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JANUARY 2014 issue

featuring...

TRADE & COMMODITIES
Promising grain and soya outlook 2
DRY BULK TRADE'S STURDY PACE 4

SHIPPING & TRANSPORT
ICS identifies lessons from Somali piracy 13
ICS publishes latest flag state performance table 15
McKeil Marine awarded for environmental leadership 16
BULK CARRIER OUTLOOK 17

PORTS, TERMINALS & LOGISTICS
First ship of 2014 calls at Port of Sept-Îles 20
RBCT forecasts 70mt traffic in 2013 22
OVERVIEW OF THE NETHERLANDS 25
PORT OF PORI: 'CLUSTER THINKING' IN ACTION 55

REGIONAL REPORT
US GULF: BULK HANDLING ACTIVITIES 57

ENGINEERING & EQUIPMENT
Telestack wins prestigious industry award 72
DIGGING DEEP: GETTING TO THE BOTTOM OF THE CSU MARKET 89
SILO CLEANING SOLUTIONS: WITHOUT CONFINED ENTRY SPACE 117

REGIONAL REPORT
VORSPRUNG DURCH TECHNIK: GERMAN REGIONAL REPORT 123

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Promising grain and soya outlook

Some uncertainty is evident about positive impulses likely to be derived from domestic economic activity in countries such as European Union members, Japan and China, over the next twelve months. But signs are moderately promising. Against this background, global import demand for minerals and other industrial dry commodities could grow solidly in 2014. Meanwhile, grain trade prospects have improved.

A few more encouraging indications have emerged in recent weeks providing insights into how countries having a large influence on global dry bulk imports are progressing. These, on the whole, reinforced cautious optimism. However, while the USA seems to be picking up solidly, Europe's revival stamina is difficult to assess, while prospects for sustained momentum gains in China are not altogether clear either.

Grain

Forecasts of world grain trade have been steadily revised upwards over the past few months. At the beginning of the current 2013/14 trade year which ends in June 2014, a flat twelve months ahead looked likely, following a slight reduction in the previous period. But the latest International Grains Council forecast suggests 4% growth to 277mt (million tonnes), as shown in table 1.

One especially notable additional support, for wheat and coarse grains trade, is the larger crops harvested in the USA and Black Sea region during the past half year. These have exerted downwards pressure on international grains prices, bolstering import demand. A more specific influence, however, is the expected doubling of China's wheat, corn and other grains imports to reach over 19mt.

Iron ore

Global steel consumption is expected to increase over the next twelve months, benefiting production volumes and, in turn, raw materials usage and import requirements. A recent report by the OECD steel committee focused attention on prospects for moderate growth in 2014.

After slackening in the first half of last year, global steel consumption strengthened markedly in the third quarter when a 9% increase (compared with the same period a year earlier) occurred. A much higher level in China was a key contributor. Although the OECD report provided no annual forecasts for last year, or for the year ahead, the improvement emerging after mid-2013 seems to be continuing.

Coal

Prospects for seaborne coal trade remain favourable, although environmental influences probably will restrict the rate of growth. Last month the International Energy Agency published a new assessment of how the global coal market could evolve over the medium-term, concluding that further expansion is likely, especially among Asian countries.

According to the IEA's analysis, international seaborne coal trade will continue shifting towards the Pacific Basin over the next few years. Asian countries, by 2018, are expected to comprise more than four-fifths (83%) of world import demand for steam coal, while two-thirds (66%) of metallurgical coal imports could be concentrated in that region. India is identified as the main growth engine for steam coal imports during the next five years.

Minor bulks

Phosphate rock trade, previously a 'major' dry bulk commodity trade, is now a small element of the minor bulk group. Seaborne movements totalled about 30mt in 2012 and may have been similar or slightly lower last year. There are no signs of a much stronger performance in the next twelve months. India is the largest importer, comprising about one-third of the total.

Bulk carrier fleet

In sharp contrast to large increases in other vessel size groups, the world fleet of Handysize (10–39,999dwt) bulk carriers has not expanded over the past twelve months, as shown by table 2. Both newbuilding deliveries and scrapping fell sharply, but the deadweight volumes appear to have been almost identical. During 2014 fleet additions and deletions may again prove similar, suggesting that the fleet will remain stable.

TABLE 1: GLOBAL WHEAT & COARSE GRAINS IMPORTS (MILLION TONNES)

	2008/09	2009/10	2010/11	2011/12	2012/13*	2013/14*
Asia (excluding Japan)	45.2	50.1	55.5	58.0	57.5	70.8
Japan	23.8	25.4	24.7	23.0	24.1	24.0
Middle East	50.1	42.5	34.9	45.8	48.2	47.3
Africa	55.0	52.6	53.1	58.6	54.5	55.8
Others	75.4	69.8	74.5	84.2	81.7	79.1
World total	**249.5**	**240.4**	**242.7**	**269.6**	**266.0**	**277.0**

*source: International Grains Council, 28Nov2013 *forecast July/June crop years*

TABLE 2: HANDYSIZE 10–39,999DWT BULK CARRIER FLEET (MILLION DEADWEIGHT TONNES)

	2008	2009	2010	2011	2012	2013*
Newbuilding deliveries	3.0	5.0	8.4	9.3	9.9	6.2
Scrapping (sales)	1.7	5.6	2.7	5.3	8.2	6.2
Losses	0.0	0.2	0.0	0.2	0.1	0.1
Plus/minus adjustments	–0.1	0.7	0.0	–0.9	–0.7	0.0
World fleet at end of year	**76.2**	**76.1**	**81.8**	**84.7**	**85.6**	**85.5**
% change from previous year-end	+1.6	–0.6	+7.6	+3.5	+1.0	–0.1

*source: Clarksons (historical data) & Bulk Shipping Analysis 2013 forecast *forecast*

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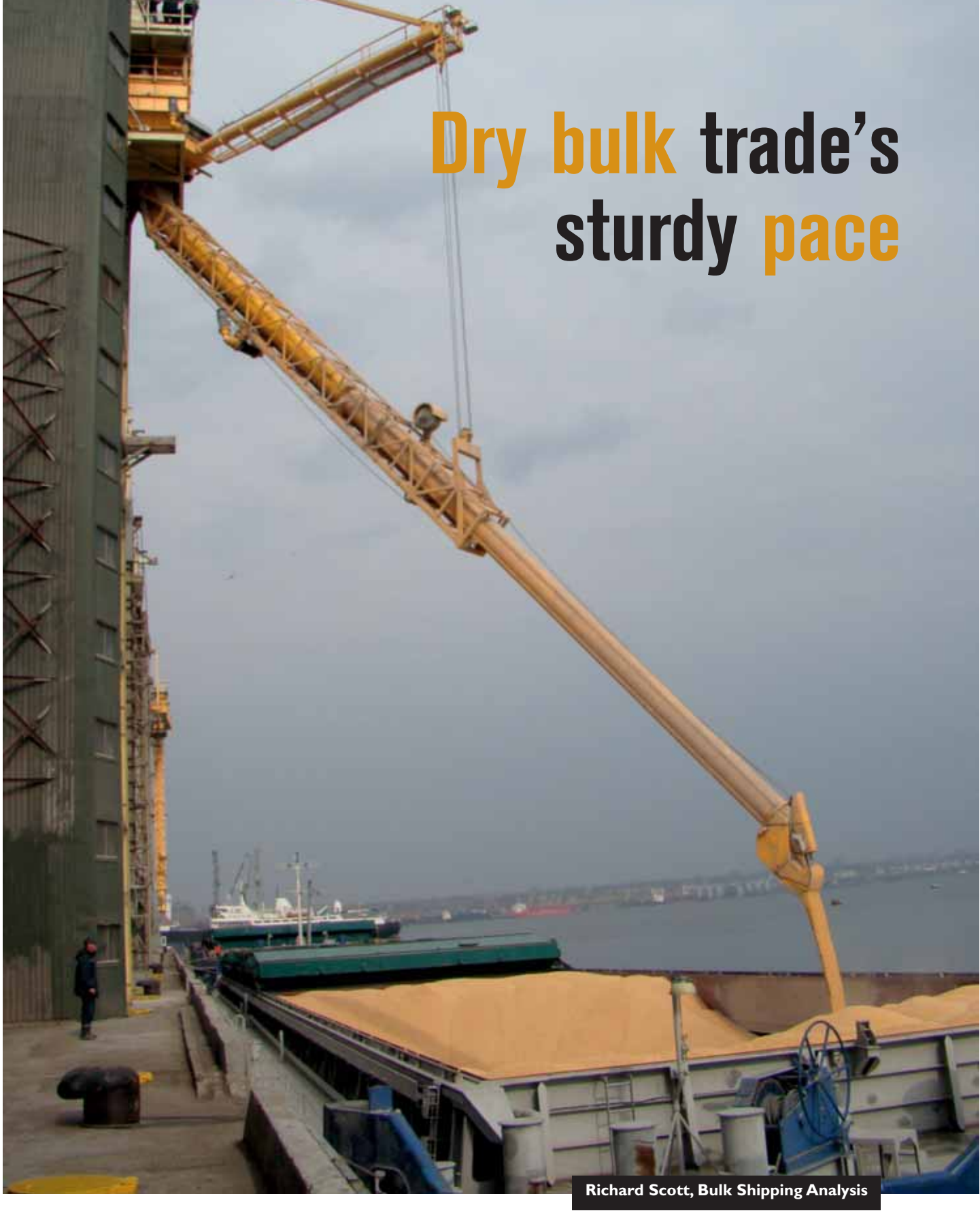

Dry bulk trade's sturdy pace

Richard Scott, Bulk Shipping Analysis

During the past twelve months elements of the background for seaborne trade remained weak. Global economic activity slowed further in 2013 as a whole despite some more encouraging signs in the second half. Yet commodity import demand grew at a healthy pace. Indications based on incomplete data suggest that world seaborne dry bulk trade expanded by about 5% compared with the previous year.

A moderately brighter outlook for the world economy has been emerging over the past few months, implying firmer support through 2014. Reviving business and consumer confidence and spending could underpin industrial output in many countries. This evolution can be expected to result in additional usage of, and import demand for, associated raw materials, fuels and semi-finished products carried by bulk carriers.

The performance of China's economy will be a crucial influence. Trends in other countries within the 'advanced' group, including Japan, South Korea, USA and European Union also will have a significant role. While there are doubts about whether Japan can fully maintain its recent stronger trend, prospects for

TABLE 1: GDP GROWTH IN KEY ECONOMIES (% CHANGE FROM PREVIOUS YEAR)

	2008	2009	2010	2011	2012	2013*	2014*
USA	–0.3	–3.5	2.4	1.8	2.8	1.7	2.9
Eurozone	0.4	–4.3	1.9	1.6	–0.6	–0.4	1.0
Japan	–1.0	–6.3	4.7	–0.6	1.9	1.8	1.5
OECD area#	0.2	–3.7	3.0	1.9	1.6	1.2	2.3
China	9.6	9.2	10.4	9.3	7.7	7.7	8.2

source: IMF, OECD Economic Outlook (19 November 2013) ** forecast* *# mainly USA, Europe, Japan and Korea*

the USA and EU seem to have improved, albeit moderately. China now appears capable of continuing to grow at a rate similar to that seen in 2013.

With some advantages derived from this expected pattern, coupled with the impact of other influences, seaborne dry bulk trade in 2014 could increase at a healthy rate of about 4%. A large proportion of the incremental trade volume is likely to occur in the minerals sector, especially iron ore and coal.

The world economy

Headwinds are still buffeting economic activity in many countries around the world. These restraints were emphasized towards the end of November when the OECD secretariat published its regular half-yearly assessment of the outlook. The report's authors concluded that a recovery (which only began in the second half of last year) is "gaining momentum only slowly and there are large downside risks".

The OECD expects the recovery to remain modest and uneven. As shown by table 1 above, GDP growth in the OECD area as a whole (mainly comprising USA, Europe, Japan and Korea) is estimated to have slackened to a 1.2% average in 2013, after 1.6% during the previous twelve months. Weakness was mainly concentrated in the first half, followed by some improvement.

This year a distinctly better, although still not robust, performance is foreseen. OECD area GDP growth is forecast to accelerate to 2.3%, double the past year's minimal increase. One especially significant element is resumed but sluggish expansion in the EU, which actually started in 2013, while the US economy now seems able to achieve stronger progress over the twelve months ahead. Japan may see a slight deterioration.

Why are prospects for these economies still very limited? The global financial crisis and ensuing 'great recession' was five years ago, but the adverse effects have proved long-lasting and exceptionally severe. While progress has been made with deleveraging (debt repayment), and fiscal consolidation (tax increases and public spending cuts), this lengthy process is not complete. Business and consumer confidence and the associated spending is only returning slowly.

In China economic output growth slowed markedly in the first half of last year after which a turnaround began. The OECD's figures point to an improvement of about half a percentage point in 2014, when GDP could expand by over 8%, although not all estimates suggest that such an upturn is achieveable. However, earlier anxieties about a sustained weakening have receded.

A package of economic measures introduced by the Chinese government in mid-2013, labelled a 'mini stimulus' programme, is credited with promoting moderate strengthening. Items included reducing taxes for small companies, cutting red tape and boosting railway investment. Whether the benefits will assist or ensure a sustainable improving trend is not clear. In the longer term, the Chinese government's aim is to shift the emphasis towards consumer spending and away from excessive reliance on capital investment.

The progress of emerging market economies as a group - including China and India - is still much better than that of the advanced countries. But a slowdown in emerging economies has become a feature, leading to questions about the timing and magnitude of a return to the more superior growth seen earlier. OECD estimates suggest that this group could see a slight pick up of about a half percentage point to a 5.3% average in 2014.

Steel raw materials

Production of steel is heavily influenced by economic progress and patterns and, in countries buying foreign supplies of raw materials, output volumes are linked in turn with iron ore and coking coal imports. Over the past twelve months negative factors affecting steel output were evident in Europe and South Korea, among key raw materials importers, while China's and Japan's steel production strengthened.

Contrasting changes in steel demand were highlighted by recent World Steel Association estimates. For 2013, EU domestic steel demand was expected to be about 4% lower than seen in the previous year, while in Japan a flat picture seemed to be evolving. China, by contrast, was forecast to see a robust 6% increase "reflecting the impact of the government's stimulus measures focused on infrastructure".

TABLE 2: WORLD SEABORNE DRY BULK COMMODITY TRADE (MILLION TONNES)

	2008	2009	2010	2011	2012	2013*	2014*
Iron ore	844	905	1,005	1,069	1,124	1,210	1,270
Coal	824	842	951	1,013	1,107	1,170	1,220
Grain (including soyabeans)	290	295	297	313	324	330	340
Other dry bulk commodities	1,311	1,138	1,301	1,413	1,473	1,520	1,560
Total dry bulk trade	**3,269**	**3,180**	**3,554**	**3,808**	**4,028**	**4,230**	**4,390**
% growth from previous year		–2.7	11.8	7.2	5.8	5.0	3.8

source: Bulk Shipping Analysis estimates and forecasts **forecast*

Looking at signs of how 2014 steel demand would unfold, the WSA foresaw further expansion in China, but at a slacker 3% pace, attributed to government efforts to rebalance the economy having a continued restraining impact on investment activities. In the EU a turnaround to resumed growth at a modest 2% rate, benefiting from an economic revival, could be accompanied by a 2% contraction in Japan amid the negative effects of higher consumption tax and energy prices and manufacturing industry relocation.

One-third of global seaborne trade in all dry bulk commodities is comprised of the steel industry's main raw materials movements, iron ore and coking coal. Last year iron ore trade, by far the largest part, apparently grew by about 8% based on partial information, reaching an estimated 1,210m tonnes, as shown by table 2 above. Coking coal trade may have expanded at a similarly rapid pace, to over 290mt.

Forecasts for 2014 suggest continued growth, but expansion at last year's rates seems unlikely to be seen. A 5% iron ore trade increase seems possible, and coking coal trade could rise again. Much depends on how China's imports evolve, as incremental volumes there almost certainly will comprise a large proportion of the global additional quantities.

Iron ore imports into China during the past twelve months expanded rapidly again instead of slowing quite sharply, as widely expected. Strong steel production was a key factor, coupled with other influences which magnified the impact of higher raw materials consumption on import demand.

Seaborne iron ore trade is dominated by China's requirements, which comprise two-thirds of the world total. The latest quarterly report by Australia's Bureau of Resources and Energy Economics (BREE), published in mid-December, estimates China's imports at 793mt in 2013, a 6% increase, and predicts a another strong 7% increase to 852mt in 2014. These quantities include some overland trade but are mainly seaborne.

Other forecasts show expansion, but based on a different profile. The 2013 total appears to have been much higher than the BREE estimate, exceeding 800mt, resulting in a faster percentage expansion. But there are signs of a significantly slower growth rate in the year ahead, amid a possible deceleration of steel production.

The outlook for the remaining one-third of iron ore trade suggests that positive changes will be limited. European Union countries could see slightly larger imports as steel production begins to revive, while in Japan and South Korea fairly flat volumes may be a feature. A possible 'wild card', with potential for adding significant quantities, is imports into India.

China's coking coal imports are on a much smaller scale than its iron ore purchases but still sizeable. BREE estimates 92mt coking coal last year, a 30% rise, followed by 99mt this year, an 8% increase. Additional volumes are foreseen during 2014 in other steel producing countries importing coking coal. Continued positive trends in India and Brazil are features.

Global seaborne coking coal trade also will be shaped by imports into Japan, Europe and South Korea. In Europe more foreign purchases may occur, while elsewhere potential for growth seems quite small. These expectations reflect the foreseeable pattern of steel industry progress.

Fuel for power stations

A much larger part of coal trade is comprised of steam (also known as thermal) coal, used primarily in power stations but quite widely in the cement and other manufacturing industries as well. Seaborne trade in this sub-sector apparently grew by around 4% last year, raising the global total to about 870mt. In 2014, another sizeable increase of 3-4% at least could emerge.

Several factors are contributing to the continuing upwards trend in steam coal trade. These include strongly rising demand for electricity, expanding coal-fired power generation capacity and greater reliance on foreign supplies where there is domestic production of coal. The mix of factors varies according to differing circumstances. Favourable

influences are most prominent in Asian countries.

Increasingly, environmental concerns have the potential for curbing coal usage and import demand and are already exerting downwards pressure. Switching to alternative, cleaner fuels is likely to remain an objective. But for many countries the economic advantages of coal remain compelling. Problems in the nuclear power industry have refocused attention on steam coal, although competition from natural gas is intense.

Two countries still enlarging coal-fired power generation are India and China. Imported supplies appear set to have a continuing massive role in both. Prospects for expansion look the most certain in India, contrasting with China where there is greater uncertainty, amid emphasis on reducing atmospheric pollution from coal burning.

India's rising steam coal imports trend reflects expanding coal-fired generation capacity and power output. Several vast new power plants are being built at coastal locations, adding to potential future growth in consumption and imports. Shortfalls in supplies from the huge domestic coal mining industry are another influence boosting foreign purchases. Steam coal imports may have exceeded 140mt last year and clear signs point to further growth in 2014.

Imports of steam coal into China also have grown rapidly in the past few years, possibly exceeding 185mt last year (excluding low-grade lignite). Domestic coal mines supply most of the market, but foreign coal is often competitive in many locations. Delivered prices for international supplies are frequently attractive for buyers located in coastal areas, particularly in southern provinces which are long distances from domestic mines. Potential for more imports is visible.

Conversely, there are some potentially negative influences. Eventual resumption of activity in Japan's nuclear power sector, mostly closed down since the severe accident at Fukushima in 2011, could begin eroding coal's strong contribution. In the European Union, coal generation is being partly phased-out as tougher environmental regulations are implemented, implying reduced participation of steam coal imports in the years ahead.

Cereals and oilseeds

Changing weather patterns is often the most prominent factor affecting short term variations in global seaborne trade in grains, oilseeds and other bulk agricultural commodities. These changes greatly determine importing countries' domestic crops (which usually have a direct impact on import demand), as well as influencing harvests in exporting countries. Underlying consumption trends also are a factor.

Over the past twelve months world seaborne grain trade (usually defined as comprising wheat, corn and other coarse grains, plus soyabeans) was affected by contrasting influences. In the calendar year 2013 first half, constricting influences were prominent, followed by a pick up beginning in the second half. After mid-year, supplies were boosted by better harvests among key exporters, resulting in lower international prices which benefited global import demand.

Figures prepared on a crop year basis clearly illustrate how trade is evolving. Recent forecasts by the International Grains Council suggest that world trade in wheat and coarse grains (but excluding soya) could increase by about 11mt or 4% in crop year 2013/14 ending June 2014, reaching 277mt. In the previous period there was a marginal 1% reduction to 266mt.

In 2012/13 the marginal overall weakness mainly reflected decreases in North Africa's and Mexico's imports, mostly offset

by increases in the Middle East and EU. During the current year, global growth envisaged is largely a result of higher estimated imports into China, accompanied by an EU downturn.

Among suppliers, remarkable changes are evolving. IGC calculations point to Black Sea wheat and coarse grains exports from Russia, Ukraine and Kazakhstan rising by 10mt or 21% to over 55mt in 2013/14, following greatly improved summer harvests in all three countries. Exports from the USA also are set to rebound, by 17mt (33%), to over 66mt after production recovered from the devastating drought in the previous year.

The strong growth of China's wheat, corn and other grains imports envisaged in 2013/14 partly reflects only a marginal increase in the mid-2013 domestic harvest. Imports could more than double to 19mt. The harvest was just 1% higher, and the quality of some output was adversely affected by weather problems. Also, consumption continues to expand, necessitating additional foreign purchases.

Within the soyabeans trade sub-sector, growth is expected to accelerate in marketing year 2013/14 ending September 2014. A recent US Dept of Agriculture forecast suggested that, following 2% growth in the previous twelve months, the total could be 10% higher at 105mt.

Almost all the soyabeans trade increase envisaged during the current marketing year seems likely to be caused by a sharp rise in China's imports. From 60mt in 2012/13, the volume imported by Chinese crushing mills could increase to 69mt. Rising consumption is the main reason, both of soyabean meal usage in livestock feed and of soyaoil usage in food manufacturing and home cooking. Lower domestic production of soyabeans is another influence.

Grain and soya trade prospects later in calendar year 2013 are still hazy. Much depends on mid-2014 harvests in northern hemisphere importing countries, but these are not yet predictable. There are no reliable forecasts for weather conditions over the growing season. Exporting countries' production also is impossible to predict accurately.

Extensive minor bulks

Minor bulks form an extensive sector, some parts of which are individually quite large. The diverse group comprises many commodities related to industrial and construction activity, while agricultural commodities are also significant. Altogether this group provides over one-third of total seaborne dry bulk movements. Within the 'industrial' sub-group the most prominent, as measured by volumes transported, are steel products and forest products. Other large elements are bauxite/alumina, iron and steel scrap, cement, salt, petcoke, and nickel and other ores. Among 'agricultural' minor commodities are sugar, rice, oilseed meals, phosphate rock plus other fertilizer raw materials and semi-finished fertilizer products.

Based on tentative calculations, growth last year in the minor bulk trades group as a whole may have exceeded 3%. Percentage increases vary widely among the individual commodities. Total seaborne trade probably was over 1,500mt Another sizeable advance in 2014 looks likely.

Developments specific to individual commodity trades are frequently influential, but broader economic growth trends are also relevant. Import demand for industrial minor commodities in some countries during 2013 was limited by slowing or subdued economic activity. Infrastructure and construction work was restrained by cutbacks in public and business investment spending. Global trends in many minor bulk trades are closely linked to China's import demand. Purchases of bauxite/alumina, nickel and other ores, and low-grade lignite, by Chinese buyers comprise very large proportions of total world movements. In other trades such as forest products, steel products and fertilizers the impact of China is also clearly visible.

Estimates suggest that seaborne bauxite/alumina trade expanded sharply last year, but it may not continue growing as rapidly in the twelve months ahead. In the past year additional Chinese import buying, amid rising aluminium production and possibly some stockbuilding of raw materials, seems to have been a key factor.

Coal, iron ore outlook in the New Year: the view from India

Prices of steel and the two principal minerals, namely, iron ore and coking coal used in the making of the metal do not move in tandem, *writes Kunal Bose*. Each one has its own market dynamics. Price behaviour of the three last year bears that out. The executive director of International Energy Agency, Maria van der Hoeven, gives the answer as to why, in spite of strong demand for thermal coal used for producing electricity and coking coal, prices of the fuel have remained subdued. For example, the price of Australian hard coking coal benchmark grade is down more than a fifth from 2013 start to $121.10 a tonne. Incidentally, coking coal traded at $330 a tonne in mid-2011 when Australian mines and rail infrastructure were submerged in flood waters. The price fall is to be principally ascribed to Hoeven's observation that the world will be seeing commissioning of around 500,000 tonnes of annual thermal and coking coal production capacity every day for the next six years. Low prices of the mineral and the pressure that capacity addition of this mammoth order brings to bear upon the market may, however, lead the expanding groups to go slow in opening new mines or expanding the working quarries.

The underlying message in a recent IEA report is that the coal market is getting overwhelmed by too much supply. Quoting from a *Wall Street Journal* report, a Delhi-based analyst says the official Australian forecast is that shipments of coking coal from that country will rise to 178mt (million tonnes) in 2015 from 145mt in 2012. The strength in Chinese production will also stand in the way of recovery in coal prices. High domestic production notwithstanding, Chinese steel-making coal imports in the first 11 months of 2013 were up 46.6% to 67.38mt. High coal imports were due to China lifting steel production between January and November 2013 by nearly 8% to 713mt. But as is the Chinese practice, the country makes bulk purchases of commodities from iron ore to sugar when their prices rule low to build strategic reserves.

According to RBC Capital Markets, coking coal prices will average $154 a tonne in 2014. For India, which imported 32.2mt of coking coal in 2012/13, low prices of the fuel is welcome news. Imports for the country in the current financial year are likely to be higher since the use of inferior grades of iron ore resulting from court ruled restrictions on mining will lead to burning of bigger amount of coking coal in blast furnaces to make liquid iron. Some of the lower-quality iron ores mined in India have a higher than normal alumina content, which leads to higher slagging (residue from smelting of ore) in the blast furnace. The use of such ores requires higher levels of heat and therefore, burning of more coal.

In the meantime, iron ore prices which sank to a low of $110.40 a tonne in May has since gained 22%. The rise in ore prices of this order as also Chinese imports reaching a record in November have come as a surprise to Rio Tinto CEO Sam Walsh. Chinese ore imports in the 11 months to November 2013 rose 10.9% to 746.1mt. Ore stockpiles at 25 major ports in China in December end was over 85mt. Walsh predicts that as "new capacity will be coming on next year, I expect iron ore prices will soften a bit. But it will still be a good business to be in." Efficient producers like Vale, Rio and BHP Billiton have their ore mining cost pegged at less than $55 a tonne. India, which till a few years ago was the world's third largest exporter of iron ore, is, however, becoming a net importer.

India scene

All that the country's metals and minerals sectors are hoping for is that there is no further reversal in their fortunes in the New Year. Moody's Investors Service has, however, kept the outlook negative for the two sectors in India as it thinks India will just manage to grow "5.5%" during 2014/15. The problem will be compounded by the lame duck government in Delhi postponing "reforms needed to revive the economy." Any improvement in outlook, according to Moody's, will hinge on GDP growth exceeding 6% and the 2014 parliamentary elections throwing up a reforms focussed government with a "strong majority." In the past Indian demand rise for steel and aluminium would approximate or exceed GDP's progress. Not any longer. In the first 11 months of 2013, the Indian steel consumption growth was a disappointing 1.8%. The steel scene has worsened since 2012/13 when demand growth was a low 3.3% to 73.3mt. "This is unavoidable since major steel consuming sectors from automobile to capital goods to infrastructure are facing rough times reflecting economic slowdown in the economy," says Steel Authority of India Limited (SAIL) chairman Chandra Shekhar Verma.

Like steel, aluminium here continues to do badly both in terms of demand growth and prices which closely follow London Metal Exchange rates plus the variable premium. Vedanta Aluminium managing director Sushil Roongta says demand for the second largest traded metal after steel will be growing 3% at the most in 2013/14. "We are all hoping for economic revival on constitution of a new government. So there is the promise of a booster for the languishing metals sector," says Roongta. Joint managing director of JSW Steel Seshagiri Rao says growth in steel consumption here is predicated upon procurement reviving from sectors like automobile, real estate and construction. But with the index of industrial production growing a few points above 1% since April, any smart revival leading to improvement in the fortunes of the metals sector is not in the immediate realm.

Dislocation in iron ore mining resulting from court rulings is hurting steelmakers without captive mines and exports. "As the government is persisting with iron ore export duty of 30% along with punishing railway freight, India's iron ore exports this year will fall further from 18 mt in 2012-13. The vacuum left by us in the world market has been largely filled by Australia and Brazil," says Federation of Indian Mineral Industries (FIMI) president HC Daga. In an earlier available ideal environment, India exported 117mt in 2009/10 to become the world's third largest shipper of iron ore. Mining restrictions and denial of an export outlet of any significance will restrict India's ore production to about 100mt this year against 140mt in 2012/13, says FIMI director general RK Sharma. The country mined close to 220mt of ore in 2009/10.

More of almost all commodities will be available for export from Brazil this year

Commodities were responsible for two thirds of the $270 billion dollars exports earned Brazil in 2013, *writes Patrick Knight.*

This demonstrates how crucial demand for — and the price of — soft commodities are for Brazil's economic health. These commodities include soya, sugar, maize, minerals (such as iron ore and bauxite) and pulp for which Brazil is a world leader.

Despite the soya price having fallen from the 2012 peaks in recent months, farmers planted beans on 6% more land during 2013/14 than in the previous year. Depending on the weather, favourable so far, this year's crop could exceed 90mt (million tonnes).

Demand from China, destination for half the 45mt of the beans to be exported this year, continues strong. As in past years, most of the 14mt of soya meal exported will go to countries in Europe.

Most of the extra 6mt of soy to be grown this year, will come from the booming state of Mato Grosso, and an increasing, if still small, share of exports will leave from ports in the Amazon region, up to six days less sailing time to many ports than Santos and Paranagua.

The brand new port at Mirituba, on the river Tapajos, where trading giants including Cargill and Bunge are building storage facilities, will handle up to 3mt of soya this year.

Thirty million tonnes of soya will still travel south, to leave from the congested ports of Santos and Paranagua. But the share exported from the north will grow fast from now on, as road, rail and water links are gradually improved.

Farmers harvesting the soya which was planted early to allow corn to be planted as a winter crop, will face problems this year.

By late 2013, at least 20mt of the record 83mt corn crop 2012/13 remained unsold, clogging warehouses.

In contrast to 2012, when the poor corn crop in the United States meant countries in Asia which usually get their corn from the US, queued up to buy Brazilian corn instead, and paid record prices for it, corn prices fell steadily last year.

Some of the grain will be processed into ethanol fuel, as it is in the United States.

Corn is a bulky crop, so getting a tonne to ports can cost more than $150, while the commodity itself sells for only $175 a tonne.

But even though less corn was planted as a summer crop for 2013/14 crop, when farmers preferred soy, farmers may still plant more corn as a winter crop in Mato Grosso. The marginal cost of planting the grain as a second crop is extremely low.

Sugar

With the world sugar price falling, but with the proportion of ethanol added to gasoline in Brazil raised from 20% to 25% in May last year, farmers growing cane, of which about 650mt was harvested in Brazil in 2013, opted to make much more than usual into ethanol and less into sugar.

Rather than rising steadily, as it did in most previous years, Brazil exported 'only' about 27mt of sugar last year, the same as was shipped in the two previous years. This meant that Brazil's share of all the sugar traded worldwide fell below the usual 50% last year.

Estimates as to how much surplus sugar now exists, and therefore what the price will be this year, vary between a massive 10mt to only 3mt. But with many countries, notably India, producing less, stocks will continue to fall, so prices should rise.

More than 700mt of cane will be harvested in Brazil this year, 630 of that in the dominant south east region. Farmers will soon have to decide how much to make of each commodity.

Because the price at which ethanol can be sold is determined by the price of gasoline, which is subsidized, while the expected buoyant world trade in ethanol has not materialized, so companies now have no incentive to build new mills.

With crushing capacity growing little, if at all, it may not be possible to crush all the cane this year. This situation will worsen from now on, as up to 20 elderly high cost mills will close down each year, cutting about 15mt a year from crushing capacity.

Demand for sugar increases by about 2% a year, more than that in developing countries, notably China, little or nothing in countries of the developed world.

Iron ore

Fears that the slowdown of the Chinese economy might mean a fall in demand for iron ore, of which about 150mt, half the total exported, goes to China, has not materialized. With at least 100mt more ore to be mined this year in Australia, Brazil's main rival for the Chinese market, prices are likely to fluctuate this year.

The Vale company, the world's largest exporter, will have no extra ore to ship this year, as output has stagnated for almost a decade. Work is proceeding at full steam on the new 'Serra Sul' mine at the Carajas mine, which will start operating in 2016, adding 90mt to supply then.

Towards the end of this year, Anglo-American will start sending ore through the 522km-long slurry pipeline linking its mine in Minas Gerais state to a port.

The CSN steel company also plans to export 40mt from its Casa da Pedra mine, 10mt more as in 2013.

The big question is what the price of a commodity which now generates about 15% of Brazil's export earnings will be from now on. Prices fluctuated in 2013, partly because many mills in China reduced stocks, as it was not clear whether tightening measures would have an impact or not.

Even if the Chinese economy grows by less than 8% a year from now on, rather than the 10% plus of recent years, about 400 million people expected to migrate from the countryside to cities in the next few years. So massive spending on new housing and infrastructure will be needed. Demand for steel and therefore iron ore will not slow, and the price should remain above the crucial $100 per tonne mark.

The Suzano 1.5mt-capacity pulp mill in Maranhao state, in Brazil's north east.

About a third of the ore costs more than that to mine, so many high cost mines would close should prices fell much.

Vale is still trying to persuade the Chinese authorities to allow its 400,000-tonne-capacity Valemax vessels to moor at ports there. While it costs about $20 to get a tonne of ore from Brazil to mills in China, it costs only half that much to get it there from Australia.

There is concern that China may soon switch to the steel-making pattern now common in the EU and the United States. In these countries, electric furnaces use up to 60% of scrap and only 40% of ore, to make steel. Vale analysts say that for the time being, very little scrap steel is available in China, so ore will continue to dominate for many years.

Aluminium complex

Although demand for Brazil's bauxite and alumina continues strong, the decision by both Alcan and Novelis to mothball 300,000 tonnes of smelting capacity means Brazil will become a net importer of primary aluminium this year.

Back in 2012, Brazil exported 646,000 tonnes of primary aluminium and imported 288,000 tonnes. But the loss of about 300,000 tonnes smelting capacity, in a country where demand for aluminium is growing by 7% a year, means there will soon be no surplus for export.

The wholly nationally owned Votorantim company, now Brazil's leading single smelter with an output of 475,000 tonnes at its mill near Sao Paulo city, says it will cut exports, and concentrate on supplying the domestic market from now on.

Votorantim, which now generates 80% of the electricity it consumes, so is a relatively low cost producer, exported 40% of the primary aluminium it made in 2009. But only 10% of the total made was exported last year.

Alcoa says that because the world aluminium price continues low, the high price of electricity in Brazil has forced it to reduce capacity at its smelter in Maranhao state.

Although the price of electricity was reduced last year, dry weather forced the use of high cost thermal power stations, most of which use gas.

The high cost of gas power, cancelled out the advantage brought by the price cuts.

While Brazil's position as a producer of primary aluminium has fallen in recent years, pushing the country down to be the world's eighth-largest producer, it continues to be the world's third-largest producer of alumina. Seven million tonnes was exported last year, and Brazil is also the world's fourth largest exporter of bauxite, with 7mt exported in 2013.

Pulp

The start up of the Suzano company's 1.5mt-capacity mill in Maranhao state, in Brazil's north east at the very end of last year, means that Brazil's pulp making capacity has increased by 3mt in the past 12 months.

Suzano said recently that it had found markets for 60% of the 1.2mt of pulp it expects to make this year, while the Eldorado mill in Mato Grosso do Sul, which started up at the end of 2012 and had exported a million tonnes by end September 2013, is now planning to add a second 2.0mt line to its existing mill.

Eldorado's enthusiasm has provoked the Fibria company, Brazil's largest, which owns the mills at the Aracruz complex and Votorantim's two large mills, to worry that excess capacity will cause pulp prices to fall.

Eldorado, a member of the JBS group, the world's largest meat producer, scoffs at the concern. The company says it may build another brand new mill in the near future.

Fibria, on the other hand, which has debts of at least $3 billion, a result of the severe financial crisis caused by unwise hedging three years ago, has urged caution. Together with Suzano, Fibria has called on Brazil's development bank, the BNDES, source of much of the finance which has enabled Brazil to become a leading pulp producer, as well as loaning much of the funds the aggressive JBS group has used to buy up financially troubled meat companies around the world, to put some order into the industry.

As well as the planned expansion of the Eldorado mill the giant Klabin group, dominant in packaging, has started work on a new complex. A joint venture involving Chile's CMPC company and the Stora Enso company will add more than a million tonnes to capacity at a mill in Rio Grande do Sul state. Another large new mill will start up in Uruguay this year.

Whether markets can be found for all this extra pulp, will depend greatly on what happens in China, where 25% of Brazil's pulp, most of it used for making sanitary paper, is now sold. With hundreds of millions of Chinese expected to move from the countrywide to cities the next few years, demand for paper should continue to grow fast as well. No country can make it as cheaply as Brazil. DCi

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ICS identifies lessons from Somali piracy

The International Chamber of Shipping (ICS), the principal global trade association for shipowners, has issued a paper drawing upon the international shipping industry's experience of Somali-based piracy during the period 2007 to 2013.

"The intention is to identify lessons learned in order to shape future policy responses, wherever in the world they might be needed," explained ICS Secretary General, Peter Hinchliffe.

The ICS paper has been submitted to the International Contact Group on Piracy off the Coast of Somalia (which was established in response to a United Nations Security Council Resolution) and by all accounts the ICS paper has been well received by governments.

ICS has produced its paper following a dramatic reduction in the number of successful attacks against ships by Somali pirates, currently at a five-year low thanks to the combined success of sustained compliance with industry Best Management Practices (BMP), the use of private maritime security companies, the activity of military assets and new capacity building initiatives ashore.

Despite this, it remains the case that the pirates are active and retain the capacity to attack far into the Indian Ocean. ICS therefore continues to emphasize that it is premature to conclude that the crisis is over, with seafarers still held hostage in Somalia, some of whom have now been in captivity for three years.

In 2013, there were at least 13 reported incidents involving Somali pirates including two hijackings. ICS stresses that adherence to the industry's latest Best Management Practices (BMP 4) and, where necessary, the deployment of private armed guards, continue to be vital self-protective measures. The maintenance of current levels of military protection provided by a global coalition of governments in the Indian Ocean is also considered to be vital.

The ICS paper explains the significant challenges the shipping industry has faced in responding to the crisis in the Indian Ocean, which escalated dramatically in 2007.

This included getting the initial attention of governments and making them appreciate the scale of the crisis that was making a vast and strategically vital area of the Indian Ocean, including major trade lanes, a virtual 'no go' area to merchant shipping.

It also involved raising awareness in the mainstream news media, and then seeking to maintain this throughout the course of the crisis.

The ICS paper also highlights the importance of clarifying the rights and obligations of sovereign nations to address piracy (which were complicated by the breakdown of Somalia as a functioning State) and of the need to engage with military authorities and to persuade them that the prevention of piracy/hostage taking has a most important strategic and humanitarian function that should not be dismissed as mere 'low level' law enforcement.

"It was particularly important to foster an understanding that protection against pirate attacks was a shared responsibility in which both the military and the industry have to play their parts," said Peter Hinchliffe.

The ICS paper also explores the challenges of:

- developing and disseminating appropriate and acceptable Best Management Practice (BMP) recommendations on preventative measures to be taken by shipping companies, ships and crews;
- maintaining constant pressure on shipping companies and ships to sustain BMP compliance at the highest possible level;
- responding to the legal and practical challenges associated with the capture and prosecution of piracy suspects;
- responding to the legal and practical challenges created by the employment of private armed guards;
- responding to the humanitarian challenge of thousands of seafarers left traumatized by the experience of being held hostage for several months (years in some cases) prior to release;
- addressing the legal and moral dilemma created by the necessity for shipping companies and their insurers to make ransom payments;
- addressing the challenges of promoting capacity building ashore and the reconstruction of civil society; and
- seeking to address the crisis in an appropriate but proportionate manner that recognized it was likely to continue for several years while avoiding a situation in which the threat presented by pirates was regarded as 'normal' or that some of the necessarily extreme measures adopted, such as the use of armed guards, did not become institutionalized.

ICS hopes that all stakeholders in counter-piracy operations — whether political, military, shipping and security industries or media — will bear in mind the lessons identified in dealing with the issue of piracy in the Indian Ocean. ICS believes the core lesson of responding to criminality robustly and without delay will be more easily delivered in the future if these basic lessons are kept readily to hand.

ClassNK newly registers more than 20 million gross tonnes in 2013

Major classification society ClassNK has announced its official registration figures for 2013, revealing that new registrations of existing and newly built vessels totalled more than 20 million gross tonnes. The announcement was made on 20 January 2014 following a meeting of the ClassNK Classification Committee, which reviews and certifies all changes made to the ClassNK register.

Figures released by the Committee show that a total of 859 vessels totalling more than 20.5 million gross tonnes were added to the ClassNK register in 2013, marking the third straight year that ClassNK has registered an annual total of more than 20 million gross tonnes. This caps more than a decade of incredible growth by the society, which has seen the ClassNK register grow by more than 100 million gross tonnes since 2003.

While newbuildings made up the majority of new registrations in 2013, accounting for 588 ships totalling more than 15.3 million gross tonnes, transfers of vessels from other classification societies continued to represent a major source of growth for ClassNK.

Driven by ClassNK's growth in Europe in particular, transfers from other class societies grew to account for nearly 33% of vessels and more than 25% of all tonnage registered by ClassNK in 2013, both new records for the society.

Commenting on the announcement, ClassNK Chairman and President Noboru Ueda stated: "Our continued success in 2013 reflects the growing recognition of our service and quality not only by partners and stakeholders in Japan or Asia; but increasingly by owners and operators around the world. With the newbuilding boom behind us, we will continue to rededicate ourselves to providing the highest level of service and support to all of our clients and partners throughout the industry to secure our place as the most trusted, respected, and relied upon classification society around the world."

ClassNK receives authorization from Finnish flag

Classification society ClassNK (Chairman and President: Noboru Ueda) has earned authorization from the Finnish Transport Safety Agency to carry out surveys for Finnish flagged vessels. The agreement allows ClassNK to perform surveys for SOLAS, MARPOL, Load Line and other international conventions, as well as perform audits and issue certificates on behalf of the Finnish Government.

Speaking on the occasion, ClassNK Chairman and President Noboru Ueda said: "With the opening of our newest office in Helsinki on 1 December 2013 and the signing of this new authorization agreement, ClassNK is now able to provide a full classification service to all owners operating vessels in Finland, including those with domestically flagged vessels."

"Over the past several years we have made a tremendous commitment to improving our operations in Northern Europe and the Baltic region especially. In addition to new and expanded offices in St. Petersburg, Klaipeda, Hamburg and now Helsinki, our ability to work on behalf of an expanded range of regional governments mean that we can provide an even better service to our clients throughout the region."

With the authorization from Finland, ClassNK is now authorized to perform surveys and audits on behalf of 16 Flag Administrations in the EU, and a total of 110 Flag Administrations throughout the world.

Inchcape Shipping Services strengthens presence in the Niger Delta

Inchcape Shipping Services (ISS), major maritime services provider, has strengthened its presence in the Niger Delta with the opening of an office on Bonny Island, Rivers State, Nigeria. The office, which complements the company's existing presence in Lagos, Brass and close neighbour Port Harcourt, will service ISS contracts with Nigeria LNG (NLNG).

ISS, which has a worldwide network of over 300 offices, has a programme of office openings in strategic locations, particularly in emerging markets and developing economies. The opening of the office on Bonny Island comes as a result of a recent contract win which will see ISS servicing some of NLNG project vessels.

Comments Flemming Jensen, ISS Executive Vice President, Middle East, India and Africa Operations: "Having entered Nigeria in 2008, the opening on Bonny Island represents a significant further growth of our footprint in the country. It forms an important part of our plan for the country, Africa's second largest economy, and supports our wider plans for the Sub Saharan Africa region."

Inchcape Shipping Services is a major maritime services provider. With some 300 proprietary offices in 65 countries, and a workforce of over 3,800, the company's diverse global customer base now includes owners and charterers in the oil, cruise, container and bulk commodity sectors as well as naval, government and inter-governmental organizations.

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

ICS publishes latest flag state performance table

The International Chamber of Shipping (ICS) has launched its latest 'Shipping Industry Flag State Performance Table' which can be downloaded from its ICS website.

ICS director of external relations, Simon Bennett explained: "The ICS table is intended to encourage shipowners to maintain a dialogue with their flag administrations to help bring about any improvements that might be necessary in the interests of safety, the environment and decent working conditions."

Following the entry into force of the ILO Maritime Labour Convention (MLC) in August 2013, the latest ICS table now requires flag states to have ratified the ILO MLC in order to receive a positive indicator.

"The level of ratification of this important new ILO Convention as of the end of December is impressive," said Bennett. "However, those flag states that have not yet ratified the MLC but had previously ratified ILO Convention 147, have now received a negative indicator on our table with respect to ILO standards for the first time. But we hope and expect this situation to change this year as more and more flags finalize ratification of this core Convention before PSC enforcement of the MLC begins in earnest this August."

Minor changes have also been made with respect to the way in which Port State Control data is recorded in the ICS table. Following discussions with governments about the treatment of flag states whose ships make relatively few port calls in certain Port State Control regions, the ICS table now includes data on those flags with fewer than the required number of inspections/arrivals to be included in PSC 'white lists' but which have nevertheless suffered no detentions within a particular region during previous three years — consistent with the way in which regional PSC authorities now publish this information.

ICS advises that the absence of a couple of positive indicators next to a flag in the table should not be seen as a serious concern. They are only potential indicators and a flag with a solid row of 'green squares' should not necessarily be viewed as superior to another that is missing one or two 'green squares', for which there may be good reason. For example, a flag state may not have ratified a particular maritime Convention due to a conflict with its national law while nevertheless implementing the Convention's main requirements.

"But if a flag is lacking a large number of positive indicators in the ICS table then shipowners may want to ask serious questions," remarked Bennett.

ICS is keen to emphasize that in today's modern global industry, distinctions between so called 'traditional' flags and 'open registers' are increasingly meaningless and actually unhelpful. The ICS table shows that flag states such as Liberia, Bahamas and the Marshall Islands are amongst the very top performers alongside many European registers and Asian flags such as Japan, Hong Kong and Singapore that might be expected to perform very well.

In the same way that the shipping industry is committed to the concept of continuous improvement and transparency with respect to its performance, through mechanisms such as external auditing under the International Safety Management (ISM) Code, ICS believes that the same principles apply to the performance of flag administrations. ICS therefore reiterates its support for the decision by IMO to make its Member State Audit Scheme mandatory. "ICS member national shipowners' associations will be looking at ways in which we might take account of this important development in future updates of the table," said Bennett.

With the exception of data for maritime Convention ratification, the ICS Table uses information derived from the public domain as at the end of June 2013.

Videotel simplifies management of crew records

Videotel Marine International, the highly respected, multiple award-winning maritime training solutions provider, has released an Application Programming Interface (API) service in order for its clients to be able to manage their crew training records housed within webFTA - Videotel's powerful cloud-based training records management program - directly from their own Crew Management System (CMS) portal.

Videotel's API service has two main processes, namely, pulling crew data from the Videotel cloud so it can be displayed in the CMS portal and, secondly, pushing crew data from the CMS portal to the Videotel cloud which, in turn, triggers crew data to be sent to the vessels automatically.

This enhancement means that those in the office can manage the day-to-day operation from one console and still benefit from using webFTA without the need for double entry or updating of crew records, this all being handled automatically. When away from the office, through webFTA, management can still log-in and access the training records from any computer having an internet connection.

Clearly, the crew onboard benefit immensely as they do not need to manually add records themselves nor request them, these being received automatically. This drastically reduces duplication of records and the man-hours lost resolving issues that such a process can often entail.

This new service is another example of how Videotel clients who subscribe to webFTA can manage their crew training records as well as benefit from time saving and cost reducing automation.

Herbert-ABS opens Singapore office

Herbert-ABS Software Solutions LLC, a renowned name in marine regulatory, load management, salvage and ship design software, has opened an office in Singapore to reinforce service and support for Asia-based shipowners, operators and shipyards.

The new office will be led by director and naval architect Rob Tagg, who will expand the activities and strategic plans of Herbert Engineering and Herbert-ABS Software, primarily supporting installations and sales of its CargoMax™ and HECSALV™ software products.

Herbert-ABS is a joint venture with ABS so the expansion to Singapore is also intended to leverage the strong local presence they have in Southeast Asia. The classification society's relationship with yards building vessels ranging from FPSOs to OSVs and tugs presents a significant opportunity for Herbert-ABS to increase its penetration among owners in this area.

"Close proximity to shipowners and operators, opportunities for salvage and offshore projects and software sales to other engineering companies, make Singapore the natural choice for the next phase of our expansion", says Hendrik Bruhns, President of Herbert-ABS Software Solutions LLC.

Herbert-ABS already counts a leading Asian container line, local salvors, offshore operators, engineering companies and shipyards among its clients, as well as working with local tanker and bulk carrier owners and operators.

Herbert-ABS' solutions are user driven and endorsed worldwide. Headquartered in Alameda, California, with site offices in Glasgow and Shanghai, Herbert-ABS bridges design, classification and operational management aspects of vessels and offshore units. The company offers cutting-edge, loading and salvage emergency response software packages and design tools to the maritime and offshore industries. Herbert-ABS has a strong customer base and continues to maintain thousands of software installations and satisfied customers. The full product portfolio includes CargoMax™, CruiseMax, HECSALV™, HECSALV™ Offshore, HECSDS, LMP-Offshore, Trim & Draft Optimization, Incline, Detailed Deck Plan Entry (DDPE), and Direct Damage Stability (DDS).

McKeil Marine awarded for environmental leadership

The Hamilton Port Authority (HPA) has announced that Hamilton-based McKeil Marine Limited is the recipient of the 2013 HPA Environmental Excellence Award, recognizing the company's dedication to environmental stewardship.

"We are very pleased to recognize McKeil's commitment to the environment with this year's Environmental Excellence Award," said HPA President & CEO Bruce Wood. "McKeil is a company that thrives on innovation, and brings that spirit to every aspect of its business. We are very proud to have McKeil as a Hamilton Port Partner, and we greatly value the company's leadership on environmental matters."

McKeil Marine is a committed and enthusiastic supporter of numerous environmental initiatives aimed at protecting water quality, reducing fuel consumption, and trimming the carbon footprint of its marine fleet.

McKeil was one of the first companies in North America to install a leading-edge fuel optimizing technology on three vessels in its growing fleet. The installation produced a fuel savings of more than 30%, along with significantly reduced pollution and CO_2 emissions.

McKeil Marine is also a founding member of Green Marine, an industry-leading program to improve environmental performance in the maritime sector. "We are constantly seeking new opportunities to find efficiencies in the operation of our fleet," said McKeil president Steve Fletcher. "Reducing our carbon footprint and passing on savings to our customers combine for very positive impact. We've demonstrated our ability to streamline customer supply chains in current cargo movements and work hard to continually devise new ways to further this effort."

McKeil has selected the Bay Area Restoration Council (BARC) to receive a $5,000 donation on the company's behalf, provided as part of the award through HPA's environmental trust fund. BARC has been a leading voice in the effort to restore and protect Hamilton Harbour since 1994.

"Industrial environmental stewardship has been a key aspect of Hamilton Harbour remediation, and we congratulate McKeil Marine Ltd. for its leadership at the waterfront and on the water," said Chris McLaughlin, Executive Director, BARC. "We are honoured to have been chosen, and this gift will support the child and youth educational programming that helps BARC ensure the next generation has the knowledge and skills to continue to 'bring back the Bay' and keep it that way."

The Fuel Optimizing System, used by McKeil Marine to minimize the fuel consumption and air pollution and also maximize the ships' profitability, was designed and installed by Pronova Systems Inc. of Laval, Quebec. "We applaud the vision of McKeil's leadership, and the input of its knowledgeable team in helping customize the system that meets the needs of McKeil's fleet, and produces excellent results," said Stefan Stan, President of Pronova Systems.

McKeil Marine Limited is a tug and barge operator servicing the Great Lakes, St. Lawrence River, East Coast and Canadian Arctic. Since 1956 the company has provided innovative marine solutions for customers in transportation and project services. Headquartered in Hamilton, Ontario, McKeil Marine also has offices in Montreal, QC and St. John's, NL.

The Port of Hamilton is the largest Canadian port on the Great Lakes in terms of both size and cargo handled. The Hamilton Port Authority's strategic vision is to be the Great Lakes port of choice.

Bulk carrier outlook

After registering significant gains in the second half of 2013 dry bulk freight rates should remain buoyant through to 2015. But excessive newbuilding orders remain a threat, writes Michael King.

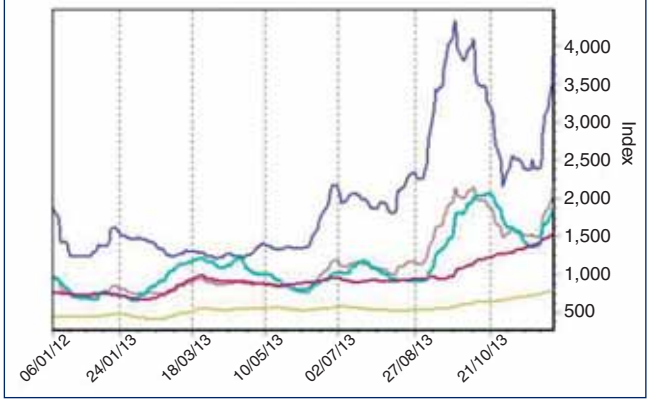
The bulk carrier shipping sector saw a marked improvement in 2013 as most indicators of health — second hand vessel values, the Baltic Dry Index, time charter earnings and newbuilding prices — took a turn for the better. The BDI, for example, was slumped at 698 on the 2 January 2013 but by 6 December had climbed to 2,176, its highest point all year. Indexes for Handy, Capesize, Panamax and Supramax vessels followed a similar trajectory (see BDI chart), all seeing surges in late summer, declines in October and November and a final bounce as New Year loomed.

Most analysts expect market volatility to continue this year but with rates swinging between higher parameters than in 2013. Peter Sand, Chief Shipping Analyst at BIMCO, said there was now clear evidence of structural recovery in the market after five years of pain for owners, operators and investors. "The way BIMCO sees it is that the fundamental balance is now slowly starting to improve as demand is outpacing supply growth," he told *DCI*.

Certainly the demand side of the shipping equation looks bright, if not bullish. Analysis by Jayendu Krishna, senior manager at Drewry Shipping Consultants, illustrates that tonne mile demand increased by a Compound Annual Growth Rate (CAGR) of 5.5% over 2000–2012. But in 2013–18 tonne mile demand will accelerate to a CAGR of 5.8%, with iron ore and coal gradually taking a larger share of the bulk shipping pie through the period, displacing minor bulks and grains. Krishna also expects the gradual rise over the last decade in the size of parcels shipped to continue increasing in the years ahead, a trend apparent across all commodities.

Krishna forecasts that India's coal imports will double through to 2018 from around 100mt (million tonnes) per annum now, while increasing US coal exports will also boost shipping demand. But while the economic health of Japan, the EU-27 and South Korea will remain critical to sustaining demand growth, the major demand question facing the industry is whether China's seemingly insatiable consumption of raw materials like iron ore, coal, bauxite, nickel etc. can endure. "Despite slower

Baltic Indices and routes



Going 'ECO'

Owners are ordering new ships now because of the historically low prices available from shipyards and the expectation that freight rates and vessels prices will rise. But another enticement is the operational savings made possible by modern designs.

The search for strategies to cut costs through slow steaming is almost a decade old in the container industry. What evolved as a pure operational stratagem has passed through to ship design, with lines seeking to gain a competitive advantage by utilizing more efficient ships that require less fuel, thus reducing container slot costs.

Belatedly, the bulk carrier industry is following the same path. The latest generation of bulk carrier ships coming out of yards have been christened 'eco bulkers' due to the energy savings they offer. "High bunker prices, lower freight rates but also new regulations regarding energy efficiency have stimulated this trend," said Konstantinos Chatzitolios Business Development Manager for Dry Cargo & Container Ships at classification society Bureau Veritas.

Most of the new generation of ships are fitted with electronic engines or ultra-long stroke engines. "The electronic engines, coupled also with advanced turbo chargers, can obtain an improved fuel consumption in slower speeds in the range of 2% compared to mechanical engines," said Chatzitolios.

"The ultra-long stroke engines can reduce fuel consumption by another 2% to 4%. Energy saving devices (ESDs) like propeller ducts and stators can also improve fuel oil consumption by increasing the ship's propulsive efficiency, while more exotic solutions like air bubbles pumped on the ship's bottom can reduce the frictional resistance. The benefits from a pre-swirl duct, for example, could be in the range of 5% for a bulk carrier according to suppliers of such appendages.

"All in all the most efficient new eco bulkers can obtain an improved efficiency as high as 20% compared to older designs depending on age."

Eco bulkers have also had their share of criticism, mainly because many of the fuel savings they offer can also be generated simply by slow steaming with the existing fleet.

Chatzitolios said this was a valid point, but eco ships also offer the advantage of being efficient at a wide range of speeds and so offer more flexibility.

"The hull forms of the new designs have been optimized in a wider range of speeds including slow steaming and extra slow steaming speeds," he explained. "This optimization follows a weighted average approach between different operational profiles. It is up to the ship owner to choose the best fit depending on the intended operational profile.

"The design approach for the older generation of ships was to optimize the hull form for one operational condition which means that lower gains can be obtained with slow steaming."

One example of a new eco bulk carrier is the Crown 63 of Sinopacific. Compared to its predecessor, the Crown 58, the new vessel offers 13% better fuel oil consumption while accommodating 9% more cargo.

"BV has currently 21 Crown 63s in Class for various owners, all built in 2012 and 2013," said Chatzitolios. "Another 11 are currently under construction. In the Handysize segment, SDARI's Green Dolphin 38 has been designed with main focus on reducing fuel consumption. Two Green Dolphins 38 are currently under construction in China's Qingshan shipyard under BV Class for Croatian owner Atlantska Plovidba with an option for another two."

Many of the improvement solutions applied to newbuildings can also be applied to existing ships if the payback period is within reasonable limits. A well-designed, five-year-old ship can compete with the new eco ships if the correct solutions are chosen and applied, according to Chatzitolios.

"BV is currently involved in two join industry projects, the REFIT 2SAVE and GRIP with the aim of systematically testing the most popular ESDs with CFD simulations, model tests and real measurements on board ships," he said. "The conclusions of these two projects will help owners identify the most suitable solutions for retrofitting their existing ships. In the GRIP project BV is leading the structural assessment of ESDs which should not be overlooked."

Chatzitolios believes ship owners will continue to invest in new eco ships as long as bunker prices remain high and newbuilding prices remain at their current low levels. In anticipation of more orders, shipyards and designers are continuously trying to improve the efficiency of new designs by applying different and new techniques.

"Nowadays, as more and more of these energy improvement techniques are considered as typical and are frequently used, there is a need to identify also new solutions which will improve the energy efficiency of ships," he said.

With this in mind, BV has developed a software system called SEECAT which is used to model and study the energy performance of ships. "With this kind of energy flow modelling, improvements can be made holistically or by focusing in certain parts of the ship like cooling and ventilation systems or other important auxiliary consumers," he said.

Chinese GDP growth in 2014, commodity imports could very well stay strong," concludes Sand. "This is due to the factors of diversity in suppliers, lower commodity prices, and the lower quality of domestically produced iron ore and thermal coal."

On the supply side, he was also positive, with the number of fleet additions falling in 2013 as yards deferred deliveries. In November some 521 vessels had been delivered totalling 43m dwt, down 45% year-on-year. "Overall, there will be a fall in the delivery of dry bulk vessels in 2013 for the first time in five years," said Krishna. "This," he said, "will go a long way in bringing back healthy earnings for ship owners".

However, the threat of over-supply which has plagued the sector for the last five years has not disappeared. Newbuilding orders — as opposed to deliveries — increased by 50% year-on-year in 2013 as owners took advantage of low yard prices and invested heavily in new fuel efficient 'eco' ships (see box).

Although fleet additions are expected to only increase the

INDICES 2013

	BDI	BCI	BPI	BSI	BHSI
06/12/2012	990	1897	940	765	446
02/01/2013	698	1237	685	737	446
01/02/2013	750	1454	664	682	449
01/03/2013	776	1243	1036	781	447
02/04/2013	896	1229	1155	933	543
01/05/2013	862	1279	1018	884	545
03/06/2013	806	1333	786	873	529
01/07/2013	1179	2176	1014	954	566
01/08/2013	1066	1935	1041	909	530
02/09/2013	1139	2263	912	939	534
01/10/2013	1994	3816	1786	1087	597
01/11/2013	1525	2316	1631	1273	669
02/12/2013	1865	3194	1695	1488	771

size of the bulk carrier fleet by low single digit figures in 2014 and 2015, a further surge in newbuilding orders could hurt the supply-demand balance thereafter. Indeed, Sand argues that the biggest threat to improved earnings comes from the fierce competition between shipyards which is anchoring newbuilding prices. "If we look at recent orderings they are likely to postpone the eventual comeback of much stronger earnings if not offset by a large increase in scrapping," he said. "The drive behind this ordering is improved designs available from yards, better fuel efficiency on the newer ships, improved access to finance and the impression that newbuilding prices are seen as moving up only up from here.

"Not all will applaud the fact that more new ships with improved characteristics will be afloat in a few years' time. But some will get lower breakeven costs across the fleet with the new ships and may concluded this will help them to return to profitable levels sooner rather than later."

This is a view shared by a number of owners, not least Euroseas. "We believe that investing in young assets when prices are low is a sound proposition as one is to gain not only from the trading of the ships, but also from possible asset appreciation," said Aristides Pittas, Chairman and CEO of Euroseas as he explained in December why his company had signed contracts to build two Ultramax dry bulk vessels. "Both vessels are of eco-design and we expect them to have an additional competitive advantage in the marketplace. This contract heralds the further growth of our company alongside with the gradual recovery of the markets that we expect."

Konstantinos Chatzitolios Business Development Manager for Dry Cargo & Container Ships at classification society Bureau Veritas, also notes that the increased orders placed in 2013 cannot only be attributed to the improved efficiency of new eco bulker designs (see box). "The main drivers for new orders will continue to be connected to other market dynamics, for example, low new building prices or a foreseeable market improvement," he said. "As long as these drivers exist, then more ships will be ordered in the future and it is certain that they will be eco ships."

Perhaps of more concern for owners in short to medium term is the latent excess of supply. This is currently being masked by slow steaming strategies, but as Sand points out, "the recent jump in Capesize rates also meant ship speeds went up a bit to cater for the sudden jump in demand." In short, if owners decide that sailing more quickly makes sense, the supply-demand equation can rapidly change.

Sand concludes that if owners could resist the temptation of further mass orders and continued to keep an eye costs by cutting speeds and fuel consumption, then the outlook is positive. "Quarter one is set to be the toughest quarter next year, as seasonality puts on some pressure," he said. "BIMCO expects demand growth for 2014 in the range of 4.5–6%. Such strong growth will outstrip supply and bring about an improvement to the fundamental balance."

Krishna forecasts that supply will expand by a CAGR of 3.5–4% over the next three years and tonne-mile demand by a CAGR of around 6% over the same period. This will see latent excess supply gradually weaned down from its current 20% to as low as 10% by 2016.

"Late 2014/early 2015 looks like more probable for sustained recovery in the earnings of vessels as the supply surplus goes down to less than 15% including slow steaming," he said. "Hopefully the recovery is not coupled with another round of new orders. In that case the same saga of low rates will continue in the years ahead. But most of this year's orders won't be delivered until 2015, so the market looks healthy, at least until then." DCi

First ship of 2014 calls at Port of Sept-Îles

Arriving from Ijmuiden, the Netherlands, at 3:22 a.m. on 1 January 2014, the Panama-registered ship *Huang Shan* was the first vessel of the year into the Port of Sept-Îles. The ship arrived empty and will set sail for Qingdao, China, at the end of January 2014, carrying a cargo of nearly 165,000 tonnes of iron ore from Cliffs Quebec Iron Mining Ltd.

The cane award ceremony took place at the traditional Port of Sept-Îles beginning-of-year cocktail reception at the HMCS *Jolliet* Naval Reserve in the presence of approximately 100 guests. Port of Sept-Îles president and CEO Pierre D. Gagnon awarded the prestigious cane to Captain Fan Kuang-Yun. Several other gifts were presented to the captain in recognition of the achievement by Mayor of Sept-Îles Réjean Porlier and Steeve Charest, general manager of Cliffs Pointe-Noire Division.

This tradition, now in its 27th year, marks the arrival of the first ship of the year to anchor in the port. Six vessels were in the running this year, including three destined for Cliffs and three for Rio Tinto IOC. To be eligible, the ship must arrive from a foreign port and be bound for a destination outside the country.

2013 IN REVIEW

The volume handled in the Bay of Sept-Îles in 2013 was similar to that of 2012, at nearly 28mt (million tonnes). The Port of Sept-Îles gained a new client, Tata Steel Minerals Canada (TSMC), which shipped 240,276 tonnes of iron ore using the facilities of the mining company Rio Tinto IOC.

The year 2013 was marked by intense construction activity on the multi-user dock at Pointe-Noire, requiring an unprecedented investment of nearly $130 million this year. The world-class dock, costing a total of $220 million, is designed to serve new clients from the iron ore industry and will be completed in summer 2014. The port would like to stress the considerable local spinoffs the project is currently generating: 80% to 90 % of the workers come from the region, and services and equipment are provided by local suppliers.

The highlight of the year was the arrival of the first Chinamax vessel in the Port of Sept-Îles, which took on 302,264 metric tonnes of iron ore from the Cliffs Natural Resources Lake Bloom mine. "The arrival of the CSB Years is an historic North American milestone and marks the opening of our port to the next generation of giant iron ore vessels," said Pierre D. Gagnon, president and CEO of the Port of Sept-Îles.

About the Port of Sept-Îles

Boasting a full range of high-performance facilities, the Port de Sept-Îles is the leading iron ore port in North America, handling more than 27mt a year. Sept-Îles' port facilities play a vital and strategic role for a number of businesses in the region's primary sector.

The port accounts for an estimated 4,000 direct and indirect jobs, with an annual economic activity of nearly $1 billion.

Beira sorting out congestion problems

Carlos Mesquita, managing director of Cornelder, which manages the Mozambican port of Beira, was expecting to have resolved the issue of congestion at the port by the end of 2013. He points out that this is been a developing problem over the past decade given the amount of cargo the port is now handling and the investment being made in both road and rail.

Part of the solution is the resumption of freight traffic to Lusaka, in nearby Zambia, after an absence of 25 years. This means that, in future, the majority of traffic (around 75%) will be moved by rail and just 25% by road. Until recently, road had a 65% market share and rail the remaining 35%. *Barry Cross*

Ust-Luga to have fertilizer plant

Russia's ICT group, which is owned by billionaire Alexander Nesis, is to invest $1.6 billion by 2017 in the construction of a fertilizer plant in the Ust-Luga industrial zone, adjacent to the Baltic port of the same name. It will be able to produce 1.2 million tonnes of granulated carbamide and 350,000 tonnes of ammonia annually. *BC*

Karnataka to build new port

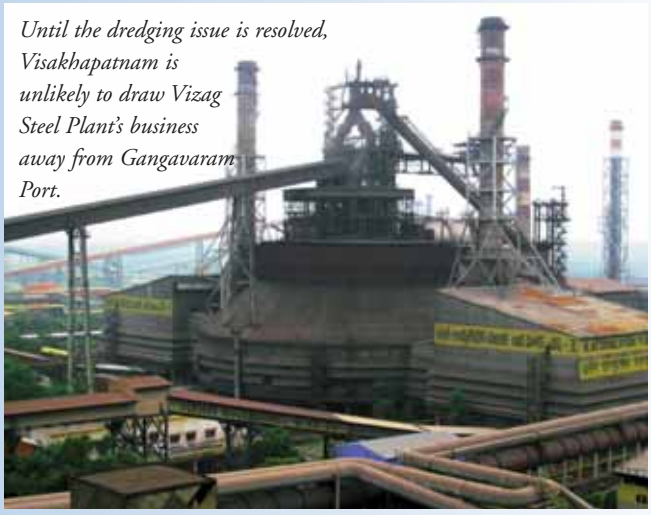
The government of the Indian state of Karnataka is to build a new port at Honnavar at a cost of $97 million, although the project itself will be taken forward as a public-private partnership. Construction work was to go ahead in early November last year. Significantly, a competing proposal has also been put forward for a similar facility costing just $81 million. *BC*

Vizag joint venture seeks to terminate agreement due to dredging failures

Vizag General Cargo Berth (VGCB) Private Limited, a 74:26 joint venture between Sterlite Industries, a company belonging to the UK based Vedanta Group and Leighton Welspun Contractors has served notice to Visakhapatnam Port Trust for termination of the contract of the concession agreement for running on a revenue sharing basis a berth at the outer harbour of the port on India's east coast. The provocation for termination notice, according to the complainant company, is the alleged failure of the port authorities to dredge and maintain the depth at the entrance channel of the outer harbour at 20 metres.

VGCB won the contract for the mechanization of coal handling facilities and improvement of general cargoes at a berth in the outer harbour in June 2010 so that 200,000 tonne Capesize ships could be received. On the understanding that the Port Trust would maintain the channel depth at 20 metres at all times for smooth operation of the dry cargo berth, VGCB claims to have already spent Rs6.38 billion ($110 million) for its operation since January 2013. However, the company says in a letter to the port authorities that "to date [we] have not been able to cater to any vessel of 200,000dwt." As VGCB is left hand-wringing, it finds that Capesize vessels are "being diverted to neighbouring ports." India's imports of thermal and coking coal leaped 34% 137.56mt (million tonnes) and imports could rise a further 13% this year as domestic production could fall short demand by 155mt. Unfortunately, thanks to the draught issue, VGCB cannot take advantage of rising coal imports, principally for which it entered into a 30-year contract.

The letter further says "as VPT has failed to comply with its obligations and or failed to cure/remedy" the situation, VGCB is left with no option "but to repudiate/terminate the concession agreement." Pratik Agarwal, director of VGCB, told a news agency



Until the dredging issue is resolved, Visakhapatnam is unlikely to draw Vizag Steel Plant's business away from Gangavaram Port.

that the project's viability depended upon the entry channel remaining perennially dredged to a depth of 20 metres. "Otherwise, investment of such an amount could never be viable. That was the basis of our bid and now we are losing money every day," he said.

In the meantime, in the first half of the current financial year (April to March), Vizag Port, one of the 12 major ports in the country, handled 28.9mt of cargo, down from 30.3mt in the corresponding period of 2012/13. Cargoes handled by the port last year fell 8.2mt to 59.13mt. Vizag Port is facing growing competition from Gangavaram Port about 11km away. The government-owned Vizag Steel Plant soon to be expanded to 6mt is using the virtually next door Gangavaram Port for coal and other raw materials import over last few years. *Kunal Bose*

HAROPA: recognized as expert in European port information systems

HAROPA-Port du Havre has again been saluted by European main ports for its expertise in the field of port information systems. For the second time in 2013, it received the members of the PROTECT group specializing in the simplification and standardization of port electronic data interchanges.

Le Havre was not chosen by chance for the organization of the second meeting of PROTECT – the European expert group – which traditionally met in Amsterdam under the leadership of the port of Rotterdam. The decision was made as a result of the expertise of HAROPA-Port du Havre's teams, as well as its innovative tools for ship and cargo transit.

It is justified by the expertise, which is now recognized on the European scale, of the teams of HAROPA-Port du Havre, as well as that of their innovating tools at the service of ship and cargo transit.

The meeting took place on 29 November last year. All the representatives of the European main ports and of the companies operating their cargo management system attended. One of the issues was the adaptation of the 2010/65 directive: the objective is setting up a European port electronic window facilitating the reporting formalities management for ships arriving in and/or departing from ports. The Port of Le Havre Authority presented the French view of the definition of the window and the strategic challenges implied by offering facilitation making the organization of the calls more fluid.

After the meeting, the PROTECT group defined a planning of work to the member States of the European Community and submitted a standardization of the practices between the major ports in Northern Europe. HAROPA-Port du Havre aims to be a prime mover especially by promoting its new-generation port electronic window: SWiNG.

It is worth mentioning that the PROTECT Group – with Le Havre as one of the founding members – groups together the major ports in Northern Europe: Rotterdam, Amsterdam, Antwerp, Le Havre, Hamburg, Bremen, Bremerhaven, London, Felixstowe, Bilbao, Portel, Groningen, Nantes and Dunkirk as well as their companies in charge of the cargo management community information system (PortBase, Seagha, Soget, Dakosy, MCP, DBH).

About HAROPA

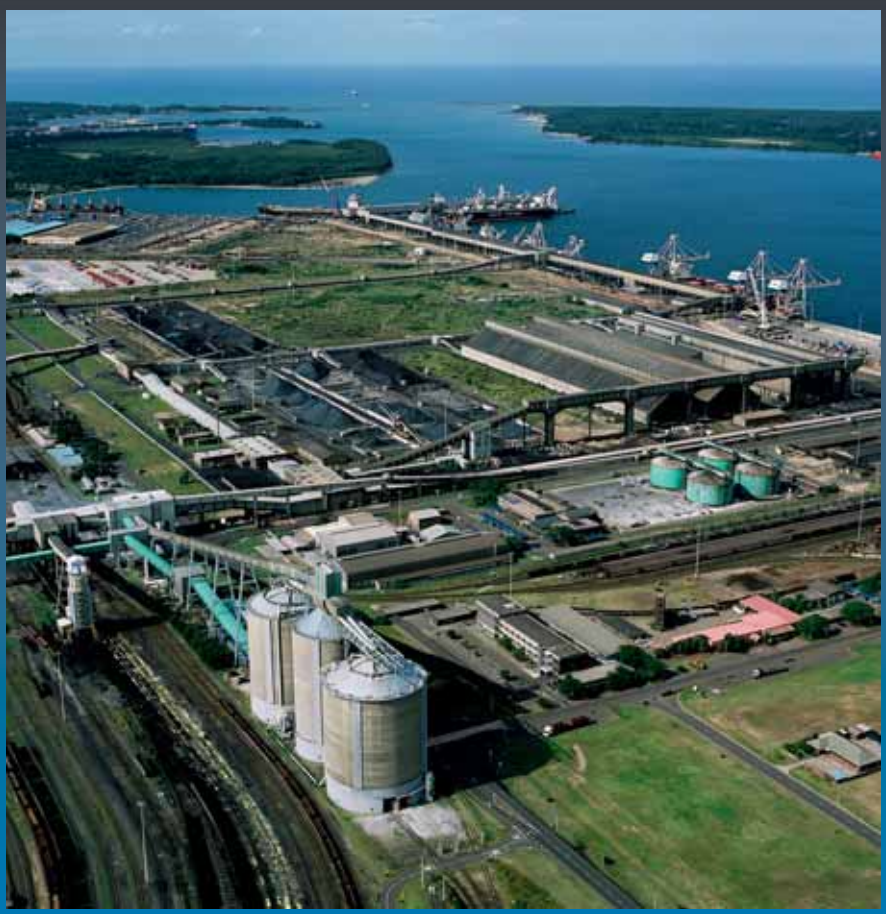
HAROPA, the fifth-largest port complex in Northern Europe, is a joint venture between the ports of Le Havre, Rouen and Paris. Connected to every continent owing to a first-rate international shipping offer (with connections to more than 550 ports worldwide), the 'one-stop' hub forms a global transport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

RBCT forecasts 70mt traffic in 2013

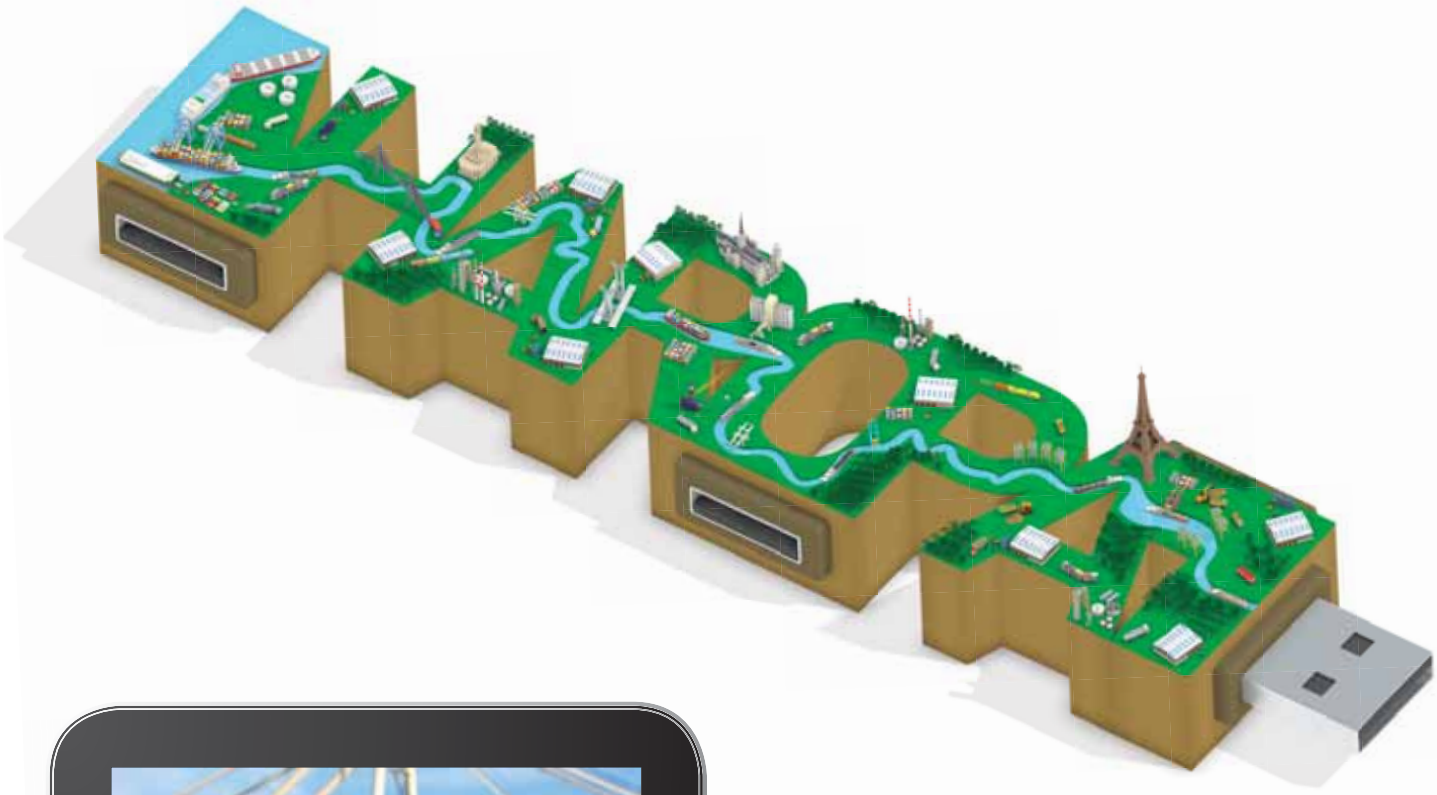
Richards Bay Coal Terminal (RBCT) is forecasting that it will have handled 70mt (million tonnes) by the end of 2013, although this is dependent on exporters upping their sales in the last quarter, which invariably happens. In addition, Transnet Freight Rail will need to maintain the type of higher monthly flows first achieved in July.

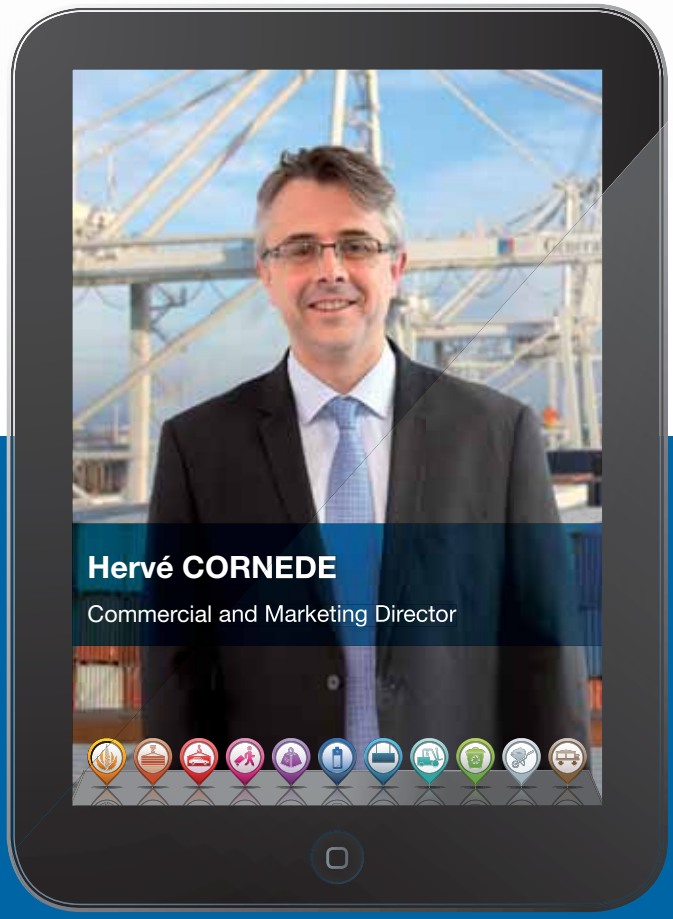
The terminal has never broken the 70mt threshold before, although got close in 2005 when it reported 69.2mt of exports. This, in itself, was a major achievement, given that the engineered capacity of the terminal at that time was in the region of 72mt. Since then, there has been something of a slowdown in the global market, with RBCT hitting a low in 2009 of 61.1mt. A recovery has nevertheless set in, resulting in 67.8mt handled last year.

In the meantime, RBCT has undertaken a five-phase expansion, which is brought engineered capacity up to 91mt. *BC*



High speed
PORT SYSTEM





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Overview of the Netherlands

Handling cocoa at the Port of Amsterdam for VOLLERS Holland B.V.

Dutch bulk handling under the spotlight

Louise Dodds-Ely

Port of Amsterdam: port of partnerships

Leading, growing, investing and co-operating in dry bulk

Amsterdam is amongst Europe's largest and most important dry bulk ports. Major international companies, including agri multinational Cargill, steel giant Tata and coal transshipment companies Rietlanden Terminals and Amsterdam Bulk Terminal (OBA) are proud to call Amsterdam their home. Thanks to these companies, Amsterdam has become a major dry bulk hub serving northwest Europe.

In the North West European bulk sector there are two main ports that are able to reach a wide hinterland via waterways and barges — Amsterdam and Rotterdam. These two largest Dutch ports have the advantage that, for bulk cargoes, barge is the cheapest method of transport. That's why Amsterdam and Rotterdam together get 51% of the dry bulk cargo shipped via ports in the Hamburg-Le Havre range (59% including liquid bulk).

Top player in coal

As world's largest gasoline port and second-largest coal port in Europe, Amsterdam is a leading player in the fossil energy market. Due to its position within the coal market, dry bulk throughput counts for 43% of the port's total annual throughput.

Coal represents almost 50% of the electricity market in north-west Europe. Over the next 20 years, coal imports are expected to increase. For Amsterdam, this will mean an increase from 14.7mt (million tonnes) of coal in 2007 to an expected 20mt in 2020. By investing in intensive space utilization, the increasing volume of coal transshipments can be housed at existing locations. Lex De Ridder, Commercial Division, Cluster Energy at the Port of Amsterdam: "We are very keen to find customer-friendly solutions. Our pioneering role in handling Russian coal is one example of Amsterdam's flexibility in action. While other ports baulked at the 'dirty' nature of the coal, Amsterdam's stevedores installed separating magnetic equipment at the port to clean the coal of metal parts picked up in transit before the cargo was onward-shipped to power stations for use in electricity generation. We were the first in Europe to do this."

Front runner in cocoa

Next to coal, Amsterdam is a top notch player as regards to a different type of dry bulk good, that is cocoa. Amsterdam is the world's #1 cocoa port. Sustainability and support of fair trade initiatives remain of the utmost importance to Port of Amsterdam with regard to cocoa and other soft commodities passing through the port. A cocoa 'rail-shuttle' between Amsterdam and Berlin has already been realized, reducing road congestion and CO_2 emissions in the supply chain.

Scrap

Early in 2014 Alba Scrap Terminal (AST), a subsidiary of the German recycling giant ALBA Group, will open a new terminal in

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Facts & Figures

- Amsterdam Port Region includes the ports of Amsterdam, Beverwijk, Zaandam and Velsen/IJmuiden;
- Amsterdam Port Region Area (North Sea Canal Area) covers 4,500 hectares;
- Amsterdam Port Area covers 2,600 hectares;
- Port of Amsterdam's annual turnover: approx. €121 million (2012*);
- Port of Amsterdam's operating profit (revenues for the City of Amsterdam): EUR 43.1 million (2012*);
- Port of Amsterdam's total capital employed: €625.7 million (2012*);
- employment in the Amsterdam Port Region (direct and indirect): 54,000 jobs;
- number of companies in port area: 663 (284 based in Amsterdam);
- transshipment in the Amsterdam Port Region: more than 94mt;
- cruises: 150 cruise liners and 1,500 river cruise liners annually, carrying a total of more than 650,000 passengers. Revenues from cruises for city and region approx. €150 million; and
- added value Amsterdam Port Region maritime industry: €5.8 billion.

** In 2012, the Port of Amsterdam was still a municipal service, so financial data do not fully reflect the port's independent status since 1 April 2013. Cruises: 150 cruise liners and 1,500 river cruise liners annually, carrying a total of more than 650,000 passengers. Revenues from cruises for city and region approx. €150 million.*

the port of Amsterdam. The terminal, situated on a 25,000m² plot with 190m quay will be utilized for storage and transshipment of ferro-metals. The annual deep sea-related transshipment via the AST-terminal is forecast to be more than 250,000 tonnes. The Port of Amsterdam is currently handling about 710,000 tonnes of scrap.

Taking leaps in agribulk and minerals

High volumes of agribulk food and feed are handled in the port of Amsterdam. All the necessary facilities and infrastructure are available in the region. From transshipment to manufactory industry. The Amsterdam port area is also a region where value is created by the industry — like the production of fertilizers, industrial mineral processing and oil seeds crushing. All made possible by the companies in the port. The 18% growth in 2013 in agribulk in Amsterdam can mostly be attributed to the biggest agribulk terminal of Europe Igma, while the growth in industrial minerals is due to the investments of Mondo Minerals and new business at the Waterland 'all-weather' Terminal.

Agribulk is playing an increasing role in the energy market. For example, soybeans and oilseed are an important feedstock for the production of biodiesel. Grain and maize are deployed for the production of bio-ethanol. As one of the world's largest energy ports, Amsterdam also wants to play a prominent role in these supply chains.

The port has also forged a unique role in the agribulk trades by encouraging the handling of parcel services by the likes of Cargill. This system enables smaller volumes to be transported without impacting the economies of scale of shipping in bulk because a number of cargo owners can use the same ship and storage facilities simultaneously. Port managers worked diligently with stevedores and shippers to ensure the complex logistics entailed in this type of shipping was facilitated across the port, with every detail covered including tariffs, storage facilities and the handling systems used before shipment to the hinterland.

Energy port

Port of Amsterdam has ambition — ambition to substantially contribute to the transition to renewable energy and bio-based economy. Lex de Ridder says, "We do this by entering into appealing partnerships with customers and innovative start-ups, making them grow. It is logical we contribute to the transition. We are one of the world's largest energy ports: a first-rate base for the development of cleaner forms of energy."

More important: renewable energy needs a strong position within the sector mineral energy, but also agribulk and recycling. These are precisely the cornerstones on which the port of Amsterdam excels. It has the infrastructure, knowledge and channels which play an important role in the transition. It is these strong fundamental sectors which make the port appealing for bio-based economy.

Photo: Peter Kamstra.

DRY BULK THROUGHPUT (TONNES)

	2012	2013 (est)
Cereals	511,745	2,735,035
Cattle feed	4,881,113	3,231,285
Oilseeds	1,523,247	2,184,461
Coal	15,578,374	17,742,803
Ores and scrap	774,787	790,053
Building materials and minerals	5,298,667	5,152,307
Fertilizers	1,118,238	1,206,382
Other dry bulk	673,232	589,057
Total dry bulk	**30,359,403**	**33,631,383**

Enterprising in bio-based economy

Bio-based economy in the Port of Amsterdam revolves around the production of high-quality raw materials extracted from organic base and residual flows. Port of Amsterdam reserves space and invests in partnerships to develop bio based activities in the port, all the while directing towards synergy. Generating clusters and cycles, in which the residual flows of one company are the raw materials of another and local and regional waste are processed into raw materials and energy.

With a strong representation of the sectors energy, agribulk and recycling Port of Amsterdam expands its bio-based economy activities. Lex de Ridder: "A good example of the bio-based economy activities in the port of Amsterdam is ICL Fertilizers Europe C.V. ICL utilizes residual flows from neighbouring port companies as raw material for the production of artificial fertilizer. Residual flows, demand for raw materials and energy production are coming together more and more in the port of Amsterdam. For instance at Cargill, Afval Energie Bedrijf (AEB) and Greenmills, which will expand its activities in the port of Amsterdam."

General information

2012 Port of Amsterdam

- world no. 1 cocoa port
- Europe's no. 1 petrol port
- Europe's no. 2 coal port
- no. 4 sea port in Europe
- top 10 cruise destination of Europe

Rising in biomass

As a true and renowned energy port, Amsterdam offers wide-ranging possibilities for the transshipment, storage and processing of biomass. Biomass refers to the biodegradable fraction of agricultural crops, agricultural, forestry and similar residues, and waste. It is used as fuel for power stations.

Due to its extensive experience and expertise in the transshipment of coal and agribulk, combined with its excellent connections to the European hinterland, Amsterdam is *the* European hub for this new energy commodity. The Port of Amsterdam is the rising star amongst European ports when it comes to biomass.

The OBA Bulk Terminal handles an impressive amount of wood pellets. "Logistically Amsterdam is perfectly situated for the transit of products to the hinterland by the Amsterdam–Rijn Canal and by sea to Great Britain," says Hans Mattheijer, Commercial Manager at OBA. "It is not yet clear to what extent biomass will contribute to Germany's generation of electricity, but it is certain that Germany is a potentially large biomass market. And Amsterdam can play a big logistical role in that market." The transshipment of biomass fits in well with the transshipment of other agribulk. Mattheijer: "The most important difference is that we even focus more on safety. Wood pellets can give off more gas. Therefore we measure the gas percentages in the vessel's hold and storage sheds very frequently. Also the temperature is different. For that purpose we have installed sensors which we can read off online."

The Supramax bulk carrier *Egret Bulker*, sailing from Vancouver, Canada, arrived at the Amsterdam terminal carrying 47,000 tonnes of wood pellets. A single shipment of biomass of this volume was something new in the port of Amsterdam but posed no problem for the vastly experienced and capable stevedore.

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Recently a new contract was signed with a biomass fuelled midscale power plant that will generate green power in the port of Amsterdam. The plant will be in operation within two years. Furthermore torrefaction plants could be established in the coming years.

Up to 1mt of biomass is expected to flow through Amsterdam by 2020. The annual throughput of biomass in the port of Amsterdam numbers varies between 50,000 and 250,000 tonnes in the recent years. To facilitate expected growth in the market, Port of Amsterdam and the terminals are preparing to invest in several new ambitious projects for storage. Of course, actual developments are dependent on government policy.

Strong growth expected in 2013 transshipment

The year 2013 got off to a promising start. Based on the figures for the first half of the year, Port of Amsterdam expects to be able to end 2013 in reasonably positive territory. Working in cooperation with partners and customers to further optimize and intensify port activities with a view to sustaining this growth.

The estimate for the dry bulk sector in 2013 is very good with a growth of 11% to 33.6mt. Agribulk is estimated to grow by 18%, while the coal import is expected to rise by 14% more throughput, a record. The drivers are the closing of coalmines in Germany, a fairly cold year, low coal prices, high gas prices in Germany. This is a return on investments made in the past years by the terminals OBA, Rietlanden and the Port of Amsterdam in port infrastructure and equipment.

Today, Amsterdam is aiming to reach 50mt of dry bulk transshipment by 2020, a goal to be achieved without use of extra land area. Port of Amsterdam's ambition is to use the existing terminals more effectively and efficiently to increasing cargo throughput in an innovative and sustainable manner.

New sea locks and lightering facility

Growth of course entails more fully loaded Capesize vessels calling at the port of Amsterdam. Global development shows that vessels are increasing in scale. To cope with the larger amount — and the increased size — of vessels, new sea locks and a lightering dock outside the sea locks in IJmuiden will be developed. Port of Amsterdam is participating in these preparations in association with the Dutch Ministry of Infrastructure and the Environment, the Directorate-General for Mobility and Transport, the Directorate-General for Public Works and Water Management, the City of Amsterdam and the Province of North Holland. The Municipality of Velsen is closely involved in this project due to the intended location of this new lock.

After the administrative decision-making has been finalized, expected in 2015, construction will begin and when completed by 2019 the new sea lock will replace the Noordersluis 'Big Lock' whose life span comes to an end in 2029. The regenerated dock will provide an extra lightering facility that can accommodate two Capesize bulk vessels, transporting liquid and dry bulk cargoes such as oil products, bio-fuels coal and biomass.

Port of Partnerships: growing together

Summarizing, the port of Amsterdam is growing and ambitious. Goals however can only be achieved by working together, by being a port of partnerships. Being a port of partnerships involves working together with inspiring partners, including the port business community, competitors, research and educational institutions, and governments, at the regional, national and international levels. They believe this is the only way to increase value and sustain growth. As an independent port company, Port of Amsterdam has more opportunities for different types of partnerships, allowing to operate more easily, flexibly and intelligently as a link in the logistics supply chain. This helps to support the customers and strengthen both the port and the environment.

Being the fourth port in Western Europe and a dedicated bulk hub, Amsterdam port is the reliable partner par excellence for dry bulk logistics across Europe.

European Bulk Services Rotterdam

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

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EBS boosted by developments at Europoort and Laurenshaven terminals

Rotterdam-based European Bulk Services (EBS) has given *Dry Cargo International* details of some of its most recent developments.

The new storage shed at the Laurenshaven terminal.

New storage shed fully operational

EBS has proudly unveiled its new storage shed at the Laurenshaven terminal. This new shed was built in nine months by construction firm Rasenberg. The concrete building, with a net volume of 30,000m³, consists of three 10,000m³ compartments. The new storage facility will be suitable for dry bulk products of all kinds. The roof will have movable steel hatches which can be opened and closed remotely by the crane operator. Due to an advanced safety system the grab cannot cause any damage to the walls of the shed.

EBS extends its Europoort Agri Terminal

European Bulk Services is building a 65,000m³ storage shed at its Europoort terminal for a major client which wants to use the terminal as an agri-hub. A long-term contract has been signed which, from mid-2014, will boost agribulk volume by around 1mt (million tonnes) a year, bringing a further rise in profitability and improving the product mix.

Aerial view of the Europoort terminal.

The existing deep-water jetty will also be extended by the Port of Rotterdam. On this new jetty, which will accommodate vessels with a draught of up to 16 metres, EBS will install a new hopper and conveyor system linked to the existing conveyors. The existing train/truck loading station will be modified and extended. Completion of the new storage shed and related conveyors and extension of the train/truck loading station is expected in the first half of 2014. Construction of the new deep-water jetty is scheduled for completion in early 2015.

About EBS

European Bulk Services (EBS) B.V. is an internationally respected stevedoring company with a focus on the storage and transshipment of dry bulk goods. EBS has its own fleet of crane vessels. Approximately 180 full-time employees work for EBS, generating approximately €45 million in revenues per year. EBS is a wholly owned subsidiary of H.E.S. Beheer N.V.

Artist's impression of the Europoort terminal.

Terminals

European Bulk Services (EBS) B.V. conducts its business operations from two strategically located areas in the Rotterdam port area, namely the EBS Europoort terminal (at the Capesize dolphins), and the EBS St. Laurenshaven terminal, a Panamax terminal. The terminals have excellent connections to deep seaways,

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Aerial view of the St. Laurenshaven terminal.

hinterland by inland waters, railways and trucks by highways. The terminals can be reached without having to pass a single lock. All types of ships can be handled at these terminals, from Capesize to coastal and river barge. The Europoort terminal is one-and-a-half-hours' sailing time to/from the pilot station and the St. Laurenshaven terminal is three hours' sailing time to/from the pilot station.

Magnetic separators of iron parts of coal

In order to meet the special requirements of the coal import market, EBS has invested in several (electro) magnet systems for cleaning contaminated coal with iron parts. The St. Laurenshaven terminal, with a depth of 13.85m, is perfectly equipped to handle and store, amongst others, coal from Russian load ports. These load ports have a similar maximum draught to the St. Laurenshaven. Receivers of Russian coals can be extra sure of the quality of their coal if their product is cleaned for metals via the EBS de-ironing installation. The electro magnets are installed in such a way that the coal can be cleaned either via storage or via board to board discharge operations.

Solutions, services and activities

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

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

EBS's electro-magnets ensure clean coal.

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OVET dry bulk terminals – quality and flexibility in bulk

OVET INVESTS FOR THE FUTURE: NEW STATE-OF-THE-ART TRAIN LOADING STATION AT FLUSHING/ VLISSINGEN TERMINAL

As of now, OVET has a new state-of-the art train loading station available at its terminal in Vlissingen/ Flushing. This new piece of equipment will allow OVET to receive 44 wagon trains in one length. OVET handled 14 test trains for different (German) customers using different rail transport companies in August and September last year, with good results. A 24-hour round trip to e.g. the German Ruhr area has proven to be successful. The rail companies were very satisfied with the available good connections to the port of Vlissingen.

The station has a maximum loading capacity of 1,500tph (tonnes per hour) and is equipped with an automatic weighing system. Over 1,250 metres of rail track is available at the terminal, of which 675 metres are double track.

Besides the train loading OVET also offers de-ironing, blending, screening and crushing services.

The port delivers excellent rail connections, rail paths and (diesel)shunting services. Different rail and (diesel) shunting companies (DB Schenker, Locon, Rheincargo, Captrain, RRF, TX Logistik) offer transport from and to the port, which can provide OVET with the necessary service. An electrified shunting yard is available at rail station Vlissingen-Sloe.

With these facilities, OVET is capable of expanding coal rail transport towards the European hinterland, mainly to supply the German power and steel industry.

Other dry bulk products can also be handled for all European destinations. The new facility is designed to give OVET maximum flexibility in terms of loading. Other loading equipment, such as mobile conveyor belts or cranes, can still be used to load different types of wagons with all kinds of dry bulk products.

OVET operates two deep water terminals in Vlissingen with two Capesize berths and Terneuzen with a Panamax berth facility. With four floating cranes, Ovet offers a discharge capacity of 80,000 metric tonnes per day. Both locations are strategically located and have efficient hinterland connections. The advantage of the locations for rail transport is, that there is no congestion at all. The time needed to reach the German border is therefore very efficient.

The rail network Zeeuwse lijn and Sloelijn connect the port of Vlissingen to the European hinterland. The rail lines are electrified and the port of Vlissingen has an electrified train yard. The rail track from the train yard to the OVET Terminal at Kalootharbour (approximately 5km) is non-electrified. Transport on this track is done by means of diesel shunting locomotives. Different shunting companies, amongst others Locon, DB Schenker and RRF are present in the port.

With these new facilities OVET is ready for the future. They also enable OVET to be present in the market on different fronts.

EMO unloads a billion tonnes of bulk

EMO hits a new dry bulk discharge record in early January — the billionth tonne of dry bulk.

A milestone for Europe's largest dry bulk terminal. Forty years ago, EMO unloaded its first tonne of iron ore (November 28th 1973). Now the terminal has reached the billion tonne mark.

The honour goes to the *Vale China*. The *Vale China*, with its 375,000 tonnes of iron ore, is one of the largest dry bulk vessels in the world. The vessel is 362 metres long, 65 metres at the beam, and has a draught of 23 metres. Using three 85-tonne grab unloaders, it takes approximately four days to unload the *Vale China*. Thanks to EMO's unloading capacity and draught meant that its terminal was an ideal destination for this huge bulk vessel.

ZHD Stevedoring: steady in 2013 and ready for 2014

In order to further strengthen its position in the Rotterdam Rijnmond area and keep on serving its customers in a modern and professional way, there has been an extensive investment program at ZHD Stevedoring over the last two years. The Rotterdam based (family owned) private company with more than 45 years of stevedoring experience, is — even in these difficult market conditions within Europe — still working on a major investment to reclaim a further ten hectares of terminal area in close co-operation with the Rotterdam Port Authority.

Milestones in 2011–2013

- a new mobile Gottwald crane (HMK 6407B, High Tower) — operational in Dordrecht since April 2011;
- upgrading loading and discharging facilities for waste-materials at Moerdijk — May 2011;
- a new 150 metre-long quay wall (Mallegat Quay Dordrecht) — opened in June 2011;
- 20,000m^2 of new developed storage area at Dordrecht — opened in December 2011;
- a new 50-tonne self-propelled floating crane — operational as of July 2012 and presented as highlight during the World Port Days in Rotterdam;
- ZHD became GMP+ certified — December 2012; and
- new-building of covered warehouses, with a capacity of approximately 50,000m^3 — operational from August 2013.

Although the start of 2013 was not easy due to the difficult market conditions, ZHD revealed at the end of 2013 that any decline in volumes at the beginning of the year had been offset and that annual throughput would be approximately 7mt (million tonnes), the same as 2012. This achievement is due to ZHD's investments, the wide variety of products handled and (new) markets (e.g. agribulk), as well as to the company's flexibility and ability to adapt quickly to changing markets. ZHD expects to maintain this volume for next year.

Warehouses in Dordrecht

On 3 May 2012, ZHD started to prepare for the construction of covered storage in Dordrecht. This new storage facility became operational in August 2013. Demand for covered storage from both existing as well as potential new customers has been high in 2012, says Leo Lokker, Commercial Director at ZHD Stevedoring. "By investing in covered storage facilities we expect and trust to serve our customers even better," he says. "The

The new 50-tonne self-propelled floating crane, which became operational in July 2012.

same goes for our new self propelled 50-tonne floating crane which is now operational in Dordrecht, Moerdijk and — of course — Rotterdam. This new self-propelled 50-tonne floating crane further expands ZHD Stevedoring's crane capacity and already has proven to increase performance and service of ZHD Stevedoring, especially on large vessels (up to Panamax) in Rotterdam."

Expansion plans in Dordrecht

As of 1 July 2011 the municipality of Dordrecht and the Rotterdam Port Authorities entered into an agreement to join forces, an agreement which was formalized in January 2012. As of that date (officially) the Port of Dordrecht has become an integral part of the Port of Rotterdam with all its benefits. Although being active in Rotterdam for many years, by means of its self-propelled floating cranes, ZHD Stevedoring recognizes the advantages being part of The Port of Rotterdam. In close co-operation with the Rotterdam Port Authorities, ZHD Stevedoring is looking into possibilities and has started the negotiations to reclaim a further ten hectares of land adjacent to its terminal in Dordrecht. This ten hectares will be connected directly to the water with a new 750m quay wall with 9.45m draught, able to accommodate vessels up to approximately 40,000 tonnes. ZHD expects to announce a positive outcome of these negotiations in the first quarter of 2014, at which point the preparation and construction of this huge project can be started.

GMP+ Certification

Apart from handling products like minerals, coal, petcokes and seasonal products as salt, ZHD Stevedoring has been focusing on handling and storage in niche markets such as steel-scrap, biomass (woodpellets) and waste-materials. From the 1 January 2013 ZHD has also been GMP+ certified, giving it the chance to play its part in the transshipment of agricultural products. Special services are offered in the field of breakbulk and the handling of bulk in/from containers (a.o. minerals, scrap) — a global trend which will grow in the future — are not unfamiliar to ZHD Stevedoring and complete the handling portfolio of the stevedore. With its steel terminal in Moerdijk, ZHD performs handling of coils as well as other steel products, such as wire-rods, steel bundles, etc.

Company background

Rotterdam-based ZHD Stevedoring is a family owned, private company with more than 45 years of stevedoring experience. ZHD is active in the total so-called Rotterdam-Rijnmond area, with terminals in Dordrecht and Moerdijk, but also with its (self-propelled) floating cranes in Rotterdam. The company offers services in bulk, neo bulk, steel products, coils and container handling, including warehousing and storage (open, covered and floating). ZHD has both road mobile and floating equipment and is able to handle all kind of product. All ZHD terminals are able to work round the clock (24/7) and are ISO and ISPS certified. Furthermore, ZHD also has water-related sites available for further (industrial) development.

Nemag unveils environmentally friendly clamshell grab

The largest grab in the world: 85 tonnes lifting capacity, 60m³ coal grab.

Netherlands-based Nemag is a major supplier of grabs for the bulk industry. All of its products are made in close consultation with the customer, to ensure that every need is met. This is just one of the reasons that the company's grabs have such a strong reputation in the global marketplace. Nemag serves four main market segments:

- steel plants (including major clients such as ArcelorMittal and Tata Steel, as well as other Asian and South American steel companies);
- power stations;
- OEMs (original equipment manufacturers), including crane manufacturers such as Kone, Gottwald, Liebherr and ZPMC; and
- major stevedoring companies.

Typically, Nemag's average customer is a big terminal — whether it is a steel plant, power station or stevedoring company. The terminal is likely to have a high berth occupancy, and Nemag's grabs are used on cranes ranging in size from medium to very large. About 80% of the cargo flow worldwide comprises either coal or iron ore, and Nemag's customer base reflects this fact — approximately the same percentage of its grabs are sold for use handling coal or iron ore, in the steel or energy market segments. The remaining 20% of its grabs are used to handle grain, animalfeed, scrap metal, minerals, biomass, fertilizer, agribulks and more.

Unveiling the environmentally friendly clamshell grab

Nemag strives to keep ahead of the game, so it invests significant sums in research and development. One of its most interesting recent innovations is the introduction of a new, environmentally friendly clamshell grab. This model has a number of new features, and is already selling very well. The grab has proved to be popular not only with existing Nemag customers, but also with other users who were previously loyal to other brands of grab.

Nemag continuously explores ways to make its grabs as efficient as possible. The latest development is its new range of enclosed type clamshell grabs, which set new standards in

environmentally friendly

clamshell grab

our new generation enclosed type clamshell grabs is based on continuous research and innovation

We produce a full range of four rope grabs for medium and large lifting capacities, an assortment of Quick Release Links and Rope Pear Sockets. Without exception, these are top-quality, excellent performing products for the lowest costs per ton of cargo handled.

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Quick Release Link and Rope Pear Socket

Together, the patented Nemag Quick Release Link and Rope Pear Socket make up a highly efficient system that enables the quick coupling or uncoupling of steel wire ropes, chains and D-shackles. The use of this system in the bulk handling industry to change grabs is already widespread. These two 'smart' products are also in great demand in other industries where steel wire ropes have to be connected to other steel wire ropes or chains quickly and safely. Together with the Rope Pear Socket, the Quick-Release Link forms a strong link between steel wire ropes and/or chains that can be uncoupled by one person within a few seconds through a very straightforward manoeuvre. Both Nemag products can be supplied for any type of crane, for any make or type of grab, and for any type of rope or chain.

Nemag & the Quick Release System

It is no surprise that Nemag invented a unique system for the quick coupling or uncoupling of ropes and chains. As a well-known designer and manufacturer of grabs, Nemag quickly found itself faced with the time-consuming nature of changeover of grabs. As a result, it came up with the idea for the Quick Release Link; a C-section with a perfectly fitting locking piece, which can be opened or closed in no time using a special key.

User-friendly, quick and safe

The Quick Release Link is available in a range of sizes for grab working loads from 2,000kg to 42,500kg and breaking loads up to 260,000kg. Apart from that, Nemag has also developed a highly durable end connection for steel wire ropes: the Nemag Rope Pear Socket. These Rope Pear Sockets can be easily fitted to the steel wire rope without the need for any outside assistance. A range of different Rope Pear Sockets is available depending on the working load and the thickness of the rope. The Rope Pear Socket has been designed to pass over crane cable sheaves smoothly in combination with the Quick Release Link.

Strictest quality standards

The Quick Release Link and the Rope Pear Socket are manufactured with the greatest possible precision using high-grade steel, based on the strictest quality standards.

In addition to that Nemag has adopted a safety and quality programme that involves periodic quality assessments and load testing. Every single Quick Release Link and Rope Pear Socket is checked before leaving the factory.

Quick Release Link

The Quick Release Link is developed to enable quick and straightforward coupling and uncoupling of grabs on cranes. It has also been used for many years with great success in other applications where loads frequently have to be coupled or uncoupled using steel wire ropes and/or chains. It is made up of a C-section and a separate locking piece, both made of special steel. The contact surfaces of the C-section have been hardened to achieve a long life span. The sealed locking piece is well protected against damage and dirt.

Rope Pear Socket

The Rope Pear Socket is an end connection especially designed by Nemag for steel wire rope. Using the Rope Pear Socket, a strong connection can be made, and the rope can be coupled to other ropes and chains in the best possible way; and even more so in combination with the Quick Release Link. The Rope Pear Socket is cast from high-grade austenic manganese steel and generally lasts longer than the steel wire rope itself. Austenic manganese steel combines a great thoroughness and a high resistance to wear.

environmentally friendly bulk handling. This range of clamshell grabs has a new revolutionary shape of the shells and also includes a number of innovations, which reduce spillage.

Shells of conventional clamshell grabs are mostly designed with square corners, which are reinforced by means of extra strip plates and lots of welds at the shell's corners. Square corners wear out fast and also cause damage to ships and to product degradation. Also, square corners at the lip plates, wear out fast and will result in spillage of material from the grab.

Rounded corners reduce spillage

The new shell design of Nemag comprises a folded shell construction, which is made by means of a computer-controlled hydraulic press. This new system results in grab shells that are equipped with largely rounded corners. Not only bottom lip plates, but the entire grab shell will be manufactured with largely

rounded corners, inclusive of the upper part of the shells. This rounded design minimizes the risk of damage to the ship's holds. Further, the extremely flushed design of the shells minimizes residual cargo on the grab construction and reduces spillage drastically. Also, the grab has a better efficiency when digging in to the material because of balanced geometry. This leads to a faster emptying over the bunker and reduced cycle time.

Increased lifespan of the shell

The cold forming of the shells avoids degradation of wear-resistant steel. The folded shell construction is extremely stable and wear and tear in the 'corners' will be minimized, resulting in improved lifespan of the grab (especially important when handling abrasive materials). Secondly, the position of the welds is moved away from the corners and result in a substantially longer life span of the grab shells. Furthermore, the number of welds in the shells has been reduced drastically; this leads to significant lower welding heat input in the wear-resistant material of the shells.

The new clamshell design also offers new possibilities to increase strength of the grab in combination with same or even lower dead weight of the grab. First successful deliveries have been made to various European customers including Terex Germany, EON UK, OBA Amsterdam, Dong Energy India and ZHD in The Netherlands for the handling of steam coal, wood pellets and alumina in capacities of up to 50-tonne SWL (safe working load).

The position of the welds is moved away from the corners, which will result in a substantially longer life span.

Company product range

Nemag produces a full range of four-rope grabs for medium and large lifting capacities, as well as an assortment of Quick Release Links and Rope Pear Sockets. All products are manufactured to a high quality, and perform to a very high standard. Nemag prides itself on its 'lowest cost per tonne of bulk material transferred' slogan. This, it says, is due to the high quality of its products which require little maintenance and rarely malfunction. Many

large dry bulk operators confirm this on a daily basis. The company further offers reliability and low maintenance costs and high through-the-ship efficiency, which offers substantial overall savings. It is also able to offer very favourable delivery times for its products.

Nemag's products include:

- **scissors grab:** this is specifically suited for the large-scale handling of coal, ore, minerals, biomass, wood chips, concentrates, bauxite, but also for sticky coal and ore. High productivity, long life span and low maintenance costs are guaranteed under almost all working conditions.
- **clamshell grab:** for reliable and fast handling of many different bulk goods, Nemag developed the clamshell grab. This grab makes it possible to discharge practically every kind of bulk material, as long as it isn't too coarse: coal, ore, minerals, biomass, concentrates, fertilizer, bauxite and phosphates.
- **trimming grab:** this is particularly suited to the handling of heavy and course materials, such as rocks, manganese ore and pig iron. Its extremely favourable digging capabilities for heavy and coarse materials make the trimming grab very productive.
- **cactus grab:** this can specifically be used to handle shredded scrap, biomass and rocks, but also for wood chips and household waste. The cactus grab is a reliable partner with a strong reputation.
- **Quick Release Link:** with this, it is possible to change the largest grab in a mere few minutes.

- **Rope Pear Socket:** this is a strong connection to attach to steel wire ropes, forming a strong connection for attaching other wire ropes and chains. The Rope Pear Socket is often used in combination with the quick release link, but is also used in many other combinations.

Technologically advanced

Nemag ensures that all of its products are as up-to-date as possible, and it is continuously carrying out research and investing in all kinds of production technologies, engineering software and so forth. Currently, the company is working in close co-operation with the University of Delft on a research project. It also has other technological developments in the pipeline.

Past and future

Nemag has been in the business for a very long time — it will celebrate its 90th anniversary in 2014. As a company, it believes in long-term growth, rather than short, unsustainable bursts of growth. This approach has enabled it to make sure and steady progress in the marketplace, and to do the very best it can for its customer base. Nemag anticipates that it will continue with its sure and steady progress, and also expects that the cautious optimism that is creeping into the market will be positive for the company as a whole.

Approximately 80% of Nemag's grabs are used to handle coal or iron ore.

Efficient fertilizer storage with the Eurosilo® system

Chris Geijs and Jaap P.J. Ruijgrok, ESI Eurosilo BV, the Netherlands, take a look at fertilizer storage with help of the Eurosilo® system.

Introduction

With a history of over 40 years and a track record of more than 120 units built around the world, ESI Eurosilo is a major engineering and contracting company in enclosed storage and handling systems for storing huge quantities of bulk solids to meet the high demand for energy and mineral resources. Non-free-flowing products can be stored over longer periods of time with help of a slotted column system for uncomplicated reclaiming. Gypsum is stored this way at numerous power stations around the world. The same system is also a well-proven storage solution for solid fertilizer in granulated form like ammonium sulphate, potash and common salt. A recent example of fertilizer storage is the commissioning of a 40,000m³ ammonium sulphate silo in Seoul for the Capro Cooperation in South-Korea.

40,000m³ ammonium sulphate silo, South Korea

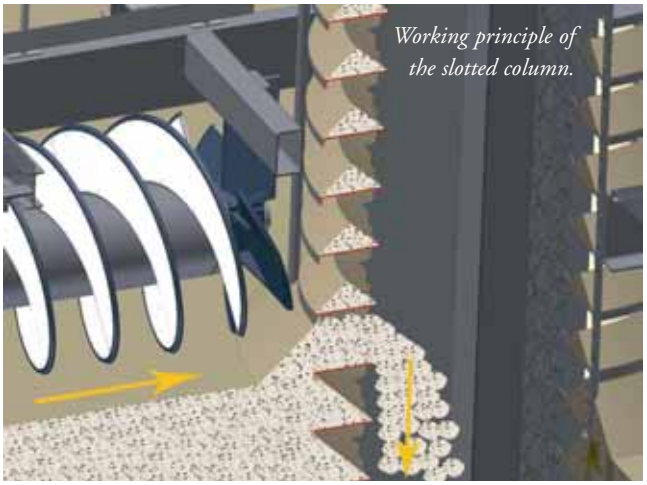
Eurosilo® system working principle

During the filling process, the product enters the silo through a hopper mounted in the centre of the roof. A short conveyor transfers the bulk material to the telescopic chute. From here, the product can freely drop down towards the auger frame, located at the top surface of the already stored bulk material. An auger conveys the material to the outer edge of the silo. At this point, a sensor is activated, allowing the overhead bridge and suspended auger frame to rotate towards free space and lay down a new segment of bulk material. This process continues for 360°. The winch system (located at the overhead bridge) hoists the auger frame one layer thickness after completing a full rotation. This cycle can be repeated until the silo is completely filled with bulk material.

15,000m³ common salt, The Netherlands.

During the discharge process, overhead bridge and suspended auger frame rotate continuously, while two augers dig into the bulk material and transport the product towards the slotted column in the center of the silo. After a full rotation, the auger frame is lowered one layer thickness.

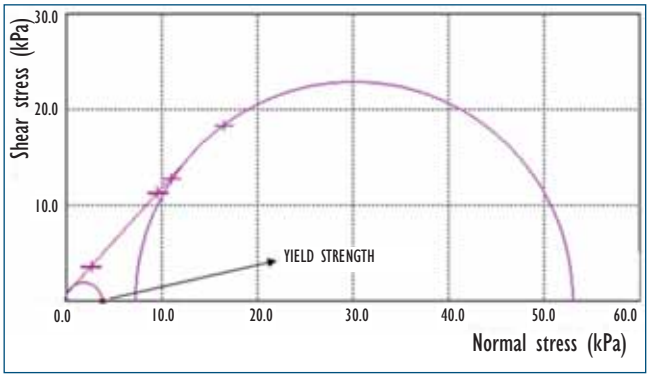
Propellers, located at the end of the augers, push the bulk material along the slots of the column, allowing the product to freely fall down towards an extracting device at the bottom of the silo.



Working principle of the slotted column.

Bulk properties of ammonium sulphate in granulated form

Ammonium sulphate in granulated form is an inorganic salt and mostly used as a soil fertilizer. In the soil, the ammonium ion is released, lowering the pH balance of the soil, while contributing essential nitrogen for plant growth. Most of the ammonium sulphate is produced as a byproduct during the production of caprolactam. After production, the ammonium sulphate acts like a free-flowing product with low yield strength under pressure.



Unconfined yield strength for ammonium sulphate under pressure (shown in Mohr circle diagram).

Ammonium sulphate is a hygroscopic bulk material and crystallizes at room temperature during storage. This process greatly increases the initial yield strength and can impose bridging problems during discharging after a period of storage in a mass flow silo. The slotted column design of the Eurosilo® system ensures stable storage of the initial low yield strength product and eliminates possible block-ups during discharging after longer periods of storage with help of the digging action of the augers and transportation of the bulk material along the slots by the propellers.

Design and construction details

The structural design of most Eurosilo® walls for fertilizer storage consists of a steel structure with an inner and outer wall.

Inner wall with ring beams and wooden lining. Outer wall with standard wall cladding.

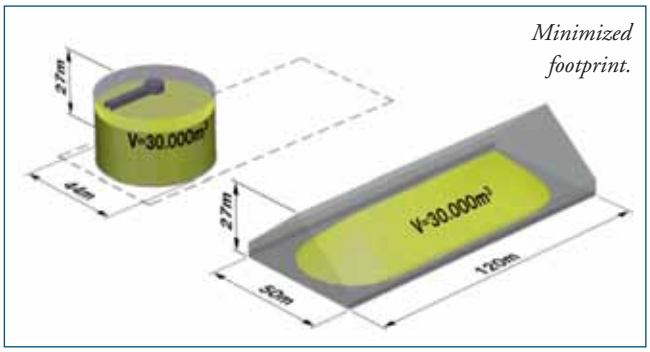
The inner wall consists of wooden planks, connected by tongue and groove. These planks are supported by horizontal ring beams, which take care of the bulk material forces. In the lower section of the silo wall, the ring beams are placed closer together, because of the higher bulk material forces in this region. The ring beams are connected to the vertical columns by means of a sliding joint. Due to this connection, all horizontal bulk material forces are taken by the ring beams as a tensional force. The ring beams can expand without transferring horizontal forces towards the vertical columns. This flexible wall system is well proven and corrosion resistant.

The silo wall can also be constructed as a concrete structure. In this case, the horizontal bulk forces are taken by the reinforcement. Construction is done with help of a slip form, a method of vertically extruding a reinforced concrete section in a continuous process.

Storage with a minimal footprint

The Eurosilo® system combines minimum space requirements with large storage capacities. In many cases, existing chemical plants need to expand their storage capacity. Very often however, there is not much space left for the installation of such a new storage system.

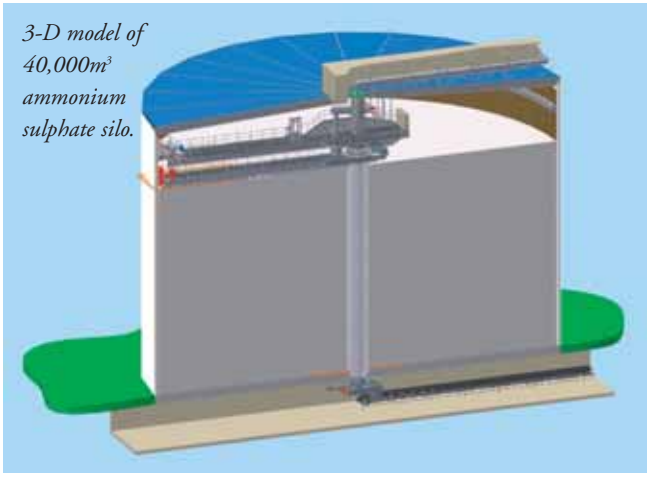
Enclosed storage with the Eurosilo® system is very space efficient. Approximately one-third of space is used compared with open storage or a storage shed.



Minimized footprint.

Storage of 40,000m³ ammonium sulphate

As mentioned in the introduction, ESI Eurosilo recently commissioned a 40,000m³ ammonium sulphate silo for the Capro Cooperation in Seoul, South-Korea.



3-D model of 40,000m³ ammonium sulphate silo.

This silo is the third installment (1), next to the two existing Eurosilos built in 2001 (2), replacing the currently used conventional storage shed (3) (see figure on page 50). For this silo a steel structure is used with wooden inner wall and outer standard wall cladding. The vertical columns and bracings are designed to withstand earthquake loads, due to the seismic location of the chemical plant.

The different components of the Eurosilo® system were part of a turnkey delivery on site. A temporary opening in the steel wall structure provided access to the silo. With the help of a mobile crane, all the components were hoisted into place, after

Silo slip form in progress.

EMO – 40 years fully equipped to meet your expectations

Please visit emo.nl to monitor our progress.

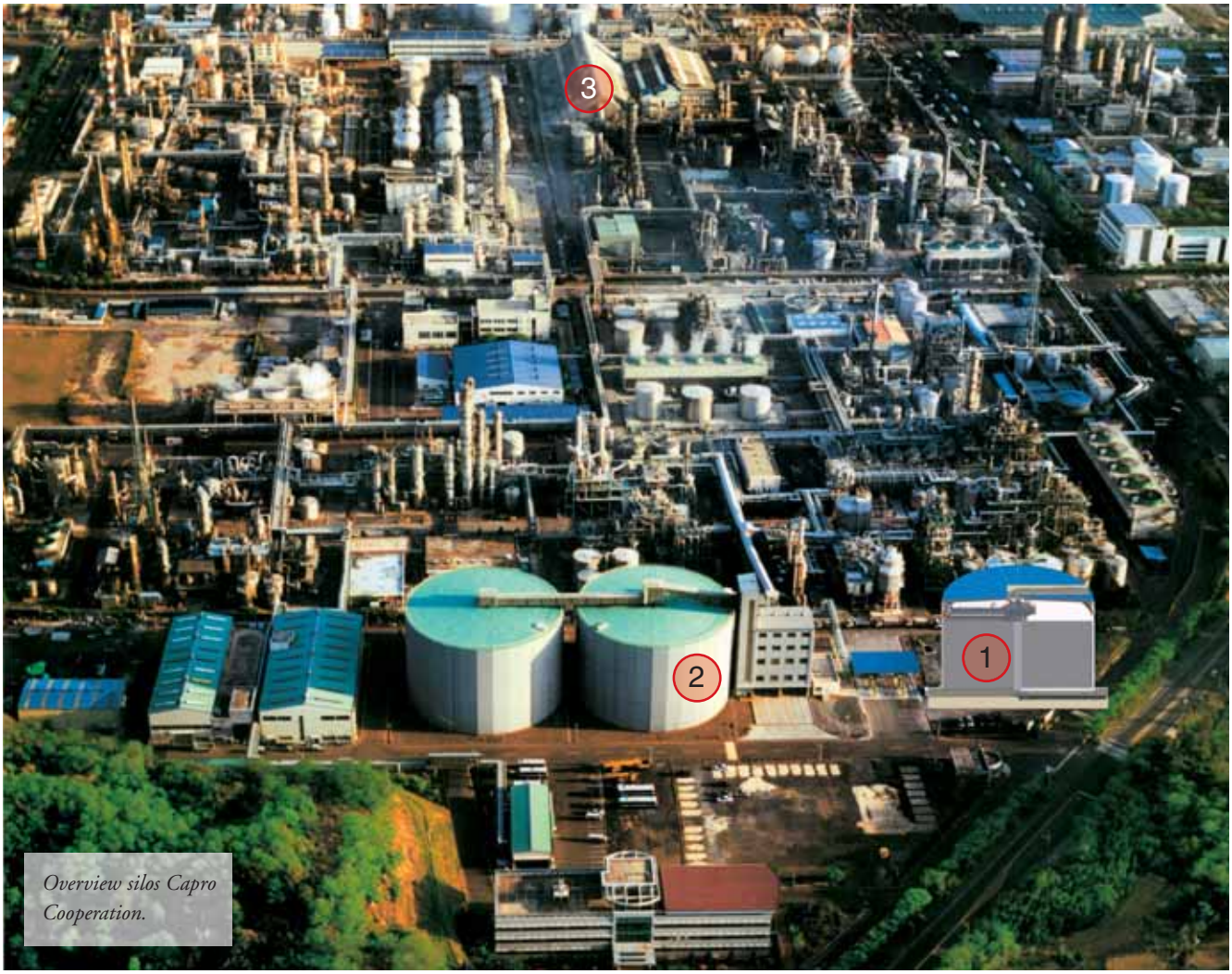
LOOK TO THE FUTURE AND PLAN AHEAD

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

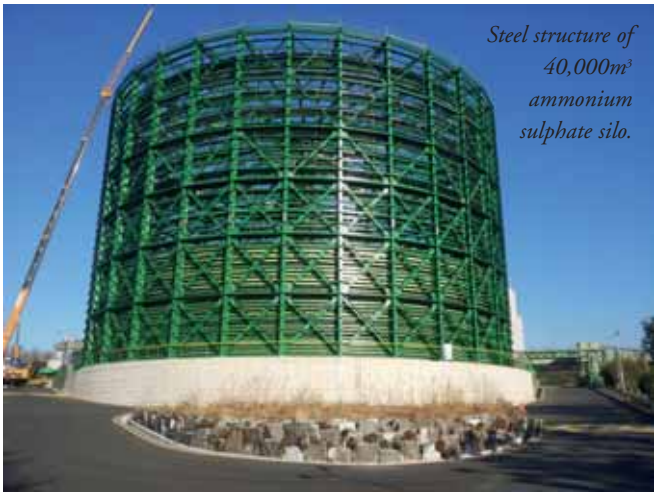
EMO is able to accommodate the world's largest dry bulk vessels, and yet we never cease to look to the future and plan ahead – now more than ever! In 2012, we have strongly increased our storage and transhipment capacity and efficiency by commissioning five new, state-of-the-art projects: the seventh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

EMO

energising your business



Overview silos Capro Cooperation.


Steel structure of 40,000m³ ammonium sulphate silo.


Eurosilo® system inside the ammonium sulphate silo.

which the construction of the roof was started. The first product entered the silo in the second quarter of 2013.

It can be concluded that this type of storage is feasible for fertilizer products in a wide variety of situations in which the logistics require substantial storage capabilities. Comparing the total annual costs of silos equipped with the Eurosilo® system, consisting of capital, maintenance and operating costs, with those of storage in A-frame sheds or even open storage, these mammoth silos are favourable in many cases.


Product infeed into the silo.

EMO, 40 years fully equipped to meet its customers' expectations

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

EMO is able to accommodate the world's largest dry bulk vessels, and yet it never ceases to look to the future and plan

TERMINAL CAPACITY

Unloading capacity	47mt
Throughput capacity	60mt
Storage capacity	7mt
Trainloading capacity	18 trains daily

ahead — now more than ever. In 2012, the terminal significantly increased its storage and transshipment capacity and efficiency by commissioning five new, state-of-the-art projects: its seventh stacker reclaimer, fifth unloader, a second fully automated coal wagon loader, a brand-new sea going vessel loader along an innovative, new quay, and a high-tech operations centre. These projects ensure that EMO is fully equipped to enhance its safety, efficiency and sustainability performance, and to continue to serve its customers as a reliable partner in dry bulk transshipment in the coming decades.

EMO operates 24 hours a day, seven days a week. It handles large bulk shipments; its discharge capacity is 47mt (million tonnes) and throughput capacity is 60mt. It always approaches its work and planning with the greatest care. EMO believes it is very important to remain state-of-the-art. Keeping the terminal state of the art as well as making necessary improvements is its key to serving its customers. EMO's highly skilled trained personnel work closely together. Skilled employees working with innovative technology guarantee high quality, efficiency and sustainability.

Meeting market demands

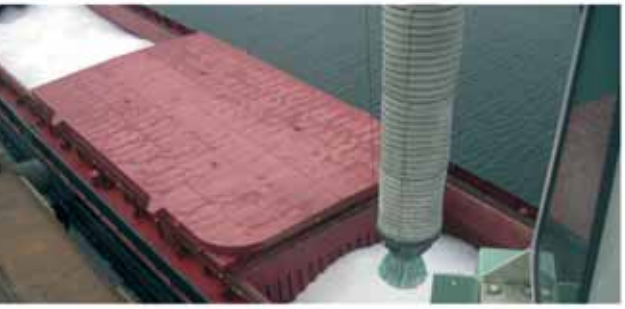
EMO's 160-hectare area currently offers 7m of storage. EMO is ideally located on a 23m-deep waterway connected directly to the North Sea. Rotterdam harbour has excellent rail and waterway connections to the rest of Europe.

EMO is a partner that offers reliability and trustworthiness. The company stays on top of the latest developments in the market. EMO continually analyzes its customers' needs, the quality of its services and its terminal's performance. In anticipation of market trends and customer needs, it is continuously geared towards offering a more efficient, cleaner and safer terminal, one designed to meet all expectations. DC

Major bulk port in Finland

Port of Pori

The port of all size vessels



The strengths of the Port of Pori

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

- **New 12m quay!**
  For more info go to: www.portofpori.fi/en

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PORT OF PORI

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info.port@pori.fi | www.portofpori.fi/en

ISO 9001 ISO 14001 OHSAS 18001
DNV
CERTIFIED ORGANISATION

Port of Pori: 'cluster thinking' in action

Ship-to-ship operations at Tahkoluoto deep harbour: the soya beans being moved will be onward shipped in either coasters or trucks.

The Port of Pori on the west coast of Finland is a true general port. All kinds of cargo is loaded and unloaded in the Mäntyluoto and Tahkoluoto harbours of the Port of Pori.

In Mäntyluoto dry bulk, scrap metal, sawn timber, project cargo and containers are handled. There are also ro-ro (roll-on/roll-off) facilities. In Tahkoluoto there is a deep harbour for dry bulk and chemical harbour for chemicals and oil products. New cargo flows are also emerging. The newest breakthrough is the handling of soya beans. Tahkoluoto harbour was chosen as the soya unloading port. The soya processing plant is situated on the coast 70km south of Pori. There are other ports available much nearer the plant but, in this case, the Port of Pori was chosen as it offers economies of scale. The port has excellent infrastructure, and great expertise in handling large vessels.

Port director Jaakko Nirhamo notes that there is less than a year to get ready for the new sulphur regulations, which will come into force in the Sulphur Emission Control Areas — including the whole Baltic Sea area. The Port of Pori has decided to tackle the economic disadvantages of the sulphur restrictions by using the strengths of the port itself. These strengths include its excellent infrastructure and expertise in handling large vessels. "It's all about energy-efficient transport solutions," summarizes Nirhamo. Energy efficiency can be increased by using larger vessels with full loads. In Tahkoluoto deep harbour, the depth of the fairway is 15.3 metres, the same depth as the Danish Straits. This means that all vessels that can pass through the Danish Straits can call at the Port of Pori. Every year, Capesize vessels call at Tahkoluoto deep harbour. In Mäntyluoto harbour there is a new 12-metre berth and fairway for Panamax vessels. For example, 3,500 TEU container vessels can be handled in Mäntyluoto. The average ship size is continuously growing in the Baltic Sea, but water under keel does not run out in the Port of Pori. Pori has the best ice conditions among the Finnish ports. Using the Port of Pori means less bunker consumption and lower bunker costs to the shipping companies. The Port of Pori has lots of potential to increase the capacity utilization rate.

The other factor besides vessel size in energy-efficient transport is full loads in both inbound and outbound directions. This is, in the first place, a matter for shippers and forwarders and their co-operation. The port can foster their objectives by offering infrastructure and services. The Port of Pori has competence of handling all kinds of cargo and all kinds of vessels. This approach makes it possible to serve different customer segments as clusters. This means that both raw materials and different semi-finished and end products can flow via the port. The port's role as a landlord is also to enable companies to settle in the port area or the areas nearby and to

help them to join the respective cluster.

Finland's success story has been based on 'cluster thinking' since long before clusters were commonly known as sources of economic development and competitiveness. Both Finnish chemical and metal industries were developed to fulfill the needs of the forest industry. The forest industry cluster is still one of the major clusters in Finland. New clusters are emerging. The mining industry is expected to be one of the major props supporting the Finnish national economy in the long run. Among Finnish ports, the Port of Pori probably has the best prerequisites to serve this booming industry and the whole mining and metal cluster. Concentrates are handled in the Port of Pori on daily basis. Six to eight scheduled block trains transport concentrate from the port to the mills situated 50km inland from the port. In Tahkoluoto chemical port, raw materials for mining and metal industry are handled. Mäntyluoto harbour has the best lifting capacity in Finland. Mäntyluoto harbour is widely used in project cargo transports. Project cargo can also be transported in liner traffic. Two shipping companies offer container transport services. Ro-ro facilities can be utilized in handling of high and heavy cargoes.

Handling of concentrate in Mäntyluoto harbour. Right, block train wagons being loaded.

The M20 Industrial Park operates in immediate vicinity of the Port of Pori, offering a unique opportunity to network within the metal and mining cluster. The area is one of the few industrial and logistics areas in Baltic Sea Region that still offers space for growth to both small and large companies right next to a well-functioning general port. The area is being developed into a junction with excellent traffic connections to all over Finland as well to Russia, Scandinavia and continental Europe.

To ensure even better hinterland connections the Port of Pori is taking part in the Bothnian Green Logistic Corridor project, which is part-financed by the European Union (EU). The aim of the project is to connect northern Scandinavia's raw materials with the markets in the Baltic Sea Region and Central Europe. The north-east connections play also an important role. New routes are emerging from the Norwegian Atlantic coast via Finland to Russia. This is partly due to sulphur regulations but mostly because of the changes in global trade flows. The Port of Pori had made a study of re-opening the Pori–Haapamäki railroad line, which would open a new route to the Finnish mining areas, but also a new route to Russia. Finland has deregulated its cargo transports in railroads according to the EU directive. Unlike Sweden, there is still only one railway operator in Finland. The monopoly in rail cargo transport between Finland and Russia will be dismantled. New methods of financing railroad infrastructure are also emerging. The field is open for new players and possibilities. In road connections, the Port of Pori wants to explore possibilities to extend the European route E14 or E16 to Finnish side and up to the Russian border. Now, for example, the E16 route from Northern Ireland via Scotland and Norway ends in the Swedish city Gävle situated on the opposite shore of Gulf of Bothnia. The Port of Pori would be a natural node and a starting point of the E14 or E16 extension in Finland. DCi

Soya bean handling in Tahkoluoto harbour. The beans will be onward shipped in either coasters or trucks.

US Gulf bulk handling activities

Record demand for coal exports from the United States has resulted in a significant throughput increase at many US port and terminal facilities along the US Gulf coast.

Reclaim feeders and conveyor equipment from Joy Global

Popular choice for many new and expanding US port and terminal facilities along the US Gulf coast

Many facilities have chosen reclaim feeders and conveyor equipment from Joy Global for their materials handling. Joy reclaim feeders are not new to the materials handling industry. Joy Global, through its acquisition of Stamler Corporation, has been producing reclaim feeders for over 25 years and has manufactured over 430 units operating in a variety of applications worldwide. In 2008, Joy Global also acquired Continental Conveyor, a manufacturer of reliable conveyor components and systems, to provide a one-source solution to ports and other coal handling facilities for their materials handling needs.

US coal exports reached record levels in 2012. Many new and expanding facilities were located along the US Gulf Coast.

Many new and existing facilities looking to improve material handling and/or upgrade their operations along the US Gulf coast have chosen the combination of Joy reclaim feeders and Joy conveyor equipment.

Since 2011, Joy Global has provided:

- **Louisiana:** 16 reclaim feeders and 6,150 SDX-Plus idlers handling coal;
- **Louisiana:** 9 reclaim feeders handling coal;
- **Louisiana:** 4 reclaim feeders and 10,250 SDX-Plus idlers handling coal;
- **Louisiana:** 1 reclaim feeder and 1,800 SDX-Plus idlers handling coal; and
- **Mississippi:** 2 reclaim feeders handling petcoke.

Joy SDX-Plus, CEMA E idlers, with end-pointed shaft technology, are a popular choice with many port facilities.

By strategically spacing multiple reclaim feeder units along a common overland conveyor, system capacity and stockpile capacity can be increased.

The advantages of properly designed reclaim feeders and conveyor systems as a single Unit

Properly designed reclaim feeders and conveyor systems have many advantages over other methods:

- **ability to blend materials:** port facilities that need to blend materials can benefit from the combination of reclaim feeders and conveyors. When properly designed, multiple reclaim feeders can feed a variety of materials to a single conveyor system;
- **broad range of total system capacity:** a single reclaim feeder can feed the associated belt conveyor, if needed. More units can be activated and feed the belt conveyor, if the need arises; and
- **redundancy for maximum system availability:** multiple reclaim feeders can also feed a single conveyor system to increase overall capacity. Reclaim feeders are typically limited to around 4,000tph (tonnes per hour). Conveyors can be designed to receive and transport tonnage rates in excess of maximum reclaim feeder capacity. Planning for the maximum capacity for a conveyor system is a key component to having flexibility in tonnage rates.

Working in combination, the reclaim feeder, properly designed discharge chute and properly designed belt conveyor system work together as one to move coal from the stockpile to ship for transport.

A series of scale-quality idlers that are manufactured to tighter tolerances are utilized on the belt conveyor to give the port facility accurate weights for material being conveyed.

Choosing quality conveyor components

When moving materials, time is money. That is certainly true when loading ships in port

Material flow can be increased to meet belt conveyor capacity and customer demand simply by enlarging the flow gate opening and allowing more material through the feeder.

facilities. Proper selection of quality equipment is a key component to long-term conveyor availability.

In the US, CEMA (Conveyor Equipment Manufacturers Association) sets the standards for conveyor idlers.

Facilities should anticipate the peak handling tonnage and design the system accordingly.

Conveyors are one of the most cost-effective methods of moving bulk materials and can provide efficient and reliable service for many years.

Reclaim feeders designed with heavy-duty wing walls are available for 'semi-mobile' applications. Feeders are available skid mounted for ease of relocation and set up on an existing level surface. Additional site preparation is not required.

Some facilities utilize multiple reclaim feeders to add materials to the conveyor system. This can be done to increase tonnage, or to blend a variety of materials that are stored in separate stockpiles in the same yard. Additional feeder-breakers can be added later to feed the conveyor system. Facilities should consider the potential for increased loading when selecting conveyor components.

Reclaim feeders and associated conveyor equipment are instrumental tools in the export industry along the US Gulf Coast. Proper equipment selection based on expected peak tonnage and the selection of quality reclaim feeders and conveyor equipment are key components to long-term system success.

Joy Global can provide the entire reclaim feeder system with controls or with a customer-supplied control system.

CEMA Ratings

For the simple evaluation of conveyor idler rolls handling specific loads, the Conveyor Equipment Manufacturers Association (CEMA) has established the following rating system for conveyor idler rolls[1].

CEMA B Idler Rolls

- belt width sizes range from 18 inches to 48 inches;
- loads range from 342 pounds to 410 pounds (depending on belt width); and
- rating based on a minimum L10 life of 30,000 hours at 500rpm.

CEMA C Idler Rolls

- belt width sizes range from 18 inches to 60 inches;
- loads range from 630 pounds to 900 pounds (depending on belt width); and
- rating based on a minimum L10 life of 30,000 hours at 500rpm.

CEMA D Idler Rolls

- belt width sizes range from 24 inches to 72 inches
- loads range from 945 pounds to 1,200 pounds (depending on belt width)
- rating based on a minimum L10 life of 60,000 hours at 500rpm.

CEMA E Idler Rolls

- belt width sizes range from 36 inches to 96 inches
- loads range from 1,575 pounds to 1,800 pounds (depending on belt width)
- rating based on a minimum L10 life of 60,000 hours at 500rpm.

[1]*Based on information from the CEMA Standard No. 502-2004.*

The most common technique for feeding is the use of large dozers to push the stockpile onto the intake end of the feeder. Many customers refer to feeders as 'dozer traps'.

Port Corpus Christi: serving the bulk market for 87 years

The Port of the Lone Star State

Port Corpus Christi has been generating business and jobs in South Texas for 87 years. Strategically located on the western Gulf of Mexico, Port Corpus Christi is the fifth-largest port in the United States in total tonnage.

The port provides a straight, 45ft-deep channel and quick access to the Gulf of Mexico and the entire United States inland waterway system. The port delivers outstanding access to overland transportation, with on-site and direct connections to three Class-I railroads, BNSF, KCS and UP, and direct, vessel-to-rail discharge capabilities through Corpus Christi Rail Terminal. The Joe Fulton International Trade Corridor, now fully operational, provides direct, non-congested access to Interstate 37 and Highway 181. Port Corpus Christi is ideally positioned for Global Trade in the South Texas Region.

Port Corpus Christi has some notable projects on the horizon. The US Army Corp of Engineers has authorized the Port to deepen the Corpus Christi Ship Channel to 52ft. However, before diving into a project of that scope, Port Corpus Christi is aiming to strengthen infrastructure. It received federal funding to expand the La Quinta Channel by 1.4 miles to an authorized depth of 41ft. The La Quinta Channel expansion will be complete by March 2014. The port is moving forward with the development of the La Quinta Trade Gateway, an 1,100-acre greenfield site designed to accommodate a multi-purpose dock and container facility. Recognizing the growth of breakbulk and project cargoes, the port identified the necessity to improve rail capabilities and has embarked on a $20 million rail improvement project.

The engineering design for the construction of a new rail yard adjacent to the Viola Turning Basin to better serve its customers is in progress. All these efforts open the gate for an increase in trade for the South Texas Region.

As a leader in environmental awareness, Port Corpus Christi adopted an environmental management system (EMS) in 2004. This EMS is ISO 14001 certified and initiatives include an anti-idling campaign, a port-wide recycling programme, and an annual Gulf Ports Environmental Summit to share ideas on common environmental issues faced by all Gulf Ports.

The port offers more than 125 acres of open storage and fabrication sites, heavy lift capabilities, more than 295,000ft^2 of covered dockside storage as well as a cold storage facility. Port Corpus Christi operates Foreign Trade Zone (FTZ) #122, reorganized under the Alternative Site Framework (ASF) for greater flexibility and expedited access to FTZ benefits.

PORT CORPUS CHRISTI SHIP AND BARGE ACTIVITY

Year	2012	2011	2010	2009	2008	2007	2006	2005
Dry	372	430	416	341	789	1,077	942	1,037
Tankers	948	965	992	971	962	1,057	1,019	1,043
Barges	4,762	4,018	4,360	3,848	4,281	4,610	4,672	5,298
Total	**6,082**	**5,413**	**5,768**	**5,160**	**6,032**	**6,744**	**6,633**	**7,378**

TONNAGE FIGURES - 2004 TO 2012

Year	Breakbulk	Grain	Chemical	Dry bulk	Liquid bulk	Petroleum	Totals
2012	390,967	2,578,847	1,966,012	7,939,684	554,336	65,367,343	78,806,189
2011	306,631	4,214,821	1,743,708	8,692,368	533,543	64,819,146	80,310,217
2010	339,259	4,113,277	1,468,244	6,866,446	506,211	68,900,860	82,194,297
2009	317,993	3,951,347	1,410,028	6,443,658	131,100	64,265,522	76,519,648
2008	552,590	5,423,867	1,630,019	7,891,343	301,007	70,060,614	85,859,440
2007	445,204	3,377,386	1,848,875	8,241,554	513,036	74,893,638	89,319,693
2006	256,697	2,031,610	1,569,993	7,700,130	248,355	75,176,048	86,982,833
2005	444,982	2,098,829	1,795,329	8,396,055	518,403	73,532,352	86,785,950
2004	503,016	1,836,090	2,142,736	7,289,403	407,906	74,214,650	86,393,801

All tonnages are given in short tons.

DRY BULK TERMINAL

Bulk dock 1

Coal, ore, minerals and other dry bulk commodities can be discharged directly from vessels to railcars or trucks at Bulk Dock #1. This facility can also be used to load vessels when special handling is required.

Location and access

Bulk Dock #1, which is operated by the Port of Corpus Christi Authority, is located at the Bulk Terminal, on the north side of Tule Lake Channel in the Inner Harbor. Road access is via Navigation Boulevard. Rail service is provided by the Burlington Northern Santa Fe Railway, Tex-Mex Railway Co. and Union Pacific Railroad through the Corpus Christi Terminal Railroad, Inc. (CCTR). A certified rail track scale is located convenient to the Bulk Terminal for accurate weighing of railcars.

Specifications

Draught:	34ft
Slip Length:	835ft
Dock Length:	396ft
Gantry Crane Travel Length:	335ft
Loaded Bucket Outreach:	55.5ft

Vertical clearance

From bottom of bucket to water line at MHT 60ft for either 10 or 15 cubic yard bucket Panamax class vessels are handled at this facility. Stevedores can offer advice on handling vessels exceeding 700 feet in length and/or exceeding 34 feet draught.

Cargo handling

The travelling unloading tower has a free digging rate of 600 short tons per hour using a 15 cubic yard bucket to discharge products weighing 55 pounds per cubic foot. Actual productivity varies depending on the product and type of operation.

Bulk dock 2

Coal, petroleum coke, and other dry bulk commodities can be loaded directly to vessels from bottom dump railcars, dump trucks or storage at Bulk Dock #2.

Location and access

Bulk Dock #2, which is operated by the Port of Corpus Christi Authority, is located at the Bulk Terminal on the north side of the Tule Lake Channel in the Inner Harbor. Road access is via Navigation Boulevard. Rail service is provided by the Burlington Northern Santa Fe Railway, Tex-Mex Railway Co. and Union Pacific Railroad through the Corpus Christi Terminal Railroad, Inc. (CCTR). A certified rail track scale is located convenient to the Bulk Terminal for accurate weighing of railcars.

Specifications

Draught:	45ft
Slip Length:	1,270ft
Dock Length:	375ft
Loading Area (without shifting):	350ft on a 135ft beam
Outreach from Face of Dock:	87ft

Aerial clearance

From bottom of spout to waterline at MHW: 62ft Panamax class vessels are handled at this facility. Vessels over 850 feet length overall must be shifted to permit full access by the loader.

Cargo handling

The radial shiploader is capable of loading products weighing 55 pounds per cubic foot at a maximum rate of 1,500 tons per hour. Actual productivity will vary depending on the product and vessel. Quotations and arrangements for loading vessels at this facility can be obtained from the local stevedores.

Our lineup, your peace of mind.

When you need an expert to provide cargo handling and logistical services, turn to Associated Terminals. With the shortest transit times from the Gulf of Mexico, twelve midstream berths including two full size Cape berths, state of the art technology and an experienced staff, our team has it covered. **www.associatedterminals.com**

ASSOCIATED TERMINALS

Associated Terminals christens the 'T. May'

The T. May, *en route to the christening.*

As part of its ongoing plan of fleet standardization, Associated Terminals christened its eighth crane from Gottwald Port Technology of Düsseldorf, Germany. On 3 October last year, Associated Terminals christened the derrick barge *T. May*, a 8400B model. The christening took place at Woldenberg Park on the Mississippi River in New Orleans, Louisiana.

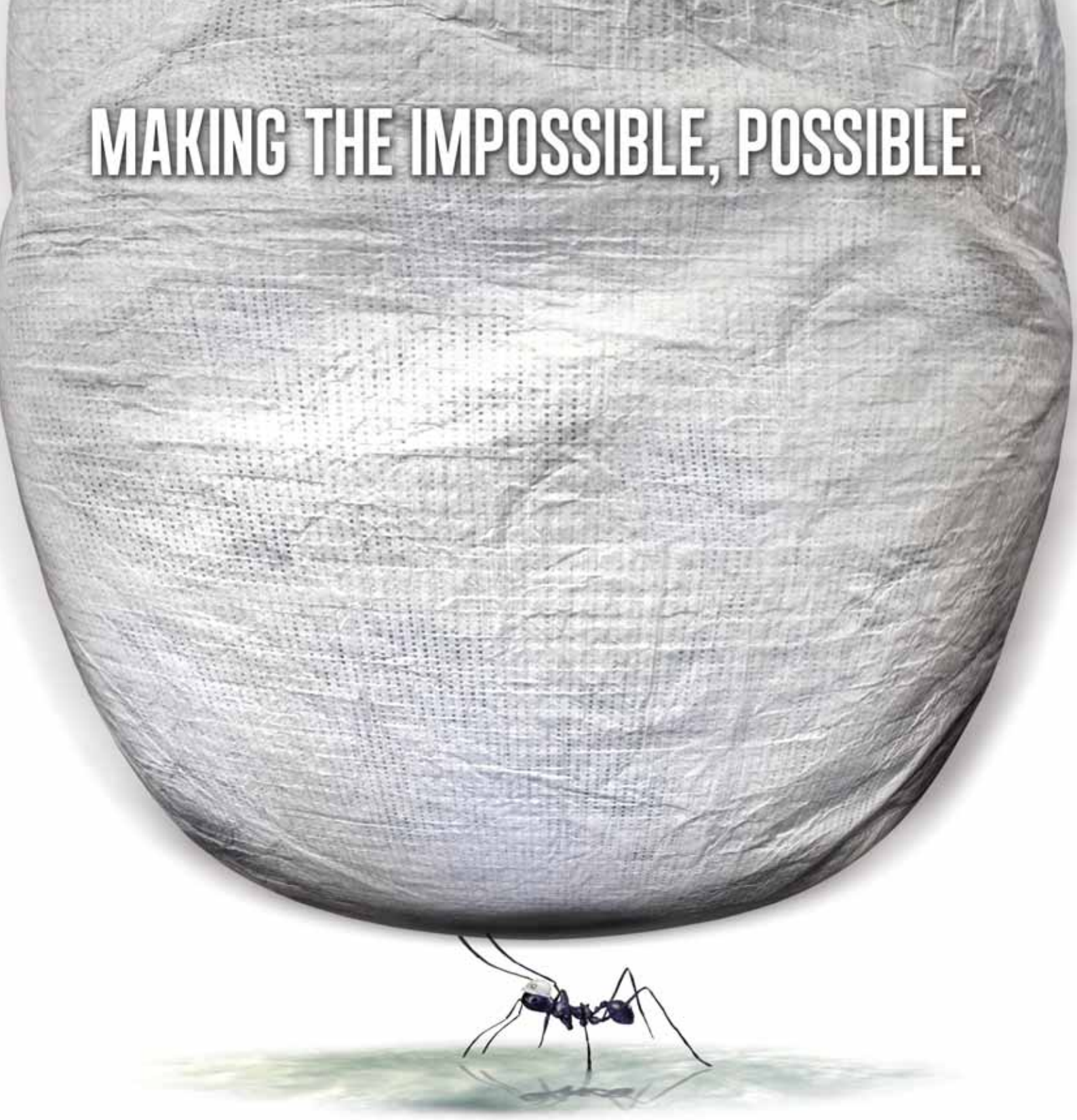
"The *T. May* will allow us to continue to provide our customers with industry-leading service," said Associated Terminals President Todd Fuller. "We have been so pleased with the performance of the Talley-Perez that we decided to choose the 8400B model again. The new addition will further increase our capacity to safely and efficiently handle large volumes."

The *T. May* is the eighth Gottwald crane in the Associated Terminals fleet. This marks the fifth year in a row that Associated has added new equipment to its fleet of stevedoring cranes. The Gottwald 8400B crane is mounted on a heavy load deck barge built by Conrad Industries of Morgan City, LA. The barge measures 250 × 72 × 12 feet.

The crane was named after Terry May, Senior Vice President of Associated Terminals. May has 35 years in the maritime industry.

In his speech, May thanked the individuals who influenced his career at the companies where he has worked as well as his Associated Terminals teammates. In addition, he thanked his parents, wife and daughters for their support.

May started in the maritime transportation industry in 1978 with Ingram Barge Company as a dispatcher and ultimately advanced to Bulk Sales Manager prior to his departure in 1986. Before rejoining the Associated team in 2003, he had numerous years of service with Consolidated Grain and Barge, International Marine Terminal, The Valley Line Company, The Port of Mobile, East/West Marine Terminal, and Celtic Marine. He has been with Associated Terminals for a total of 13 years as Vice President and currently serves as Senior Vice President. He also serves on the board of the Mississippi Valley Trade and Transport Council.



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Associated Terminal upgrades facility

Located at the foot of the Mississippi River Bridge in Port Allen, Louisiana, Associated Terminals of Baton Rouge is firing on all cylinders. This prime location on the Intracoastal Canal serves as a logistical hub for the movement of commodities such as rice, fertilizer, grain and other goods where barge and truck is key.

As stated by Brian Harden, "Just like all of our terminals, we aim to be the strategic answer for our customers. Major upgrades have been completed on our facility and further upgrades are on the way for our equipment and dock. With easy accessibility to the interstate, our location and storage capabilities allow us to serve as an ideal distribution centre for customers who need to service clients along the I-10 corridor and surrounding areas."

Construction is complete on a new 17,500 square foot warehouse. The new warehouse will be primarily utilized for the storage of urea. A phased dock expansion is also underway at the property. Phase I of the renovation is a new dock measuring 60' x 130'. The expansion will ultimately result in a 400ft linear waterfront. The increase in surface area is needed to accommodate the increased number of trucks that will be visiting the facility due to long-term contracts that will provide a steady stream of additional products into the facility.

From an equipment standpoint, a Hyundai L800 excavation and an additional Hyundai 740-9 wheel loader will be in put in service this year. New marine radios have been installed to increase communication between the scale master, the fleeting boats and the truck drivers increasing the operational and safety integrity of the location.

Port of South Louisiana dedicates its new finger pier and opens MSOC

In April last year, the Port of South Louisiana dedicated its new finger pier, and also held a grand opening of its Maritime Security Operations Center (MSOC) at the Globalplex Intermodal Terminal.

Louisiana Department of Transportation and Development's (LA DOTD) Secretary Sherri LeBas joined Port of South Louisiana (PSL) Executive Director Joel T. Chaisson and Commission President P. Joey Murray III at a dedication for the new Finger Pier at Globalplex Intermodal Terminal during a ceremony held on 9 April 2013. The $19.5 million project, an extension of the general cargo dock, was funded in part through the Louisiana Department of Transportation and Development's Port Construction and Development Priority Program in the amount of $15 million.

Built by Continental Construction Company, the Finger Pier adjacent to and downstream from the general cargo dock, is a 700ft long and 65ft wide extension that can facilitate berths of additional vessels at Globalplex. It enables barges to moor on the inboard side as well as both vessels and barges on the outboard side, improving efficiency of ship-to-barge and truck-to-barge operations by allowing simultaneous operations on both sides of the Finger Pier. Estimates of approximately 47 new vessel calls per year are expected and increasing by 70 vessels by the second year of operation. The project also included the demolition and reconstruction of the downriver mooring dolphin.

"We knew if we built it that they would come," said Joel T. Chaisson, Port of South Louisiana's Executive Director, while pointing at the berthed vessel, the Pine 2. "[But] without our partners — the Governor and his administration, the State Department of Transportation and its Port Priority personnel who worked so hard on this project — we would not have this great addition to the Port of South Louisiana."

Commission President P. Joey Murray acknowledged the current commission board members (Raymond Fryoux, Louis A. Joseph, Joseph Scontrino, Robert 'Poncho' Roussel, Paul Robichaux, and Stanley Bazile) and former port commissioners (Sheila Bonnette, Russell Gaudet, Blaise Gravois, the late Gregory Gravois, and the late Lawrence Jackson) who were involved in the planning stages of this project.

The keynote speaker, Secretary LeBas reiterated the importance of our nation's ports. "Ports serve a vital role in our state, as you all know, and they create and support 73,000 jobs, contribute approximately $4 billion into the state's economy and this project is going to help move that forward with an estimated 36 new jobs. So I just want to congratulate all of you for the vision, for the work that you do because [with] projects like this…you're making this port facility the best that it can be."

Following the Finger Pier dedication, the Port of South Louisiana held a ribbon cutting for the new Maritime Security Operations Center (MSOC), also located within Globalplex Intermodal Terminal.

Established as a command and control centre to manage emergencies within the Port of South Louisiana's jurisdiction, the MSOC is a 2,000ft^2 hardened concrete and steel building with impact-resistant glass, built to withstand 150 mile-per-hour winds. Equipped with the latest in communications and surveillance equipment, it is linked to MSOCs at four other deep-water ports on the lower Mississippi River, as well as federal, state, and local emergency response agencies. The $1.2 million project was funded in part by $965,000 in grants from the US Department of Homeland Security. Louisiana's Department of Transportation and Development provided funding for the remainder.

The establishment of MSOCs at the five lower Mississippi River deep-water ports is a network system that gives full maritime domain awareness over the Mississippi River, something Captain Peter Gautier of the US Coast Guard New Orleans Sector lauded during a speech at the event. "We have a linked system of communications for the first time, together with

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The new finger pier at the Port of South Louisiana.

sensors that can tell us very early on if we are having an incident on the river," said Captain Gautier. "Really what it does is it ups our game in terms of responding faster and better to maritime incidents and to protect the people and the property and the environment of this most important river and in this economically-vibrant region." He went on to say that "…when you think in terms of maritime security in the modern sense, it's hard not to think of September 11, 2001. And, in that sense, it's designed to confront new threats presented by a new adversary and one that seeks to exploit our weaknesses and the gaps and seams. And the main gap and seam we have is the maritime environment. This seeks to close that gap and seam."

Demurrage-free top-off for Capesizes

Oldendorff and United Bulk Terminals have introduced a demurrage-free top-off service for Capesize vessels from the US Gulf to India and Far East. In November last year, United Bulk Terminals USA Inc. and Oldendorff Carriers GmbH & Co. KG announced their co-operation to market combined loading and shipping of coal and petroleum coke in Capesize vessels from the US Gulf Coast to India and East Asia.

The new service includes United Bulk Terminals export terminal in Davant, Louisiana and Oldendorff's top-off installation in Trinidad. For the first time customers are able to book fully loaded Capesize vessels from the US Gulf Coast at a very competitive fixed rate, face no demurrage risk and receive high quality professional service from two market leaders.

Customers will be quoted one competitive and all-inclusive freight rate for loading of a Capesize vessel up to maximum available draught (approximately 47ft/120,000dwt) and a smaller shuttle vessel of approximately 50dwt to 60,000dwt. Both vessels will sail to Trinidad where the cargo of the shuttle vessel is consequently transferred into the Capesize vessel at Oldendorff's existing top-off installation. The contract eliminates any demurrage risk for the customers at United Bulk Terminals Davant and Trinidad.

"We are very excited about the opportunity to offer this unique service package together with Oldendorff, the world's largest dry bulk carrier owner/operator. Our ongoing expansion project at Davant, where we are currently doubling our handling capacity to over 20mt [million tonnes] per year, will enable us to offer our customers the best possible transshipment and freight terms for coal and petroleum coke exports to Asia" says Jan Vogel, president & CEO of United Bulk Terminals. "Our worldwide fleet of over 450 vessels and the existing top-off operation in Trinidad are now complemented by a high performing loading facility with approximately 4mt of ground storage and strong ties to river transportation" adds Patrick Hutchins, managing director of Oldendorff Carriers London. "The Trinidad project in the Gulf of Paria has been in operation since July 2012 and transshipped more than 2mt of iron ore in the first four months of operation".

Both companies believe the combination of two successful and established operations will form very competitive and simple alternatives for producers, trading houses and importers alike. Because no new investments are required, the service is available with immediate effect and with no long-term commitment required from the customers. DCi

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New Bobcat loader for cement ships at Scotline

Scotline Ltd has purchased a new Bobcat S130 skid-steer loader from Bobcat of London, the authorized Bobcat dealer for London and the South East, for shiptrimming work at a new cement installation at Scotline's Rochester Transit Terminal on the River Medway in Kent in the UK.

The new cement installation provides cement for customers in the London and South East region and is an important diversification for the Scotline operations in Rochester where the company also runs the nearby Medway Timber Terminal. The Transit and Medway operations are two of four independent Scotline Timber Terminals in the UK alongside those at Gunness on the River Trent near Scunthorpe and at Inverness in Scotland. As well as cement, timber and wood pulp, Scotline handles other bulk cargoes and also owns and operates a fleet of seven modern box hold vessels.

When a cement ship docks at the Scotline Transit Terminal, most of the unloading of the cement in the hold is carried out by a trailer-mounted extraction system on the dockside, which pumps cement from the hold via a new pipeline system to four large silos, from where it is loaded via a hopper into lorries for supply to customers.

As the hold on the cement ship empties, there comes a point where the discharge tube cannot reach the corners and this leaves a significant amount of cement remaining in the hold. At this point, the Bobcat S130 skid-steer loader, which is equipped with an optional front door, is lowered by crane into the hold, where it first forms new mounds of cement in the centre of the hold for the discharge tube to extract and is then used to ensure that the hold is cleaned out as much as possible.

Ian Gould, purchasing manager at Scotline, said: "We are very pleased with the performance of the Bobcat S130 loader which has been designed specifically with the durability and reliability you need for tough applications like this. Working inside ship holds is particularly demanding because the job must be completed as quickly as possible, and can take hours, in dusty and hot conditions. From our fleet of seven cargo vessels to all the equipment we run in our terminals, we ask a lot of all our machines, but we look after them very well and we have been rewarded with excellent long-term performance throughout the fleet."

Providing support for the new S130 skid-steer loader, Bobcat of London is the authorized Bobcat dealer for London, Essex, Kent, East Sussex, West Sussex, Surrey, Hertfordshire and Middlesex and is based in West Thurrock in Essex. Bobcat of London's factory-trained engineers have many years of hands-on experience of repairs and servicing of compact and heavy plant and machinery. All the company's service vans are fully equipped with workshop tools and extensive parts for on-the-spot service work.

Only original Bobcat parts are used to maintain the best mechanical standards and to optimize performance, reliability and protect machines' residual values. Bobcat of London stocks a full selection of genuine Bobcat accessories and parts to support every machine in the field and backs these with flexible service agreements including 24 hours a day coverage, depending on the requirements of the customer. In addition to essential spare parts stocked by Bobcat of London, there is a back-up service with overnight delivery for other items.

For shiptrimming work such as that at Scotline, one of the most important advantages of Bobcat skid-steer loaders – their outstanding manoeuvrability in confined spaces – ensures they are the ideal machines for this application. In the S130 model, the radius lift pattern and short wheelbase are combined with differential steering for highly efficient manoeuvring and super fast cycle times in tight areas, a fast travel speed and more than ample auxiliary pump flow. In addition, the hydrostatic drive enables precise control of the speed and direction of the loader, both forwards and backwards, in any situation.

The S130 skid-steer loader has an operating weight of 2,465kg, a rated operating capacity of 597kg and a tipping load of 1,195kg. The S130 also has a reach of 575mm with a lift height of 2,781mm. Enhanced performance results from the use of the Kubota V2203-E diesel engine producing 34.3kW of power at 2,800rpm.

As well as Bobcat skid-steer loaders, Bobcat of London is also responsible for sales and service for Bobcat compact tracked and all wheel steer loaders, excavators, telehandlers and utility vehicles. The company also offers for sale over 70 different types of Bobcat attachments that help to deliver versatility and time-saving efficiency across a huge range of applications.

New building range from Rubb has lift off

Rubb Buildings Ltd was tasked with designing, manufacturing and erecting two crane liftable buildings to cover offshore pile clusters.

The two buildings from Rubb's new 'BLE Series' feature spans of 30m and each measure 35m in length. To increase the overall internal apex height of the manufacturing bays to 20.2m, Harland and Wolff (H&W) asked Rubb to use a 7.3m-high wall constructed out of 40ft containers as the building's foundation. A custom-designed supporting frame was created to hold the containers together and act as the fixing base for the Rubb BLE structures.

The buildings are designed with reinforced base beams and anchor brackets so they can be easily lifted from their container foundations and moved to one side. This allows the client to then crane lift materials into the space within the foundation frames for various operations. The building roof is replaced to protect employees and materials from the elements.

Each gable end of both paint and blast facilities includes a pedestrian door and a 4m × 4m roller shutter door for equipment access.

Harland and Wolff has 150 years of marine manufacturing experience. The company, based at Queens Island, Belfast, Northern Ireland, offers a unique combination of vast facilities and technical capability. From initial consultancy through detailed engineering, fabrication and through-life support, H&W are perfectly positioned to support the needs of the maritime, offshore and renewable energy sectors.

Rubb Buildings Ltd developed the concept and launched the liftable, moveable, extendable, relocatable BLE range of facilities in 2013. All BLE facilities are equipped with lifting points, providing crane connections which allow the structures to be elevated into position. The BLE Series can also be designed to be mounted and

run on a track system to provide a perfect solution for large scale production lines or coverage of ships and dry docks. Buildings are easily extendable and can also be relocated as required.

Chris McNally, Harland and Wolff Heavy Industries' maintenance operations manager, said: "We approached Rubb with a concept of using our gantry cranes to lift a roof on and off a new paint and blast facility to hold subsea weldments at our ever improving and expanding works. We worked closely with Rubb and our structural engineers to design and develop a completely new idea and Rubb supported us throughout.

"The quality of the workmanship from the design drawings and loading calculations was impeccable and visits to site from design engineers and directors assisted in a smooth programme of works. The site team worked self-sufficiently and without disruption to our busy daily works and provided two first class liftable buildings and two gable end walls efficiently, to budget, on time and to a very high specification.

Between Rubb and ourselves we have been able to create two separate cells 30m (W) x 35m (L) x 19m (H) with the ability to remove the roof off with either of our 840-tonne gantry cranes using a specialist lifting beam and arrangement. Moving forward we would happily work with Rubb again on increasing our facilities."

About Rubb Buildings Ltd

Rubb Buildings Ltd is renowned worldwide for the design and manufacture of custom-made relocatable engineered fabric structures.

Highlights include ground-breaking military buildings (aircraft hangars, shelters, storage facilities), specialist sports buildings and structures for a variety of sectors including aviation, ports, construction, bulk storage and environmental (waste and recycling).

All products are designed and manufactured at Rubb's UK plant at the Team Valley Trading Estate in Gateshead, Tyne and Wear. The company was founded in 1977 and has a proud history of delivering innovative and quality structures to a wide range of clients.

The Rubb Group has plants in the USA, Norway, Poland and China.

Telestack wins prestigious industry award

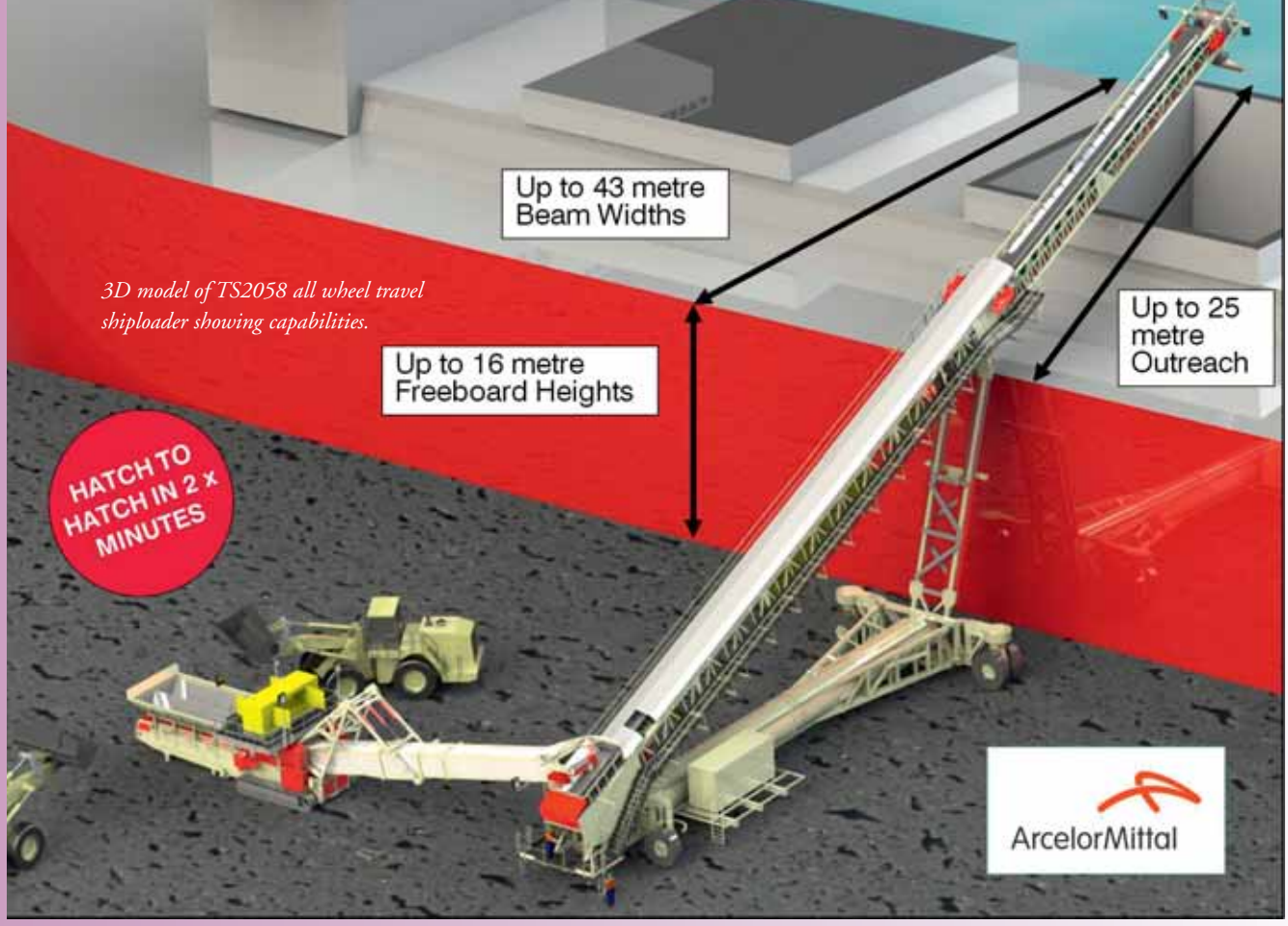
TS2058 all wheel travel mobile shiploader loading vessel at 2,000tph from HF2020 heavy duty tracked mobile hopper feeder.

Telestack has been announced as the winner of a coveted IBJ 2013 Award winning the Innovative Technology category. The IBJ Awards salute achievements in the maritime bulk industry and are open to companies right across the globe.

This is the second time Telestack has won an IBJ Award since their launch in 2010, having won the Best Ship Loading/Unloading System category in 2010 for its innovative mobile grain loading system

Telestack has won this prestigious 2013 Award in the face of very strong competition from leading industry players and is confirmation of the company's commitment to working closely with its customers to ensure that it designs and supplies a solution that is customized to suit their specific needs.

Drawing on its extensive knowledge and experience gained



3D model of TS2058 all wheel travel shiploader showing capabilities.

from numerous installations across the globe and especially those handling heavy ores, Telestack designed a very unique solution using proven existing technology to ensure that its customer, Arcelor Mittal, received an innovative mobile shiploading system that Telestack believes offers the shortest hatch change times in the industry. This powerful performance helps maximize the efficiency of the shiploading process for our customer.

The Telestack system offers a loading process to comply with ISO:3082 2009 Iron Ore Sampling Standards. The system consists of a track mobile hopper feeder with auto sampling unit feeding into an all travel shiploader. The hopper feeder can receive up to 2,000tph (tonnes per hour) of iron ore from CAT 988 wheel loaders and then this material is transferred directly to the shiploader which is capable of loading vessels with a freeboard height of up to 16 metres and a beam of 43 metres.

In the first 12 months, Telestack's customer loaded approximately 3.5mt (million tonnes) with the Telestack system. The unique mobility of the system allows Arcelor Mittal to move quickly from hatch to hatch and, when loading is complete, the entire system is easily relocated away from the quay side to free up valuable ground space.

This award winning system is another example of Telestack's strategic focus in offering pit-to-port rapid deployment solutions to its customers. Such systems are especially suited to the remote locations within Africa, Asia and South America where it is often not possible or economically viable to use more traditional shiploading systems.

Telestack's ISO 9001:2001 certification helps ensure that it adheres to processes and procedures internally so that it meets and exceeds the needs of its customers in terms of specification, performance, delivery, reliability and after-sales support. This commitment to quality has helped Telestack to win many prestigious orders around the world in sea ports, inland river terminals, mines, power stations, cement plants and steel mills, ensuring Telestack is a proven alternative to traditional material handling methods.

TS2058 all wheel travel mobile shiploader.

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DELACHAUX GROUP

Breakthrough Siwertell order for Black Sea grain terminal

Siwertell shiploaders are based on screw, aeroslide or belt conveying technologies that offer high capacity and environment-friendly loading.

Three new Siwertell loaders will provide high capacity grain loading at the major Ukrainian port of Illichevsk with minimal environmental impact and exemplary levels of efficiency and safety

Cargotec has secured an important order to deliver three stationary Siwertell SBL 1600 shiploaders for installation at a grain terminal in the Ukrainian port of Illichevsk. The belt-type loaders, which are designed to handle vessels of up to 100,000dwt, each have a grain loading capacity of 2,000tph (tonnes per hour). It will be possible to use two loaders simultaneously to provide efficient, environmentally friendly grain loading services.

Ola Jeppsson, Siwertell sales manager at Cargotec, says this is an important breakthrough into the Ukrainian grain market for Cargotec. "The Black Sea region in general and Ukraine in particular is a hub for grain export and it has many new bulk export facilities at the planning stage. The Illichevsk terminal is the first grain terminal in the region using Siwertell equipment. This order will improve our chances of winning further contracts."

Illichevsk Grain Port chose the Siwertell system because it represents an excellent technical solution at a reasonable price. "The system will be designed to minimize dust and eliminate spillages," notes Jeppsson.

The new loaders will be delivered in pre-assembled sections suitable for shipping. Delivery is scheduled for the end of 2014. The final mechanical construction work, electrical installation, testing and commissioning will be carried out on site under the supervision of Siwertell engineers.

Cargotec offers a wide range of Siwertell grain handling products; loaders, unloaders and bulk terminal solutions. All of these are tailor-made to address customers' particular needs and all offer exemplary levels of efficiency and safety with minimal environmental impact.

Cargotec offers a wide range of Siwertell grain handling products; loaders, unloaders and bulk terminal solutions. All of these are tailor-made to address customers' particular needs and all offer exemplary levels of efficiency and safety with minimal environmental impact.

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

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Ready for the future today: NKM Noell floating cranes

Floating cranes are playing an increasingly important role in ship-to-ship and ship-to-shore bulk loading, unloading and transshipment. Because they require no port infrastructure, floating cranes are flexible and can operate within or outside of ports. The importance of floating cranes is, amongst others, being driven by, among other things, increasing port charges and deadweights. The increases in port charges are causing operators to reconsider their loading and unloading operations, moving them away from the quayside. The increases in deadweights, and resultant draughts of bulk carriers means that they will at least be forced to lighten their load and hence reduce their draughts before they can enter port.

Advanced concept

Predicting these developments, in mid-2005, NKM Noell started to develop an advanced floating crane concept. Computer simulations, interviews with crane drivers and thirty years of experience established that crane throughput could best be increased not by substantially increasing the hoisting capacity but by increasing luffing and slewing speeds and because the intention was to develop a floating crane, stability considerations played a major role.

A crane can have a high theoretical throughput, but the actual throughput is largely determined by the skill of the crane driver. The driver must be able to see the cargo, must not be excessively subjected to vibration and acceleration forces, must have easy access and must feel safe. Moreover, a theoretically fast crane is only effective if it is operational. This places demands on reliability, availability and the life of the crane. Moreover, the crane must be economical to operate and be environmentally friendly.

Principle design

The principle design of the advanced crane concept is derived from the classical lemniscate crane (see 'The Lemniscate Crane') and incorporates the lessons learned from the above. This has resulted in a principle crane design that includes:

- improved stiffness;
- a low centre of gravity;
- redundancy in the slewing and luffing mechanisms;
- an optimal balance system;
- optimized slewing speed ;
- optimized luffing speed (up to 160m/min);
- PLC control;
- semi-automatic grab control;
- low noise-level;
- a comfortable cabin, sophisticated suspension;
- elevator access (optional);
- a safe escape route (no entrance in machinery house needed);
- low fuel consumption;
- low smoke emissions;
- low exhaust emissions;
- a design life of 25 years; and
- use of flywheel (optional).

The product

Based on the principles described above, NKM Noell designs and builds cranes to customer specification. Each crane is tailored to the customer's specific needs. NKM Noell can also supply the pontoon on which the crane is installed and can arrange the installation. Life-time maintenance is possible via a Service Level Agreement (SLA) and any delivery is backed by the comprehensive NKM Noell guarantee.

NKM Noell Special Cranes

NKM Noell Special Cranes is a major supplier of special cranes and special handling equipment. In addition to advanced special cranes, it can also supply R&D, consulting, feasibility studies, design, engineering, manufacturing, shipping, installation, commissioning, training and after-sales service. NKM Noell is part of Groupe Reel, which was founded in 1946 and is based in Lyon, France.

The Lemniscate Crane

It sounds complicated, but lemniscate refers to a mathematical curve in the form of a figure-eight. Carefully selecting the parameters creates a curve, part of which approximates a straight line. In a lemniscate crane, the point of suspension of the load follows this straight line, which is arranged to be horizontal.

The advantage of this type of arrangement is that during luffing the load moves horizontally, which reduces, among other things, the power required and the vertical acceleration forces.

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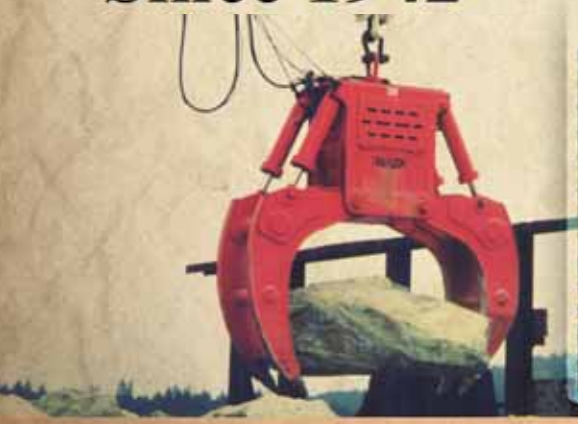

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Liebherr Group equals previous year's turnover in 2013 despite weak economy

The overall economic situation did not improve in 2013. According to current forecasts, the global economy will grow by just under 3% and global production probably by 3.1%.

In this year the volume of worldwide trade will, according to World Trade Organization (WTO) forecasts, increase by 2.5%.

Turnover forecast for the 2013 business year

In view of only moderate overall economic development this year, the Liebherr Group expects its total turnover to reach €9,086 million, which equals the previous year's figure. A slight downturn is anticipated in the construction machinery and mining area, where turnover according to current forecasts will be in the region of €5,620 million, just €249 million or about 4% lower than in 2012. The Liebherr Group's construction machinery and mining area includes the earthmoving, mobile cranes, tower cranes, concrete technology and mining divisions.

Outside the construction machinery and mining area, on the other hand, growth is anticipated. The group expects turnover in this business area to reach €3,466 million, an increase of €245 million or 8%. The area comprises the maritime cranes, aerospace and transportation systems, machine tools and automation systems and domestic appliances divisions, together with miscellaneous products and services that include the components division.

Investments

The Liebherr Group has invested in modernization and expansion of its worldwide production network, and also in further strengthening of its sales and service organization. The group's total investments in the 2013 business year are expected to reach slightly more than €800 million, a figure below the previous year's total.

Construction of a new logistics centre for Liebherr-Logistics GmbH near Kirchdorf an der Iller (Germany) deserves special mention. It will be used initially to supply spare parts for Liebherr earthmoving machinery worldwide. In the long term it is planned to transfer spare part logistics for further construction machinery divisions to this location. After the first construction phase the building will cover an area of more than 47,000m² and will go into operation in the first quarter of 2015. Investment volume for the first phase amounts to more than €100 million. When the centre is completed, Liebherr will have a 360,000m² site boasting hall space of around 170,000m² and 4,500m² of office space.

Another major project is investment in extending the premises of Liebherr-Australia Pty. Ltd. at its Adelaide location, to which for example a warehouse building, a logistics centre and a component remanufacturing centre are to be added. The aim is to offer the region's mining customers still more comprehensive support.

Within the components division, Liebherr-Components

Biberach GmbH began construction work in August 2013 on an additional factory near Biberach an der Riss (Germany). It is intended to accommodate the development and production of switchgear, electric motors and generators. In Colmar (France) a new factory covering an area of 50,000m² has been built. The components division will operate it as a research and development centre and for the production of mining components.

A new production building with adjacent administrative building has been added to the Liebherr production plant for hydraulic excavators, wheel loaders, material handling machines and transmissions in Dalian (China). It is intended to increase the production capacity of Liebherr Machinery (Dalian) Co., Ltd. for the Chinese market and for various other threshold countries.

Workforce

According to current estimates, the group's workforce will increase by 1,870 in 2013, to a total of 39,670.

Outlook for 2014

Despite gradual recovery in the highly developed national economies, only moderate global economic growth is anticipated: the International Monetary Fund assumes that growth will be 3.6%. The Liebherr Group views the coming business year with cautious optimism. In its initial forecast for 2014 it expects total turnover to reach a volume similar to that achieved in the previous year. The workforce will probably increase slightly in size.

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Heyl & Patterson in partnership with BHJD in China

In January this year, Heyl & Patterson Inc., an expert in thermal processing and bulk material handling systems, announced the signing of an exclusive partnership with BHJD Mining Engineering & Technology (Beijing) LLC, an equipment procurement and construction (EPC) company based in Beijing, China, that specializes in coal preparation plants.

This agreement combines Heyl & Patterson's world class engineering and manufacturing skills with BHJD's sales and marketing expertise in China. Coal preparation plants wash coal and prepare it for transport to power plants and steel mills. An industrial dryer at the end of the process will increase the coal's heat content and make it a higher-value product. Heyl & Patterson has been an acknowledged expert in coal drying technology since its founding in 1887.

"This is a fantastic business opportunity with one of the most innovative companies in China," said John Edelman, President of Heyl & Patterson. "It will give Heyl & Patterson the chance to reach out to a new geographic market and collaborate with a business in one of the world's fastest growing economies."

BHJD was established in 2006 and has quickly become a leading provider of engineering design, construction, project management and production operations to the coal and power industries. The company has also completed projects in lignite, kaolinite, non-metallic minerals and non-ferrous metals.

About Heyl & Patterson Inc.

Founded in 1887 in Pittsburgh, PA, Heyl & Patterson Inc. provides high quality, custom engineered solutions for thermal processing and bulk material handling applications around the globe. Thermal processing products and services include some of the largest high-efficiency dryers and coolers in the world, as well as calciners, bulk material processors and pilot plant laboratory testing systems. Heyl & Patterson is the innovator the rotary railcar dumper and offers a wide range of bulk material handling equipment, including railcar & barge movers and barge unloaders.

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RDS and Loup Electronics launch LOADEX 100 at CONEXPO 2014

The next generation of onboard scales will be on show at the Loup Electronics booth at Conexpo 2014, offering the widest choice for all types of loaders and excavators.

CONEXPO-CON/AGG will take place in Las Vegas, USA, in mid-March, and will showcase the newest equipment, technology and product breakthrough in construction.

Making its market debut, LOADEX 100 is a retrofittable scale installed on both tracked and wheeled 360° excavators and material handling machines to weigh the amount of net material load in the bucket or grab.

Up to two pressure sensors are installed into the hydraulic lift system, with the addition on machines with assistor accumulator cylinders, of up to two more compensation pressure sensors.

The pressure signals are captured, filtered and corrected by measuring the angle of the main boom using either an RDS Inclinometer or Mechanical Angle sensor.

When used dynamically, the pressures are captured through a set weighing zone. The system may also be used in static weighing mode; the boom can either be lifted to a set weighing position where the pressure is captured, or measuring constantly in a 'live' mode at any required boom height. Both dynamic and static weighing positions are adjustable by the operator to suit any job required, which will enable the machine to be used at its most efficient output.

Dipper arm position corrections are made from a mechanical angle sensor mounted on the boom to dipper arm elbow pivot. This provides fast and precise dipper arm angle measurement that is not effected by inertia G-forces or acceleration effects.

Slope corrections are made from another inclination sensor on the chassis.

As an added option, oil temperature compensation is provided by a clamp on temperature sensor. Ultrasonic technology is used to provide reliable and precise bucket position compensation.

All calculations are made in the LOADEX 100 Weighing Module, with the resultant calculation sent via CAN protocol to the LOADEX 100 terminal in the cabin. Load and store information is saved in the terminal where it can be distributed to an in-cab printer, modem or internal SD flash card.

Also making its CONEXPO debut is the new WEIGHLOG VUE on-board weighing scale for wheeled loaders. An all-new CAN-based system combining cutting edge sensor technology and signal processing techniques, the WEIGHLOG VUE provides precise and consistent bucket weight information and emphasizes the gains in productivity and profitability that can be achieved with such technology.

Designed to operate within the fastest loading environments and toughest of conditions, WEIGHLOG VUE reduces cycle times and maximizes tons per hour performance.

Loading correctly first time eradicates return trips to the stockpile reducing vehicle movement, fuel usage and machine & tyre wear.

The new WEIGHLOG VUE uses a 7" colour, resistive touch screen display and additional physical keys providing a modern and ergonomic operator interface.

Suitable for use with up to 10 different attachments e.g. buckets or forks, the system can be retrofitted onto wheeled, telescopic and tractor type loaders.

The system continually measures hydraulic pressure using up to four sensors. The pressure signals are captured and filtered through a weighing 'arc' provided by inclination sensors measuring the angle of the main boom.

All signals are processed in the RDS Smart Box and the resultant weight calculation is sent to the terminal mounted in the cabin.

SQL database capability with up to eight reference fields providing virtually unlimited inputs of products, customers, trucks, hauliers, locations, destinations, mix blends and notes. There is a blend facility with an infinite number of mixes and products.

GPRS or Wi-Fi connectivity provides one or two-way communication with the back office to send and receive job information.

Video input for switching head unit into reversing camera mode removes the need for additional screen, releasing valuable cab space.

For smaller loaders and skid-steers, Loup offers the WEIGHLOG 3030, which also benefits from a colour touch screen display. This instrument is a user friendly on-board weighing system which provides accurate and consistent bucket and total load results, meaning stock management and check-weighing operations can be controlled more effectively.

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Telestack to exhibit at CONEXPO/CONAGG 2014

HF521 tracked hopper feeder feeding TS542 radial telescopic conveyor.

Telestack Ltd will be displaying some of its mobile bulk material handling equipment at Conexpo Con/Agg 2014 in Las Vegas in March. This is the company's third time attending the show as an exhibitor and, since it first visited back in 2008, it has sold over 140 machines and counting into the North American market as well as building on introductions at previous shows to sell equipment right around the world.

This year Telestack will have an outdoor booth where they will have on display three machines that are new to the North American market. The factory Sales and Technical teams will be on hand to meet with existing dealers and customers as well as potential new dealers and customers.

The world launch of the latest model in the track mobile hopper feeder range will take place and Telestack is excited by the potential for this machine in North America and beyond

The HF 520 has been developed in response to feedback

HF518 tracked hopper feeding fixed incline conveyor.

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TC424R tracked radial conveyor automatically stockpiling.

from dealers and customers and can be used in a multitude of applications from reclaiming in the quarry, mine and port to loading barges on the inland river network.

Also on display will be the latest generation in Telestack's Track Radial Range. The TC 424R incorporates a number of design/performance improvements that have again come from customer input over the past two years.

In many applications, this range from Telestack is becoming more popular than traditional track conveyors as it allows customers to combine the benefits of track mobility for ease of moving around the site/moving from site to site, being able to build radial stockpiles from one fixed position without having to reposition the crusher/screener thus reducing downtime and wheel loader operating costs, and also being able to operate the unit using the PLC programme to reduce segregation/degradation and keep dust levels to a minimum.

In fact a lot of the time the Telestack TC Radial range will do all that the operator needs a radial telescopic unit to do, but at a much lower capital cost.

Telestack's third unit on display is the new water-cooled TC 420 X which is the first of the new design to arrive in North America and replaces the very successful previous model

There will be videos and photographs on display of the rest of the Telestack family of equipment including radial telescopics, track mobile truck unloaders and track mobile link conveyors.

In 2014, Telestack is looking forward to expanding its aggregates customer base which already includes Martin Marietta, Teichert, Vulcan, Tilcon, Old Castle, CRH, La Farge, Holcim, Cemex , Hanson Aggregates – Heidelberg, Iluka Resources and many more.

The company is proud to have been selling equipment in North America since 2007 and its network of full service dealers ensures that it is able to fully support its customers.

Telestack is continually looking to expand its network of dealers in North America and the rest of the world and it invites any company with an interest in selling its equipment to visit its booth

Telestack's equipment is operating all over the world, often in extreme and harsh conditions. This proven record of performance coupled with the company's ability to continually innovate mobile bulk material handling solutions to meet the requirements of its customers helps ensures that it will continue to expand its product offerings in the years ahead. DCi

TC420X tracked conveyor stockpiling from a crusher.

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Digging deep

getting to the bottom of the CSU market

In-service performance secures new mobile Siwertell unloader contract

UK company TAD Enterprises Ltd has signed a contract with Cargotec for the delivery of a Siwertell 5 000 S mobile unloader for cement-handling operations in the Black Sea port of Yeysk, south of Rostov, in Russia. Delivery is planned for February 2014 from Cargotec's production plant in Bjuv, Sweden.

"The new Siwertell unit will offer the company a flexible, low cost cement handling operation," says Jörgen Ojeda, Siwertell sales director. "TAD Enterprises currently employs a pneumatic mobile unloader, but is not happy with its performance. The company also expressed concerns about the level of maintenance that this type of unloading system demands.

"With more than 400 units put on the market since 1992, Siwertell unloading systems have proven themselves in service. This market-leading reputation for reliability and the support offered by Cargotec Sweden Bulk Handling were essential elements in securing this new contract," explains Ojeda.

"Along with reliability, Siwertell mobile unloaders offer flexibility and high capacity bulk handling combined with low operational and maintenance costs; this also had a major impact on the client's decision."

The diesel-powered, trailer-based Siwertell 5 000 S system will be used to load trucks alongside the berth for further transportation by road. It will be fitted with a double-bellows system for handling cement continuously at a rated capacity of 300tph (tonnes per hour). The unit will also have a dust filter system to ensure a low environmental impact.

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

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Road-mobile Siwertell system to support operations at two Omani ports

Oman's leading cement producer, Raysut Cement Company SOAG, has ordered a high capacity road-mobile Siwertell unloading and conveying system for its cement-handing operations at the ports of Duqm and Sohar. The order has been booked into Cargotec's 2013 fourth quarter order intake.

The contract, which supports the company's expansion plans in Oman, comprises the delivery of a road-mobile Siwertell 10 000 S unloader unit and a road-mobile Siwertell PumpMaster blow pump conveying unit, commissioning, supervision, and spare parts.

The combination of screw type unloader and blow pump conveyor has a number of advantages including the low energy consumption of mechanical unloading combined with the convenience of pneumatic conveying.

The system will have a rated cement discharge and conveying capacity of 300tph. "This is a particularly high value, considering that the distance from the unloader and blow pump unit to the silo top is about 270m with an elevation of about 40m," explains Peter Göransson, Siwertell Sales Manager.

He adds: "Raysut chose this system because it is one of the very few products on the market that offers such a high discharge capacity while remaining fully road mobile. Siwertell equipment has a proven track record of reliable performance and minimal environmental impact; these were also important factors in the decision to opt for a Siwertell system from Cargotec."

The system will be built at Cargotec's Siwertell manufacturing facilities in Bjuv, Sweden, and delivered by July 2014. It will serve the Sultanate of Oman's eastern port of Duqm, located on the Arabian Sea, and one of its largest ports, Sohar, which is situated on the country's north coast in the Gulf of Oman.

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CSUs: specific and profitable handling alternatives from VIGAN Engineering

In 2013, VIGAN Engineering — a very well-known equipment supplier to the agribulk sector — commissioned a range of CSU (continuous ship unloader) projects. These projects, for regions including Egypt and Bangladesh, were extremely challenging.

Transshipment and barge unloading in Egypt

Transshipment is a popular process for the handling of bulk commodities — not only grains, but also others including coal and iron ore. Transshipment reduces capital investment costs, and makes it possible to enjoy the regional advantages of transport by barge into the nearby hinterland, or by coastal vessels to local markets.

Panamax and post-Panamax vessels require a very deep draught, so transshipping means there is no need to carry out expensive dredging and/or build a quay for loading/unloading equipment.

Transshipment can also be very flexible, allowing for operations with vessels of various sizes and different characteristics — geared, non-geared, for example.

Nile Stevedoring and Storage Company (NSSC), which has its

Two portable VIGAN type 200 (maximum unloading rate 250tph) CSUs unloading grain from the hold onto the quayside conveyor.

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Two portable VIGAN type 200 (maximum unloading rate 250tph) CSUs unloading grain from the hold onto the quayside conveyor. The clean-up operation has begun, with the help of auxiliary equipment.

main activities in Alexandria (Egypt), opted for this alternative. The transshipment is carried out with special VIGAN NIV type equipment (see picture and graphic on p97) working at a rate of 600tph (metric tonnes per hour).

The transshipment pontoon berths alongside the large size vessels and the pneumatic CSU discharges the various ship holds and directly load river barges.

Under the gantry main platform, a hopper behaves as a buffer in order to maximize the handling rates by reducing operational stoppages, for instance between the barge mooring and sailing.

For barge unloading, four portable type 200 VIGAN machines are mounted on small specially designed gantries (see above): the rotation capability of the small platforms is to maximizing the hatch coverage by the suction nozzle.

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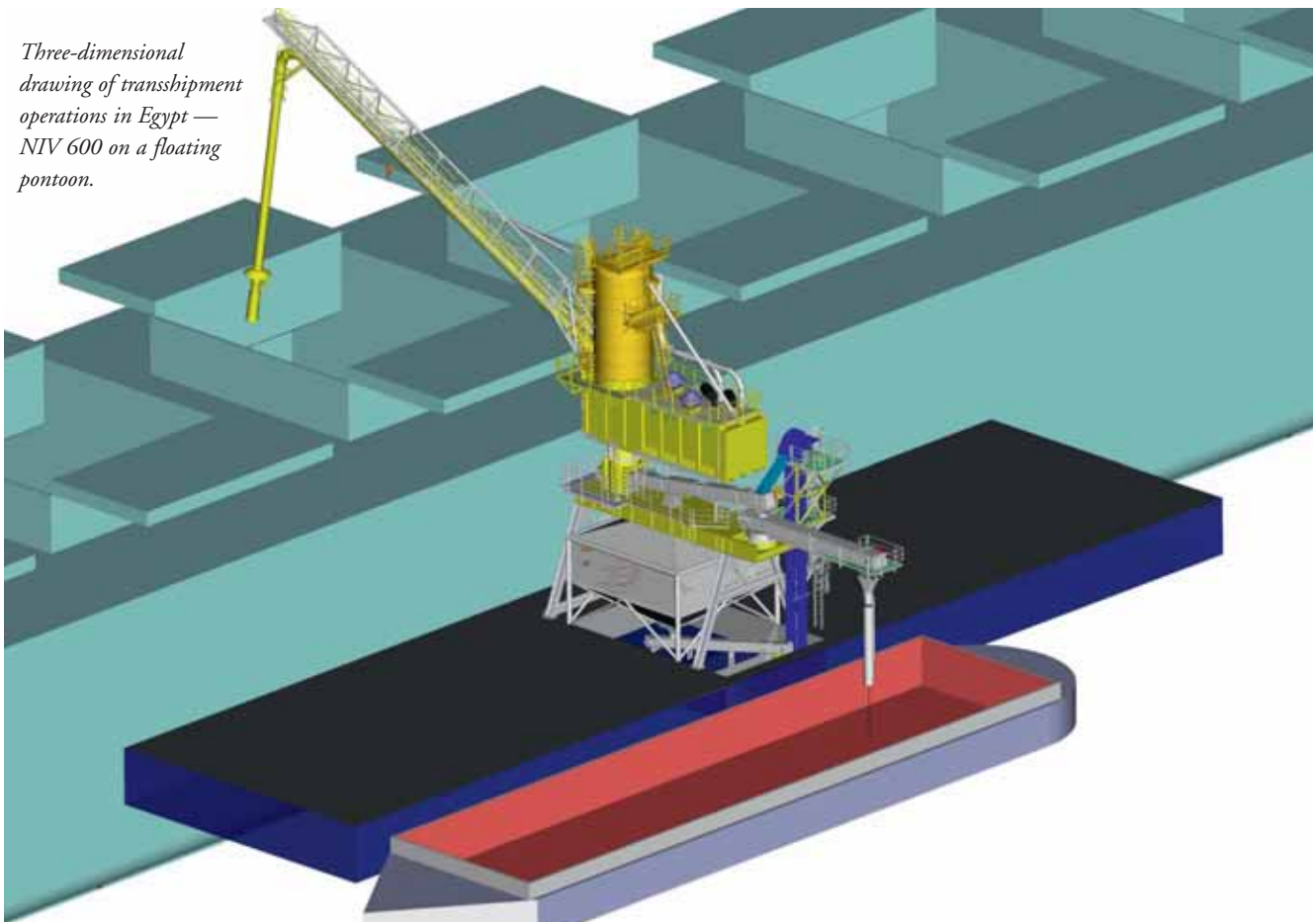
NIV 600 on floating pontoon for the discharge of large size vessels and loading barges.

A small independent crane allows for the lifting of auxiliary equipment into the barges and therefore the performances of efficient cleaning with pneumatic machines is even more boosted: the hatch emptying is not any more a major concern as usual with traditional discontinuous system such as grabs.

Bangladesh

In 2004, the first pneumatic VIGAN CSU was installed at Chittagong port for the Directorate General for Foods.

With the continuous growth of population in this country, as well as increased economic activities, imports of agricultural



Three-dimensional drawing of transshipment operations in Egypt — NIV 600 on a floating pontoon.

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A VIGAN NIV 250 CSU working at the Port of Chittagong Bangladesh.

commodities continue to rise, so higher unloading capabilities are needed. The same state-owned organization was so satisfied with the first machine that, in 2012, it ordered a second NIV-type machine from VIGAN.

On a self-propelled rail-mounted gantry, this VIGAN pneumatic CSU with a nominal capacity of 250tph discharges directly onto a quay side conveyor. The four stage turbo-blower, with its associated electrical control devices, keeps energy consumption below 0.8kWtph.

The air-conditioned operator cabin allows for continuous monitoring of the unloading operations with a certain comfort for the worker in charge: this is of great importance in such a hot and humid climate.

Also — and standard in VIGAN equipment (see parts in grey colour) — many parts are hot dipped galvanized not just because this offers the most reliable anti-rust system but also as a main

Three-dimensional drawing of a 250tph NIV in Bangladesh Chittagong.


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There is no dust or spillage to cause disturbance to the port operators and to the environment.

Iran

Further to the delivery a few years ago of a large 400tph machine to the Port of Amirabad in northern Iraq alongside the Caspian Sea, VIGAN has delivered another unit to this port. This new machine is a tower-type NIV unit, with a capacity of 220tph, and will be used by the ASC Matin company.

This towable machine has its own generator, and two outlets for loading trucks.

South Korea

A twin belt machine SIMPORTER was commissioned at the end of 2013 in the port of GUNSAN: the CSU offers a capacity of 800tph for grains, and is on rails with cable.

Mechanical and pneumatic CSUs from Bühler

Bühler manufactures both mechanical (Portalink for sea going vessels, Bargolink for river barge handling) and pneumatic (Portanova) continuous ship unloaders (CSUs). Its models are installed worldwide, and are customized to ensure that the customer receives the best possible unit that suits the local conditions and requirements.

The Portalink model is often the best solution for the customer, as it offers clear advantages in terms of lower operating costs and increased efficiency, due to the easy and auto sink-in function. Initial investment costs are higher, but this is more than offset by the lower operating costs.

All types of free-flowing product — including grains and mealy products like soya meal — can be handled by Bühler's mechanical and pneumatic unloaders.

Major clients, especially for the mechanical unloaders, include grain terminals and larger end-users. For example, Ishinomaki in Japan has invested in a Portalink, a project which was completed in 2013. Similarly, Santander in Spain and Tokachi in Japan both

This Bargolink has been operational at Vupik in Croatia since the end of 2012.

Portalink 600 in operation in Santander, Spain.

have a Portalink 600 with a nominal capacity of 600tph (tonnes per hour) for wheat and can handle vessels up to 65,000dwt. A Bargolink has been operational at Vupik in Croatia since the end of 2012.

In terms of remaining competitive in the market, Bühler continuously monitors and reacts to market conditions, in particular the individual requirements of the customer. In this way, it is able to act and develop new solutions for current and future trends and anticipate on stricter regulations.

Recent contracts awarded to Bühler include:

- two mid-size Portalinks for Asia;
- one mid-size and two large size Portaloads as well one large size Portalink for China;
- two high-capacity grain loading terminals for South America; and
- various grain terminal extensions in Africa.

Recent technological developments

For earthquake-sensitive areas such as Japan, Bühler has developed the earthquake absorber. This can withstand even significant earthquakes and thus support continuity of the port hit by the earthquake.

Growing into the future.

Bühler is a specialist and technology partner for plant and equipment and related services for processing basic foods and manufacturing advanced materials. The group is a major supplier of flour production plants, pasta and chocolate production lines, animal feed manufacturing installations, and aluminium die casting systems. The core technologies of the group are in the field of mechanical and thermal process engineering. With its expertise and over 150 years of experience, Bühler time and again rolls out unique and innovative solutions for its customers, helping them achieve success in the marketplace. Over the decades, Bühler has come to be acknowledged as a reliable partner, thanks to its distinct commitment to quality and its global presence.

Bühler Group operates in over 140 countries, has a global payroll of over 10,000, and generated sales revenues of CHF2,409 million in fiscal year 2012.

Portalink 600 in operation in Tokachi Port in Japan.

Eco-coal unloading technology from ThyssenKrupp Resource Technologies

ThyssenKrupp Resource Technologies (TKRT, formerly ThyssenKrupp Fördertechnik), one of the world's leading companies in the field of bulk materials handling equipment and systems, is active in the design, manufacture, installation and commissioning of complete materials handling equipment and systems, as well as individual machines, such as stackers, reclaimers, shiploaders, shipunloaders and wagon tipplers, crushing and screening equipment and opencast mining plant and systems.

Recently, TKRT's Bulk Materials Handling Business Unit based at Rohrbach in Germany has experienced considerable success with the award of new contracts and the construction of individual machines for continuous ship unloading facilities worldwide. Some examples of machines recently installed or currently in design or under construction as well as the new development of continuous ship unloading technology are described in the following article.

Environmentally friendly coal unloading for PKT Bontang boiler plant, Indonesia

In February 2010, TKRT received an order for the design and supply of a coal handling plant; including a continuous barge unloader (CBU), a circular stacker and reclaimer system and the pertaining belt conveyor system. The order was placed by PT. Inti Karya Persada Tehnik (IKPT) on behalf of PUPUK KALTIM (PKT), a key player in the fertilizer industry of Indonesia for the Boiler Plant of Bontang Fertilizer Complex in Kalimantan, Borneo.

Already at the stage of concept design of the coal handling system, the technical development in the field of ship unloading, coal storage and conveying as well as the following environmental and economic aspects were taken into consideration:

- increasingly strict regulations in the field of environmental protection;
- high-performance unloading and handling under different geometrical and meteorological conditions;
- high operational efficiency, resulting in cost savings for ship berthing time and operation of the handling plant; and
- low maintenance and spare parts costs

Construction site of the recently developed CBU for PKT Bontang coal boiler plant.

Based on this, the following equipment was selected by the end-user and the EPC (engineering, procurement, construction) contractor favouring high efficiency, environmental protection and operation safety and effectiveness:

- chain bucket elevator-type continuous barge unloader (CBU) instead of grab type barge unloader;
- fully covered circular storage with circular stacker and side scraper reclaimer, with full automatic operation;
- covered belt conveyor system for environmental and weather protection.

For this project TKF developed a new generation of CBU which will fulfill all requirements in respect of unloading efficiency, environmental protection and low operation and maintenance cost.

The CBU will be designed for a design unloading rate of 700tph (tonnes per hour) of coal from barges ranging from 7,000dwt to 10,000dwt. The CBU will be of heavy duty design and construction to operate for a continuous period of 18 hours per day and an annual period of 330 days. The machine consists of a rigid supporting frame construction on wheels, which is able to travel along the length of the barge. Reclaiming is done by a chain bucket elevator, hinged onto the slewing and luffing boom. While reclaiming in either longitudinal direction of the barge, the bucket elevator can be positioned sideways of the boom against the coal pile on the barge for effective reclaiming. From the bucket elevators the coal is transferred directly to the boom conveyor, which in turn feeds it to the portal conveyor. The operation is controlled from the operator's cabin or from the pier by remote control. Digging depth, speed of the reclaimer and /or traversing is controlled automatically to achieve the required unloading capacity. The reclaiming is achieved in semi-automatic mode, allowing manual positioning and/or operating.

TKF's CBU in operation at the Bontang site in Indonesia.

TKRT's previous references for continuous barge unloaders and their excellent track record, including the recent milestone of a high capacity 4,000tph CBU to Bontang Coal Terminal, were deciding factors in the contract being awarded to TKF. This special design of the continuous barge unloader is the first of its kind in Indonesia, although all critical components have been proven in continuous barge unloaders previously supplied by TKF. In all, TKF has already supplied more than 50 continuous ship/barge unloaders, mostly to clients in Indonesia, Korea, China, Taiwan, the Philippines, Malaysia, USA, Great Britain, Spain and Germany.

Another continuous barge unloader for Indonesia

Two-thousand-and-twelve is the year for Indonesian CBU. Besides the installation of a CBU at Bontang, another order was received for a 3,000tph CBU for coal, destined for Kalimantan in Borneo. It will be the third CBU operating in Indonesia, designed and built by TKF.

A similar CBU in operation at Bontang Coal Terminal, Indonesia.

The Arutmin North Pulau Laut Coal Terminal, PT Nusa Tambang Pratama, a company of the well-known Bakrie Group, recently placed the order with TKF. A decisive factor for this decision was, amongst others, TKF's excellent track record of more than 50 continuous ship and barge unloaders in operation worldwide, some of which have meanwhile been in service for more than 25 years.

This latest CBU is designed for unloading 8,000dwt to 10,000dwt open coal barges at a rate of 3,000tph or 3,500m³/h. TKF received in 2008 the order for a CBU with an unloading capacity of 4,000tph. This unloader, operated by PT Indominco Mandiri, has now been successfully in operation at Bontang, also in Kalimantan, since beginning of 2010. Seeing the satisfactory performance of this machine in operation was perhaps what finally convinced the client that the TKF type of CBU design was the right choice. However, not only their high unloading capacity, travelling mobility, low maintenance and installed power and energy consumption, (compared for example to the screw type ship unloader or a conventional grab unloader), but also the efficiency of emptying the hull right down to the bottom of the barges without the use of a Bobcat, and thus making 'sweeping' of the barges practically superfluous, are a special advantage of the TKF type of continuous barge unloader.

TKRT, Business Unit Materials Handling, better known in former days as PHB or PWH, first developed the bucket elevator type of continuous ship unloader (CSU) at the beginning of the 1970s. Its first CSU, designed to unload asbestos, was commissioned in 1974. It took some years before customers, who until then had been working with conventional grab type ship unloaders, saw the advantages of a CSU compared with the conventional grab type used mostly in those days. Since then however, the TKF type of CSU has made its mark in the field of dry bulk ship unloading. Today TKF CSUs are designed for handling such products as coal, iron ore, phosphate, urea, sand unloading bulk carriers of up to 250,000dwt. In recent years, in particular in countries which depend heavily on importing their fossil fuels, coal-fired power plants are invariably built directly at deep water sea locations with the convenience of having their own coal unloading terminal facilities. Two such coal-fired power plants for example, are the Tanjung Bin and Jimah power stations in Malaysia. Here four TKF CSUs are in operation. Another prime example is the Hou Shi Power Plant in Fujian Province, P.R.of China, where three TKF continuous ship unloaders are in operation. However, also large coal import terminals, for example in China, have in the last ten years turned more and more to using CSUs. Until today, TKF has already supplied in total 15 CSUs to China. In South Korea there are already nine TKF designed CSUs in operation in coal fired power plants.

Follow-up order from Guangzhou Zhujiang power plant, China

Ship unloaders supplied by TKF working at Zhujiang power plant for 20 years.

Back in 1994, the new power plant in Guangzhou City, Zhujiang power plant received TKF's ship unloaders for its coal terminal

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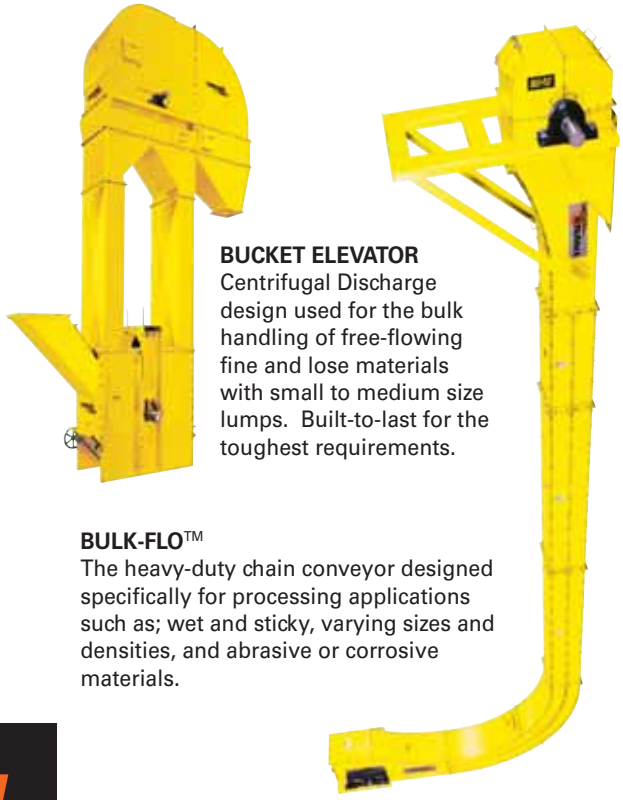

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TKF's three CSUs, similar to those to be installed at Zhujiang, in operation at Huayang Power Plant, China.

and put into operation. Since then these ship unloaders have been operating successfully to serve the power plant demand on coals for 3 × 600MW blocks and transshipment of coals for the region. An annual turnover of 6–8 millions tonnes is achieved by these unloaders.

With the increase of power consumptions in this region, the power plant started the expansion project of Phase II for the other 1,000MW block. Through an international tender TKF again won the new order for the two further ship unloaders, and this time chain bucket elevator continuous ship unloader.

The contract was signed in June 2012 for the supply and installation of two CSUs. These unloaders will be designed for an unloading rate of 1,500–1,650tph and ship sizes up to 70,000dwt, and in the future for 100,000dwt representing outstanding success of TKF in China by covering >75% of market share.

For TKF, this follow-up order not only means being awarded a further order, but also represents continuity with respect to design, supply, construction and management and demonstrates the client's appreciation of and satisfaction with TKF's performance to date.

The delivery to site and commissioning of the new CSU is schedule for end of 2013, the commercial operation can start from February 2014.

The decision of Zhujiang Power Plant to choose TKF as supplier for all of their important ship unloaders has been made with the confidences in the TKF's advanced technology, capability of execution of large scale projects and first-class technical service, as one of the decision makers said, the choice went in favour to TKF after accurate comparisons of several competitors on the evidence of:

- worldwide and extensive experience in the development of coal ship unloader technology;
- excellent performance of CSU already built;
- high availability and long service lifetime without intensive repairs;
- reliable technical services during construction, commissioning and operation period; and
- good relationship with Chinese partners for manufacturing and erection

With this contract, TKRT, one of the world's leading designers and manufacturers of CSU's, has once again contributed to the development of China's coal ports and power plants among with other equipment of more than 60 machines for car dumpers, ship unloaders, shiploaders, stacker-reclaimers, etc. DCi

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US cement producer takes control of fugitive material

To deliver positive dust containment, each transfer point was outfitted with Martin ApronSeal™ Skirting, a dual design with two sealing surfaces.

A global producer of cement, ready-mixed concrete, aggregates and related products has completed a significant upgrade to its bulk material handling conveyors, helping the company eliminate waste and reduce maintenance, while minimizing potential risks from airborne dust and fugitive material build-up. By avoiding accumulations that required cleanup, the company is also reducing the need for maintenance personnel to work in close proximity to fast-moving conveyors, helping further diminish the chance of accident or injury.

Grupo Cementos de Chihuahua (GCC) is a global producer of cement, ready-mixed concrete, aggregates and related products to construction industries in Mexico, the United States and Bolivia. The company began manufacturing operations in 1943, with a capacity of just 60,000 metric tonnes. Expanding gradually according to a clear strategic vision, the firm has developed innovative processes and technologies that contribute to dynamic growth, while fostering an environmentally responsible, community-oriented culture.

Like most cement manufacturing sites, GCC Dakotah employs an extensive conveyor system to handle raw materials and move finished product. In keeping with its long-range plans to employ industry best practices for bulk handling and fugitive material control in its plants, company officials conducted an extensive assessment of the conveyors in early 2013. It was determined that significant upgrades could be made on conveyor transfer points to reduce spillage and dust emissions, and they contacted Martin Engineering for a proposal.

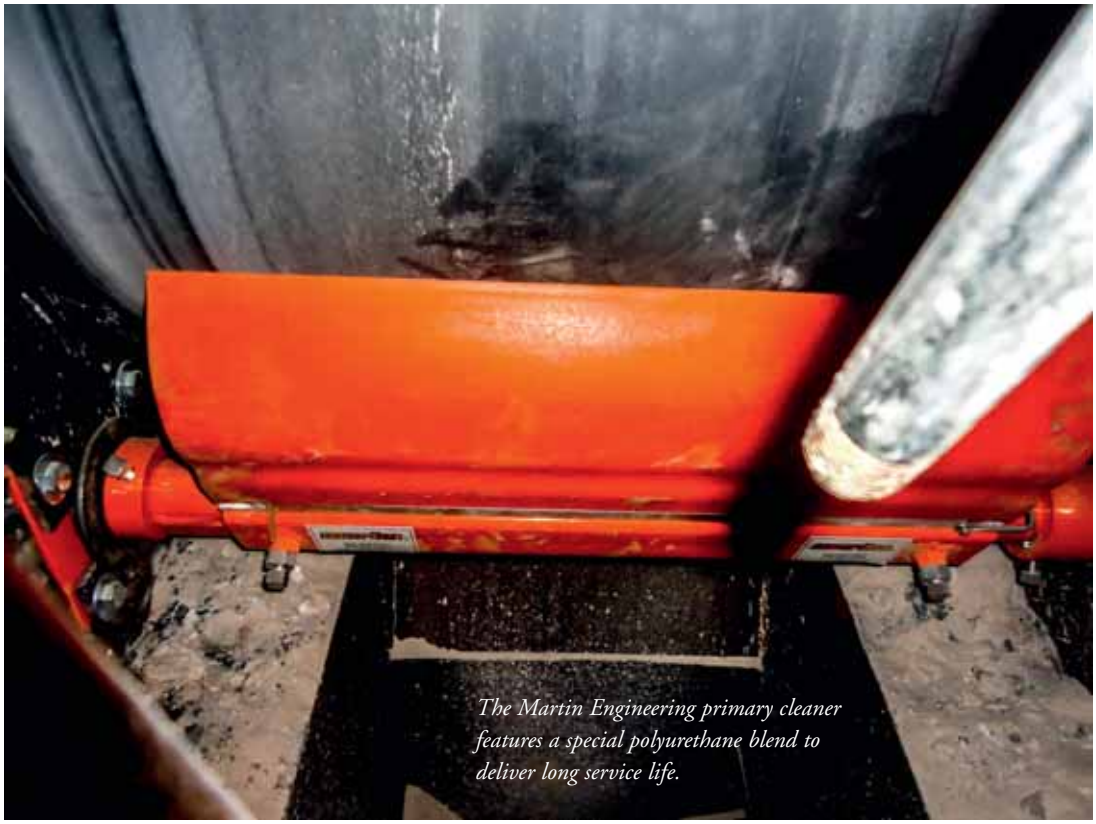
"Virtually any time bulk material is moved, especially in large quantities or at high speeds, the potential exists to create and release dust," explained Martin Engineering product engineer Dan Marshall. "Dust accumulation affects both safety and productivity, so it's really more than just a housekeeping issue. Complicating the situation is the fact that bulk handling systems frequently must accommodate changing weather and material conditions, making dust management an even bigger challenge."

Scope

The upgrade involved a significant overhaul of six transfer points on four conveyors, which were originally constructed in the late 1970s. All belts are 24 inches (61cm) wide, and range in length

from 40 feet (12.2 metres) to 110 feet (33.5 metres). During normal operation, they move 200–250tph (tonnes per hour) of clinker from the storage building and carry it to the bins feeding the finish mills.

"Most of the material handling system at this plant was fairly standard issue for its time, but some of the components were nearing the end of their useful life," commented GCC maintenance manager Ralph Denoski. "We were also aware that significant advancements had been made in some areas of bulk handling, and we wanted to take advantage of the newest technologies."



The Martin Engineering primary cleaner features a special polyurethane blend to deliver long service life.

With a detailed proposal from Martin Engineering in hand, GCC planned the upgrade process for a scheduled shutdown in March. In addition to supplying the components, Martin Engineering was responsible for planning and supervision of the project, while a mechanical contracting group assisted with the installation.

Components

Work began on all four conveyors by disconnecting the material inlet chutes from the existing skirtboard system and removing the worn rubber skirt seals, clamps, supports, skirtboard chute walls and tail boxes. Existing idlers were also removed to allow mounting of new belt support systems and troughing roll assemblies.

On each conveyor, three Martin® Trac-Mount™ Idlers were installed, spaced to deliver optimum belt support. The unique idler design delivers proper belt carriage, while stabilizing the belt line to improve sealing. Its slim profile requires only eight inches (203mm) of space for 6-inch (152mm) idlers, and the slide-in/slide-out frames allow service without the need to raise the belt or remove adjacent idlers.

Each transfer point received one new impact cradle and two belt support cradles.

With new idlers and troughing roll assemblies in place, each transfer point received one new impact cradle and two belt support cradles. Installed under the loading zone, Martin® Impact Cradles absorb the force of falling material in a transfer point and stabilize the belt line to help prevent the escape of dust and fines. Rugged impact bars are composed of a top layer of low-friction, ultra-high molecular weight (UHMW) polymer and a lower layer of energy-absorbing styrene butadiene rubber (SBR).

Working in conjunction with the impact cradles are a pair of Martin® Slider Cradles on each conveyor. Installed under the

skirtboard of the transfer point, these cradles support the edges of the belt specifically to eliminate sagging. With the proper support in place, pinch points that can trap material and gouge the belts are eliminated, improving both sealing efficiency and belt life. When the top eventually wears out, the bars can simply be flipped over to provide a second wear surface.

Sixteen-foot sections of skirt board were installed on each transfer point, with new side/centre supports and covers. The new skirt board is 7″ (17.8 cm) high on two of the conveyors, and 12″ (30.5 cm) high on the other two. Each system also included internal skirt board wear liners and a new tail box assembly with sealing components.

To deliver positive containment of fugitive dust, each transfer point was outfitted with Martin® ApronSeal™ Skirting, a dual design with two sealing surfaces. A primary seal is clamped to the steel skirt board to keep lumps on the belt, and a secondary seal or 'outrigger' strip captures any fines or dust particles that may pass beneath the primary seal. The secondary seal lies gently on the belt and self-adjusts to maintain consistent strip-to-belt pressure, despite high-speed material movement and fluctuations in the belt's line of travel.

Each conveyor was then fitted with a Martin® Tracker™ for the return side, installed approximately 10 feet (3 metres) ahead of the tail pulley. By providing immediate and continuous precision adjustment of the belts, the Tracker helps reduce edge damage, prevent spillage and extend belt life.

Finally, each belt received one Martin® QC1™ Cleaner HD as a primary cleaner and one Martin® SQC2S™ Cleaner. The QC #1 features a special polyurethane blend and tungsten carbide tip to deliver service life two to three times longer than conventional urethane blades. Designed to provide excellent cleaning performance immediately, avoiding any break-in period, the assembly maintains consistent tension without frequent adjustment.

Results

The entire upgrade operation was completed in just 11 days during the scheduled outage, with crews working 12-hour days to accommodate the planned shutdown. While specific cost savings are difficult to quantify, Denoski said the difference is easily observed. "The production team responsible for that area has had nothing but positive feedback about the upgrades," he commented. "We're not losing product to spillage and dust, so that material can be sold instead of cleaned up off the floor. The manpower formerly spent on cleanup can now be directed to core business activities.

"Our experience with Martin Engineering has been very positive," Denoski concluded. "The company's greatest strengths are its knowledge of bulk material handling problems and the best solutions for addressing them. And the no-excuses guarantee gives us the confidence of knowing that it will stand behind its products."

Martin Engineering supplies conveyor products and industrial vibrators around the world for a wide variety of bulk material handling applications, including cement/clinker, rock/aggregate, coal, biomass, grain and other materials. Founded in 1944, Martin Engineering is a major force in making bulk materials handling cleaner, safer and more productive. The firm is headquartered in Neponset, IL, offering manufacturing, sales and service from factory-owned business units in Brazil, China, France, Germany, Indonesia, Mexico, South Africa, Turkey, India and the UK, and under exclusive licence with ESS Australia. DCi

Each conveyor was fitted with a Martin Tracker™ for the return side, to help reduce edge damage, prevent spillage and extend belt life.

"E-Crane provided the crane with a custom modified barge and managed the entire project on a turn-key basis. We're very pleased with the design and operating flexibility of the crane and have ordered a 2nd E-Crane for use at IMT."

Fred Pope, Project Manager, KinderMorgan, USA

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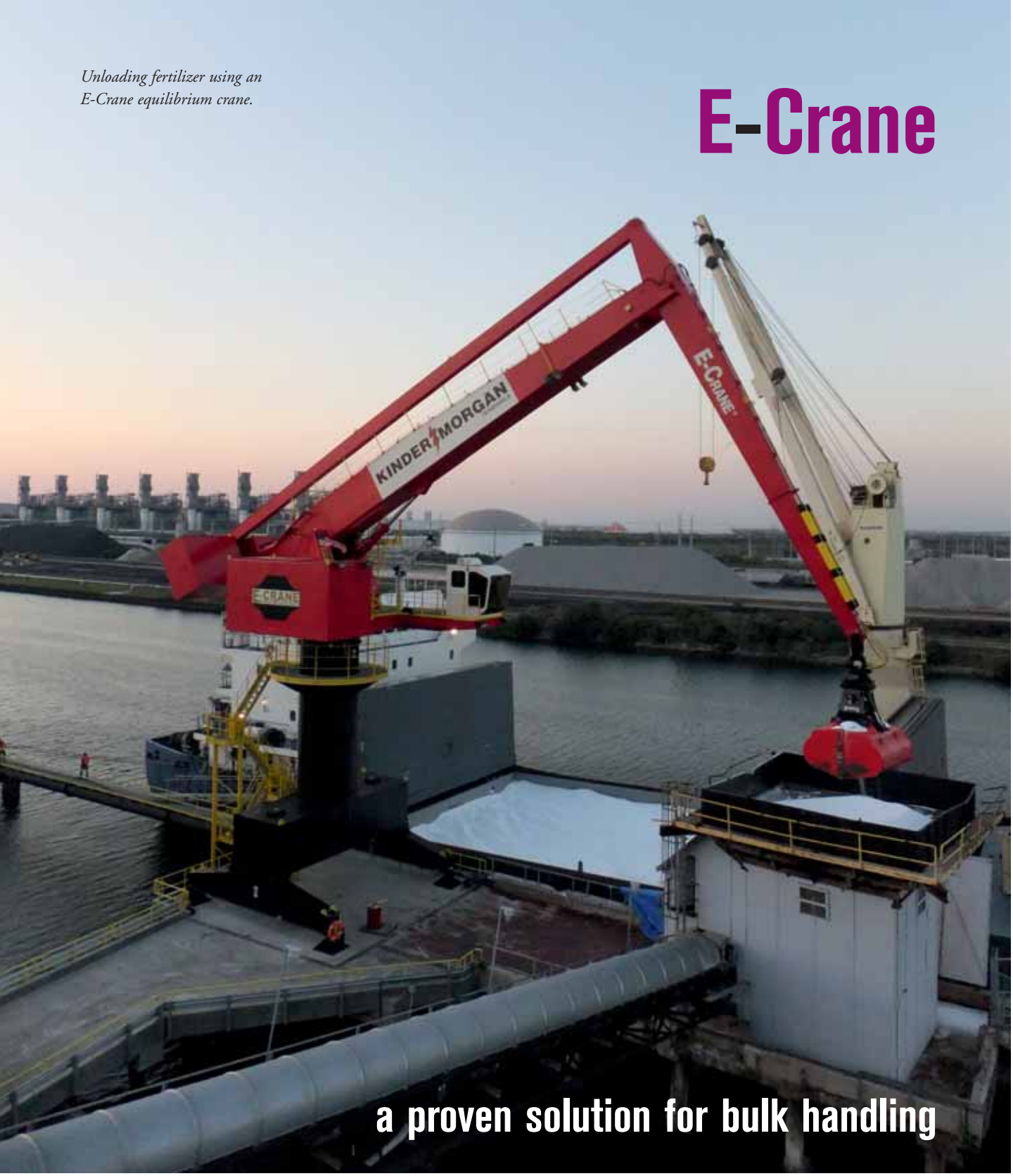


Unloading fertilizer using an E-Crane equilibrium crane.

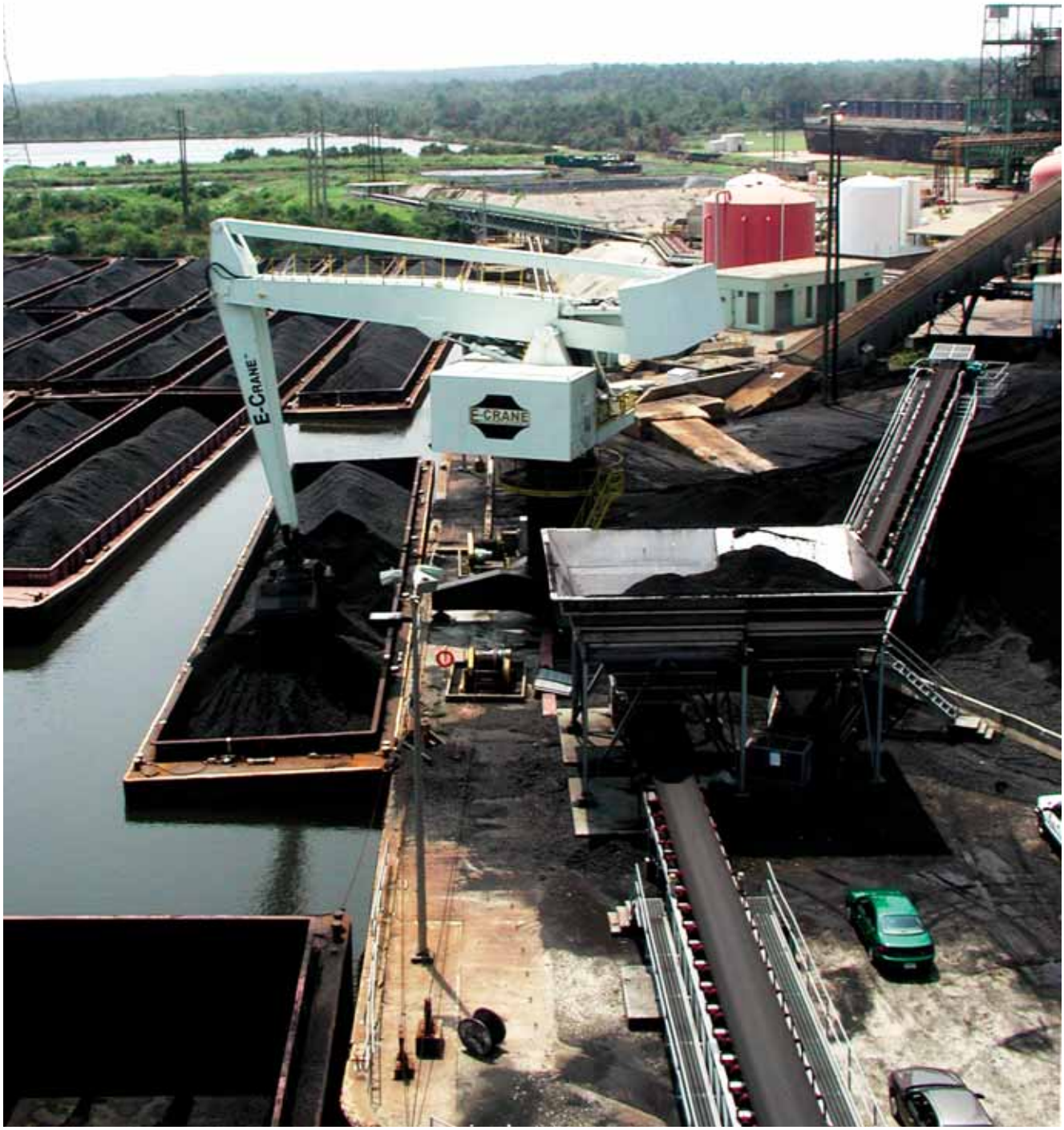
E-Crane

a proven solution for bulk handling

The E-Crane is specifically designed for barge and ship unloading, and is a proven and trusted solution in the bulk handling industry. E-Crane has proven itself at ports and terminals, offering complete solutions that ensure high efficiency and productivity as well as fast, efficient solutions for midstream transfer operations. E-Cranes provide longer outreach ranges than typical material handlers, from 24.8 to 47.8 metres (82 to 157 feet). This outreach allows for unloading any type of barge or ship with minimum cleanup. E-Crane duty cycle capacity ranges from 5 to 50 metric tonnes (5.5 to 55 US tons).

While most systems dedicated for offloading bulk materials such as grain, coal, limestone, etc. are expensive, inflexible, and require a costly, hard to maintain infrastructure, E-Crane is just the opposite. The E-Crane has a modular design and custom solutions which make it the ideal equipment for any bulk handling applications including offloading Panamax and Handymax sized vessels, barge loading and unloading, ship loading and unloading, feeding hoppers, and stockpiling. E-Crane also offers more than just the crane itself. Turnkey bulk material handling solutions are offered in order to optimize the entire port operation. E-Crane streamlines the facility by working with the customer to provide other services and equipment including stationary or linked hoppers, barges and barge haul systems. For handling dry bulk materials such as coal, limestone, bauxite,

Unloading coal from barges.



fertilizer, grain, cement clinker and coke, E-Crane is an ideal solution.

About the equipment

The standard E-Crane product line consists of five series of balanced hydraulic cranes (E-Cranes): 700 Series, 1000 Series, 1500 Series, 2000 Series, and 3000 Series. The E-Crane is placed firmly between production line excavators (or material handlers) and large scale dedicated unloading structures. Even the smaller E-Cranes offer much more unloading capacity than the standard excavator. The larger E-Cranes can compete with dedication systems in terms of production and come in at only a fraction of the installed cost with even less annual maintenance costs. The E-Crane product line is rated for barge offloading from 500 to 2,000tph (tonnes per hour).

The equilibrium design

The 'E' in E-Crane stands for equilibrium. The E-Crane design is based on an ingenious parallelogram style boom that provides a direct mechanical connection between the counterweight and the load. This unique four-bar mechanism system ensures that the E-Crane remains in near perfect balance throughout its working range. Compared with conventional cranes that require as much as 80% of their available energy just to move the boom, stick, and grab, the E-Crane makes gravity work for you instead of against you, reducing horsepower requirements and power consumption by up to 50% and significantly reducing maintenance and operating costs. Flow-on-demand hydraulics also play a part in lowering power consumption, along with the modular design. This simple, balanced design with modular construction allows for off-the-shelf components for longer service life, but also

E-Crane easily handles commodities such as limestone.

enables custom solutions.

The E-Crane is a truly unique and revolutionary machine with the lowest power consumption cost in the industry. The E-Crane runs on clean electric energy, saving customers huge amounts of money when compared to diesel powered equipment. E-Cranes also have very little associated maintenance costs due to E-Crane's innate design. The key to the E-Cranes efficiency is the parallelogram design linking the stick to the moving counterweight which keeps the E-Crane in near perfect balance throughout its working range.

Simple, easy equipment maintenance

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

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Silo cleaning solutions

without confined entry space

Most cleaning projects are performed with the Martin Heavy Duty Whip, a portable tool that can be lowered into storage vessels through a manhole opening.

Bulk material handlers now have a proven solution for blocked vessels and plugged discharge chutes, one that will remove build-ups, reclaim lost material and restore design capacity and flow rates. In most cases Martin® silo solutions eliminate the need for confined space entry and hazardous cleaning techniques such as explosives, water and air lancing, typically allowing the material to be recaptured and returned to the process stream.

Technicians from Martin Engineering use remote-controlled equipment from the top of the vessel to safely address blockages. With nearly 70 years of experience in solving material flow problems, the company employs highly-trained specialists who are safety-certified to current OSHA and MSHA standards.

Most cleaning projects are performed with the Martin® Heavy Duty Whip, a portable, remote controlled tool that can be lowered into storage vessels through a manhole opening. Powered by compressed air, the Heavy Duty Whip can be equipped with a variety of flails and cutting edges to knock down accumulated material without damaging storage vessels. Abrasion-resistant steel chain is best suited for most applications, with non-sparking brass chain for combustible materials. Urethane flails can also be employed to protect lined vessels that could be susceptible to damage from metal tools.

"With this technology, the need for confined space entry is greatly reduced", observed Martin Engineering silo sales specialist Marty Yepsen. "The equipment can be set up quickly outside the vessel, and it's portable enough to move easily around various bin sizes and shapes."

The Martin HD Whip uses a modular boom arrangement that extends from 2 metres up to 8.5 metres and can clean vessels up to 18 metres in diameter and 68.5 metres tall from a single central opening of just 450mm. The pneumatic cutting head delivers powerful whip action from the rotating head to remove buildup from walls. The hose reel easily separates from the boom assembly for transportation and set-up in tight spaces.

"There are competing systems that utilize hydraulics, but they tend to be heavy and cumbersome," said Martin Engineering territory manager Jim Densberger. "And they present the possibility of a fluid leak, which could contaminate otherwise-salvageable material. The whip requires no hydraulics; it needs

Martin Silo Solutions will remove build-ups to restore design capacity and flow rates without the need for confined space entry or hazardous cleaning techniques.

just 90PSI and 100CFM, which can usually be supplied from a plant's existing air system."

Densberger added that some pneumatic cleaning systems require very high air volumes, often as much as 1,200CFM. "To achieve that kind of pressure, the diesel compressor rental alone can be more than $1,000 a day, and the fuel bill for a full day's work could be half again as much," he said. "Then there's the cost to actually do the work."

Potential damage to the storage vessel can also be an issue. Some cleaning technologies use the very high pressure to blow air through a hose that's simply dropped into an access hole at the top of the vessel. At the end of the hose is a tool with a restricted nozzle, which causes the "cleaning head" to thrash about randomly. While this technique works in large blockages, it provides little or no control, and as the head gets closer to the vessel wall, it has an equal chance of taking out a chunk of the silo as it does hitting material for removal.

Technicians from Martin Engineering use remote-controlled equipment from the top of the vessel to safely address blockages.

For extreme blockages where hardened lumps of material have plugged discharge chutes, silo cleaning technicians also use the Martin® Buster, which safely dislodges blockages by the powerful force of expanding CO_2 gas. The technique employs non-explosive generators that cause rapid gas expansion to fracture chunks and compacted material, opening the discharge and restoring normal flow.

When bridged or arched material creates a no-flow condition, technicians can rely on the Martin® Drill to bore through tough clogs. The drill's powerful hydraulic action drives its way through blockages, clearing a pathway at depths up to 45 metres.

Martin Engineering's silo solutions are provided as a turnkey service. The company's fully-equipped teams bring all required equipment and personnel directly to customer sites. Many facilities are able to remain in operation during vessel cleaning, but when conditions require a shutdown, technicians work evenings, weekends or holidays to accommodate customer schedules.

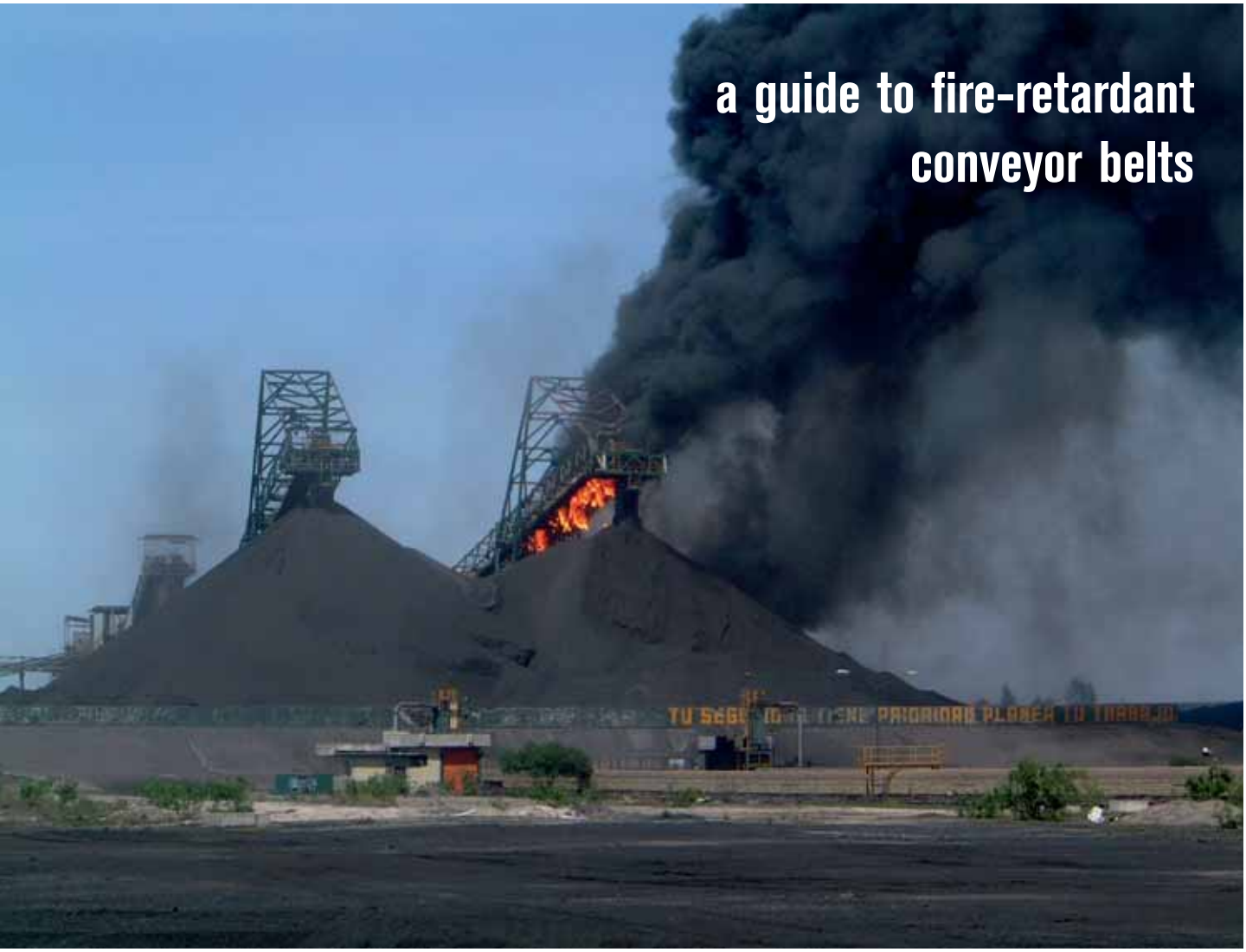
Silo cleaning services from Martin Engineering are backed by the company's total satisfaction guarantee. If any customer is dissatisfied after one full shift, the crew will return to headquarters without charge.

Founded in 1944, Martin Engineering is the world leader in making bulk materials handling cleaner, safer and more productive.

The company supplies flow aids and conveyor products around the world for a wide variety of bulk material applications, including coal, cement/clinker, rock/aggregate, biomass, grain, pharmaceuticals, food and other materials. The firm is headquartered in Neponset, IL, offering manufacturing, sales and service from factory-owned business units in Brazil, China, France, Germany, Indonesia, Mexico, South Africa, Turkey, India and the UK, and under exclusive licence with ESS Australia. DCi

Playing with fire?

a guide to fire-retardant conveyor belts



If a conveyor belt does not perform according to the manufacturer's claims by wearing prematurely, ripping too easily or disintegrating due to excessive heat or because of oil penetration, the risk to life and limb is relatively small, *writes Sytze Brouwers, the Chief Application Engineer for Fenner Dunlop BV (Dunlop Conveyor Belting) in The Netherlands*. Yes, it can be very expensive but hardly life-threatening. But if a conveyor belt that is specified as being fire-retardant catches fire but does not resist the fire the way that it should do then it will literally 'convey' the fire throughout the site. The consequences can be catastrophic.

Is cost being put before safety?

Due to the financial pressures on the cargo industry caused by the uncertain economic climate, more and more organizations are being forced to examine their day-to-day running costs and, almost inevitably, seek cost savings. The pressure to cut costs now seems to be influencing buying decisions concerning fire-retardant conveyor belts. Is price being put before safety?

There is also concern that operators are being lulled into a false sense of security by conveyor belt manufacturers and suppliers. The discovery that a belt is not sufficiently fire retardant is only likely to be made when it is too late.

Anecdotal as well as factual evidence gained from laboratory testing certainly indicates that even some of Europe's biggest users of conveyor belts, including some major ports, may be using belts that are not as resistant to fire as they are claimed to be. In a growing number of instances, sites that should be using fire-resistant belting are operating with non-fire-resistant belts simply because of 'economy' or, at least, poor quality versions.

At the same time, insurance companies are becoming increasingly concerned. According to at least one major insurer, claims for fires directly involving conveyor belts are costing an average of nearly $8 million per claim. To find out more about this highly important and complex subject we sought the guidance of the chairman of the international standards (ISO and CEN) committee and one of the world's leading authorities in conveyor belting, Sytze Brouwers.

No conveyor belt is fire proof

Fire-retardancy standards and test methods applied to conveyor belts are becoming increasingly stringent and can be very confusing. The first and most important thing to bear in mind is that conveyor belts cannot be totally fire proof. Using special additives and chemicals, the rubber used in the top and bottom covers that protect the carcass of the belt and the rubber skim between the fabric plies of the carcass can be engineered to resist fire but the complete structure of the belt cannot be made fire proof. The fabrics used in the carcass of the belt most commonly contain polyester and nylon. These materials have little or no resistance to fire. In other words, every belt will burn when it is exposed to a naked flame that is sufficient to ignite the belt. When choosing a fire-retardant conveyor belt, deciding on the actual level of fire retardancy needed for a specific application or environment is of crucial importance.

Environments with inflammable dust and gas

EN 12882 is the standard for safety requirements for conveyor belts for general-purpose use (not underground). The most basic electrical and flammability safety requirement is EN 12882 Category 1. For environments where coal dust, gas, fertilizer, grain or other potentially combustible materials are involved, it is essential that the conveyor belt cannot create static electricity that could ignite the atmosphere. Belts need to be able to allow static electricity to pass through the metal frame of the conveyor structure down to earth rather than allow static to build up. At Dunlop we decided some time ago that the safest approach was for all of our belts to be anti-static and conform to EN/ISO 284 international standards. This means that they can all be used in ATEX 95 (94/9/EC Directive) classified zones. Some people mistakenly believe that all belts used in ATEX classified zones must be flame retardant but actually this is not the case.

ATEX regulations apply to industrial environments where there is a risk of explosion because dust or gas is present in the atmosphere. For those organizations that are buying conveyor belts for use in ATEX regulated areas it is very important to ask potential suppliers for a copy of a certificate provided by an appropriate independent testing authority such as the German Institute Dekra Exam GmBH.

Interestingly, a belt that has good anti-static properties is also a good indication of the quality of the rubber used on the belt. All (black) rubber belts contain carbon black, which is an ingredient in the rubber compound needed to achieve good mechanical properties. The higher the quality of carbon black used to produce the rubber compound then the better the overall quality of the belt will be.

Above-ground and general service applications

Because fire safety is such an important issue there are numerous safety classifications and international standards for which there are many different tests used to measure the self-extinguishing properties of conveyor belts. Rubber belts reinforced by layers of textile fabrics (multi-ply) or steelcord reinforcement are the most commonly used type for transhipment and in general service applications. The basis of most tests for belting used in normal industrial applications is

EN/ISO 340. This standard makes the distinction between fire resistance with covers (K) and fire resistance with or without covers (S).

The relevance of 'with or without covers' is that, as belt covers wear during their operational life, the amount of fire-resistant rubber protecting the flammable carcass reduces. The best way to decide between 'K' and 'S' grades is to consider the material being carried. For moderately abrasive materials such as coal for example, then 'K' (EN 12882 Class 2A) grade is usually perfectly adequate. This also applies to elevator belts. However, if the material is abrasive and tends to wear the top cover quite rapidly, or if carrying biomass (which can self-combust), then the safest option is be to choose the 'S' (EN 12882 Class 2B) grade.

In both 'K' and 'S' grades, the rubber skim that bonds the fabric layers of the carcass together should also be fire resistant. In the case of 'S' grade (fire resistant without covers), the rubber skim should be thicker than the skim used for 'K' grade. The easiest way to tell if a 'K' grade belt has the required thicker rubber skims is to obtain technical datasheets from the manufacturer for both 'S' grade and 'K' grades and compare the carcass thickness figures.

Another important reason why buyers should always request technical datasheets before placing an order is that they include information on the level of abrasion (wear) resistance. The ingredients used to create a fire-resistant rubber compound generally have an adverse effect on its wear-resistant properties. Consequently, fire-resistant belts tend to wear faster and as the thickness of the rubber reduces so does the level of protection given to the inflammable carcass. To avoid premature wear, in the case of purely fire-resistance belting, buyers should always demand an average abrasion-resistance level of no more than 150mm³.

Thankfully, at Dunlop our rubber compound technicians have proved that it is possible to have the best of both worlds by developing a fire-resistant rubber that also has good resistance to abrasion. In fact our technicians have created a compound that has 50% better wear resistance than the DIN Y standard for abrasion-resistant rubber. This means that the belt retains its resistance to fire for much longer and at the same time extends the operational lifetime by the same proportion. However, laboratory tests have revealed that this is very much an exception to the rule within the conveyor belt industry.

EN/ISO 340 testing

EN/ISO 340 tests involve exposing 6 individual samples of belt to a naked flame causing them to burn. The source of the flame is then removed and the combustion time (duration of flame) of the test piece is recorded. A current of air is then applied to the test piece for a specified time after the removal of the flame. The flame should not re-ignite.

The time it takes for the belt sample to self-extinguish after the flame has been removed is then measured. The duration of continued burning (visible flame) should be less than 15 seconds for each sample with a maximum cumulative duration of 45 seconds for each group of six test samples. This factor is of paramount importance because it determines how fire can be effectively carried along a moving belt. The effects of fire being literally 'conveyed' to adjoining buildings can be seen in some of the photographs.

Even if a manufacturer states that their fire-resistant belt has passed the ISO 340 test, the buyer should still exercise caution. A typical conveyor belt can easily travel more than 40 metres within the 15 seconds sufficient for a belt sample to pass the test so this would still allow the belt to carry flames over a potentially dangerous distance. For this reason our required time limit standard in Dunlop is no more than one second, ideally 0 seconds. Buyers of fire-resistant belt are therefore recommended to ask to see copies of the test results and to check that the laboratory that has carried out the tests has is EN ISO 17025 (Chapter 5) compliant.

What standard of fire resistance do I need?

One of the most difficult challenges for users of conveyor belts is establishing the correct level or standard of fire resistance needed. For the vast majority of belts being used in the open air, EN 12882 Class 2A or 2B would be perfectly adequate. Class 2A demands that the belt is able to pass the ISO 340 test described earlier with the covers intact on the belt samples (K grade). Class 2B requires that the belt that can also pass the ISO 340 test with the top and bottom cover rubber removed (S grade). As mentioned earlier, the electrical conductivity of the belt also needs to fulfill the requirements of ISO 284.

If you are still unsure of the fire-resistant grade of belting needed then it is best to carry out an internal risk assessment. If the expertise for this does not exist within your company then there are a number of external organizations (and almost certainly your insurers) that can perform this function for you.

For conveyors carrying materials that contain oil such as grain, wood chips and biomass, rubber compounds that are resistant to fire, abrasion and oil are available. There are, of course, two types of oil resistance — mineral and vegetable. This is yet another important consideration when deciding on the correct type of fire-resistant belt so buyers are recommended to be very specific when making requests for quotations from manufacturers and suppliers.

CEN fire test standards

One of the most problematic aspects of fire testing rubber conveyor belts for industrial use above ground is that most of the test methods were established many years ago specifically for underground mining belts. Enormously complex and very costly testing has to be made by independent testing institutions. Because of environmental regulations, large-scale gallery fire tests now involve using a 12-metre-long container filled with carbon to filter the smoke emissions before being released into the

atmosphere. In order to be awarded a safety standard certificate every belt type has to be independently tested. For some tests a minimum of 20 metres of belt is needed and can easily cost up to €20,000 or more. For the manufacturers of solid woven underground mining belts and steelcord belting this is not a particularly big problem because there are a relatively small number of different belt types that have to be supplied for testing in large quantities. Although the test certificates are valid for several years, these large-scale tests present a huge and costly problem to manufacturers of rubber belting for above ground use because there is a much wider range of belt types. Such complex test methods have made it extremely difficult to develop improved levels of fire safety because if a belt sample fails the tests then the technicians have to go back to the drawing board to make further changes to the rubber compound and then embark on another round of expensive tests.

Apart from hindering development of fire-resistant belting, it also means that it is very difficult to adequately test those belts that manufacturers claim reach specific levels of fire resistance. This is one of the reasons why there are so many end-users operating conveyors fitted with belts that provide totally inadequate levels of fire safety.

New CEN fire test standards to be introduced

This problem has long been recognized by the CEN standards committee and over recent years they have been trying to find a solution. Following recent meetings attended by technical experts from all over Europe, the Committee European de Normalization will be introducing several positive changes in 2014.

Agreement has been reached on using and adapting tests already in existence for quality standards such as DIN and BS that will involve smaller scale tests using much smaller equipment. This will mean that major manufacturers will be able to experiment and carry out testing in their own laboratories. Ironically, these new test methods will actually be even more demanding than the old, large-scale tests. Major insurance companies are already showing interest and are becoming involved in discussions. For them, and for all genuinely safety conscious organizations, this can only be very good news.

Don't play with fire

Although manufacturers and suppliers may be able to provide test certificates, in some cases that certificate may only relate to the belting that the manufacturer produced for test certification purposes. The actual belt delivered to site may well not be up to the required standard. For greater peace of mind we would suggest ordering an extra metre of belt and then have that piece of belt tested by an accredited testing authority or laboratory.

The price of not exercising caution simply cannot be calculated. DCi

N.B. *This technical feature article relates to conveyor belts that are used above ground. For test methods and standards for conveyor belts used below ground please seek specific advice and guidance.*

Vorsprung durch Technik

German regional report

The Elbehafen Brunsbüttel is a multi-purpose port excellently joining water, rail and road.

Jay Venter

Brunsbüttel Ports GmbH: direct access to North and Baltic Sea & Euro waterways

With the strategically advantageous location of Brunsbüttel at the lower Elbe and at the Kiel-Canal the group of ports at Brunsbüttel — Elbehafen, Oilport and Port of Ostermoor — offers direct access to North and Baltic Sea as well as to the European inland waterways, as they are close to Hamburg with available industrial areas next to the port.

These advantages of location but also the extensive range of maritime services make the ports an attractive centre for cargo handling for the largest connected industrial area of Northern Germany and for the metropolitan area of Hamburg. Brunsbüttel Ports GmbH serves regional customers as well as national and international customers in the range of cargo handling, storage, transit and project logistics.

Elbehafen Brunsbüttel:

The Elbehafen is a multi-purpose port which unites water, rail and road in a highly professional manner. Fast turnarounds, high levels of productivity and safety as well as total reliability are the basics for flexible, economical just-in-time operation.

Today, service companies can not satisfy their customers' demands by offering just standard service. Highly specific and detailed demands require individual solutions that are just as specific. Therefore Brunsbüttel Ports' work starts with analysing and discussing:

Targets

- status quo analysis;
- optimizing of supply chains; and
- individual logistical concepts.

Oil port Brunsbüttel

The oil port is located within the Kiel-Canal, near the locks of Brunsbüttel. Five jetties make it possible to handle a wide range of refinery products in liquid form.

Port of Ostermoor Brunsbüttel

The port of Ostermoor, also located within the Kiel-Canal near the lock of Brunsbüttel, essentially is used as a port for the local chemistry companies in the park ChemCoast Park Brunsbüttel. The port makes it possible to handle the goods on four jetties.

Brunsbüttel Ports GmbH is a competent service provider for the handling of all sorts of bulk goods. The ports at Brunsbüttel handle millions of tonnes of dry bulk goods yearly: for example copper ore concentrate, coal, building materials, urea and many other commodities in mostly covered systems.

With motivated and flexible staff, proactive thinking and economically optimized working processes the port focuses on its customers' demands 24 hours a day, 7 days a week.

Hansen Industrial Transmissions expands its market share in heavy duty single stage gear units

For the last few years Hansen Industrial Transmissions (HIT) had been very successful in selling single stage blower drives. Having no dedicated single stage solution for the larger sizes, a special solution was designed starting from the standard horizontal, parallel, 2-stage 'Hansen P4' housing (size G, H, J or K — with one gear set). What started as a one-off project has since turned into recurrent business.

HIT sees a significant market potential for similar single stage drives, also outside Europe, mainly in the mining sector (e.g. for centrifugal slurry pumps) and for applications such as blowers, compressors and refiners as well as equipment for e.g. the chemical industry and the energy sector.

These applications however would not benefit from a specific 'large' single stage housing i.e. those used for the P4 single stage units with a dedicated housing. HIT therefore re-used its current robust P4 2-stage housing.

Using its in-house resources HIT generated a large number of possible gear sets. From a mechanically optimized subset a final selection was made looking at dynamic and noise properties which led to a highly optimized gear set range. With a selection ratio up to 1% exact in almost any case the optimal working speed is matched as near as possible. The specially designed lubrication for this new product range — based on the multi Megawatt principle — ensures the gear set and all bearings are pressure lubricated.

A new type of sprinklers caters for optimal oil distribution over the gear teeth. Due to the high installed powers, a cooling group is indispensable. Taking into account the high peripheral speeds at the shaft ends HIT provides its 'Hansen Oil-lock™' sealing at all shaft ends and dimensions the oil drains large enough so no pressure is built up and leakage is prevented.

HIT rewarded by key customer SPX

Before the summer HIT delivered two size U Hansen P4 gear units and a series bottom and top entry mixers in different sizes for SPX Lightnin USA. SPX expressed its appreciation towards HIT for the exceptional service and contribution and rewarded HIT with a recognition plaque.

SPX has assembled the upper mixer construction with HIT's Hansen P4 U-size gear unit on top of the platform. The mixer installation is one of the largest mixers in the world. The small blue motor in the picture above is to perform a no-load-test of 75kW at less than 1,000rpm whereas the real motor is a 3m high 2,8MW motor.

Reliability and service are key factors to repeat orders for ThyssenKrupp Resource Technologies

A similar TKRT shiploader for coal in Indonesia.

1975, 2013 — Ukrainian chemical plant orders new shiploader

Materials handling at ThyssenKrupp Resource Technologies stands for the design engineering and construction of complete handling facilities for port terminals and stockyards. In 1975, ship loading and unloading equipment was supplied to the Odessa Port Plant, a chemical plant in Yuzhne/Ukraine producing ammonia, urea and other chemical products. Now the customer is once again putting its faith in the expertise of ThyssenKrupp Resource Technologies, a subsidiary of plant engineering specialist ThyssenKrupp Industrial Solutions, with an order for a new 1,000tph (tonnes per hour) shiploader.

The originally supplied handling equipment has been operating to the customer's complete satisfaction for almost four decades. Now the abrasive effects of urea combined with the coastal location have made it necessary to replace one of the older shiploaders. The reliability of the existing equipment and continuous contact with the customer were key factors in the decision to place the new order with ThyssenKrupp.

A full range of specialist engineering and construction services and a shipbuilding history stretching back centuries are the strengths of the ThyssenKrupp Industrial Solutions business area. High-quality engineering is at the center of the company's success. Global project management skills, first-class system integration expertise, reliable procurement and supplier management, and a service offering meeting the highest standards form the basis for lasting customer satisfaction. A total of 18,500 employees at over 70 locations form a global network with a technology portfolio that guarantees maximum productivity and cost-efficiency.

SIBRE – advanced brake technology and drive components for heavy industries

For over 50 years, Siegerland Bremsen, well known under its brand name SIBRE remains one of the leading manufacturers of industrial brake systems and drive components. The current portfolio is characterized by a wide breadth and depth of standardized industrial brakes and components for drive technology (e.g. drum couplings, crane wheels, rope sheaves, brake discs, complete assemblies incl. shaft and bearings). This allows the company to fulfil nearly every market demand because a tried and tested standard product is always the basis for customized specifications.

SIBRE industrial brakes are applied in port equipment (container and bulk handling), important applications are harbour cranes and belt conveyor systems (gantry travel drive brakes, trolley drive brakes, main and boom hoist service and emergency brakes, storm brakes). Further range of applications for SIBRE brakes are to be found in the mining industry, in steel mills (e.g. hot metal cranes) and wind turbines. All brake systems are equipped with well-proven and concerted thrusters or hydraulic power units of reputable european suppliers.

Continuous research and development, in-house testing, as well as ongoing optimization of the production facilities are the platform for the highest quality braking systems SIBRE is known for around the globe. In addition to the product quality, the cost-efficiency of a brake system, i.e. the lowest possible service life costs for the system with regards to maintenance and ongoing operation, is a significant factor for industrial and port systems operators. For this reason, SIBRE doesn't just focus on new product developments; it places value on optimizing not only the mechanical properties, but also the sensors of its brake systems.

Equipment condition monitoring of brake systems

Modern brake systems are electronically integrated into and controlled by larger machine systems (e.g. crane or conveyor PLC). At the same time, different brake systems from SIBRE send feedback to the superordinate process control system via the connected sensors and deliver information about the respective status of the brakes. With this information from the SIBRE status monitoring system, maintenance cycles or pending service measures can be determined ahead of time including replacement part procurement without a technician having to look at the brakes first.

Electronic control of braking processes

Modern belt conveyor systems for mining operations or for mechanized tunnelling often come along with the need for controlling and coordinating complex material transport systems consisting of several linked conveyor sections, some with inclined, some with declined orientation. Protecting such complex systems against over-chute as well as belt tension peaks, it is all the more important that intelligent while reliable, low-maintenance braking solutions are being used as service or emergency stop brakes.

Shipunloader at Tianjin Coal Terminal, fitted with SIBRE systems.

SIBRE brakes are fitted to this stacker and reclaimer at Dalian Iron Ore Terminal.

To reduce mechanical stress and destructive forces on gear box and the conveyor belt, and to brake the system within a given time slot, a set of adjustable hydraulic components is incorporated in the brake control unit for a smooth and controlled induction of braking force. Pre-set, adjustable components guarantee an easy and reliable fine-tuning of brake control at site.

An external reference signal (typically the conveyor speed) and a programmed pre-set parameter (typically the braking time) are evaluated and a linear or nonlinear time function is calculated in the process controller. This integral process controller module runs a permanent comparison of calculated characteristic according to the pre-set ramp and the actual speed values. Proceeding from the guide signal generated by the controller, the frequency converter modifies the hydraulic pressure and thus controls the process of braking operation.

Safe adherence to brake time stipulations is the initial prerequisite for the realization of the shutdown regime of complex belt conveyor systems. This is the only way to provide protection from surcharges caused by asynchronous stoppage of conveyors. The application of IBC — Soft Braking System — is excellently suited for this job since it ensures the pre-set braking times independent of the conveying direction (up or down) and the loading status.

Local service globally

When safety is critical, in applications such as container cranes, steel mills, wind power, mining and lift bridges, SIBRE braking systems have achieved the safety standard and reliability the world market has come to depend on. With its subsidiaries in China, India, Italy, Spain and the US together with its worldwide network of sales and service partners, SIBRE offers an optimum flexibility to accommodate customer needs. With the SIBRE Service Division, highly qualified personnel are able to support customers with training, installation and troubleshooting that exceed expectations.

ThyssenKrupp Uhde and ThyssenKrupp Resource Technologies merge to form ThyssenKrupp Industrial Solutions

ThyssenKrupp Resource Technologies, formed from ThyssenKrupp Polysius and ThyssenKrupp Fördertechnik, as a customer-driven plant construction and engineering company with strong engineering skills. A wealth of reference plants in all four corners of the globe, a multitude of follow-up contracts and long-term business relations with its customers all bear witness to this. It thus goes without saying that plant engineering and construction will play a key role in the further strategic development of the ThyssenKrupp Group. For this reason, the group is pooling its plant engineering and construction skills under one roof and in January 2014 ThyssenKrupp Uhde GmbH and ThyssenKrupp Industrial Solutions AG will be merged with ThyssenKrupp Resource Technologies GmbH, which will operate in the market under the name ThyssenKrupp Industrial Solutions GmbH from that point onwards. Shortly afterwards, the company will be transformed into a stock corporation.

The merger will create a plant engineering and construction company that is ranked among the world's top ten in terms of size. The company will benefit from decades of experience gained in the completion of over 5,000 plants and excellent engineering skills based on the creativity and inventiveness of over 12,500 employees.

With sales of over €5 billion the company will also be in a position to handle projects of a previously unachievable size.

The entire management team of ThyssenKrupp Resource Technologies will still be responsible for core business activities at ThyssenKrupp Industrial Solutions AG. Similarly, the usual contacts will also be on hand to assist clients. The rights and obligations arising from existing contracts with what is currently ThyssenKrupp Resource Technologies GmbH will continue intact with ThyssenKrupp Industrial Solutions AG in future as it is considered to be the same legal entity and neither the name change nor the transformation into a stock corporation will have an effect thereon.

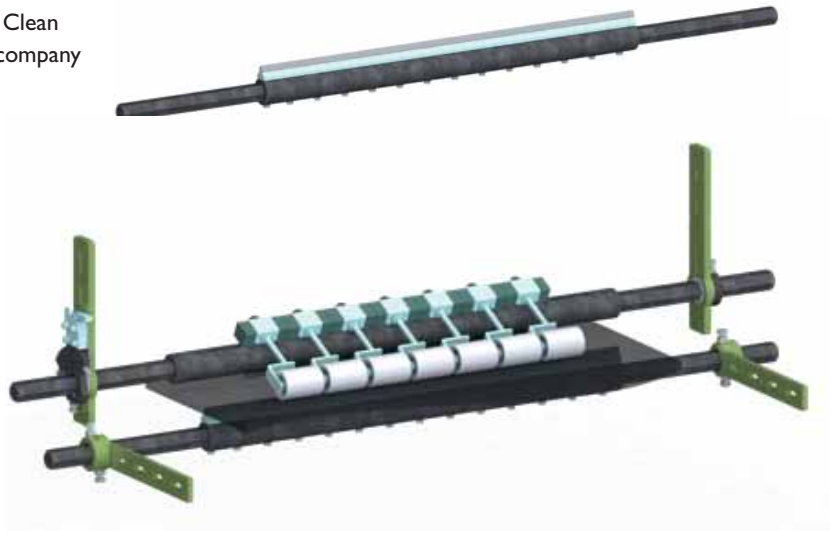
In parallel, the group is also working towards merging the respective companies belonging to ThyssenKrupp Resource Technologies and ThyssenKrupp Uhde to form – wherever possible – a single company under the name ThyssenKrupp Industrial Solutions in each country. This will ensure that in future ThyssenKrupp Industrial Solutions will have a much bigger and more efficient organizational structure to serve customers' needs.

Major emphasis will also be placed on the global exchange of know-how and engineering services.

Schulte Strathaus introduces new, innovative belt cleaner system

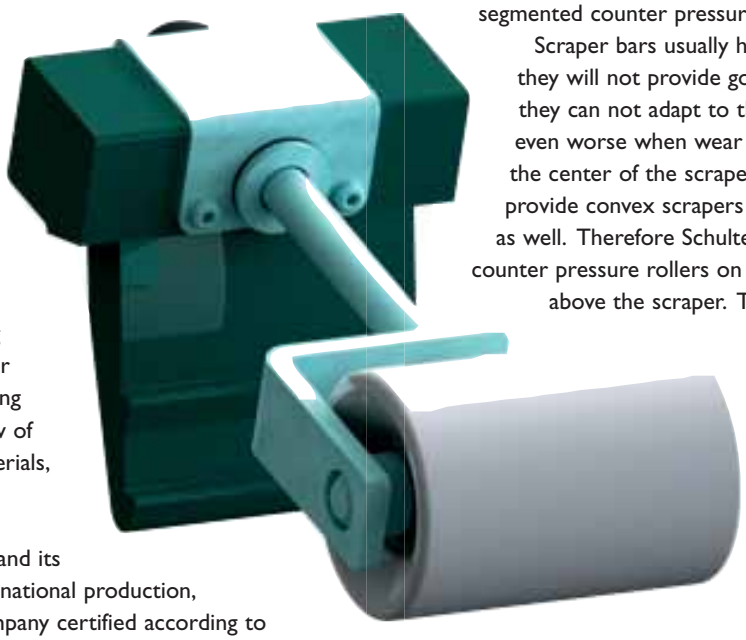
F. E. Schulte Strathaus GmbH u. Co. KG was established as a trading company in Unna in 1952. Today's modern product and service portfolio under the heading 'Solutions – Clean and Green' are the result of the close contacts the company has maintained with its customers and the enormous development efforts undertaken since.

The underlying idea of the 'Solutions – Clean and Green' philosophy is to provide the market with products and processes that fulfil the demand for higher material efficiency and greater economical use of resources. Especially in times of scarce resources and rising raw material prices resource-saving operations make sense. This is why the company offers processes and products for customer applications that guarantee the efficient use of materials, smart management of material flows and optimal reuse of raw materials.



'Solutions – Clean and Green' is synonymous with products and processes that ensure optimum belt cleaning and material flow control for conveyor installations handling bulk materials. Add to this the gas and watertight fire protection pipe and cable conduits that protect against fire and water in shipbuilding and facility management.

Since the acquisition of Cyrus in 2003 F. E. Schulte Strathaus' portfolio has also included vibration machinery with a modular setup for efficient conveying and screening technology for foundries, forges and recycling industries. Especially in view of responsible handling of materials, the range is rounded off by screening technology.



Today, Schulte Strathaus and its subsidiary Cyrus are a multinational production, engineering and service company certified according to ISO 9001:2008 and holding the BGH quality symbol 'Safety with System' as a member of VDMA, the German Association of Plant and Machinery Manufacturers.

Being in the field of belt cleaning for many years, Schulte Strathaus has designed a new cleaning system for optimum results.

The new idea is that, other than segmented belt cleaners, the belt can adapt to the cleaner. Therefore Schulte Strathaus has developed a cleaning system with a tungsten carbide or polyurethane scraper bar as a secondary cleaner and segmented counter pressure rollers.

Scraper bars usually have the disadvantage, that they will not provide good cleaning results, because they can not adapt to the belt. This problem gets even worse when wear occurs, which occurs more in the center of the scraper than on the sides. Ideas to provide convex scrapers have proven to be insufficient as well. Therefore Schulte Strathaus put segmented counter pressure rollers on the inside of the belt directly above the scraper. These counter pressure rollers are 100mm in width, and mounted to a bar with flexible polyurethane feet, just like all scraper segments of the proven STARCLEAN® system. These segmented rollers are now twisted when the scraper is tensioned, and every roller uses its own flexibility and pretension, to press the belt to the scraper, providing the best possible cleaning result. When an obstacle passes the scraper, the rollers are flexible enough to hinge away and save the belt.

This system has proven itself now as the ideal solution for sticky, abrasive materials and for the optimum cleaning result, for belts up to 1600mm in width.

Growth for Port of Hamburg dry bulk figures

The total bulk cargo segment for the Port of Hamburg was able to report growth of no less than 8.9% to 31.4mt (million tonnes) in the first three quarters of 2013 *writes Axel Mattern, Executive Board Member Port of Hamburg Marketing association.*

In the first nine months of 2013, bulk goods handling therefore contributed around 44 percent of the growth in all seaborne cargo handling in the Port of Hamburg. All three bulk cargo segments reported positive throughput figures for the first nine months. At 5.9mt, throughput of suction cargoes that include grain, oil fruits and feedstuffs, was up by 30.9%, in percentage terms the strongest growth. The grab cargo segment, mainly comprising ores, coal, coke and fertilizers, reached 14.5mt, up by 2.1%. For the dry bulk cargo segment the port expects a total handling in 2013 of 27.5mt (+9%). On the export side the port expects a growth of 28% up to 7.3mt, the import will be 20.2mt, an increase of 3%.

ts-systemfilter gmbh – Modular system for filtration units

Since 1978, when ts-systemfilter gmbh was founded, the company has been developing filtration devices for the bulk material processing industry which are used worldwide in all industrial sectors.

Applications in which heat, pressure shock resistance, filter changes without contamination and other factors play a significant role are streamlined by the company's modular system. This modular system for filtration units includes several components by means of which the filtration systems are connected and adapted for widely differing tasks.

Various kinds of star filters, hose filters, filters made of sintered plastics in combination with different series offer many opportunities to implement the required filter area. The equipment for the regeneration of the filter apparatus may be selected from mechanical semi-automatic cleaning by the shaker motor and fully automatic compressed air cleaning devices.

The ts-systemfilter apparatus is of compact construction and can be directly mounted at the receptacle. The filtering media used warrant a consistent separation of the bulk goods from the carrier gas in a sustained manner.

Customized production

ts-systemfilter gmbh will test the solution for the application in systematic stages. The bulk goods will be classified according to the ts-filter standard and compared with the bulk goods databank. A bulk goods test establishing the optimal applications for the ts-systemfilter units, filtering media, service life, gas purity values and many other data allows the selection of the customized ts-systemfilter apparatus.

Patents

Numerous domestic and foreign patents relating to many individual components demonstrate the sustained power of innovation.

Owner-manager Hartwig Straub has filed more than 50 patent applications.

After numerous patents granted over the years three more patents were issued in 2013, one for the multifunctional star filter ts-x, one for the use of a PTFE-membrane facilitating the regeneration of the filter surface and the most recent one for a process of excluding the formation of ignition sources inside the ts-filter apparatus.

Examples for application

Dedusting in Ex-zones

For the manufacturing of household appliances more and more powder coating is used because of economical reason. The overspray is recovered by the product separator. The deposited product now is added to the fresh-powder and can be reused. It is combustible powder, electrostatically charged for coating. The filter apparatus complies with the ATEX-guideline.

Dedusting of hygroscopic bulk material

As an example we select a hygroscopic bulk material like sugar powder, enriched with syrup. T he humidity of the product in the suctioned total volume of 14,000m³/h is very high. For three-shift operation, a filter apparatus with fully-automatic compressed air cleaning is selected for the regeneration of the filter surfaces.

Exhibitions

The company regularly exhibits at the ACHEMA in Frankfurt, Germany, which takes place every three years.

Sales partners and service

ts-systemfilter gmbh has sales partners in various countries and provides 24-hour service within Europe.

Supply range

Different types and individual production of filter units with filter areas of over 200m²; star filters; an almost unlimited variety of folds or filter media; hose filters; extension systems, e. g. weather cowl and acoustic hood for installation outside, fans, rotary valve.

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duisport takes over coal operations


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The holding and management company of the Port of Duisburg, duisport, has been operating the 'Kohleninsel' (coal island) in Duisburg-Ruhrort since summer 2013. The Kohleninsel, which had previously been operated by RBH Logistics, a subsidiary of DB Schenker Rail Deutschland AG, is one of the most efficient facilities in Europe for handling and mixing coal and for its intermediate storage. Due to the area's trimodal connection, loading can also be carried out on the water directly into inland waterway vessels. The 20ha site, which is operated 24 hours a day seven days a week, has a total capacity of around 4mt (million tonnes) per year.

The Kohleninsel has an extensive and modern infrastructure. For example, eight trains can be processed per day on train-length tracks. The permanently installed crane has a daily capacity of over 8,000 tonnes, which can be increased flexibly by using an additional mobile crane. The conveyor systems available have a daily output of 9,000 tonnes for loading wagons.

"By taking over the Kohleninsel we have set the course for further growth. The positive developments of the last few months have shown that the site is among the most up-to-date facilities in Europe and is very competitive. Therefore, we are confident that we can continually increase volumes also in the coming year," says Erich Staake, chief executive officer of Duisburger Hafen AG.

The Port of Duisburg has a total of five import coal terminals. In 2012, 7.6mt of coal in total were handled in the Port of Duisburg.

Rhenus Midgard sets new record in Wilhelmshaven

Company handles more than 3 million tonnes of coal for the first time in 2013

The past year will go down in the record books as a special period for the port operator Rhenus Midgard in Wilhelmshaven thanks to developments at the coal terminal there: the bulk terminal, which was renamed the Rhenus Bulk Terminal Wilhelmshaven (BTW) in the autumn of 2013, reached its full productivity level after a four-year building period and it broke through the 3mt (million tonne) mark for handling coal for the first time in its history.

"As a family-managed company, the Rhenus Group not only sets short-term goals to develop its business, but also makes long-term investments where it believes the prospects are good. The Rhenus Bulk Terminal Wilhelmshaven is a classic example of this strategic focus," says Michael Appelhans, managing director of Rhenus Midgard, underlining its importance.

Conclusion of the building phase

The extensive conversion and expansion work at the long-standing bulk terminal in Wilhelmshaven, which Rhenus has been operating since the mid-1970s, was completed in 2013 — at least for the time being. The piers and the associated capacity on the land side of the terminal, which was formerly known as the Niedersachsenbrücke jetty, have been thoroughly modernized and expanded during the last four years. The facility now has a deeper berth, which enabled the company to handle the first fully laden Capesize vessel at a German seaport in 2012, new unloading equipment and expanded conveyor belts to unload coal. The conveyor belts can transport up to 4,000 tonnes of coal to the storage facility per hour and ensure that vessels can be unloaded very quickly — in conjunction with the new cranes in use on the pier.

Further storage space in the planning stage

"We now have two storage areas that are fully operational to accommodate 900,000 tonnes of coal in all and we're drawing up specific plans for another storage facility. This takes into account the increase in demand for storage space," Matthias Schrell, managing director of Rhenus Midgard in Wilhelmshaven, explains. "We're able to provide high-performance transshipment operations and top quality with our fully automatic stackers/reclaimers and efficient train loader away from the pier too. The train loader is very accurate and therefore makes full use of the load-carrying capacity of the trains; this means cost savings and competitive advantages for our customers."

New record set

The expansion work, which was completed last year, has enabled the company to set a new record for handling coal. The Rhenus Bulk Terminal Wilhelmshaven has unloaded more than three million tonnes of coal during the last twelve months. The cargo was delivered to Wilhelmshaven in Handysize, Panamax and Capesize vessels. The terminal can directly accommodate and unload the largest coal-carrying vessels in the world, which have up to 250,000 tonnes of cargo on board. And the Rhenus Midgard business site has excellent prospects of attracting even greater volumes from existing customers and others wanting to supplement and optimize their supplies of coal through the expanded facilities at Wilhelmshaven in future.

Now that the double-track work on the 50 kilometre long railway line between Oldenburg and Wilhelmshaven has been completed, the port logistics experts at Rhenus Midgard are not expecting any more closures on the line. The timetable has now changed, so even more trains can operate at a higher frequency level.

"We're delighted at the new record, but we'll not sit back on our laurels," says Michael Appelhans, making things very clear. "We've not made our long-term commitment to this site, in the form of the major investments made here, to then come to a standstill at the half-way point. Using the facilities created here, we'll be aiming to triple the new record that we've set in 2013 in future. The new coal power station operated by GDF Suez in Wilhelmshaven, which is due to open in the near future, will play a major role in this process."

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Seaports of Niedersachsen: specialists for bulk traffic

The Port of Nordenham has a long tradition in the handling of coal and other bulk products. Source: Rhenus Midgard

When it comes to bulk shipments, the Seaports of Niedersachsen provide many attractive solutions for customers. The group of ports, which includes Brake, Cuxhaven, Emden, Leer, Nordenham, Oldenburg, Papenburg, Stade and Wilhelmshaven, offer great expertise in the handling and warehousing of dry bulk cargoes like agricultural products, foodstuff, coal, building materials and chemical products.

During recent years, the ports' logistics solutions have made it possible to optimize bulk handling processes and to create more customized solutions. The ports invested in new facilities and handling equipment, thereby enabling them to meet the growing demands of customers. Today, many European ports are concentrating solely on containerized cargoes and wish to attract container lines. However, this often means they do not have the necessary equipment and facilities to handle bulk cargoes. The Seaports of Niedersachsen, which have a long tradition in bulk handling, have taken the opportunity to extend their activities in that field.

The Port of Brake is currently expanding its warehousing capacities by building a new silo for agricultural products, with a capacity of 47,000 tonnes. The local operator J. Müller Group is investing about €24 million in that project. Once construction at the Port of Brake has been completed, it will be able to offer storage capacity for dry bulk products like grain or feedstuffs. Capacity will exceed 500,000 tonnes. That makes J. Müller Agri Terminal Germany's largest port for the import of feedstuffs. Located close to the Oldenburger Münsterland, Europe's largest compound feed area, the Port of Brake is ideally suited for the handling and storage of grains, feedstuffs, oilseeds, fertilizer, renewable natural resources, biomass products, sugar, food-related products as well as other suitable bulk and agricultural goods. 'Just-in-time' delivery is enabled 24 hours a day, seven days a week. J. Müller Agri Terminal also offers a wide range of processing services such as aspirating, milling, rough-grinding, mixing, crushing and drying.

Rhenus Midgard in Wilhelmshaven has established the deepwater-terminal 'Bulk Terminal Wilhelmshaven' for bulk commodities, especially for the handling of coal. The company is ready to discharge fully laden Capesize bulkers here due to the water depth of 18.5 metres. The government of the federal state of Niedersachsen as the owner of that jetty (formerly known as 'Niedersachsenbrücke') invested about €25 million to upgrade infrastructure in recent years. Since 2009, the Rhenus group has spent about €100 million to upgrade the unloading equipment and invested in a more efficient conveyor belt system, fully automatic stacker/reclaimers and a high-performance train loader. This will increase the efficiency of the long-standing bulk commodity; right now the company is able to handle volumes of about 8mt (million tonnes) of coal in Wilhelmshaven per year. The space used to provide temporary storage for the huge amounts of coal has also been enlarged. This will make Wilhelmshaven the second-largest coal import hub in Europe in coming years.

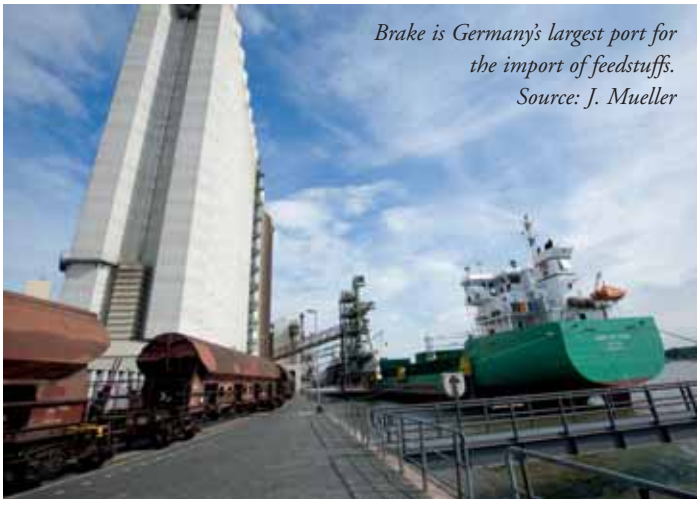
The handling of dry bulk is also one of the core competences of the Port of Nordenham. The port has a long tradition in professional coal handling and warehousing as well as in the just-in-time distribution to coal power plants in the port hinterland via inland waterway or by train. For the gentle handling of special coal products, the port operating company Rhenus Midgard Nordenham has recently invested in modern handling equipment as well as in special facilities to reduce dust. The Port of Nordenham handles up to 2.4mt of cargo per year.

Dry bulk is also a very important business field for the three municipal seaports Leer, Oldenburg and Papenburg. Agricultural products and building materials are the main commodities handled in these ports.

The port of Stade also specializes in the handling of dry bulk products. The northern part of the pier in the port Stade-Bützfleth is used to unload bauxite and to load aluminium oxide and aluminium hydroxide. In the inner port, vessels can be loaded via an enclosed belt conveyor system from the warehouses directly into the vessel.

In Cuxhaven, one of Germany's offshore base ports, the dry bulk handling partly also refers to the renewable energies sector: building materials like gravel or stones are handled and stored in Cuxhaven before these materials are being shipped to the offshore construction fields where they are being used to fix the offshore foundation structures down at the sea bottom.

The port of Emden plays an important role as a hub for agricultural products and building materials. But the core business of this port is the handling of new cars, the transshipment of forest products and project cargo for the wind energy market.



Brake is Germany's largest port for the import of feedstuffs. Source: J. Mueller

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

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Handling timber – best time: two SENNEBOGEN machines at Pfeifer Holz

With all-wheel drive and two-axle steering, the two SENNEBOGEN wood handling machines are on the go at Pfeifer Holz in Kundl, Austria. The specially designed driving machines fully exploit their advantages, particularly when driving into narrow lanes.

In Kundl, Austria, Pfeifer Holz GmbH & Co KG operates a modern wood processing plant. With a 730 M-HD and a 735 M-HD, two SENNEBOGEN material handling machines are at work there for handling of log wood on the extensive lumberyard.

With a production capacity of approximately 570,000m³ of sawn timber and planed goods, the wood processing plant in Tirol is one of the largest production locations of the internationally active corporate group. The log wood from the nearby forests of the Tiroler Unterland is first sorted on the log yard and prepared for further processing as sawn timber and planed goods. This is where the two 7-series SENNEBOGEN material handling machines are deployed. A 730 M-HD and a 735 M-HD ensure smooth logistics at the lumberyard. The wood moving machines, specially designed for this area of implementation, are convincing through optimal kinematics, which enable movement under load. For this, the 730 M-HD is equipped with a 2m² HGT log grapple; and a 3.0m² grapple is mounted on the 735 M-HD. Both machines are used flexibly on the entire facility; the first task is to unload the logs from the truck at arrival. The logs are immediately supplied to the sorting line.

In the next step the two SENNEBOGEN machines move along the sorting line and remove the material, sorted by size, from the various boxes. Thanks to the compact dimensions and the slewable upper carriage, here the SENNEBOGEN machines fully exploit their advantages. The 'pick & carry' concept is characterized by minimal manoeuvring effort and direct travel paths. With a width of merely 3.6m and all-wheel steering, operator Josef Ritzer, moves the 735 M-HD between the rows of logs that are metres high. In this process, the slewable upper carriage enables slewing over the sorting rows, and with a reach of 12m, can thus place the material easily and safely.

The driving and transport machine is specially designed for free-standing use with safe working loads to maximum 20t. A 186kW diesel engine, combined with the wide-gauge undercarriage, bring the machine to drive speeds up to 20km/h. Even with tight entries into narrow lanes, which are often the case in Kundl, the SENNEBOGEN wood handling machines remain reliable and manoeuvrable.

For the operator, the rigid comfort cab that can be elevated 1.0m offers ideal ergonomics and a comprehensive, all-round view. In drive operation the view to the right is also possible without obstruction thanks to the offset boom connection point. On site the machines are deployed in demanding two-shift operation, this required good service and regular maintenance.

"Whether using the 730 or the 735 M-HD, the SENNEBOGEN machines are impressive through their easy handling and reliability. In two-shift operation the material handling machines are pushed to the maximum limit — here the trump cards are speed and flexibility," says Herbert Stöckl, Logistics Manager at Pfeifer Holz.

As the long-standing local sales and service partner, IBS Baumaschinen Österreich GmbH is quickly on site when needed and ensures a reliable spare parts supply.

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2013 picked up, 2014 looks even better for ORTS GMBH MASCHINENFABRIEK

After a difficult first half of 2013, grab manufacturer ORTS experienced a definite improvement in the second half of the year, with grab orders being delivered all over the globe.

Recent activity

- the company is fitting four bulk carriers from European shipping companies with electro-hydraulic grabs and the necessary crane equipment;
- another customer from Southern Africa ordered ORTS' fully radio-controlled diesel-hydraulic grabs, and an additional project in Africa is pending;
- the company also supplied some German port companies with smaller electro-hydraulic grabs in the last few months. This year, it also finished a bulk-carrier newbuild project with a Chinese customer which has been ongoing for two years for several newbuild vessels;
- an old customer, which is already operating two of ORTS' radio-controlled diesel-hydraulic grabs in America, ordered a third one, which speaks volumes about the technical advantages, reliability and effectiveness of these grabs;
- one of the company's oldest customers, a shipping company from Norway (which has been operating ORTS grabs for more than 25 years) ordered a ship-set of electro-hydraulic grabs and crane equipment for its newbuilding in Japan. Nearly all of its bulk carriers are fitted with ORTS grabs.
- for a mining company in south-east Europe ORTS is going to deliver a special mechanical rope grab.

ORTS' new generation of small-radio controlled diesel-hydraulic grabs started with a first order in 2013:

- a German company bought the prototype of the diesel-hydraulic grab DHZ 2.2m³.

This grab will handle biomass.

ORTS' small radio-controlled diesel-hydraulic grabs have a range from 1m³ to 5m³ and they can be operated on all kinds of cranes.

- the small diesel-hydraulic grabs are especially perfect for operation on truck cranes or building cranes.

These grabs feature low dead weight, easy handling and no further equipment is necessary to use them.

Outlook for 2014

"The outlook for 2014 is much better than for 2013" says Sigvard Orts jr, ORTS GmbH.

"We keep all of our production and construction in Germany. Even some other European grab makers are going to outsource their production partly into 'low-cost' countries."

He adds, "The customers value the quality and workmanship in Germany and also 90% of our suppliers are located in Germany."

The Aug. Bolten shipping company, Hamburg/Germany

operates a modern fleet of presently 20 vessels world-wide — Handy-size bulk carriers and multi-purpose vessels of approximately 24,000–40,000dwt and also two container feeder vessels. Aug. Bolten tracks the continual expansion and modernization of its fleet. For the time being, three modern handy-size bulker newbuildings are expected to be delivered in 2014 and 2016.

History

Aug. Bolten Wm. Miller's Nachfolger, Germany's second-oldest shipping company, was founded in Hamburg in 1801 by the Scottish shipbroker William Miller. Under his successor August Bolten the company experienced a rapid rise in the middle of the 19th century. During Bolten's active period the company was co-founder of famous shipping lines like Hapag, Hamburg-Süd, Wöhrmann and Deutsche Ostafrika-Linie.

In the 20th century, the range of Aug. Bolten's activities was increasingly expanded from ship broking (liner and port agency as well as chartering business) to ship owning and ship management. The Bolten fleet grew and a third-party ship management business was established. Besides its tramp shipping activities, Aug. Bolten was co-founder of TT-Line in 1962 and was for 50 years shareholder in this ro-ro/passenger ferry service between Germany and Sweden.

Today

Aug. Bolten is in the seventh generation as a privately held company. Gerhard Binder, as major shareholder, and Dr. Johann Killinger, as shareholder, are members of the board of the Aug. Bolten Holding company, whereas Ole Kraft and Thorsten Mackenthun, as Managing Directors, are responsible for the company's operational business. Besides the management, a team of about 50 skilled shipping experts in the Hamburg head office stands for efficient work processes.

Aug. Bolten provides a wide range of services to domestic and international clients such as:

- chartering;
- ship owning/ship operation;
- crew management;
- technical management;
- safety/security management (ISM/ISPS);
- port agency (in Hamburg and in all German sea ports); and
- P&I representation (GARD, Norway)

The Bolten group, including its affiliated companies (*inter alia* the 100%-subsidiary Lydia Mar Shipping Co. S.A., Greece),

Future-oriented project

In 2012, Aug. Bolten was co-founder of a new chartering pool for Handysize bulk carriers which started operation in October 2013. The daily chartering and commercial management functions of the pool are performed by the staff of Aug. Bolten, Hamburg, who has already gained profound expertise in the management of pools.

The Bolten group and the Piraeus based Ariston Navigation Corp. have invested in a series of at least eight new state-of-the-art, eco-optimized 36,000dwt Handysize bulkers. The design of this most advanced bulker — called the SeaStallion — is based on the Seahorse 35 type which has been in successful operation since 2011. The first SeaStallion bulker *Ardennes* was delivered in October 2013 and won the Lloyds List Award 'Ship of the Year 2013' on 29 January 2014.

Currently, the pool comprises two Seahorse bulkers being in long-time charter with Aug. Bolten and two SeaStallion vessels belonging to Ariston Navigation. The next SeaStallion newbuilding *Amorgos* was ordered on behalf of the Bolten group and will join the pool after delivery by Nanjing based CSC Jingling Shipyard in January 2014. A further four SeaStallion newbuildings are expected to be delivered by January 2015 on behalf of Ariston Navigation. Bolten will further join the pool with three more also eco-optimized new-building sister vessels of 38,000dwt built by a Japanese shipyard.

The owners of the two companies and their experienced management are convinced that with this new generation of eco-optimized vessels they will have a market advantage and offer most efficient tonnage to their cargo customers.

The 'Sea Stallion Pool' will be the starting point for a

successful operation of Handysize bulkers focusing particularly on an economical and efficient operation as well as environmental friendliness.

Other owners of this or similar ship types are invited to join the pool. According to medium-term objectives, Ariston and Bolten will — together with selected partners — build up the pool fleet to a total of 25-30 vessels.

The main characteristics of the 'Sea Stallion' type are as follows:

Deadweight:	36,000t on 10,304m
LoA:	180m
Breadth:	30m
Total grain capacity:	46,700m³ (box-shaped)
Deck cranes:	4 x 30.5t
Miscellaneous:	PSPC, CSR
Class:	ABS
Speed / consumption:	
Service speed:	14 kn / 25,0 ts HFO per day including Auxiliaries
Eco speed:	12 kn / 16,5 ts HFO per day including Auxiliaries
Main engine:	Wartsila 5 RT-flex 50D - 6.350kW

Loading safely: SENNEBOGEN 640 mobile harbour crane with magnet system

Each day, steel coils and bundles, each weighing about two tonnes, leave Al-Ezz Dekheila Steel Co. plant in Alexandria Egypt in great numbers. Recently, the largest steel producer in the Middle East has been relying on two new SENNEBOGEN mobile cranes.

Since the beginning of 2013, two mobile SENNEBOGEN 640 M machines have been working at Al-Ezz Dekheila Steel Co. (EZDK). The company was founded in 1982, and today it is the leading steel producer in Egypt and one of the largest producers in the world with an annual production of 3mt (million tonnes). In Dekheila, near Alexandria, approximately 2,800t of steel coils and 3,400t of bundles leave the production plant daily.

Steel coils, each weighing 2t, are loaded by a new SENNEBOGEN 640 M at EZDK, near Alexandria in Egypt.

The steel coils are loaded by magnet system. For this, the SENNEBOGEN machines were factory-equipped with a 25kW magnet system including a 220V generator. To satisfy the most rigorous safety criteria, in addition a total of 18 batteries were installed, in order to maintain the magnetic holding force for up to 15 minutes if the need arises; this backup meets the customer's safety requirements.

Thanks to the new machine concept, after just a short time, the firm was able to increase productivity by 20%. The two 640 mobile cranes load the 2t steel coils for nearly ten hours a day. In this regard the machines are in operation at 30 cycles per hour — a stress trial for man and machine. The responsible persons and operators at EZDK have particular praise for the HD mobile undercarriage and the robust design of the crane boom that withstand even the highest stress levels. The stable design of the duty cycle crane combined with the high level of mobility on the entire production facility make the machines unique and superior to other solutions. For the drivers, the comfortable maXcab and the intuitive and easy operability are among the special advantages.

In close collaboration with the local service and sales partner, Egyptian Co. for Engineering Equipment '3e' SENNEBOGEN, was able to provide the perfect machine to meet this challenge — additional machines of this type have already been ordered with a modified magnet system allows the crane to handle the steel bundles in addition to above mentioned coil system which is a complete new version in the mobile crane application.

Muhr's custom-made bulk loading systems achieve optimal results

Individualization — an increasing trend over the past few years. In contrast to the consumer goods sector, where individualization is mainly used for the emphasis of personality, it has a significant economic background in the field of technology. By perfect adaptation of individual components within a process, a significantly higher overall efficiency can be achieved.

What this means with regard to the loading of bulk materials is exemplified by the Muhr bulk loading systems. Hardly any manufacturer offers a comparable wide range of systems and additional options in this field:

In addition to the general separation into open and closed loading, Muhr provides loading systems in almost any size with a variety of different bellows and/or telescopic tubes. This is complemented with various wear protection systems, integrated or external filter systems, product distribution systems for optimal tank utilization, special designs for foodstuff loading, explosion protection measures, customized intake flanges and outlets, level detectors, loading controls, etc.

On request Muhr also provides each loading system with the option of combined loading. With this configuration it can be both open and closed loading with a single loading unit. Along with an optional traversing unit (= loading vehicle) the loading system can be fully variably positioned on the truck, train or ship that has to be loaded. Intelligent combination of innovative modules can speed up loading processes and reduce costs.

The core competence of Muhr is the perfect adaptation of the loading systems to specific customer requirements, such as loading performance, product characteristics, product and ambient temperature, loading conditions, etc. Because only a perfectly matching system will achieve optimum results. For maximum efficiency, maximum safety and maximum quality.

Fig. 1

EXAMPLES:

Loading system for coal loading in Spitsbergen (fig. 1), for ambient temperatures down to –40°C in ATEX21 conditions. Because of the scenic sensitive environment, the system was designed for very dust-free loading and high loading capacity. An ornate wear protection system increases the service life and, together with the special loading control, cares for economical operation.

Fig. 2 & 3: Combined loading system with pneumatically operated shutter cone for loading of dolomite in closed silo trucks or open dumps. The customer's target was a drastic minimization of dust emission during the loading process. After comparing different concepts, the customer decided on this Muhr concept. The specialty of this system is the dust-free loading with both closed as well as open loading.

Fig. 4. Combined loading system with pneumatically operated shutter cone for loading of cement on open ships or tank ships.

Fig. 5. Closed loading system with integrated filter unit for loading of graphite and coke in closed silo trucks.

Two brands – one philosophy: from level measurement technology to warehousing technology

SMB Group develops new model range for silo applications and designs innovative compact high-bay foodstuffs warehouse in Nigeria

SMB International and MBA Instruments are linked not only by a common company headquarters in Quickborn near Hamburg (Germany), but also by their main business activities in material handling. Planning, development, production, worldwide sales and service of the highly complex automatic loading systems, filling systems, systems for level and conductivity measurement, palletizers, conveyor systems, compact high-bay warehouses and shiploaders are just part of the product range. Under the umbrella of the 'SMB Group', the two companies are active on the international market with their innovative products. Here are two recent examples.

At the turn of the year 2013/2014, MBA Instruments brought a completely new range of devices for level measurement onto the market. The main field of application of the new MBA800 series are silos where the height of the cone of bulk material is measured using a rotating paddle. The devices are characterized by a powerful motor with direct drive of the miniature paddle and selectable pre-set parameter combinations for universal application. "This technology allows various functions of the devices to be adapted to different types of bulk material for different applications," says MBA Instruments managing director, Hans-Heinrich Westphal, describing the innovative and patented design. "It is precisely these preset parameter combinations that make the MBA800 unique worldwide until now."

When measuring the filling level in the silo, the paddle is slowly rotated by the motor. When the bulk material reaches the paddle, the rotating movement is stopped. This state is signalled electronically by the magnetic clutch in the permanent-magnet synchronous motor used for the first time in the MBA800 Series. As soon as the bulk material drops below the level of the paddle, the paddle starts to rotate again.

Level measurement for all conceivable types of bulk materials

Ex works the MBA800 Series already has eight standard settings "in which all our know-how about the most diverse types of bulk materials are bundled," adds Westphal. These standard settings cover, for example, the reliable level measurement of products with a severe tendency to cake or of very free-flowing or very viscous products. "Of course we can also programme individual parameters for very special bulk materials in close cooperation with our customers," assures Westphal.

First offshoot of the MBA800 Series is a rotating paddle level measuring 'full' indicator with double function: whereas with conventional level measuring devices, only the bulk material angle is taken into consideration for the immersion depth and installation position, the MBA808 smooths the surface in the silo for the measurement. It thereby spreads the charged material to be measured uniformly across the silo and pushes it in a circular motion against the inner wall of the silo. "The advantage of this measurement technique is that the previously unused flanks of the bulk material cone in the silo are filled by the rotating paddle," explains Westphal. "In the standard measurement methods used to date, the silo is already signalled as full when the tip of the cone reaches the defined measurement point. The MBA808, on the other hand, signals the silo as completely full only when it is really full."

Ultramodern compact warehouse for foodstuffs in Nigeria

One of the latest examples from the SMB production is the highly innovative compact high-bay warehouse system for the foodstuffs company CHI Limited in Lagos/Nigeria that was completed in August 2013. "It acts as a quarantine store for juice and milk products in Tetra-Pak beverage cartons which are stored here for a short time after coming from production until they are released by the foodstuffs laboratory," says SMB managing director, Andreas Heckel, explaining the function of the warehouse. The challenges facing the SMB design engineers were severe, and a large number of parameters had to be taken into consideration: fresh products such as juice or milk beverages require particular attention during cooling and the lock technology, and a high turnover frequency is essential. "The new compact high-bay warehouse should offer maximum utilization of the available storage volume with minimum energy consumption," says Heckel. The result is a highly efficient

compact high-bay warehouse that permits an electronically controlled storage and retrieval of pallets in transverse direction on up to eleven levels simultaneously. The warehouse has a silo design and therefore forms the supporting structure of the building at the same time. That also keeps the construction costs low. It is roughly 70 metres long, 22 metres wide and 20 metres high. Around 7,700 pallets are stored here. The compact high-bay warehouse has already been in unrestricted use since August 2013. The control software is currently being optimized, and at the same time SMB is accompanying CHI Limited in the 'running-in phase' of the warehouse as contractually agreed. The official inauguration is to take place in February 2014.

Truck-shuttle technology enables high space utilization

A further special feature of the new warehouse: the space utilization is enormously high at 95%. This is made possible by the truck-shuttle technology developed by SMB. There are practically no free spaces, such as upper and lower approach dimensions which in conventional automatic warehouses can take away almost two metres. A further advantage of the SMB design is that due to the constant spacing between the stored pallets, a uniform distribution of the cold air can take place. Significantly less cooling capacity is therefore required — resulting in a remarkable saving in costs.

So how does the truck-shuttle technology function? On each of the total of eleven levels there is a truck with a shuttle which transports the pallets with the beverage cartons into the depth of the aisle. They are fed by two vertical conveyors each with a capacity of up to 120 pallets per hour. If necessary, the compact high-bay warehouse can operate around the clock. The pallets handled are not only Euro pallets (80 × 120cm), but also special industrial pallets measuring 120cm × 120cm.

Low energy consumption despite high travel speeds

Thanks to the variable-frequency electric drives, high travel speeds can be achieved with defined safe braking and acceleration characteristics. As the system requires only 0.01kW/h per storage and retrieval cycle, it has a lower energy consumption than comparable models. "The system requires a drive power of only 2.5kW per truck and shuttle; thanks to the low tare weight of the system of less than one tonne, they need very little energy that is converted into heat during starting and braking," explains Heckel. The cooling system therefore does not have to compensate this generated heat — again offering a cost benefit. For inspection or service work, each warehouse level can be switched off and accessed individually; the service staff can carry out the service work without the aid of equipment such as lifting platforms. "If a truck is being serviced or has a fault, the others can continue to operate so that there is no standstill," says Heckel.

High percentage of in-house manufacturing

The managing directors, Andreas Heckel and Hans-Heinrich Westphal, describe something else that links SMB International and MBA Instruments as follows: "As the SMB Group, we deliberately decided in favour of a high percentage of in-house manufacturing at our site, and hence in favour of 'Made in Germany'. We can thus meet customers' wishes spontaneously, selectively and with a consistently high standard of quality." Not only the in-house design engineering, but also the production of mechanical and electrical modules form the basis for the great manufacturing depth with which the SMB Group ensures the reliability with respect to quality and delivery time.

Significant investments are also continuing to be made in Quickborn: "Our expansion, reorganization and modernization of the existing SMB manufacturing centre in 2013 improve the efficiency and ensure an ultramodern and digitally optimized production process," explains Heckel. The medium-sized enterprise currently has well over 100 employees, but further experts and qualified personnel are still being looked for on the job market. A global sales network ensures quick and efficient co-ordination of all the projects.

Liebherr boosts cargo handling in the Middle East

Recent orders for Liebherr Mobile Harbour Cranes (LHM) from the Middle East include two LHMs and the first LiSIM® LHM 550 unit for the region, paving the way for state-of-the-art crane operator training. Additionally, one Liebherr Reachstacker has been delivered to the region.

Traditionally, the Middle East/India/Africa region (MIA) has represented a very important market for Liebherr mobile harbour cranes (LHM). In 2013 alone, Liebherr counted more than 40 mobile harbour crane sales. The company has now delivered well over 300 LHMs to MIA in total.

"We had a very good year," says Gordon Clark, divisional manager in Dubai. "We sold new units to the UAE, Iraq and other countries in the Middle East, and not just LHMs."

The new LRS 645 unit provides advanced technology for smooth and efficient container handling in Port of Maqal, Iraq.

A first for the region was the order for the new LiSIM® mobile harbour crane simulator for Saqr Port in Ras Al Kaimah, United Arab Emirates. Launched in 2013, Liebherr's modern training solution is based on original software and hardware allowing for cost-effective and highly immersive crane operator training. A major benefit of simulator training is the ability to simulate harsh environmental conditions when required. This allows both experienced operators and trainees to gain valuable experience operating under challenging conditions in a safe virtual environment. The resulting increase in operator skills allows for safe and productive crane operation in the real world and naturally boosts productivity. Saqr Port has opted for the classroom solution which can be easily integrated into existing training centres.

Sample picture of Liebherr's classroom solution.

Additionally, Saqr Port has ordered an LHM 550, enforcing their existing mobile harbour crane fleet. The new crane is equipped with Liebherr's unique Pactronic® system for highly efficient bulk handling. Awarded with the State Prize Clean Technology Austria 2012, Pactronic® hydraulic hybrid drive system for cranes is the first to achieve increased handling performance with reduced fuel consumption. By adding an accumulator as a secondary energy source instead of a bigger or additional prime mover, Pactronic® is regenerating the reverse power while lowering the load. The stored energy is transferred back to the system when the crane requires peak power during hoisting. In terms of turnover capacity, that means a plus of up to 30% compared to a conventional machine with equal power rating of the primary energy source. In addition, Pactronic® leads to a

reduction of fuel/energy consumption (litre/tonne) as well as CO_2 and exhaust emissions in the range of 30% depending on the operation. The hybrid drive system is virtually maintenance free as it just needs visible inspection every ten years. One-hundred-per-cent recyclability as well as less noise exposure are additional eco-friendly benefits of this advanced system. The new LHM 550 for Saqr Port is especially configured for highly efficient bulk handling. Due to Liebherr's flexible mobile harbour crane approach, the LHMs can also be used for container handling and general cargo operation if necessary — just by an easy exchange of the lifting attachment.

Due to the new LHM 550, Saqr Port will soon operate a fleet of six Liebherr mobile harbour cranes.

Due to the new LHM 550, Saqr Port will soon operate a fleet of six Liebherr mobile harbour cranes. The forward-looking combination of advanced simulator-based training and high-speed machines has potential to significantly improve their production figures. Moreover, thanks to this new investment, Saqr Port will strengthen its top position in the Middle East bulk market. The new crane and simulator will be commissioned in the first quarter of 2014.

To accelerate the revitalization of Port of Maqal in Iraq, NAWAH port management has invested in state-of-the-art cargo handling equipment. Basra's urban port will therefore benefit from a versatile LHM 180 unit and one Liebherr Reachstacker, type LRS 645. Due to its new Liebherr mobile harbour crane, NAWAH port management has added valuable services to their portfolio. The LHM 180 is designed for efficient container handling as well as for safe and reliable general cargo operation, allowing for lifts as heavy as 64 tonnes. Moreover, the new LRS 645 unit provides advanced technology for smooth and efficient container handling in Port of Maqal. Both machines began operation in summer 2013. "The LHM 180 and reachstacker from Liebherr are working very well in Basra, and we also work closely with their local office in Jebel Ali for service and spares. Our offices are so close that we even pop around for coffees occasionally," says Justin McCauley, business development coordinator for NAWAH.

Liebherr is optimistic that the positive trend in the MIA region will continue.

2014

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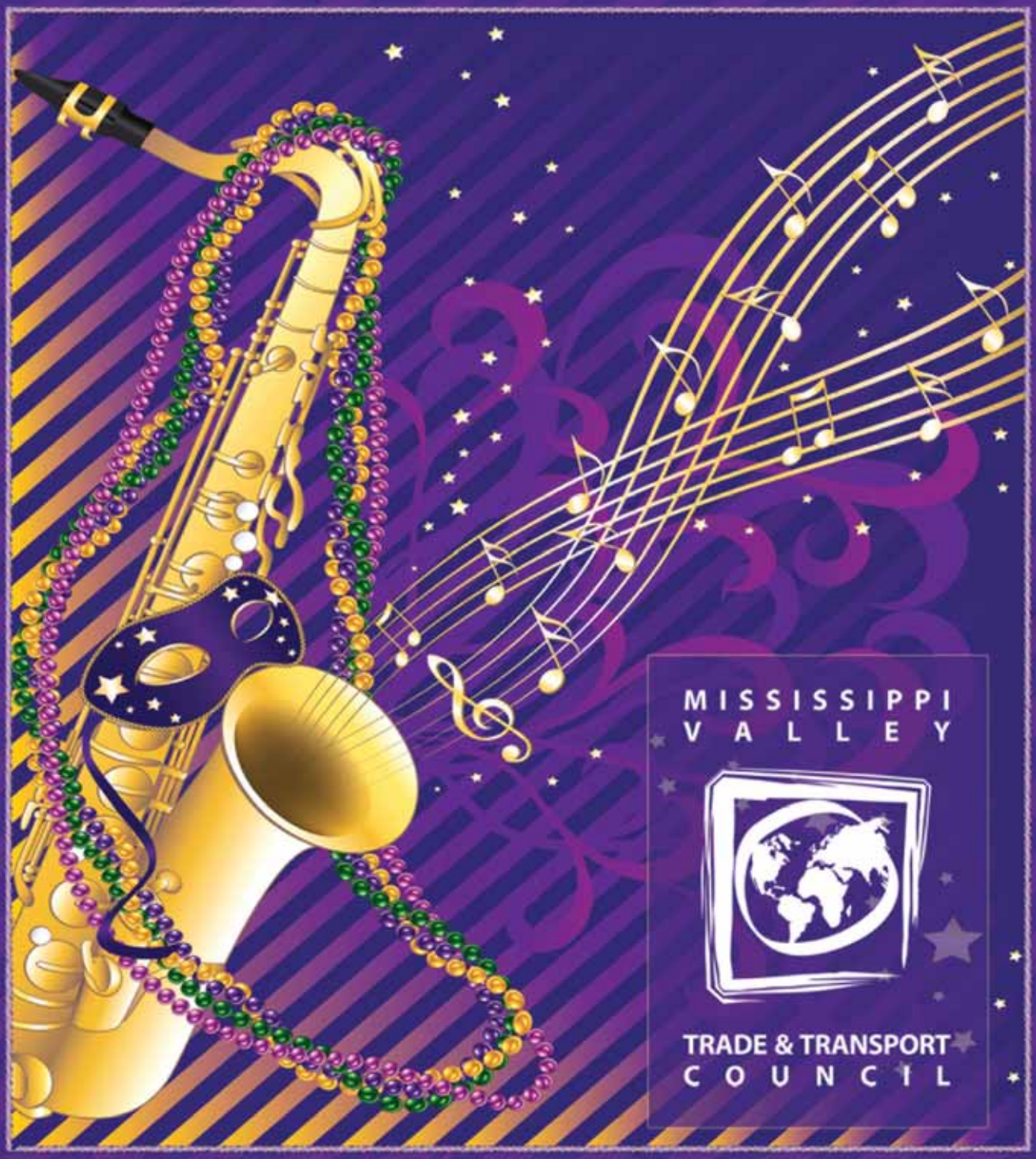

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Wanted: innovative applications with energy chain systems

The entry phase for the vector competition 2014 is open.

Companies can register for the vector award until 15 February 2014. This recognizes applications that use energy supply systems. Whether huge or tiny energy chains — anyone can apply online and present their designs to the judging panel with brief descriptions, photos and videos. The winners will receive prize money of up to €5,000, with an official award ceremony held at the Hanover Trade Fair in April 2014.

Every two years, creative applications for energy supply solutions are recognized with the vector award. The latest official entry phase began at the Motek 2013. An expert judging panel comprising representatives from the world of science and specialist associations evaluates the applications and selects the winners from among all the entrants. "The vector award is an extremely important part of our development work," stated Harald Nehring, authorized representative for e-chain systems at igus GmbH. "We use it to support innovations and promote new potential uses for energy supply systems." Anyone who dares to put energy chain systems to new uses is encouraged to enter the competition regardless of their sector.

Overview of previous entrants and winners

All further information, including the competition terms and conditions and details of previous winners, can be found at the vector award website. From a robot that loads and unloads presses, a sludge treatment system with igus's largest plastic energy chain, the E4.350, to a wood working application that uses the igus twisterband and has an overall rotation of 1,440°. The site also provides an overview of the many interesting and highly inventive entries that have been received since the competition was first launched in 2008. These range from exercise trainers in the field of physiotherapy to mobile launch pads for space rockets. The current entry period closes on 15 February 2014. DCi

This twisterband can conduct a 1,440° rotation. This application in the wood working sector won the bronze vector award in 2012. (Source: igus GmbH)

Every two years, igus organizes the vector award in recognition of advanced energy chain applications. In the picture: Harald Nehring, authorized representative for e-chain systems, igus GmbH. (source: igus GmbH)

Winner of the golden vector award 2012: the KUKA Cobra. An additional axis is mounted to the robot arm to load and unload presses. A new, special chain guide design from the igus E6 series is used to make the robot structure as compact as possible. (source: igus GmbH)

This sludge treatment system at the Port of Antwerp uses the world's largest plastic energy chain, the E4.350. The project won the silver vector award in 2012. (source: igus GmbH)

INDEX OF ADVERTISERS

Company	Page
Achenbach GmbH Metalltechnik	124
Anvil Attachments	94
Associated Terminals LLC	Outside Back Cover, 62
Bühler AG, Grain Logistics	3
BV Zeehavenbedrijf Dordrecht (ZHD Stevedoring)	38
Cimbria Bulk Equipment	78
Coaltrans Conferences	66
Conductix-Wampfler AG	74
Cooper/Consolidated	64
Coperion GmbH	122
CST Covers	80
Duisburger Hafen AG	126
E-Crane World Wide / E-Crane International USA	112
EMS-TECH Inc	90
ESI Eurosilo BV	46
European Bulk Services (EBS) BV	32
Europees-Massagoed Overslagbedrijf (EMO) BV	48, 49
Fednav Ltd	12
FLSmidth Inc.	88
FLSmidth Wadgassen GmbH	82
HAROPA	23
HAVER & BOECKER OHG, Machinery Division	132
Hudig & Veder BV	13
IBAU HAMBURG	136, 137
IHI Transport Machinery Co., Ltd. (IUK)	96
Indexator Rotator Systems AB	72
J & B Grabs b.v.	84
Liebherr-Werk Nenzing GmbH	68
Listenow GmbH & Co.	81
Loibl Allen-Sherman-Hoff GmbH	7
Mack Manufacturing Inc	78
Marcor Stevedoring BV Rotterdam	53
Maschinen und Mühlenbau Erhard Muhr GmbH	145

Company	Page
Metso Minerals Industries, Inc.	98
Mississippi Valley Trade & Transport Council	150
Nemag BV	41
Neuero Industrietechnik GmbH	Inside Back Cover
NKM Noell Special Cranes GmbH	76
ORTS GmbH Maschinenfabrik	140
Ovet BV	36
PINTSCH BUBENZER GmbH	125
Pirs SAS	108
PIV Drives GmbH - a Brevini Power Transmission Co.	138
Port of Amsterdam	24
Port of Corpus Christi	60
Port of Pori	54
RC Inspection B.V	28
RHB Stevedoring & Warehousing	30
Rhenus Midgard GmbH & Co. KG	132
Rotterdam Bulk Terminal (R.B.T.) B.V.	34
Royal Haskoning DHV	28
RTA ALESA Ltd.	100
Rubb Buildings Ltd	71
RULMECA HOLDING S.P.A.	86
SENNEBOGEN Maschinenfabrik GmbH	Front Cover
Sept-Îles Port Authority	20
SIBRE - Siegerland Bremsen GmbH	127
Terex Fuchs GmbH	134
TMSA Tecnologia em Movimentação S/A	116
Tramco, Inc	106
Verbrugge Terneuzen Terminals	26
Verstegen Grijpers BV	Inside Front Cover
VIGAN	92
Vossloh Kiepe GmbH	131
Zeeland Seaports	52

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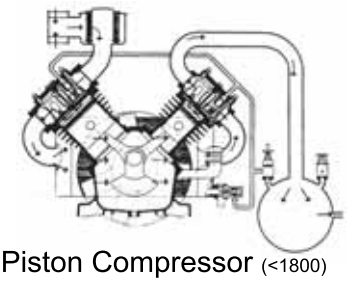
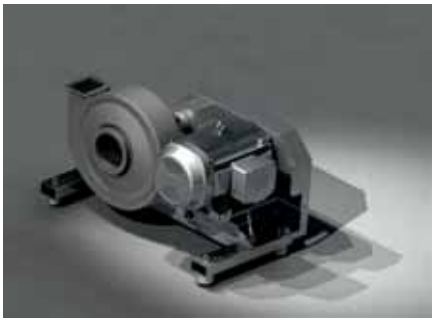


Piston Compressor (<1800)

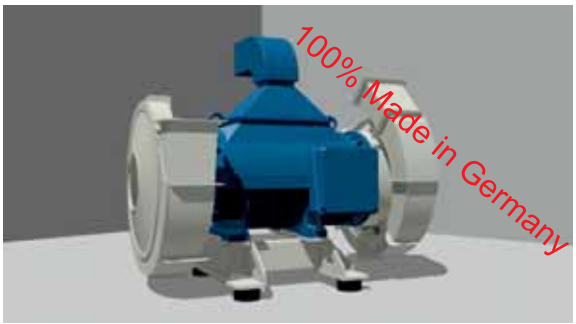
Roots Blower (1900)

Fan with Air Flow Regulator (1960)



Fan with frequency inverter and automatic belt tension (2000)

TURBO POWER single stage (2009)



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