipment

solutions.

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 mobile screening equipment. This is made up of 30+ products sold across a range of dry screening, washing and recycling applications, from aggregate screening to sand extraction; from screening of construction and demolition waste to skip waste and compost.

Precia-Molen Nederland BV

Franse Akker 1
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The Netherlands
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Job Title: Communication & Marketing
T: + 31 76 524 2513
F: + 31 76 522 8039
E: monique.heessels@preciamolen.nl
W: www.preciamolen.nl
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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
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UK
Contact: Mr Joe Naylor
Job Title: Sales Manager - Beltweighers
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F: + 44 1732 781 311
E: joe.naylor@proconeng.com
W: www.proconeng.com
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PT MacGregor Indonesia

hanurata Graha 5th Floor
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Jakarta
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PT SpanSet Indonesia

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Manager
T: + 62 21 650 9556
F: + 62 21 650 9566
E: sales@spanset.co.id
W: www.spanset.co.id
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Jakarta 12560
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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
Jln. 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
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one of the leading automotive and
industrial power transmission belt
manufacturers in Indonesia. It has
one main plant located in
Tangerang and its marketing
office located in Central Jakarta.

**PT. Thermalindo Sarana
Laboratoria**

Jl. Daan Mogot II No. 100J
Jakarta 11510
Indonesia
Contact: Mr Eduard Sasmita
Job Title: Branch Manager
T: + 62 21 566 3057
F: + 62 21 566 2795
E: edo@thermalindo.com
W: http://www.thermalindo.com/

**Quadrant Engineering Plastics
Products**

2120 Fairmont Avenue
Reading
PA 19612
USA
Contact: Mr Brad Siebt
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F: + 1 260 478 1074
E: bradley.seibt@qplas.com
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2164
Australia
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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
existing systems to improve their
reliability and accuracy.

Qube Ports & Bulk

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Designs and builds green
hoppers, belt conveyors and
transhipment plant for coal,
cereals, mineral.

RAM Spreaders



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RAM Spreaders, one of the
leading manufacturers and
suppliers of container handling
equipment for over 40 years have
developed their environmental
friendly RAM Revolver® for dust
free containerized bulk handling
solutions in association with
specialist container suppliers.

Rapat Asia

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Designs, builds and supplies
continuous bulk handling belt
conveyor systems and associated
equipment, stackers up to 10,000
tph, reclaimers up to 15,000 tph
and shiploaders up to 3,000 tph.

RC Inspection B.V

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RC inspection is an independent inspection company for quality and quantity control in the market of Solid Fuels, Metals-Minerals, Scrap and Marine Surveys with offices all over the globe.

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RDS Technology was formed in 1969 and specialises in the design and manufacture of a wide range of instrumentation for off-road vehicles. Products include on-board weighing scales for all types of loader including the new LOADMASTER a100.

REMA TIP TOP GmbH

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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.

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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

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RockTree Logistics Pte. Ltd.

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Ronin GMS

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Ronin GMS provide bulk inventory management systems and moment in time audits for balancing real-time stock positions to stock positions on book. Our systems can be used in Silo's, warehouses and open air stock yards. Enrolling business partners worldwide.

Royal Haskoning DHV

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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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Specialises in the production of rollers, motorized pulleys and components. Rulmecca 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

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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 being received from around the world.

Sammi

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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: · Complete industrial plants · Bulk handling equipment · Off-shore conveyor systems - Lime kilns · Machine for the ceramic sector In January 2012, acquired majority shareholder of PLANIA Ingegneria (Architectonic Engineering Planning); a company of professional civil, industrial

engineers and architects, completing the competences already present at Sammi.

Sampling Associates International

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SAMSON Materials Handling Ltd

SAMSON
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SAMSON, a company within the AUMUND Group, is a leading supplier of an extensive range of Mobile Stackers (Stormajor®), Shiploaders, Link Conveyors, Eco Hoppers, and SAMSON Material

Feeders for bulk materials reception. The SAMSON concept offers a mobile and economical alternative to conventional fixed installations and represents a unique approach to the bulk cargo handling in ports and terminals requiring a high degree of mobility and flexibility.

Sandvik Mining

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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.

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Continuous open pit mining systems, including bucket wheel excavators, belt wagons, spreaders, transport Crawlers.

Scantech International

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SCHADE Lagertechnik GmbH**SCHADE**
AUMUND GROUP

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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

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E: enquiries@schenckprocess.co.uk
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Schenck Process is an expert in the weighing, conveying and handling of coal. Using a range of equipment including train loading and unloading systems, mechanical conveyors and weighing technologies the movement of the material can be accurately monitored and recorded.

Scorpio Engineering Pvt. Ltd

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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

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Sea Transport Corporation group of companies own, operate and construct commercial vessels. We offer specialist marine design and consulting services with extensive commercial experience through our team of Naval Architects, Consultants, Surveyors and

Project Managers.

Seabulk Inc

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Involved in 'design and build' projects in the marine bulk transportation industry. Ports, self unloaders and transhipper developed by Seabulk have improved bulk transportation logistics significantly.

Selpeco Resources Inc.

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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

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SEMPERTRANS has been developing, manufacturing and installing conveyor belts for more than 50 years. Its knowhow, its experience and the quality of its products make SEMPERTRANS one of the world's leading companies in its field.

SENNEBOGEN Maschinenfabrik GmbH

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Sennebogen offers a wide range of all kinds of materials handling machines, HD rope excavators/cranes, crawler cranes, telescopic cranes and base carriers.

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Manufacturers of TORQSENSE and LOADSENSE Sensors and Transducers. The TorqSense and LoadSense range of sensors offer accurate, affordable, market leading products across the whole range of industrial applications.

Sentry® Equipment Corp

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Sentry Equipment manufactures liquid, gas, slurry and bulk solids samplers - delivering representative samples from a variety of applications. Products include sample coolers, needle and cylinder panels, liquid and bulk solids samplers, and steam and water sample conditioning systems and components.

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SGS is the world's leading inspection, verification, testing and certification company. SGS also designs and supplies mechanical sampling systems for a wide range of bulk materials. SGS has more than 30 years experience in this field with equipment in operation throughout the world.

SGS Minerals Services

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Knowing your coal quality and representatively sampling are essential to eliminate penalties and maximize profits. SGS' technical expertise provides unrivalled experience and value throughout the coal value chain to eliminate operation risk.

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The SGS Group is the global leader and innovator in verification, inspection, testing and certification services. Founded in 1878, SGS is recognised as the global benchmark for the highest standards of expertise and integrity. With over 30,000 employees, the Company operates a network of offices and laboratories in over 140 countries around the world.

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World-famous manufacturer of cranes and large steel structures. Products include quayside container cranes, gantry cranes, shiploader/unloaders, bucketwheel stackers and reclaimers, portal and floating cranes, engineering vessels and big steel bridge structures etc.

Shanthi International

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Coal Stacker, Hammer-head Design



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SIBRE - Siegerland Bremsen GmbH



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SIBRE-Siegerland Bremsen manufactures industrial brakes (drum-, disc-, caliper- and storm brakes) and drive components (e.g. drum couplings) and offer an optimum combination of innovative high quality products, easy usage and minimized life-cycle costs, by employing latest manufacturing and quality assurance technologies.

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Engineering Manufacturer Steel Plants, group of companies.

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Wormscreen, pusher-type and vibratory centrifuges, centrifuges for granular products; decanters for continuous separation of solids from liquids; laboratory centrifugal, size-reduction machines, especially vibratory mills for grinding to ultimate fineness, machines and plants for taking and preparing samples. Horizontal, elliptical and circular motion screening machines, jigs.

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SMB meets the demanding material-related requirements of conveying bulk and bagged goods. The company designs and manufactures high-performance conveying solutions designed for trouble-free long-term operation. Projects all over the world convince fertilizer producers, port operators and industrial specialists of the quality of German engineering.

Smiley Monroe Ltd

23 Ferguson Drive
Knockmore Hill Industrial Park
Lisburn
Co. Antrim

Northern Ireland
BT28 2EX
UK
Contact: Mr Tim Monroe
Job Title: Senior Marketing Manager
T: + 44 28 9267 3777
F: + 44 28 9266 3666
E: sales@smileymonroe.com
W: www.smileymonroe.com
Exporting worldwide - experts in the design, manufacture and service of conveyor belts, screening media and conveyor spillage control & dust encapsulation systems for bulk materials handling. Industries served range from quarrying, mining and cement plants to ports, steelworks and power stations.

SMM-UM Sociedade de Montagens Metalomecnicas SA

Quinta da Fonte
Edificio D. João I
Paço de Arcos
2770-203
Portugal
Contact: Ms Ines Goncalves
T: + 351 21 4697600 / 607
F: + 351 21 4697612
E: ines.goncalves@smm.com.pt
W: www.smm.com.pt

Sobemai by IRI nv

Bogaardestraat 168M
Maldegeem
Oost-Vlaanderen
B-9990
Belgium
Contact: Mrs Kathleen Breusegem
Job Title: Managing Director
T: + 32 50 711801
F: + 32 50 710402
E: sales@sobemai.com
W: www.sobemai.com
Manufacturer of equilibrated cranes, selling to the international market.

Solitec Engineering Ltd

Unit 8
Gilchrist Thomas Industrial Estate
Blaenavon
Gwent
NP4 9RL
UK
Contact: Mr David Woodland
Job Title: General Manager
T: + 44 1495 790623
F: + 44 1495 790666
E: sales@solitec.co.uk
W: www.solitec.co.uk
Design and manufacture bulk materials handling equipment to food, pharmaceutical, cement, petrochemical and other industries. Product range, typically, consists of screw conveyors, bucket elevators, mixers (various), IBC systems and silo discharge aids. Part of the ROTOLOK Group of companies.

Sotecma Inc Process Engineers

3126 Bernard-Pilon
Suite 200
Saint-Mathieu-de-Beloil
Quebec
J3G 4S5
Canada
Contact: Ms Odette Lecompte
Job Title: Administrative Assistant
T: + 1 450 464 4426
F: + 1 450 464 4534
E: olecompte@sotecma.com
W: www.sotecma.com

Canadian company offering turnkey engineering and construction services in bulk handling and flat storage solutions at low cost. The type of structure used is a highly versatile alternative to conventional constructions. The storage shed can be dismantled and be relocated. For more details visit www.sotecma.com.

Specialised Handling & Eng (Pty) Ltd

PO Box 125
Featherbrooke Estate
Mogale
Gauteng
1746
South Africa
Contact: Mr Derek Albertson
Job Title: Managing Director
T: + 27 11 662 1649
F: + 27 11 662 1049
E: she@she.co.za
Custom designs bulk materials handling stacking and reclaiming machinery and systems. Specialist suppliers of rail wagon tippers and positioners. Patented circular stockpiling system stacks and reclaims multiple grades of materials.

STAG AG

Industriestrasse 11
Maienfeld
7304
Switzerland
Contact: Mr Thomas Zanettin
Job Title: Sales/Marketing
T: + 41 81 3035800 / 53
F: + 41 81 3035899
E: office@stag.net
W: www.stag.net
STAG bulk material technology for mechanical and pneumatic conveying technology as well as ensilage technology. We are also the ideal partner as a general company for complex assignments for nearly all bulk materials in plant construction.

Stas BV

Kathodeweg 4
Horn
1627 LK
The Netherlands
Contact: Mr Rob ver Doren
Job Title: Managing Director
T: + 31 229 282 940
F: + 31 229 233 177
E: info@stasgroup.eu
W: www.stas-nl.com
Stas is a manufacturer (production) of transport rollers, drive and tension drums and import bearings and bearing blocks.

Stewart Inspection and Analysis (Pty) Ltd

PO Box 267
Brakpan
1541
South Africa
Contact: Mrs Carol Le Cordeur
T: + 27 11 740 0621
F: + 27 11 740 0626
E: carol.lecordeur@alsgroup.com
W: www.stewartgroupglobal.com

STM srl

Zona Industriale snc
Tito Scalo
Potenza
85050
Italy
Contact: Mr Anselmo Zirpoli
Job Title: Sales Manager
T: + 39 0971 485073
F: + 39 0971 485086
E: anselmo.zirpoli@stmpotenza.com
W: www.stmpotenza.com

Stock Equipment Company

16490 Chillicothe Road
Chagrin Falls
Ohio
44023-4398
USA
Contact: Mr Simon Shipp
Job Title: Business Development
T: + 1 800 289 7326 ext: 217
F: + 1 440 543 5944
E: simon.shipp@stockequipment.com
W: www.stockequipment.com
Other equipment: High capacity hopper and belt feeder reclaim. Stock Equipment and the Schenck Process Group are global specialists in the weighing, screening, feeding and conveying of bulk materials. Systems include railcar unloading, stockpile stackers, plant transfer and high capacity volumetric and gravimetric material reclaiming and feeding systems.

Stokman BV

Brasem 18
Raamsdonksveer
AB
4941 SE
The Netherlands
Contact: Mr Jan Stokman
Job Title: General Manager
T: + 31 162 516040
F: + 31 162 517590
E: stokmanbv@stokmanbv.com
W: www.stokmanbv.com

Strudes Inc

1440 Sainte Catherine St
Suite 905
Montreal
Quebec
Canada
Contact: Mr Henry Nowodworski
Job Title: President
T: + 1 514 731 6951 x 123
F: + 1 514 737 4146
E: h.nowodworski@strudes.com
W: www.strudes.com
Strudes Inc. is an engineering consulting company, founded in Montreal in 1984. We specialize in design for heavy industry. We provide full range of engineering services including preliminary and final design, contract evaluation and administration, environmental studies, schedule development, etc.

STUDIO TECNICO MALNATI SAS

Via G. Treccani/Alfieri 22
Milano
I-20141
Italy
Contact: Dr Andrea Malnati
Job Title: Product Manager
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F: + 39 02 895 022 55
E: andrea.malnati@stmalnati.com
W: www.stmalnati.com
Our company represents several industrial manufacturers. We develop basic engineering for solid material handling systems.

Our team is focused on selecting machineries and designing plants for: - crushing - screening - handling systems - rollers and rubber belt - e-motors and inverters - process automation Other Equipment: Telescopic Cascade Chutes

Sucofindo

Laboratory Strategic Business Unit
Graha Sucofindo 6th Floor
Jalan Raya Pasar Minggu Kav.34
Jakarta
12780
Indonesia
Contact: Mr Diding Sudira
Job Title: Senior Manager
T: + 62 21 798 3666
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W: www.sucofindo.co.id

Sumitomo Heavy Industries

Material Handling Systems Co., Ltd.
ThinkPark Tower
1-1 Osaki 2-chome
Shinagawa-ku
Tokyo
141-6025
Japan
Contact: Mr Akihide Ito
Job Title: Acting General Manager, International Sales
T: + 81 3 6737 2643
F: + 81 3 6866 5181
E: Akh_itou@shi.co.jp
W: www.shi.co.jp
SES has produced a very wide range of materials handling equipment for many years and perseveres in its efforts to improve the efficiency of their leading continuous ship unloading range of machines.

Superior Industries, Inc.

315 East State Highway 28
PO Box 684
Morris
Minnesota
56267
USA
Contact: Mr Jeff Steiner
Job Title: Sales Manager
T: + 1 320 589 2406
F: + 1 320 585 5644
E: info@superior-ind.com
W: www.superior-ind.com
Superior Industries is the only North American based company to manufacture a complete line of conveying equipment like telescoping radial stackers, mobile shiploaders, truck unloaders and fixed conveyor systems; plus conveyor related components like idlers, pulleys, scrapers and other accessories.

Svendborg Brakes ApS

Jernbanevej 9
Vejrstrup
5882
Denmark
Contact: Mr Nikolai Jørgensen
Job Title: Sales Director
T: + 45 63 255 255
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E: sb@svendborg-brakes.com
W: www.svendborg-brakes.com
Svendborg Brakes creates high growth for both customers and ourselves by innovating, testing and delivering world class braking solutions. We are value driven and customer focused, and we continuously strive for superior and unmatched quality in design, products, testing, certification and

services. This makes us Global Leading Experts and the preferred and trusted provider in the field of intelligent braking solutions.

Swire CTM Bulk Logistics



C Transport Maritime SAM
Gildo Pastor Centre
7 Rue du Gabian
Monaco
MC 98000
Monaco
Contact: Captain Giorgio Vallega
Job Title: Operation/Commercial Manager
T: + 377 9798 5981
F: + 377 9798 2306
E: gvallega@ctmmc.com
W: www.swirectmbl.com
Sums up the experience, know-how and networks of its parent companies in the dry bulk and logistics field, providing a full range of integrated services from the supplier to the end users, including specialised barge services, transshipment, river, coastal and ocean transportation by means of conventional bulkcarriers or self-unloading vessels and barge.

Synergy Engineering Ltd

135 Glacier Street
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BC
V3K 5Z1
Canada
Contact: Mr Richard Neuman
Job Title: President
T: + 1 604 472 2800
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E: office@synergy-eng.com
W: http://www.synergy-eng.com

TAIM WESER GmbH

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32547
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E: frank.herrmann@taimweser.com
W: www.taimweser.com

TAIM WESER, S.A.

Carretera de Castellón, km 6,3
Poligono Industrial La Cartuja
Zaragoza
50013
Spain
Contact: Mr Simon Whalley
Job Title: Sales Director
T: + 34 976 500 006
F: + 34 976 500 028
E: info@taimweser.com
W: www.taimweser.com
TAIM WESER is a world leading company within the fields of bulk materials handling, lifting equipment, waste treatment plants and renewable energy, with more than 100 years of experience and committed to innovation and technology.

TAKRAF GmbH



Torgauer Str. 336
Leipzig
D-04347
Germany
Contact: Mr Thomas Eckel
Job Title: Director Sales
T: + 49 341 2423 605
F: + 49 341 2423 610
E: takraf.sales@tenova.com
W: www.takraf.com
With more than a century of experience and tradition in the field of open cast mining, bulk materials handling, and port facilities, the company is proud of its worldwide standing. Services offered: planning, design, fabrication, erection and after sales service of machines, systems and complete plants.

TBS Shipping Services

612 Grassy Sprain
Yonkers
New York
10710
USA
Contact: Mr Gregg McNelis
T: + 1 914 961 1000
F: + 1 914 961 2286
E: TBSRates@nyc.tbsship.com
W: www.tbsship.com/

Tebodin Consultants & Engineers

P.O. Box 16029
The Hague
2500 BA
The Netherlands
Contact: Mr R J Smits van Oyen
Job Title: Manager Logistics, Asset Management & Maintenance
T: + 31 70 348 0249
F: + 31 70 348 0591
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W: www.tebodin.com
Tebodin is an independent, multidisciplinary firm of consultants and engineers. We offer clients around the world the experience and expertise of more than 3,500 employees. Our extensive office network allows us to offer clients the best of both: integrated engineering and consultancy expertise combined with local knowledge. Clients include major international companies, governments and multilateral financing institutes.

techNaero aps

Blaabaervej 3
Haslev
DK-4690
Denmark
Contact: Mr Anders Larsen
Job Title: CEO
T: + 45 56314925
F: + 45 56314555
E: sales@techNaero.dk
W: www.techNaero.dk
Other equipment: Silo systems

Telestack Limited



Omagh
County Tyrone
BT79 ONZ
Northern Ireland
Contact: Mrs Samantha Thompson
Job Title: Marketing Co-Ordinator
T: + 44 28 82 25 11 00
F: + 44 28 82 25 22 11
E: salesenquiries@telestack.com
W: www.telestack.com
Specialist manufacturers of Mobile bulk material handling systems for the Ports/Inland terminals, Mines, Quarries, Steel Mills, Cement Plants and Powerstation industries globally. The mobile range of equipment offers unrivalled flexibility for the operator, reducing costs in Cap-Ex Investment compared to fixed installations, fuel and labour. Equipment includes; mobile shiploaders/unloaders, mobile stackers, mobile truck unloaders, mobile reclaim hoppers, mobile rail wagon loaders/unloaders and mobile link conveyors. We have supplied and support some of the world largest blue chip companies.

Tema BV

PO Box 3220
Rijswijk
GE
2280
The Netherlands
Contact: Mr M P van Delden
T: + 31 70 390 6555
F: + 31 70 399 3390
E: mp.vandelden@tema.nl
W: www.tema.nl
TEMA / SIEBTECHNIK
Centrifuges Coal centrifuges for coarse and fine coal; Sample taking, sample preparation, complete sampling plants and laboratory equipment; Linear- and circular-motion screening machines.

TEMA Systems Inc.

7806 Redsky Drive
Cincinnati
Ohio
45249
USA
Contact: Mr Mike Mullins
T: + 1 513 489 7811
F: + 1 513 489 4817
E: sales@tema.net
W: www.tema.net
Other equipment:
Centrifuges/dryers. Manufacture and supply cross-belt sampling systems (up to 3M wide primary cutter) in accordance with ISO standards, screening machines and centrifuges for the coal and other mineral industries. Please visit our web page for additional information.

TENOVA S.p.A - Tenova Takraf Italy

Via Albareto, 31
Genova
16153
Italy
Contact: Mr Pietro Bibolini
Job Title: Commercial Director
T: + 39 010 605 4634
F: + 39 010 605 4710
E: pietro.bibolini@

it.tenovagroup.com
W: www.tenovagroup.com
Provides a full range of high capacity bulk materials handling equipment for coal and other minerals and ores. Its range of CSUs and shiploaders are amongst the largest capacity machines operating worldwide.

Tenova TAKRAF Africa

58 Emerald Parkway Road
Greenstone Hill Ext. 21
Johannesburg 2047
South Africa
Contact: Mr Peter Cheshire or Ms Kay Subramoney
T: + 27 11 201 2300
F: + 27 11 455 4547
E: TMM@za.tenovagroup.com
W: www.tenovagroup.com
Profile Statement: Tenova is a worldwide supplier of advanced technologies, products, and engineering services for the iron & steel and mining industries providing innovative, integrated solutions for complete process areas. Profile Sentence: Tenova: One network, better solutions.

Terex Fuchs GmbH



Industrie str. 3
Bad Schönbörn
76669
Germany
Contact: Mr Thomas Berners
T: + 49 725 384 136
E: thomas.berniers@terex.com
W: www.terex-fuchs.de
Loading machines from 19 to 77.5t operating weight and up to 21m reach. Complete solutions honed for your specific purpose.

Terex MHPS GmbH

Terex Port Solutions
Forststrasse 16
Düsseldorf
D-40597
Germany
Contact: Mr Peter Klein
Job Title: Senior Manager Marketing
T: + 49 211 7102 3355
F: + 49 211 7102 3651
E: info@terexportsolutions.com
W: www.terexportsolutions.com
Terex Port Solutions supplies customers in ports with a unique combination of machines, software and services under the Terex and Terex Gottwald brands. Whether it is ship-to-shore cranes, reach stackers or fully automated, integrated handling systems for containers and bulk, Terex Port Solutions provides reliable solutions for rapid, safe, efficient handling of all forms of cargo.

The ACT Group

14644 El Molino Street
Fontana
CA
92335
USA
Contact: Mr Edward Sunseri
T: + 1 909 350 4703
F: + 1 909 350 4982
E: esunseri@groupactinc.com
W: www.groupact.com
Bulk material handling: includes supply and design of conveyor, hoppers, screens, crushers. Dust control: includes dust collection and dust suppression utilizing air, water and chemicals. Engineering services and complete service

and installation capabilities are also offered.

The China Navigation Co. Pte. Ltd

300 Beach road #27-01
The Concourse
Singapore
199555
Singapore
Contact: Mr Richard Sell
Job Title: Commercial Manager
T: + 65 6603 9429
E: Richard.Sell@chinanav.com
W: www.chinanav.com

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/electrohydraulic/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.

Thiele GmbH & Co KG



Werkstrasse 3
Iserlohn
D- 58640
Germany
Contact: Mr Maik Koerner
Job Title: Sales Manager - Conveyor Chains
T: + 49 2371 947 319
F: + 49 2371 947 241
E: m.koerner@thiele.de
W: www.thiele.de
More than 60 years experience in the engineering and manufacturing of conveyor chain

systems such as round steel chains, bushed conveyor chains, forged conveyor chains and cardan chains, including all attachments.

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 speciality 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
2TR 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 Industrial Solutions AG

Bus. Unit Resource Tech./Mining-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.thyssenkrupp-industrial-solutions.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
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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.tkmh@thyssenkrupp.com
W: www.thyssenkrupp-materialshandling.co.za
We offer a comprehensive product portfolio and a close-

meshed sales and service network for our customers in the sectors of mining, cement, mineral processing and bulk materials handling. Our customers benefit from our decades of experience and our unique know-how in the fields of research and development, engineering, project management and after-sales service.

ThyssenKrupp Robins, Inc.

7730 E. Bellevue 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
Spijkensse
3203 LG
The Netherlands
Contact: Mr Rik Verspeek
Job Title: Business Manager
T: + 31 181 668668
F: + 31 181 668660
E: info@tideworks.com
W: www.tideworks.com

TMEIC

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Roanoke
Virginia
24018
USA
Contact: Mr Don Samsa
Job Title: Marketing
T: + 1 540 283 2000
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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 Elektro

Spuieweg 8a
Waalwijk
N-Br
5145NE
The Netherlands
Contact: Mr Ronald van Egeraat
Job Title: Business Development
T: + 31 416 34 00 16
F: + 31 416 56 07 90
E: egeraat@transelektro.nl
W: www.transelektro.com
BMAir systems provide Clean Cabin Air for all brands of mobile plant. The usage of a BMAir systems means complying to HSE and taking care of plant operatives' health. The wide range of products starts from step-in models up to advanced systems.

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@tsgsgroup.com
W: www.tsgsgroup.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@tsgsgroup.com
W: www.tsgsgroup.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.trftd.com
W: www.trftd.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
Amprior
Ontario
K7S 0C3
Canada
Contact: Mrs Sue Staniszewski
Job Title: Sales Manager
T: + 1 613 623 3434
F: + 1 613 622 4003
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

22 Frith Street
Mayfield West
NSW
2304

Australia
Contact: Mr Steve Maxwell
Job Title: G.Vice President,
Mining, APAC Sales
T: + 61 2 4908 2222
F: + 61 2 4968 2043
E: info@tpt.com
W: www.tpt.com
Triple Point Technology@ is the leading global provider of Commodity Management software. Triple Point's Commodity XL Metals and Mining solution reduces operational, logistical, marketing and commercial costs by managing the tonnage, quality and value of coal and mineral supply chains.

Tsubaki Kabelschlepp GmbH

Daimlerstr. 2
Wenden-Gerlingen
D-57482
Germany
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T: + 49 2762 4003 0
F: + 49 2762 4003 220
E: info@kabelschlepp.de
W: www.kabelschlepp.de
Founded in 1954, KABELSCHLEPP is known today as one of the world leaders where cable carriers, guideway protection and conveyor systems are concerned. Products are today being used by numerous well-known machine builders in Germany and abroad.

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: sales@tsubaki-bulk.com
W: http://tsubakimoto.com/tbs/
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
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F: + 86 21 6539 7400
E: info@tts-huahai.com

TTS Marine AS

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4606
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Job Title: Communications & Marketing Coordinator
T: + 47 55 94 74 08
F: + 47 55 94 74 01
E: info@tts-marine.no
W: www.ttsgroup.com
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

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Contact: Mr Bodo Altgeld-Wichmann
Job Title: Marketing Manager
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F: + 49 5584 94210 99
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 bulks 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
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Contact: Mr Paul Kuiper
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F: + 31 524 599 330
E: mach@veenstra-coevorden.nl
W: www.veenstra-coevorden.nl

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

Verachtart Nederland B.V.

Markerkant 14-30
Almere
Flevoland
1314AS
The Netherlands
Contact: Mr Rudy van Leeuwen
Job Title: Sales Manager
T: + 31 73 - 640 41 11
F: + 31 36 529 85 94
E: Info@dcc-grabs.nl
W: www.dcc-grabs.nl

Verachtart Nederland B.V.

De Bloemendaal 8
Hertogenbosch
North Brabant
5221EC
The Netherlands
Contact: Mr Robbert Boersma
Job Title: Director
T: + 31 73 640 41 11
F: + 31 73 641 97 40
E: info@veraned.nl
W: www.veraned.nl/en
Verachtart has developed itself in 60 years into the market leader of Work Tools for all types of excavators and wheel loaders, and offers solutions for the specific wishes of the customer.

Verachtart products represent quality and productivity. Other equipment: Coal handling buckets & funnel buckets

Verstegen Grijpers 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/four rope grabs and hydraulic grabs.

Vibrafloor

Les Pièces Bourgeoises
Givry
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.vibrafloor.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.

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 (VCM Belgium NV)

Woluwelaan 9
Vilvoorde
1800
Belgium
Contact: Mr Bill Law
Job Title: Director of External Communications
T: + 32 2 254 1411
F: + 32 2 520 261
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 Rainer Luehring
Job Title: Head of Sales Industrial Components
T: + 49 211 7497 265
F: + 49 211 7497 1265
E: r.luehring@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: Export Manager
T: + 49 20 66 99 66 40
F: + 49 20 66 99 66 62
E: info@vsr-industrietechnik.de
W: www.vsr-industrietechnik.de
Products have been proving themselves in the bulk handling business for more than 39 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

Worley-Parsons

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@preciamolen.fr

Company	Shiploaders	Ship-unloaders	Grab Loaders	Grab Unloaders	Grabs	Continuous Ship Unloaders	Barge Loaders	Barge Unloaders	Self-Unloaders & Equipment	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
4B BRAIME Elevator Components																											
A. Friedr. Flender AG																											
AJS Cimbria																											
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																											
AMECO SA																											
Anvil Attachments																											
Arlona Engineering																											
ASGCO																											
ASGCO Manufacturing																											
ATIC Services																											
ATIC Services - Asia Pacific																											
Atlas Manufacturing Co. Inc																											
Atlas Manufacturing Co. Inc																											
AUMUND Foerdertechnik GmbH																											
Aurecon																											
Aurecon																											
Aurecon Hatch																											
Ausenco																											
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.																											
Bogaert Transmission (GEHA)																											
Bosch Rexroth B.V.																											
Bosch Rexroth Mellansel AB																											
Boyne Area Manufacturing (BAM)																											
Breiko Conveyor Products																											
Bretby Gammatech Ltd.																											

	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	Enclosed Storage	Stockyard Systems	Railcar Loaders/Unloaders	Engineering Consultants	Other
Bridgestone Industrial Limited	✓																									
Bridon International Ltd																										
BRUKS AB																										
BRUKS Rockwood Incorporation																										
Bucket Mart Inc.																										
Bulk Cargo Handling BVBA																										
BULK.ID																										
Buttimer Bulk Engineering																										
Bulk Logistic Landmark																										
BV Beco																										
C. Christophel GmbH																										
Cable Arm Inc																										
Cachapuz Bilanciai Group																										
Calim Grab Industry																										
Cambelt International Corp																										
Capotex																										
Carbonser, S.A. DE C.V.																										
Cargotec Sweden AB, Marine																										
Selfloaders																										
Cargotec Sweden Bulk Handling AB (Swertell brand)																										
Carlsen Group																										
Carsurin																										
Caterpillar Inc																										
Cavotec SA																										
CDM Systems, Inc																										
CFS Handling srl.																										
Changsha Kaiyan Instruments Co. Ltd																										
China Huadian Engineering Co., Ltd.(CHEC)																										
China Sonangol International (S) Pte																										
CHL Equipment Ltd (incorp.																										
Verstegen Grabs UK)																										
Cimbria Bulk Equipment																										
Claudius Peters Projects GmbH																										
Claudius Peters Technologies S.A.S																										
Cleveland Cascades Ltd																										
Clough Limited																										
CNBM International Engineering Co.,																										
CNK INTERNATIONAL LIMITED																										
Coal & Mineral Technologies (SABS)																										
COBRA Europe SA																										

Company	Shiploaders	Ship-unloaders	Grab Loaders	Grab Unloaders	Grabs	Continuous Ship Unloaders	Barge Loaders	Barge Unloaders	Self-Unloaders	Belt 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	
Coecierici S.p.A.																												
Cofely Experts BV																												
Coles Associates																												
Comercial Tauro S.A.																												
Conductix - Wampfler Australia																												
Conductix-Wampfler AG																												
Conductix-Wampfler Americas																												
Continental Construction (Memphis)																												
Continental Conveyor & Equipment																												
CONTINENTAL MATADOR																												
RUBBER_s.r.o.																												
ContiTech Transportbandsysteme GmbH																												
Control Systems Technology Pty Ltd																												
CPS Projects (Pty) Ltd																												
CST Covers																												
CST Storage																												
Cullen Grummitt & Roe																												
CWA Engineers																												
Dalian Huarui Heavy Industry Group Co. Ltd																												
Dalian Huarui Heavy Industry Group Co. Ltd																												
Dalis (Software and Automation) Ltd																												
DCL, Incorporated																												
De Regt Conveyor Systems																												
Dearborn MidWest Conveyor Co.																												
DeMarco Industrial Vacuum Corp																												
DemcoTECH Engineering																												
Den Bakker Dustcrusting Technology b.v. (dbd global b.v.)																												
DMN-WESTINGHOUSE																												
Dome Corp of North America																												
Dome Technology																												
DOMTEC International LLC																												
Donaldson Filtration Deutschland																												
Doosan Benelux SA																												
Doppelmayr Transport Technology																												
Dos Santos International, LLC																												
Dosco Overseas Engineering Ltd																												
Doubrava Ges GmbH																												
Dunlop Conveyor Belting																												
DURO FELGUERA, S.A.																												

COMPANIES TABLE

	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
Dust Control Technology																											
Dust Solutions Inc.																											
E-Crane World Wide																											
E-Crane World Wide /																											
E-Crane International USA																											
Edge Innovate																											
EIFFEL Etablissement SOMDEL																											
Elaborate Communications																											
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																											
Enviro Abrasion Resistant Engineers Pvt. Ltd																											
EQUIPO LLC																											
Eriez Europe																											
ESI Eurosilco BV																											
Euomec Srl																											
Euro-Tramco BV																											
F E Schulte Strathaus GmbH & Co																											
F L Smidth A/S																											
Fairport Engineering																											
FAM Foerdanlagen Magdeburg																											
Famak SA																											
Fantuzzi Reggiane S.p.a																											
FELD Maschinen-und Industriebau																											
Fenner Dunlop Conveyor Belting Europe																											
Fenner plc																											
Figee Crane Services BV																											
Flexco																											
Flexco Europe GmbH																											
Flexicon Corporation																											
Flexveyor Conveyor																											
FLSmidth GmbH																											
FLSmidth Minerals Pvt. Ltd																											
FLSmidth Spokane, Inc.																											

Company	Shiploaders	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 Tech BV	✓																									
Intersystems																										
iSAM AG Gesellschaft fuer angewandte Kybernetik																										
Isomonte SA																										
Italgru S.r.l																										
J & B Grabs b.v.																										
Jansen & Heuning																										
Jenike & Johanson Inc.																										
Joy Mining Machinery																										
JSC Tehnoros																										
Kalenborn Kalprotect GmbH & Co.																										
Kardesler Grab & Machine																										
KCT Grab Industry																										
Kinergy Corporation																										
Kingfisher Industrial Ltd																										
KIROW ARDEL GmbH																										
Kleemann GmbH																										
Knight Energy Services Limited																										
KOCKS KRANE GmbH																										
Konecranes (France)																										
Konecranes Finland Corporation																										
Konecranes Hafentechnik GmbH																										
KPI/JCI and Astec Mobile Screens																										
KRANUNION GmbH																										
Kröger Greifertechnik GmbH & Co.																										
Laing O'Rourke																										
Larox Flowsys Oy																										
Larsen & Toubro Limited																										
Lassing Dikken Consulting Engineers																										
Lawrence Industries, Inc.																										
Libran Engineering and Services																										
Liebherr Maritime Cranes																										
Liebherr-Hydraulikbagger GmbH																										
Listenow GmbH & Co.																										
Logmarin Advisors Srl																										
LogSys NV																										
Loibl/Allen-Sherman-Hoff GmbH																										
Lycopodium																										
Macawber Engineering, Inc																										
MacGregor SWE AB																										

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	Drives, Controls & Automation	Enclosed Storage	Stackyard Systems	Railcar Loaders/Unloaders	Engineering Consultants	Other
Mack Manufacturing Inc	✓																										
Mactenn Systems Ltd.	✓																										
Mantsinen Group Ltd Oy																											
Martin Engineering																											
Martin Engineering GmbH																											
Maschinen und Mühlenbau Erhard																											
Muhr GmbH																											
Mentor Dynamics																											
Merrick Industries																											
Metso Minerals Industries, Inc.																											
Midwest Industrial Supply Inc																											
Midwest International Standard Products, Inc.																											
Mitsui Miike Machinery Co., Ltd.																											
Moffatt & Nichol																											
Mole-Master Services Corporation™																											
Motherwell Automation																											
Motridal SpA																											
MRS Greifer GmbH																											
NAVCO (National Air-Vibrator Co)																											
Negrini Srl																											
Nemag BV																											
NERAK GmbH Fördertechnik																											
Neuro Industrietechnik GmbH																											
NILOS GmbH & Co KG																											
NKM Noell Special Cranes GmbH																											
NM Heilig BV																											
NMH s.r.o																											
Nordströms Konstruktionsbyrå																											
Nordstrong Equipment Ltd																											
North American Crushing & Screening, LLC																											
NSL ENGINEERING PTE LTD																											
Orthos Projects Ltd.																											
ORTS GmbH Maschinenfabrik																											
P.T. Mitra S.K. Analisa testama																											
PAGE MACRAE ENGINEERING																											
Parker Plant Ltd																											
PEBCO®																											
PEINER SMAG Lifting Technologies																											

Company	Shiploaders	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
Ronin GMS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Royal Haskoning DHV	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rubb Buildings Ltd	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RULMECA HOLDING S.P.A.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SABS - Mining & Minerals	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sammi	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sampling Associates International	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SAMSON Materials Handling Ltd	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sandvik Mining	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sandvik Mining and Construction (China) Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Scantech International	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Schade Lagertechnik GmbH	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Schenck Process UK Limited	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Scorpio Engineering Pvt. Ltd	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sea Transport Corporation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Seabulk Inc	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Selpeco Resources Inc.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sempertrans France Belting Technology SAS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SENNEBOGEN Maschinenfabrik	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sensor Technology Ltd	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sentry® Equipment Corp	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SESCOTRANS (SAE)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SEW-EURODRIVE GmbH & Co KG	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SGS (Nederland) BV	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SGS Australia Pty Ltd	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SGS Minerals Services	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SGS Minerals Services	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shanghai Global Machinery Co., Ltd	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shanghai Janus Grab Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shanghai Qifan Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shanghai Yo-Pi Port Machinery Co.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shanghai Zhenhua Port Machinery Co (ZPMC) Ltd	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shanthei International	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shaw Almex Canada	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SIBRE - Siegerland Bremsen GmbH	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SIDERAR / TERNIUM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Siebrechnik GmbH	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Siemens AG	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

	Shiploaders	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
Siemens AG																										
Siemens Nederland NV																										
SIG Società Italiana Gomma Spa																										
Simplicity Projects Pvr Ltd																										
SMB International GmbH																										
Smiley Monroe Ltd																										
SMM-UM Sociedade de Montagens Metalomecánicas SA																										
Sobemai by IRI nv																										
Solitec Engineering Ltd																										
Sotecma Inc Process Engineers																										
Specialised Handling & Eng (Pty) Ltd																										
STAG AG																										
Stas BV																										
Stewart Inspection and Analysis (Pty) Ltd																										
STM srl																										
Stock Equipment Company																										
Stokman BV																										
Strudes Inc																										
STUDIO TECNICO MALNATI SAS																										
Sucofindo																										
Sumitomo Heavy Industries																										
Superior Industries, Inc.																										
Svendborg Brakes ApS																										
Swire CTM Bulk Logistics																										
Synergy Engineering Ltd																										
TAIMWESER GmbH																										
TAIMWESER, S.A.																										
TAKRAF GmbH																										
TBS Shipping Services																										
Tebodin Consultants & Engineers																										
techNaero aps																										
Telestack Limited																										
Tema BV																										
TEMA Systems Inc.																										
TENOVA S.p.A - Tenova Takraf Italy																										
Tenova TAKRAF Africa																										
Terex Fuchs GmbH																										
Terex MHPS GmbH																										
The ACT Group																										

Company	Shiploaders	Ship-unloaders	Grab Loaders	Grab Unloaders	Grabs	Continuous Ship Unloaders	Barge Loaders	Barge Unloaders	Self-Unloaders & Equipment	Stackers	Reclaimers	Stacker Reclaimers	Conveyors & Accessories	Front-End Loaders	Hoppers	Crushing	Screening	Blending	Weighing	Sampling & Inspection	Dust Control & Suppression	Enclosed Storage	Drives, Controls & Automation	Stockyard Systems	Railcar Loaders/Unloaders	Engineering Consultants	Other
The China Navigation Co. Pte. Ltd																											
The Grab Specialist b.v.																											
Thiele GmbH & Co KG																											
The Raring Corporation																											
Thermo Fisher Scientific																											
ThyssenKrupp Canada																											
ThyssenKrupp Industrial Solutions AG																											
ThyssenKrupp Materials Handling																											
ThyssenKrupp Robins, Inc.																											
Tideworks Technology - Europe																											
TMEIC																											
TMSA Tecnologia em Movimentação S/A																											
Tranco, Inc																											
Trans Elektro																											
Trans-Global Solutions, Inc																											
Trans-Global Solutions, Inc.																											
TRF Limited (Ta Ta)																											
Triodetic																											
Triple Point Technology																											
Tsubaki Kabelschlepp GmbH																											
Tsubakimoto Bulk Systems Corporation																											
TTS HuaHai Ships Equipment																											
TTS Marine AS																											
Ulrich Brehme GmbH																											
V D B (Pty) Ltd																											
Veenstra Machinefabriek B.V.																											
Ventyx																											
Verachtert Nederland B.V.																											
Verachtert Nederland B.V.																											
Verstegen Grippers BV																											
Vibrafloor																											
Vollert Anlagenbau GmbH																											
Volvo (VCM Belgium NV)																											
Vossloh Kiepe GmbH																											
VSR Industrietechnik GmbH																											
Wirtech AG																											
Worley Parsons Canada (Westmar)																											
Yernaux-Passage																											



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