



DRY CARGO

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FEATURES

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The transhipper Bulk Zambesi during operations in Beira - Mozambique. The vessel, together with her twin unit Bulk Limpopo, was specifically designed by CC to overcome logistical constraints inherent to the port and optimize Vale's coal handling process from the Moatize mine to worldwide customers.

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Cloudy prospects for coal trade

During the past year commodity imports growth into many countries weakened, and in some instances large reductions in volume were seen. Extra imports elsewhere were unable to prevent a sharp slowdown in global seaborne dry bulk trade expansion. For 2016, the outlook currently suggests limited potential for reviving momentum.

Recent global economic activity forecasts indicate only minimal trade benefits from a very modest strengthening. The latest IMF predictions show the global GDP growth rate edging up by just 0.3 percentage points from last year's estimated figure, to 3.4% in 2016. Slight improvements in the USA, Europe and Japan are likely to be accompanied by a continuing deceleration in China.

COAL

Much greater uncertainty about the global coal trade growth trend has been evolving, amid clearer potential for adverse influences. Forecasts have become more cautious, given the increasing emphasis in many countries on reducing harmful emissions from fossil fuel burning. The impact on coal consumption and import demand around the world in the twelve months ahead is likely to be negative, but is difficult to estimate.

A forecast published by the Australian Government, at the end of December, shows global steam coal trade (including land movements but mostly seaborne) resuming growth in 2016 at a 2% rate, reaching 1,059mt (million tonnes), after a large 8% decline last year. According to this view, China's imports could cease declining and rise slightly, following the past year's huge downturn which severely affected trade.

IRON ORE

Statistics released by the World Steel Association underline the full extent of steel production weakness in raw materials importing countries in the past twelve months. All the main producers saw a reduction during 2015, compared with the previous year, varying within a 2-5% range.

China's crude steel output was 2% lower at 823mt, although this figure may be revised upwards. The European

Union, similarly, saw a 2% decrease to 166mt, while steeper falls were seen in South Korea, at 3% (down to 70mt) and in Japan, at 5% (to 105mt). Iron ore and coking coal consumption and imports were adversely affected. In the year ahead some producers may see increases, but the potential for upturns currently does not seem large.

GRAIN

Since the beginning of the present 2015/16 crop year which ends in June 2016, estimates of world trade in wheat plus corn and other coarse grains have consistently indicated a slight annual decrease. Lower import into China and the Middle East area have been, and still are, expected.

The latest (January) International Grains Council forecast for 2015/16 shows a 7mt or 2% world trade reduction, to 315mt. Among importers, increases are predicted in the European Union, up by 18% to 18.6mt and in sub-Saharan Africa, up by 13% to 26.2mt. But these positive influences are likely to be more than offset by a downturn in China from the previous year's record high level (25% lower at 19.3mt), and also by a decline of 11% to 50.2mt in the Middle East area, mainly resulting from falls in Iran and Turkey.

MINOR BULKS

Activity in the minor bulk commodity trades during 2015 was boosted by rising exports of steel products (coil, plate, sheet, etc) from China. The total rose again to reach a record 112.4mt, 20% higher, after the previous year's large expansion. However, the Chinese mills are encountering more foreign pressure to limit the upwards trend.

BULK CARRIER FLEET

Although down from earlier annual volumes, deliveries of newbuilding bulk carriers from world shipyards remained quite high last year, at an estimated 49.2 million deadweight tonnes, a 2% increase, as shown by table 2. Increased scrapping was also seen, restricting fleet growth. In 2016 another large volume is scheduled for delivery, many of which could be delayed or postponed.

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

	2010	2011	2012	2013	2014	2015*
Japan	76.6	68.7	70.5	77.0	74.1	72.5
South Korea	23.4	25.9	25.7	26.4	29.9	31.5
Taiwan	10.2	10.7	10.5	10.9	10.9	11.0
China	47.3	44.7	53.6	75.4	62.3	48.0
India	35.0	33.0	35.5	39.0	47.9	51.0
Total of above	192.5	183.0	195.8	228.7	225.1	214.0

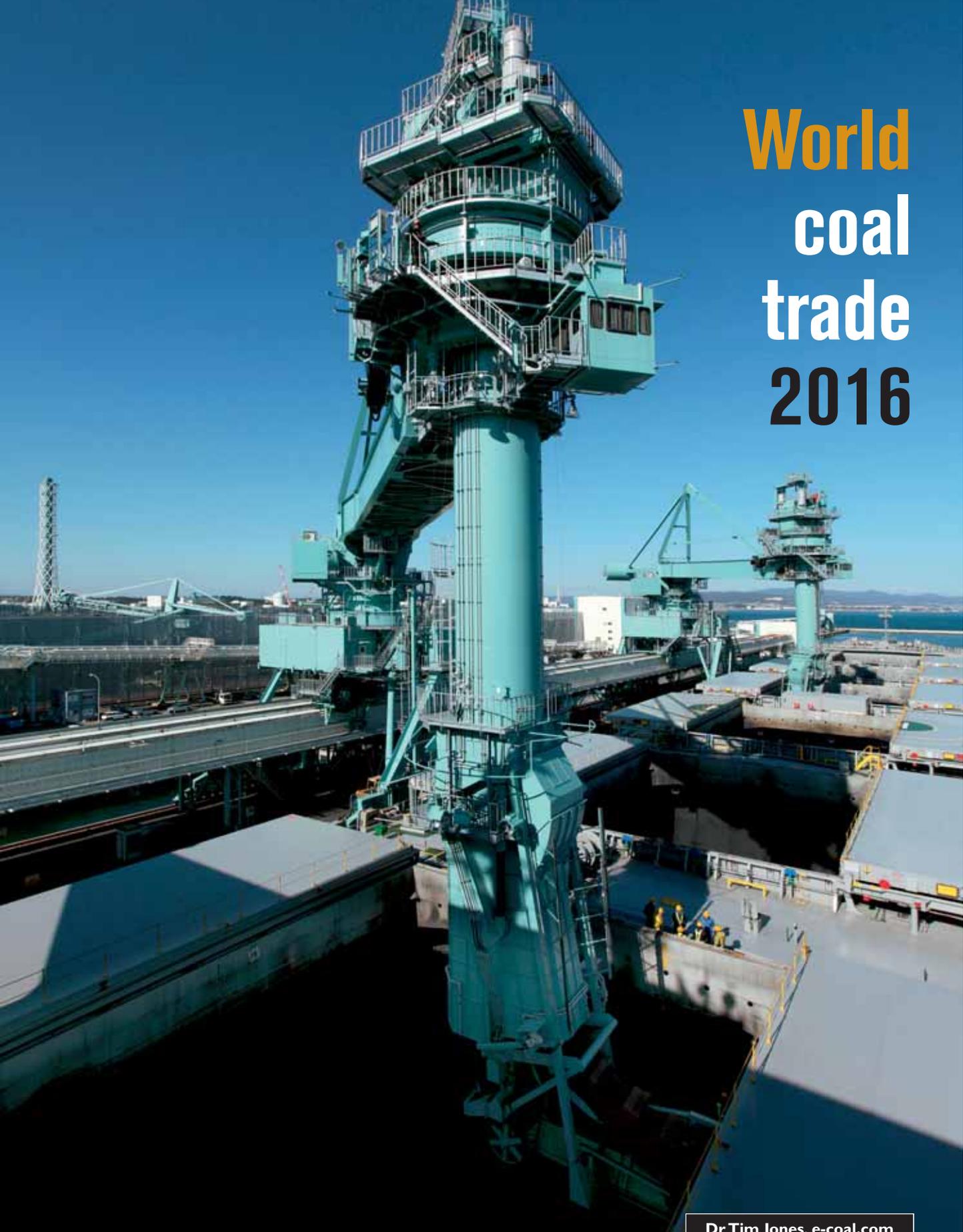
source: various & BSA 2015 estimates * estimate

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

	2010	2011	2012	2013	2014	2015*
Handysize (10-39,999dwt)	8.9	10.2	10.5	6.3	5.4	6.5
Handymax (40-64,999dwt)	19.0	22.0	20.9	14.7	11.4	15.9
Panamax (65-99,999dwt)	14.5	22.2	27.0	19.9	12.8	9.9
Capesize (100,000dwt and over)	38.6	45.6	41.9	22.0	18.5	16.9
Total	81.0	100.0	100.3	62.9	48.1	49.2
% change from previous year	83.7	23.5	0.3	-37.3	-23.5	2.3

source: Clarksons Research * estimate

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World coal trade 2016

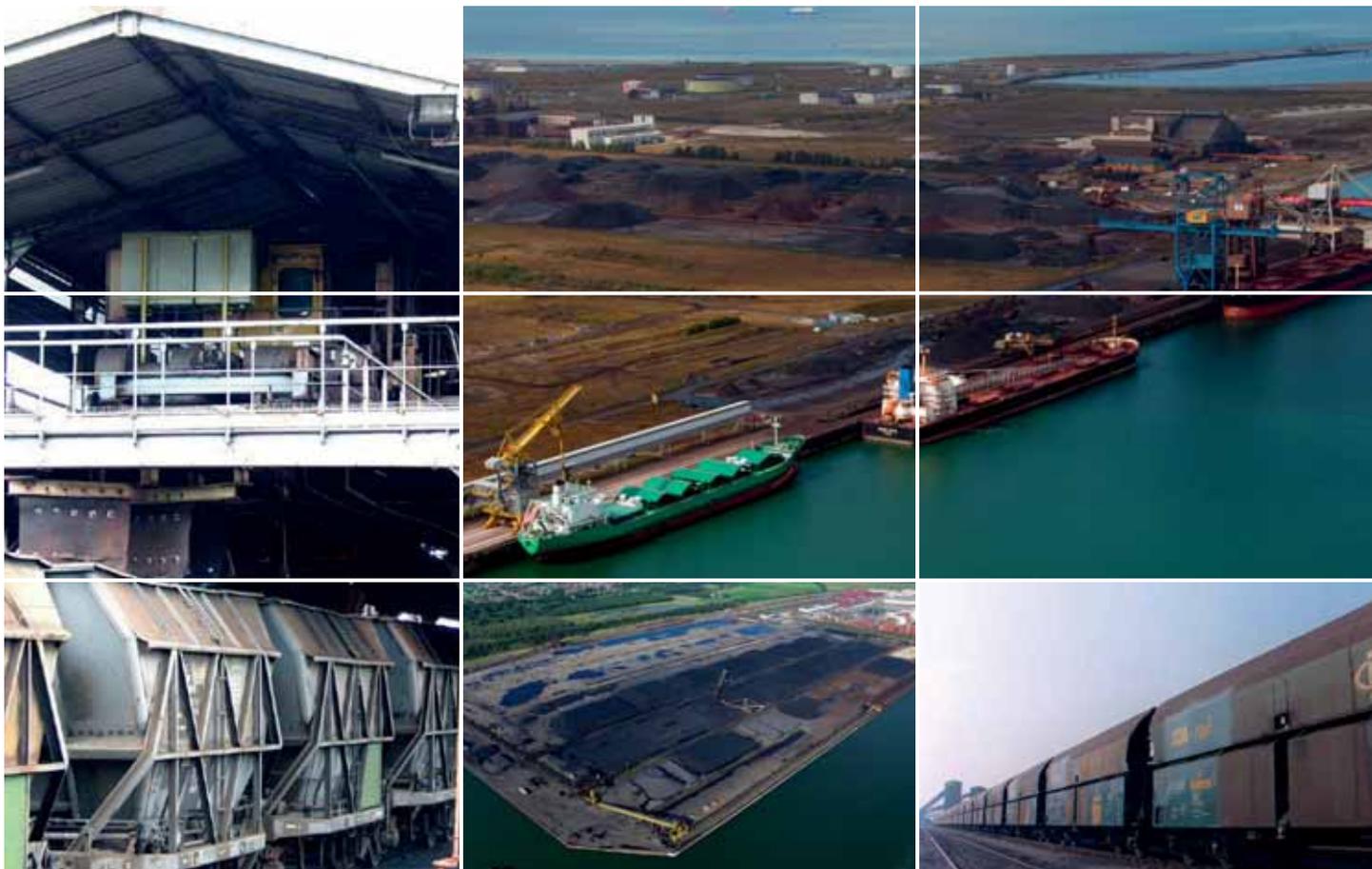


Dr Tim Jones, e-coal.com

World commodities markets had a difficult year in 2015 and the international coal industry remained in the doldrums as far as prices were concerned for shippers. Traded volumes, however, were still relatively high on a historical basis, and this has enabled the larger producers to continue to operate amid several years of low prices. Thermal coal spot prices have been falling during 2015 to their lowest since before the financial crisis, and for the

first time since the 1990s global thermal coal trade has been moving into negative growth overall. Asia remains the dominant market for coal, but China has cut back substantially on its import requirements.

Thermal coal trade on a global scale is believed to have decreased in 2015 compared with the previous year, although final statistics have yet to be reported at the time of writing. A



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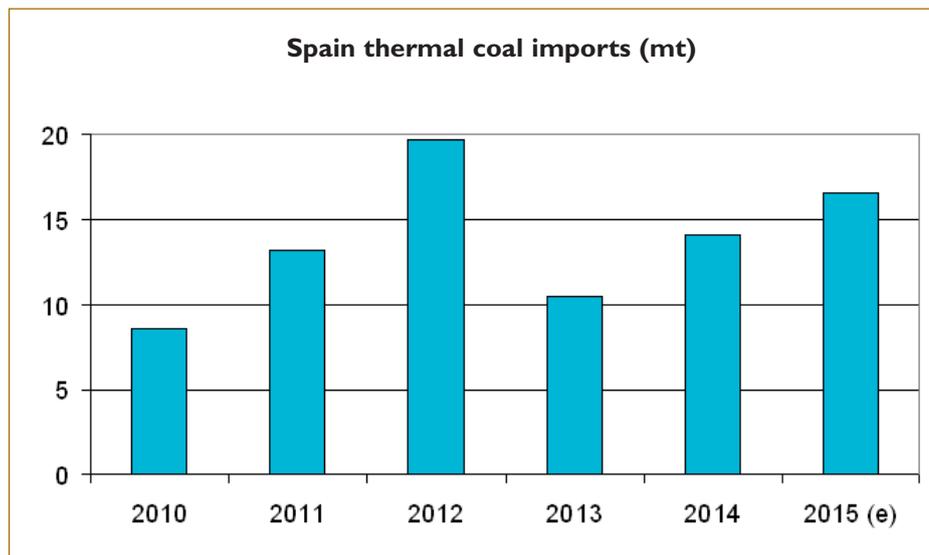
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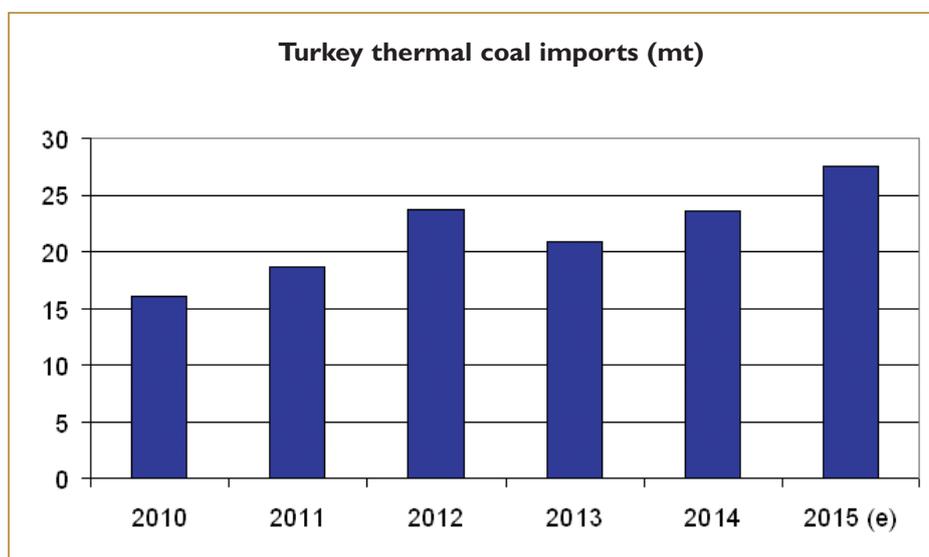
total of about 940mt (million tonnes) has been indicated, and this is the lowest since 2011 when the total reached 915mt. There have been regional variations, depending on energy policy, and in Europe the demand for thermal coal has been decreasing since 2012 when it reached 198mt. In 2015 the total is expected to have been around 183mt with demand from Turkey being stronger, while coal-fired power plant continues to be reduced in other countries. This has been particularly significant in the United Kingdom. In the Asian market, weaker demand from China has impacted trade, but several other Asian countries have shown firm requirements during 2015. Nevertheless, thermal coal trade is likely to have been the lowest since 2012 at about 720mt in 2015. In the Americas, demand has been steady overall in the region of about 37mt



also been losing market share in India over the past year, with South Africa and Australia improving their volumes to that country. Although India has remained firm in its demand growth,

this has also been slowing down during 2015. Korea, Malaysia, and Thailand have been more positive over the past year as their coal-fired power generating capacity increased, and they have been taking substantial tonnage from shippers in the region.

India is the main importer of thermal coal in the Asian region now, having moved into top place as Chinese imports slumped in 2015. Electricity demand has been the driving factor behind India's growth in coal demand, but the rate of that growth has slowed over the past year. An increase of some 15mt in thermal coal imports is expected for India in 2015 when the final statistics are reported, and this equates to well

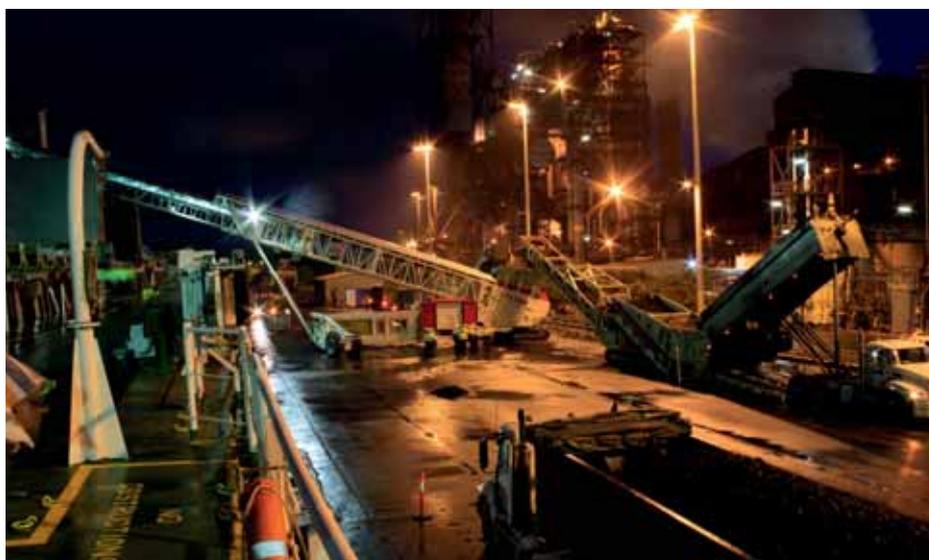


with the strongest market being in Brazil. North American markets for imported thermal coal remain weak. Thermal coal trade in the Pacific dominates the market with some 735mt expected to have been shipped in 2015. This compares with about 205mt traded in the Atlantic market last year.

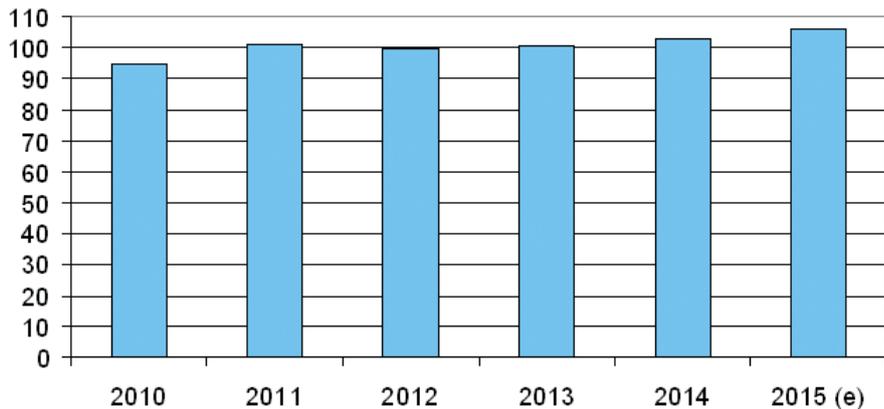
While the oversupply situation in the thermal coal market continues, the outlook remains gloomy. Over the past year, the decline in demand from China has had a substantial impact on the coal industry and with knock-on effects around the world. China may have taken over 60mt less imported thermal coal in 2015 when statistics are finalized. Shippers of low CV coal from Indonesia have been greatly affected since China introduced its regulations restricting that product in its import mix last year. The Indonesian shippers have

over 10% growth compared with the previous year.

China's imports of thermal coal were in more decline during the first half of 2015 but the rate of decline slowed over the



Korea thermal coal imports (mt)



remaining months of the year. Chinese imports are expected to have been in the range 130-140mt in 2015 which compares with 198mt recorded in 2014. This is a decrease of around 58-68mt or 30-34% compared with that in 2014 and is attributed to weak demand combined with an oversupply in China's coal industry in 2015. The new regulations and associated penalties over the consumption and import of low quality coal have also contributed to this decline.

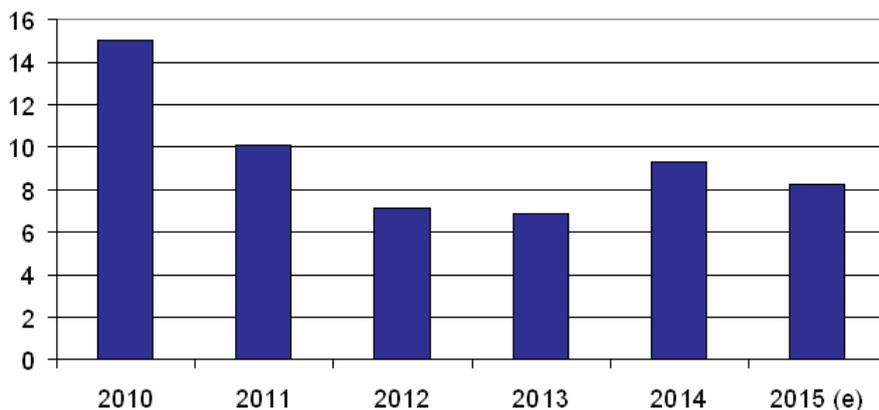
The stronger thermal coal markets in the Asian region in 2015 include Korea, Malaysia, Philippines, Thailand and Japan. It had been thought that the increase in the coal tax in Korea in July might have affected the volume of coal imported, but it appears to have had little effect, and imports have been stronger. The Korean buyers in the power sector have also been seeking higher quality coals which has benefitted the exporters in Russia and Australia. A new record quantity of thermal coal is expected to have been taken

by Korea in 2015, at an estimated 105-106mt which is an increase of some 3.5%. Although they are smaller markets, importing countries like Thailand have been seeing improved industrial sector demand and an estimated extra 2mt is likely to have been imported in 2015.

In Europe, the Mediterranean market has been fairly robust compared with the rest of the continent. After a few years of losing business in Europe, the South African shippers have seen improvement in trade there. The Colombians remain the key supplier to European buyers elsewhere, and other exporting countries including Russia and the USA have seen markets decline in

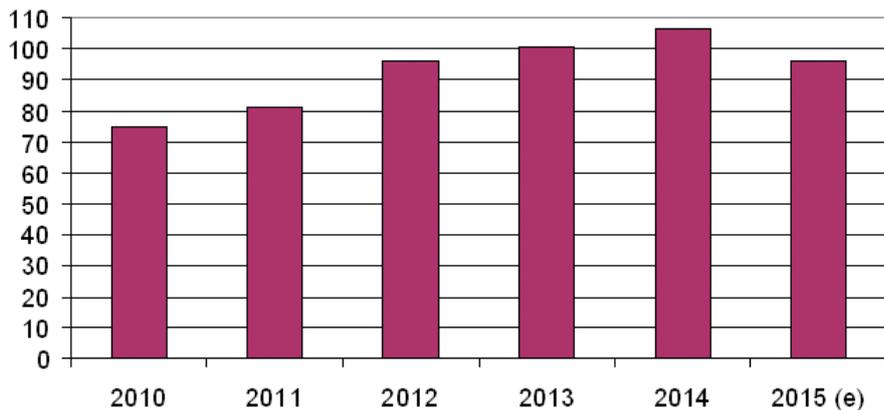
2015. Coal usage in the United Kingdom is in decline, and this is the case in other countries which were previously key markets including Poland and those in Scandinavia. This has been

USA thermal coal imports (mt)



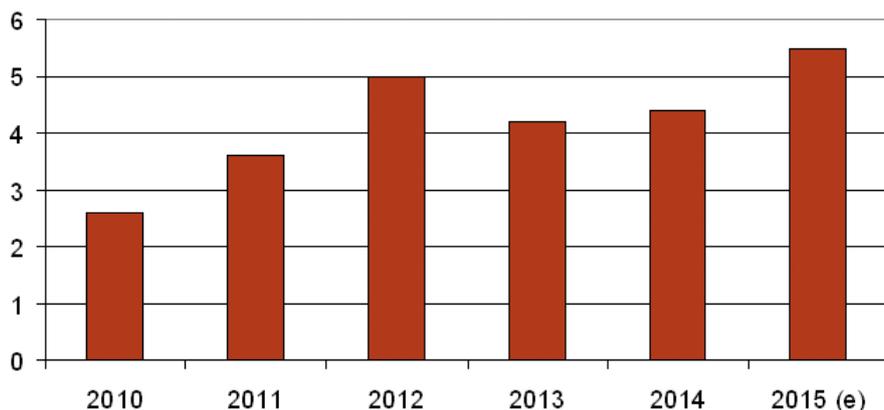
impacting Russian exporters through the Baltic Sea in particular over the past year, but their markets through the Black Sea to Turkey remain more positive.

Russia thermal coal exports (mt)



Overall demand for thermal coal in the Atlantic markets is understood to have declined by some 5-6mt last year. The only firm region was in the Mediterranean, with Spain, Portugal, and Turkey remaining keen on thermal coal usage as much of northern Europe is shrinking away from it. German interest has been steady amid the policy on nuclear power over the past few years, but the less favourable carbon tax position since last April has contributed to the further decline in demand in the United Kingdom. Coal imports could be down by around 45% compared with 2014 at less than 20mt. New coal-fired capacity is likely to have boosted

Portugal thermal coal imports (mt)



environment, the Colombian and South African shippers have been able to ship more to the North Atlantic over the past year. India has remained steady for South African material in 2015.

The north European suppliers are expected to have exported 60–65mt of thermal coal in 2015 which is down from around 71.5mt the year before. Lower demand from the United Kingdom has had the biggest impact there, as well as low prices deterring some exporters such as Poland. Colombian exporters have increased their tonnage in Europe with around 75mt expected to have been shipped there in 2015, compared with less than 70mt in

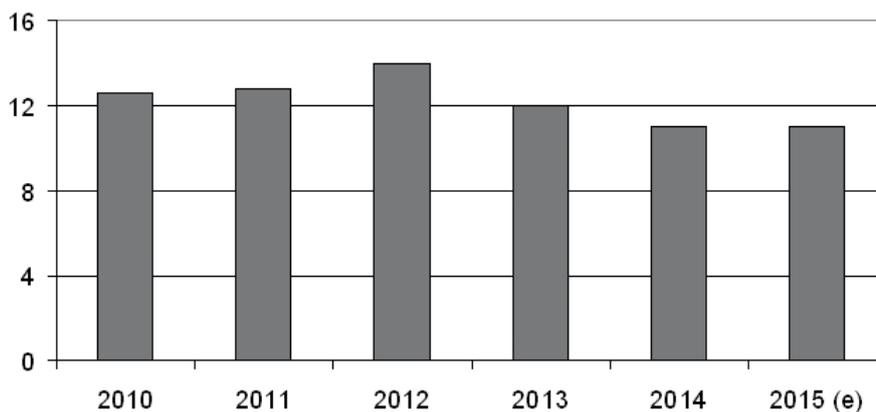
Turkey's imports by some 4mt in 2015. Lower availability of hydro generation was boosting coal imports during the first half of 2015 in Spain and Portugal, with increases of around 2.5mt and 1.5mt respectively believed to have been taken by year end. The opposite was true in Scandinavia where higher hydro availability reduced coal demand in the first half of the year and into the autumn.

The main importers of thermal coal in the Americas, the USA and Brazil have seen different scenarios for coal over the past year. Oversupply in the domestic US market has led to lower demand even for low priced Colombian material, while lower availability of hydro power has increased interest from Brazil during most of the year.

Supplier countries to China have been adversely affected during 2015, with Australia and Russia seeing declines, but the Indonesian shippers of lower quality material have taken the biggest hit. As Russian supplies in the Atlantic have been lower, as well as US availability in a weak price

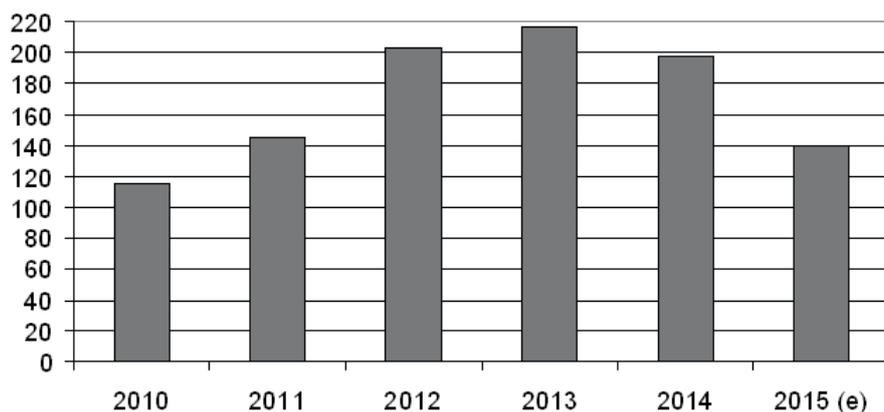
2014. Meanwhile, the South African exporters are likely to have increased their export volume in the Atlantic to over 30mt in 2015 continuing steady growth there over the past few years.

Israel thermal coal imports (mt)



Morocco and Turkey have been important markets for them. Less than 10mt of thermal coal has been supplied to Europe by shippers in the Far East over the past year.

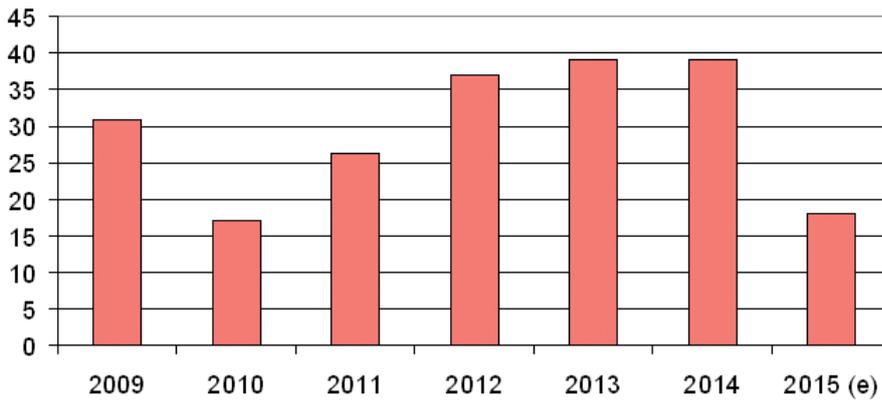
China thermal coal imports (mt)



Russian thermal coal trade into the Pacific markets is likely to have been level in 2015 compared with the previous year at about 47mt. Firmer demand from some countries in the region compensated for the decline in requirements from China. The Chinese exporters themselves are expected to have shipped barely more than 1mt in the Pacific market in 2015.

Indonesian thermal coal exports in the Pacific and Indian markets declined in 2015 to reach an estimated 370mt which was more than 30mt down on the year before. The preference for higher CV coal in those markets, however, has boosted sales of Australian material by an

United Kingdom thermal coal imports (mt)



estimated 5mt from the 200mt recorded in 2014. A similar situation has arisen for South African exporters supplying India in particular. Their export tonnage is likely to have been steady

US\$50/t basis 6,000kcal/kg NAR (net as received) by last October. The slump in oil prices is likely to get deeper and will continue to influence coal prices to lower levels. The decline in

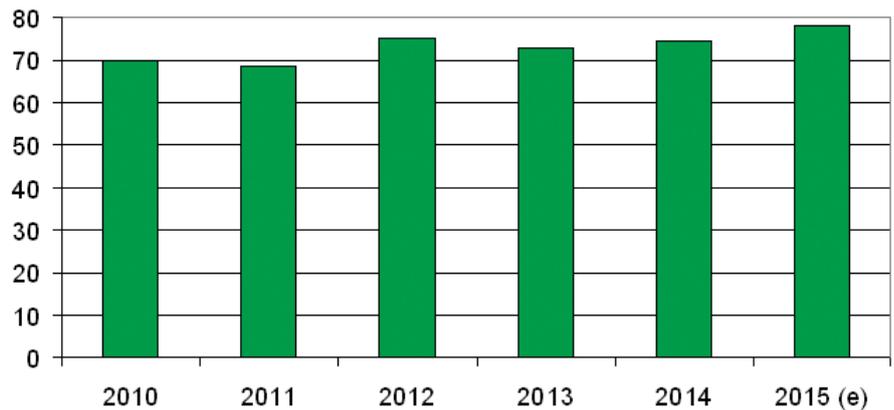
reduced shipments of Colombian coal by an estimated 1mt in the Pacific to about 6.5mt last year. US shippers found more business in India but their overall exports in 2015 through the Pacific are likely to be less than 10mt.

Pacific trade in thermal coal was about 685mt last year while that in the Atlantic was about 190mt. Both regions saw declines, of about 30mt and 6mt respectively.

Thermal coal prices have continued to slump amid the oversupply situation around the world and falling demand from China. The current market level has not been seen for some ten years with prices into Europe falling to around



South Africa thermal coal exports (mt)



into the Asian market at about 47mt.

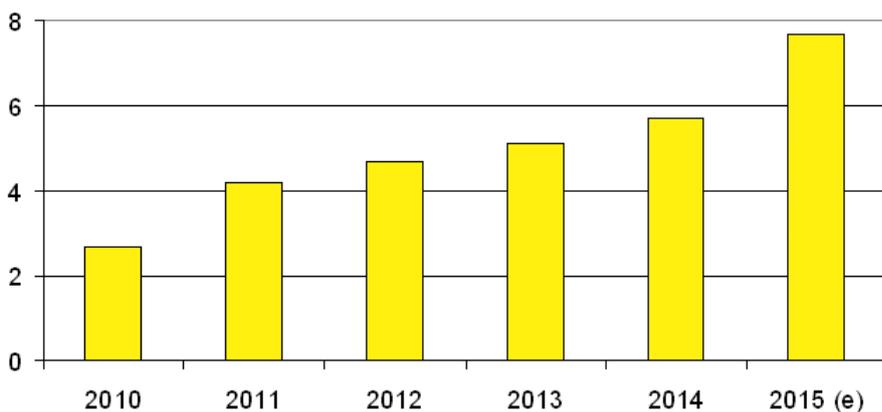
Colombian and US thermal coal exporters have found some business in the Pacific in 2015. A decrease in demand from Chile

China was driving global coal demand growth rates down and this has become negative for the first time this century. The rate of China's decrease in demand slowed after the rapid withdrawal

from some markets in the first half of the year, and some players believe the worst is now over. Indian buyers have also slowed their rate of demand growth to around half of that seen in 2014, and this has influenced markets and prices over the past year. By any standards, however, a growth rate of about 10% is still respectable, and India is behind most of the compensation for the slowdown in demand in China. The smaller Asian countries mentioned previously have also helped to cushion some of the blow from China's decline in 2015.

While producers hope for an improvement in prices around the world, the oversupply situation has been persisting for a long time now.

Brazil thermal coal imports (mt)



The only signs of some significant cuts in supply appear to be in three supplier countries — Indonesia, Russia, and the USA. Australia, South Africa, and Colombia continue to produce at increasing levels which will not help the supply/demand balance and therefore the price. At the latest rates, half of the decrease in global supply estimated in 2015 will have been made up for in 2016. The main swings are happening in the Pacific market, while the Atlantic supply continues to tighten by just a few million tonnes per year.

In corporate news, among the major mining companies, BHP Billiton reported that metallurgical coal production for the December 2015 half year decreased by 3% to 21mt. The company's expectation for the 2016 financial year remained unchanged at 40mt. According to the company report released in January, Queensland Coal production declined in the

Coal volumes due to higher customer demand was offset by lower customer requirements for the San Juan product. On 2 July 2015, BHP Billiton announced that the sale agreement for the San Juan Mine to Westmoreland Coal Company (WCC) had

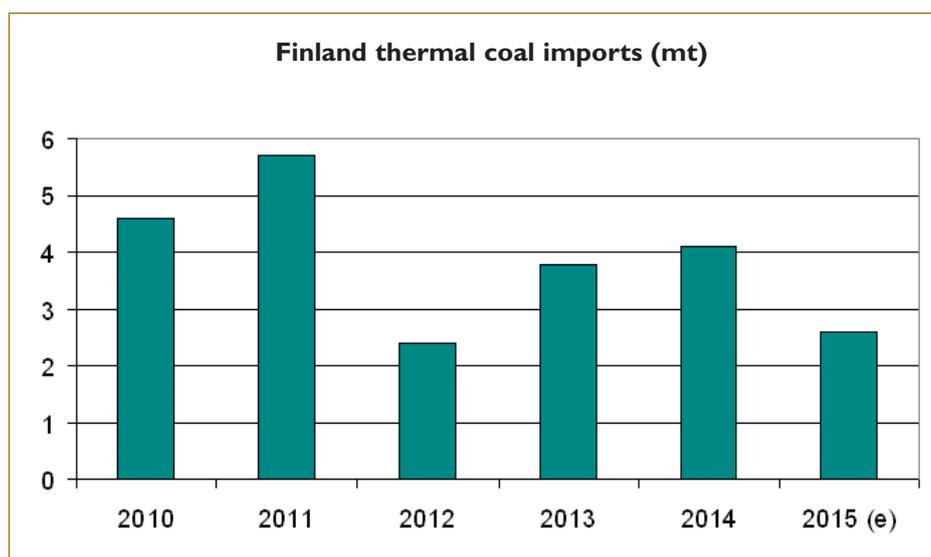
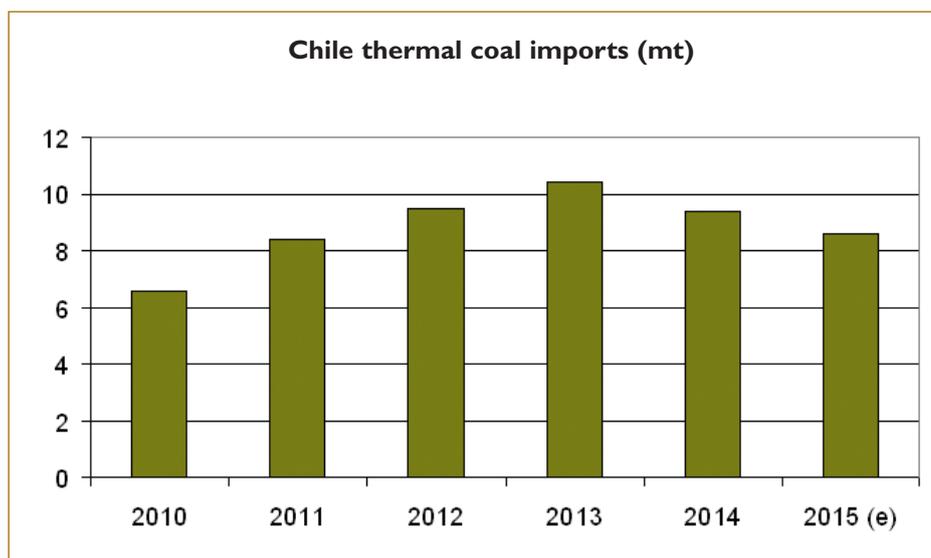
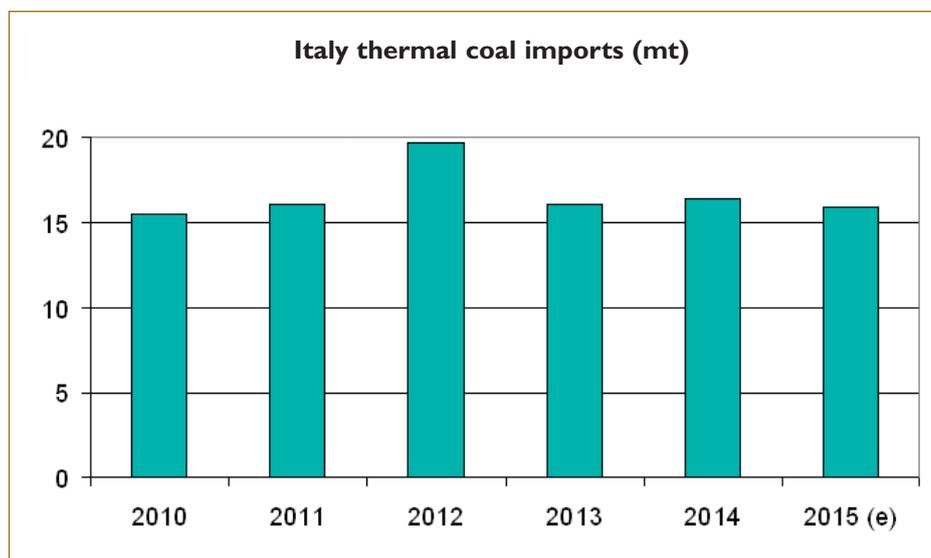
been executed. Regulatory approval has been received and the company expects the transaction to be completed in the March 2016 quarter.

Another of the major miners, Rio Tinto, reported that its hard coking coal production was 11% higher in 2015 than in 2014 at 7.859mt following improved production rates at the Kestrel mine according to their report published in January 2016. Fourth quarter tonnage was 16% higher than the same quarter of 2014 at 1.9mt due to the longwall changeover at Kestrel in 2014. Semi-soft coking coal production was 14% higher in 2015 compared with 2014 at 3.647mt, and 9% higher in the

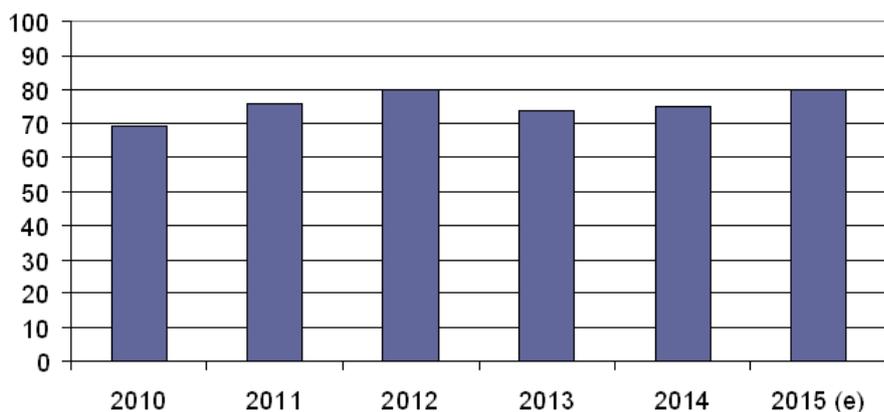
fourth quarter than in the same quarter of 2014 at 0.797mt, reflecting mine production sequencing at the Hunter Valley Operations unit in Australia. Thermal coal production in 2015

December 2015 half year as record production at the Blackwater, Daunia, Caval Ridge and South Walker Creek mines was offset by a 'convergence event' at the Broadmeadow mine.

Normal operations have resumed at that mine, but completion of longwall mining at the Crinum mine affected the overall output. The Crinum mine will be put into care and maintenance in the March 2016 quarter. Energy coal production for the December 2015 half year decreased by 3% to 19mt. The company's forecast for the 2016 financial year remains unchanged at 40mt. Lower production for the December 2015 half year reflected continued drought conditions in Colombia at the company's Cerrejon operations, while the miner's operations in New South Wales Energy Coal were affected by heavy rainfall. In the North American operations, a 16% increase in Navajo



Colombia thermal coal exports (mt)



was reported to be broadly in line with 2014 at 18.638mt last year (actually 2% lower). Fourth quarter production in 2015 was nine per cent higher than in the same quarter of 2014 at 5.182mt, due to increased production at the Hail Creek mine.

In 2016, Rio Tinto's share of production is expected to be 7–8mt of hard coking coal, 3.3–3.9mt of semi-soft coking coal and 16–17mt of thermal coal. Thermal coal guidance includes a contribution from the Bengalla operation up to the expected date of divestment during the first quarter of 2016.

According to Glencore's third quarter production report published in November, total own-sourced coal production was 102.7mt, an 8.8mt (8%) reduction on the comparable period the year before. The reduction was attributed to the market-driven decision to scale back production in Australia, as well as the closure of Optimum's open-cut operations in South Africa. Reducing Prodeco's production in Colombia to meet raiing restrictions also affected

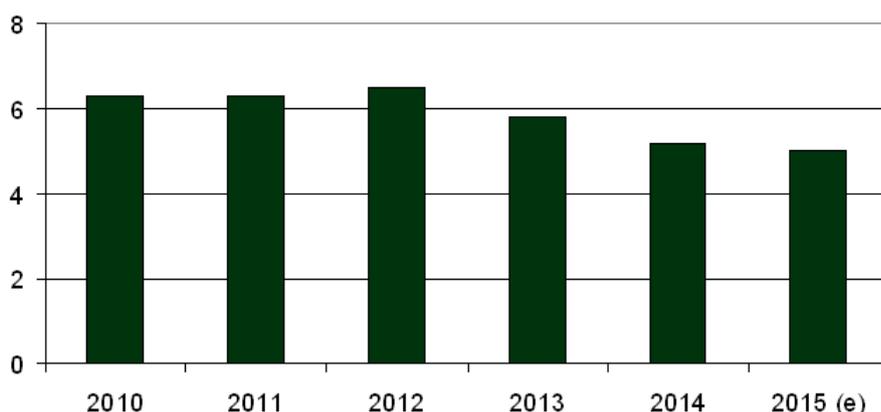
line with the environmental planning consent which has been granted.

In South Africa, production of 31.8mt of thermal coal was

the result.

In Australia, production of 4.2mt of coking coal was 0.4mt (9%) lower than the comparable period in 2014 due to geological issues at the Oaky North mine. Australian thermal and semi-soft coal production was 44.3mt, 4.8mt (10%) lower than the comparable period in 2014. Glencore reported that this was due primarily to the market-driven decision to limit production in response to weaker markets. Within this overall net reduction, some mines increased production where appropriate, including Ravensworth North which continued its ramp-up as planned, and the Mangoola operation increased production in

Mexico thermal coal imports (mt)



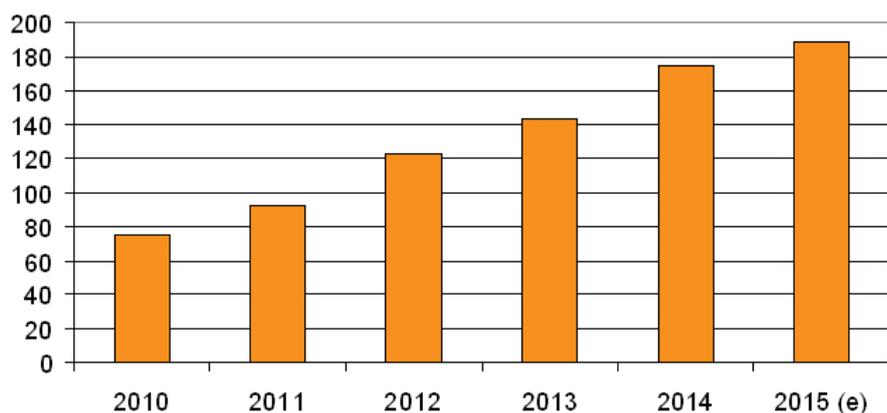
2.6mt (8%) below the comparable period in the previous year, primarily due to the closures of Optimum's opencut operations and the Middelkraal mine. The remainder of Optimum, which is

in business rescue proceedings, is still producing coal. Increased production at Impunzi and Tweefontein has, in part, mitigated the overall reduction.

In Colombia, Prodeco produced 13.9mt, a 1.2mt (8%) reduction compared with the prior year period, due to scaling back to meet temporary night rail restrictions. Glencore's share of Cerrejon production was 8.4mt, 0.2mt (3%) higher than the same period in 2014, which was impacted by production constraints related to management of dust emissions in drought conditions.

Given the depressed state of the commodities sector, and coal in particular, the freight market has been having a difficult time over the

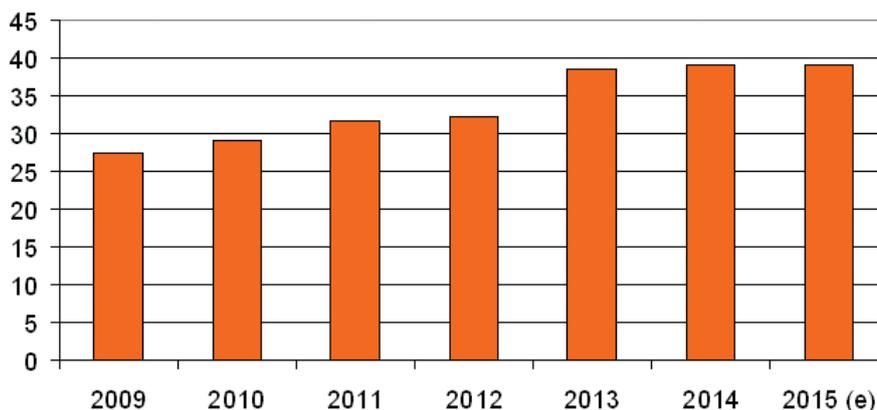
India thermal coal imports (mt)



past year. New lows were reached in the freight rates during 2015. Some of the main influences on this have been the economic slowdown in China coupled with weaker demand for coal and iron ore in world markets. Supply of vessels has been high as well, and this has exacerbated the situation. The size of the bulk carrier fleet has been growing amid the weaker commodities market. Short-term trends saw freight rates recover from time to time over the year, but the historically low levels have persisted after some recovery during the March to August period last year.

There was some hope that China would add to freight demand due to its steel output but this has proved otherwise. Global demand for freight is believed to have declined overall in 2015. Market fundamentals remain consistent with an expectation of

Germany thermal coal imports (mt)

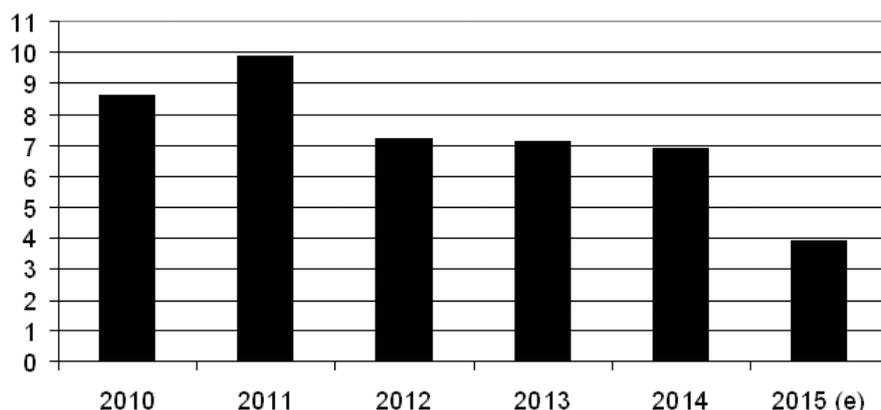


under way seems just as uncertain as it was this time last year. All players in the coal chain face continuing challenges just as they did a year ago and in some ways the situation is more

gloomy than it was in early 2015. Coal trade volumes remained high last year in historical terms, despite the depressed markets. The low oil prices of a year ago were not expected to have plumbed new depths quite as much as they have since then, so it is unlikely that coal prices will rise in the short term. It is difficult to see how the market can get any lower, so there may be more reason to be optimistic for coal's outlook this year, at least compared with last year. DC

Dr Tim Jones is Director of e-coal.com Consultancy and Editor of the weekly publication Coal Market Intelligence which covers 11 spot markets

Poland thermal coal imports (mt)



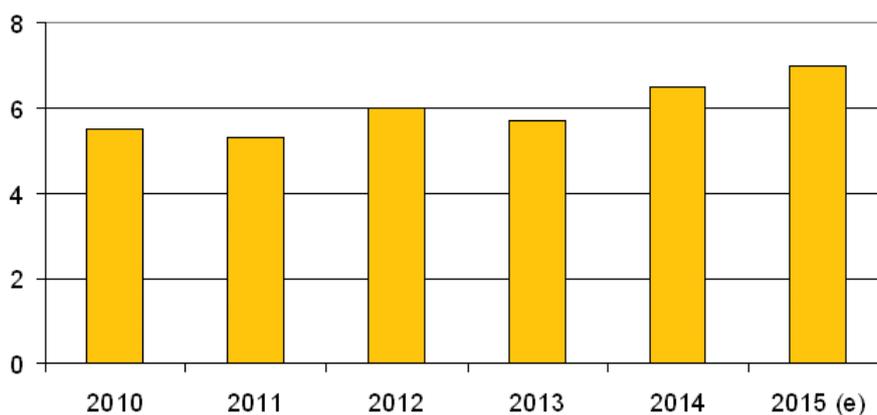
historically low rates for the foreseeable future, but some forecasters suggest there could be a recovery in overall demand in 2016.

Shipping analysts have reported that growth in the overall dry bulk fleet of some 2.5% to about 778 million dwt was achieved in 2015. This compares with a growth rate of 4.4% in 2014 when the fleet reached an overall size of 757.2 million dwt. Although there appears to have been a slowdown in the rate of growth, this will do nothing to help a recovery in rates under the current trade demand levels. Scrappings in the Capesize and Panamax fleets are believed to have increased in 2015 at some 30 million dwt. This compares with 17 million dwt scrapped in that sector of the shipping market in 2014.

The situation for coal as 2016 gets

worldwide, gives key information on the latest deals and tenders, company news, people and jobs, industrial relations, and ports, shipping, and freight rates.

Morocco thermal coal imports (mt)



Steel: China outguns competition

Britain left trailing in wake of Chinese supremacy



Kunal Bose

The Chinese steel export juggernaut looks unstoppable. The protests and trade-related actions by the injured countries are looked at with disdain by the exporting nation which accounts for nearly half the world production of steel. According to the General Administration of Customs of China, the country's steel exports took a year-on-year vault of 20% to 112.4mt (million tonnes) in 2015 when, according to the World Steel Association, the global demand for the metal declined by 1.7% to 1.513bn tonnes. As China's 2015 gross domestic product growth of 6.9%, the lowest in 25 years, shrank the local demand for steel from construction to manufacturing sectors, its steelmakers went on dumping the metal in the world market. The perfect storm of Chinese steel exports buffeted by large dollops of mostly hidden subsidy has been the undoing of the British steel industry.

As arrivals of cheap China-origin steel grew in a flat demand situation in Europe, Tata Steel in the UK was forced to cut jobs, close down plants and write downs starting 2009. In a shocking move for workers and manufacturing industry in general, Tata Steel announced in October 2014 that it was negotiating the sale of Scunthorpe site and the rest of its long products division to the leading American commodities trader Gary Klesch. The deal did not happen, putting Tata Steel in a bind. Turnaround fund Greybull has now emerged as a potential buyer of

Scunthorpe. In case Greybull does not close the deal by March, then the big facility will face certain closure.

Caparo Industries in the UK, part of the business empire of Lord Swraj Paul, had to be referred to the administration on 19 October 2015 as cheap imports from China and a strong pound took a major toll of its manufacturing activities across 16 companies. Sadly, unable to take the shock of Caparo going into administration, its CEO Lord Paul's youngest son Angad Paul (45) jumped to his death on 8 November. Accountancy major PwC — which played the role of administrator to Caparo Industries to find buyers for individual units, which it successfully did — and other experts found the fundamentals of the group's engineering and automobile related businesses strong. The undoing of Caparo Industries was Chinese export blizzards.

What China means for world steel today, Britain meant in 1875 with a nearly 50% share of the global pig iron production and 40% share of steel production. That was the time when Britain would export the major portion of its steel output to America and the rest of the world. But the once mighty British steel industry is now a tale of inexorable decline. Figures don't lie. According to the World Steel Association, Britain made 18.95mt of the metal in 1988. In the three years starting 2010, its steel production, facing the impact of global recession, stayed below 10mt a year. There were improvements since then and

production climbed to 12.065mt in 2014. But again last year Britain's steel output was down 10.4% to 10.9mt. The major fall in production happened when world production was down 2.8% to 1.67bn tonnes. Last year was an unmitigated disaster for British steelmakers and downstream groups engaged in activities like pressing and forging the metal. It stood as a statement of the deepening crisis in the country's steel industry with heavily loss-making mills downing the shutters in rapid succession causing skilled job losses.

There already is a major Darwinian cull of British steel and steel processing industry. Much of the remaining capacity is likely to go under as world steel prices, down a third in a year, are at their lowest in over a decade. A toxic cocktail of high energy bills, green taxes on emissions, crippling business rates and a strong pound makes Britain a very high-cost steel production centre. A study jointly done by industry body UK Steel and Labour MP Anna Turley finds British steel industry is "disadvantaged to the tune of £480 million a year" because of these factors. No wonder, then, imports are meeting a record 60% of the steel demand of the country's manufacturing and construction industries.

The Chinese steel industry, roiled by the slowest economic growth in the country since 1990, is under increasing pressure to export steel and aluminium, where it has much surplus capacity. In steel, China reportedly has a surplus capacity of 300mt, about half of global surplus of 645mt estimated by the Organisation of Economic Cooperation and Development. But Beijing is not finding it easy to weed out all the 'polluting and uneconomic capacity' because of provincial concerns of unemployment and social unrest. In Europe, Britain is seen as the softest target where bargain-hunting traders and consumers are snapping up low-priced Chinese commodity steel in growing quantities. Chinese steel met 8% of 2015 steel demand in Britain up from 2% in 2011. This is to further rise this year as the government has not done anything to stem cheap steel imports from China and a few other countries.

To the concern of global steel industry, China continues with

high production, even while the WSA said in a study that the country's steel demand was to contract by 3.5% in 2015 year and a further 2% this year. Expect China then to remain an aggressive seller of steel in the world market and British steel makers will continue to feel the heat of imports. The British industry is crying foul that Chinese steel exports in most cases amount to dumping, causing injury to local steelmakers. UK Steel Director Gareth Stace says, "Chinese steelmakers are fully subsidized by the Chinese government and their regions." His contention finds support in a finding by *Metal Bulletin*, the intelligence service provider, that China has made it a practice to sell steel in the world market at 10% discount to local prices. This is the reason why some varieties of Chinese steel are repeatedly falling foul of anti-dumping authorities in the US and European Union.

China, however, contends that the export success of its mills is because they are ahead of most other steel producing countries in productivity and cost effectiveness. It further says the fall in the prices of iron ore and metallurgical coal has improved the competitiveness of Chinese steel.

In an environment of high energy and wage cost and a strong currency supporting imports, the undoing of British steel industry is its making of basic commodity steel. If anything, mothballing of Britain's second-largest blast furnace at Redcar by Thai owner Sahaviriya Steel and Scotland's 130-year-old plate mill by Tata Steel, all engaged in making slabs, bars and rails, should have happened earlier.

The market is so bad that groups such as Nippon Steel & Sumitomo, ArcelorMittal, US Steel and Posco, focused on making top-end automotive-grade and grain-oriented electrical steel, are finding their margins under increasing pressure. Whatever noise British trade union leaders and MPs make, asking the government to come to the rescue of mills, the fact is that British steel has lost its strategic significance in terms of its share of GDP and employment. The irony is the remaining resilient manufacturing sector of Britain is not regretting the demise of British steel. DCi

Tata Steel's Scunthorpe steel mill.





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Stringent USCG BWT standards implemented in 2016

As of 1 January 2016 vessels are no longer able to discharge ballast in US waters unless their ballast water treatment (BWT) systems are compliant with stringent demands from the USCG (US Coast Guard). Experts believe that now, more than ever, it is imperative that shipowners make the right BWT choice.

“There’s so much confusion surrounding the issue of ballast water treatment now,” opines Optimarin CEO Tore Andersen, the head of a firm that brought the first ever commercial BWT system to market back in 2000. “The IMO Ballast Water Management (BWM) convention is close to ratification, but yet to be rubber-stamped, and meanwhile the USCG has taken the bold move to act unilaterally to protect the environment with its own regulations.

“So let’s cut through that uncertainty and state a fact: all shipowners that discharge ballast must get a BWT system, preferably an environmentally friendly one, if they want their ships to operate in the future. And, if they want to sail in US waters, then they must act now.”

TWO STANDARDS, ONE ANSWER

The fact that there are effectively two sets of regulations regarding BWT standards has muddied the waters for shipowners, making it difficult to find the solution they need.

Classification societies are well aware of this, but aren’t as keen to go on record to explain the situation. An environmental solutions expert at one of the world’s leading classification bureaus agreed to speak, but only on the condition of anonymity.

“Ballast water gets by far the most questions of any issue we deal with,” they note with a smile, “and it’s easy to understand why. There’s a major difference between USCG and IMO regulations. Basically this centres on standards.

“USCG judges (BWT) systems on the basis of ‘living/dead’ organisms in ballast water, whereas IMO views them in terms of ‘viable/unviable’. In other words, for USCG approval systems have to kill the organisms, while for IMO they don’t, but must ensure they don’t reproduce.

“USCG tests this using the FDA/CFMFA method, which uses a dye to identify living organisms, while the IMO does not list one specific methodology. The MPN (Most Probable Number) test is the norm here, having been used for almost 40 years, but procedures vary from laboratory to laboratory. This is an issue for USCG — it wants a simple, reliable and reproducible testing method. Until this is established, and there are hurdles in doing so, both with validation and law making, FDA/CFMFA will remain the USCG standard.”

NO ALTERNATIVE

Some may now be feeling lost in a sea of abbreviations. So, here’s the lowdown — USCG regulations are much more exacting. This means fewer systems will make the grade.

For the time being USCG is temporarily accepting the use of Alternate Management System (AMS), whereby vessels with solutions that have already been approved by another flag state can discharge ballast in US waters. However, USCG-approved AMS systems will only be accepted for a period of five years after the vessel’s compliance date, and, if they haven’t met the USCG’s own stringent standards by that point, will have to be changed. That burden of potential cost and uncertainty is not one today’s shipowners, operating in a climate of squeezed margins and aggressive competition, may be willing to accept.

They need to be sure.

Unfortunately, the systems that many industry observers seem to prefer for their simplicity, ease of operation and environment credentials (utilizing no chemicals) are struggling with USCG approval. “UV systems are easy to operate, don’t require chemical storage and are a good option for the industry,” opines the classification specialist. “But caution is needed.”

They explain that the majority have been made with the ‘viable’ standard in mind and therefore lack the power — “and you might require a lot more power” — to tackle the tougher FDA/CFMFA test.

“That’s where Optimarin has been smart,” they state. “They’re focusing on USCG current requirements and approval. And the first UV system to get this will have a real market advantage.”

THE POWER TO DELIVER

BWT specialist Optimarin — which has sold over 350 of its systems to shipowners across the world, with more than 270 installed — is coming to the end of a US\$3 million USCG approval programme.

Its technology is the first UV system to meet the USCG marine water requirements, successfully satisfying the FDA/CFMFA criteria. Further tests of remaining water salinities are scheduled for spring 2016, after which point approval is expected later in the year.

“Passing the initial tests puts us in pole position in the market for final approval and is a great endorsement of our system’s effectiveness,” comments Andersen. “Each of our system lamps has a 35kw capacity. This power instantly kills any potentially harmful invasive organisms and that’s exactly what USCG wants to see. We’re delighted to be leading the way in our segment — something that we put down to decades of work, sector expertise and investment.”

With 2016 now upon us, both Andersen and the regulation expert offer similar, sage advice to shipowners.

Andersen notes: “Install a system that is reliable, simple to maintain, easy to install (make sure any supplier can show a history of retrofit success) and proven within the marketplace. This is still a relatively young sector, so it pays to go with a name you can trust.”

His classification peer, meanwhile, has regulations front of mind: “It’s simple,” they say. “The industry has to comply, so choose a system that will be compliant.”

OPTIMARIN

Optimarin installed the world’s first commercial system on the cruise ship *Princess Regal* in 2000.

The type-approved Optimarin Ballast System (OBS) is certified by a comprehensive range of classification organizations, including DNV GL, Lloyd’s, Bureau Veritas, MLIT Japan, and American Bureau of Shipping.

Shipowners that have chosen the OBS solution include Saga Shipholding, MOL, Grieg Shipping Group, Gulf Offshore, Farstad Shipping, NYK, Nor Line, and Evergreen Marine Corp, amongst others.

Optimarin’s OBS, which is already AMS accepted, is the only UV system to have satisfied the USCG’s marine water FDA/CFMFA tests so far. The system is now on course for full USCG approval in 2016.

Cargotec acquires maritime software company

Cargotec Corporation has agreed to acquire INTERSCHALT maritime systems AG, a renowned specialist software and related service provider to the maritime industry. The acquisition will complement Cargotec's strategic aim of being a leader in intelligent cargo handling. Cargotec will gain more competence in technologically advanced software and service solutions and attains a global footprint with branch offices, service stations and partner representations.

Cargotec has agreed to acquire all the shares in the German software and service company INTERSCHALT. INTERSCHALT's sales in 2014 amounted to €42 million and it employs over 200 people. The closing of the transaction is expected to take place in the first quarter of 2016 and is subject to the approval of competition authorities after which INTERSCHALT will be consolidated into Cargotec's figures. The parties have agreed not to disclose the transaction value.

"During the last couple of years, we have been focusing on improving our profitability and now we are ready to take the next strategic step in implementing our strategy," says Mika Vehviläinen, CEO of Cargotec. "Our target is to get 40% of sales from services and software in five years' time. This acquisition is an excellent strategic fit to our Navis and XVELA offerings within the Kalmar organization, and it will also bring new service business for MacGregor."

"The acquisition of INTERSCHALT is part of our strategy of growing our software business in new areas and creating more value for existing and new customers. The acquisition will add customers, talent, additional knowledge, capabilities and software products to support the future growth of XVELA as the leading collaboration platform serving the needs of ocean carriers, terminals and their shipping partner," says Olli Isotalo, President of Kalmar. "We are very excited about the great growth opportunities we have ahead of us."

"Very soon after starting discussions about this acquisition, it became clear that we all shared the same strategic vision about the future of the maritime industry. INTERSCHALT's and Cargotec's software solutions together will help greatly our customers in their value creation in increasingly complex world of maritime logistics," says Robert Gärtner, CEO of INTERSCHALT.

Interschalt provides software solutions and services for the maritime industry, and its activities are structured into two segments: software solutions for cargo and fleet management as well as maintenance, repair and retrofit services for bridge navigation and communication equipment as well as for data voyage recorder systems. Cargotec is planning to integrate software solutions into the Kalmar business area and services into the MacGregor business area.



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GAC rings in New Year with management changes

Four managers from the GAC Group start 2016 with a new challenge as they take on new roles for the global provider of shipping, logistics and marine services.

Peter Österman moves to his native Sweden to take on the new role of Commercial Manager – Shipping for Denmark, Finland and Sweden combined. He is replaced as Managing Director of GAC Global Hub Services by Ronald Lichtenecker who relocates to Dubai for his new role. Lichtenecker was previously Managing Director of GAC Singapore. Henrik Althen takes over his former role in Singapore, after serving as Managing Director of GAC Kuwait. He is replaced by Filip Björklund, previously Group Business Controller.

Patrik Halldén, Group Vice President – Human Resources, says the latest appointments reflect GAC's long-standing policy of exposing its executives to a



Peter Österman



Ronald Lichtenecker



Henrik Althen



Filip Björklund

variety of roles in order to enrich their experience and bring a wealth of operational experience to serve customers around the world.

"This is a continuation for the successful business philosophy that has served GAC since its inception," he adds. "In 2016, our 60th anniversary year, we plan to continue that tradition of innovation to continue to deliver the best possible business solutions to the many sectors we serve."

GAC is a global provider of integrated shipping, logistics and marine services. Emphasizing world-class performance, a long-term approach, innovation, ethics and a strong human touch, GAC delivers a flexible and value-adding portfolio to help customers achieve their strategic goals. Established since 1956,

GAC employs over 9,000 people in more than 300 offices worldwide.



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Agents of change?

why ship agents are more essential than ever



*Unloading steel coils
at the Port of New
Orleans.*

‘Call The Agent’: ASBA member ship agents – tested – trusted – certified

Many may recall a poem — ‘Call The Agent’ — that made the rounds in the maritime industry publications and via emails many moons ago but still rings true today. The poem, with a little tongue in cheek, accurately highlights the breadth and scope of service provided by your ship’s agent. The poem can be found on ASBA’s website.

As the poem quite clearly states, maritime principals always:

- ❖ **Call the Agent** in advance of the vessel’s arrival for current port restrictions and accurate port costs;
- ❖ **Call the Agent** to arrange and handle the vessel’s time in port; and
- ❖ **Call the Agent** following vessel’s departure to ensure that the Statement of Facts documents the vessel call and the FDA is expeditiously prepared.

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

a ship’s agent.

- ❖ fiscally responsible company;
- ❖ trained boarding agents; and
- ❖ past experience with the ship agent and the agent’s experience with the cargo and vessel type.

ASBA’s Agent Member Certification is renewed annually and specifically addresses these qualities. This month, ASBA celebrates eleven years of its Agent Member Certification. However, in order to describe what it means to be ASBA certified — what, exactly, is an agent, and what does an agent do?

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

The agent dispatches the local services necessary for a

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

An agent's job is to safely and economically expedite the vessel's port call. They must understand the impact of high daily operating costs of ships and marine terminal, the pressures of berth congestion, and contract deadlines for loading and unloading cargoes. Solid rapport and good standing within the local maritime community is critical. The agent stands in the shoes of his or her principal protecting their interests at all times.

FISCAL RESPONSIBILITY

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

TRAINED

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

ASBA provides a variety maritime courses and seminars on

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

EXPERIENCE

ASBA's 30 member agents handle over 43,000 vessel calls annually in the USA and Canada. Approximately 14,000 were dry bulk and break bulk vessels. Based on the Association's calculations, ASBA Certified Agents have represented close to 65% of the dry and wet bulk calling US ports last year. In terms of experience, these statistics tell a clear story!

ASBA formed in 1934. Members use the Association to address issues affecting their companies and principals on a national level — and to advocate for quality. ASBA's landmark member certification was embraced by its international counterpart, the Federation of National Associations of Ship Brokers & Agents (FONASBA) in 2007, known as the FONASBA Quality Standard, and is now being awarded in 24 member countries. Owner's organizations, BIMCO, INTERTANKO and INTERCARGO, recognized the value of promoting "quality" in the appointment of ship agents when they endorsed the Quality Standard.

As a best practice supporting operational excellence and risk mitigation, ASBA encourages all vessel charterers, owners, and operators to nominate and appoint ASBA-certified FONASBA QS agents around the world whenever possible. Vet your agent like you vet your ships!

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Profile of Agena Tramp ship agent

Agena Tramp, headquartered in Le Havre in France, has been dedicated to ship agency and port and marine services for over 40 years. From its origins as a local company in 1972, Agena Tramp grew to be one of the leading ship agency and marine services providers in France. In 2015, the company handled 1,500 port calls. Agena Tramp is a major bulk-shipping agency in the country. The company philosophy is to serve the shipping industry through dedication, professionalism, independence, loyalty, expertise and a code of ethics. Agena Tramp is an affiliate of NAXCO Group, one of the largest fully integrated shipping and logistics providers, worldwide.



Thanks to its technical expertise and pro-active teams available 24/7, Agena Tramp offers a wide range of services such as:

- ❖ ship agency;
- ❖ crew change;
- ❖ dry-dock and repair supervision;
- ❖ husbandry services;
- ❖ offshore support;
- ❖ port informations;
- ❖ project cargo and any handling;
- ❖ protective agent;
- ❖ ship supply;
- ❖ spare parts delivery;
- ❖ stevedoring.

Its extensive experience in all types of vessels make it a renowned specialist in this field.

Agena Tramp is one of the first ship agencies to ensure the best port coverage in France. The company started to operate in the ports of Le Havre, Rouen and Bordeaux in France, before becoming successful and extending to other French ports. Agena Tramp has seven owned offices covering main and secondary French ports from the North Sea – Channel, Atlantic Coast and Mediterranean: Dunkerque, Le Havre, Rouen, Nantes-Saint-Nazaire, La Pallice, Bordeaux, Marseilles, Fos, and more. As a member of Multiport, the world's largest independent ship agency network, Agena Tramp is also able to provide port agency services worldwide.



DRY BULK BUSINESS

Dry bulk is the second main sector of Agena Tramp. Dry cargo vessels represent approximately 30% of the activity this year. The company can handle all types of cargoes and is largely involved in wheat, iron ore, sunflower pellets, soybean meal pellets and coal. Agena Tramp's own offices and employees in Bordeaux, La Pallice, Montoir and Dunkerque ports are the bulk key drivers, in addition to the others activities.

This activity consists of co-ordinating and facilitating incoming and outgoing bulk shipments for transportation companies. Dry bulk is a demanding market requiring further work: bulk carriers spend more time in port than other ships, more players are needed in the field, significant material handling experience is required.

THE ROLE OF A SHIP AGENT

Acting as the local representative of the principal, the ship agent co-ordinates the entire port call: getting a ship into port, loading/unloading, and departure. The ship agent is 'the eyes and ears' of the ship owner and/or the charterer in port. He acts as a protector and an advisor and is the key player between all parties involved during a call. He needs to provide excellent services with a high level of care and support. Agena Tramp is known for its professionalism and its solid relations in port, and its agent is there to ensure the success of a call.

Constantly looking for additional values on information and market intelligence is also a core function of the agent responsibility that can make a difference.

High-quality service, productivity, time and cost savings and reactivity are crucial for customers. Availability is essential. An agent works non-stop, 24 hours a day, seven days a week and 365 days a year.

MAJOR CLIENTS

Agena Tramp represents ship owners and charterers. Its customers in the dry bulk industry are: grain traders, mineral importers and exporters, coal importers, steel producers and

fertilizer producers. It also has major clients in liner and cruise, liquid and heavy lift/project cargoes. From small to big companies, Agena Tramp can respond quickly and reliably to their requests. It is able to satisfy customer demands from every part of the world.

MAJOR COMPETITORS

Dry bulk is a competitive sector and Agena Tramp competes with local as well as global companies. With its own offices and employees based in major seas and river ports, Agena Tramp is one step ahead in services and reactivity. Reputation, experience, connection and a national presence make it one of the leading companies in the sector.

NEWS

To keep our eyes on the horizon and constantly move forward, Agena Tramp has just become a member of NAXCO PORT AGENCY, an international network of port and marine services specialists. This network is an exclusive alliance of selected ship agents having a strong foothold in their respective local markets and able to provide the appropriate solutions to each port operation.

Ship agency services with GAC Shipping South Africa

Eric Barnard, Managing Director of GAC Shipping South Africa, explores the role of the service provider in helping dry bulk operators manage costs.

WHAT DO YOU CONSIDER THE ROLE OF A SHIP AGENT TO BE?

The ship agent is the 'eyes and ears' of the Principal in every port. They are trusted to protect their interests at all times. Now, more than ever, time is money, so any time saved in port means a saving for the vessel's owner or operator.

Some might say that the role of a ship agent has remained fundamentally the same, however the business of ship agency has matured, diversified and expanded significantly in recent years in response to changing customer needs. At GAC Shipping, we respond by combining our unsurpassed local knowledge and know-how with sophisticated IT tools, global reach and resources, and our integrated range of service solutions.

These days, it's much more than simply providing traditional agency services. For us, it's also about delivering quality and prompt services and support, and putting our customers' business first by shaping our services to suit their individual needs.

Ship agent work long hours, are expected to have all the answers and must be able to fix any problem at short notice, and always with a smile! We are committed to providing first-rate support and this is evident in everything we do, whether dealing with Principals or Masters, be it operational or through communications.

At GAC Shipping, we believe we play an important role in delivering our customers' business strategies. It is much more than just providing a service as and when needed, it's a 'holistic' approach to providing a quality service and working closely with our customers to ensure that everything we do for them adds value and helps to realise their commercial goals.

Owners and operators are facing record low rates, an oversupply of tonnage and an all-round depressed industry. Belts have tightened everywhere, margins for error or delay are slimmer than ever, and the commercial consequences are all the more severe for it. A ship agent must have a varied set of skills

and resources to meet the changing needs of the various sectors we serve, including expert industry knowledge, a thorough understanding of local requirements, a global network, the means to respond to the market's changing needs and the ability to provide a range of support services beyond the basic agency role.

In today's competitive market and challenging economic times, owners need a ship agent who can provide a complete package of time and cost-effective solutions.

AT WHAT PORTS ARE YOU REPRESENTED?

Our head office is in Cape Town with branches in Durban, Richards Bay and Saldanha Bay. We also have representation in Mossel Bay, Ngqura, Port Elizabeth, East London, Namibia and Mozambique.

HOW MUCH OF YOUR BUSINESS RELATES TO DRY BULK?

In South Africa 50–60% of our business activities is dry bulk related, and our offices in Richards Bay and Saldanha Bay focus purely on dry bulk.

WHAT ARE YOUR MAIN CHALLENGES?

Competitor agents damaging our industry by charging extremely low agency fees, purely to secure any business they can without having the resources needed to deliver the standard of service the industry expects. Volatile exchange rates, low commodity prices and weakened demand have resulted in reduced exports.

GENERAL COMPANY BACKGROUND

Established since 1998, GAC Shipping South Africa provides a full range of ship agency services to vessels calling at all major ports in the country, as well as in neighbouring Namibia and Mozambique. Our strong, experienced team of shipping professionals are fully conversant with a wide range of cargoes from iron ore and coal through crude, agricultural produce and chemical to vehicles, livestock, general cargo and containers.

GAC Shipping is part of the GAC Group, a global provider of integrated shipping, logistics and marine services and employs over 9,000 people in more than 300 offices worldwide.

Leading Polish agency INTER BALT enters second decade of operations

Joseph Conrad wrote in his remarkable book *Lord Jim* over 100 years ago that "A water-clerk ... must have ability in the abstract and demonstrate it practically". This remains true today. To be an agent in the maritime agency is a beautiful and human occupation at all times. The role of the ship agent has changed little from when Conrad's book was first published in 1900. Today, apart from the pilot, the ship agent is the first and last person to board or depart during any ship's call.

The training of ship agents — or water-clerks, as Conrad termed them — is a long and complex process. INTER BALT Poland has highly experienced staff. They are ready to work around the clock, seven days a week in all Polish sea ports where their offices are located.

INTER BALT ship agency staff are able to effectively handle the clearance, husbandry (non-cargo matters), chartering, claims, bunker supply orders, crewing exchange and other matters. INTER BALT's people will perform whatever functions are required of them to operate, manage



INTER BALT Sp. z o.o.
Shipping Agency
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80-750 Gdańsk
Poland



phone +48 58 300 96 94
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www.interbalt.pl



and assist the master of the vessel to comply with international, local and government regulations — all as if the shipowners themselves were present in the one of the Polish ports.

Due to the vast spectrum of cargoes carried by tramp vessels through Polish ports, INTER BALT's ship agency is ready and able to provide excellent service year-round for them all. The number of vessels it services varies from year to year — in 2015, INTER BALT served nearly 300 vessels.

INTER BALT specializes mainly in bulk shipping. Many of the

vessels it services carry coal and coke cargoes, raw materials, scrap, biomass, fertilizers, liquid products etc. INTER BALT's principals are long-standing and have worked with the agency for many years.

The company works hard to remain competitive in the agency market, and must deal with competition from many other companies. It co-operates successfully on a regular basis with a number of owners. INTER BALT's agency team is open to co-operating with every contractor and is keen to offer





consulting services connected with its operations to each potential client. Flexibility and diversification are hallmarks of this ship agency.

Since the company started its ship agency operations on 1 January 2004, INTER BALT's head office has been located in Gdansk. It also has branch offices in other Polish ports like: Gdynia, Szczecin and Swinoujscie.

As well as its ship agency operations, INTER BALT also offers services in freight forwarding which, similarly to its agency services, operates 24 hours a day, seven days a week.

INTER BALT Poland's primary scope of business includes:

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

Marek Kowalski, the Chief Executive Officer of INTER BALT - Poland, has confidently stated that now that it is in its second decade of operations, INTER BALT's ship agency meets the expectations of its customers, and it has gained a strong reputation in this market.

INTER BALT is a certified ship agency (ISO 9001), and is an active member of BIMCO – The Baltic and International Maritime Council as well as The Polish Shipbrokers' Association.



CERTIFICATE OF APPROVAL

This is to certify that the Quality Management System of:

INTER BALT sp. z o. o.
ul. Stągiewna 18
80-750 Gdańsk, Poland

has been approved by Lloyd's Register Quality Assurance to the following Quality Management System Standards:

ISO 9001:2008

The Quality Management System is applicable to:

Ship Agency.

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

Approval
 Certificate No:
 GDK6020671

Original Approval: 9th December 2014
 Current Certificate: 9th December 2014
 Certificate Expiry: 8th December 2017

Issued by: *[Signature]*
 Lloyd's Register (Polska) sp. z o.o.
 for and on behalf Lloyd's Register Quality Assurance Limited



Lloyd's Register (Polska) sp. z o.o. Al. Zwycięstwa 13a, 80-218 Gdańsk, NIP: 0002117768
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Wilhelmsen Ships Service developing the next generation of agency services

Founded in 1861, the Wilhelmsen group boasts more than 155 years of maritime experience.

The agency business, starting life under the Barwil Agencies name in 1976, is an integral part of the Wilhelmsen Ships Service (WSS) portfolio. Part of the largest maritime service network in the world, its agents handle numerous port calls day in and day out, in over 2,000 ports worldwide. Consistently providing standardized, efficiently executed port calls on a global basis is the cornerstone of WSS's agency business. However, the company believes that a ship agent can, and should, be more.

An agent is in a unique position, being in touch with all parties in port, ranging from linesmen and loadingmasters to bunker companies and pilots, and of course the port authorities themselves. WSS agents see themselves as not only the principal's representative in port, but a pivotal part of the chain of port services that each and every customer needs.

In addition, WSS believes its on-the-ground expertise can continue to benefit its customers long after they've left their berth. Just the beginning, it is also developing the next generation of agency products that will further utilize market intelligence, detailed real-time port information, technology and online resources. In short, WSS plans to become the 'Apple' of the industry — the agent that its customers put their trust in and the competitors look up to; a driving force for innovation in the maritime industry.

As one of the top agency providers in the business, WSS feels that its main challenge lies with the many local outfits providing agency services around the world. Many of these offices are



dedicated to a single trade, or even in some cases a single customer. These very specialized agents have a limited reach, but many have proven themselves time and time again to be resourceful and true experts within their respective trades. WSS

respects that, it is after all what it offers its customers, but as part of a standardized system offered on a global basis.

With dry bulk vessels constituting the largest single segment of the merchant fleet, the dry bulk segment of course forms a significant part of WSS's business as well. It is represented at almost every port on the planet, but when it comes to dry bulk, there are certain focus points for WSS. It is

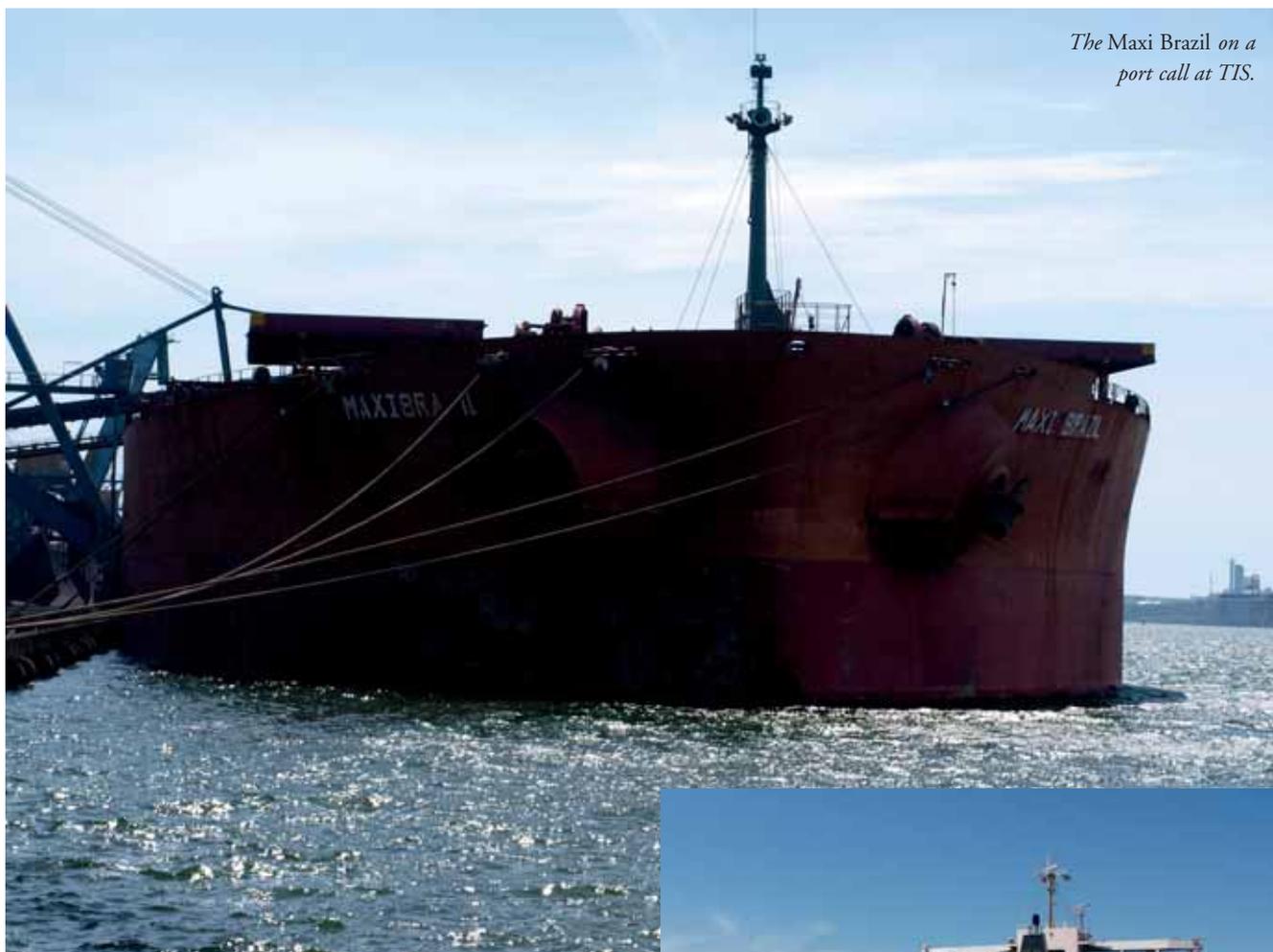
heavily involved in wood pulp exports from Canada, coal exports from Newcastle in Australia and has vast experience with the export of fertilizers and related products from Heroeya in Norway.

In dry bulk, although there are the major three cargoes — iron ore, grain and coal — WSS is also involved with a number of other cargoes such as cement, fertilizers, potash, fly ash and much more, with just as wide a variety of principals.

For dry bulk, WSS thinks the main challenges lie in the market itself. With the Baltic Dry Index seeming to reach a new low each month, sadly good performance alone is no longer sufficient. An agent needs to strive for excellence in port, making sure all avenues for cost savings and efficiency are exhausted. Providing added value to customers through additional services or vital market intelligence is, in WSS's opinion, also incredibly important. In this market, WSS knows how much it matters for a customer to be able to load a bit more cargo or spend a little less time in port. Finding ways to make this happen is essential for WSS.

Another challenge lies in the quickening pace of shipping's technologies, from increased connectivity, to smarter vessels. WSS believes that major changes in how agency is done will be inevitable; however, it also recognizes that in-depth, local port expertise delivered through standardized services and uniform standards, backed up by global availability will always be in-demand.





The Maxi Brazil on a port call at TIS.



ATIS Shipping LTD was founded in 2001 as a terminal agency company with staff of five.

The company provides a full scope of agency services for tramp (not liner) vessels:

- ❖ port agency;
- ❖ protective agency;
- ❖ port expenses calculations and analysis;
- ❖ arranging of any kind supply and repair;
- ❖ arranging of bunkering of fuels;
- ❖ arranging of hold or tanks cleaning by special shore labour; and
- ❖ crew change and any other husbandry services.

ATIS Shipping offers these services in major Ukrainian ports on Black Sea – Yuzhny, Odessa and Illychevsk. The office is located at the TIS terminal, within 1km of its main field of activity which takes place on #15–22. This proximity is an advantage as it allows the company to react immediately if any problems arise on the ship.

ATIS Shipping now has a staff of 20 persons, and on average they handle 40 vessels per month. Most of these are Handysize, Panamax and Capesize dry bulk carriers. At the same time, the company has experience of handling crude oil and sunflower oil tankers, specialized vessels for the shipment of oversized project cargoes (it has an ongoing co-operation with Chinese company ZPMC), science-research ships, tugs and dredging fleet of world-known company STRABAG AG (ex Moebius AG). In 2012, ATIS Shipping provided agency services for the *Maxi Brazil*, the biggest bulk carrier ever to call at Black Sea ports, with LOA of 320m and tonnage of 259,587dwt. The vessel loaded a cargo of iron

ore concentrate from the Port of Yuzhny, TIS terminal.

ATIS Shipping LTD has now been in operation for about 15 years, and has successfully handles over 3,500 port calls. Today, it also offers a port forwarding services, particularly for iron ore pellets cargo exported by FERREXPO AG from TIS-Ruda terminal with an average annual tonnage is about 6mt (million tonnes) and partly for ALLSeeds vegetable oil shipments.

THE ROLE OF THE SHIP AGENT

ATIS Shipping knows the importance of the role of the ship agent in export/import operations in port. In today's market, which is at a low ebb, rates are not as high as a few years ago. Therefore, a delay of even 30 minutes can be costly. It is vital to ensure that all necessary arrangements, permissions and approvals by the agent are carried out in a timely manner, enabling the vessel to proceed without any idle time.

In former USSR ports, even today there is still a huge amount of paperwork formalities — different types of forms have to be filled, issued and approved with original stamps and signatures, all delivered to port authorities by courier. Frequently changing port tariffs, plenty of regulations, usually not adapted to IMO rules and other international conventions, continuous



inspections by port authorities — all this can cause a big headache to carrier and crew. Therefore, a professional agent can guide his principal and save money and time, something that can not be achieved by non-professionals

PORT REPRESENTATION

ATIS Shipping LTD provides direct services at Yuzhny, Odessa and Illychevsk Marine Trade Sea ports. At the same time, it also has sub-agents in the majority of ports in the Ukraine and Russia on the Black Sea, and is able to provide services there. As a part of its activity, it provides husbandry and crew change services at OPL top-off areas (outside 12 NM territorial waters) where Capesize ships complete their full cargo.

MAJOR CLIENTÈLE

ATIS Shipping LTD was found in 2001. During that time, it has service most of the world's companies, including major foreign commodity trades such as: Louis Dreyfus, Glencore, Ameropa, Vitol, Cargill, Bunge, ADM, BTG Pactual. It has also dealt with the major commodity traders of Ukrainian origin: KERNEL, ALLSEEDS, UkrLandFarming, FERREXPO AG. Other customer's include major foreign shipping companies such as: SwissMarine, Norden DS, Pacbasin, Genco Shipping and Trading, Navios Maritime Holdings.

Creating value through efficiency

Developing supply chain strategies that achieve more with less is key to supporting the dry bulk market's recovery. *Christer Sjödoft, Group VP Commercial at GAC Group, reports.*

As the dry bulk sector continues to experience volatile freight rates fuelled by weak demand and over capacity, ship owners and operators are understandably looking to squeeze costs from every angle. While increased scrapping activity and a reduction in new build orders will help owners and operators maintain business continuity until the market recovers, the onus is on the supply chain to generate significant further cost savings.

The need to cut costs is widely understood by the dry bulk supply chain. However underpinning this aim is a lesser-understood — and even less widely implemented — focus on value retention within lower-cost services. At a time when every dollar counts, dry bulk ship owners and operators may be tempted to procure the lowest cost ship agency services. Although this may plug a cash shortage in the short term, any savings achieved could be short-lived, with lower costs resulting in poor services that ultimately end up costing the owner or

DEALING WITH THE COMPETITION

As ATIS Shipping LTD is a 'terminal-related agent', it aims to serve all vessels in the region. The terminal agent will always protect the interests of the terminal directly or indirectly, regardless of who appoints and pays him (owner or charterer). Therefore, when a terminal signs an agreement, it is in its interests to recommend its own agent.

Nevertheless, the choice of agent is the decision of the shipper, terminal, buyer, charterer or sometimes even the owner of the vessel; it depends on the contract, or chain of contracts, and the terms of agreement.

These days, terminal customers — big commodity traders — sometimes have their own agents, and these represent competition for ATIS Shipping LTD. These agencies include



Portinvest and Metinvest.

When a charterer, carrier or owner is able to appoint an agent, they prefer to choose one that is independent from the terminal, including major companies such as Wilhelmsen.

MAIN CHALLENGES

ATIS Shipping LTD's main challenges are providing the high level and professional agency and forwarding services for its regular customers, as well as attracting new ones. It aims to expand its activities further, and its next step will be to open a chartering department in the company.

operator more in the long term when costly mistakes and shortfalls have to be corrected.

Such costly scenarios can be avoided by partnering with ship agents that resist the siren call of cost cutting at any price, in favour of creating true value through efficiency. For GAC, this has always been a hallmark of its service.

As one of the world's largest providers of shipping and logistics services representing more than 3,500 customers and handling as many as 75,000 shipping jobs annually, GAC deploys its expertise and experience in order to be a true partner for dry bulk companies seeking to control their costs, increase efficiency and deliver their business strategy. This is made possible through a number of different business strategies and technological innovations.

CREATING EFFICIENCIES THROUGH IT INNOVATION

To handle complex ship agency services for the dry bulk sector, GAC has developed in-house IT solutions, ensuring greater connectivity, control and co-ordination that gives customers a

window into their world.

For example GAC has invested heavily in sophisticated systems that allow employees to continue work while they are on the road. The new facilities include connectivity to the systems of port and immigration authorities and other stakeholders, as well as internal systems such as financial software.

By finding innovative ways to streamline operations, control costs and pass on efficiency savings to customers, GAC is able to provide tangible benefits to dry bulk owners and operators. For example, in January 2016 GAC launched a new add-on to its freight-tracking portal, GACtrack, aimed at giving more job transparency and greater job control to ship agency customers. As well as being able to view job information from multiple offices on one screen, the add-on means that customers can check costs and export service information, view vessel line-up information (and query if necessary), check updates on job statuses and advise on changes to services where required.

Users can view outstanding jobs via a 'Jobs' screen, which contains information about the supplier, the person who requested the service and a remarks section. Furthermore, importantly, the add-on lists services provided with estimated and actual costs, in real time, ensuring no surprises when a customer receives their final bill. By enhancing the usability of GACtrack, GAC aims to add even more value to the services it provides.

In addition, GAC has unveiled a new version of its mobile phone application that gives users instant access to a directory of GAC contact details, wherever they are. The latest upgrade of the app, which was originally launched three years ago, offers enhanced integrated search capabilities by office, country, contact names and job titles, as well as the ability to add a GAC office as a phone contact. Users can also see the latest updates from the Group with the introduction of the news section. The app links to the dynamic database of contacts across GAC's global network. With the latest version, users can view the directory at any time, even while updates are being made.

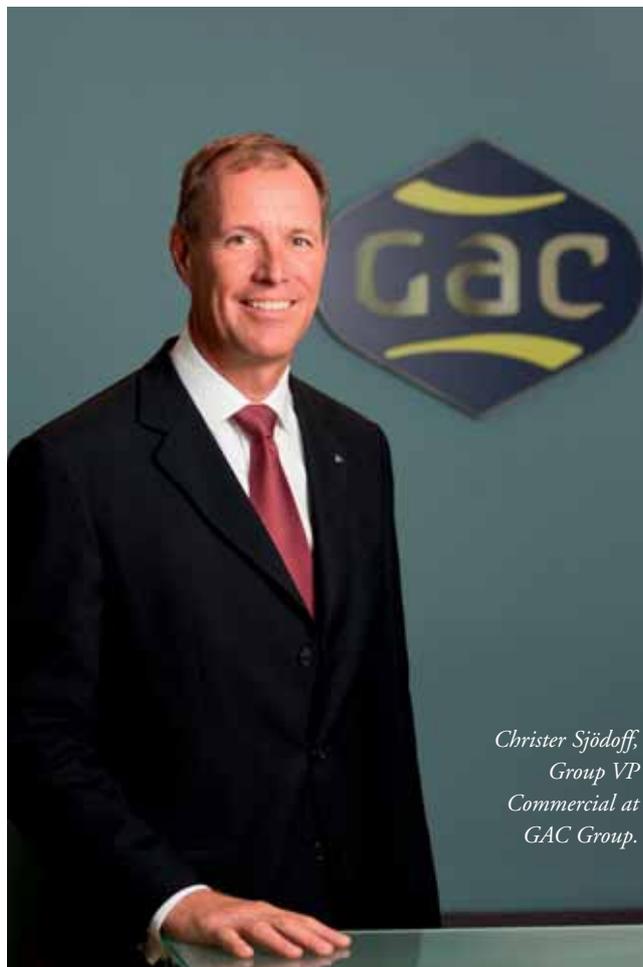
AN INTELLIGENCE-LED APPROACH

Additionally, GAC provides a wide range flexible, value-added services, ranging from crew changes, hub agency to bunker fuel supply. As a result, it can serve as a one-stop-shop for customers, who can benefit from significant cost savings through a customized package of support services. GAC is also looking to the future and embracing intelligent new solutions to the long-standing requirements of ship owners. Take the innovative and environmentally friendly HullWiper Remotely Operated Vehicle (ROV) by GAC Environhull for example; the brushless, diver-free ROV cleans hulls — boosting vessel speed and fuel efficiency — within a fraction of the time needed for the traditional method of cleaning by divers.

CREATING 'SMARTER SOLUTIONS'

GAC is dedicated to finding the smartest way of working, in order to deliver the most operationally-efficient solutions for its customers. This means utilizing the wealth of data collected across each voyage and allowing customers to manage all documentation through a single platform.

That way, if a GAC customer is in London and its ship is in Lagos, it can access live and archived port disbursement accounts, track cargo details, perform KPI analysis, control bank transfers and utilize GAC's preferential exchange rates provided by their banking partner. Customers can proactively manage any



*Christer Sjödoft,
Group VP
Commercial at
GAC Group.*

procurement costs, streamline operations, minimize unnecessary spend and bill through GAC's Centralised Payment Services. Furthermore, through GAC's real-time port information and alerts services, they can stay on the front foot and work with GAC to anticipate and address any possible delays.

MAKING SHIP AGENCY PAY

As the dry bulk sector continues to navigate this significant global trade slump, ship owners and operators should adopt a strategy of long-term efficiencies that ensure they secure value for money from their supply chain services. Although procuring the cheapest ship agency services may appear financially advantageous in the short-run, any perceived savings soon dissolve when poor quality service leads to costly mistakes.

GAC is mindful of the pressure faced by dry bulk owners and operators and is working hard to maintain relationships, drive efficiency and ultimately pass savings onto customers. Whether through being a constant 'eyes and ears' in port, regularly updating customers, delivering detailed reporting or ensuring fast turnaround of disbursements, GAC is constantly striving to achieve great service levels that will support the dry bulk sector through the most challenging of times.

ABOUT GAC GROUP

GAC is a global provider of integrated shipping, logistics and marine services. Emphasizing world-class performance, a long-term approach, innovation, ethics and a strong human touch, GAC delivers a flexible and value-adding portfolio to help customers achieve their strategic goals.

Established since 1956, the privately-owned group employs over 9,000 people in more than 300 offices worldwide.

Dominican ports served by Maritima Dominicana



Maritima Dominicana, S.A.S. is a ship agency and stevedoring company with 45 years of experience offering a full range of services to the maritime industry, both to ship owners and cargo interests. It handles port agency and ship husbandry matters for all kinds of vessels, regular liner, tramp calls as well as cruise ships with passengers visiting the country. It also offers all kinds of efficient cargo handling, loading and discharging, achieving rapid turnaround of the ships under its care in all Dominican ports. Furthermore, its services include all kinds of cargo storage and handling facilities at locations at or near the main ports.

Maritima Dominicana is the Dominican member of the worldwide Multiport Ship Agencies Network and a member of the Baltic & International Maritime Council (BIMCO). It has been accredited under ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007, for its ship agency, cargo handling and warehousing activities. It has also been certified by the Dominican Chapter of Business Alliance for Secure Commerce

(BASC), based on the international standards of the worldwide BASC organization. The Dominican Customs has certified it as Authorized Economic Operator of the Dominican Republic (OEA_RD), based on the international standards and security requirements of Authorized Economic Operators, established by the World Customs Organization within the Safe Framework.

The role of the ship agent is to provide all the services required by the vessel in order to have a smooth port stay and efficient cargo operations. Maritima Dominicana provides the full vertical chain of service making its logistics service ideal. From the moment the vessel owner appoints the company, they can rest assured that the proper logistics will be set into motion. Maritima Dominicana ensures that essential supplies, crew transfers, customs documentation, and clearances in and out of the port are all arranged with the port authorities without delay. Maritima Dominicana advises the Master and Principals regarding port restrictions and required documentation of the vessel for said port. Within its responsibilities, it also ensures the proper





berth for the vessel, arrange for the pilot and tugs, organizes discharge/loading operations, organizes the transport and handling of the goods, liaises between the shippers and the receivers, as well as other services. It also provides all concerned parties with updates and reports on the activities of the vessel at the port so that they have real-time information available while the vessel is in port.

Dry cargo vessels represent approximately 20% of the vessels Maritima Dominicana attends per year. Dominican Republic exports bauxite, cement, building aggregates, sugar, gypsum, clinker, salt, and fertilizer. Corn, coal, clinker, wheat, soybean meal, petcoke, fertilizer, salt, malt, sugar and building aggregates are imported. Coal vessels discharge in Rio Haina and Barahona. If the vessel is not self-discharging, Maritima Dominicana provides the necessary clamshell grabs for the operations. Maritima Dominicana owns and operates a large fleet of vehicles and lifting equipment guaranteeing the proper handling of the cargo. Grain vessels discharge in Rio Haina, Santo Domingo and Puerto Plata. Maritima Dominicana has offices in Puerto Plata, San Pedro and Manzanillo besides the one it has in Santo Domingo. These offices make it easier for it to provide its services in all of the ports as they are strategically set up in different areas of the country.

Over 60% of the vessels Maritima Dominicana attends are container vessels. Containers vessels load/unload in Caucedo, Rio Haina, Puerto Plata and Manzanillo. Caucedo is a dedicated container port and in Manzanillo there is constant traffic of reefer containers as fruit is exported. Maritima Dominicana's office in Manzanillo enables a quick response to this far-off port. For that purpose, it operates off-dock terminals at these ports to facilitate the delivery of empty containers and chassis for export shipments. Maritima Dominicana owns 1,200 chassis for



transportation of containers which play a large role in this operation.

Of course, like in any other business, Maritima Dominicana has competition. There are other agencies in the country. Maritima Dominicana attends approximately 50% of all the vessels coming into the country. It is truly committed to provide the best service in the safest way possible, complying with all the regulations and taking care of the environment. Its main challenge is that, as it is always the pioneer in the field, sometimes it has to work doubly hard in order to get the sector aligned with practices which may be new to the country though they are common practice in other countries already. It is easy to note that the company's mission is to provide a complete array of quality services in ocean transportation, cargo handling, warehousing, reefer warehousing and dangerous cargo warehousing, in pursuit of national leadership and international recognition as ship agent in all Dominican ports.



Experience, dedication and quality – all watchwords for Biehl & Co

BIEHL & Co.

Biehl has been a recognized entity in the shipping industry since the beginning of the 20th century. Respected worldwide and financially sound, Biehl stands poised to lead the way among ship agencies into the 21st century. Biehl maintains its position by retaining highly qualified personnel and utilizing the latest technology available to assist each principal to conduct business. In addition to offering the full range of ship agency services, Biehl also acts as owners' or charterers' protective agents or as husbanding agents in connection with dry-docking and other special circumstances.

PASSION

Founded in 1905, Biehl's service to the US Gulf Coast in Galveston precedes the establishment of the Port of Houston. Shortly after World War I, Wilkens & Biehl, opened the first office in Houston. Since then Biehl has grown to become one of the largest steamship agents in the US with 16 offices located in the US Gulf and US East Coast. Biehl continues into its fourth generation of continuous family ownership proving that the company can easily adapt to the changing shipping landscape.

EXPERIENCE

Biehl is one of the largest agencies in the US with expertise in handling dry bulk commodities from petcoke and coal to grains and fertilizer. Its customers rely on its value-added services to not only handle their vessels but also provide them with relevant market data and up to the minute information which is critical in handling their business. When requested, Biehl can evaluate project viability, verify design economics and review contractual language to identify potential issues.

DEDICATION

Serving the needs of its customers throughout the US Gulf and US East Coast, Biehl agents and offices are prepared to address customer needs. Sixteen local offices eliminate the need to travel great distances. Each location is plugged into the local community, from the port authorities to terminal operators — it acts as its customers' eyes and ears.

Biehl can tailor any service or request specifically to the customer's requests. Detailed work instructions (which the customer can revise at any time) are developed and discussed to clearly outline customer expectations. Once completed, these instructions are shared between offices to ensure continuity of service and then regularly reviewed to assess customer satisfaction.

TEAMWORK

Biehl invests in its most vital asset: its people. Managers communicate with staff and colleagues to exchange ideas, identify trends and ensure continuity across locations. The Next Generation Program identifies talent within the organization and



selects those individuals for additional specialized training. Biehl is proud of its heritage of family leadership and is eager to develop the next generation of shipping managers from within its own organization.

PROACTIVE

Biehl employees are trained to anticipate and proactively address challenges. In most cases, it resolves operational issues so swiftly, its customers are never aware of them. For example, draft bills of lading are prepared well in advance of the vessel's arrival so that, upon completion of loading, only the cargo figures need to be included. Biehl further demonstrates its commitment to advance preparation by providing customers with timely port information, weather updates and most significantly, by offering customers the benefit of years of experience with a particular port, ensuring seamless vessel operation.

Due to the considerable amounts involved, Biehl places utmost importance on safeguarding customer funds. Both bonded and well insured, Biehl is able to cover whatever issues may arise. Its advanced accounting software can create customized reports and data that can be exported to customers' specifications thereby eliminating double data entry and ultimately saving both time and money for its customers. For some large volume clients, it also provides designated accounting services staff that are attuned to a particular customer's needs and is better able to respond to their requests.

QUALITY

Biehl is a firm believer in providing consistent customer service through performance measures. Its ISO system tracks and records multiple aspects of its operation's processes. ISO-dedicated staff members conduct internal audits at each office on a quarterly basis and all offices are subject to annual ISO performance audits. Biehl ensures a high level of performance through extensive internal training and by requiring Association of Ship Brokers and Agents (ASBA) testing and certification of all operations personnel.

As a member of both Multiport and the Association of Ship Brokers and Agents (ASBA), Biehl annually submits to two independent audits to ensure continued membership in good standing with each organization. This attention to fiscal control contributes to the company's positive financial standing with no debt and ample opportunities for expansion. The company owners allow the profits to remain within the company to be used for expansion both internally and through acquisition. **DCi**





Cargo transshipment

offshore operations solve conundrum of port congestion and lack of facilities



The Samarinda, Indonesia — The Bulk Celebes during blending operations. (photo: Coeclerici).

Coeclerici continues to thrive in a difficult market

The current period will be remembered for the collapse of the commodity market and dry shipping market, writes Capt. Giordano Scotto d'Aniello, Head of Commercial Department at Coeclerici Logistics S.p.A., Milan, Italy.

Prices have been plummeting throughout the year and no sector and geographical region have been untouched by this turmoil.

Inside this market trend, Coeclerici Logistics (CCL) the logistics division of Coeclerici Group (CC), one of the world's leading bulk commodities transshipment companies with a history of more than 40 years in this specific field, has proven to be once again a point of reference among all the transshipment operators, proving the ability to firmly handle the market overturning and maintain its commitment to customers, offering tailor-made solutions.

In terms of operations, 2015's Indonesian downward market trends forced CCL to re-deploy the self propelled Floating

Transfer Station (FTS) *Bulk Celebes* from Muara Pantai Area, where the unit operates under a long-term contract with PT Berau Coal, to Samarinda Area in order to carry out blending operations in the spot market. Blending of coal is requested from some players, especially traders, in the Indonesian coal market, giving them the possibility to mix low with high grade of coal, offering a more suitable product to final users. For this purpose the *Bulk Celebes*, already armed with two 30t cranes of 38m outreach and a telescopic shiploader with a range of 25–40m, has been improved with additional equipment able to perform blending operations, which make it possible to mix two different grades of coal homogeneously.

The blending percentage can vary from 20–80% to 50–50%. Once the desired percentage is set, the blend is monitored and automatically adjusted by a PLC unit which can vary the belt extractors speed and flow rate. This is controlled by three-belt scale installed on the conveyor system, one on each extractor



PLM 520 – PLM 825

- Shipboard cranes
- Mobile cranes
- Harbour cranes
- Trolley cranes
- Bucket wheel unloaders
- Pontoons

- Dredging
- Bulk handling
- Hoisting
- Pile-driving.

- Diesel-Hydraulic
- Electric-Hydraulic
- Electric
- Capacity up to 4000 ton/hour



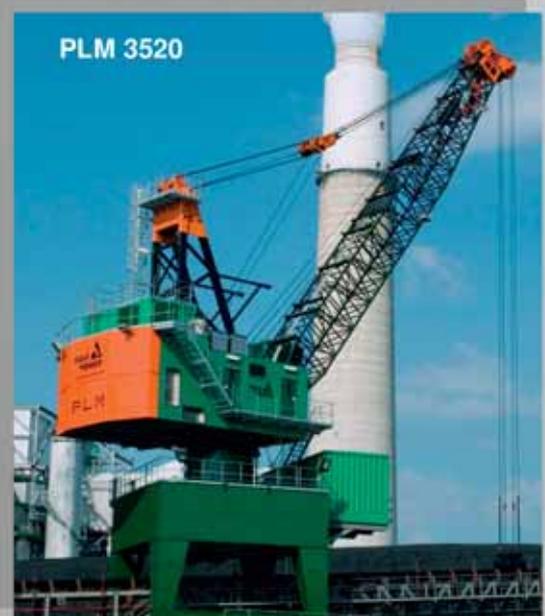
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PLM T450



PLM 3520



The FTS Bulk Pioneer operating at Samarinda. On 20 September 2015, the FTS transhipped its 1,000th OGV under a long-term contract with KPC. (photo: Coeclerici).



belt measuring each grade flow rate and on the transversal conveyor measuring the total flow. The homogeneous blending of coal is also enhanced by the transfer points of the conveyor system and the revamped system is able to guarantee reliable loading rate from 1,500tph (tonnes per hour) up to 2,000tph. The system is also supported by a sophisticated online sampling device and a metal detector.

Despite the Indonesian ‘dog-eat-dog’ market heavily affected by an oversupply of transshipment capacity (currently there are more than 130 floating cranes operating in Indonesia), the FTS *Bulk Celebes* stood out for its multiple versatility serving different

operators and reaching the remarkable amount of about 3.2mt (million tonnes) of coal transhipped in less than one year.

Given the great experience gained over the company’s 120 years in business, CC’s activities can be seen as actions carried out by a real pioneer. “To try where nobody else did” was the motto that drove CC’s main heads when they decided to move to the uncharted Indonesian market in late 2005. The *Bulk Pioneer*, one of the first FTSs deployed in the East Kalimantan Area, was probably named after this talent — the ability to face the challenges and the unknown.

With the use of this new facility concept, CC brought to

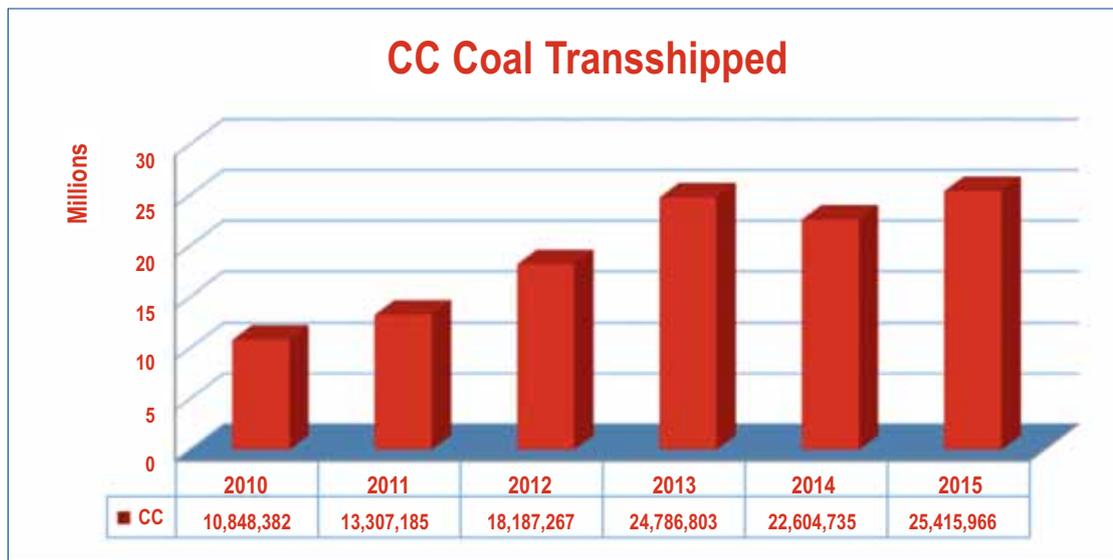
The Bulk Zambesi, one of Coeclerici’s twin transhippers. The second, the Bulk Limpopo, can be seen on p37. (photo: Coeclerici).





Built to deliver more Global Logistic Solutions

Rocktree is a young and dynamic logistics and shipping company offering its clients logistics solutions to enhance their operations worldwide. Rocktree specializes in providing services to companies in the natural and mineral resources sectors, specifically dry bulk commodity producers, end users and international trading companies in emerging markets. Rocktree's fleet of highly specialised offshore floating terminals (OFTs) provides its clients with unique, customized logistics solutions for their operational needs, including transshipment, storage, cargo blending and ship management.



have been operational off-shore Beira Port since 2011 and 2012 respectively, serving the mining giant Vale and enabling the export of coal by taking advantages of scale economy in ocean trade market.

Despite the underdevelopment of the area characterized by logistical constraints and

Indonesia not just a modern and incisive facility for carrying out transshipment activities, allowing the country to maximize its potential coal industry, but also a new service more focused on customer's needs and requirements.

The *Bulk Pioneer* is equipped with: two grab cranes able to load up to 25 tonnes each; two specially designed hoppers with belt-feeders; a belt conveyor system designed to handle coal at 2,000tph; two shiploaders with swivelling trimming spouts; and buffer storage that ensures uninterrupted shiploading during the times of barge non-availability or changeover.

Since August 2005 when operations began in Tanjung Bara and Lubuk Tutung, the FTS *Bulk Pioneer* has transshipped almost 55mt of coal. Notably, on 20 September last year, the milestone of 1,000 vessels loaded was reached, all under a single contract stipulated with Kaltim Prima Coal (KPC), the major thermal coal producers in Indonesia.

Thanks to CCL solutions and efficiency, the amount of coal transshipped for KPC has dramatically increased from the original 3mtpa (million tonnes per annum) to the current 6.5mtpa in 2015 with *Bulk Pioneer* only.

During 2015, CC also strengthened its presence in the Mozambique market with its cutting-edge twin transshippers, the *Bulk Zambesi* and the *Bulk Limpopo*. The 53.776dwt Transshipment Units (TUs)

bottlenecks, which heavily compromise the supply and the provision of coal, the two TU's still provide an outstanding performance with a total amount of almost 3.5mt of coal transshipped during 2015.

It is likely that this will go downhill from here, since 2016 is expecting to bring a double of railway capacity, which is currently managed by CFM, and which will be anticipated to exceed a capacity of 10mtpa. As always, when it comes to maintaining market position and striving for the best results, CCL is looking forward to this expansion to exponentially increase the amount of commodity transshipped.

In spite of a challenging market characterized by weak prices and low global demand, CC's performance is constantly improving and, after the maintenance of the current market shares, CC is also focusing on new market developments with talks already at an advanced stage with clients in Australia, India and South East Asian countries.



The Bulk Limpopo, the second of Coeclerici's twin transshippers. (photo: Coeclerici).

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Oldendorff's new transloaders servicing clients in the Arabian Gulf



Over the years Oldendorff Carriers — one of the world's largest dry cargo carriers — has built up a considerable area of activity within bulk logistics and project development. The company currently manages major transshipment operations in Turkey, Guyana, Trinidad and the Arabian Gulf.

EOL, an Oldendorff joint venture company based in Abu Dhabi, has specialized in transshipment and lightering activities in the Arabian Gulf since 2009. It operates several transshipment

vessels in the region, capable of discharging the largest bulk carriers at high speeds. In addition for Abu Dhabi, a fleet of four shallow draught self-propelled gravity self-unloading units is employed to transport cargo from the transshipment anchorage to the severely draught-restricted berth.

In order to further enhance and develop the services provided to the clients in the Arabian Gulf, Oldendorff had two state-of-the-art post-Panamax newbuilding transloaders



delivered from New Yangzi Shipbuilding in March and June 2015 - *Alfred Oldendorff* and *Antonie Oldendorff*. The features of these eco type 94,000 tonnes deadweight ships include:

- ❖ LOA: 235m
- ❖ Beam: 38m
- ❖ Draught (scantling): 14.5m
- ❖ Cranes: Side-mounted heavy-duty high-speed 4-rope MacGregor cranes; 3 x 52 tonnes SWL with up to 45 metres outreach
- ❖ Grabs: 4 x 16.4cbm spill-proof iron ore grabs
- ❖ Deck system: EMS-Tech belt system of 3,500tph capacity with 2 discharging boom conveyors (1 x 60-80m telescopically adjustable shuttle boom & 1 x 23.5m barge loading boom)
- ❖ Bow thruster: 2,500kW
- ❖ Stern thruster: 1,200kW
- ❖ Pay loaders: 3 x JCB wheel loaders
- ❖ Fenders: Pneumatic Yokohama types
- ❖ Dust suppression system: Water spray nozzles in hoppers, deck belts covered, retractable boom spouts
- ❖ Accommodation: 40 persons

Upon their arrival in the Arabian Gulf the ships went through successful commissioning off Abu Dhabi. Both ships are engaged in long-term transshipment contracts with EOL's various clients in the area, primarily involving lightering of iron ore fines and pellets from Capesize bulkers and self-unloading at the

respective customer berths.

These two newbuildings support EOL's existing fleet of two Panamax transloaders — *E. Oldendorff* and *Johanna Oldendorff* — which have been successfully operating in the region for several years.

The transloaders operated by EOL in the Arabian Gulf are true work horses. They have very short sea voyages, several loading and unloading operations per month, and there is a lot more equipment on board to maintain than on normal bulk carriers in regular tramping business. So a preventative maintenance regime is of vital importance. "One of the key elements for our clients is to secure a reliable logistics chain, so there is no compromise for performance," says Linda Kongerslev, General Manager of EOL.

Other key factors are flexibility and optimization of the supply chain. "With our fleet of dedicated transloaders in the Arabian Gulf region we have been able to build flexibility and back-up for our customer base. Our transloader fleet provides redundancy for both planned docking periods and unplanned maintenance works on the units, which in turn can potentially save a lot of money for our clients," says William Wallace, Director Projects of Oldendorff and Commercial Manager of EOL. "We build complete marine logistics solutions for our clients, integrating ocean freight and transshipment to reduce overall transport cost. By offering these one-stop solutions we are creating reliable, cost efficient and resilient supply chains, which our industrial clients rely on to run their business," says Wallace.

Since commencement of operations in the Arabian Gulf, Oldendorff has transhipped and unloaded over 39 million tonnes for the local clients.

DCi





Scrutinizing self-unloaders

The Algoma Harvester, the second Equinox Class vessel built by Algoma, began service in 2014. (CNW Group/Algoma Central Corporation).

the ocean's workhorses



Jay Venter

TED WILUSH

Algoma Central Corporation signs contracts for two Equinox-class self-unloaders

At the end of November last year, Algoma Central Corporation announced that it had contracts in place to build two 740 foot Seaway Max self-unloading bulk freighters to join the company's Great Lakes/St. Lawrence Waterway dry bulk fleet. These contracts were made effective with the delivery of refund guarantees by the shipyard.

These new *Equinox*-class ships will be built by Jiangsu Yangzijiang Shipbuilding Co. Ltd. and will feature a standard rear boom. The vessels will have an overall length of 225.55 metres (740 feet) and a beam of 23.77 metres (78 feet), qualifying as Seaway Max size ships. The vessels are designed to carry 29,300 tonnes at maximum Seaway draught.

"Our search for a shipyard in China to replace the now-bankrupt Nantong Mingde Heavy Industries (Mingde) led us to Yangzijiang," said Ken Bloch Soerensen, President and CEO of Algoma. "We have been pleased with the professionalism and enthusiasm the yard has shown for our project and the quality that they have shown on work done for other ship owners."

These new *Equinox* vessels will have all of the features of the existing *Equinox* design, including the exhaust gas scrubber technology pioneered by Algoma on the Great Lakes in its first *Equinox*-class gearless bulk carriers. The vessels are scheduled for delivery in the first half of 2018.

This new order brings the total *Equinox*-class vessels under

construction to seven. In total, Algoma expects to invest approximately \$450 million in this phase of its fleet renewal programme. With the addition of these new ship orders, the company is reviewing its fleet plan and considering the retirement of certain older vessels.

Since 2009, three *Equinox*-class bulk carriers and two coastal class self-unloaders have been added to the domestic dry-bulk fleet operated by Algoma. Upon completion of these seven new vessel orders in 2018, the average life of the company's dry-bulk fleet will be reduced by 13 years from the 31 year age of the current fleet.

ABOUT ALGOMA CENTRAL CORPORATION

Algoma Central Corporation operates the largest Canadian flag fleet of dry and liquid bulk carriers operating on the Great Lakes/ St. Lawrence Waterway, including 18 self-unloading dry-bulk carriers, seven gearless dry bulk carriers and seven product tankers. Algoma also has interests in ocean dry-bulk vessels operating in international markets. Algoma provides ship management services for other ship owners and owns a diversified ship repair and steel fabricating facility active in the Great Lakes and St. Lawrence regions of Canada. In addition, Algoma owns and manages commercial real estate properties in Sault Ste. Marie, St. Catharines and Waterloo, Ontario.

The Interlake Steamship Company launches Phase II of pioneering emission-reduction technology

ONE-THIRD OF FLEET TO HAVE EXHAUST GAS SCRUBBERS BY SPRING 2016

The *James R. Barker* sailed into Fincantieri Bay Shipbuilding Company in Sturgeon Bay, Wis., last week where it will become Interlake Steamship Company's first thousand footer and its second self-unloading bulk carrier to be outfitted with exhaust gas scrubbers.

Interlake became the first US-flag fleet to test scrubbers on the Great Lakes in April 2015 after pioneering the emission-reduction technology on its *Hon. James L. Oberstar*.

Fincantieri Bay Shipbuilding handled the successful installation on the 806-foot *Oberstar* and was the clear front-runner to earn the second phase of installations on two additional vessels — the 1,004-foot *Barker* and the 826-foot *Lee A. Tregurtha*, which just arrived at the Wisconsin shipyard.

"We're excited to extend this proven, innovative scrubber system to our 1,000-foot class ships and further reduce our fleet's carbon footprint," says Interlake President Mark W. Barker. "We have the utmost confidence in the expertise and technical abilities of Fincantieri Bay Shipbuilding to implement the technology and help propel us toward our long-term vision of being an environmental leader on the Great Lakes."

During the multi-month project at Fincantieri Bay Shipbuilding, both vessels will be equipped with the same single-inlet, closed-loop DuPont™ Marine Scrubbers from Belco Technologies Corp. (BELCO), a DuPont company, that were installed on the *Oberstar*.

"Fincantieri Bay Shipbuilding is pleased to have been selected to lead these scrubber installation projects," says Todd Thayse, Vice President & General Manager of Fincantieri Bay Shipbuilding. "Interlake's commitment to leading environmental technology on the Great Lakes is once again demonstrated and we appreciate Interlake's confidence in Fincantieri Bay Shipbuilding to once again partner with us for this important project."

The scrubber units, which are attached to the exhaust system of each of the ship's two engines, effectively strip the majority of sulphur from its stack emissions. Here's how the systems work: Exhaust gas from the engine is sent through a series of absorption sprays that 'wash' and remove impurities, specifically sulphur and particulate matter. That washed exhaust gas then travels through a droplet separator before a clean plume of white steam is discharged into the atmosphere.

"The sulphur reductions we have been able to achieve in the first year of operation have exceeded our expectations," says Barker,

adding that the additional reductions of these emissions make an even stronger case for marine transportation — the most environmentally friendly way to deliver, in Interlake's case, raw materials.

As the first US-flag fleet to implement the scrubber technology, the company was not only tasked with proving its emission-reduction capability but also taking the lead in developing a sustainable supply-and-delivery infrastructure to support its widespread use on the Great Lakes.

Specifically, the scrubber system relies on an injection of sodium hydroxide — to neutralize and remove sulphur from the exhaust gas — and that chemical has to be delivered to the vessel about twice a month.

Working with partners, Hawkins Inc., PVS Chemicals Inc., Garrow Oil & Propane and OSI Environmental, the company has established waterfront supply capability at Sturgeon Bay, Wis., and Detroit, Mich. Calumet Specialties LLC has become a vital partner and stakeholder in the development of a new supply capability within the Twin Ports of Duluth, Minn., and Superior, Wis. A supply-and-delivery infrastructure is expected to be built out at ports located near East Chicago, Ill., and Burns Harbor, Ind.

After a successful round of sea trials, the *Barker* and *Tregurtha* are expected to resume their Great Lakes trade routes by late spring.

ABOUT INTERLAKE

Headquartered in Middleburg Heights, Ohio, the Interlake Steamship Company was launched in 1913. For more than a century, the company has led the Great Lakes shipping industry through its commitment to flawless service, environmental stewardship and continuous innovation. ISO 9002 certified, Interlake's fleet of nine vessels deliver raw materials to ports throughout the Great Lakes region.



The 826-foot Lee A. Tregurtha.

Algoma Central Corporation – contracts for three Equinox-class self-unloaders become effective

In November 2015 Algoma Central Corporation announced that the contracts with Uljanik d.d. of Croatia to build three, 740 foot Seaway Max self-unloading bulk freighters have become effective.

Under the terms of the conditional contracts announced by Algoma on 10 September 2015, Uljanik d.d. was required to delivery security for the contractually required construction instalments that is acceptable to Algoma. This security was delivered by the yard and approved by Algoma on 24 November 2015.

“The design work and preliminary construction of the vessels has already begun,” said Ken Bloch Soerensen, President and CEO of Algoma. “We now have a total of five ships under construction at the Uljanik Group’s 3Maj shipyard in Rijeka, Croatia and we look forward to working closely with Uljanik on the construction of these vessels,” Soerensen continued.

On November 19, 2015, Soerensen and Al Vanagas, Senior Vice-President, Technical for Algoma, accompanied by Canadian

Ambassador to Croatia, Daniel Maksymiuk and Gianni Rossanda, President and CEO of Uljanik d.d., met with Croatian President, Kolinda Grabar-Kitarovic in Zagreb to celebrate the new contracts.

These new *Equinox*-class ships will feature a boom-forward configuration designed to provide greater flexibility in certain delivery situations. The vessels will have an overall length of 225.55 metres (740 feet) and a beam of 23.77 metres (78 feet), qualifying as Seaway Max size ships. The vessels will carry 29,300 tonnes at maximum Seaway draught.

The new *Equinox* vessels will have all of the features of the existing *Equinox* design, including the exhaust gas scrubber technology pioneered by Algoma on the Great Lakes in its first *Equinox*-class gearless bulk carriers. The first vessel is scheduled for delivery in early 2018 with the balance of the ships delivered by the end of that year.

Repair of self-unloading vessel at MSR Gryfia



MSR GRYFIA, PART OF MARS SHIPYARDS & OFFSHORE, IS RENOVATING SELF-UNLOADER BULK CARRIER – SPLITNES.

REPAIR IS PERFORMED IN FLOATING DOCK NO 5 IN SZCZECIN.

Scope of works includes: maintenance of the hull, piping works, cleaning of fuel and ballast tanks, works on bulkheads in cargo holds, disassembly of anchor-mooring lifts and anchor chain as well as repair of anchors and repair of bottom and side valves.

The vessel is over 166m long and 20m wide. *Splittnes* is equipped with onboard cargo-handling systems, enabling it to discharge without shore-based unloading equipment.

ABOUT MARS SHIPYARDS & OFFSHORE

MARS Shipyards & Offshore is a group of closely cooperating shipyard and offshore companies owned by the MARS Closed-End Investment Fund.

The fund is managed by the MS Investment Funds Society, a subsidiary company of the Polish Armament Industrial Group. The aggregate value of the assets currently managed by the MARS fund amounts to more than €260 million, as of late December last year.

CSL Americas announces agreement to acquire self-unloading vessels



CSL Americas, a division of The CSL Group Inc. (CSL) announced in November 2015 that it reached an agreement with Klaveness Selfunloaders AS, a subsidiary of Klaveness Ship Holding AS (KSH), to acquire the *Trillium*-class Panamax self-

unloading vessel, *Balto*, and the Handysize self-unloader, *Barkald*.

Marbulk Shipping Limited, of which CSL is a 50% shareholder, has also reached an agreement with KSH to purchase *Balder*, a Handysize self-unloading ship.

The three vessels are currently employed in the CSL International Pool and will continue to operate as part of this Pool upon their expected delivery in January 2016.

"We are very excited about adding this new cargo capacity to our fleet, including the state-of-the-art *Balto* built in 2013 under CSL supervision," said Louis Martel, President of CSL International. "Constructed according to the high performance and environmental standards of CSL's *Trillium* class, we are delighted to reunite *Balto* with her sister ships, *Rt. Hon. Paul E. Martin*, *CSL Tacoma* and *CSL Tecumseh*."

The acquisition agreements are subject to technical due diligence on each vessel.

Rand Logistics introduces newest Canadian flagged self-unloader

In December last year, Rand Logistics, Inc. announced that it has introduced its newest Canadian self-unloading vessel, the *Manitoulin*, into service. The new vessel has the largest carrying capacity of any existing *River*-class self-unloader and is anticipated to be the most efficient vessel of its class on the Great Lakes.

The new addition increases the size of Rand's fleet to 16, including 10 Canadian flagged and six US flagged vessels, and supports recent new long-term contracts, which took effect in April 2015.

"As reported in our second quarter fiscal 2016 financials, the new vessel will service existing business that is presently being delivered through a third party time charter," commented Mark Hiltwein, Rand's CFO. "We are in the process of transferring tonnage to our new vessel and ending the third party time charter agreement that has been in place throughout the current sailing season. We do not expect that our newest vessel will have a meaningful impact on our fiscal 2016 financial results. In the 2016 sailing season, we expect per day profitability generated from our newest vessel to exceed that of any of our existing assets."

Hiltwein added, "We estimate that the new vessel will increase our overall return on invested capital by approximately 1% and our free cash flow per basic shares outstanding at the current Fx rate by between \$0.18 and \$0.22 on a full year basis."

"The *Manitoulin* is officially in operation in the Great Lakes Region after successfully completing the voyage from China to Canada over the last two months, travelling across the Pacific Ocean, through the Panama Canal, along the East Coast, and down the St. Lawrence River. We are pleased with the vessel's performance and are thankful for our skilled crews and all who contributed to delivering the vessel into service safely and within the expected timeframe," said Scott Bravener, President of Lower Lakes Towing Ltd. and Grand

River Navigation Company, both subsidiaries of Rand.

ABOUT RAND LOGISTICS

Rand Logistics, Inc. is a leading provider of bulk freight shipping services throughout the Great Lakes region. Through its subsidiaries, the company operates a fleet of four conventional bulk carriers and 12 self-unloading bulk carriers including three tug/barge units. The company is the only carrier able to offer significant domestic port-to-port services in both Canada and the US on the Great Lakes. Its vessels operate under the US Jones Act — which reserves domestic waterborne commerce to vessels that are US owned, built and crewed — and the Canada Coasting Trade Act — which reserves domestic waterborne commerce to Canadian registered and crewed vessels that operate between Canadian ports.

FORWARD-LOOKING STATEMENTS

This press release contains forward-looking statements. For all forward-looking statements, Rand Logistics claims the protection of the Safe Harbor for Forward-Looking Statements contained in the Private Securities Litigation Reform Act of 1995. Forward-looking statements are inherently subject to risks and uncertainties, many of which cannot be predicted with accuracy or are otherwise beyond the company's control and some of which might not even be anticipated. Future events and actual results, affecting the company's strategic plan as well as its financial position, results of operations and cash flows, could differ materially from those described in or contemplated by the forward-looking statements. Important factors that contribute to such risks include, but are not limited to, the effect of the economic downturn in certain of our markets; the weather conditions on the Great Lakes; and Rand Logistics' ability to maintain and replace its vessels as they age.

DCi

Port of Tyne announces new contract with International Plywood

The Port of Tyne based at South Shields in North East England has announced a new commercial agreement with one of the UK's leading importers of plywood.

In an initial three-year deal with Gloucestershire-based International Plywood, the Port of Tyne will provide office accommodation, cargo handling, covered storage and onward UK-wide road distribution for timber products imported through the port.

Ian Attwood, managing director for International Plywood, said: "International Plywood has been importing plywood and panel products for a quarter of a century. We are a family-owned company and in this extremely competitive market, we pride ourselves on always striving to achieve value for money for our customers.

"The Port of Tyne offers exceptional value and customer service with an excellent location providing unrivalled connectivity via road networks."

Multi-geared breakbulk vessels will import plywood and other timber products to the Port of Tyne from the Baltics and as far afield as South East Asia and South America.

Nolan Gray, business development director for Port of Tyne, said: "The Port of Tyne is unique in its ability to not only manage break-bulk of non-containerized cargo but to also handle containerized products, storage and distribution providing optimal customer service.

"The port's ability to handle larger vessels presents not only greater economies of scale for International Plywood as larger volumes can be handled per shipment but it also creates a positive environmental benefit."

Stuart Watts, director for International Plywood, said: "Working with the Port of Tyne offers the ability to maximize the potential by creating a northern hub with an office based at the Port allowing International Plywood to firmly establish ourselves as one of the UK's leading independent suppliers of plywood and sheet materials."



International Plywood has experienced significant growth in the last decade, reporting £130m turnover in 2014. The business supplies products to leading building merchants, housebuilders and various other UK markets.

THE PORT OF TYNE

The Port of Tyne is one of the UK's major deep-sea ports — a vital trading gateway to worldwide markets. The port operates five business areas including bulk and conventional cargo, car terminals, cruise and ferry, logistics and a commercial property portfolio.

New rail services to link Beira port with 11 destinations

Trains have begun running between the Mozambican port of Beira and both Zimbabwe and Zambia. Although the initial composition was composed to containers, the aim is to transport around 10,000 tonnes of freight monthly, which will include fertilizer. The service is being provided by the South Africa Railway Association (SARA), which encompasses Portos de Ferro de Moçambique (CFM), National Railways of Zimbabwe (NRZ) and Zambia Railways Ltd (ZRL).

SARA has identified 11 potential rail corridors, with that from Beira being the first to become operational. This line will convey import fertilizer and export copper from Zambia. Currently, such traffic is moved by road.

As part of the service, each of the three railway administrations will provide both wagons and locomotives.

In 2015, the port of Beira is expected to handle 220,000 containers, more than 2.5mt (million tonnes) of general cargo and 5mt of coal, the latter compared to just 4.6mt of coal handled in 2014.

Barry Cross

Matarani to handle 10% of global copper

The Peruvian port of Matarani is on course to handle 10% of the global production of copper. By 2017, around 1mt (million tonnes) of copper, equivalent to half of Peru's total production, will be exported by the port. This will come about because of the opening of Las Bambas mines and the extension of Cerro Verde, which will generate 400,000 tonnes and 272,000 tonnes of copper respectively.

According to the Luis Rivera, who is the VP of operations at Las Bambas, Matarani will be able to handle the additional traffic thanks to a \$200 million investment in the new 'F' berth. This is being built as a partnership between MMG (Las Bambas), Freeport (Cerro Verde), Glencore (Antapaccay) and Matarani port operator Tisur. Rivera adds that exports will be in the form of concentrates generated by the various operators and new ones that could potentially emerge from the south of the country in the future.

The new berth will be able to receive Supramax vessels, which can handle up to 55,000 tonnes. There will also be a new rail discharge facility and an ore storage shed that will be used exclusively by Las Bambas.

Berth 'F' has been engineered to handle around 10% of the global production of copper, which in 2014 amounted to 18mt.

As for the expansion of Cerro Verde, this is due to go-ahead at the end of this year, while Las Bambas will expand its own operations in the first quarter of next year.

BC

Dry bulk concessions up for grabs in Uruguay

In Uruguay, the Ministry of Transport and Public Works and the National Ports Administration has issued a call for expressions of interest in running dry bulk terminals in the ports of Fray Bentos and Paysandú, either individually or as a package. This forms part of government policy to improve access to foreign markets for producers in Uruguay and also to improve the export logistics chain for bulk.

BC

Brazilian river port reopens for sugar traffic

In October last year, the Brazilian river port of Murtinho reopened for the export of sugar traffic, despatching 6,000 tonnes to neighbouring Uruguay. According to the state governor Reinaldo Azambuja, the use of the port will provide an alternative to the Paraguay River routes for producers in Mato Grosso do Sul.

This year, it is expected that the port will handle around 300,000 tonnes of dry bulk. In addition to sugar, Murtinho is expected to handle some of the record output of grain, of which the state exported 3.5 million tonnes in 2015.

It is hoped that with the reactivation of the port Chinese investors, which have build a processing plant at Maracaju, will resume conversations about investing in the soya industry in the region.

BC

Ukraine opens agribulk transshipment terminal

In Ukraine, the new dry bulk transshipment terminal specializing in agribulk exports has opened at Mykolayiv. This, it is claimed, will help reduce the loading time for vessels. Overall, the Agriculture Ministry is pursuing deregulation of the industry and also simplifying conditions attached to doing business in the country. Ukraine is currently one of the top three world grain exporters, with potential in the agricultural sector continuing to grow.

BC

Spanish dry bulk in the ascendency

According to recently released figures in Spain, bulk liquids and dry bulk handled in the first eight months of last year amounted to a combined 172mt (million tonnes), equivalent to 52.4% of all port traffic, which reached 329mt.

Dry bulk traffic grew by 8.59% between January and August 2015, reaching 61.8mt.

Gijón generated 20% of all dry bulk traffic in this period thanks to an overall boost of 22% in the volume it handled, which amounted to 12.3mt. Traffic was also up at the port of Ferrol, which showed an increase of 2.6% on handling 6.1mt. In contrast, Tarragona reported an eight-month reduction of 2.5%, although still handled 5.4mt. However, the star performer was Almería, which showed growth of nearly 24% and handled around 3.7mt. Cartagena also did well, increasing traffic by 9% to 3.6mt.

BC

Silopor issues one year handling contract

In Portugal, Silopor, which has been in liquidation for several years, has issued a tender for the handling of bulk cargo at its terminals at Beato and Trafaria, in Lisbon. The reference price quoted for the contract, which will run for one year only, is in the region of €2 million and involves handling agribulk. The winner will be the company offering the most competitive price.

The contract has had to be put out to tender given the strange financial situation of Silopor. In October 2014, the government decided to cancel a tender it had issued due to the fact that there has been legal action taking place between bidders.

The original concession was launched in 2007, resulting in a provisional award being made to Grupo ETE in January last year. However, the new concessionaire pointed out that changes to the market meant that it could not pay the €40 million of promised upfront investment nor the further €122 million it had agreed to invest over the 25 years of the concession. This infuriated opponents, such as Sogestao, which had offered €62 million, resulting in the whole process ending up in the courts.

BC

Record year for Puerto Panul

In Chile, the Port of San Antonio's bulk terminal, Puerto Panul, has beaten all previous records in respect of dry bulk traffic. It closed the year having handled 2.6mt (million tonnes), equivalent to growth of 7%. Indeed, the terminal had, by November, handled as much traffic as it had in the whole of 2014.

According to managing director David Fernández, the operator now handles 95% of all imported clean bulks, such as wheat, corn, soya and fertilizers. In 2016, the aim is to install conveyors to handle export bulk, which should allow the terminal to handle up to 3mt, much of which will be heading for Asian markets.

In total, Puerto Panul will invest \$3 million to put the new export conveyor and a stacker-reclaimer systems into operation.

Quizzed as to how the terminal had been able to produce such good results in the face of difficult trading conditions, Fernández attributed it to both animal grain and grain bound for processing plants. He pointed out that, in general, this market tends to be more resistant to economic variations, given that it is connected with animal and human food consumption.

Despite having just a single berth, which is operating at high levels of capacity, the terminal has been able to increase throughput, too, thanks to speeding up handling activities. According to Fernández, this has been in the form of integrated logistics, which has resulted in consignments being shipped out of the port rapidly by either truck or train. In 2016, \$3 million is to be invested in upgrades, which should allow traffic to increase from 2.7mt to 3mt.

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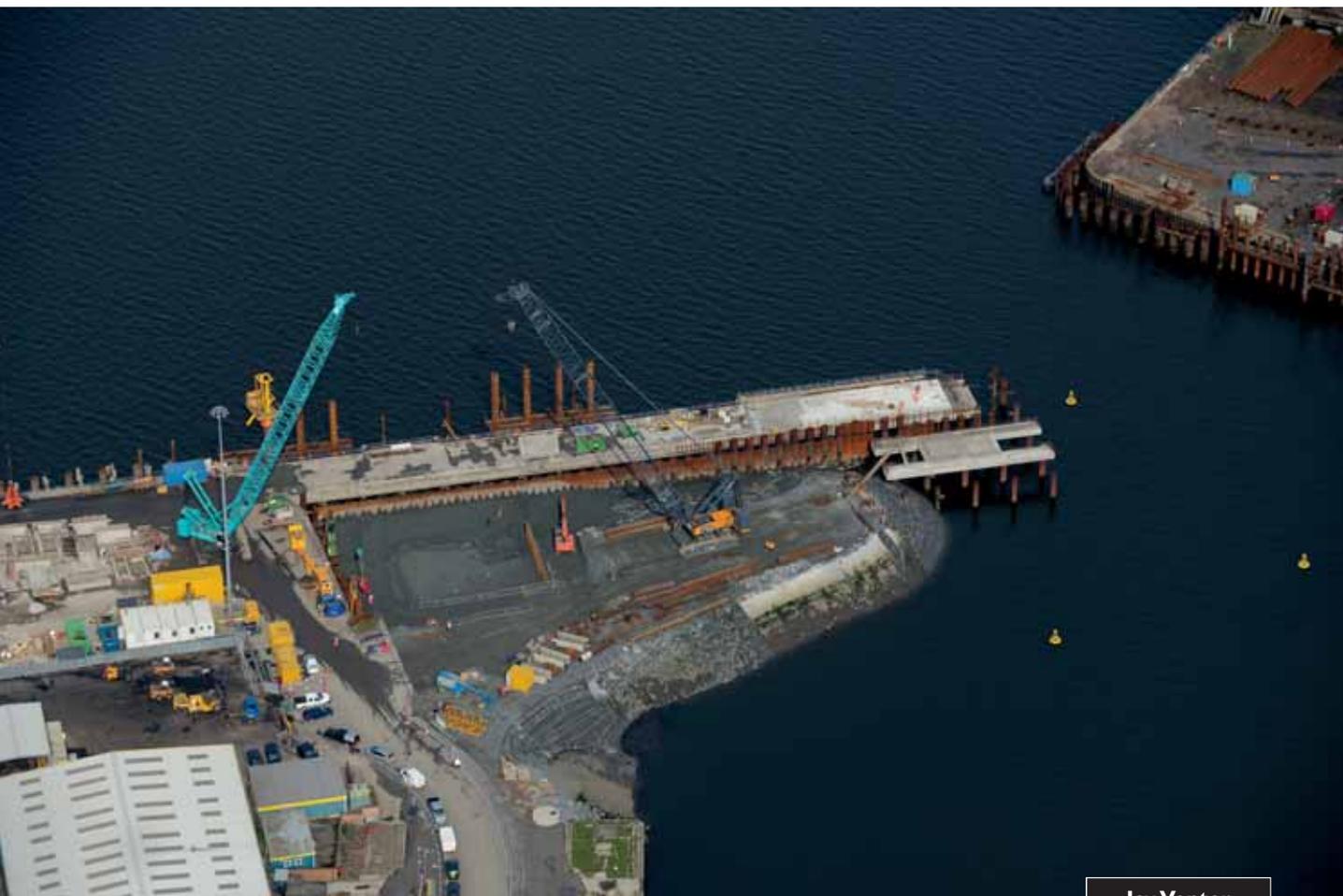


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Coal terminal developments

facility improvements enhance handling capacities



Jay Venter

Quay to Port extensions increase capacity at Port of Tyne

The project to extend the Port of Tyne's multifunctional quay 'Riverside Quay' at Tyne Dock, South Shields, UK, is right on track.

The £25 million investment project is the biggest development programme the port has made since 2010 — extending the quay by 125 metres, the project is due to be completed by spring.

Four weeks of capital dredging using a cutter suction dredger took place in November to December 2015, removing 100,000m³ of material, which equates to 200,000 tonnes of silt and stone. The dredging makes the new berth as deep as Tyne Bulk Terminal at 13 metres and provides greater flexibility at the deep-water facility.

The £25 million project to extend the Port of Tyne's

Riverside Quay sees the construction and refurbishment of 329 metres of quays, which comprises a 125 metre extension to the existing Riverside Quay deep-water facility, refurbishment of 118 metres of the same quay and initial expenditure in the strengthening of 86 metres of quays at an adjacent site now ready for redevelopment.

The dredging programme deepened the 125 metre extension pocket and approach to the berth with Belgian subcontractors and leading experts in dredging and marine construction activities Jan De Nul deploying specialist dredging vessels.

Scheduled for completion in 2016, the newly extended Riverside Quay will increase Port of Tyne's capacity to handle a wide range of bulk cargoes by almost 20%, expanding the port's ability to compete effectively in new and existing markets.

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Port of Rotterdam: coal only dry bulk commodity to improve throughput in 2015

DRY BULK THROUGHPUT PORT OF ROTTERDAM

	2015	2014	Difference
Agribulk	10.8	11.3	-3.8%
Iron ore and scrap	33.9	34.1	-0.6%
Coal	31.0	30.4	1.0%
Other dry bulk	12.3	12.8	-2.3%
Total dry bulk	87.7	88.6	-1.0%

(million metric tonnes)

Source: Port of Rotterdam Authority

DRY BULK IN THE PORT OF ROTTERDAM, 2015

The year 2015 was a little disappointing for total dry bulk throughput in the Port of Rotterdam (PoR). With an estimated 87.8mt (million tonnes), throughput declined by one percent compared with 2014. With the exception of coal, all dry bulk commodities handled in the port were below 2014 results.

Rotterdam is the largest dry bulk port in Europe, and has a strong position especially in iron ore and coal. Last year coal throughput increased and iron ore handling was slightly behind the 2014 results.

IRON ORE

There has been global oversupply of iron ore, with the result that the ore price per tonne has fallen below \$50. This has been beneficial to the steel industry in north west Europe, which is completely dependent on imports.

However, there has only been modest growth in EU steel consumption, and the competition from Chinese steel exports (dumping) remains fierce.

There remains over-capacity in the EU steel industry (70% occupancy rate).

One positive note in steel is the investment by ThyssenKruppSteel in retrofitting of the blast furnaces in Duisburg.

COAL

Despite the pressure on coal (COP 21 Paris, public opinion, financial institutions divesting coal assets etc.), coal imports in the Netherlands and Germany have increased.

The coal market is over-supplied, resulting in very low prices and making coal competitive with gas.

Two new coal-fired power plants (E.ON and Engie) started operations at the Maasvlakte in Rotterdam.

Although demand for coking coal by the EU steel industry was subdued, there still was an increase in coking coal imports in the PoR. This was the result of the strategy of ThyssenKrupp to concentrate its coal deliveries at Rotterdam.

STEVEDORING COMPANIES

The EECV terminal (dedicated iron ore and coal terminal of ThyssenKrupp) has approval from its owner to invest in modernizing and upgrading of the ore terminal. A possible lengthening of the iron ore quay wall has not yet been decided. A longer quay would make it possible to accommodate Valemax vessels without restrictions.

At the EMO terminal, work is continuing on automation of the terminal. EMO has already fully automated its stacker/reclaimers and coal wagon loaders, as well as all the conveyor belts and the associated routes. Now EMO is working

on the automation of the unloaders for sea-going vessels, and the first crane will be operational in early 2016.

Also at the EMO terminal, a biomass torrefaction plant is being built by River Based Energy. This demo plant will produce bio-coal. The project also involves the development of a prototype large scale biomass logistics hub using existing coal assets of EMO.

EBS completed the new 'south jetty' at Europoort Terminal in December 2014. This is the second berth which will be suitable for Panamax and post-Panamax vessels. The new berth has dolphins for a floating crane. These are situated at the north part of the existing jetty which was completed and operational at the beginning of 2014. During 2015 EBS also invested in a hopper with weighing functionality and a conveyor belt system on the new jetty.

BSR Van Uden on the north bank, has invested in a second floating crane, which will be operational during next year (2016).

And finally stevedoring company Marcor which has floating operations in the Waalhaven area will move to a new terminal at the Hartelstrook. Awaiting permits and building activities, Marcor could start operations there in 2018.

PORT AUTHORITY

An ongoing project is the deepening of the waterway and port basins in the Botlek area of the port. This will improve the nautical accessibility of the terminals and industrial sites in this part of the port for large Panamax vessels.

In the Caland Canal and the Botlek, the Port of Rotterdam Authority has worked hard on the expansion and replacement of buoy berths and dolphin configurations. And at the Maasvlakte, two new dolphins (no. 90 and 91) were positioned. In the first half of 2015, transshipment (of dry and liquid bulk) at buoys and dolphins rose by 21% from 8.3mt to 10.1mt compared with the same period of 2014. The increase was related mainly to the transshipment of fuel oil. The positioning of dolphin configurations and the replacement of buoy berths with dolphins is in line with the Port Authority policy to further modernize the existing port area and to use it as intensively as possible. Larger vessels can moor at the dolphins. The replacement of buoys with dolphins is also an improvement in terms of safety. The Port Authority is investing a total of around €32 million in this project.





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Continuous investments enhance Maritime Bulk Terminal (MTMG) services



Operating at the Port of Gdynia in Poland, universal terminal MTMG (Morski Terminal Masowy Gdynia) offers 24-hour service for reloading and storing of bulk commodities like coal, coke, ore, grains and feedstuffs, biomass, sugar, aggregates, fertilizers and also liquid cargoes (including chemicals of the 3rd, 6th, 8th and 9th classes according to the IMDG Code), crude oil and its derivatives. MTMG is located at the main entrance of the Port of Gdynia and is directly connected to the hinterland through its railway and road networks. Services are tailor-made as per client's need: direct or indirect handlings, separating of the goods (screening), weighing, levelling, etc. MTMG is able to handle vessels with maximum length of 300m and draughts up to 13m.

MTMG is a constantly growing terminal striving for excellence. Continuous investments enable improvement of handling processes, thereby enhancing services quality which is one of the main strengths of the company. The terminal has a four-chamber automated warehouse with loading and unloading technology, designed for storage of agricultural products with a total capacity of approximately 60,000 tonnes. The warehouse has four loading stations, each equipped with an electronic weighing system. It is connected through bridge conveyors system with another warehouse allowing a flexible surface disposal. The second warehouse has a loading station equipped with an electronic weighing system. Unloading technology efficiency is 1,200 tonnes per hour.

Concentrated on diversification of handled products, MTMG is not only investing in covered storage but is also expanding its open air area, offering to clients separated paved stockyards with direct connection to quays and railway system.

Through environmentally friendly technologies and handling methods, MTMG seeks to maximize quality and safety of provided services as confirmed by ISO 9001:2009 and ISO 22000:2005 HCCP certificates. In 2014, thanks to enormous efforts of the company and as the only one in the port, MTMG's terminal obtained OHSAS 18001:2007

certification, guaranteeing promotion of a safe and healthy work environment. To protect the environment and neighbourhood, MTMG invests in modern systems to protect stockpiles against excessive dusting by covering commodities with a thin layer of cellulose using Dustclusterliquid installation.

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Coal imports power bulk growth at Port of Hamburg

*The bulker Cape Island on its way to Hansaport.
Photo: © HHM Hasenpusch*



Along with general cargoes and containers, handling bulk cargoes is an important element sustaining the Port of Hamburg. Around 43mt (million tonnes) of bulk, suction and grab cargoes, as well as liquid cargoes, are handled here every year. Berths for ore, coal and grain mega-carriers have water depths sufficient to permit loading and discharging irrespective of the state of the tide. Hamburg is one of Europe's top hubs for suction goods, with silo storage capacity totalling more than 1mt. Vessels can berth directly in front of the large silos, where high-performance equipment takes over loading and discharge.

For the first six months of 2015, at 23.6mt bulk cargo handling was 12.3% up on the previous year. With a dramatic rise of 19%, it was especially the strong coal and ore imports, totalling 11.5mt, which led to grab cargoes powering growth.

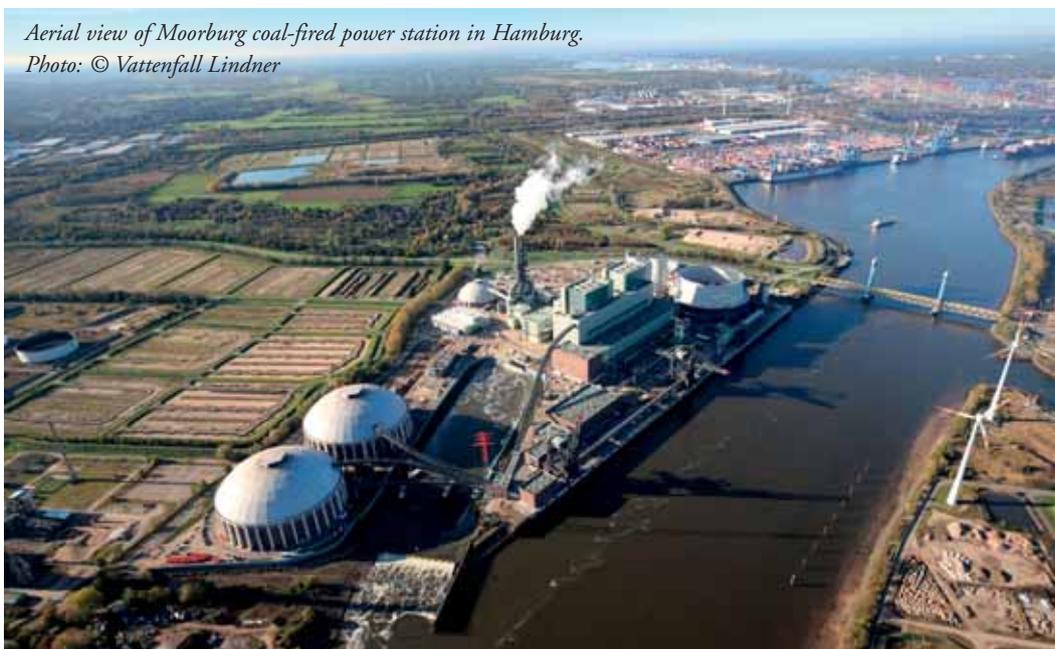
Coal imports reached 3.8mt, producing strong growth of 46.3%. In the first three quarters of the year, the total of 34.3mt bulk cargo (up by 8.7%) suggests a record figure for the full year. In this segment double-digit growth rates were based on grab cargo throughput of 16.9mt, up by 13.9%. Of grab cargoes, the bulk comprised ore and coal imports, at 7.6mt and 5.6mt respectively.

For the complete year 2015 Port of Hamburg Marketing association expects with 7.6mt a growth of 26%

in coal imports in Hamburg. In 2016 the marketing association expects again a light growth in coal imports in Hamburg.

Apart from the steelworks of Northern and Eastern Germany, the main customers for coal are industry, and power stations. When running at full capacity, the new Moorburg coal-fired power station, which has been in operation in Hamburg since March 2015, will require up to 4.2mt of hard coal annually. Coal imports are unloaded at its own facility. This volume of coal will enable up to 11 billion kilowatt hours of power to be generated, or almost as much as Hamburg needs in a year. At the same time, the plant produces one-quarter less CO₂ than older coal-fired stations, and moreover can be steered so flexibly as to react very effectively to fluctuating power input derived from renewable energy sources.

*Aerial view of Moorburg coal-fired power station in Hamburg.
Photo: © Vattenfall Lindner*



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2015 – a record-breaking year for the Port of Gdansk

Source: Kacper Kowalski/Port of Gdansk Authority

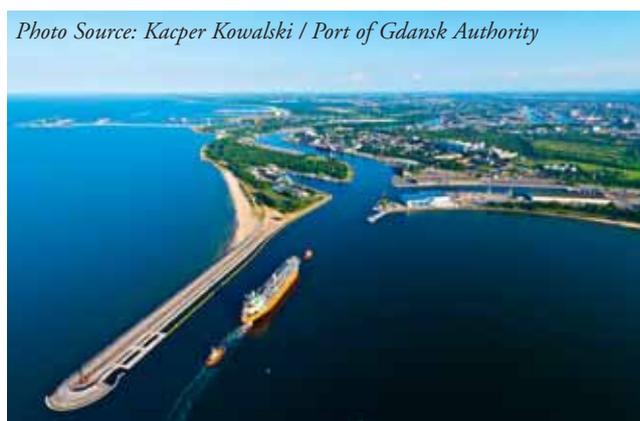


Photo Source: Kacper Kowalski / Port of Gdansk Authority

Nearly 36mt (million tonnes) of goods handled, an 11% year on year increase in goods turnover and more than 100% increase in just eight years, a doubling of the size of commercial vessels within a decade and hundreds of millions of Euros invested in just 12 months — in brief, this is the summary of the last year at the Port of Gdansk.

In 2015, for the third time in a row, the Port of Gdansk broke its record for annual turnover of goods by handling a total of 35.91mt of cargo and achieving an 11% increase over 2014 and a 100% increase in just eight years. This is the best result ever in the history of the Polish maritime economy, which also contributed to a 3% growth in the Port of Gdansk's share in the Polish market for marine cargo handling, i.e. to a level of 46.5%.

The results achieved in 2015, according to preliminary data, strengthen the solid seventh position of the Port of Gdansk in the Baltic ranking of the most active ports on this basin, significantly closing the gap with Klaipeda in sixth place by almost six percentage points.

The difficult situation in the shipping market, and the fact that 2015 was significantly weaker for the majority of the Baltic ports, was not felt by Gdansk thanks to the excellent operability of the dynamically functioning transshipment terminals, and also the versatility of the port's infrastructure. The result of nearly 36mt is more than 11% greater than last year, which means at the same time almost the highest year-on-year growth rate for cargo handling throughout the whole Baltic.

The excellent results of the port in 2015 were due mainly to

record-breaking results in bulk cargo turnover. Last year the Port of Gdansk handled almost 15% more bulk cargo than during the year 2014. There was an 18% increase in liquid bulk and 10% increase in dry bulk cargo turnover.

Although the coal market in Poland is characterized by a structural surplus, and the unfavourable trends observed in the European market clearly intensified in 2015, the situation of coal handling at the Port of Gdansk shaped up very successfully. In fact, the Port of Gdansk was the only one of the three major Polish ports over the last year to record an increase in the transshipment of coal up by 35% and finally closed the year with a result of 4.5mt of this raw material. Particularly noteworthy is the fact that the majority of this volume was coal exported from the port, a year-on-year 8% increase in market share for Gdansk.

A slight drop in cargo handling in comparison with 2014 was recorded during the past year only in the group of other bulk cargo (-11%) and cereals (-13.2%), with the difference that in 2014 on the quays of the Port of Gdansk cereal transshipment was relatively balanced in terms of export and import, whereas 2015 witnessed a distinct dominance of exports, of which 41% consisted of Polish wheat. This should not come as a surprise, however, since Poland holds fourth place in the export of wheat in the European Union.

It is worth mentioning also that 2014 was a record at the Port of Gdansk in the handling of grain. Hence, the aforementioned 13% decrease in this group noted in 2015 in terms of tonnage was ca. 200,000 tonnes. Therefore, this makes

THROUGHPUT FIGURES FOR THE PORT OF GDANSK (THOUSAND OF TONNES)

YEAR	2014			2015			Difference	
	IN	OUT	TOTAL	IN	OUT	TOTAL	TOTAL	%
TOTAL THROUGHPUT (bulk and general cargo)	19,691	12,587	32,278	21,780	14,134	35,914	3,636	11.3%
LIQUID BULK	8,925	3,854	12,778	4,366	15,057	2,279	17.8%	
Of which:								
Crude oil	8,693	200	8,893	283	10,773	1,880	21.1%	
Refined petroleum products	66	3,396	3,463	3,774	3,819	357	10.3%	
Liquefied (petroleum) gas	126	2	128	0	119	9	-7.2%	
Other liquid bulk (non-petroleum)	40	255	295	38	309	347	52	17.5%
DRY BULK	5,163	3,257	8,420	4,271	9,257	837	9.9%	
Of which:								
Cereals	764	802	1,566	482	877	1,359	207	-13.2%
Fodder / Oil seeds	7	56	63	0	97	97	33	53.0%
Coal	1,680	1,643	3,322	1,914	2,574	4,488	1,166	35.1%
Ores	5	0	5	85	0	85	80	1535.1%
Fertilizer	224	0	224	347	0	347	123	54.7%
Other dry bulk (scrap iron, steel, etc.)	2,484	755	3,239	2,158	723	2,881	358	-11.0%

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2015 the third best result of the Port of Gdansk in handling this cargo group. While summarizing the year 2015, it is worth pointing out the increase in the size of merchant ships at the Port of Gdansk, since in this regard last year should be considered a record. During 2015, the size of commercial vessels arriving in Gdansk increased year-on-year by over 16%, thereby setting a new record for the Port of Gdansk. In practice, this means more than a 100% increase in the size of commercial vessels operating at the Port of Gdansk in just one decade.

Overall, the year 2015 can be summarized as very successful, though not an easy year for seaports when, despite the difficulties existing on the market, the Port of Gdansk once again noted very good transshipment results strengthening its position not only within the domestic maritime market, but moreover among the ranks of the fastest growing Baltic port complexes.

The year 2016, in the context of the prevailing market conditions, promises to be equally difficult for all participants in port and sea trade. However, according to information gathered from cargo handling operators located at the Port of Gdansk, it can be assumed that the results in 2016 should be comparable with the recent 2015 record.

It is important to bear in mind that the year of 2016 is a very important period for the development of Gdansk. During this time, the next important stage of a major investment programme will be implemented both for the Port of Gdansk as well as transshipment operators conducting their business there.

Only in 2015 at the Port of Gdansk there were implemented more than 100 investment projects, some of which included

so-called ad-hoc investments, while others were strategic. There were also renovation projects which focused, among others, on improving the existing infrastructure, as well as organizing vacant plots and wasteland in order to maximize the use of port land lying under the administration of the Port of Gdansk S.A.

The year 2016 will be no less intensive in this term. A deepwater bulk terminal for handling agricultural commodities (i.e. grain and fodder) is to be built by the company OT logistics. According to the forecasts of the investor, during the first stage of investment until 2018 the terminal will gain a throughput capacity of 2.7mt per year, while the implementation of the second stage from 2018–2020 will result in a doubling of the capacity. Moreover, in accordance with the approved plans, by the end of the year work should be under way on the modernization of the Inner Port quays and the deepening of the fairway — a project worth over €200 million. Finally, in 2016 the construction of a railway bridge (used particularly for bulk cargo transport) over the Vistula River will be completed, with a target capacity of 180 pairs of trains per day which will increase the traffic capacity of the railway to the right bank of the Port of Gdansk six-fold.

Undoubtedly, all these projects will make major contributions to improving the quality of service for cargo and ships at the port and further strengthen the role of the Port of Gdansk not only in the Baltic, but also in the European arena. How these investments will influence on the port results, we'll see. Based on what happened in 2015, it may be the next step towards further increase of cargo turnover in this port.

TPP announces capacity expansion to handle coal

Terminales Portuarias del Pacifico (TPP) is the first public specialized terminal for handling bulk and steel products located in the Port of Lazaro Cardenas, Mexico. TPP has been awarded by Federal Electricity Commission (CFE), national utility, an EPC and Operations and Maintenance long-term contract to unload at this Terminal an additional 1.3mt (million tonnes) to 1.8mt annually of thermal coal for CFE Petacalco power plant.

Mexico is sweeping an historic energy reform that has changed the electricity industry. This reform will strengthen competitiveness in the generation of power, accelerate the expansion of transmission networks, improve distribution supply quality, and offer the end consumer a wider range of opportunities to meet their consumption needs at more competitive prices. Therefore CFE is seeing a new source of coal for this power plant as an important step of this reform to bring this utility to its maximum capacity.

TPP has one berth with a capacity to receive Capesize vessels of up to 150,000 metric tonnes of net cargo, given its draught of 15.30 metres (50.20ft). TPP is equipped with two Liebherr cranes offering an average rate of 35,000 metric tonnes/day in the loading and unloading of vessels. TPP will store 140,000–400,000 tonnes of coal at its yards and then dispatch the coal to CFE power plant by a new conveyor system. Stacker-reclaimer equipment will be set at port and power plant, infrastructure that will be constructed on the next 18–22 months.

TPP started operations in late 2012, mainly handling iron ore handling more than 3.8nt on 2013 and an overall of 5.5mt. Currently TPP is looking to diversify into other products like thermal coal and other solid fuels as well as looking options for southeast US bulk trade, as the terminal has rail connection to this region.

As the Trans–Pacific Partnership Agreement starts operating,



TPP is looking forward to new opportunities in bulk and steel products trade coming to the NAFTA region; therefore TPP will set new infrastructure to be able to cover this demand. **DCi**



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- ❖ sorting and crushing machines;
- ❖ railroad car loading/unloading stations;
- ❖ chain and belt bucket elevators;
- ❖ conveyor bridges;
- ❖ transfer towers.



Conveyor system.

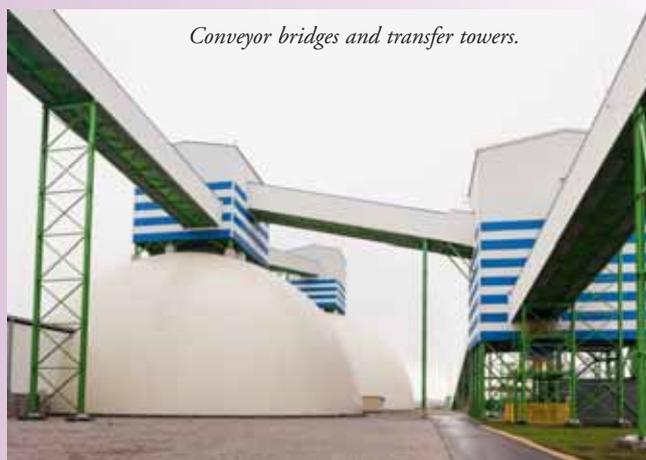
The company also supplies precision-machined frames and other large steel structures for cranes, turbines, shiploading machines, stackers, reclaimers and other oversized machinery

KEY FACTS ABOUT TTS

- ❖ 20,000m² of production facilities with preassembly area and 45t overhead cranes;
- ❖ 250 employees with 40 designers and engineers;

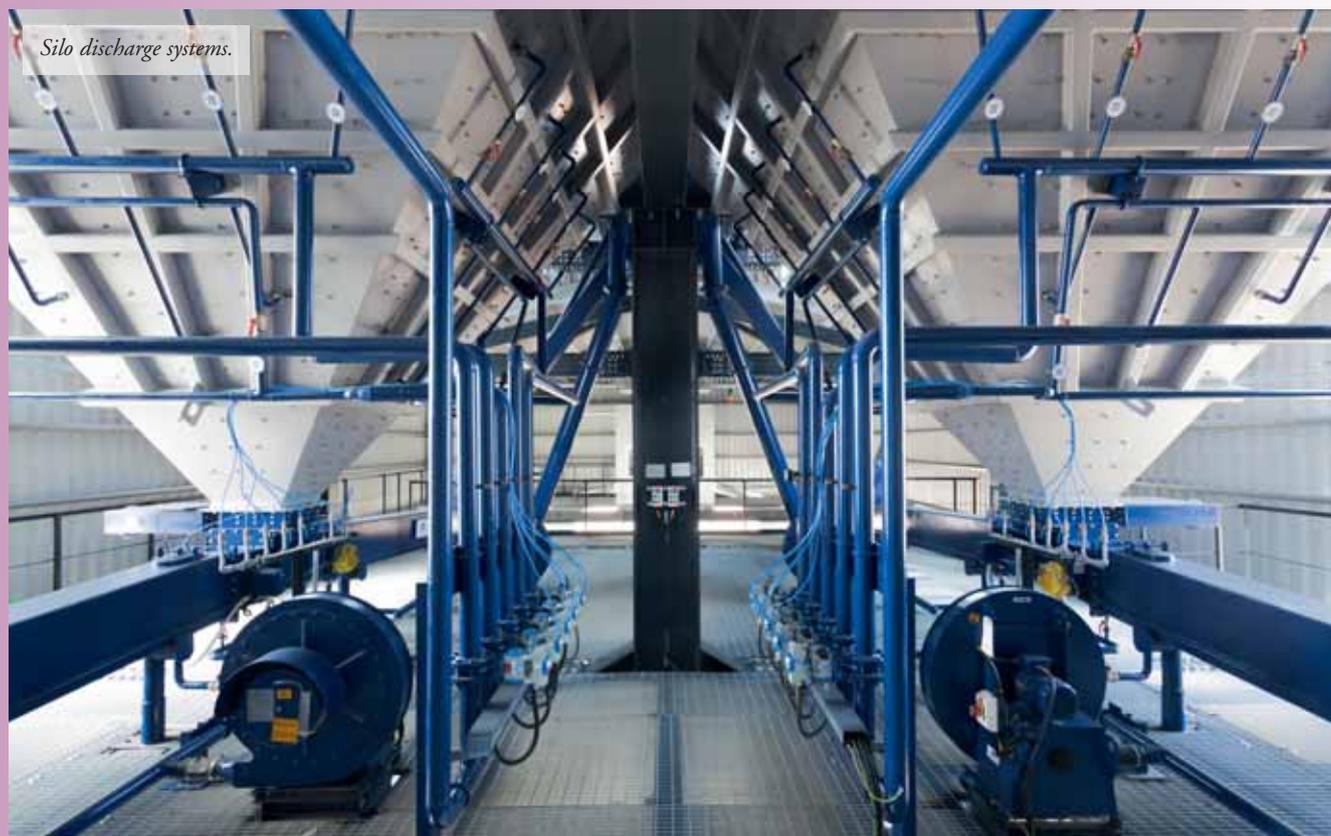


Coal storage facility.



Conveyor bridges and transfer towers.

- ❖ universal and CNC machines with up to 15x5m machining envelope;
- ❖ large shot-blasting and painting chambers;
- ❖ certification: ISO9001, ISO14001, ISO3834-2, EN1090-2 (EXC4), EN287-1 and EN1418;
- ❖ technologies and equipment: MIG, MAG, TIG, MSAW, SAW;
- ❖ monthly capacity – 750t/month;
- ❖ proximity to Riga sea port (10km).



Silo discharge systems.

Siwertell road-mobile unloaders for cement handling in Libya and Vietnam

Siwertell, part of Cargotec, has delivered two more of its market-leading 10 000 S road-mobile unloaders for cement unloading operations in Libya and Vietnam. The new trailer-based, diesel-powered machines are fitted with a double bellows system and dust filters and can handle cement at a rated capacity of 300tph (tonnes per hour).

Following an order signed with Tenovar International Ltd in Malta in late June 2015, the first unloader was delivered promptly in August the same year. In February 2016 it will be commissioned in Tobruk, Libya and will operate for Mediterranean Cement, also known as Al Bahar Al Mutawaset Cement.

The second unloader was ordered in November 2015 by Koastal Industries Pte Ltd, on behalf of leading Vietnamese cement exporter, the Vissai Cement Group and was also delivered only a month later in December 2015. It will be used for cement unloading at two sites in

Vietnam and was ordered as part of the group's ongoing expansion plans. The contract includes spare parts appropriate for two years of operation. Commissioning is scheduled for spring 2016.

"In the cement bulk-handling business Siwertell stands for reliability and therefore we believe that by choosing our units, the customer chooses the best tool in the business," says Jörgen Ojeda, Director, Siwertell Mobile Unloaders.

"The ease of setting up, operating and folding away our road mobile unloaders makes them extremely flexible and cost effective for multi-terminal operations. For example, the Vissai Group's operation will use its mobile unloader at a number of ports in central Vietnam, separated by distances of up to around 300km," continues Ojeda.

"Both customers were influenced by the reliability offered by Swedish-built technology and by Siwertell's ability to offer scrupulously clean unloading operations and excellent references from the cement industry," he adds.

Siwertell mobile systems were originally developed for unloading cement. Years of experience and development reflect the company's deep understanding of cement handling and gives it the ability to provide valuable advice to its customers.

The Siwertell road-mobile unloader is one of the most reliable, eco-friendly and sustainable systems on the market today for cement operations. Its flexibility and capacity combined with low operational and maintenance costs are major selling points. As there is no need for any civil engineering works, our mobile unloaders can start operations almost immediately after arrival on site.

Siwertell ship unloaders and loaders are based on unique screw conveyor technology, in combination with belt conveyors and aeroslides, and can handle virtually any dry bulk cargo, such as alumina, biomass, cement, coal, fertilizers, grain and sulphur. Siwertell's product portfolio includes ship unloaders, mobile ship unloaders, ship loaders, conveying systems and complete bulk terminal solutions, all of which are designed to ensure environmentally-friendly and efficient cargo operations.



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CASE offers choice of boom and loader arm on 580ST backhoe loader



CASE Construction Equipment is extending its backhoe loader offering with the introduction of a new backhoe design with in-line cylinder geometry and inner 'extendahoe' on its 580ST model. Now customers can choose the design that matches their specific needs best: the new in-line geometry or the well-known CASE boom with overlapping cylinders and outer extendahoe. And they make their choice in the knowledge that, whatever they choose, they can count on the premium digging and lifting performance CASE backhoe loaders are known for.

On the other hand, the well-known CASE design with overlapping cylinders has a shorter boom, lower transport height and protected outer sliding extendahoe.

NEW IN-LINE GEOMETRY FOR BETTER VISIBILITY AND GREAT BREAKOUT FORCES

The new in-line geometry, which maintains the S-shape boom that is part of the CASE backhoe DNA, ensures that the effort is evenly distributed over the entire length of the boom, resulting in high stress resistance. In addition, the narrower frame of the boom provides better visibility of the working area at the back of the machine.

Operators looking for exceptional breakout force and great reach will find their ideal solution in the new in-line boom. With 5,520daN and 4,100daN respectively, the 580ST featuring the in-line boom design delivers great breakout force both at the bucket and at the dipperstick — and it reaches as far as 6,647mm from the swing centre.

CASE DNA BOOM GEOMETRY FOR TOUGH WORKING CONDITIONS AND EASY TRANSPORT

The CASE DNA boom geometry with outer extendahoe is

the perfect solution for tough working conditions, as the sliding part never touches the soil, while the components that do are protected against impact and material accumulation.

The design with overlapping cylinders reduces the CASE 580ST's overall boom transport height to just 3.5m, making it easy to transport the machine with no waste of time and fuel. More time is saved with the patented integrated hydraulic quick coupler, which allows the operator to change backhoe attachments from the cab with the simple flick of a switch.

The 580ST model carries the CASE backhoe loader DNA, built on the company's long history of industry firsts. Since it launched the world's first factory-built tractor loader backhoe in 1957, the brand has produced more than 600,000 units and CASE backhoe loaders have become synonymous with performance, high lifting capacity, best digging depth, and great breakout forces. Now they are benefiting from technologies developed within CNH Industrial to extend the offering by giving customers the choice of boom geometry to match their specific requirements.

CASE Construction Equipment sells and supports a full line of construction equipment around the world, including loader/backhoes, excavators, motor graders, wheel loaders, vibratory compaction rollers, crawler dozers, skid steers, compact track loaders and rough-terrain forklifts.

Through CASE dealers, customers have access to a true professional partner with world-class equipment and aftermarket support, extensive warranties and flexible financing.

CASE Construction Equipment is a brand of CNH Industrial N.V., listed on the New York Stock Exchange and on the Mercato Telematico Azionario of the Borsa Italiana.

Hycontrol level measurement systems serve coal and quarrying industries

Redditch, UK-based Hycontrol has been providing level measurement solutions to the coal and quarrying industries for over 30 years. With a comprehensive range of technologies available and extensive industry experience, Hycontrol works closely with its customers to ensure a precisely-tailored solution for their particular application.

Given the particular qualities of coal and coal dust, Hycontrol engineers usually specify radar technology for measuring its level in a storage vessel. Pouring and movement of the product may cause damage contact-based technologies such as TDR and the dust may cause ultrasonic devices to give false readings. A recent application was at a mine in France where coal is extracted from 800 metres underground. The coal is carried up a lift and stocked in two 18m buffer silos. From there the coal is conveyed into one of 36 20m storage silos.

Previously the level in these silos had been monitored using aging Pulse Radars Systems (PRS) with large parabolic antennas and aiming kits. The PRS provided only a weak return signal caused by the pulse reflecting in a dusty environment. Under these circumstances, it was difficult to obtain accurate and reliable level data. A trial of Hycontrol's VG6 FMCW (Frequency Modulated Continuous Wave) radar device equipped with polypropylene drop-shaped antenna was undertaken. The VG6 FMCW radar uses a high frequency (26GHz) signal which increases during the measurement. The emitted signal is reflected back from the product surface and received after a time delay. Further signal processing of the difference between transmit and receive frequencies is carried out and the difference is directly proportional to the level.

The VG6 FMCW radar has two unique features: firstly, it has a unique patented design 'drop' shape antenna. This new antenna shape makes it difficult for product to build up on the antenna front face and still continues to work even when heavily coated with product. The VG6 is especially suited for long range, dusty solids applications such as powdered cement and coal. It was clear during the trial that these FMCW devices did not suffer from the same problems as the PRS due to the power of the radar transmission and the drop-shaped antenna's resistance to product coating. No aiming kits or large apertures were required. The old PRS have now all been replaced with VG6 radar systems.

Hycontrol's offerings to the coal and mining industry extend far beyond just level measurement, though. The company has won multiple industry awards for its pioneering Silo Protection System (SPS), a comprehensive contents and pressure monitoring system for powder silos. Pneumatic conveying of powders uses pressurized air to carry the product from its transport to the storage vessel. This raises significant dangers if the silotop filter cannot vent the air (for example if it has become blinded with dust) and over-pressurization can rupture the silo or blow the



Hycontrol SPS.

filter element clean off the roof. This obviously has severe Health & Safety implications.

Hycontrol's SPS is the only system on the market that currently meets and exceeds Mineral Product Association (MPA) guidelines for the safe storage of powdered product. The system fully tests all essential safety components (pressure relief valve, pressure sensor and level probes) at the push of a button before each and every fill, and will only allow filling to commence when the checks have been passed. The system has been successfully installed across a wide range of industries, not least in the mining and quarries.

Hycontrol's range of Microwave switches have also proved useful in many coal/quarry applications, often for blocked chute detection on crushers. Hycontrol's new generation

of microwave switches is proving to be an extremely reliable, robust and cost effective replacement for ageing nucleonic systems, offering operators a 100% safe solution. They provide a simple non-contact, non-intrusive option suitable for many applications on both liquids and solids. A typical installation consists of a microwave transmitter and receiver, mounted facing one another across the bottom of the hopper. During operation the transmitter emits a continuous, low power, 24GHz microwave beam to the receiver and an output relay is energized or de-energized when this beam is obstructed by the material being monitored. The switch trigger point is determined by the amount of microwave energy received and can therefore be adjusted to cater for specific products and applications.

A key advantage of this latest generation microwave technology is its ability to 'see through' low dielectric materials. This means that low-cost replaceable windows can easily be fitted into the sides of a chute, keeping the process closed with no disruption to material flow and the microwave transmitters/receivers safe from the harsh environment. The system is extremely easy to set up and calibrate and the microwave signals are unaffected by high dust levels or material build up on the sides of the chute.



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Efficient scrap recycling at Stena in Sweden

With more than 100 scrap yards, Stena Recycling AB is one of the largest scrap and waste recyclers in Sweden. At the scrap yard in Malmö, a new SENNEBOGEN 830 has been working since mid 2014 and feeds the longest-working shredder in Sweden.

The longest-working shredder in Sweden has been running for over 25 years, with 3,400hp and a huge appetite for scrap. It is fed by a modern SENNEBOGEN 830 material handler that has been in operation at Stena Recycling AB in Malmö since mid 2014. Production manager Magnus Persson reports that the company had already had very good experience with numerous SENNEBOGEN material handlers in Denmark, "After the first months, we were very satisfied with the performance and reliability. The simple maintenance, easy access to service, and the good support from the local dealer OP System are optimum."

Painted in the blue company colour, the SENNEBOGEN 830 has a 164kW diesel engine and handling equipment along with a multi-shell grab with a maximum range of 17m. To prevent damage to the boom, stick protection was specially attached. Especially when material is thrown far up during loading, the wooden planking prevents the grapple from hitting the stick. The 830 of the current E-Series feeds the large shredder with around 700 tonnes of scrap metal per day, seven days per week. The operators especially like the comfortable, elevating Maxcab, which can be moved vertically by 2.7m and ensures the best possible overview — whether during shredder feeding or truck loading.



Good co-operation with the local dealer OP System: Production manager Magnus Persson (right) and operator Elvir Husic with Dan Hansen (OP System).

A SENNEBOGEN 830 works at Stena Recycling AB in Malmö and feeds the shredder with 700 tonnes of scrap metal per day.



AUMUND special conveyor assumes transport at world largest HDRI production plant in Algeria

INCREASING MARKET SHARES FOR THE AUMUND FÖRDERTECHNIK GMBH DIVISION METALLURGY

At the end of August 2016, a new AUMUND special conveyor for the transport of hot DRI (direct reduced iron) will be delivered to the new steel mill at Tosyali (Algeria). A BZB-H-I 900 type conveyor with a length of 116 metres will be employed in Algeria. The conveying performance has been configured for 323 tonnes hot DRI per hour at a material temperature of 750°C.

The technical solution was crucial for the contract award to AUMUND Fördertechnik: in Algeria, AUMUND is counting on using a patented pan conveyor with buckets. The improved sealing protects the material to be

transported completely from any environmental influences. Thus, the inert system prevents the reoxidation of the highly reactive bulk material and makes the transport of the sponge iron possible without losing the high degree of metallization. "To produce the same amount of steel, a significantly lower input of energy into the electric arc furnace is needed this way, the tap cycles are reduced and productivity rises by up to 20%", explains AUMUND project leader Frank Reddemann. The AUMUND special conveyor will be used as the link between the MIDREX shaft furnace and an electric arc furnace for the transport of HDRI.

With the support of MIDREX, Tosyali is building the largest plant for the production of DRI worldwide at Bethioua (Algeria). The new MIDREX-Direct Reduction plant will feature a production capacity of 2.5mt (million tonnes) of DRI. Probably starting at the end of 2016 HDRI or CDRI will be produced alternatively without constraints to ongoing production.

ADVANTAGES OF HOT CHARGING

The transport of hot DRI (HDRI) to the electric arc furnace has two distinct advantages: the demand of specific, electric energy drops and productivity rises significantly. The energy savings are achieved, because less energy is needed within the electric arc furnace to melt the DRI.

"Compared to cold charging, the transport of HDRI results in up to 6% less wear on the electrodes. The tap-to-tap times get shorter, the demand for carbon as the primary energy carrier will be reduced, and CO₂ emissions will be lowered as well", explains Reddemann. With an HDRI input temperature of approximately 600°C, energy savings will be above 120kW per tonne of liquid crude steel.

Hadeed (Saudi Arabia) – AUMUND reference for energy-efficient conveying of DRI (photo AUMUND).





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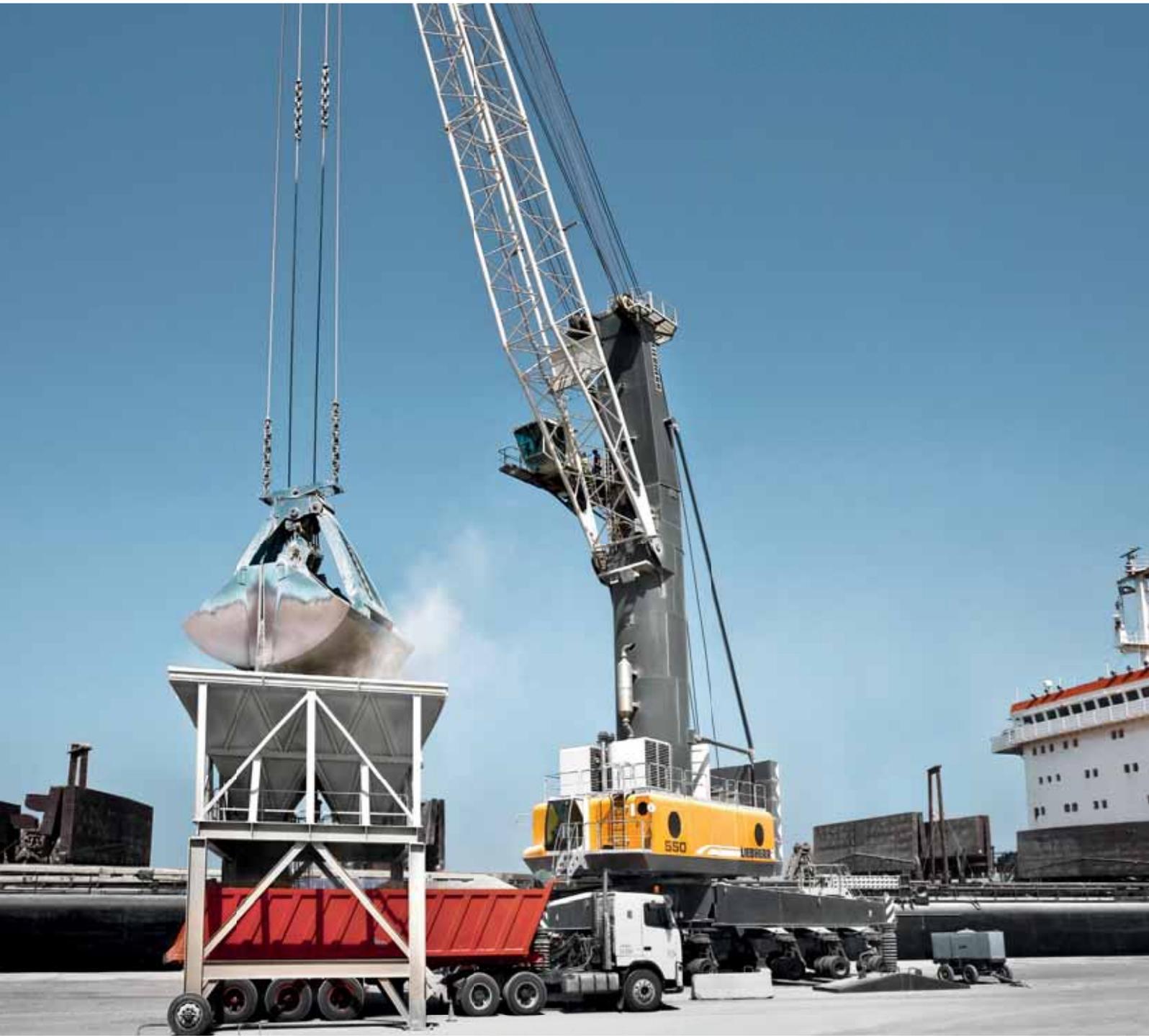
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Bulk Handling

With a maximum material handling rate of up to 2,300 tonnes per hour, mobile harbour cranes from Liebherr are suitable for sea ports and inland ports and can be used not only as mobile cranes but also as fixed cranes.

CASE extends D Series crawler excavator range with five new models

CASE Construction Equipment is extending its new generation D-Series crawler excavator offering with the introduction of new models at the BAUMA 2016 exhibition. BAUMA 2016 will take place from 11–17 April in Munich, and CASE will also be showing much of its other equipment, including its offering for the urban construction, road building, aggregates and recycling applications.

The CX130D, CX160D and CX180D fit in the medium range, while the other new models take the D Series' big performance to a new level: the CX490D adds approximately 1.5 tonnes to its predecessor in the C Series, bringing its weight very close to 50 tonnes; at the top of the range, the CX500D in Mass Excavation version delivers a massive performance with an operating weight above 50 tonnes. The two heavy duty models, which replace the previous generation's CX470C and CX470C ME, have been renamed to reflect their increased weight. All the new models feature CASE's exceptionally fuel-efficient Tier 4 Final (Euro IV) maintenance-free technology with no DPF (diesel particulate filter). They offer the high productivity, comfort and safety levels and low running costs that the previously launched D Series models have become known for.

IT'S TIME FOR MORE PRODUCTIVITY

The new D Series crawler excavators share the well-proven CASE intelligent hydraulic system of the previously launched new generation models. The improved D Series system with high performance hydraulics control takes controllability and smooth operation to a new level. The faster cycle times achieved with the new, more efficient hydraulics, and the greater weight raise the bar on these models' productivity — especially in the top two that weigh in at more than 25 tonnes.

The new models deliver faster cycle times because of the new electronically controlled hydraulic pumps and larger main valve, which increase their productivity further. The new pumps and bigger valve improve the machine's responsiveness, resulting in cycle times up to 12% faster than the previous generation's. In addition, the new models deliver a greater lifting power.

The high productivity is further enhanced by the crawler excavators' excellent autonomy resulting from the high capacity fuel and AdBlue® tanks combined with the machines' fuel efficiency. Also, the AdBlue tank only needs to be refilled every 10 fuel refills, so that no time is wasted.

IT'S TIME FOR MORE ECONOMY

Operating costs of the new D Series models are remarkably low. To begin with, the engine technology and new hydraulics result in lower fuel consumption than the previous generation.

The new models comply with Tier 4 Final (Euro IV) emissions standards with an after-treatment selective catalytic reduction (SCR) system and diesel oxidation catalyst (DOC). With this solution, exhaust gases are treated exclusively through chemical reactions in the SCR and DOC; no particles are trapped in the system, so that no DPF is required.

This is a very simple and effective solution to dramatically reduce polluting emissions and, as it is an after-treatment system, the engine runs at optimum efficiency, delivering more power with less fuel. As a result, customers enjoy significantly lower fuel expenses. The system is also very economical in its use of AdBlue, which is just 3% of fuel consumption. In addition, as there is no DPF regeneration or DPF replacement, maintenance and operating costs are remarkably low.

Three working modes — Speed Priority, Heavy and Automatic



— help the machine conserve energy and exert only as much power as needed to complete the job at hand.

The new models also feature CASE's energy saving systems, which include pump torque control, auto-idle and idle shutdown functions, spool stroke control, boom economy control and swing relief control. These systems take advantage of every fuel saving opportunity, further reducing operating costs and contributing to a longer life for the machine.

IT'S TIME FOR MORE COMFORT AND SAFETY

The spacious cab offers best-in-class space and the ultimate interior configuration with premium features. The fully adjustable workstation with a new air-suspended high-back seat delivers excellent comfort. The pressurized and iso-mounted cab keeps noise and vibration down, providing an operating environment among the quietest in the D Series' class. The large multifunctional widescreen monitor with continuous rear view camera adds to the already excellent all round visibility.

Each machine is available with a new (optional) LED working light package that provides illumination similar to sunlight — and more than three-times brighter than halogen — allowing contractors to work around the clock.

The ROPS cab is certified for ROPS level II as standard on all models and a full range of optional front guards is available to ensure the operator's safety in tougher working environments. The optional factory fitted travel alarm contributes to greater safety on the jobsite around the machine.

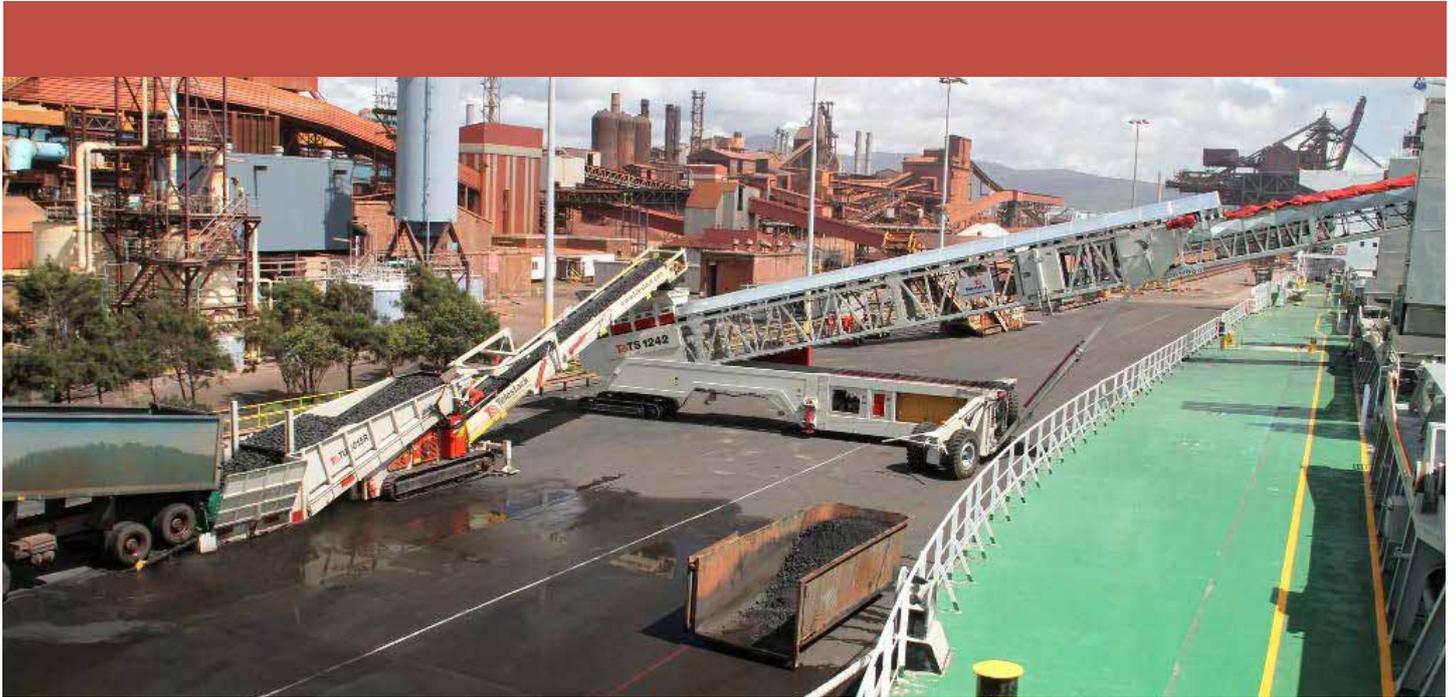
The CASE SiteWatch telematics system enables the fleet manager to keep track of the machine and helps prevent misuse of the equipment, protecting the customer's asset.

IT'S TIME FOR MORE RELIABILITY AND DURABILITY

The new D Series models are designed and built for reliability and durability. The new boom and arm design reduce stress on the structure, improving reliability. The high resistance cast steel at the foot and at the end of the boom, together with the jointed steel cast part across the boom and the arm's boxed section increase the strength and durability of the boom and arm. Reliability is further enhanced by the safety valves on the boom and arm cylinders with overload warning.

The new undercarriage design that has increased the dimension of components results in even greater reliability and durability. The new undercarriage one-side slope design ensures there is less material build up between the frame and the track chain. The material easily slides outward during cleaning operation and the operator will save time cleaning the undercarriage.

MOBILE COAL HANDLING SYSTEMS



Radial Telescopic Shiploader and Mobile Truck Unloader loading pet coke to Handymax vessels



Radial telescopic stockpiling coal @ 2000tph
in powerplant receiving from ship unloading system



Hopper Feeder & Radial Telescopic reclaiming/
stockpiling coal in stockyard of powerplant

Telestack **mobile** coal handling systems offer significant **operating costs savings** compared to traditional methods of material handling (e.g wheel loaders, mobile harbour cranes, stacker/reclaimers etc.) as well as providing **environmental** and **health & safety benefits**. Additional benefits include **reduced planning** permission required due to product **mobility**. Also the **flexibility** to move Telestack Mobile Conveyors off site. Telestack Conveyors can be **rapidly deployed** on site with handling rates of up to 3,000 TPH.

THE POWER TO MOVE MATERIALS



Raking over the coals

keeping track of the equipment and systems used to handle coal



Fig 1: radial telescopic stockpiling coal in stockyard for ship-unloading operations.

Louise Dodds-Ely

Telestack mobile coal handling systems bring efficiency and flexibility to the dry bulk logistics chain

Telestack continues to excel in providing innovative mobile bulk material handling systems to its worldwide customer base. The success derives from achieving sustainable value for the client; using mobile bulk handling technology to enhance operational efficiency, minimizing environmental impact and maximizing flexibility.

Traditional ship-unloading in ports and terminals varies from the fully integrated ship-to-stockyard system incorporating grab cranes, hoppers, conveyors and stackers/reclaimers for fully dedicated berths. Alternatively, the system for multi-cargo berths operates grabs, hoppers, trucks to the specific stockyards. The main issue with the latter system is how to efficiently unload a ship and stack the material in a safe and environmentally friendly manner while maximizing flexibility and limiting CAPEX spend.

Telestack mobile unloading hoppers, stacking and truck unloading solutions are particularly effective when unloading and stockpiling on a quayside or remote stockyard which allows the operator to stockpile differing types and grades of materials in various locations.

The recently introduced Dockside Unloading Hopper (DUH) range enhances the ports and terminals product range from Telestack and offers a unique material handling solution for sea

ports and inland terminals where loading and unloading of bulk materials from vessels of all sizes from small barges/coasters up to Baby Capesize vessels is possible with enhanced mobility and efficiency. The DUH is used to unload a very wide range of bulk materials direct to truck, freight train or conveyor belt and is one of the most cost efficient and environmentally sound method of vessel unloading. The bulk material can be fed to the hopper from either a dockside grab or self-discharging vessel. With hopper mobility and control, fast and efficient vessel unloading can be achieved.

For ports which operate multi-cargo berths and stockyards, Telestack's unique range of mobile equipment can offer the flexibility to stockpile up to heights of 20 metres (60ft) at a rate up to 3,000tph (tonnes per hour) using a range of truck unloaders and mobile radial telescopic conveyors. The optional automatic stockpiling system reduces the potential for segregation, degradation and compaction of the material within the stockpile, which ensures the material characteristics are maintained. Also, it can be used as a back-up stacking system in the event of failure or during statutory maintenance of a dedicated stacker/reclaiming system. This stockpiling unit can be installed with a crawler tracked dolly unit or wheeled dolly unit and onboard genset for full site mobility in harsh ground



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conditions. This site mobility ensures the operator can use this equipment anywhere within the stockyard when required. In many instances, these units are multifunctional, utilized for both stockpiling and shiploading applications up to Panamax-size vessels, with the radial telescopic features offering maximum manoeuvrability and flexibility during both processes.

In many applications, a fully automated integrated system would not be feasible to the particular port and inland terminal with lower capacities, which could not justify the high capital expenditure of the overland conveyor and stacker/reclaimer systems. The traditional method for multi-cargo berths would include grabs, hoppers, trucks to the specific stockyards. These trucks would transfer the bulk material directly to the stockyard. Primarily, these trucks would dump the material within the stockyard, then loading shovels or excavators would be used to stockpile the material, either with a loading shovel driving up and down stockpiles or a number of excavators used to achieve the required stockpile height and capacity.

In many locations, this traditional process can be inefficient with potentially extensive contamination and double handling of the material, which leads to increased operational and production costs. The Telestack solutions offer a range of static and mobile truck unloaders, reclaim hoppers and stackers which can eliminate these common problems.

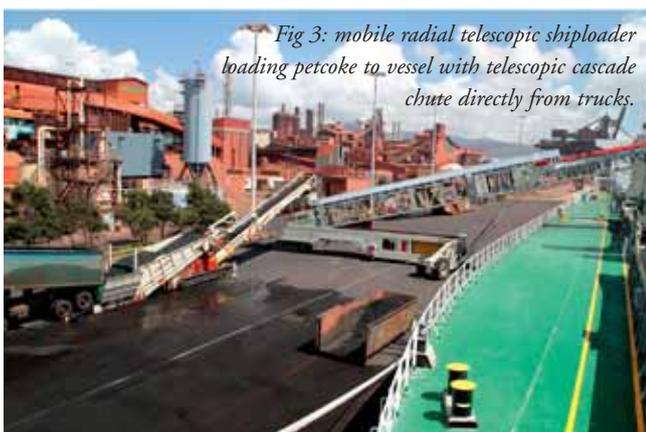


Fig 3: mobile radial telescopic shiploader loading petcoke to vessel with telescopic cascade chute directly from trucks.



Fig 2: new method from Telestack — mobile unloading hopper with integrated dust extraction.

In specific stockpiling applications directly from loaders/trucks (see Fig5 on p78), Telestack offers a range of mobile truck unloaders which can transfer the load directly from the trucks to a stockpile. This unit can include a radial facility, which again allows maximum flexibility to stockpile up to 10 metres either within the stockyard or within a warehouse. This efficient stockpiling method eliminates the double handling of the material and allows the operator to stockpile directly from this single unit. Also, the mobility of this unit means it can be easily moved around the stockyard depending on the requirements of the operator.

This range of truck unloaders can be used in conjunction with the radial telescopic stacker to achieve the greater stockpile height and capacity if required (see Fig6a) and b) on pp78 & 81).

The combination of these two mobile units, for both stockpiling and shiploading, offer the customer complete



Fig 4: typical ship-unloading application cw grab crane discharging into hoppers which feed directly to trucks, which unload in the stockyard.

flexibility, safety and efficiency, taking into consideration required stockpile heights, capacities and types / grades of materials within typical multi-cargo berths.

The benefits of the Telestack range of mobile equipment include:

- ❖ dual functionality, both for shiploading and ship-unloading operations, which eliminates overhead costs for secondary equipment;
- ❖ ease of transport from stockyard to quayside;
- ❖ range of truck unloaders utilized as a stacker/shiploader or

Fig 5: mobile truck unloader stockpiling directly from loaders/trucks in the stockyard.

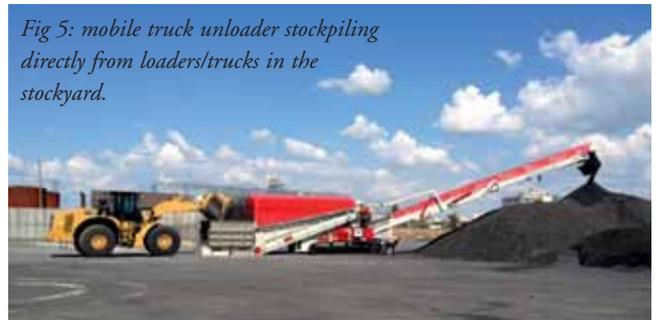


Fig 6 (a): – mobile truck unloader and stacker stockpiling material from ‘trucks to warehouse’.



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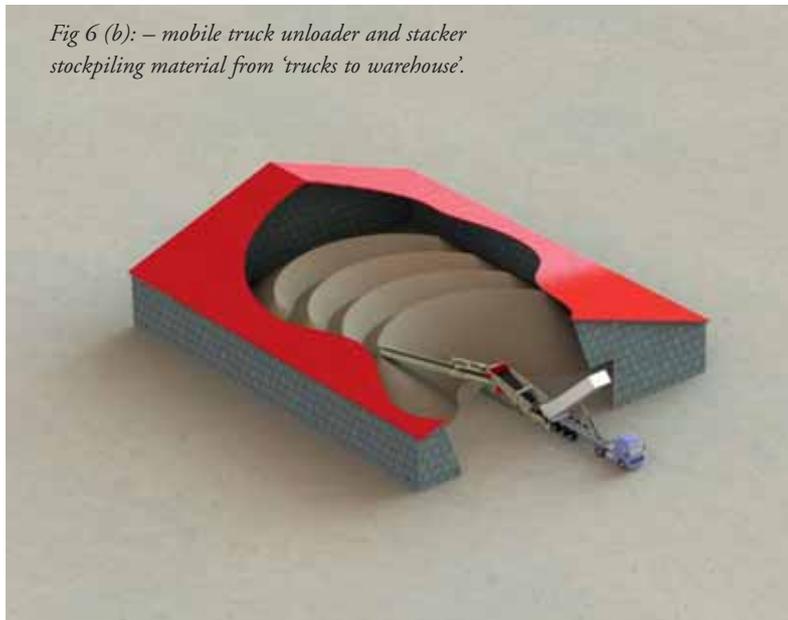
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Fig 6 (b): – mobile truck unloader and stacker stockpiling material from ‘trucks to warehouse’.



the specific needs of each application to ensure the equipment is efficient and reliable during these types of operations, all from one experienced supplier.

Telestack has a vast range of successful installations globally with its products utilized in a range of applications as well as coal, including the mining and quarry industries, stockyard management, ports and inland terminals, power stations, rail yards, steel mills and cement plants and has a team of specialists to support all projects and applications. Having recently achieved ISO status, Telestack is dedicated to the quality of its products and is steadfast in its commitment to delivering reliable, powerful and environmentally responsible products.

Telestack clients within the coal sector include coal producers such as Anglo America, Sueki and Mechel, coal terminals such as Port of Kemplab, Port of Vostochny and Port of Dhamra and coal consumers such as AES Powerstation, Kilroot Power station, Mittal Steel and Jindal Steel.

- feeding the radial telescopic stackers;
 - ❖ wide range of dust suppression/containment and trimming facilities;
 - ❖ operational movements range from in line, radial, parallel and many more;
 - ❖ hatch changes normally only require parallel movement — no need to reverse out if the vessel is geared;
 - ❖ cost-effective solutions compared with other competitors; and
 - ❖ customized solutions to meets the needs of any application.
- These mobile systems highlight Telestack’s aim to provide for

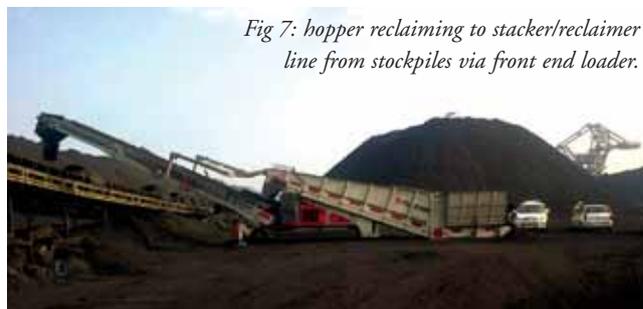


Fig 7: hopper reclaiming to stacker/reclaimer line from stockpiles via front end loader.

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Coal handling improvements to belt conveyors



USING ASGCO®'S PRINCIPLE OF 'SAFETY BY DESIGN' TO ACHIEVE LOWER TOTAL COST OF OWNERSHIP

We continue to see more stringent regulations in the bulk material handling industry. Air quality, house-keeping requirements, spillage control and safety continue to influence the need for cutting-edge technologies to maintain and increase production requirements. In port facilities, whether deep water ports or inland waterways the demands placed upon coal handling conveyors require constant vigilance. That being said, ASGCO® is continuing to provide proven solutions and new technologies that promote production and improve the bottom line in marine environments at port facilities and bulk loading terminals, helping our clients to focus on their primary purpose of moving cargo to global markets.

Production done safely is achievable. Production rate increases will result when using the proper technologies and safety by design to increase throughput and minimize maintenance problems or frequency. Recent upgrades and improvements have solved many of the problems that are typical in dry bulk handling facilities. To illustrate some of the solutions recently provided by ASGCO, this article will focus on identifying various problems along with discussion on the solutions provided, as well as the client's perspective on performance improvements.

The goal at all bulk handling facilities is to get the cargo loaded as safely and efficiently as possible. Production rates must be met or improved. Demurrage is not an attractive option. Whether Post Panamax-size vessels are used, or river barges are being loaded, the goal remains the same.

A common problem is fugitive materials. A common issue is rust. Fugitive materials can come from many sources in a belt conveyor operation. One source of fugitive materials is material being carried back on the return side of the conveyor belt. Belt cleaners are employed at the head pulley location in primary secondary and also tertiary locations. In order to achieve maximum performance with minimal maintenance in a marine

environment, the standard stainless steel construction of the ASGCO® Skalper® series belt cleaners provides longer life for the support and tensioning mechanisms. Not only does the stainless steel construction eliminate the rust issue, but they are also available with external serviceability capabilities to eliminate confined space entry issues and reduce routine maintenance time required for inspection and service. This example of 'Safety by Design' lowers the total cost of ownership while improving belt cleaner performance as can be seen in Figure 1 on p84 taken at a major North American Port facility.

Another source of fugitive materials and a major source of spillage and dust is the transfer point of a belt conveyor system. Along with the house keeping issues and the expense of handling the bulk material twice, regulatory and safety issues are big factors.

Safety first: the most common source of injuries comes from slips, trips and falls. The highest rate of incidence by employment sector is among maintenance personnel performing routine maintenance tasks or cleaning up around the conveyors. The highest rate of incidence by location is at the terminal pulley locations which are located at the transfer points. Fatalities have even occurred on conveyor belts that have been properly locked out, tagged out and tested out due to stored energy in the belt itself which is in essence like a big rubber band under tension. A worker cleaning up spillage around a tail pulley buried in fugitive material needs to be aware of the stored energy in these systems. There have been recorded incidents in which a worker has suffered crushing injuries and even fatalities when tension is relieved as the tail pulley breaks free after fugitive material locking it in place is removed during cleanup operations. Many belt manufacturers rate their belt modulus at 1.5–2% stretch under tension. On a 600' belt for instance, the instantaneous belt movement resultant from tension release can easily pull both the man and the tool he is working with into the tail pulley causing injury or death. Policies, procedures and PPE do not prevent these tragedies. Guarding can help but it can be



Fig. 1. Skalper® with E-Z Torque® Tensioner installed on the head pulley for maximum belt cleaning performance.

removed. Training can help, but it must be applied. The simple answer is to eliminate the problem at the source. The ASGCO® Flo-Controlled transfer point has been employed at port facilities resulting in cleaner, safer operations while improving throughput and resulting in improved production, safer operations and a lower total cost of ownership for a healthier bottom line. Improved flow and proper containment improves overall performance of the system and the morale of the employees. ASGCO® Flo-Controlled Chute technology was employed at a terminal facility where full respirators were required prior to the installation. Spillage was everywhere. After the installation was completed, no respirators were required and the bulk material was where it belonged...on the belt!

In the world of bulk material handling, conveyors are a

dynamic piece of equipment. Conditions are constantly changing. There is no such thing as a 'perfect conveyor' in the real world. Continued use, and abuse in some cases caused by the rugged environments they exist in, takes a determined maintenance effort. In many instances the conveyor system or the belt itself requires that additional measures be taken to correct or prevent fugitive materials and spillage resulting from misalignment. Whether the structure sinks, a dozer runs into the framework, constantly changing environmental conditions, or belt damage is the cause, the result is fugitive material ending up on the ground, along the walkways, or in the water. There is radical new technology that ASGCO® is providing to aid in belt tracking to ensure that the corrective measures take place quickly, effectively and safely. The ASGCO® Tru-Trainer® patented system is now



Fig. 2. The tail pulley is buried in material.

employed at many port facilities and terminals around the world. These training devices are quick acting, very effective and have no roller guides or 'ears' that can damage the conveyor belt, which is by far the most expensive component on a bulk handling conveyor system. A device in use which shortens the life of the conveyor belt carries an economic penalty for the owner of the system. There is no support mechanism required under the tracking device for material to build up on as is common with all other styles of training idlers available. The safety by design with the ASGCO® Tru-Trainer® relies on a self-activating internal pivot that does not need side guide rollers to influence the belt travel. The elimination of areas where fugitive material can build up resolves a regulatory compliance issue. The Tru-Trainer® belt tracking devices are frequently installed prior to the load zone on the return side of the belt to ensure that the belt is centred under the load being discharged onto the belt at the transfer point. They can also be used on the carrying side with no belt edge contact. As anyone who has worked around bulk handling conveyors can attest, it is not uncommon to see ordinary training idlers tied off with a rope to ensure that the belt receives maximum influence. (See Figure 3, right). This is a tremendous safety hazard for employees working near the conveyor. This old belt training technology can frequently result in belt edge damage from friction and pressure as well as delamination of the belt carcass which is the tension member responsible for carrying the load. Another fugitive material issue in dry bulk coal handling facilities is the fact that some coals can be plagued by combustible dust issues. Heat from friction can be a source of concern. The Tru-Trainer® has no belt edge contact to create



Fig. 3. Ordinary training idler tied off with a rope causing material build up on the support frame work and belt edge damage from friction and pressure.

friction. The desire to keep the system running at maximum production output can be achieved safely and with a lower total cost of ownership.

ASGCO® has been a Complete Conveyor Systems solution provider for 45 years and has global distribution on five continents. ASGCO® continues to provide innovative and proven technologies to the dry bulk cargo industry. Production can be improved safely....and safety improves the bottom line.

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An advertisement for BLUG. The top part features a collection of colorful cartoon characters (including a spider, a green alien, and a blue character) gathered around a large pile of blue and red objects. Above them, a yellow crane hook is lifting a blue character. The text "don't play with your cargo" is written in blue above the characters. Below the characters, the text "GRAB IT WITH BLUG" is written in large, bold, white letters. Underneath this text are four small images showing different pieces of industrial equipment. At the bottom right, there is a logo for BLUG with the text "1965 2015" and "Credeblug, s.l. HANDLING SOLUTIONS". At the bottom left, the address "Juan XXIII, 9 Azpeitia (Spain)" and contact information "blug@blug.es . www.blug.es" are provided.

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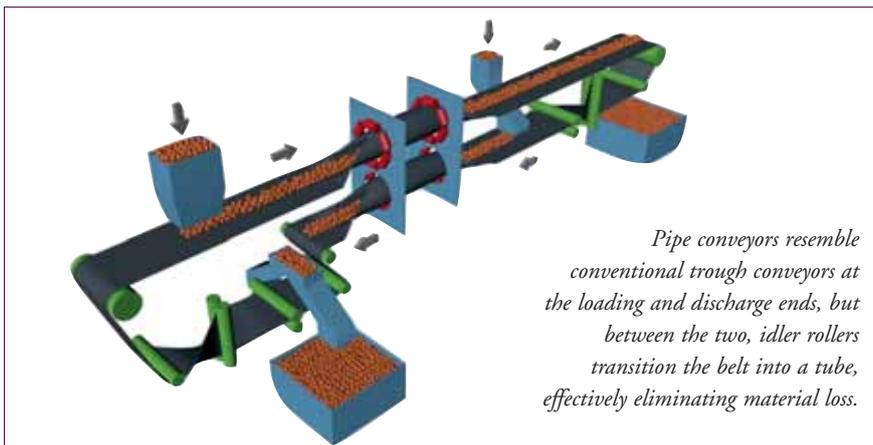
WOLF POINT ENGINEERS & CONTRACTORS BEGINS OFFERING PIPE CONVEYORS TO HELP REDUCE COAL AND ASH DUST

There's a new product destined to make an impact — or, rather, reduce environmental impacts — at coal-fired utilities across the United Kingdom and North America in coming years. It's the pipe conveyor — so named for how the conveying belt is rolled into a tube — and it can be rightfully considered the conveyor of the future for applications that require spill- and dust-free conveyance of coal and coal by-products, especially ash.

But the pipe conveyor isn't a new product. It was developed in Japan in the late 1970s, but design patents and the scarcity of licence partners resulted in slow adoption elsewhere until patents expired in the late 1980s and early 1990s.

Even then, however, pipe conveyors generally had high capital costs and, therefore, were widely considered to be not cost-competitive with trough conveyors. Few installations could be found outside of Japan, where strict environmental regulations mandated their use.

In the last 20 years, though, design improvements have reduced the cost of constructing pipe conveyors and improved their operation; at the same time, environmental regulations on the handling of coal and coal combustion residuals have tightened in many parts of Asia, Europe, and North America.

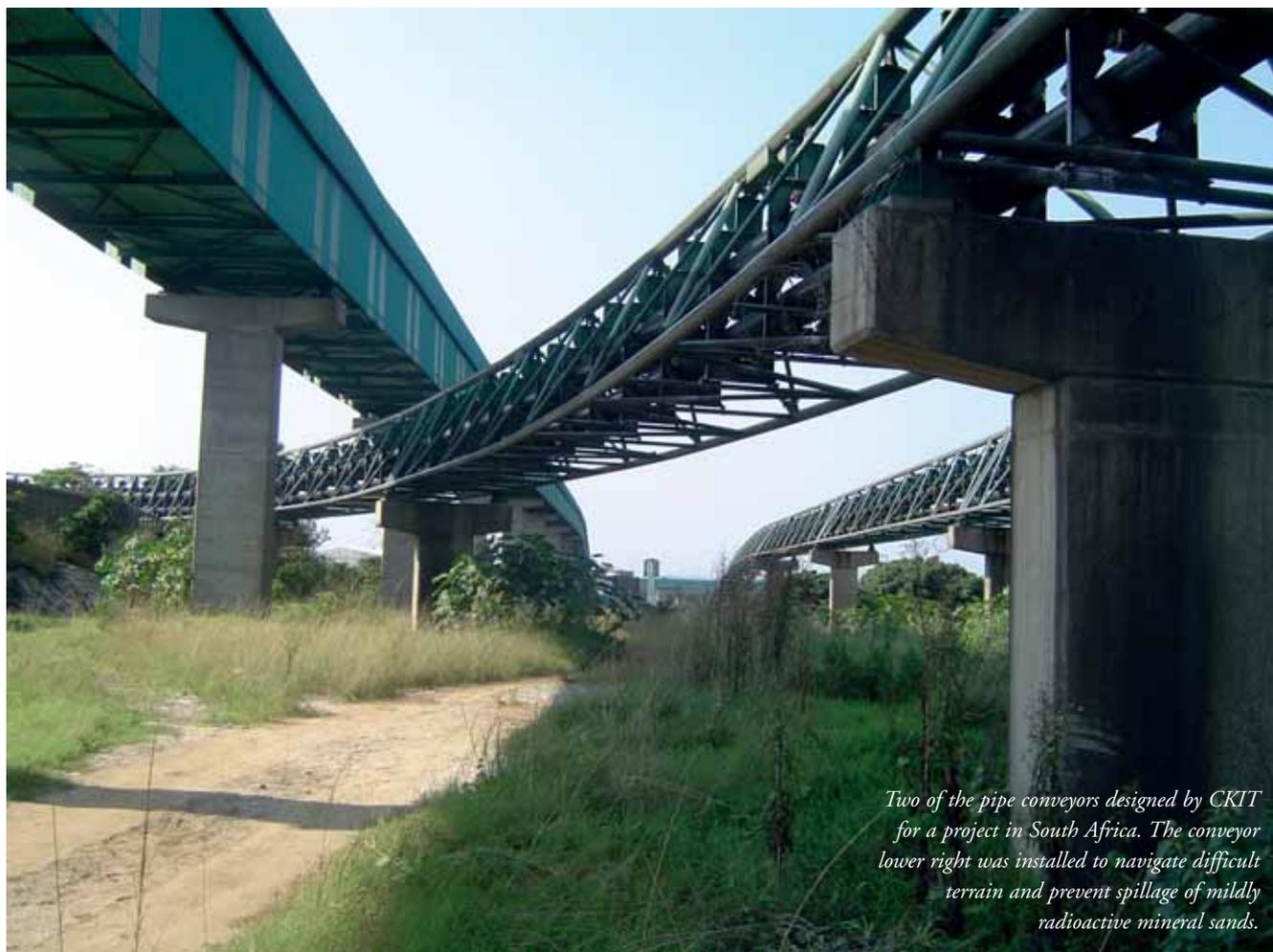


Pipe conveyors resemble conventional trough conveyors at the loading and discharge ends, but between the two, idler rollers transition the belt into a tube, effectively eliminating material loss.

Today, pipe conveyors are especially common in India, where both environmental regulations and the need to prevent spillage and other loss of materials have made them a preferred product, one used to move a wide range of materials, including coal, alumina, and copper concentrate.

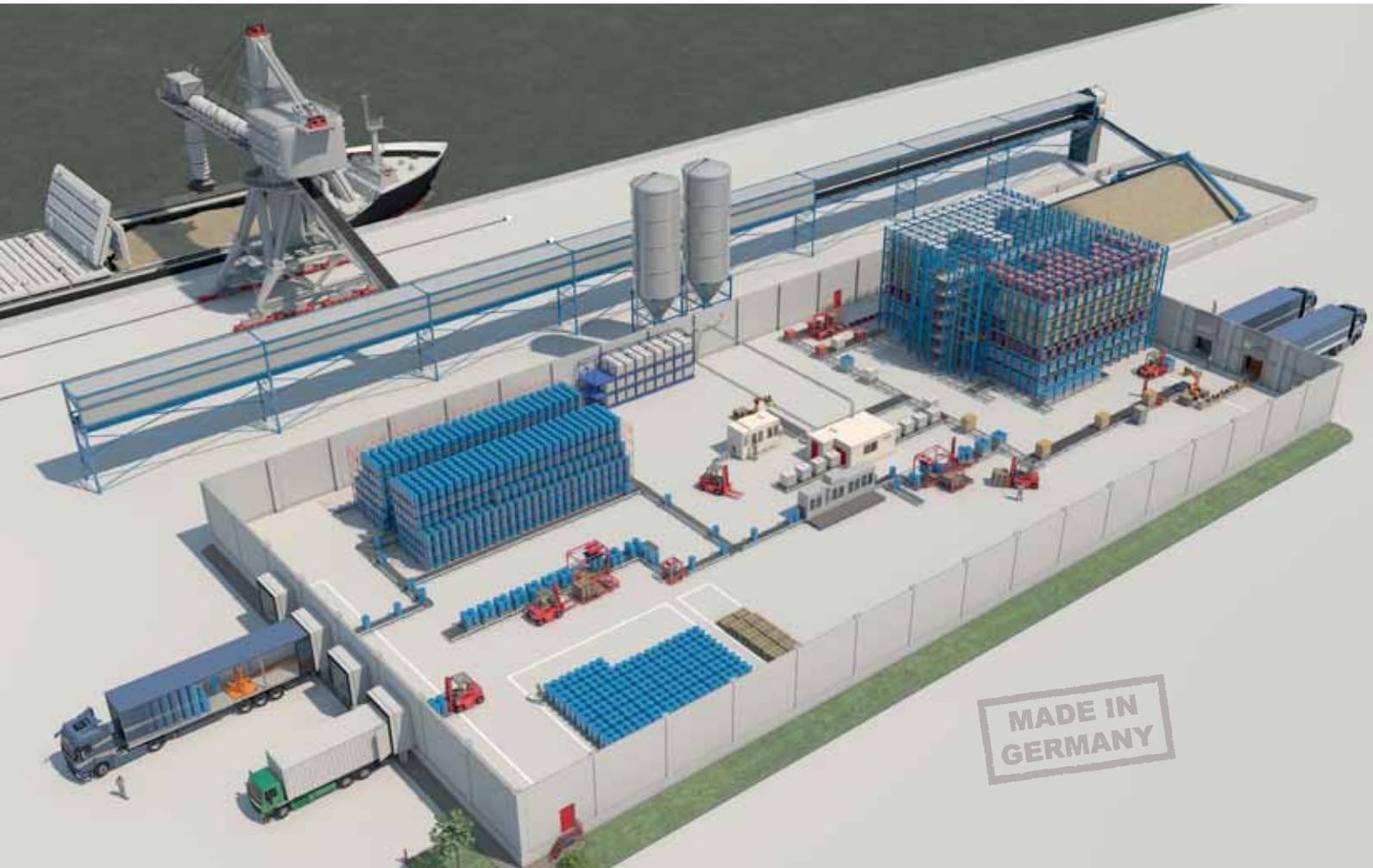
Still, one would be hard pressed to find a pipe conveyor at a utility in North America, and many utilities are shutting down or reducing capital investments in coal-fired plants. Minnesota Power, for example, generates 75% of its power from coal but will reduce the share of coal to just one-third over the next 15 years.

But coal won't be going away anytime soon. It still makes up nearly 40% of electricity generation in the US, and it is widely believed the US Environmental Protection Agency will continue



Two of the pipe conveyors designed by CKIT for a project in South Africa. The conveyor lower right was installed to navigate difficult terrain and prevent spillage of mildly radioactive mineral sands.

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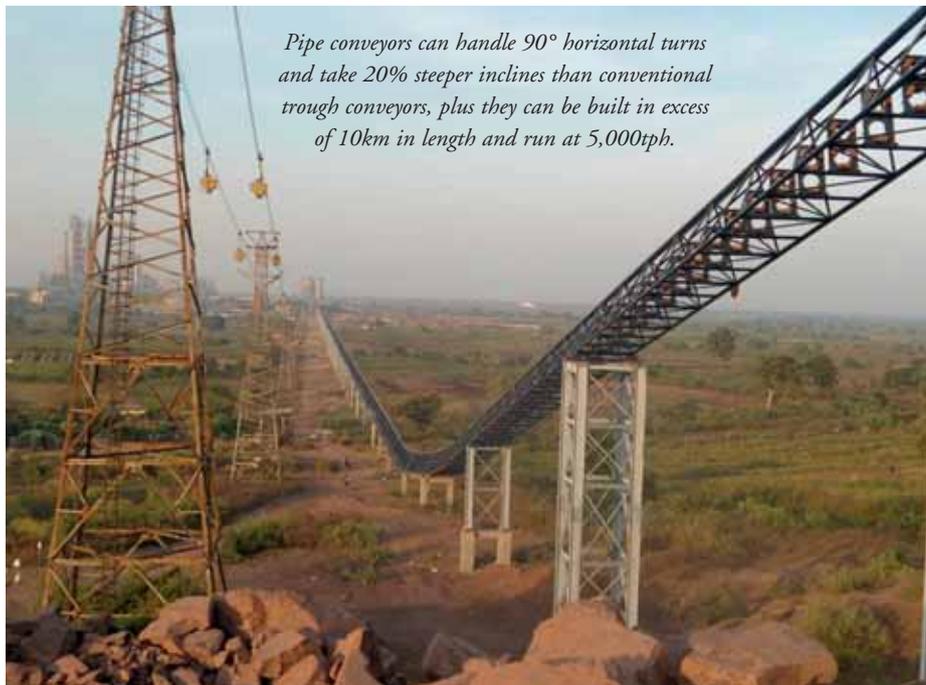
stiffening regulations on the handling of coal and its by-products, especially ash. Conventional trough conveyors will still have their uses at utilities, but they will not be able to provide the kind of dust-free containment that will be mandated.

Pipe conveyors, on the other hand, have a unique closed design. They resemble conventional trough conveyors at the loading and discharge ends, but between the two, idler rollers transition the belt into a tube, effectively eliminating material loss.

Plus, because of their enclosed design, they don't require covers, and they can be fitted with triangular galleries, both of which reduce the amount of steel required in construction. In addition, they can be fitted with maintenance trolleys instead of walkways, further reducing material and construction costs, even down to lighting.

Also, pipe conveyors offer greater flexibility in terms of configuration. They can make 90° horizontal turns and take 20% steeper inclines than conventional trough conveyors, reducing transfer points and the costs associated with them. In fact, they are effectively the only kind of conveyor capable of negotiating some topographically challenging areas, but they can also be built to cover great distances — in excess of 10km in length at 5,000tph (tonnes per hour).

Despite the seeming inevitability of their application, only a handful of companies worldwide have experience designing pipe conveyors. Wolf Point Engineers & Contractors — a full-service engineering, procurement, and construction services provider for the power, mining, and industrial processing industries, and a division of North Alabama Fabricating Company (NAFCO) — recently entered into a strategic alliance with CKIT, one of the



Pipe conveyors can handle 90° horizontal turns and take 20% steeper inclines than conventional trough conveyors, plus they can be built in excess of 10km in length and run at 5,000tph.

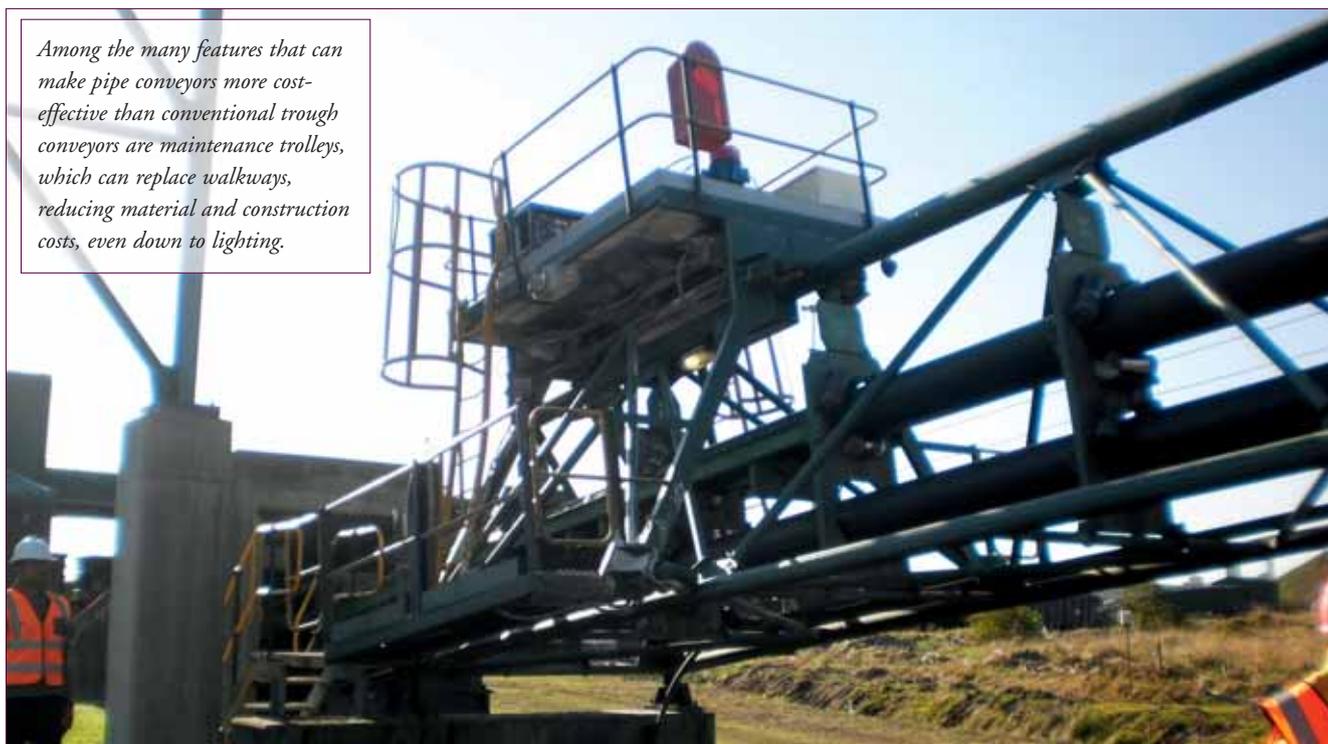
most seasoned and well-respected designers of pipe conveyor systems, to offer this technology to North American customers.

CKIT is a Cape Town, South Africa-based material-handling consulting and engineering company with dozens of pipe conveyor installations in Africa, Europe, and Asia, including more than 50 in India. Its pipe conveyors now move everything from coal and ash to cement to paper pulp.

Indeed, because of their closed design, pipe conveyors promise to make their mark well beyond power generating. They are ideal in nearly any application that requires keeping bulk materials dry — including grain processing, fertilizer processing, and steel production.

So while their use might be more or less mandated in some areas eventually, pipe conveyors may also be adopted out of practical necessity anywhere raw materials or the environment need an extra layer of protection.

Among the many features that can make pipe conveyors more cost-effective than conventional trough conveyors are maintenance trolleys, which can replace walkways, reducing material and construction costs, even down to lighting.





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Conductix-Wampfler finds success in Pacific Northwest



One of the largest bulk handling projects for North America in recent years is the Westshore Terminals upgrade in Vancouver, BC, Canada. Westshore is investing \$275 million over the next five years to replace ageing equipment and modernize its office and shop complex. The project involves replacing the shiploader at Berth 1 and three stacker-reclaimers, with all work being carried out within the existing terminal footprint.

Conductix-Wampfler was the selected supplier for the eight variable-frequency drive reels. Each machine will be fitted with a water hose reel for dust suppression purposes, along with a high voltage, control, and fibre-optic composite cable. The cable selected consists of 3 x 150mm², 6kV-rated, with ground conductors, and twenty four multi-mode optical fibres in a Protolon (M)-R construction from the Prysmian Group.

Conductix-Wampfler will be supplying its HD30 VFDs, which incorporate SEW motors with integrated frequency controls. This drive has been used successfully in numerous port applications and for the electrification of rubber-tyred gantry cranes (E-RTGs). Conductix-Wampfler's Market Development Manager Americas, Mark Zuroske, states that "while the need for variable frequency drive reels is largely seen in ports applications, the bulk handling market has been transitioning to VFD reels from the more traditional drives over the last few years." As more bulk handling OEMs are moving to VFDs on their machines, Conductix-Wampfler now offers three levels of VFD packages which include standard control, advanced control, and advanced centre-point control. Zuroske went on to state "while some applications in the bulk handling market are gradually migrating to VFDs, Conductix-Wampfler's proven magnetic coupler technology continues to be suitable for the majority of the bulk handling applications".

The company was also successful in the recent supply of a magnetic coupler reel and two specially designed stainless steel festoon systems at nearby Neptune Bulk Terminals. The cable reel was provided for a refurbishment of an existing stacker/reclaimer, where a level wind reel was replaced with a mono-spiral wrap reel. The festoons were placed on the new stacker/reclaimer that was installed in 2014.

Conductix-Wampfler has also shipped two magnetic coupler driven reels for the new shiploaders going to the Pacific Coast Terminal at Port Moody BC. These reels include CSA-approved cables manufactured by the Prysmian Group's facility in North Dighton, MA, USA.

The company also recently supplied the cable reel for the new shiploader installed at Canpotex's Portland, OR (USA) facility, and is under contract to supply the new reel for the potash tripper. Both of the Canpotex projects, along with the Westshore project, involved the use of special Prysmian composite cables. Ernesto Heller, Prysmian's Manager Industrial Markets noted "we have witnessed a significant increase in the demand for composite cables, which consist of power conductors, control conductors, and multi-mode fibre optics in a single jacketed cable suitable for reeling applications."

In the case of the Westshore Terminals, the cables selected were the mining and reeling type (M)-R, which has a reduced weight and outer diameter. This was necessary to place these large mono-spiral spools into some very tight quarters. Heller went on to state that "over the years the Prysmian Group and Conductix-Wampfler have developed a close working relationship that has benefited both groups globally". This is coupled with the realization that OEM customers and end users prefer to deal with a single company able to take responsibility



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PROF. LYAL WHITE
DIRECTOR, CENTRE FOR DYNAMIC MARKETS,
GORDON INSTITUTE OF BUSINESS SCIENCE

With the slowdown in commodity and oil prices, what types of projects will prevail?

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for the complete project.

With sales and service offices on every continent and manufacturing facilities in China, USA, Germany, France, Italy and Brazil, Conductix-Wampfler is ideally situated to handle large bulk handling projects. The company's wide footprint and strategic vendor partnerships gives it a decided edge. Iain Barton, Conductix-Wampfler's Global Market Manager for Mining & Bulk Materials Handling, "I was able to co-ordinate the projects to take maximum advantage of our global strength, global alliances, and our local presence to bring many resources to bear." At the local level, Precision Crane (part of Portal Crane Parts, Ltd) is the newly appointed representative for Conductix-Wampfler in the region. PCP Ltd has had a strong presence in the British Columbia material handling segment for decades. Its part-owner, Bret Bromhead, has had many years of experience with crane components and electrification systems and has had success with Conductix-Wampfler's quality products. Bromhead stated that "Conductix-Wampfler is the festoon provider of



choice for the regions container cranes".

In the final analysis, tight co-ordination between the local reps and global entities greatly enhanced the success of these projects. These advantages will put the company in great position to secure many more bulk material handling projects as terminals strive to upgrade their facilities.

Dust-controlled coal loading from Cleveland Cascades

Cleveland Cascades is a specialist in the design and manufacture of bespoke dry bulk material loading chutes. Based in the North East of England, the company has a population of over 600 systems working in bulk handling facilities worldwide. It has built a reputation for well-engineered, robust, high performance chutes, backed up by excellent customer service and product support. The product is suitable for use in shiploading, storage, transfer points, road and rail wagons, as well as tanker loading. The product range includes both Cascade, controlled flow technology and Free Fall chutes capable of loading up to 6,000tph

(tonnes per hour), with a chute length up to 30m.

Cleveland Cascades loading chutes are particularly well suited to handling coal and the sector has always been a major part of the company's business. The first coal handling chute was delivered to South Africa in 1995 and since then the population of coal handling systems has grown consistently. In 2015 it accounted for approximately 25% of sales and the systems were delivered worldwide to customers in North & South America, Asia, Australia as well as in Europe. The product types delivered last year in to the coal sector also varied widely, including



*Cleveland Cascades
stockpile chute.*



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cascade shiploaders, transfer chutes and free fall vehicle loading chutes.

In addition to the key criteria of loading capacity, coal handling facilities often focus on minimizing dust pollution and preventing both material degradation and material segregation. Environmental health regulation, intended to protect the handling facility and its neighbours, is a growing concern in developing

countries as well as the advanced economies. Most applications nowadays have a requirement to effectively control dust emissions during handling. In addition, coal can have a relatively wide range of particle sizes and some handling systems can damage larger pieces and reduce their size.

The Cleveland Cascade chute effectively addresses all these factors for coal handlers. The Cascade loads material through a



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series of oppositely inclined cones, which controls the flow at low velocity, yet high volume. During its descent, the material is supported through the full length of the chute, ensuring a soft delivery from the outlet to the material pile, for every load. It therefore arrives at the load pile with minimal degradation. The controlled descent of the material prevents air separating the particles and largely eliminates dust generation at source.

FAM, Colombia recognized this recently, when it installed a shiploading Cascade system with a chute length of 18.5m and a capacity of up to 2,750tph handling coal. The project had a special requirement for a 5m trimming spout. Globotech in Colombia recently installed a shiploading Cascade system, with a loading capacity of 1,000tph which also specified a trimming spout with 1.5m trajectory. Coal is abrasive and has a relatively large particle size, so to ensure longevity, the 1.5m trimmer spout was fitted with a 6mm ceramic lining.

Where dust control is not a critical requirement for loading, Cleveland Cascades' Free Fall chutes can be an effective solution and The Port of Riga in Latvia took this option recently when it needed a chute for loading vessels at its new coal terminal. With a capacity of 2,000m³/hour, through a 15m chute, the system will load 3mt (million tonnes) of coal per annum. This free fall chute is designed to be robust over a long operating life and is constructed from 6mm hardened, wear-resistant steel.

Coal handlers not only load the material in to vessels. They also load coal to stockpiles as well as to vehicles; Cleveland Cascades has built numerous systems over the years for these applications, utilizing both the Cascade controlled flow and



Freefall cone chute with flexible skirt and (inset) Freefall tube chute with trimmer spoon.

conventional free fall technology.

A big part of the package provided by Cleveland Cascades is ongoing product support, from the moment the product is delivered and throughout its operating life. Commissioning engineers can visit site to help install and optimize the operation of the chute according to customer needs, upon delivery. Manuals are comprehensive and detailed to give the operators the information they need to maintain the product and maximize its operational efficiency. On-site technical advice, repair and maintenance is also available during the life of the product using factory-trained engineers. Cleveland Cascade engineers have extensive international experience maintaining, servicing and optimizing Cleveland Cascade systems all over the world. To complete the support package, original OEM spare parts can be supplied with the original order and subsequently during the life time of the chute.

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Getting the right balance with Seram Group



Seram Group has been designing and manufacturing equilibrium cranes (or balanced cranes) since 1973 in Perpignan, France.

Seram cranes are hydraulic, electrical and multifunctional. They feature long reaches (up to 40 metres), high reliability, and significantly reduced power consumption and operating costs due to the equilibrium concept. They can be used to handle a wide variety of commodities, including coal.

Seram's crane range offers lifting capacities from 2–50 tonnes, and bulk unloading capacities of up to 1,500tph (tonnes per hour).

The original equilibrium concept differs from other material handlers. It consists of a pivoting counterweight that permits the Seram crane to be in equilibrium throughout its working cycle. The counterweight is controlled through a hydraulic cylinder which is directly connected to the hydraulic cylinder controlling the stick. That means that, when the stick moves out, the counterweight moves back automatically. The pivoting counterweight is nearly always compensating the load of moment of the boom and stick in every position of the Seram crane.

Seram cranes are suited for heavy-duty production cycles and different working conditions, and thanks to their multipurpose capabilities, they can be used in following applications: dry bulk handling in port terminals (both on inland and sea ports), scrap metal handling on scrapyards, and dredging.

Dry bulk materials that can be handled with Seram cranes include: coal, iron ore, sand, gravel, limestone, clinker, bauxite, grain, sugar, scrap, and so forth.

Seram cranes can also handle breakbulk goods such as big bags or coils, as it is possible to install different kinds of attachments (grabs, clamshells, spreaders, etc) on the same crane.

Seram cranes can unload almost all kinds of vessels from barges to Panamax size. They can also be installed on different kind of supports: fixed or free-standing pedestals, mobile on

trolleys, high portal gantries or crawlers, or on floating barge.

Brand-new hydraulic cranes with higher outreach and lifting capacity often replace old cable cranes in port terminals today, due to their many benefits, and Seram Group is enjoying this current situation.

There are many benefits of these new cranes, including: higher reliability, lower operation and maintenance costs, better filling of the grab thanks to higher push down force of the hydraulic system, shorter duty cycle times allowing higher capacity of bulk material unloading, accuracy of hydraulic controlled grab.

Traditional markets are Europe and the USA for dry bulk handling applications. However, many Seram cranes are also in use handling scrap metal on all five continents — especially in countries such as Japan, Saudi Arabia, Australia and Mexico.

In order to stay competitive in the market, Seram has a strong maintenance service in technical co-operation with its worldwide distributors' network and a research and development department which is currently working on developing a new range of equilibrium cranes with higher lifting capacity and higher outreaches.

Seram Group's main customers are medium and large scrap metal processing companies, such as Groupe Derichebourg (France), Sims Metal (Australia) or European Metal Recycling (UK), multinational companies such as Holcim (USA) or Cemex (UK), and dry bulk terminal companies, such as Nancyport (France).

The group's main competitors are manufacturers of hydraulic cranes for bulk material unloading, manufacturers of traditional mobile harbour cable cranes, as well as continuous ship unloaders dedicated to some specific kinds of bulk material.

Since 2014, Seram Group has been part of the well-diversified French Derichebourg Group.



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RC Inspection: offering expertise in inspection, sampling and analysis of coal



RC Inspection was founded in 2006 in Rotterdam, the Netherlands, as an independent, privately owned inspection company operating in the field of dry bulk commodities, metals and marine survey related services. One of the many commodities it inspects is coal.

Since 2009 RC Inspection has expanded its services worldwide and in various commodities. Its offices are

strategically based around the globe enabling to perform the services prompt on request and giving excellent turnaround times to the customers, irrespective which time zone.

However all global services are co-ordinated from the office in Rotterdam, where a permanent team of specialists in inspection, sampling, sample preparation and analysis of dry cargo commodities is based. With their professional and adequate



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*Group discounts apply to delegates from the same company

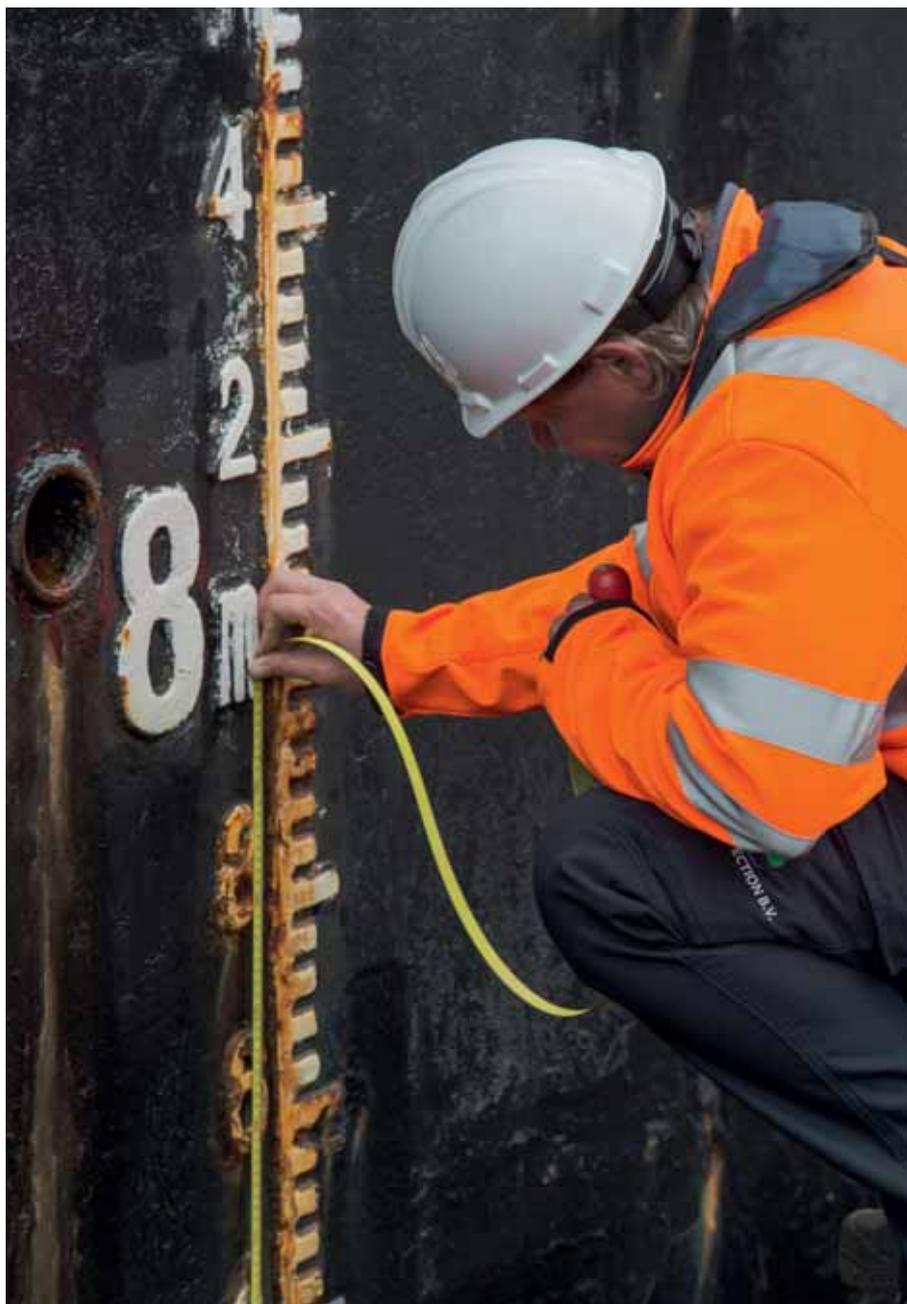


working they provide fast and reliable results.

To be able to live up to the high standard, the staff understands the value chain from A to Z. This requires the knowledge and experience to grant the customers extremely high quality. With management members having more than 40 years of experience in inspection, sampling and analysis, RC Inspection's specialists know all aspects and characteristics on all types of ores, solid fuels, biomass, agricultural products, metals, minerals, bulk ferro and noble alloys, concentrates, ores, ferrous/non-ferrous scrap and fertilizers.

In the product range of solid fuels, RC Inspection has great expertise in deep temperature control and infrared temperature control. It owns all the needed equipment and has the expertise to conduct deep temperature control and infrared temperature control during loading and discharge operations, prior discharge operations and as well during the period of stockpiling and re-loading operations ex-stockpile to avoid spontaneous combustion.

As a result of the management's long-standing personal experience, RC Inspection recognizes the importance of extensive knowledge and experience, as well as the ISO standards in order to perform highly representative inspection and sampling services, including the



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sample preparation of the obtained bulk samples.

This has led to the managing experts of RC Inspection developing special internal procedures for sampling, inspection and sample preparation for all kinds of dry bulk commodities.

The surveyors are all well informed and instructed according to these internal procedures, which is necessary to guarantee high quality services.

These procedures are recognized by the fact that RC Inspection recently obtained accreditation according to the ISO/IEC 17020 by the RvA The Netherlands, under registration number I 308.

This accreditation has been valued upon the following services:

- ❖ visual cargo inspection, sampling, sample preparation, barge gauging/draught survey for loading and discharging operations for hard coal, pet coke, ferro alloys and ores;
- ❖ storage facilities and transshipment equipment for solid fuels and metals/minerals; and
- ❖ loading compartment inspection (LCI) for feed transport

This accreditation guarantees the clients that the policies, practices and procedures of the company can be ensured with consistent high quality and expertise in the knowledge of the commodities and the provided services worldwide.

RC Inspection strives to keep analysis in-house conducted by its group company, 'RCI Analytical Services'. To date, the company has laboratories strategically located in the Netherlands, Ukraine and Mongolia. These laboratories are equipped with the most modern and advanced instruments to drive accelerated turnaround times and up-to-the-minute reporting through a service-driven approach and innovative use of technology..

RC Inspection carries out an independent qualitative and

quantitative evaluation of the chemical elements contained in metals listed on the LME (London Metal Exchange), using relevant required techniques to define the required purity and analytical specifications that registered brands must meet. RCI Analytical Services provides chemical analysis for RC Inspection Group companies and its related customers.

The analyses are performed using all relevant modern analytical techniques such as ICP-OES (inductively coupled plasma-optical emission spectroscopy), X-ray fluorescence, instrumental gas analysis for all relevant gases, X-ray diffraction (XRD) analysis.

Additionally, RCI Analytical Services performs analysis on metals such as gold and silver in copper, zinc and lead concentrates by fire assay/cupellation techniques with ICP-OES finish in combination with graphite furnace AAS and titration in a state-of-the-art equipped laboratory.

With future prospects in sight, RCI Analytical Services is working on getting all the laboratories accredited under ISO/IEC 17025 and is actively participating in inter-laboratory tests and international round-robins.

Besides rendering the analytical services, the company also offers supply of analytical equipment, auditing of laboratory management systems and implementing/managing laboratories as outsourcing to the industry.

Except for its skills RC Inspection places high value in personal relationships with its customers. By adding a personal touch in the communication and services, RC Inspection wants to make the difference in meeting the customers' needs. The core business philosophy is to provide independent, fast and reliable services with a direct people to people approach as befits a modern inspection company.

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DOCKSOLID coal handling capabilities

BUTTNER ENGINEERING AND DOCKSOLID

Buttimer Engineering produces and sells hoppers for coal handling under its DOCKSOLID brand. A typical DOCKSOLID heavy-duty hopper (opening of 5.6m x 5.6m) is built to handle a throughput of approximately 500tph (tonnes per hour) of coal. The hopper combines dust-control features such as a non-return valve flex-flap system, with an extremely robust frame to handle demanding bulk loads, along with the core features of the DOCKSOLID hopper range to ensure easy mobility, efficiency and reliable performance.

KEY CONSIDERATIONS

The biggest issue with handling coal, as with many bulk cargoes, is dealing with dust. Coal poses two problems: as well as the danger to the lungs and skin of both nearby workers and local residents, coal dust can also be explosive when suspended in air, which makes dust suppression an even bigger priority than with other dry goods. And with penalties for both employers and employees who breach safety regulations, effective suppression measures are essential.

When unloading a bulk cargo vessel with a grab, the commodity is disturbed, handled and can be exposed to through winds. In these conditions, it is probable that smaller particles will become airborne and create environmental dust. While developing its range of DOCKSOLID Environmental hoppers, Buttimer Engineering has given careful consideration to the process of unloading bulk commodities from ships using a crane and grab. The company wanted to both optimize the performance and efficiency of the receiving hopper, while minimizing the amount of dust created and suppressing the dust that is. The DOCKSOLID range has come about as a result of a long time and plenty of design energy invested into getting efficient, robust and reliable hopper performance. The Environmental hopper adds Buttimer's experience in environmental dust control to this expertise, creating — the company believes — the most effective, as well as reliable and efficient, dust-controlling ship-unloading hopper on the market.

Buttimer's Environmental hoppers are fitted with a steel 'thimble' or skirting around the hopper's opening, providing an enclosed space in which the grab can open, protected from through winds or the external climate. This limits the exposure of the product to airflows and prevents small particles being separated and lifted as airborne dust. As the grab opens, it prevents the flow of air into the hopper's thimble. Meanwhile, Buttimer's extraction filter design creates a negative pressure inside the hopper, pulling the product into the hopper and minimizing dust creation. After the grab opens, the bulk commodity passes through the hopper's grid and flex-flap system; the grid is to stop oversize items entering the hopper and blocking the discharge. The flex-flap system is constructed from heavy-duty rubber flaps with steel girders — it allows the product to pass into the hopper, while preventing any product or dust rising back above the grid upon impact.

Dust above the hopper grid, and below the hopper — where trucks, or wagons, are loaded — is suppressed using Buttimer's state-of-the-art air extraction and filtration system. The air extraction system removes a specified volume of air at a low velocity from above the hopper's grid, and around the end of the



discharge chute, maintaining a negative air pressure and pulling practically all emitted dust particles through a special fabric 'sock' filtration system. A compressed air reverse-jet pulse then periodically cleans the filtration fabric, and returns the collected dry particles to the bulk commodity, for discharge to trucks, rail-wagons or conveyors.

THE BIGGER PICTURE

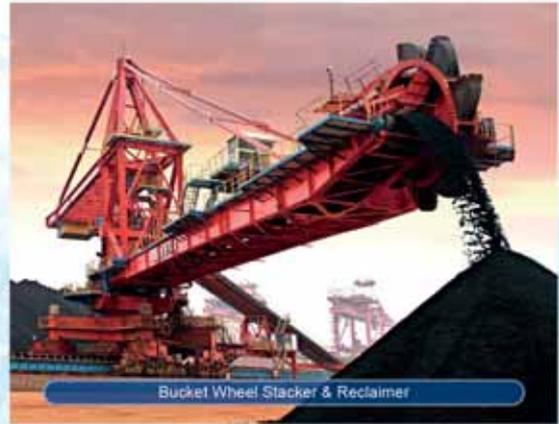
Of course, DOCKSOLID hoppers are just one link in the chain. Buttimer's solution is only effective as long as it remains compatible with the cranes, grabs and other equipment used in ship unloading. With this in mind, Buttimer Engineering is engaged across the globe with crane and grab makers to ensure that together they can offer a complete solution to customers.

ABOUT BUTTIMER ENGINEERING

Buttimer is a diversified mechanical engineering company which specializes in materials handling equipment and processes, steel high-quality fabrication and project management. Established in 1978 with an initial focus on agricultural industries, today the company has more than 35 years' engineering experience and over 120 full-time employees. The company has grown into one of Ireland's leading engineering firms, by building significant long-term client relationships. Over 80% of Buttimer's new business comes from repeat customers — attesting to its consistent high-quality project delivery, and good working relationships with its clients. Buttimer has grown into new markets with a subsidiary in Warsaw, Poland, and significant project experience in the UK, as well as a number of international projects.

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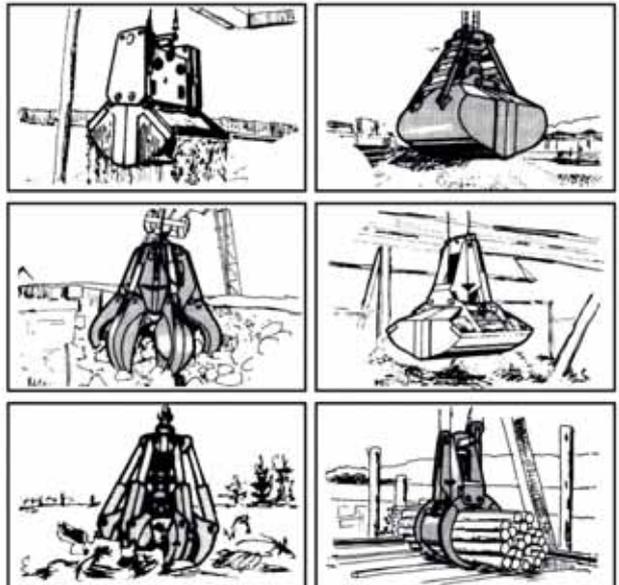
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WeatherSolve fences keep coal dust under control and protect the environment

“Good fences make good neighbours” is a proverb that has application to every coal handling and storage facility around the world.

By its very nature as a source of heat, coal needs to be carried to, and stored close to, where the heat is needed. Unfortunately that often means close to people — people who are increasingly intolerant of coal dust.

The sentiments of the proverb “Love your neighbour, yet pull not downe your hedge”* have been around since at least 1640. Matching proverbs are found in Spanish, Norwegian, German, Japanese, Hindi, Russian and Latin languages. In other words, the proverb reflects a very human need for separation from one’s neighbours.

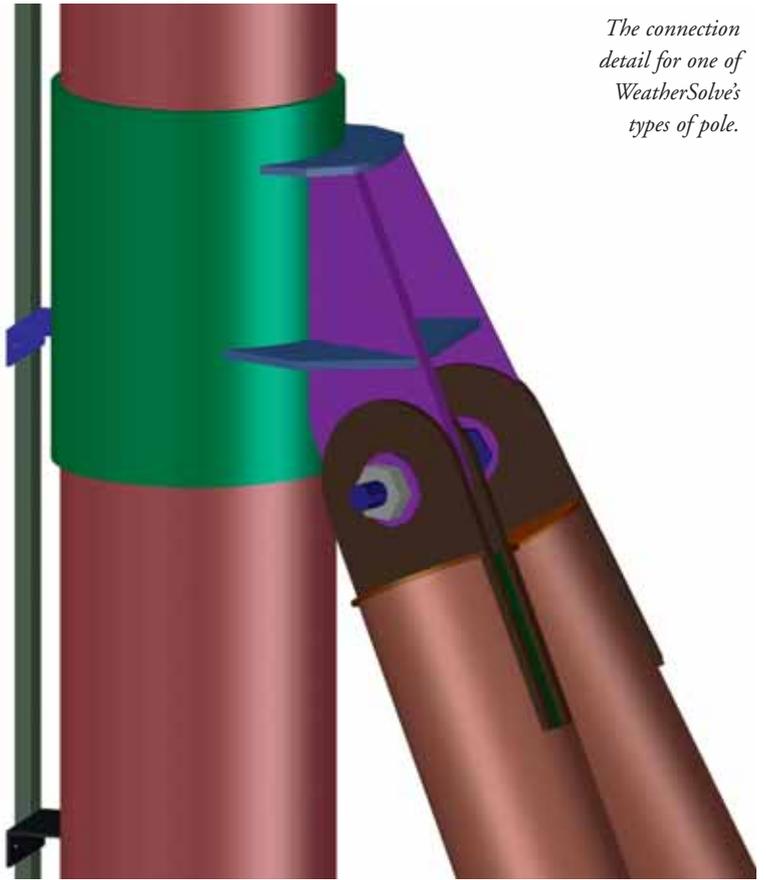
The more different the neighbours are, the more intense the need for separation. Coal piles are dramatically different than nearly everything. Even other storage piles (such as sulphur) are easily contaminated by coal dust.

Clearly coal handling facilities need very good fences.

And this is where WeatherSolve Structures comes in. WeatherSolve makes very high quality fences for wind and dust control. No other known fence system has even half of the following features:

DESIGN

1. Every fence is custom designed. WeatherSolve’s designers work with customers to find the best solution. Sometimes it may be a multi-stage solution, as WeatherSolve regularly works with suppliers of other compatible



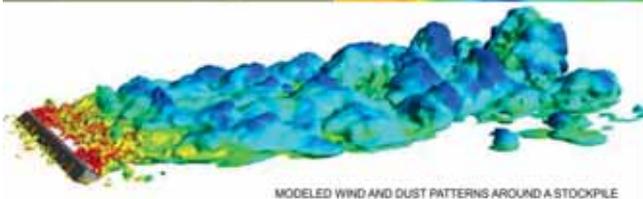
The connection detail for one of WeatherSolve’s types of pole.

dust control systems.

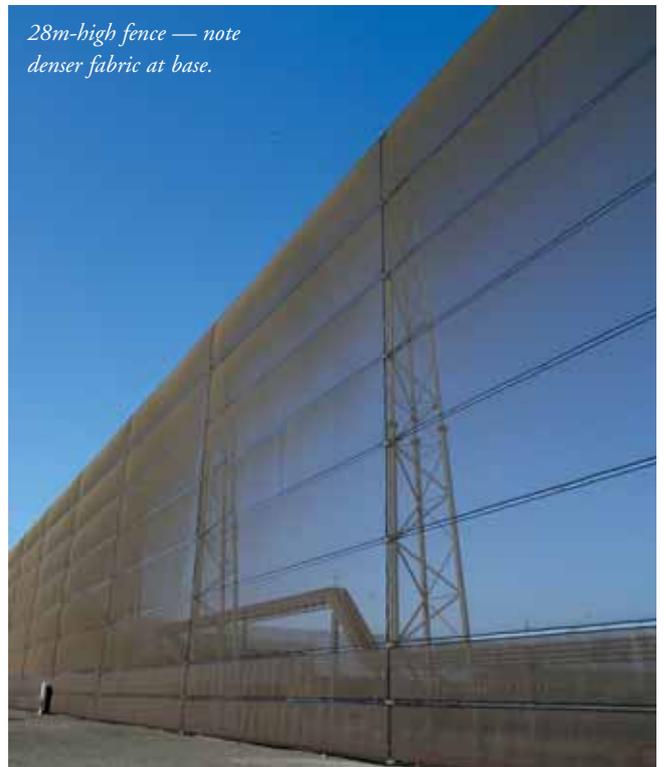
2. Computer modelled to optimize and quantify the wind and dust control effects. The modelling is done via the Midwest Research Institute Global, a not-for-profit independent research organization internationally recognized as an expert in the field of fugitive emissions.

3. Rigorously engineered and tested to exceed local wind loading codes. The structural system is suitable for windspeeds over 300kph if that is what the design calls for. A related feature is a stress release system that can be set to release some of the load if winds beyond the design load are encountered.

WeatherSolve’s new CM clips – these ones are less than 50mm long and hold over 400kg.



28m-high fence — note denser fabric at base.



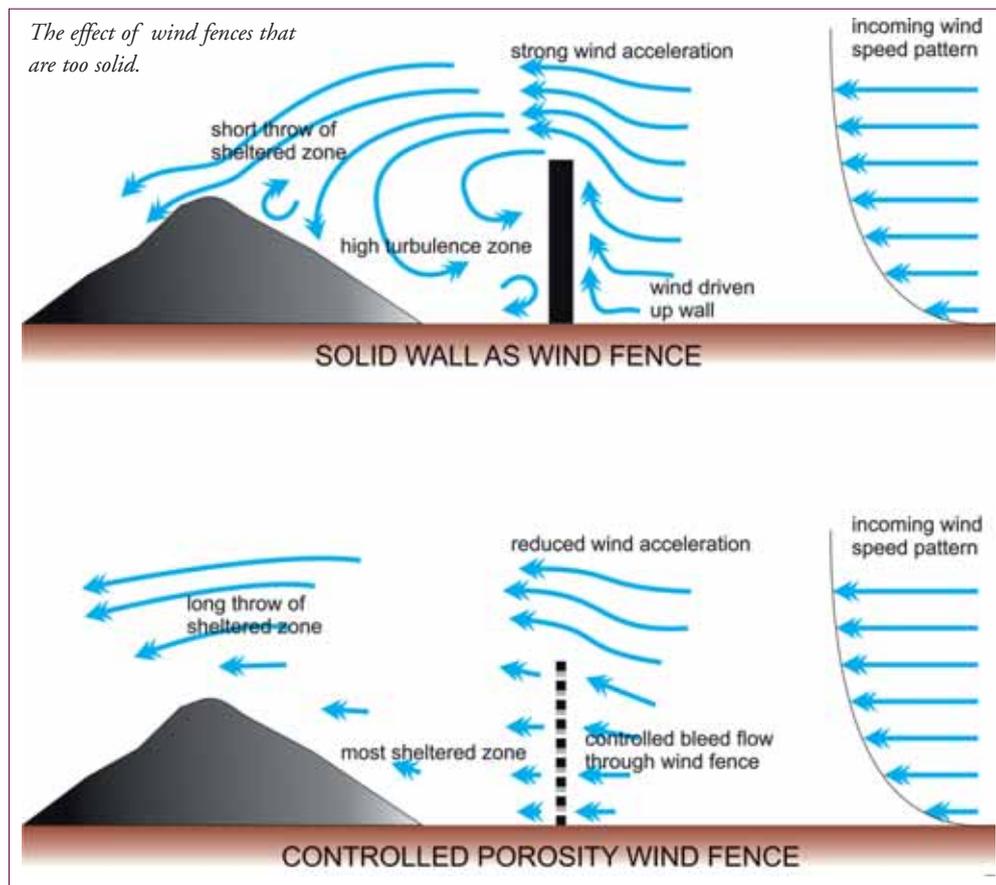
* W Mieder (2003) Good Fences make Good Neighbours: History and Significance of an Ambiguous Proverb, Folklore, 114:2 pp155–179

SPECIFICATIONS

- 4. Heights in excess of 32m (105ft).** Even taller fences are also possible given the availability of equipment to lift people higher to work on them.
- 5. Aerodynamic porosities from open nets through to nearly solid and everything in between.** All the WeatherSolve fabrics are wind tunnel tested so that their performance in a storm is known.
- 6. Varying porosity with height as required.** The structural system allows fabric of different porosities to be combined. This



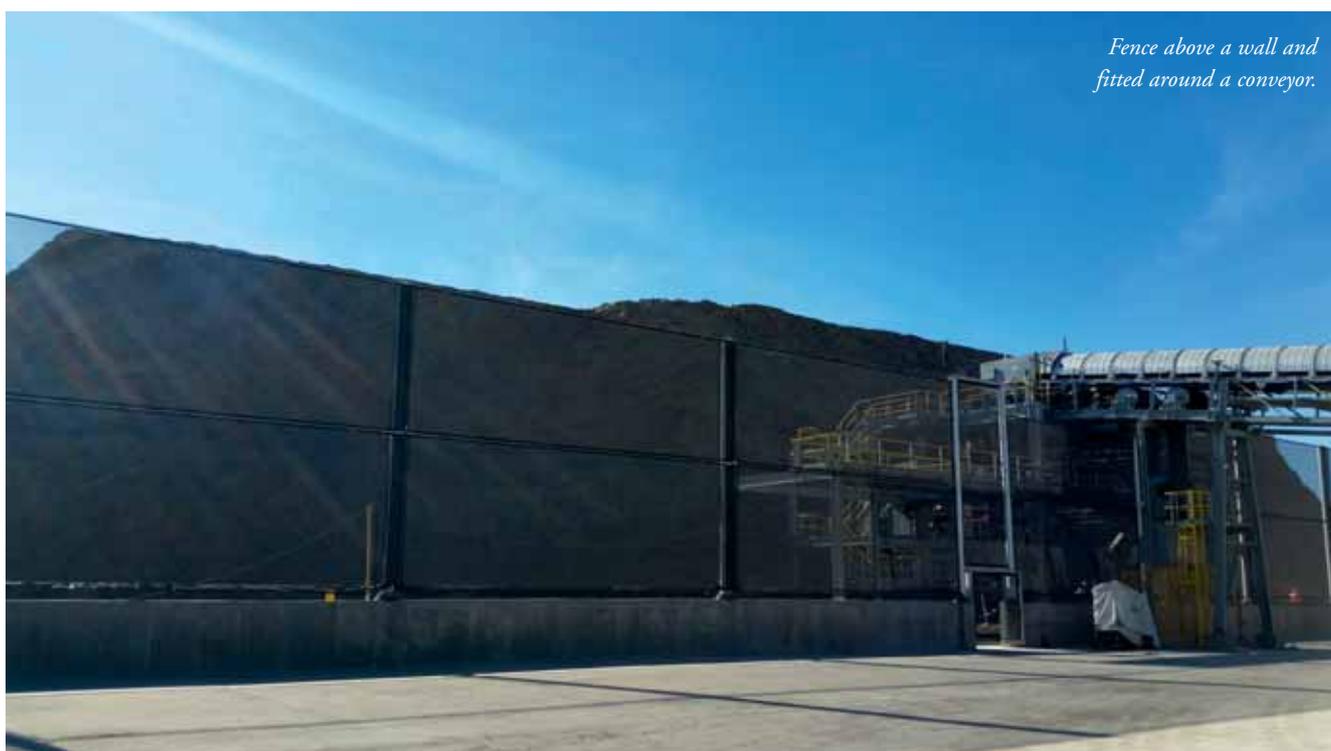
A WeatherSolve fabric panel ready for installation.



enables the use of dense fabric at the base where most of the dust is, and more porous fabric up high where a dense fabric would otherwise cause too much turbulence.

7. Wide pole spacings (30m or more) can accommodate crowded wharf environments, for example where there are limited places to put a fence pole. The fences can even be built above buildings and waterways where there is no access below the fence.

8. Easily accommodate doorways and conveyor openings. When the poles are 30m apart, the openings can be as wide as 30m — in other words very big doorways. Smaller doorways just require an extra pole the height of the doorway. Conveyors can be accommodated in a similar way.



Fence above a wall and fitted around a conveyor.



Polished stainless steel fittings in a highly corrosive environment.



Wind fence being built over a 50ft tall building.

9. Readily adapted to include security features. The fence can be adapted to include security mesh, or to sit above a concrete wall. That is a lot of flexibility.

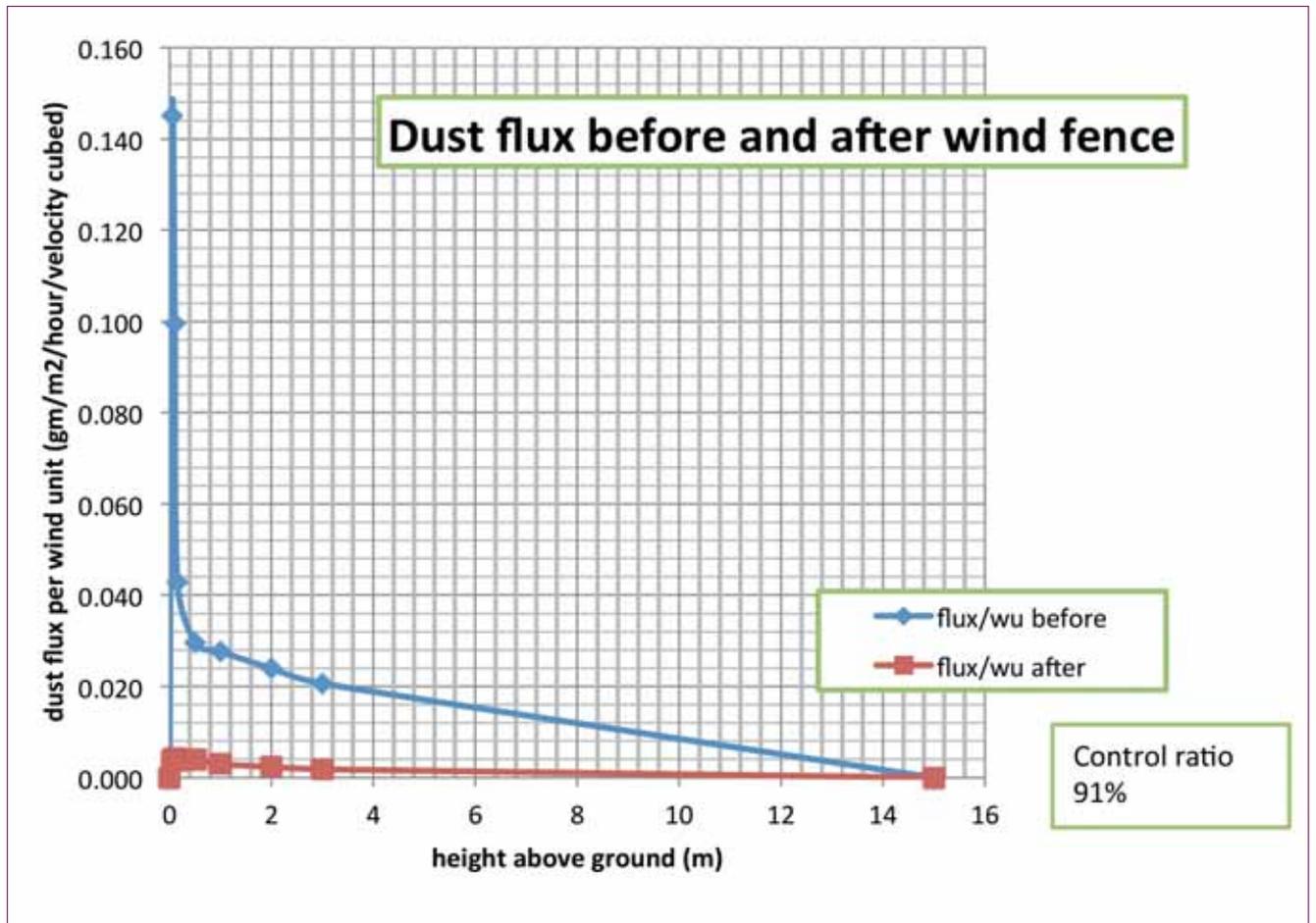
PERFORMANCE

10. Exceptional reliability thanks to over 35 years' experience building wind fences in the world's most challenging environments. Apart from extreme wind speeds, WeatherSolve also has systems for extreme cold and extreme heat. The system can be supplied with galvanized fittings, or with 316 grade stainless for highly corrosive environments.

11. Measured dust control efficiency on open stockpiles as high as 92%. Dust is controlled through both upwind and downwind fences. The upwind fences slow the wind and hence dramatically reduce the amount of dust being carried by the wind. The downwind fences act as a filter to catch dust. Of the

two, the upwind part is most efficient, but both work extremely well.

Operators wanting to improve their relationships with their neighbours should consider WeatherSolve. The company has a wealth of experience, and is keen to share it.



Engineering solutions for coal storage and handling

In coal mines and power plants, coal is often stored in gravity-reclaim stockpiles, silos or bunkers. Unless properly designed, the storage system can experience flow problems such as flow stoppages, limited live storage capacity, feed rate limitation, etc. This is also true for self unloading ships used to transport coal as well as for the surge hoppers and bins used to store fly ash and bottom ash. Similarly, if the feeder and transfer chutes are not designed properly, they can result in flow problems. These problems can be avoided by properly designing or retrofitting the storage and handling systems.

Established in 1966, Jenike & Johanson is a renowned technology company which provides solutions for reliable storage and handling of bulk solids. This issues that the company can successfully avoid or solve are: flow stoppages due to arching and ratholing, in bunkers, silos and reclaim hoppers; limited live storage capacity in silos, bunkers and stockpiles; chute pluggages due to cohesive coals; limited flow rate, flooding, and dusting of fine coal and fly ash; premature wear of material contact surfaces; and solids handling equipment failure investigations.

Bulk solids handling problems are often the major cause of costly downtime and demurrage charges for many facilities, especially during startup. These same flow problems continue plaguing on-going operations by limiting throughput and creating safety and health risks, as well as reducing equipment life, increasing maintenance costs and causing premature equipment failure.

To address these costly problems, Jenike & Johanson has developed proven ways to design handling equipment that will promote reliable, smooth and unrestricted flow of bulk solids. Bulk solids handling equipment design should not be a trial-and-error approach; Jenike & Johanson doesn't guess at material properties, it measures them. It has the largest and most complete laboratory in the world for characterizing the flow properties of bulk solids under representative environmental conditions. For nearly 50 years, Jenike & Johanson has focused on developing first principle theories on bulk solids flow and conveying behaviour.

Jenike & Johanson's services include: coal flowability study; silo, bunker, hopper design review and recommendations; belt/apron feeder and interface design; transfer chute design; calculation of material flow induced loads on silo and hopper walls; structural design/engineering of silos, bunkers as well as transfer chutes; and training on solids flow and pneumatic transport.

Jenike & Johanson combines test results and real world project experience, which yields the best



solution in terms of reliability and cost-effectiveness. Its skilled and experienced engineers provide detailed structural and mechanical design of solids handling equipment, and routinely design stockpile and gravity reclaim systems, silos, feeders, loading and transfer chutes and custom equipment (e.g., standpipes, large slide gates, etc.).



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Superior Midwest Energy Terminal handles approximately 22 million tons of PRB coal annually, loading approximately 450 vessels during a 305-day shipping season.

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“Martin Engineering's team proved excellent to work with.”

stated **Marshall Elder**, Director of Terminal Operations.

“The crew leader and workers were very detail-oriented and they stayed with the job to resolve any last-minute adjustments that needed to be made.”

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Undercover work

enclosed storage of bulk commodities

*Stored fertilizer in a fabric building
(photo: ©2016 Legacy Building
Solutions, Inc)*



Solving the conundrums of commodity storage with Legacy Building Solutions

Commodities storage can be a tricky business, frequently involving the balance of contradictory factors. The storage environment must be secure — but also accessible. It must provide for a huge volume of materials — but with individualized handling conditions. By offering near-limitless customization options, rigid steel frame fabric structures can efficiently resolve these issues and more. Combining high performance and flexible design, these buildings are ideal for housing a wide range of commodities, from sand and salt to fertilizer, sweeteners and grain.

A renowned producer of large-scale, customized fabric structures, Legacy Building Solutions pioneered the use of a rigid steel frame in this building category. Superior to weak, corrosion-prone tubular frames or open web trusses, a plate steel frame offers multiple specific benefits for commodities storage. It optimizes functionality by using proven engineering to safely support heavy collateral and hanging loads such as conveyors, cranes and catwalks, fans, light fixtures and fire suppression systems. Hot-dip galvanized steel is corrosion-resistant, standing up to abrasive chemical reactions. The rigid frame accommodates lean-tos for operations and maintenance without compromising storage space.

Wrapping the rigid steel frame, fabric cladding is a practical choice for commodities storage facilities for numerous reasons.

Quick to install and low in maintenance, polyethylene (PE) or polyvinyl chloride (PVC) flame-retardant fabrics have extraordinary tensile, thermal, and light-transmissive properties. With a higher level of solar reflectance than conventional sheathing materials, fabrics naturally reflect the sun's heat (rather than absorbing and magnifying it, as metal enclosures do), and so keep buildings up to 20° Fahrenheit cooler in the summer and warmer in the winter. The materials are available in different grades of translucence to control interior daylighting. When used in highly corrosive environments, such as salt or fertilizer storage, fabric will last years longer than steel.

Legacy's design and engineering technologies produce extremely adaptable buildings, a trait that is especially important in situations where a storage facility's success is dependent on its physical configuration. Connector structures, accessory rooms, equipment bump-outs, overhangs, lean-tos, and other architectural features are simple to incorporate into the flexible floor plan. Buildings can be designed free of interior columns to maximize storage capacity. For specialized storage needs, the fabric sidewalls can be combined with concrete wall systems for increased storage capacity, metal panels, fibre-reinforced plastic or masonry panels. While designed as permanent structures, Legacy buildings can be modified in size or relocated, should the storage programme change.



Loading fertilizer in a lean-to. (photo: ©2016 Legacy Building Solutions, Inc)

CASE STUDY: FERTILIZER STORAGE BUILDING

A recently completed fertilizer storage facility illustrates the design flexibility and building performance of a Legacy tension-fabric structure. The soil conditions of the site — on the bank of the Mississippi River in East Dubuque, Illinois, USA — were unsuitable



Aerial view of the Dubuque facility. (photo: ©2016 Legacy Building Solutions, Inc)

for traditional buildings, making the lightweight, heavy-duty building the best choice for Alliant Energy/IEI Barge Services.

The 63,010ft² tension-fabric structure is engineered to withstand the rigours of turning over its full 27,000-tonne capacity at least three times each year. With a 55ft gable roof, the design allowed an overhead conveyor system to be installed — along with a catwalk for maintenance — that makes filling the building a quick process, one that's far more efficient than using portable conveyer systems or front-end loaders.

The building accommodates a complete range of commercial transportation. Because product moves to and from the facility by rail, river, and truck, easy access was critical. Branching out from the 77ft x 580ft main structure, three strategically placed lean-tos—measuring 40ft x 340ft, 25ft x 130ft, and 25ft x 60ft — facilitate the flow of vehicular traffic at the facility.

The IEI Barge project features eight framed and wrapped doorways ranging from 16ft x 16ft to 3ft x 7ft. Clad in a translucent 26-mil polyethylene 15oz. flame-retardant fabric, the building takes full advantage of natural light and saves on utility costs.

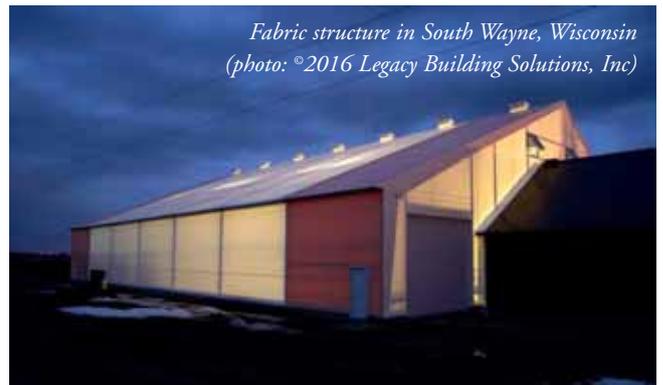
COMPANY SNAPSHOT: LEGACY BUILDING SOLUTIONS

Based in South Haven, Minnesota (US), and providing services worldwide, Legacy Building Solutions was founded in 2010 by a team with more than a century of expertise in the tension fabric building business. Committed to sustainability and best management practices, the company expanded its facilities in January 2016 with an on-site steel fabrication plant, making it the only ISO 9001:2008 and CSA 660-certified supplier of tension-fabric structures that manufactures its own materials, offers comprehensive in-house design/build and engineering services, and installs its products. Having a capacity of up to two million pounds of steel on the floor at any given time, the new plant places the company in a commanding position in the industry.

“This expansion puts us in the elite manufacturing category,” said Ben Fox, president/CEO of Legacy Building Solutions. “We can now offer our clients fully customized structures with 100% quality control. All of the elements that go into a Legacy building — the fabric, the steel frames, and the connections and other metal assembly components — are now efficiently produced in a single location.”



Inside the loading area (photo: ©2016 Legacy Building Solutions, Inc)



Fabric structure in South Wayne, Wisconsin (photo: ©2016 Legacy Building Solutions, Inc)



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Dome Corporation of North America completes fertilizer transloading facility

Dome Corporation of North America is a major supplier of prefabricated, pre-engineered storage solutions for dry bulk materials. Its products range from patented storage domes and barrel buildings to fertilizer blending facilities, port terminals, agribusiness complexes and fully integrated material handling systems.

Established in Canada in 1965, Dome Corporation benefits from 50 years of experience. Its proven structures and streamlined construction methods have demonstrated their worth across North America and around the world.

Because it fabricates its pre-engineered building components indoors in a climate- and quality-controlled environment, Dome Corporation can provide faster service and a better building for the money.

Every year, Dome Corporation completes hundreds of dry bulk material storage facilities on time and in budget — cost-effective facilities that are safe and secure, environmentally sound, low-maintenance, long-lasting, and easy to operate.



CASE STUDY

The photographs shown here depict a recent project for Dome Corporation. The structure was erected in Hammond, IN, for Potash Corp.

It will be used as a regional transloading facility and allow for better service and product availability to customers.

The main storage area is 215ft wide by 700ft long and features an integrated truck/rail loading facility.

The overall capacity is over 120,000 tonnes of dry fertilizer.

A Metso stacker/reclaimer was installed and allows for superior receiving and reclaiming of the building.

SPECIALIZING IN TURNKEY DESIGN-BUILD CONSTRUCTION

Dome Corporation has the facilities, resources and experienced personnel needed to design, engineer and manage the construction of any size or type of dry bulk material storage facility — from concept to completion.

Having Dome as a single point of contact and single source of responsibility streamlines the building process and reduces the customer's administrative burden. The company works together with its long-time trusted subcontractors and suppliers as a fully integrated and highly efficient design-build team — a team that is focused on meeting the performance needs of the customer, not just minimum design requirements. This results in:

- ❖ faster delivery;
- ❖ greater cost savings;
- ❖ better quality control;
- ❖ more seamless warranty coverage; and
- ❖ enhanced jobsite safety.





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One-stop-shop for storage and handling with Dome Technology

These domes, built by Dome Technology for China Coal, were completed in August last year.



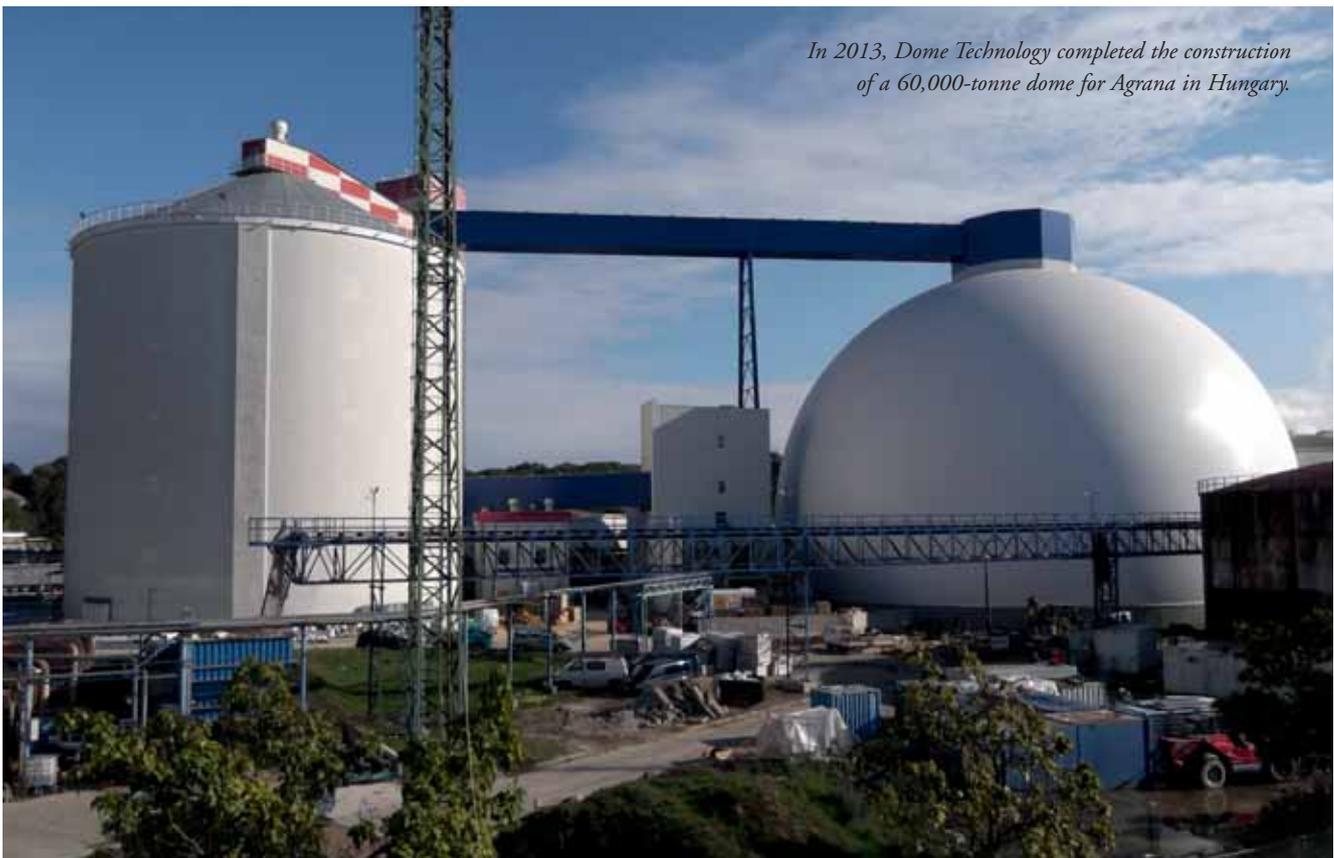
For 37 years Dome Technology in Idaho Falls, Idaho, has been providing companies with a bulk-storage solution that competes with traditional silos and linear storage.

Dome Technology has built 590 domes worldwide, and its customer base has continued to grow as companies recognize the advantages of a dome and the ability to acquire both a

storage facility and its material-handling systems by working with a single company. Dome Technology has completed dome projects for companies like Drax, Enviva, Peeples Industries, QSL, China Coal, St. Marys Cement, and Intrepid Potash.

In recent years Dome Technology has worked on several sugar projects around the globe. The first was completed for

In 2013, Dome Technology completed the construction of a 60,000-tonne dome for Agrana in Hungary.



Guatemala's Ingenio Magdalena in 2013 with a storage size of 75,000 metric tonnes, and that same year a sugar dome with a capacity of 60,000 metric tonnes was completed for Agrana in Hungary. Currently Dome Technology is building a dome for American Crystal Sugar Company in Montgomery, Illinois; construction began in December 2015 with a scheduled completion date of November 2016, and the dome will hold 60,000 metric tonnes.

Dome Technology also completed a project for China Coal in August 2015; the team constructed three domes at two different sites, for a total of six coal-handling domes. Inside the domes, innovative material-handling systems allow each dome to process 60,000 metric tonnes of coal every three days.

Companies in parts of the world where seismic activity is prevalent are also realizing the value and stability of a dome for bulk storage. Dome Technology's team is now constructing a clinker dome in Santiago, Chile, for BSA Cementos. The dome is being built at a new site where BSA Cementos will be able to increase its production by 950,000 tonnes per year during the first stage of operation, with as much as 1,900,000 tonnes being processed per year. But in addition to that level of throughput, the dome will meet or exceed the country's building codes,

thanks to the structure's geometry.

A dome can withstand seismic movements at the foundation so the shell can continue functioning properly. This tolerance is possible because the dome is comprised of 360° of reinforced concrete — one entire, solid structure that can withstand forces of acceleration. The material stored within the dome has some self-supporting qualities allowing it to hold itself together to a degree, and the dome shell can be designed to bear any force from the stored product's shifting. In essence, the dome and its stored material work together to resist vibrations from the ground. Beyond the inherent strength and the continuity of the dome — no sharp corners to concentrate forces — are safety factors designed into the dome to increase strength and ability to withstand seismic forces.

Dome Technology's team also helps customers select a material-handling system by analysing the qualities of their stored product and the desired reclaim rate. Whether a company needs bucket elevators, traditional conveyors, drag-chain conveyors, or pipes that transport product pneumatically, Dome engineers use their material-handling know-how to customize a system for each business. Engineers work closely with owners to design material-handling systems and ensure correct installation.

This 75,000-tonne dome was built for Guatemala's Ingenio Magdalena in 2013.



DF Mining & Handling: bulk handling under cover



Designed by DF, this 85x40m storage facility is used to handle petcoke in Muskiz – Vizcaya (Spain), and has a capacity of 23,000m³. Also visible is the 500tph scraper reclaimer.

Since the company started operating in the mid-19th century, DF Mining & Handling (Duro Felguera) has evolved to become an internationally renowned supplier of maintenance logistics systems for bulk products. Its strengths lie in a thorough knowledge of its customers' needs — this expertise allows it to design customized, reliable designs for their installations.

Among the many services DF Mining & Handling offers are storage and homogenization yards, port terminals (loading and unloading) and continuous transport systems.

In terms of facilities to store bulk products, DF Mining & Handling has successfully developed several projects.

While designing storage facilities for solid products, it is essential to take many factors into consideration. One of the

most important is the type of material to be stored and its characteristics — chemical composition and corrosiveness can affect workers as well as the facility itself. Duro Felguera has mainly developed EPC (engineering, procurement & construction) projects to store petcoke and sulphates in refineries. Machines for stacking and reclaiming material are designed according to the available space, and can include portal and side scrapers which are generally accepted as excellent choices. In this type of installation, it is very common to find sandwich and pipe conveyors to move material. The quality and complexity of the equipment installed always reflects a deep consideration for the environment.

The photographs shown here are courtesy of Duro Felguera, and depict examples of warehouse storage.



Scraper reclaimer designed by Duro Felguera for sulphate installation.

Triodetic industrial domes

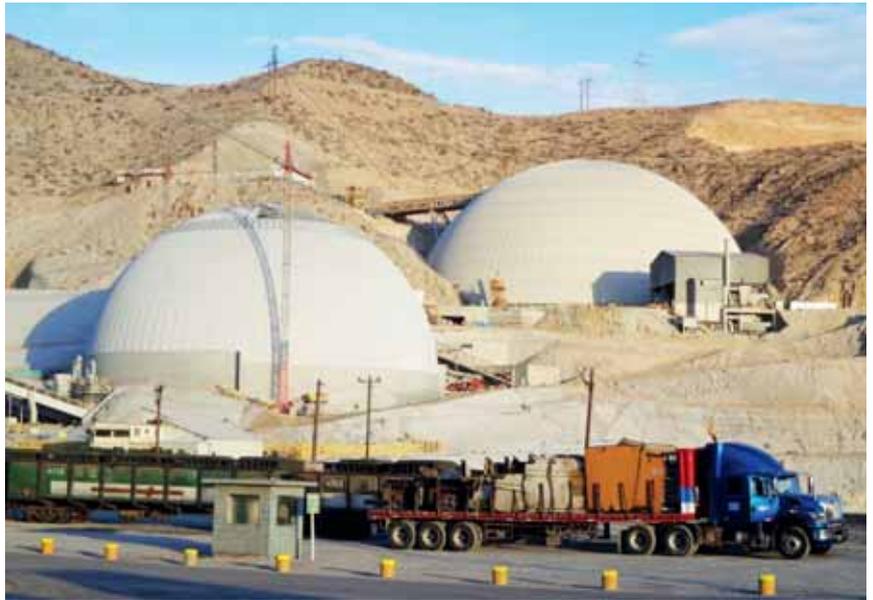
Since the 1960s, Triodetic has been an internationally recognized supplier of industrial domes and longitudinal buildings. Triodetic holds numerous patents and trademarks for its technology. All products are supplied in compliance with sustainable building initiatives.

Triodetic activities are performed in compliance with OSHA (Occupational Safety and Health Administration) requirements and ISO quality management principles.

TRIODETIC DOMES

Triodetic maintains exacting management and engineering standards to consistently ensure the design, construction and service requirements of each structure.

Triodetic vaulted arches and domes have been used as tank roofs and stockpile enclosures for many years. More recently,



RECENT TRIODETIC PROJECT

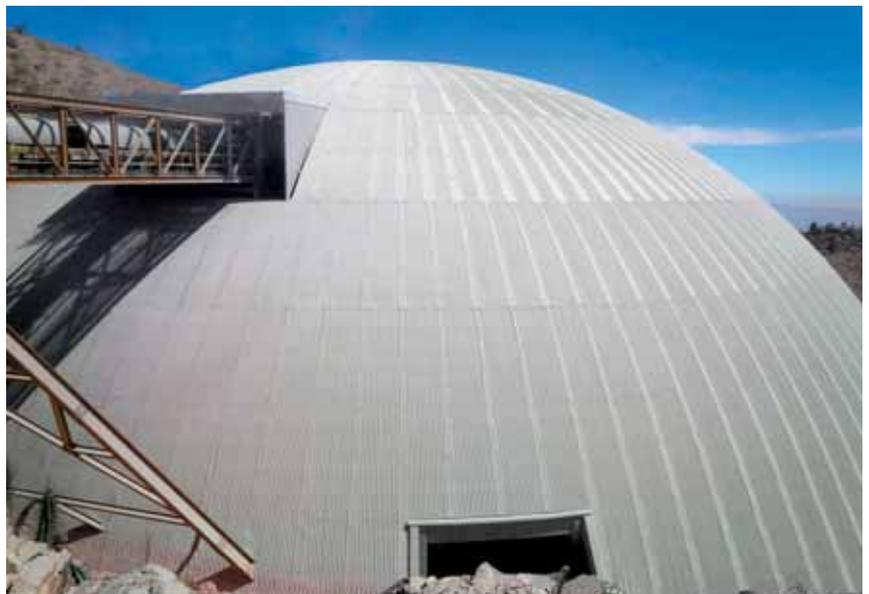
Some of Triodetic's most recent storage facilities are in the Toquepala copper mine located in Peru. Triodetic designed, fabricated and supervised two domes in Toquepala for the project named 'Proyecto Mejora Tecnológica en Acarreo de Mineral' with the following dimensions:

- ❖ Dome Pila de Intermedios is 110m in diameter and 55m high. This specific dome is located on the side of a hill, thus the Triodetic team designed the dome to accommodate a foundation that changes elevation from ring #1 to ring #11 making the engineering co-ordination, structural design and geometrical design work a real challenge;

new innovations in design and manufacturing have permitted economical stockpile covers to be built in very large sizes exceeding 135 metres for both new and existing industrial applications.

Triodetic industrial domes ensure the following key elements:

- ❖ assistance in conceptual project development;
- ❖ design method validated by full-scale testing;
- ❖ long-term integrity of thousands of structures;
- ❖ manufacturing expertise, precision, efficiency;
- ❖ construction techniques are fully proven;
- ❖ in-house experience in all aspects; and
- ❖ 40 years' reputable performance.



❖ the second Dome, Pila de Material Existente is 73m in diameter and 35m high. This dome is designed with two wide conveyor openings through the side of the dome. One penetration is used for the existing conveyor and the second used for a new conveyor. These conveyors were installed prior to the installation of the dome itself.

Toquepala is the world's fifth-largest copper mine. It also produces molybdenum, silver gold and zinc. The domes cover the coarse ore stockpile coming out of the mine which will be processed later on in the different stages of the production line.

The structural pipes for both domes are provided with a special galvanized protection system. This special coating allows for exceptional performance of the structural pipes for the lifetime of the dome.

The panel system was designed and customized to accommodate the double curvature of the dome. The



customization of the cladding panel on the dome allows for efficient and fast installation. The cladding panels were painted in order to add extra corrosion protection to the galvanized finish. The colour of the exterior and interior side of the panels matched client requirements.

ENVIRONMENTAL FACTORS

Mining operations are known in some cases for releasing a large amounts of dust into the environment creating all kinds of challenges for the population living close to these mines. Triodetic domes are one of the most efficient ways to control dust pollution. The customized Triodetic cladding system is designed to effectively control the dust contamination.

The process of loading the product inside the dome is done by using

conventional conveyer systems. The conveyer system feeds the material into the dome through a side opening. The structure of the dome around these openings is designed and reinforced in order to absorb the stress created around them. The size of the openings are as small as possible. A tight fit between the dome and conveyor system reduces the possibility of dust contamination.

Both domes are constructed with openings at the base, which allows equipment access when needed during operation or maintenance process. These openings are equipped with electrical roll up doors, which reduces the possibility of dust contamination to the outside of the dome.

During the early stages of the project, Triodetic co-ordinates with the client the clearance dimensions required between the foundation and the stockpile for equipment operation purposes. It is always recommended, when material movement with heavy equipment is required, to have the clear dimensions between the stockpile base and the foundation wall to be at least equal to the width of the equipment

operating around the perimeter of the stockpile.

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Conveyor carryback

cement plant addresses the problem with help from Martin Engineering



Using alternative fuel resources increased energy efficiency, but conveyor belt carryback was producing excessive spillage.

ALTERNATIVE FUEL RESOURCES RESULT IN UNWANTED CARRYBACK

Holcim Mexico (Holcim) is the second-largest producer of cement, aggregate and ready-mix concrete in Mexico. Across seven facilities, the company produces 12.6mt (million metric tonnes [13,889,123 tons]) of cement annually and operates more than 40 ready-mix plants, 23 distribution centres and two maritime terminals. The firm is the Mexican subsidiary of Switzerland-based LafargeHolcim, the largest producer of building materials in the world, operating in 90 countries.

To align the company with LafargeHolcim's environmental goals, executives have implemented several initiatives to make its production system more sustainable and affordable. One of the efforts is to reduce the use of fossil fuels such as coal and petcoke as an energy source. To do this, Holcim increased the use of solid and liquid waste products as an alternative fuel resource (AFR) across all of its facilities. According to the company's Corporate Sustainable Development Report (CSDR),

"The use of waste as an alternative fuel makes a significant contribution to Holcim's sustainable development and economic performance." This is evidenced by the fact that nearly 14% of the company's total thermal energy demand was fulfilled by the use of alternative fuels in 2013.

Using 1990 as a benchmark, the corporation's total Mexican cement production has increased by almost 120%, but the company's annual energy consumption has only increased by 45%, helping it to reach its goal of reducing CO₂ emissions (per tonne of cement) by 25% by 2015. The CSDR further states, "Holcim will continue to replace more fossil fuels with alternative energy sources and increase its use of industrial by-products such as fly ash and slag."

However, the implementation of any new system or policy is generally accompanied by unforeseen complications. An example of this arose at Holcim's Planta Macuspana cement facility, where the increased use of solid and liquid AFRs created some expensive carryback issues.



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SPILLAGE AND SAFETY

Located on the Yucatan Peninsula in southeastern Mexico, the Macuspana facility produces 1mt (1,102,311 tons) of cement annually. Although the transition to AFRs successfully increased energy efficiency, sticky carryback on conveyors feeding the calcinator produced excessive spillage. Clean-up and maintenance costs were estimated at \$67,000 per month, which threatened to offset the positive economic projections of the new policy.

Spillage also caused other issues, such as build-up around equipment that limited access and threatened to encapsulate the belt, which causes material to get onto the return side of the belt, fouling idlers and damaging pulleys. Another more serious problem is the increased potential for worker injury during clean-up. Workers performing maintenance around moving parts and machinery statistically raise the possibility of workplace injury.

“We’ve successfully partnered with Holcim in the past on similar bulk handling projects across their operations,” said Cristina Astiazaran at conveyor component manufacturer Martin Engineering. “When operators called us, they asked for a solution that would decrease spillage, increase safety and lower the cost of operation, three major traits that our equipment designers focus on.”

A Martin® QCI™ Cleaner PD was placed at each of the seven conveyor discharge points feeding the calcinator.

**SEVERAL TYPES OF CARRYBACK**

Delivered in both solid and liquid forms using separate conveyor systems, 1.5 metric tonnes (1.65 tons) of solid waste and 21 metric tonnes (23 tons) of sludge are carried per hour to the calcinator. As part of the clinker manufacturing process for Portland cement, the calcinator heats limestone to just below the melting point using pressure and heated fuel sources — traditionally fossil fuels such as coal and petroleum coke.

Solid waste products including paper, wood, plastics and shredded tyres are run through a crusher and measured for caloric content (the amount of energy contained within a substance). Moved from the processing floor into a feed hopper, the material passes over a belt scale and is distributed by a mechanical feed valve to five conveyors leading to the calcinator.

Consisting of petroleum slurry and contaminated water, the

liquid waste is mixed with sawdust and then measured for caloric content. Carried by two 40-inch-wide (102cm) conveyors to a hopper, which monitors the consistent level of liquid provided to the system, the sludge is then transferred onto a belt scale before being set into an industrial dryer. Once dry, it is fed to the calcinator.

The entire conveying process of both solid and liquid AFR was spilling approximately 6 tons (5.4 metric tonnes) of solid and liquid material per month, resulting in a loss of

The heavy-duty spring tensioner retains a tight seal on the belt for consistent cleaning throughout the blade's service life.





Maintenance costs were estimated at US\$67,000 per month, which threatened to offset the economic benefits of the new policy.

nearly 72 tons (65.3 metric tonnes) of AFR annually. “During our analysis, we noticed right away that operators utilized a mix of belt cleaners without tensioners and cleaning systems that were fabricated in-house,” Astiazaran said. “Unfortunately, neither of the designs adequately cleaned the belt or prevented carryback.”

Monitored by a full-time employee tasked with daily reporting on the volume of spillage and potential hazards, the person also supervised a crew of four workers for a full shift twice per month for clean-up. The workers would clean piles of material from around the conveyor frame leading to the calcinator and perform maintenance as needed.

VERSATILE SOLUTIONS

After a thorough assessment of the situation, the Martin Mexico team determined that a Martin® QCI™ Cleaner PD (Performance Duty) placed at each of the seven conveyor discharge points feeding the calcinator would dramatically reduce the clean-up expense and product loss. Integrated onto the existing mainframes and installed on the lower side of the head pulley, the units are comprised of a single urethane blade connected to a steel mandrel, which is turned by a heavy-duty spring tensioner housed in a protective sealed tube. The tensioner retains a consistently tight seal on the belt, while the blade design utilizes Martin Engineering’s patented Constant Angle Radial Pressure (CARP) technology to maintain an efficient cleaning angle throughout its service life, without damage to the belt or splice.

Able to accommodate belt speeds of up to 900fpm (4.6m/sec) and service temperatures of -40° to 160°F (-40° to 70°C), operators can choose between five different blade types to

address the characteristics of specific kinds of cargo for each conveyor. Available in lengths of 18 to 96 inches (457 to 2,438mm), blades can also be ordered in 10ft (3.05m) slugs, allowing operators to cut to length for increased versatility.

The unit features a no-tool replacement process that can be performed safely by a single worker who simply pulls the locking pin, unclamps the bracket and slides the blade out of the mainframe. The new blade is slipped on and clamped into position, significantly reducing maintenance and replacement time.

IMMEDIATE RESULTS

The performance of the system with the newly installed equipment was evaluated over a 28-day period, measuring the buildup of carryback as compared to the month prior to installation. Plant personnel cleaned the space below and around the belts manually as normal. Operators reported approximately 90% less fugitive material over the entire evaluation period, resulting in a drastic reduction in labour and downtime needed for clean-up.

Plant managers predict that the upgraded belt cleaning system will extend the life of idlers and other conveyor components, decreasing unscheduled outages due to equipment failures. Moreover, operators confirmed that worker morale was greatly improved due to the easier clean-up and improved working conditions.

“During subsequent visits we’ve observed that the area is considerably cleaner and easier to maintain,” Astiazaran pointed out. “Operators have reduced the staff hours needed for monitoring and cleaning by two-thirds. Along with less equipment damage from fugitive material, they are very happy with the results of this project.”

Effective utilization of alternative fuels



Interior view of the Plainfield Project tripper/stacker with portal reclaimers.

The utilization of alternative fuels within various industries has been on a path of rapid expansion for the last 20 to 30 years, writes Pietro de Michieli, Chief Operating Officer – Bedeschi Spa. For instance, cement producers have been pushing for a net negative fuel cost for decades, which only a few plants have truly achieved and the Southeastern US has recently become the hotbed of biomass-based fuel sources for power generation or co-firing. As the world attempts to reduce its dependence on fossil-fuels, what was once considered waste has now become a driver for a rapidly expanding industry which is attempting to combat the global megatrend of climate change and resource scarcity.

THE RECENT PAST

As recently as 1986, Kurt E. Peray suggested that solid fuels in rotary kilns were generally coals: anthracite, bituminous, lignite and coke, and that “several pre-heater kilns in various parts of the world are being used to dispose of old automobile tyres, wood chips and even garbage for introduction into the back end of the kiln”.¹

Alternative fuels have now taken their place in the proverbial front end of the kiln. The times of focusing on alternative fuels

1. Kurt E. Peray (1986) *The Rotary Cement Kiln, Second Edition*, Chemical Publishing, pp 38, 57-58.

purely for financial sake are over. Yes, they still have their place, but a far larger constant has been added to the equation: new emissions regulations.

In 2010, the US EPA finalized the National Emission Standards for Hazardous Air Pollutants (NESHAP) amendments to the standards for Portland cement manufacturing and emissions of mercury, total hydrocarbons (THC), hydrochloric acid (HCL) and particulate matter (PM). In 2013, these new regulations became law. This updated law, coupled with the New Source Performance Standards (NSPS) regulates NO_x, (nitrogen oxides) and SO₂ (sulphur dioxide), and required cement plants to be compliant with the new standards.

After a round of lawsuits, modifications and amendments, mostly championed by the Portland Cement Association, all US cement plants should have demonstrated compliance as recently as 9 September last year.

But there's more. In August of 2015, President Obama authorized the new 'Clean Power Plan' to regulate CO₂ emissions from power plants. With the new emphasis on greenhouse gasses and their supposed contribution to global warming, can the cement industry be far behind?

Going back to Peray, utilizing coal as a fuel source under stoichiometric conditions in a cement kiln would lead to approximately 18% CO₂ in the stack if there were no evolution

of CO₂ from the raw mix and as much as 28% when considering the CO₂ evolving from the raw mix.

By their very nature, numerous alternative fuels and raw material additives have reduced chemical constituents that lead to a reduction of overall emissions, reduced fuel costs and the possibility of generating carbon offsets.

Today, wood chips and biomass usage for one of the major world-wide cement producers contributes as much as 24.5% of

their fuel input needs². Consequently, the low heat values of alternative fuels now require larger handling and storage systems that are more flexible and permanent fixtures within the plant.

CASE STUDIES

Plainfield Renewable Energy / Enova Energy Group

The Enova Energy Group embarked on a renewable energy project in Plainfield, Connecticut in 2011 to generate 37.5MW of clean energy utilizing waste wood from construction and demolition debris, recycled wood pallets and land clearing materials. The biomass plant features a wood storage yard, fluidized bed gasification system, condensing steam turbine generator, cooling tower, ash silo, scrubber, bag house, electrical switchyard, storm water storage and treatment and balance of supporting plant systems.³

Bedeschi America, Inc., was selected for the fuel handling system consisting of an over-head tripper/stacker and a portal reclaimer. Prepared fuel is delivered to the plant where the covered storage hall can house five days of fuel.

PLAINFIELD PROJECT SPECIFICATIONS	
Material	Biomass
Bulk density	17–24pcf
Material size	4 inches
Moisture content	20% (surface moisture)
Angle of repose	45°
Total volume stored	4,800 tonnes
Volume of the pile body, no endcones	4,400 tonnes
Number of piles	1
Section of piles	1,225ft ²
Total length of pile	500ft (toe to toe)
Width of piles	70ft
Height of piles	35ft
Maximum stacking capacity	300tph
Maximum reclaiming capacity	100tph

2 Azad Rahman, M.G. Rasul, M.M.K Khan, S. Sharma (2013). Impact of alternative fuels on the cement manufacturing plant performance: an overview. 5th BSME International Conference on Thermal Engineering.

3 Leidos, Inc. website pages



Bedeschi BEL P – portal reclaimer.



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MIDDLE-EAST CEMENT PLANT PROJECT DATA

Material:	Coal	Petcoke	Oil shale	Olive residue
Bulk density (t/m ³)	0.8	0.9	0.8	0.44
Grain size (mm)	68	68	200	140
Moisture (%)	12	12	6.5	18
Resting angle (°)	38	38	38	27
Stored volumes (tonnes)	3 × 10,000	2 × 7,000	2 × 1,500	2 × 1,500
Section of piles (m ²)	187	187	187	122
Total pile length (m)	75	50	24	38
Width of piles (m)	31	31	31	31
Height of piles (m)	12.1	12.1	12.1	7.9
Stacking rate (tph)	200			
Reclaim rate (tph)	150			

The Bedeschi (TRP 9/1200) overhead tripper stacker utilizes a 1,200mm belt and the (PAL P200/21+4) portal reclaimer has blades with a length of 2 metres and boom length of 25 metres (see picture on p133). Due to the potential of wood dust explosions, Bedeschi was required to supply Class 2/Div 2 electrical equipment, namely motors, switches and pump skids.

Middle-East cement plant

A Middle Eastern cement company asked Bedeschi SpA to propose a multi-fuel handling system for its facility which is capable of handling a diverse array of fuels. The system comprises a receiving feeder, storage facilities and a bulk handling system complete with dust suppression.

The fuels to be handled are: coal, petcoke, oil shale and olive residue.

The alternative fuels arrive via semi-truck and are loaded onto

a surface feeder to an optional double roller crusher for sizing of the fuels, if required. From there, the fuels travel via belt conveyor to a tripper/stacker to properly build the nine piles of fuel. A total of 50,000 tonnes of fuel are housed within the storage hall.

Given the diversity of moisture within the fuels, a bucket-type portal reclaimer was determined to be the most effective for the duty. As is standard, Bedeschi prefers to utilize a bucket-type reclaimer when the moisture is in excess of 12%. In the case of this project, the fuels require minimal mixing and Bedeschi reclaimer affords quick pile changes.

Bedeschi supply to include:

- ❖ surface feeder CNT 14/2500;
- ❖ double roller crusher type RL 450/1500 (optional);
- ❖ stacker type STK 22/800;
- ❖ reclaimer type BEL P 250/30+4;



Bedeschi PAL P — portal reclaimer.

- ❖ belt conveyors NG: 800/584 , 800/507, 650/104, 650/269;
- ❖ bag filter (ATEX): 120 BV 100, 120 BV 64, 120 BV 64; and
- ❖ electrical, automation and controls.

Gob as a fuel

VIRGINIA CITY PROJECT DATA

Material	Coal Gob
Bulk density	50–65pcf
Material size	2 inches
Moisture content	9%
Angle of repose	38°
Total volume stored	72,000 tonnes
Number of piles	2
Section of piles	3,035ft ²
Total length of piles	1,253ft
Width of piles	125ft
Height of piles	48.5ft
Maximum stacking capacity	950tph
Maximum reclaiming capacity	950tph

Gob is a waste coal that is the low-energy discards of the coal mining industry. These waste coal piles accumulated mostly between 1900 and 1970 in western Pennsylvania, West Virginia and Kentucky.⁴ These piles can contain millions of tonnes of low calorific value fuel that can potentially be recovered and processed in coal-fired power plants or other energy-intensive pyro-processing systems.

The Virginia City Hybrid Energy Center is just one example. The 585 megawatt coal-fired power plant will be generating electricity from millions of tonnes of waste coal that was not previously marketable.⁵

This project proved how just important the material assessment is. From the table below, one can see that the material as described by two of the owner's engineers seems reasonably benign. Based upon this, the decision to provide a

blade-type reclaimer was taken. Commissioning issues quickly led to a further and more complete investigation into the true nature of the material.

The investigation revealed that the material being received at the plant contained a much as 32% clay. The clay tended to be non-flowing, highly compactable and exhibited angles of repose between 75° and 90°. The clay prohibited the coal from flowing from the secondary 'pusher' boom to the primary reclaim boom. In addition, the compact clay forced the reclaim blades in to a more aggressive digging-mode, which exerted additional stresses and ultimately caused cracking in the blades.

Ultimately, Bedeschi proposed a fix for the blades and the customer has more proactively managed its fuel resources. Given a proper evaluation of the materials, Bedeschi's equipment choice would have been a bucket-type reclaimer, and these issues would not have arisen.

Bedeschi America's scope includes:

- ❖ dual stacker with tripper: STK 31/1200;
- ❖ dual portal reclaimers: PAL P 260/22+12;
- ❖ cabin with control panel; and
- ❖ electrical, automation and controls.

SUMMARY

Today's focus on environmentally friendly fuels and raw materials presents ever-increasing challenges in the field of material handling. For over 100 years, Bedeschi has been handling sticky and high moisture clays for the tile and brick industries and continues to invest in product development to increase efficiency and enhance its product line for its world-wide customers. The global needs for common fuels of today and the anticipated fuels for tomorrow requires an ever diligent company like Bedeschi to keep abreast of difficult material handling issues. The company looks forward to the challenges that will emerge in the next centuries.

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4 *Energy Justice Network, website pages*

5 *Bristol Herald Courier, Gobco mining coal waste piles, turning gob into cash. website, posted March 7, 2010*

Bedeschi PAL P — portal reclaimer.



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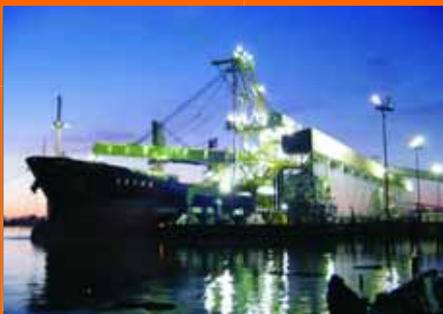
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