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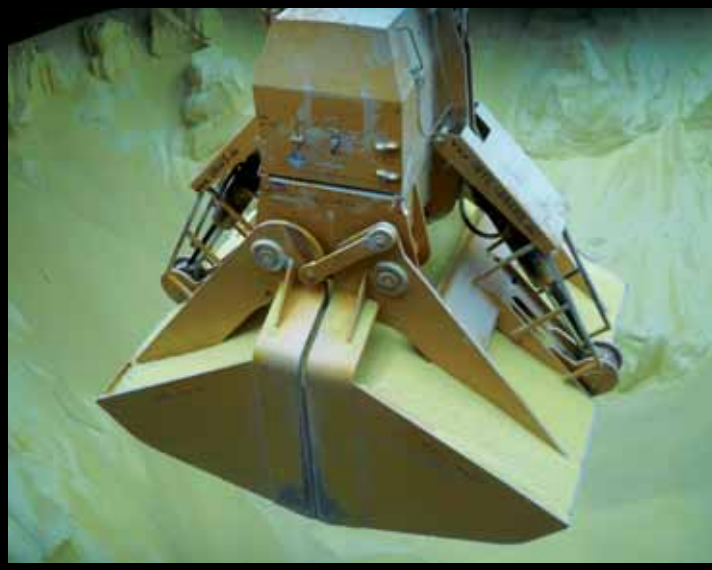

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Left side: 25m³ dredger grab with 80t dead weight during dredging works in Russia
Right (top): Fully radio controlled diesel- hydraulic grab DHS-B 8m³ during an urgent cargo recovering operation in Singapore
Right (bottom): Fully radio controlled diesel- hydraulic orange-peel grab DHM 6m³ discharging limestone rocks from a bulk carrier.

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MARCH 2013 issue

featuring...

Some advantages for dry bulk trade

Forecasts of world seaborne dry bulk trade in 2013 still point to solid growth. Commodity import demand in numerous countries seems set to increase, including sizeable additional volumes in the iron ore and coal sectors, which together comprise well over half of overall dry bulk movements.

One encouraging aspect recently has been an improving outlook for global economic activity over the next twelve months. The implication is strengthening output in many industries importing dry bulks, but improvement is unlikely to be uniform. Europe may remain firmly in recession. The latest (end February) European Commission economic report predicts GDP growth of only a very marginal 0.1% within the EU this year, following last year's 0.3% decline.

Iron ore

World seaborne iron ore trade could grow by between 4% and 5% in 2013, reaching an estimated total of over 1,170mt (million tonnes), as shown in table 1. However, expansion depends heavily upon the continuing robust performance of China, which comprises two-thirds of the global total. Among other countries, prospects for additional volumes are limited.

Japan and the European Union, formerly the dominant iron ore importers, are still major market influences, comprising about one-fifth of overall trade. A slight rise in Japan's volume this year from last year's 131mt is envisaged, resulting from more activity in steel using industries and higher steel production. The outlook for Europe's steel output by contrast remains bleak, suggesting that ore imports may remain below 100mt.

Coal

About a quarter of world seaborne coal trade consists of coking coal for steel industry use. Growth in this sector, and also in the much larger steam coal category where import demand from power stations is the greatest influence, seems likely during 2013. There is potential for the overall global trade total to increase by 5%, raising the annual volume to 1140mt or more.

Asia is the main focus for higher coal imports, particularly India and China. In the past two years European countries also have been significant contributors to the strong upwards world trend, but some positive factors in that region are unlikely to continue indefinitely. China and India together apparently imported over 380mt in 2012, about one-third of global coal trade, and both countries could see additions in the twelve months ahead.

Grain

Prospects for grain trade are more difficult to assess because crop production is affected by unpredictable weather patterns. As a result, global grain trade forecasts for 2013 are highly tentative. Assuming that weakness in the first half will be followed by some revival in the second half, this year's global trade total (including soyabeans) may be similar to last year's estimated 323mt.

Calculations based on crop years show a decrease of about 4% in global wheat and coarse grains trade during the current 2012/13 year ending mid-2013. Lower imports into the Middle East area and some African countries are features. By contrast, soyabeans movements seem likely to increase, assisted by China's rising imports, providing a partial offset for weakness elsewhere.

Minor bulks

The large and varied minor bulk trades sector comprises about one third of the global seaborne dry bulk trade total. Industrial bulks related to manufacturing and construction are the largest part. In this sub-category, which includes steel products and forest products, import demand could grow by around 3% this year, supported by reviving economic activity in several regions.

Bulk carrier fleet

As shown by the figures in table 2, the world bulk carrier fleet is set to grow rapidly again in 2013, by about 7%, raising the end-year total to over 720m dwt. This growth rate represents a further slowdown, following very fast expansion seen previously, assisted by sharply lower newbuilding deliveries amid continued reduction of world shipyard orderbooks.

TABLE 1: WORLD SEABORNE DRY BULK TRADE IN 3 MAJOR COMMODITIES (MILLION TONNES)

	2008	2009	2010	2011	2012	2013*
Iron ore	844.0	905.0	1,005.0	1,069.0	1,124.0	1,174.0
Coal	823.6	841.7	951.0	1,012.5	1,085.0	1,140.0
Grain (including soyabeans)	290.3	294.7	296.8	312.8	323.0	325.0
Total major bulks	**1,957.9**	**2,041.4**	**2,252.8**	**2,394.3**	**2,532.0**	**2,639.0**
% growth from previous year		4.3	10.4	6.3	5.8	4.2

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

TABLE 2: WORLD BULK CARRIER FLEET (MILLION DEADWEIGHT TONNES)

	2008	2009	2010	2011	2012	2013*
Newbuilding deliveries	24.5	43.2	80.2	98.5	99.5	75.0
Scrapping	5.6	10.6	6.3	23.2	32.9	26.0
Losses	0.1	0.3	0.4	0.4	0.1	0.1
Other adjustments/conversions	6.9	8.7	4.4	4.1	-2.8	0.0
Net change in fleet	25.7	41.0	77.9	79.0	63.7	48.9
Fleet at end of year	**417.6**	**458.6**	**536.5**	**615.5**	**679.2**	**728.1**
% growth from previous year		9.8	17.0	14.7	10.3	7.2

source: Clarksons (historical data) & BSA 2012 estimate and 2013 forecast **forecast*

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China's upwards trend in bulk imports continues

Many signs emerging recently have bolstered predictions of further substantial growth in China's dry bulk commodity imports during 2013. Although there are still differences of opinion about the extent of positive changes foreseeable, the seaborne imports trend direction seems clearer. Much of the uncertainty which had arisen previously, when the Chinese economy was slowing markedly, has receded.

The likely progress of China's commodity purchases from foreign suppliers has become a crucial aspect of the outlook for world trade. Dry bulk cargo imports into China now comprise about 33% of all global seaborne trade in this sector.

Moreover, while prospects for growth in other major importer segments — such as Europe and Japan — is limited, there remains considerable potential over the years ahead for continuing expansion in China.

During last year's final quarter, the Chinese economy's slowing trend was reversed, when GDP growth picked up. Although annual growth in 2012 as a whole was below the previous year's rate, at 7.8%, the end-year improvement added to other indications that an upturn is under way. The latest (January) IMF forecast suggests an acceleration to 8.2% in 2013. Government measures stimulating activity seem to be making an effective contribution.

Iron ore growth

By far the biggest single part of China's imports, iron ore, performed strongly last year, as shown in the table. The total was over 57mt (million tonnes) higher, an increase of 8% compared with the preceding twelve months, raising the 2012 volume to 743.6mt, which includes some land movements but is mostly seaborne. This performance was especially significant, because the total comprises almost two-thirds of global iron ore trade.

Steel production at Chinese mills expanded at a much less rapid pace. Crude steel output was 3% higher at 716.5mt. Pig iron production at blast furnace mills using iron ore grew by 2%, reaching 657.9mt. These provisional figures compiled by the World Steel Association probably will be revised upwards when more accurate data is available.

Imported iron ore competed strongly with domestic ore production in the past twelve months and increased its market share. Similar circumstances in 2013 could result in iron ore imports again rising at a fairly rapid rate, possibly of about 6% or more according to several estimates, exceeding steel output growth. A sustained moderate upwards trend in steel production is expected to result from strengthening construction and manufacturing activity.

Coal expansion

In 2012 China's imports surged again to become the largest single element of world coal trade, exceeding the massive volumes imported by both Europe and Japan. The Chinese total increased by 52mt or 28%, reaching 235.1mt. Almost four-fifths was steam coal destined for power stations and other industries such as cement, with the remainder comprising coking coal for steel industry usage.

Despite rising production from the vast domestic coal mining industry, imports competed successfully last year. Seaborne imports into China benefited from a lower proportion obtained by overland transport from Mongolia, a key supplier of coking coal grades especially. Coal imports are greatly affected by price differentials between domestic and international supplies, and in the past twelve months the delivered costs of foreign supplies proved attractive.

Over the year ahead another large rise in imports could be seen. Recent forecasts pointing to a 10% or greater increase seem quite realistic, amid higher coal usage in the main consuming industries. Although domestic coal output may continue growing, the Chinese market probably will remain tight as the economy picks up, resulting in additional foreign purchases.

Soya increase

After a downturn in 2011, soyabeans imports, another large trade into China, regained momentum last year with a sizeable increase of 5.8mt or 11%. This additional volume raised the annual 2012 total to 58.4mt. Lower domestic soyabeans production, coupled with rising consumption of soyameal and oil, explains the positive change. Potential for further growth is apparent.

Soyabeans crops produced by Chinese farmers comprise a relatively small part of the market. The past two harvests were smaller than the preceding volume. In 2012, a 13% reduction to 12.6mt was seen. Meanwhile, domestic usage of meal by livestock feed manufacturers has grown very strongly in recent years, including a 9% rise in the marketing period ending September 2012, based on US Dept of Agriculture estimates. Soyaoil consumption grew by 7%.

Imports of another agricultural commodity, wheat and coarse grains, are fairly small because China is essentially self-sufficient. Another good domestic harvest in the summer and autumn of 2012 has reduced the need for foreign supplies. In the marketing year ending September 2012 imports rose to 10.9mt, but a reduction to 8mt is envisaged by USDA in the current period.

Minor bulks mixed

Many other dry bulks are featured among China's imports. These commodities include bauxite/alumina, nickel and manganese ores, steel products and woodpulp. Although overall there has been continuing expansion, changes in the volumes last year were not wholly positive.

One of the strongest performances in this group was exhibited by nickel ore, used in stainless steel production. Imports into China during 2012 reportedly rose by 35%, reaching 65mt. By contrast, imports of steel products were 14% lower at 14mt, and bauxite/alumina purchases apparently also declined sharply. Given the diverse nature of this group, future import demand changes could vary greatly.

Richard Scott

CHINA'S DRY BULK IMPORTS (MILLION TONNES)

Main bulk commodities	2008	2009	2010	2011	2012	% change*
Coal	40.8	126.6	166.3	183.1	235.1	+28.4
Iron Ore	444.0	629.8	618.6	686.1	743.6	+8.4
Soyabeans	37.4	42.6	54.8	52.6	58.4	+11.0
Steel products	15.6	22.4	17.2	16.3	14.0	-14.1
Bauxite/alumina	30.5	24.9	34.7	47.1	42.5	-9.8
Nickel ore	12.4	16.6	25.1	48.3	65.0	+34.6

source: China Customs, USDA, BSA ** 2012 compared with previous year*

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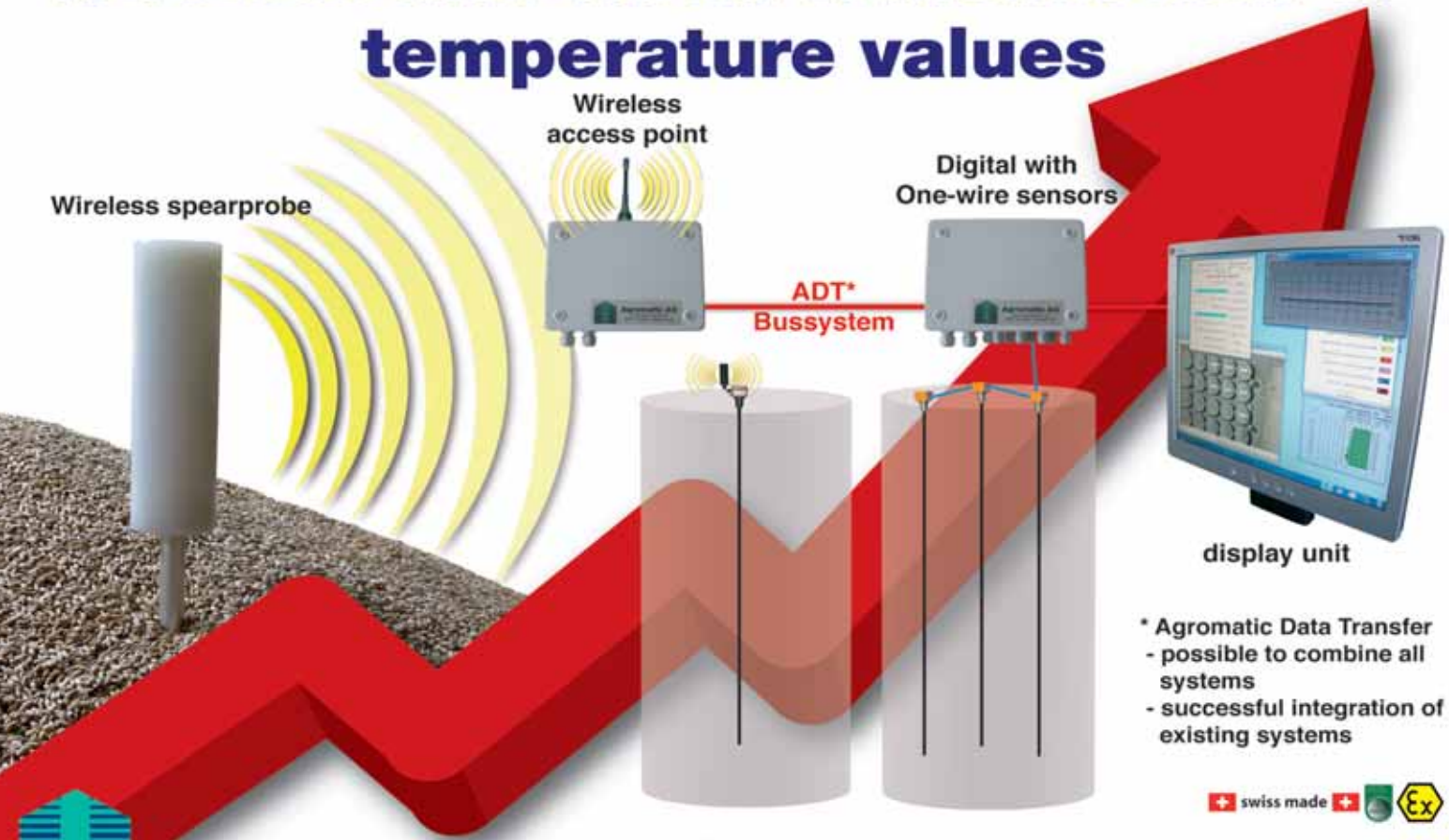

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World grain trade

Maria Cappuccio

Larger plantings boost expectations for huge harvests in 2013

Global growth is projected to strengthen gradually, averaging 3.5% during 2013, according to the International Monetary Fund (IMF), but remains fragile with unemployment remaining unacceptably high in many countries. While policy actions have lowered acute crisis risks in the euro area and in the US, the return to recovery in the euro area after a protracted contraction, is delayed. Japan's stimulus plans will help boost growth in the near term, pulling the country out of a short-lived recession. At the same time, policies have supported a modest growth pick-up in some emerging market economies. Although the downside risks remain significant, including renewed setbacks in the euro area and risks of excessive fiscal consolidation in the US.

In commodity markets, following last year's catastrophic drought that reduced supplies in North America, Europe and the Black Sea region, higher prices for major crops are encouraging a strong supply response with larger plantings forecast for wheat, corn and soyabeans. Assuming normal yields, large global harvests in 2013/14 are forecast to replenish global stocks and moderate prices, although the weather, which had a critical impact last year remains a key uncertainty, and until production levels are better known, commodity markets are expected to remain volatile.

Global wheat supplies poised to expand in 2013

Driven by both firm prices and a recovery from adverse weather conditions, producers had strong incentive to increase wheat plantings. Early indications suggest the global wheat area could be 2% above last year. All the major exporting countries

GLOBAL WHEAT PRODUCTION (MT)

	2009	2010	2011	2012	2013
Europe	144	140	141	136	144
EU	139	136	137	132	140
E.Europe	5	4	4	4	4
CIS Baltics	114	81	115	77	102
Russia	62	42	56	38	54
Ukraine	21	17	22	16	20
N &C America	92	87	83	92	89
US	60	60	54	62	57
Canada	27	23	25	27	29
S America	22	28	26	20	21
Argentina	12	17	16	11	12
N East Asia	39	40	40	37	38
Turkey	18	17	19	16	17
F East Asia	228	227	236	246	239
China	115	115	117	121	118
Africa	27	21	25	23	26
North Africa	20	16	18	17	17
Australia	22	28	30	22	25
Total	687	652	697	654	682

Source IGC, USDA, UN trade — totals may not add due to rounding

including the EU, Russia and Ukraine, are expected to have larger crops with the possible exception of the US. While planting conditions have been favourable in many areas adverse weather in some key producing areas especially those recovering from drought, has limited the sown area and or crop emergence. With the focus shifted to condition and development of northern hemisphere crops, the International Grains Council's (IGC) preliminary estimate points to a larger global wheat crop in 2013 forecast at 682mt (Abares 688mt, Informa 701mt), boosted by an increase in the sown area and a rise in yields, although the potential increase in global output is expected to be absorbed by higher demand.

Smaller US wheat crop following severe drought

US wheat area is projected to increase to 56m/acres, with a smaller Hard Red Winter (HRW) wheat area (29.4m/acres) due to drought, and an increase in the Soft Red Winter (SRW) wheat area (9.7m/acres). Spring wheat area including durum is projected to decline due to more profitable returns for corn and soyabeans.

US wheat production is forecast at 57mt, lower than last year, as much of the acreage in states such as Kansas and Nebraska, which bore the brunt of the drought, were rated in very poor condition. Recent heavy snowfalls have provided much needed moisture to replenish the deeply depleted reserves, but spring rains will be especially important.

The Canadian government forecast Canada's wheat plantings to increase with a wheat crop of 28.5mt, and adds to other forecasts that global wheat supplies are poised to expand, potentially helping to curb prices that rallied 21 in Chicago over the past year as inventories dropped.

EU output to recover with the exception of the UK

The EU planted area is projected to rise to 23.5m/ha, with production for 2013 forecast at a four-year-high of 291mt (soft wheat 131/mt durum 9mt) up almost 19mt on last season's — boosted by the accession of Croatia to the EU, which typically has a harvest of 3mt. While some areas in central Europe have experienced low soil moisture, late sprouting in autumn and excessive wet weather in France and the UK, will reduce yield quality and has already led to downward revisions to output. Persistent rainfall, 50% higher than normal between September and February, saturated UK soils and prevented farmers from a late catch-up on winter sowings. Strategie Grains forecast the EU crop at 139mt (soft wheat 131mt Durum 8mt) this includes a UK crop of 12.4mt, while UK merchant Gleadell, forecast a UK wheat crop of 11mt.

Black Sea region output recovering strongly

Despite a dry autumn, which left an estimated 12% of winter-sown grains in poor condition, the Russian wheat crop is seen rebounding and forecast at 55mt this season, well above the drought-depleted harvest last year, with wheat crops in neighbouring Kazakhstan also forecast higher at 16mt and Ukraine 20mt.

Elsewhere crop conditions in North Africa, Asia were reported as being generally favourable. In China, the area is similar to last year; Pakistan is expected to have a record crop; plantings in India are reported to have been lower with the crop forecast at 92.5mt.

Southern hemisphere — Australian crop forecast at 25mt

With planting a month away, Abares forecast the Australia's wheat area at 13.3m/ha (33m/acres) with a wheat crop of 25mt, after a heat wave curbed summer plantings in parts of Queensland and northern New South Wales, and farmers switched to planting winter sown crops.

Tight supplies and high prices cut demand for feed wheat

Even with a larger planted area and favourable planting conditions, global wheat output fell to 654mt in 2012, due to extreme weather conditions, in the CIS countries and in the EU. Tight supplies and higher prices dramatically cut demand for feed wheat, especially in the EU and CIS countries, the exception being the US, where due to scant corn supplies and higher prices, meat producers switched from using corn, to wheat in animal feed (forecast to rise from 4mt to 10mt), especially in areas from Oklahoma to west Texas. Overall, global wheat use is forecast to fall to 673mt (feed 133mt food 551mt), leaving reduced global stocks of 177mt.

GLOBAL WHEAT SUPPLY & DEMAND

	2009–2012/13mt				
	2008/9	2009/10	2010/11	2011/12	2012/13
Production	683	687	652	697	654
Consumption	644	654	655	698	673
Trade	144	136	137	153	140
Stock	168	201	198	197	177
China	46	54	59	56	56
Major Exporters	46	56	51	45	41

Source: USDA/FAO/IGC

Reduced imports in several wheat countries

Global grain trade is expected to fall by13mt to140mt in 2012/13, reflecting reduced purchases by several wheat importing countries, some reduction in feed wheat import demand and tighter exportable supplies. Egypt ,the largest single buyer of wheat on the global market, may import less than the 9.5mt forecast this season, due to political tensions, budget deficits and falling currency reserves. Egypt typically imports around 10–11mt of wheat and consumes 18–19mt. The Egyptian government says that while finance for wheat imports remains a priority, it expects a better domestic harvest of 4.2mt this year and have sufficient supplies for several months. Traders remain sceptical and point to a drop in wheat stocks-from seven to about three months' supply-and to a smaller number of grain ships arriving at Egyptian ports.

Indian wheat exports surge over 8mt in 2012/13

A much smaller harvest, and fear of an export ban, prompted a surge of early-season shipments from Russia, which reduced stocks, and resulted in a hike in the domestic price for wheat to $385/t. Black Sea wheat exports are forecast to fall to 23mt (Russia 10.5mt, Kazakhstan 6.5mt and Ukraine 6mt) in 2012/13. In their absence, several countries including Thailand, South Korea and the UK turned to India to secure competitively priced feed wheat boosting India's exports, forecast to rise to 8.5mt. Thai feed millers-bought 40,000/t of Indian wheat at $315/t (C&F) in February and, due to an exceptionally poor crop, the UK imported 1.34mt of wheat from several origins in the July–December period, compared with 461,000/t last year. Traders say Indian wheat was selling below the market price because of slower demand and in order to clear large stocks before the next wheat harvest. Wheat exports from other countries are forecast to increase — Canada 19mt, US 29mt — helped by recent sales to Brazil and a 50,000/t sale of US soft red winter wheat for feed to Japan. EU 19mt supported by Algerian buying activity — AgriMer revised French end-season stocks higher, due to weaker trade within the EU and poor feed demand, while noting that India's rising presence in export markets may need to be re-evaluated by the US and EU, especially in relation to Asian destinations.

Wheat's discount to corn, is giving feedlots and other end-users a reason to think about replacing corn with wheat. Ethanol group Poet confirmed that an Indiana plant was seeking soft red winter wheat to use as a feedstock, replacing some corn.

CBOT Wheat

May 2013 rebounded on reports of positive news especially wheat to increase/replace corn-before falling back on better global wheat prospects to close at $7.021/2/bu (4 March).

Dramatic rise in global corn output forecast in 2013

USDA expects US farmers to plant more soya and slightly less corn in 2013, with acreage projected at 96.5m/acres, down slightly from last year's 75-year high, implying a US crop, based on more typical weather and crop yields, of 364mt, with US corn prices expected to average $4.80/bu, considerably lower than current prices. IGC pegs US sowings higher at 98.8m/acres, up 1.6m/acres year-on-year and the biggest US corn area since 1936. The IGC said it expects corn plantings to increase further this year in response to tight stocks and high prices, although the increase would be capped by competition from other crops, notably spring wheat.

GLOBAL COARSE GRAIN SUPPLY & DEMAND

	2009-2012/13mt				
	2008/09	2009/10	2010/11	2011/12	2012/13
Production	1112	1115	1099	1153	1124
Consumption	1082	1113	1131	1155	1142
Trade	111	119	116	133	125
Stocks	197	166	164	144	146
China	52	52	50	61	61
Major Exporters	87	90	63	56	43

Source: USDA

Elsewhere, corn plantings in China, are expected to match last year's 34.8m/ha, with upside potential from higher-yielding hybrids. Plantings in the EU and Ukraine are expected to be above average at 9.4m/ha and 4.0m/ha respectively. Ukraine has also entered into a co-operation agreement with China, regarding the supply of corn — Ukraine received a US$3bn loan to boost corn production and, in return, China has a reliable supplier of corn.

Addressing an outlook conference in Europe, Steven Vogel of Alfred C Toepfer International GmbH, forecast global corn output to rise 14%, based on a recovery in corn yields, to 976mt in 2013/14, compared with the dramatic situation last year, where output fell especially in the US, Russia, Ukraine and other countries to 854mt.

Global coarse grain crop hit by drought in 2012/13

Expectations of a large global coarse grain crop keenly anticipated to ease feed prices and rebuild coarse grain stocks, were marred by a savage drought, which cut global output to 1,124mt in 2012/13, still the second largest crop on record. Record high and volatile prices, curbed demand in several countries, as consumption fell to 1,142mt coarse grain for feed use increased by 16mt (mainly due to the switch from wheat) to 671mt, food/industrial use declined by 29mt to 471mt, with global coarse grain trade lower at 125mt, and slight improvement in stocks to 146mt.

Even with the worst US drought in more than 50 years, US farmers still managed to harvest a corn crop of some 274mt; elsewhere, a bumper crop in China 208mt, better crops in Ukraine 21mt, Mexico 22mt and potentially large South American crops, are expected to boost global corn output to 854mt in 2012/13. While hot, dry weather has cut the Argentine crop by 7mt to 20mt, Brazil's crop is forecast at a record 73mt, including a second or 'safrinha' corn crop, which is planted as a follow-on crop after soyabeans. This year the safrinha crop may be reduced following delays in harvesting soyabeans in some areas, and while it is viewed as a risky crop, having much of its growing period during the dry season, the extra crop produced vastly improves corn supplies for export, being almost half the corn output in Brazil.

Record corn crop in 2013/14 to moderate prices

Global consumption of corn is expected to be lower at 867mt — less food/industrial use in addition to the 13mt cut in corn use for ethanol, reduced global corn use by 27mt to 347mt in 2012/13. Higher prices for corn and a drop in demand for US gasoline, because of a lagging economy, cut ethanol production to 13.3bn/gallons in 2012, for the first time in 16 years, forcing plant shut-downs at some ethanol facilities and sharpened debate on the future of the Renewable Fuel Standard (RFS). A record corn crop for 2013/14 should improve industry margins and ethanol output-and is expected to use 118mt of corn, up 4mt from last year, to produce 13.8bn gallons and over 35mt of high-quality livestock feed (32.7mt DDGS and 2.9mt corn gluten feed and meal).

Improving demand from ethanol and end-users support US cash market for corn

Slow farm selling and improving demand from US ethanol plants and end-users are responsible for a strong cash market for corn. Prices of ethanol RINs — paper credits assigned by producers to ethanol batches that can be used by blenders as a substitute for the real biofuel — have risen to $0.80/gallon (3 March), well above their traditional price of some $0.02/gallon, improving the benefit to ethanol producers, hit by record high corn prices and squeezed margins. The 'RIN rollover' reduces the demand for physical biofuel to meet the Renewable Fuel Standard (RFS), and also the associated demand for biofuel feedstock such as corn for ethanol. The Environmental Protection Agency (EPA) estimate the amount of RINs available to rollover in 2013, to be in a range of 2.4bn to 2.7bn RINs, implying much greater flexibility for corn use for ethanol in 2013.

USDA forecasts further growth in corn use for ethanol over the next few years, to be hindered by declining use of gasoline in the US (more efficient cars/fewer miles due to the slow economic recovery), ethanol penetration rates remain at 10% as growth in higher blends (E15 and E85) remains limited — this implies a blend wall of fewer than 13.4bn gallons. Ethanol output in excess of that amount would need to be held as stocks, as export prospects unlikely to improve due to greater competition from Brazil and restrictions on exports to the EU — where a recent decision imposed an $83.03/t tax on US ethanol exports, imported into the EU over next five years.

Livestock producers continue to be challenged by high feed prices

Despite record corn prices, feed use is forecast to increase by 16mt mainly as a result of the switch from wheat to 520mt especially in corn producing countries like China, Russia, Brazil and Argentina. With global meat prices close to record highs, livestock producers continue to be challenged by high feed prices not expected to ease until later in the year, and falling profitability, with output slowing and growth in world trade also decelerating.

Demand for animal protein particularly in China, Brazil, India and in other countries, continues to stimulate global poultry production as a competitively priced option, forecast to increase by 1% to a record 83.5mt. Higher feed costs for poultry, over the past few years have eroded profit margins, as larger producers have consolidated for cost-savings synergies and to help maintain margins. China is expected to be the most significant contributor to this growth, despite the high feed prices. The industry is facing huge challenges adjusting to the new feed cost plateau from 2007 and has moved into 2013 on a weaker footing although China is showing strong consumption growth. Global pig meat production growth is likely to be relatively constrained in 2013. China continues to dominate the global market but is expected to record only a modest increase in production in 2013 as slower economic growth dampens consumer demand. Brazil is expected to maintain steady production growth, supported by improving export markets despite a weakening domestic economy; while Russian production is also expected to grow with strong government

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GLOBAL MAJOR OILSEED PRODUCTION

2009–2012/13 mt

	2008/09	2009/10	2010/11	2011/12	2012/13
Production	397	444	456	441	467
Soyabean	212	261	264	239	270
Trade	94	107	108	110	116
Crush	339	359	378	394	395
Use: Meal	229	239	251	262	267
Use: Oil	131	139	145	150	156
Stocks	57	74	82	65	67
Soyabean	43	61	70	55	60
US	4	4	6	5	3
S.America	29	39	45	31	39

Source: USDA/Meal use includes fishmeal appx.5m/t.

support, despite continued problems with African Swine-Fever. Beef consumption remains robust, particularly in Asia and South America, with beef prices increased in most regions, reinforcing the meat's position as the most expensive mainstream protein, strong expansion by India, up by 14%, and to a lesser extent Brazil, Argentina, Australia and China. India's expansion drives exports expected to be 29% higher this year, with plentiful supplies and competitive prices.

Global corn trade is forecast lower in 2012/13

Global corn trade is forecast to fall to 98mt, due to reduced imports by a number of countries — including Egypt — imports lowered to 4.5mt, due to sluggish pace and difficulties in the livestock sector, while Mexico's large domestic crop reduced imports forecast at 8.5mt. Additionally, reports from Chinese feed mills imply potential mould problems in farmers' unsold grain in some areas in Northern China, may increase the need for imports beyond the 2.5mt forecast. Lower imports were partially offset by record 10mt imports into the EU due to a poor domestic wheat crop, and unusually, increased US imports to 2.5mt. Brazil is expected to replace the US, as the world's largest corn exporter this season, with exports forecast at 24.5mt, followed by the US 24mt, Argentina 20mt and Ukraine 13mt. Global corn stocks are expected to fall to 118mt, with US stocks at an historic low of 16mt. Average export prices for Corn (yc3) FOB $309/t (4 March); CBOT Corn May 2013 closed up at $7.10/bu (4 March).

EU and Canada barley acreage to rise with record spring barley plantings in UK

The IGC pegged the global barley area at 53.1m/ha, a rise of 700,000/ha year-on-year. Canadian farmers are expected to increase barley plantings to 3.2m/ha with output expected to rise to 9mt, with domestic barley prices averaging C$220–250/t (US$214–244). Canadian farmers' more favourable view of barley comes on the back of the USDA forecast that prices of corn will average $4.80/bu in the US market in 2013/14, down 33% year-on-year. EU acreage is also expected to increase to 12.4m/ha. Excessive wet weather in most areas in the UK, have prompted a large increase in spring barley plantings, expected to replace flood-damaged wheat fields. And, due to shortage of quality seed, only some 39% would make the malting quality grade, the remainder as feed barley, increasing the UK's potential exportable surplus to 200,000/t, well above the 15,000/t this season. With lower winter-kill rates in France and Germany, spring sown acreage is forecast down by 40%, reducing scope for malting barley output. Germany is expected to double malting barley imports to 580,000/t for the beer industry. The EU's exportable malting barley surplus is expected to be just short of 800,000/t in 2013/14.

Thin stocks support firm barley prices

Barley output fell in 2012/13 to 130mt, due to poor harvests in the CIS countries but also in Australia, Morocco and Turkey. While feed barley increased especially in Saudi Arabia, the EU, Australia among others, overall, consumption and trade were lower at 133mt and 18mt, respectively, with global barley stocks at a five-year low of 24mt, especially in major exporting countries. Export prices remain firm EU Barley (France) FOB Rouen $289/t (Mar 4), around $13/t higher than last year. Matif Futures Malting Barley May contract closed at $315.20/t (5 March).

Small increase in sorghum acreage in 2013

US sorghum acreage is forecast to increase to 6.4m/acres in 2013, due to a switch from other crops in areas recently suffering from drought and the impact of EPA approval of sorghum as an advanced biofuel. Production of sorghum increased by 5mt to 59mt in 2012/13, helped by a bumper harvest in Sudan, and better harvests in Argentina, Brazil and the US. Consumption is up by over 4mt to 60mt, especially in the

SOYABEANS MAJOR PRODUCERS

2009–2012/13mt

	2008/09	2009/10	2010/11	2011/12	2012/13
US	81	91	91	84	82
Brazil	58	69	75	67	84
Argentina	32	55	49	40	53
China	16	15	15	15	13
India	9	10	10	11	12
Paraguay	4	7	7	4	8
Others	1s2	13	17	18	18
Total	212	260	264	239	270

Source: USDA

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OILSEEDS AND MEAL SUPPLY/DEMAND 2012/13 (MT)

	Oilseeds	Meal					
Oilseeds	**Prod**	**Trade**	**Crush**	**Stocks**	**Prod**	**Trade**	**Use**
Soyabeans	270	99	232	60	183	60	182
Sunseed	36	2	34	1	15	5	15
Rapeseed	59	112	59	3	35	5	35
Copra	6	*	6	*	2	1	2
Palmkernal	14	*	14	*	7	6	7
Peanuts	37	3	17	2	7	*	6
Cottonseed	45	1	34	1	15	*	16
Total	467	116	396	67	269[1/]	80[1/]	267[1/]

*Source: USDA; *less than 200,000/t. [1/] Oil meal totals incl. fishmeal (Prod c.5mt, trade 3mt, Use 5mt)*

Sudan, Mexico and Brazil. The increase in industrial use in the US (mainly ethanol) offset by a cut in feed use of 0.6mt. Trade is forecast higher at over 6mt, with larger imports to Japan, Mexico and the Sudan-Sorghum export prices FOB-Nola $314.35/t (1 March).

Soyabean acreage in the US to increase in 2013

USDA forecasts US farmers will increase the planted acreage for soya to 77.5m/acres in 2013. Based on yields of 43.9bu/acre, implies a record soyabean crop of 92.5mt (3.40bn/bu). Tight US stocks 3.4mt (125m/bu) are projected to increase to 6.8mt (250m/bu) in 2013/14, while the average farm price is expected to decline from $14.30/bu to $10.50/bu. In the CIS countries, Russia and Ukraine may reduce the area to sunflowers. This will mostly affect Ukraine, where the area will be reduced by 7–10%, mainly due to the clamour for corn.

Record global oilseed output in 2012/13

Global oilseed output for the major oilseeds, is forecast to increase to a record 467mt, due to bumper crops forecast for South America, which will become available over the coming months. Soyabean production is forecast to rise by 31mt to 270mt, with increases for groundnut 37mt, palm kernel 14mt and Copra 6mt, with smaller crops of rapeseed 59mt, cottonseed 45mt and sunflowerseed 36mt. Global oilseed consumption is forecast to rise by 5mt to 267mt with trade also increased to 116mt.

While soyabean output in the US fell, both Brazil and Argentina are expected to produce record crops forecast at 84mt and 53mt respectively. Safras Mercado downgraded the Brazilian soy crop to 82mt, while Informa pegged Brazil's crop at 85mt (Mar 1) and maintained the estimate for Argentina at 51mt; while Lanworth and the Buenos Aires and Rosario grain exchanges, estimate the Argentine soy crop to be below 50mt.

Strong demand for soya but delays put brake on Brazil's exports

Demand for South American crops surged, after last year's drought, pushed up prices in the US. While Brazil is poised to overtake the US as the world's leading soyabean exporter this season, with its vast supplies, potential flaws in the transport

network (from field to ship), have become apparent, as it struggles to make deliveries, with shipments held up at Brazilian ports. "The talk is of the logistical backlog in Brazil," said Sal Gilbertie, chief investment officer of Teucrium Trading LLC. "Brazil has, for quite some time, needed to improve its loading facilities." With Brazil's main port of Santos, severely clogged, and waiting times at the port of Paranagua averaging 51 days in February, triple those recorded last year, according to AgResource, a Chicago-based research group.

Global soyabean trade is forecast to increase by 9mt to a record 99mt in 2012/13. While China's soyabean imports are expected to rise to 63mt this season, minimal increases are anticipated in the EU-27, Japan and South Korea. With positive crushing margins world-wide, recent sales of US soyabeans to China in February and a sale of 775,000/t soyabeans (5 March), out of dwindling US supplies, underlines the idea that Brazilian logistical problems are driving trade to the US — which may itself be forced into imports before supplies from the 2013 harvest come on stream. "Demand is improving for shrinking US supplies," Don Roose, the president of US Commodities Inc. said with exporters and crushers competing for last year's drought-reduced supplies. Average export prices for Soyabeans No 2 FOB Gulf $567/t (Mar 6) some $55 more than last year. Current high price levels, suggests further weakness in soyabean contracts likely. CBOT Soyabeans-March closed at $15.03 ½/bu, with May soyabeans ending up $14.73½/bu (7 March).

Larger crops of soyabean, groundnut, palm kernel and copra expected to boost crushings by 2mt to 396mt; soyabean crush margins throughout the world are very positive, and soya crush is expected to rise by 5mt to 232mt, matched by a 5mt increase in global oilmeal consumption forecast to rise to 267mt, by the end of 2012/13. China's oilseed crushings are forecast to rise by 4mt to 100mt to meet rising food and feed demand for poultry and pigs.

SOYABEANS & SOYABEAN MEAL

Major importers 2009–2011/12mt

Importers	10/11	11/12	11/12	09/10	10/11	11/12
	Oilseeds			Meal		
EU	13	12	11	23	22	21
Asia	65	70	75	15	16	16
China	52	59	63	-	-	-
L. America	1	1	1	4	4	5
N. America	4	4	4	3	3	3
Mexico	4	3	3	2	2	2
Mid East/Africa	5	4	4	6	6	7
Others	1	2	2	6	7	6
Total	89	93	97	57	58	58

Source: USDA

China's crush capacity provides opportunity for soyameal exports

China's rising consumption of oil meals up to 71mt and vegetable oils 22mt, is driven by food demand and growth in rapidly maturing animal husbandry and expansion in crush capacity. Private sources estimate China's current soyabean crushing capacity to be 139mt per year. State controlled companies COFCO, Sinograin and Chinatex have contributed to the rapid expansion. The industry has grown despite severe problems of overcapacity with utilization rates estimated to have ranged 60% and lower. Rabobanks see the spare crushing capacity as a way for China to export more soy meal to nearby markets in Southeast Asia.

So far, despite having excess processing capacity and advantages to nearby markets, China has not been a dominant meal exporter, constrained by strong domestic demand and higher internal prices, limiting exporters' ability to compete with Indian meal. India is a competitive supplier to the same Asian markets. However, rising domestic use in India could potentially exceed production growth and erode exportable supplies. This would present an opportunity for exports by China. Southeast Asia accounts for about 20 percent of world soyabean meal trade, while over 70% of the region's imports come from Latin America. DCi

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International Paint launches revolutionary fouling control technologies

Introducing Intercept®8000 LPP, a new patented biocidal antifouling set to revolutionize predictability in hull coating performance and Intersleek®1100SR the industry's first patented biocide-free slime-release technology.

In February, International Paint, part of AkzoNobel, the world's largest global paints and coatings company, announced at a press conference in London, a sea-change in hull performance with the launch of two new coatings solutions.

Designed to address the industry issues of predictability in antifouling performance not seen since the days of tributyltin and the difficult issue of slime fouling on ships hulls, the two new technologies are set to improve vessel operating performance, increase efficiency and help control fuel costs and emissions.

- Intercept®8000 LPP, is a brand new biocidal linear polishing polymer antifouling featuring patented 'LUBYON®' technology that delivers predictable long term performance for in-service periods up to 90 months; and
- Intersleek®1100SR, is the industry's first biocide-free fouling control coating featuring unique patented slime release technology that combats micro fouling on ships hulls, maintaining performance throughout the docking cycle.

Based on advanced patented LUBYON® polymer technology, Intercept®8000 LPP, provides customers with consistent and predictable linear polishing. This will enable ship owners and operators to plan and budget effectively throughout the dry-dock cycle of the vessel.

The unique LUBYON® polymer technology gives the coating a 'superhydrophilic' surface. When the coating is immersed, the seawater has a lubricating effect, resulting in less friction. This reduces drag and increases vessel efficiency giving average fuel consumption and associated emissions savings of 5% annually compared with typical controlled depletion polymer antifoulings. The coating surface also swells on contact with seawater, helping to smooth out imperfections and potentially further reducing drag.

LUBYON® technology reacts with seawater via a constant surface active zone releasing only the optimum amount of biocide over the scheme life to control fouling settlement. Critically, this biocide release rate is largely unaffected by seawater temperature meaning Intercept®8000 LPP has total trading flexibility and can operate across global routes and through all seasons.

Unlike typical silyl and metal acrylate antifoulings Intercept®8000 LPP replicates the linear polishing of the shipping industry benchmark tributyltin based coatings meaning total predictability with the polishing rate remaining constant throughout the in service period.

Designed for the deep sea market at newbuilding and maintenance and repair, the coating has been extensively monitored with in service performance validated on multiple vessel types including containers, tankers, bulk carriers and LNGs representing over 4 million dwt.

Also available is an economical version of Intercept®8000 LPP, Intercept®7000. Derived from patented LUBYON® polymer technology, Intercept®7000 features all of the attributes of a typical mid range biocidal antifouling product with the added benefit of linear polishing.

International Paint has also launched Intersleek®1100SR, the shipping industry's first biocide-free, fluoropolymer technology that tackles the market's age-old 'slime challenge'. Slime, a complex, varied and dynamic organism which begins to colonize

surfaces as soon as they enter the water, has been proven to have an adverse effect on the efficiency of all vessel types. According to a recent formula produced by Michael P. Schultz, Professor, Department of Naval Architecture & Ocean Engineering, US Naval Academy, at today's bunker prices, the effects of slime potentially costs the shipping industry 44 million extra tonnes of bunker fuel, $28.6 billion in additional fuel costs and an extra 134 million tonnes of CO_2 emissions every year.

Designed for all commercial vessels, even when slow or ultra slow steaming, new Intersleek®1100SR slime-release technology delivers outstanding macro and micro fouling control with good static resistance even in warm waters. Slime that can build up during static periods is released by the movement of the vessel through water. This has been achieved by the new patented fluoropolymer in Intersleek®1100SR which has been developed by enhancing the slime resistant polymer groups used in earlier generations of Intersleek® technology creating new surface chemistry that specifically resists the adhesion of slime.

The technology is the culmination of comprehensive research to understand slime growth. The development of the new polymer included a three year fundamental research programme involving a multi-discipline team of marine biologists, hydrodynamicists and polymer scientists. The team was supported by world renowned independent academic institutes, four years of laboratory testing and in service, full vessel performance data, from some of the world's leading ship owners and operators.

Intersleek®1100SR's slime release technology delivers International Paint's best fuel-saving performance throughout the entire docking cycle of a vessel.

Paul Robbins, Marine Marketing Director at International Paint said: "Amid record high bunker fuel prices and lack of liquidity within the shipping industry, the economic importance of underwater hull condition cannot be understated. The launch of Intercept®8000 LPP and Intersleek®1100SR, demonstrates our commitment to providing customers with real choice and the broadest range of fouling control solutions that meet the specific needs of their vessels, fleets and operational preferences.

"It also highlights International Paint's mission to introduce new, often revolutionary innovations and market leading technologies that drive operational, cost and environmental efficiencies for our customers. Research, development and innovation underpin everything we do to provide the market with technology choice while also supporting our commitment to sustainability."

Damen introduces new Anchor Handler design

New deepwater AHTS offers over 200 t Bollard Pull and an extended winch package

Damen Shipyards Group introduces its newly designed Damen AHTS 200, a versatile deepwater Anchor Handling Tug Supplier able to operate in water depths in excess of 3,000m. The AHTS 200 is the latest addition to the ongoing Damen Offshore Series.

Following the company's ambitions to increase its market share in the offshore industry, Damen heavily invests in designing state of the art vessels for several offshore sub-markets, noticeably the Offshore Support, Offshore Wind, (Seismic) Research and Transport & Installation industries. Backed by ample R&D and engineering capacity, its own construction yards, specialized partner yards and a rapid expanding service organization, Damen feels confident that the chosen approach will be successful.

Research

The typical Damen design philosophy, featuring values like safety, functionality, standardization, modularization, ease of maintenance and overall quality, can also be found in the Damen AHTS 200. An extensive research analysis was executed on hull optimization, sea keeping qualities, noise and vibration reduction, fuel oil consumption reduction, changing rules and regulations and client-needs and lessons-learned from other Damen designs.

Innovative winch package

The Damen AHTS 200 includes a new and innovative winch arrangement which is quite decisive for the overall dimensions and layout of the vessel. For the development of this extensive winch package Damen teamed-up with Huisman Equipment (The Netherlands), which specializes in heavy lift and deepwater cranes, winches and drilling equipment. The electrically driven winches resulting from this cooperation may be considered an innovative approach, as the market is traditionally dominated by low-pressure hydraulics. The electrical-drive winches provide a clean, green, economical, functional and safe solution for the anticipated operations.

Propulsion

The vessel is suited to generate 200-250 t Bollard Pull and is fitted with engines in a father-son layout, featuring twin-in single-out gearboxes driving CP propellers in a nozzle. High performance flap-type rudders fitted to rotary vane steering gears facilitate a high degree of manoeuvrability supported by ample side thrust capacity, including tunnel thrusters as well as retractable thrusters in fore and aft ship.

Outfitting options

Forward of the winches ample space has been reserved for the fitting of a high-end ROV system with the possibility of launching through a side door. The high beam AHTS could serve as a suitable platform for mounting a subsea construction crane. The design can easily be upgraded with dedicated anti-heeling systems, moon pools and sophisticated diving systems.

Accommodation

The comfortable accommodation can host up to 45 persons in single and double cabins fitted according to the Damen Business or Executive Line comprising modern and durable materials. Special attention is paid to sufficient natural lighting through maximum-sized windows. State-of-the-art infotainment systems support the functionality and comfort of the vessel.

Although driven by its standardization philosophy Damen offers ample opportunities to include owner's standards and component choices for maximal support of their operations. The vessel is designed following an extensive DNV-class notation, although other class societies may be considered as well.

Damen Shipyards Group

Damen Shipyards Group (est. 1927) operates more than 45 shipyards, repair yards and related companies worldwide. Damen employs over 6,000 people in 34 countries, has delivered over 5,000 vessels since 1969 and delivers up to 150 vessels annually. Based on its unique, standardized ship-design concept and short delivery times, Damen is able to guarantee consistent quality.

Damen's focus on standardization and modular construction leads to short delivery times (Damen keeps vessels in stock), low 'total cost of ownership', high resale value, proven technology and reliable performance. Damen offers a wide range of products, including: tugs, workboats, patrol vessels, high speed craft, cargo vessels, dredgers, offshore support vessels, oil-spill response vessels and even frigates and super yachts. For nearly all vessel types Damen offers a broad range of Services, such as Lifecycle Maintenance Services, Customer Finance, Training and transfer of (shipbuilding) knowledge.

In addition to shipbuilding, Damen Shiprepair & Conversion offers a network of 12 ship repair & conversion yards worldwide, most of which are conveniently located along the North Sea coast from Brest (France) to Gothenburg (Sweden).

Most port operations continuing in Port Said, Ismailia and Suez

Maritime services provider Inchcape Shipping Services (ISS) is advising that most port operations are currently continuing in Port Said, Ismailia and Suez, and canal convoys have not been interrupted despite ongoing disturbances in Egypt and a state of emergency being declared in the three Suez canal cities. The Egyptian Army has also been deployed to ensure all vessels can safely navigate the canal and has taken control of the Suez Canal building.

ISS Egypt has however suspended all husbandry services at all Egyptian ports including crew changes and transfers, Cash to Master and shipments delivery as road transportation is currently deemed unsafe by the company due to the anti-government action nationwide. ISS Egypt also recommends for the safety of all personnel that any embarking/disembarking is postponed until the situation settles.

ISS Egypt will continue to monitor developments on behalf of ship owners and operators.

Shipowners commit to UK Club in tough market

The UK P&I Club (the UK Club) has announced that it has attracted over three million gross tonnes of new tonnage, following the closure of the renewal season on 20 February. At conclusion of renewal, the Club's tonnage stands at around 120 million gross tonnes. This represents net growth over the past year of 7.6 million tonnes. As importantly, the Club maintained its policy on sound underwriting declining an equivalent volume of tonnage during the renewal on factors such as quality of risk.

Hugo Wynn-Williams, chief executive of Thomas Miller P&I, the UK P&I Club's managers, says: "It has been a good and solid renewal for the UK Club marked by continued controlled growth for the second year in succession.

"Gross tonnage has increased and we are pleased that our financial stability, claims management and service have attracted more tonnage from existing Members and new business to the Club.

"As ship-owners face extremely challenging conditions, the Club's strong capital position enabled a 2.5% mutual premium discount on the 2011 policy year. The discount amounted to a 10% deduction for all mutual members for the final instalment of the 2011 call due in December last year.

"The continuing commitment of the membership and the support of the insurance broking community is greatly appreciated by the UK Club and its Board especially considering the significant increase in the cost of the International Group reinsurance premium which accompanied the general increase for 2013."

High-performance antifouling from SIGMA ECOFLEET® 690

The newest addition to the SIGMA ECOFLEET range provides predictable antifouling protection at variable operating speeds in aggressive fouling environments for short sea and coastal shipping.

PPG Protective and Marine Coatings (PPG) has launched SIGMA ECOFLEET 690, designed to deliver self-polishing antifouling for extreme and aggressive fouling conditions.

Developed specifically for the dry dock, maintenance and repair market, SIGMA ECOFLEET 690 has been formulated using PPG's unique patented binder technology ensuring consistent performance levels and fouling control for in-service periods of up to 60 months.

Fully compliant with the IMO AFS Convention, the product is suitable for a wide range of vessel types and contains an ultra-high volume solids content of 70% - thus reducing potential VOC emissions. SIGMA ECOFLEET 690 has been formulated to be easy to apply, increasing productivity and reducing overall maintenance costs.

Sijmen Visser, Global Marketing Manager M&R, PPG Protective and Marine Coatings, said: "Aggressive hull fouling is a problem for shipowners operating in coastal and short-sea trades where vessels can be inactive more than 50% of the time. SIGMA ECOFLEET 690 has been designed specifically to deliver high-quality, self-polishing antifouling for vessels with low activity and/or those operating in waters where fouling is known to be a particular problem."

PPG's SIGMA ECOFLEET range offers reliable antifouling performance backed up by an extensive track record in fouling protection. The products are designed to provide easy application properties and are in use in dry docks and new-building yards around the world.

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Safety at sea

are we doing all that we can?

Nickel ore in hold.

Yet more bulk carrier deaths at sea linked to nickel ore carriage, writes Mike King.

More seafarers dead on bulk carriers. Another round of condolences. No action. That was again the response by the shipping industry to the news that the Panama-registered, 1983-built Handymax *Harita Bauxite* sank on 17 February after loading nickel ore in Obo, Indonesia. The vessel was en route to Ningbo, China. Ten sailors understood to be from Myanmar were rescued one of whom subsequently died. Fourteen were unaccounted for and are now assumed to have drowned in heavy seas.

If this sounds like a tragic remake of Groundhog Day then that is not surprising, because bulk shipping has been here before. The trade of nickel ore from Indonesia to China accounts for a tiny proportion of dry bulk trade each year, but over the last three years it has been almost singularly responsible for putting into reverse two decades of successful efforts to reduce deaths at sea on bulkers.

Eighty-one seafarers — including the *Harita Bauxite* 15 — have now lost their lives on the Indonesia–China nickel ore trade since late 2010. This is almost four times the total number of seafarers killed globally by pirates over the same period. The list of casualties that have resulted in fatalities makes painful reading:

- **December 2011.** The Vietnam-flagged *Vinalines Queen* 2005-built Supramax bulk carrier carrying 54,400 tonnes of nickel ore from Morowali port in Sulawesi to Ningde port in China developed a list northeast of Luzon Island in the Philippines. Only one of the 23 seafarers onboard escaped with his life.
- **3 December 2010.** The *Hong Wei* sank. Ten of the crew perished.
- **27 October 2010.** The *Jian Fu Star* sank with the loss of 13 lives.
- **10 November 2010.** The Nasco Diamond suffered 21 fatalities on 10 November.

All of the casualties have occurred during Indonesia's wet season which runs from approximately October to March. The cause of the *Harita Bauxite* loss was still being investigated as *DCI* went to press, but the previous four losses on the trade were linked to liquefaction of the cargo.

Although industry bodies have issued a number of notes offering guidance on the safe loading and shipment of nickel ore, the message does not seem to be getting through to Indonesia's

Bureau Veritas works to improve safety

Bureau Veritas is pioneering new ways of improving bulk carrier safety both during the vessel design stage and throughout operation.

Konstantinos Chatzitolios, Product Manager Dry Cargo & Container Ships, said bulk carriers were exposed to a very demanding service life while at sea and in port and required end-to-end provision of safety services.

"BV carries out both pre-active and active safety services," he explained, adding that BV currently provides safety services for almost 1,000 bulk carriers currently operating worldwide under its class.

Pre-active services encompass verification of the ship's structural integrity and the reliability of machinery systems during design, construction and operation. They certify that the vessels are built according to the highest safety standards and will maintain seaworthiness over their designed operational life. "During the design of the ship, all of its structural elements are examined for their capacity to withstand the local loads of the sea and the cargo carried, as well as the global loads which result from the overall bending of the ship while at sea," said Chatzitolios. "Today, this examination is performed with state-of-the-art 3D finite element analysis software which looks at the real (worst possible) loads that the vessel will encounter during its operation."

He said sea loads were derived from an analytical hydrodynamic analysis which, for bulk carriers in particular, always factors in severe North Atlantic sea states. "With this holistic analysis we are able to examine the scantlings of the ship and ensure that they are acceptable from a yielding, buckling and fatigue point of view, while maintaining a reliable safety margin," he added.

In recent years, following the increase in length of ships, for example VLOCs, a physical phenomenon called hydro-elasticity has been identified and is deemed responsible for structural failures of large vessels, he told *DCI*. Hydro-elasticity is the elastic response of the ship at sea, which may amplify the global loads compared to a smaller and more rigid ship.

"After an extensive research programme, Bureau Veritas has launched a new programme for examining ultra-large ships which takes into account hydro-elastic elements," he said. "A 200,000dwt bulk carrier designed by CSBC has already been examined in accordance with this new programme, paving the way for the new generation of very large bulk carriers."

Another important aspect in the design of bulk carriers is their ability to undergo loading/unloading operations safely while in ports where cargo grabs, bulldozers and hydraulic hammers can cause physical damage to plating, frames and brackets.

"In loading ports, where the cargo delivery rate is high, the inability to pump out ballast water at a sufficient rate may result in the hull being overstressed," added Chatzitolios. "Specialized studies are therefore performed to address these issues and to ensure that the vessel remains undamaged in these difficult conditions.

"BV surveyors closely follow every aspect of the ship construction process in order to verify that each ship is built according to its approved drawings — examined at the design stage — and to the highest industry standards."

After the ship is launched, BV surveyors then ensure each ship is maintained according to BV rules. "This is achieved through surveys carried out at specific time intervals, each survey having its own area of examination, for example, machinery surveys, cargo hold examinations, bottom structure etc.," he said.

"In the case of bulk carriers, due to their accident-related history, an enhanced survey programme is also carried out whereby shipowners are required to follow specific guidelines relating to the maintenance of ship safety while at sea and in port."

All safety-enhancing regulations, together with surveys and specific items to be examined, were derived from careful risk analysis studies and from operational feedback. "Nonetheless, real life sometimes demonstrates that not all risk scenarios can be anticipated, and consequently accidents still occur," he said. "For this reason, the active services of BV are designed to provide support in the event of an accident.

"When the correct initiatives are taken immediately after an accident, the survivability of the ship — and, most importantly, of the crew on board — increases dramatically, minimizing also the risks of damage to the environment.

"BV's emergency response service provides immediate support in case of accidents, and specialized reviews are carried out to assess the residual strength and stability of the vessel. In addition, expert surveyors board the ship in order to assess the damage and its possible effects."

maritime controllers, specifically the Ministry of Transport, or to miners and shipowners and managers loading the cargo.

Indeed, many of shipping's leading organizations, including those representing seafarers, have proven consistently reticent about criticizing Indonesia over deaths on its nickel ore export trade, a backwater trade dominated by suspect owners and managers using old ships manned by low paid seafarers. If a similar number of deaths had occurred on ships working the North Sea and manned by Europeans, one imagines the response may be different.

Indonesia is now the world's largest supplier of nickel ore and China is the largest buyer. Even so, in 2011 the country supplied just 3mt (million tonnes) to China, which in terms of the billion plus tonnes of bulk cargo shipped each year, is a rather marginal line of business.

Indonesia's nickel mines are predominantly located on the islands of Sulawesi, Halmahera and Papua. None of these islands offers much in the way of cargo testing facilities to measure moisture content — a major problem when it comes to nickel ore.

As previously outlined in *DCI*, mineral cargoes made up of fine particles shipped in bulk can liquefy if they contain too much moisture. This problem usually occurs when the cargo is mined and stored in conditions which enable the absorption of large amounts of water.

"Nickel ore shipped from Indonesia and the Philippines

typically contains substantial moisture content," said a report from INSG Insight. "The ore is often mined and stored in quite simple facilities that provide no protection from the environment. The ore is a mixture of fine clay-like particles and larger rock-like particles.

"Especially in the monsoon season, the humidity of the shipment may increase and there is a danger that the ore in the cargo hold of a ship may turn to liquid."

As INSG points outs, in some tests nickel ore has turned to liquid with moisture content in the range of just 35%. Cargo liquefaction can occur quite rapidly and may be started by vibration. "Bulk carriers are not designed to carry cargo in such a state," said the report. "A liquid cargo destabilizes the vessel, causing listing and ultimately capsizing and sinking."

Overall volumes exported from Indonesia fell last year following a ban in the first quarter of 2012 by the Indonesian government. Regulation No 7/2012 was entitled 'Improving Value Added Mineral Processing and Purification through Mineral Activities' and it imposed limitations on the export of unprocessed copper, gold, silver, nickel, tin, bauxite and zinc. The intention behind the new regulations was to encourage the processing and smelting of ores within Indonesia, but legal challenges by miners saw the Supreme Court of Indonesia rule the legislation illegal in November last year.

After nickel exports had been curtailed for much of the year, the pressure was ramped up to boost exports as fast as possible just at the onset of the worst part of the wet season. As *DCI* went to press, it was not entirely clear if the Harita Bauxite sank because of nickel ore liquefaction, but the four other casualties on the trade listed above were all found to have been caused by nickel liquefaction.

One of the main issues in Indonesia is the difficulty of enforcing the use of safe loading practices at ports in remote mining areas where infrastructure is often limited. "There is little infrastructure which, combined with the remoteness of some of the ports, means it is difficult to ensure reliable sampling and testing of the cargo," said one source with a risk assessment background.

"A single lab exists in Indonesia and I understand that the equipment is not as sophisticated as that used in labs in, for example, Singapore. I believe there is also an issue with capacity.

Unloading nickel ore.

"We have also heard of surveyors being assaulted or arrested by the police and there seems to be little support from the Authorities."

Peter Lundahl Rasmussen, Senior Marine Technical Officer at BIMCO, said that cargo surveyors in Indonesia suffered threats and intimidation when trying to survey nickel ore cargoes.

"It has been reported that actions ranging from being barred from gaining access to the nickel ore cargoes to physical violence, threats, harassment, and being placed under 'house arrest' by the police on the pretext of some visa irregularity have been exercised on cargo surveyors. Such conduct is, of course, not acceptable for any of the stakeholders."

Rob Lomas, Secretary General of Intercargo, which represents shipowners but also includes nickel ore miners with an Indonesian presence in its membership such as Vale, said of

Number of substandard vessels is falling, says RightShip

Despite downward pressure on vessel management maintenance budgets, high levels of scrapping and increased scrutiny from Port State Control Regimes, the number of substandard ships operating in the bulk carrier sector is falling, according to Warwick Norman, the Australia-based CEO of RightShip.

"The world is more transparent now and there are fewer places where these ships can hide," he said. However, Norman warned there were still substandard ships traversing the world and often serving trades where port practices are also poor, which he suggested was one reason why vessels were still loading cargoes such as nickel ore fines without completing the requisite moisture checks.

"Owners are putting vessels in there mainly because other guys are staying away," he added.

Since starting operation just over a decade ago, RightShip has vetted over 200,000 vessels and undertaken more than 14,500 physical vessel inspections, with some 75% of its business involving analyzing bulk carriers. In 2012, RightShip processed 33,504 decisions across 2.66 billion tonnes of commodity and removed 1,158 vessels from customer supply chains.

Norman said RightShip's work had enabled customers to identify in advance the 25% of the global fleet that are the substandard operators who account for approximately 70% of total casualties. He said while there were no particular patterns to identifying substandard bulkers, certain Flags and non-IACS class societies have poor performance curves. "They'll argue they are targeted more," he added.

"Older tonnage also fits into that window, but it comes back to how responsible the owner is. Some class societies, IACS members, don't take vessels over certain ages, so owners operating them may need to find a non-IACS society."

Nickel mine.

the *Harita Bauxite* loss that "at this early stage, we cannot speculate about the cause of this sad incident."

But, he continued, "The sudden loss of another bulk carrier in this region underlines the importance for the relevant authorities to quickly conduct their accident investigations so that the dry bulk sector can learn and apply any safety-related lessons from this tragedy, and help in future prevent this unnecessary loss of life."

Intercargo was happy to take its share of the credit for improving ship safety during the years of declining deaths on bulk carriers. However, its actions on the nickel ore issue in Indonesia since 2010 have hardly smacked of an organization ready and willing to grasp the safety nettle and tackle the miners and politicians largely to blame for these consistent tragedies.

"According to Equasis, the manager of the [*Harita Bauxite*] is listed as Ocean Sentinels Shipmanagement in Singapore, and I confirm that neither they nor the ship are in Intercargo membership," said Intercargo manager David Jones. "We've no confirmation of who the shipper was at this stage.

"If there are any safety-related lessons to be learned, all stakeholders should take note."

After so many incidents on a single trade in just three years, it is no wonder many outside the bulk industry ask how long and how many lives it will take before the industry learns its lesson.

BIMCO has now issued a 'Solid Bulk Cargoes that can Liquefy Clause for Charter Parties' aiming at assisting its owner members. "BIMCO owners considering fixing nickel ore cargoes are strongly advised to contact their own P&I club for advice and guidance," said a spokesman.

Intercargo and various P&I Clubs have also issued a range of guides explaining how to safely load nickel ore and test moisture levels. However, as far as *DCI* can ascertain, most of these guides are aimed at captains of ships able to read English. If they even reach miners and port operators on Indonesia's more remote islands, the chances of them being understood and followed correctly are rather slim.

Maritime regulators are now attempting to tighten the International Maritime Solid Bulk Cargoes Code (IMSBC) governing the handling of cargoes such as nickel ore and iron ore fines that can suffer liquefaction. Yet progress is proving painfully slow. The alterations to the Code will not be adapted before the Maritime Safety Committee's 92nd session in June and will not then enter force until the start of January 2015. "The inclusion of several changes to the Code requested or supported by Intercargo are included, and revisions concerning the control of moisture content for 'Group A' cargoes are particularly welcomed," said Intercargo.

Member states to IMO have been urged to act ahead of the Code amendments. However, many analysts argue that stronger regulations will not help in places where existing regulations are not adhered to and infrastructure and enforcement are lacking.

Steve Cameron, Marine Director at maritime risk, safety and forensic investigator RTI, said ship operators should take control of the loading situation rather than trust land-side assessments in high risk areas. "Where there is insufficient infrastructure they should consider either not carrying the cargo, or if it's really worth the risk, then invest in inspectors to inspect the supply chain and equipment to carry out their own Flow Moisture Point (FMP) and Transportable Moisture Limit (TMP) tests rather than risk the safety of ship, cargo and crew."

While shipping industry organizations have been hesitant about pressing Indonesian ministers, Cameron thinks another route to improvements might be available. He said the threat of court actions for corporate manslaughter against mining companies might more quickly ensure improved safety than new regulations that are easily ignored in remote locations and could cause conflict at ports. "The cargo may already be unsafe and its poor condition on arrival at port is likely to trigger either a dispute, or worse, another fatal accident," he said.

"There needs to be greater pressure for the mining companies to take responsibility for their supply chain from mine to vessel hold. We recommend that the supply chains are audited to establish they are managed safely."

TTS Marine's winch bollards contribute to overall safety

TTS Marine AS, part of the TTS Group, provides a full portfolio of services for the marine market. TTS Marine AS designs and supplies rescue boat and fender davits, winch bollards, and service platforms.

The company is DNV-certified in accordance with ISO 9001: 2008. It is focused chiefly on marine servicing, with a wide scope of activities such as the provision of original spare parts — supporting thousands of delivered cranes and many hundred delivered davits — as well as offering inspections, service, conversions and training for a wide range of products.

It is clearly essential that all winch davits, which are used to lower lifeboats into the sea in case of an emergency, are in full working order. Keeping the systems operational on a yearly basis is part of a good and sound safety measure. TTS Marine offers both davits installation and annual surveys and maintenance.

The company's experienced personnel are trained and authorized for servicing in accordance with the latest requirements of SOLAS, IMO, and ILO regulations.

As a major supplier, TTS Marine AS is very interested in the safety of all personnel operating its equipment. The care that it takes is evidenced in the design and manufacture of its winch bollards.

Winch bollards

TTS Marine AS has developed and patented a revolutionary mooring system that replaces mooring winches, capstans and wrapping drums as well as the standard bollards conventionally used for mooring. Direct mooring without the use of stoppers, and secures optimal and safe control during mooring.

The mooring system makes a saving on deck space and, more significantly, mooring operations are made easier and safer than with the standard methods currently available. The system is available in hydraulic and electric versions.

Basic features:

- one-man operated;
- direct mooring without the use of stoppers;
- optimal and safe control during mooring;
- controlled by foot pedal;
- integrated emergency stop and flexible cable connection;
- stepless speed control with high light line speed;
- failsafe brakes, adjusted to approximately 60% of the mbl of the rope;
- automatic reduction of line speed when load is increased;
- low noise during operation;
- self-lubricating bearings for low maintenance; and
- compact, clean and water-resistant design.

Standard equipment

- complete winch bollard with necessary equipment to ensure safe operation;
- frequency converter with control unit (electrical version);
- prepared for connection to the vessel's ring line system or HPU (hydraulic version);
- foundation prepared for welding to the vessel's main deck structure;
- entire steel structure made of certified steel and sandblasted to Sa 2.5 prior to painting;
- exterior paintwork: top quality, two-component epoxy/acrylic paint of highest marine standard — colour according to owner's choice;
- full set of operating manuals and spare parts list; and
- optional pipe hatch; rope; storage drums; HPU; radio control etc, on request.

Liquefaction – a clear and present danger for bulk vessel operators

Geoff Taylor, managing director of PSM, looks at the potential hazards posed by liquefaction for bulk carriers and considers how modern technology can help not only to ensure regulatory compliance but also deliver operational benefits.

This year sees the 100th anniversary of the loss of the *Titanic*, an event which changed maritime history forever. Beyond the staggering loss of human lives and implications for ship design, the disaster pointed out sharply the necessity for proper safety procedures and their potential to avert a crisis. Out of this recognition was born the Safety of Life at Sea (SOLAS) Treaty.

Almost 100 years on, the treaty remains largely unchanged in respect of regulations governing passenger ships. In 1974 however, a major amendment was implemented introducing new regulations aimed at providing added protection for Bulk Carrier ships constructed to carry dry cargo — for example, metal and mineral ore — against the risk of liquefaction.

The new legislation was developed in response to the many lost ships and fatalities found to be attributable to cargo. While the number of losses has since declined, liquefaction continues to be an issue, with seven bulk carriers lost in 2010 alone and the Supramax bulk carrier *Vinalines Queen* reported missing as recently as December 2011.

Liquefaction refers to the process by which saturated, unconsolidated metal ores are transformed into a substance that acts like a liquid. Left undetected, the presence of liquid may lead to disastrous consequences. SOLAS X11 Regulation 12 required all bulk carriers to be fitted with water ingress and detection (WIAS) systems to provide advance warning of water layer formation in the bottom of cargo holds, a state widely acknowledged as being an early stage of liquefaction.

Subsequently in 1999, the regulations were extended (SOLAS Chapter 11-1) to include single hold cargo ships and void spaces to ensure the protection of smaller cargo vessels. In addition to the requirement to install WIAS systems in new ships, vessels currently in service are required to undergo periodic port inspections to ensure their WIAS systems are functioning adequately.

Tip of the iceberg

There are estimated to be as many as 500 bulk carriers in service today, with new vessels coming on stream all the time. The earliest detection systems developed to meet the new WIAS requirements were poorly conceived, due to a lack of knowledge at that time about the severe service demands likely to be placed upon them in use. This has led to an emerging problem with performance issues and even system failures. Many vessel owners now also face legacy issues relating to service and spares, with some manufacturers since having left the market altogether.

The requirement for a more robust and reliable system has been the key driver for PSM in developing its BulkSafe water ingress detection and alarm system. Representing the vanguard of WIAS technology, BulkSafe has been proven to detect the presence of water in bulk carriers and has been designed to ensure full compliance with the latest SOLAS regulations.

This new technology has found wide acceptance amongst shipyards and designers as a low-cost solution which is easy to install. As a retrofit solution, there are also considerable financial advantages. With many bulkers approaching the age where major refit and overhaul becomes a consideration, the latest systems offer an easy way to update obsolete or malfunctioning WIAS systems, often at a lower cost than repairing the existing configuration.

How does the technology work?

The latest systems offer maximum flexibility and ease of fitting for both new and retrofit applications, with a full range of mechanical and electrical installation options facilitating integration with other systems and allowing existing components e.g. clamps and conduits to be re-used. With no moving parts that will wear or foul with damp cargo, today's solutions offer proven reliability in use with fewer maintenance requirements.

Unlike systems based on mechanical switches and floats, PSM's modern water ingress detection and alarm systems use self-checking, active sensors to monitor cargo holds, triggering an alarm if water is detected. PSM's BulkSafe System additionally features a 'check from deck' facility which allows mandatory Inspections to be completed with the cargo holds full or empty. Reducing the time spent in port clearance procedures can help improve fleet efficiency while maximizing available cargo capacity. A high safety integrity level is assured through the use of hydrostatic level transmitters with a 'live zero' function. Both features are designed to enable comprehensive testing of the ship's systems by the ship's cargo master prior to loading to ensure everything is in order.

Another important requisite for today's ship operators is a means to establish a safety audit trail, both to protect staff in the event of an incident and to provide documented evidence in the event of an incident. PSM's BulkSafe application provides a solution in the form of an RS485 serial communications output which connects to the ship's voyage data recorder to provide a permanent and secure record that can be analysed offline.

Wet nickel ore presents a liquefaction risk that can be detected by WIA systems.

What does the future hold?

At the present time WIAS regulations do not require systems to provide any remote alerting facility. However, PSM believes that by providing faster transmission of critical alarms potentially dangerous incidents can be more easily avoided, meeting the true objectives that lie behind the SOLAS WIAS regulations. The latest BulkSafe systems use Polestar and Skywave IDP technology to provide near-instantaneous alerts.

Integration of BulkSafe with PSM's ClearView system provides further functionality. With the ClearView system, a real-time message is delivered to the operator's desk or via a text message should a critical alarm or pre-warning be activated on board the vessel. Additionally, operators benefit from secure storage of operating activity records and can perform on-board system condition health checks. This allows the ship's staff to ensure the vessel's readiness for WIAS port inspections ahead of arrival and to monitor safety systems at all times.

Manufacturers continue to make further advances — PSM for example seeks to cut installation costs further by the introduction of the latest MODBUS sensors which reduce pipework and cabling requirements. The move to digital technology provides improved reliability and self-checking, further enhancing safety in transit.

Affordable and practical

Whilst the primary function of BulkSafe and similar systems is safety, the benefits of adopting the latest technology are clear. Installing modern systems of this type offers rapid payback in terms of cost savings and operational efficiency through the entire vessel. Advances in technology combined with the specialist instrumentation experience of suppliers like PSM has brought such systems within reach of ship owners and operators, making them a practical alternative to repair. With the help of digital technology, the cargo industry can at last look forward to a safer future.

About PSM

Established for over 30 years, PSM Instrumentation is a specialist in the design, manufacture and supply of advanced marine control instrumentation and marine protection systems for the marine transportation industry. PSM offers a range of application solutions for designers, ship builders and end-users, to ensure vessels operate efficiently and reliably and are compliant with legal, safety and environmental regulations. Main application solutions include:

- ClearView: award-winning oily water discharge monitoring systems with satellite data transfer providing MARPOL compliance and preventing accidental pollution
- TankView: level measurement and supervision systems for ballast, cargo, service and bunker fuel oil tanks
- BulkSafe: water ingress and alarm systems to protect bulk carriers in accordance with SOLAS regulations

PSM products carry all required type approvals from the main leading marine societies, in addition to many country specific approval standards. PSM are approved to BS EN ISO 9001:2000.

E.M.W. considers safety as a top priority

For 35 years, E.M.W. (Electrical Marine Works) in Greece has been involved in ships' electrical works such as new constructions, repairs, modifications, electrical boards, automations, rewinding generators and electrical motors, not only in Greece but all over the world. Its highly trained staff have great expertise in electrical work, such as on-board alternator rewinding, motors, panels, automations and so on.

E.M.W. pays particular attention to ensuring that its operations are environmentally friendly. It also believes absolutely in ensuring the safety of all its staff and the operators of its equipment. It provides special uniforms, gloves, glasses and shoes. The company's equipment consists of modern machinery and specified modern tools as high voltage test, measuring devices of electrical power, temperature, vibrations and balancing and so forth.

In the past 35 years, E.M.W. has managed, in shipping, to construct new vessels and repair older ones like flooded with water and fire damaged accommodations/engine rooms. In addition, it has carried out the rewinding of alternators, motors, and repaired every electrical problem on board. In terms of competition, the company is very careful in all its work, very timely and always to a high quality.

The company's clients come not only from Greece, but also from around the world, including Cyprus, the UK, Germany, France, Denmark, Singapore, Malaysia, India and the USA.

E.M.W. owns a 450m^2 workshop near the Port of Piraeus, as well as two 300m^2 storage facilities which hold all the necessary portable and stable equipment.

RINA puts safety first in bulk carrier initiatives

RINA has for many years been involved in studies and projects designed to improve the safety and maintenance of bulk carriers, *writes Dino Ettore Cervetto, Technical Services Sector Manager with Genoa-based international classification society RINA.*

For the past 20 years and more RINA has occupied a major role in IACS and IMO initiatives focused on the development of new maintenance criteria for this type of ship. And it has carried out a number of studies on existing bulk carriers, aimed at assessing permissible loading conditions in compliance with new international requirements.

New research projects covering bulk carrier safety on which RINA is currently working include its role as co-ordinator of the

Dino Ettore Cervetto.lo

EU-funded MINOAS project, covering the development of a fleet of robots to be employed for ship inspections, with a specific focus on bulk carriers. A set of robotic platforms, each with specific capabilities, is used to provide visual feedback, and to perform UT measurements, without the need for human intervention.

Elsewhere, RINA is working on solutions to help solve problems involving the liquefaction of bulk cargoes. It has been closely involved in studies to resolve issues relating to the moisture content of IMSBC Group A cargoes. It believes that it has developed a programme which, when implemented in close co-operation with the designer, provides a definitive solution to the problem.

The co-operation between RINA and the designer is designed to identify the optimal selection of holds to be arranged for the safe carriage of Group A cargoes at any moisture content, and the most appropriate arrangement.

Other solutions are possible involving inspection and control at ports of embarkation, thus ensuring that cargoes are transported with an acceptable moisture content. But all such options are subject to a range of variables which are difficult to manage in a totally reliable way, and are inevitably characterized by a degree of uncertainty.

As part of its work on addressing the problem of cargo liquefaction, RINA has also engaged in advanced consultation on bulk carrier conversions with two Chinese ship designers, with one of whom it has entered into an agreement for the development of a conceptual bulk carrier design. It has also

worked on a new design with a Korean yard, in co-operation with a leading dry cargo operator. However, the recent difficult market conditions and adverse trends, which have resulted in a reduction in nickel ore transportation, mainly from Indonesia, have served to slow down the development of such designs.

Meanwhile, RINA is also working on a solution to the problems caused by demands for high loading rates and the insistence of some terminals on hold-filling during a single pass. This procedure can have a negative effect both on local structures (for example, cargo hammering of double bottom plates) and on hull girder loads, typified by a high load concentration in one hold when the ship is operating at low draught.

The issue is closely related to ballast system capacity. RINA has performed a number of studies on representative ships and has identified a procedure for evaluating the optimum ballast pump capacity.

It is clear that cargo terminals play a key role in this scenario. For that reason, it is appropriate for the issue to be addressed at an international level, where rules can be established and then adhered to by both the shipping industry and by terminal operators.

RINA continues to expand and improve its R&D programme on hull and structure safety and maintenance, and is co-operating with a pool of Italian shipowners operating post-Panamax bulk carriers in a project to identify the optimal sailing conditions needed to produce a reduction in fuel consumption. The study involves the development of *ad-hoc* software for the control and monitoring of system efficiency.

RINA has meanwhile been very active in terms of securing contracts related to newbuilding contracts for bulk carriers. It is currently involved in the approval of several new bulk carrier projects in the Far East, and in particular in Chinese shipyards. These include a significant involvement in the approval of a novel design of Handymax bulk carrier built by the Zhejiang Haihang Shipbuilding Co for Italian owner d'Amico Società di Navigazione which is characterized by very low fuel consumption rates.

This is an issue of paramount importance in today's industry, and is achieved by working on propulsion, hull lines and hull weight characteristics. It poses significant challenges to the designer and also to RINA, which are working together in a spirit of strict co-operation to achieve optimum results. Joint examination of propulsion characteristics and, in particular, of structural influences, using advanced analysis techniques and cutting-edge verification tools, is central to the work being undertaken.

RINA is also in the process of developing a new class notation covering the energy efficiency of ships, including bulk carriers, certifying the fuel-savings achieved by vessels when compared to the benchmark value of similar ships.

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Expertise in ship management: keeping safety at the forefront

Bernhard Schulte Shipmanagement (BSM) has always been a major presence in the operation of dry bulk vessels, particularly the largest vessels such as Capesize and VLOCs (very large ore carriers), *writes Captain Firoze Mirza, Managing Director of Bernhard Schulte Shipmanagement (Hong Kong)*. Currently, BSM has 87 bulk carriers under management, these range from small Handysize bulkers to the world's largest ore carriers. Clients are located in various continents — Asia, Europe and the Americas — and include established commodity operators, industrial conglomerates, and of course pure shipping companies.

This extensive experience of managing vessels for some of the leading dry cargo operators has resulted in BSM developing a strong expertise and knowledge base, as well as a pool of highly experienced staff both afloat and ashore. Great emphasis is placed on developing and retaining this strong pool of shipboard and shoreside staff, and their embedded knowledge.

Ideally BSM's involvement starts at the design stage itself. The company has been able to offer suggestions and comments on the newbuilding specifications, and make small but important changes resulting in better safety/operational performance, and long-term cost savings for the ship owner.

BSM has assisted owners with shipyard evaluations, yard audits, and energy efficient optimization, to build fuel-efficient, environmentally friendly vessels meeting all the latest regulations. In consultation with owners, BSM often arranges for fitting of equipment which goes beyond the requirements of Class and the IMO conventions. For example, on some of the large ore carriers, BSM has fitted hull stress monitoring systems which allow the officers to monitor the actual stress levels, not just as calculated from the loading instruments. This undoubtedly adds to the ship's safety by ensuring that inadvertent overstressing of the ships structure is avoided.

Building a good vessel is one thing — operating it safely and efficiently is quite another. The extensive knowledge base of BSM's staff goes a long way in proactively identifying the expected hazards and mitigating the risks. For ships that are calling at certain dedicated ports/terminals, BSM has set up in house training facilities for the ship-staff, such as bridge simulators with the models of the particular vessel and port.

In many of the dry bulk trades, what you see is not necessarily what you get. A mis-declared cargo loaded on board is a great hazard to the ship and crew, and BSM's office staff are always alert to the risks and the areas and trades where such practices are endemic. There are many ports (especially in the minor bulks trade) where vessels are subject to huge marine risks as well as commercial risks of exorbitant claims. Indeed the majority of recent 'loss of life' due to bulk carrier casualties was due to such inappropriate/mis-declared cargo loaded onboard the vessels. Again, BSM's strong background and experience of the trade goes a long way in anticipating and preparing for these types of situations.

With the very high price of bunker fuel at present, any factor that saves even a small amount of fuel is very valuable to the ship operator. BSM pro-actively monitors the vessels operation to ensure that the engine is being operated in the optimum condition and that the vessels hull condition is maintained as best practicable, regularly inspecting and cleaning as required. Every vessel is closely monitored to ensure best possible draught and trim condition, avoiding overballasting the vessel. As an example of innovation in this sphere, BSM has developed in-house trim optimization software, which can be customized to each vessel, which results in major fuel savings during operation.

Effective maintenance is obviously critical in ensuring the vessel is fit for her purpose, especially as the vessels age advances. Apart from machinery upkeep and hull coatings, BSM pays close attention to the condition of ballast tanks and coatings, since this is probably the factor which will govern the useful life of the ship. Regular inspection, touch up and stripe coating is carried out by the ship's crew.

Finally, BSM as a service provider recognizes that each ship owner/operator has unique needs, and it is the company's responsibility to fulfill these. For example the requirements of a tramp bulker owner are very different from that of an industrial company which operates its in-house fleet as a part of its raw material supply operations. Flexibility of management while following the universal norms of safety, ethics, and environmental protection, is what BSM promises its clients.

In the ship-management industry there are some conflicting aims, such as to deliver personalized service to each client, but also high cost efficiency taking advantage of economies of scale. Personalized service is best delivered by a small organization near the client's geographical location, and limiting total number of ships and clients. However such an organization would not have the cost efficiency associated with a large organization which is able to spread its overhead among a large number of ships, and who can also negotiate from a position of strength with suppliers to obtain the best costing for the ship owners. In BSM, this is taken care of by having a number of ship-management centres spread around the globe, which are close to respective clients, limiting the total number of ships and clients handled by each office. At the same time, functions such as supply chain management, IT, HRM, and regulatory compliance, are centralized, achieving economies of scale by avoiding each office having to duplicate this function. This also allows the large critical mass necessary for negotiating with suppliers and service provider's, to obtain the best possible deals for the ship owner clients.

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intergroup provides a wide and fully-integrated management for cargoes, along the whole logistic chain: marine terminal activities, transport, packaging, warehousing, handling of special cargo (for instance: windmills), handling and services for ferries, ro-ro and cruises, and therefore as a group, it offers a tailor-made service while keeping highly competitive prices.

Established in 1986, during its 26-year-long existence, intergroup has been logistic partner with leading national and international companies. intergroup handles for them industrial supply chains of several million tonnes of goods a year.

In a nutshell, the key strength of intergroup is its offer of a whole range of services, in order to build a 'logistics package' for its clients, activating its dedicated pool of employees in every department involved. Services provided from intergroup transport division cover national and international transport for every kind of goods delivering excellent services, while the marine terminal network, based in both the Port of Rome Civitavecchia and the Port of Gaeta (halfway between Rome and Naples, and experiencing a €95 million expansion plan), offers a wide range of stevedoring services and has both technologically innovative equipment and machines, and trustworthy and high-skilled human resources.

One of the logistic areas of intergroup.

The port and the city of Gaeta.

INTERGROUP – BULK LOGISTICS EXPERIENCE

In December 2012, the Port of Gaeta, where the headquarters of intergroup are situated, received €35 million, thus becoming the fastest-growing port in Italy in 2013.

The new amount was released in order to further develop the first stage of expansion works, just concluded in 2012, at a cost of €65 million, which improved the draught up to 9 metres, and more than doubled the storage areas up to 400,000m^2. At the end of the works, the new draught will be of 14 metres, so that even bigger vessels will be able to arrive at the port.

Gaeta specializes in the receipt and discharging of dry bulk materials, and therefore one of the core focuses of intergroup is the dry bulk: intergroup is in fact a main logistics player in various national supply chains for industrial companies receiving clinker, coke, sands, salt, fertilizers, sulphate, carbonate. intergroup is structured to offer loading, discharging and movement operations of raw materials and goods transported from ships as bulk cargo. Harbour activities are performed with specific means and equipment: the group directly owns four Gottwald cranes of 200, 100, 63 tonnes, Caterpillar bulldozers and Bobcats, hermetic grabs from 7 to 20 cubic metres, de-dusted hoppers, skid slides, suction cleaning machines.

In tight connection with harbour activity, there are the warehousing facilities. intergroup owns and runs eight warehouses on the national territory: a harbour warehouse in Gaeta (custom and VAT free); Formia, where packaging and others added-value services are provided; Sessa Aurunca for coal and other products related to the cement industry; the new foodstuff warehouse in Gaeta; the also new 20,000m^2 wide Distriport area in the heart of the Port area of Civitavecchia; the intermodal exchange area in Frosinone, connection point between flows of road-carried and railway-carried products, and the recently opened new warehouses on the Ionian coast.

Some of those warehouses are completely dedicated to bulk storage. Among them, the coal logistics plays a main role. In fact, one of the six warehouses mentioned above, is entirely dedicated to supporting the cement industry with all the raw material it needs for its production, such as petcoke, coal, iron oxide, ferrous sulphate, pozzolana: the Sessa Aurunca warehouse, just halfway between Rome and Naples, is a preferred hub for the just-in-time distribution for most of the major cement factories located in the centre/south part of Italy, such as Colacem, Italcementi, Cementir and many more. The area completely reserved to coal flows is 70,000m^2 wide. Five-metre- high cement walls are placed in the area in order to protect the product and to create different zones reserved to each client, keeping different coal qualities ideally separated. Coal is discharged at the Port of Gaeta by the intergroup marine terminal facilities, from vessels usually arriving from United States or South America, then carried into the Sessa Aurunca warehouse, stored and delivered just in time to factories, according to distribution plans.

According to the quality and green-oriented philosophy that drives the intergroup way, Sessa Aurunca coal warehouse is equipped with a system to minimize dusts, and all around the area there are high cement walls and lines of poplars. There is also a totally green system, equipped with highly sophisticated automated installations for depuration, filtering and recycling of water, a sub-irrigation system, a coconut-fibre drainage system with laser rays, a safe fire-fighting system and all the technologically advanced installations which guarantee the highest standards in this field. Last but not least 30% of the whole warehouse area is specifically dedicated to a poplar plantation to protect the outer environment from any contamination with the product.

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Tangshan to get five coal berths

China's National Development and Reform Commission has given the go-ahead for the construction of two more coal berths at the port of Tangshan. These will have an annual capacity of 56 million tonnes. Two of the port's coal berths will be able to accommodate 150,000dwt vessels, while the other three will be limited to 100,000dwt vessels. The budget for the project is $897 million.

Barry Cross

China to clear calls by Valemax carriers

CVRD believes that its Valemax bulk carriers will be given clearance to call at ports in China this year. Up until recently, the 400,000dwt ships have been barred from the ports because of safety concerns, although the real reason appears to be that some traders in China are worried that CVRD will be able to dominate the market with these extra capacity ships. *BC*

Subic Bay coal transshipment operation not as efficient as hoped

CVRD has been experiencing problems with the hub operation that it has established at Subic Bay in the Philippines. Each of the Valemax vessels has reportedly been delayed by up to 30 days at the port due to the erratic scheduling of shuttle carriers. Discharge rates have also not lived up to expectations. The company believes that the transshipment operation is costing around six dollars per tonne extra, but once additional costs are added in the operation may be up to 50% more expensive than direct shipments. *BC*

HBT given permission to withdraw equipment from Haldia

Haldia Bulk Terminal in India, despite being allowed to remove handling equipment from its former concession at the port of Haldia, has been strictly forbidden by the courts from redeploying said equipment abroad. Earlier, Kolkata Port Trust had sought an injunction to prevent the equipment from being taken away by HBT, but this was declined by the judiciary.

The terminal operator had previously withdrawn from the port midway through a 10-year contract because of law and order problems. *BC*

Another customer uses the new coal terminal at the Niedersachsenbrücke Jetty in Wilhelmshaven

The Patricia V *at the Niedersachsenbrücke.*
(All images © Rhenus Midgard Wilhelmshaven)

First vessel for GDF SUEZ handled in Wilhelmshaven

The Niedersachsenbrücke (NSB) jetty in Wilhelmshaven, a pier stretching out into Jade Bay, has been expanded at great expense over the past three years to turn it into one of Germany's largest coal terminals, *writes Astrid Unverricht.* The investments are now bearing fruit: the local terminal operator, Rhenus Midgard, has been working hard to encourage coal consumers in the energy sector to make use of the benefits of its facilities; and it has been able to increase coal volumes for the first time.

The Rhenus Group has invested €90 million in modernizing its facilities for handling coal at the Niedersachsenbrücke jetty. After deepening the berth, the terminal on Germany's North Sea coast is now the only one in the country that can accommodate fully laden Capesize vessels with a draught of 18.50 metres and up to 250,000 tonnes of cargo on board.

Part of the Rhenus Midgard's extension work involved installing two new double jib level luffing cranes, each of which is able to handle up to 1,750 tonnes per hour. A second conveyor belt from the pier to the coal storage area will enable the three cranes to achieve their full unloading potential from the summer of 2013 onwards and this will significantly reduce unloading times for vessels. But the company has not only upgraded its facilities for unloading ships — it has also ensured that the coal can be stored until it is transported to final customers. Each storage area — and a second one will be completed by the spring — can accommodate approximately 400,000 tonnes of coal. As many as seven storage areas are possible — where up to three million tonnes of the fuel could be stored, when fully completed.

First coal unloading operations for GDF SUEZ

Wilhelmshaven has attracted great interest in the market place. The first fully laden Capesize vessel, the *Navios Pollux*, docked at the coal terminal at Wilhelmshaven in November last year. The conversion of the Rhenus Midgard terminal opens up new opportunities for competitive imports through the port in Lower Saxony — for coal consumers in Germany and neighbouring countries, e.g. large energy suppliers like GDF SUEZ. Rhenus Midgard has signed a logistics contract with this company for a coal-fired power station that is still under construction.

Although the new power station in Wilhelmshaven has not yet been commissioned, the customer is already using the new opportunities at the coal terminal at Wilhelmshaven to supply its power stations in North and South Germany. As a result, Rhenus Midgard handled its first load of coal for GDF SUEZ in January.

Black gold from Russia

The *Patricia V* flying the Liberian flag reached the Jade with a draught of 14.17 metres on arrival following a four-day voyage from Vysotsk, which is situated in the Russian district of Leningrad. The journey from Vysotsk to Wilhelmshaven covers 1,150 nautical miles; the Russian port has an oil and coal terminal and is located about 150 kilometres north-west of Saint Petersburg. The Panamax carrier, which is 224.90 metres long and 32.25 metres wide, had 71,050 tonnes of Russian coal on board and the Rhenus Midgard employees at the Niedersachsenbrücke jetty unloaded this cargo.

"We view the way our business relations are developing with GDF SUEZ in a very positive light. The handling of the *Patricia V* is just the start of our long-term co-operation at the Wilhelmshaven site," says Matthias Schrell, Managing Director of Rhenus Midgard at Wilhelmshaven, summarizing the situation.

Wilhelmshaven wins over customers with its nautical advantages

"Wilhelmshaven offers nautical advantages, because the largest vessels can berth here. This creates savings in expenditure on logistics and it is the reason why GDF SUEZ is planning to locate its coal hub at Wilhelmshaven," says Michael Appelhans, Managing Director of Rhenus Midgard, commenting on the benefits of the site. The GDF SUEZ coal, which has already arrived at Wilhelmshaven, is destined for power stations near Bremen and Munich and is being transported on block trains in line with demand.

Good railway links to inland destinations

Rail links have improved too as part of the upgrading work. The railway line between Wilhelmshaven and Oldenburg has had

double track since the timetable change last December. This opens up greater capacity for rail services and improves links to the European rail network for the business site. Rhenus Midgard in Wilhelmshaven also offers its customers a new wagon loading facility at the coal terminal; this can load 2,000 tonnes of coal per hour on average and it therefore guarantees rapid and safe train turnarounds.

"We're delighted by the growing interest shown by customers, particularly from the coal sector. It's now our aim to develop the Wilhelmshaven site and turn it into the central coal hub on the North Sea coast. We've now almost completed the technical requirements with the current upgrading work on the Niedersachsenbrücke jetty and the infrastructure near the terminal," says Appelhans.

Imported coal essential in the energy mix

One thing is certain: despite the change in energy policy in Germany, it will be impossible to completely do without fossil fuels during the next few years. Current estimates suggest that Germany will still need to import many million tonnes of coal until 2030 for power generation purposes, the iron and steel industry and the heating market. Mining German coal is not competitive, particularly because it involves operations at such a great depth. So politicians have decided to continually reduce subsidies and close German black coal mines by the end of 2018. Reductions in the amount being mined have to be offset by imported coal and lower consumption.

Most German imported coal arrives through Amsterdam, Rotterdam and Antwerp (ARA), the most important seaports in the Rhine/Maas delta. "Following the expansion of the Niedersachsenbrücke jetty in Wilhelmshaven, we now offer a real alternative to the ARA ports," says Appelhans, viewing the future in a very positive way. "We want to gradually increase the amount of fuel handled at our coal terminal during the next few years — from approximately 1.6 million tonnes before the upgrading work to ten million tonnes per annum."

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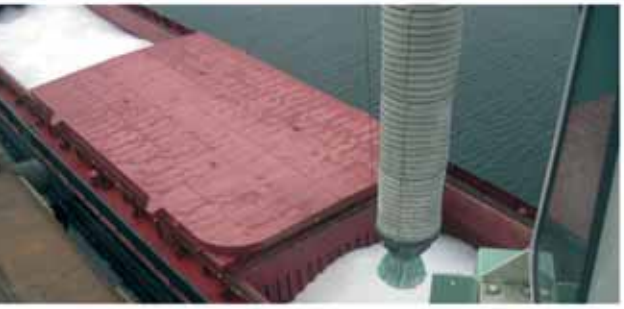

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Dry bulk in the Baltics

dealing with a wide variety of commodities

The Port of Riga in Latvia.

Barry Cross

The large number of countries surrounding the Baltic Sea generate a variety of dry bulk traffic, from more traditional coal in the Baltic States and Poland, to a more diverse range at ports in Sweden and Denmark.

The Latvian Port of Riga handled 21.63mt (million tonnes) of dry bulk in 2012, which was 8.3% more than the previous year. Much of the increase was down to coal volumes, which rose by 10.4% to 14.9mt. In addition, grain products and some ores also increased.

The port's importance in this trade cannot be understated, since it was the largest dry bulk port of those in the Eastern part of the Baltic Sea, handling 24% of region's dry bulk volume.

A port spokesperson noted that no huge increases are expected for 2013, with the forecast for similar throughput as last year.

Overall, Riga could handle up to 26mt per year with its current infrastructure, although in a few years' time capacity will have reached 32mt. The most advanced project is that of Krievu Sala, which is currently under construction. The aim is to relocate terminals away from the city centre and thus provide more efficient cargo handling. Once fully operational, its capacity will be in the region of 17–22mt.

Significantly, of the 32 stevedoring companies working in Riga Freeport, dry bulk is handled in 19 terminals, with a variety of different handling equipment to found, depending on what commodities are handled. In total, there are more than 110 different cranes units, with new equipment being added all the time.

Approximately, 75–80% of total port's cargo is handled by train and approximately 85% of dry bulk traffic either arrives or leaves by rail, with all transit cargo trusted to the railways for onward movement. Eleven dry bulk terminals have direct rail access, linking into the national and international network.

At present, the main dry bulk commodities flowing through the port are coal, fertilizer, woodchip, wood pellets, metals, scrap and ferro-alloys. Coal, at 14.9mt, was the most significant commodity in 2012, followed by fertilizer (1.415mt), grain (686,900 tonnes) and woodchip (1.053mt).

The maximum draught at the main dry bulk berth is 14.7m, which accommodated its largest ever vessel, in 2012, when the 118,590dwt UBC ONSAN called with a cargo of 111,700 tonnes of coal.

As for storage, there are 333,000m^2 of covered warehousing, 1,619,000m^2 of open stockpiles and 250,000m^3 of silos.

Other than handling and storage, a variety of other added value services are available, including coal magnetic separation and purification, cargo sorting, ore packing, grain blending-cooling, and fumigation.

In 2012, the Lithuanian Port of Klaipeda registered a 3.2% decline in overall dry bulk traffic in handling a total of 14.063mt. Some commodities did better than others. Agricultural products, for example, grew by 71.8% to 2.747mt, with grains, in particular doing rather well. At present, the covered storage capacity of dry bulk cargo at the Port of Klaipeda Port is about one million tonnes, while handling capacities for fertilizer and agricultural products have reached 14mt and 5mt respectively.


The Port of Klaipeda.

A port spokesperson points out that storage capacity of the above-mentioned cargoes has been increasing steadily, with stevedoring companies in the port having built new facilities so that the ongoing demand increases for agricultural products and fertilizer can be accommodated.

However, fertilizer traffic on the year was down from a 2011 record high of 9.564mt to 7.683mt, a drop of nearly 20%, which is mainly down to decreased demand. Nevertheless, the end-of-year figures do not accurately reflect what was really going on in this sector. While there was reduced demand, most sales contracts were only signed at the beginning of the second quarter of 2012, after which throughput levels effectively returned to higher levels.

The growth in fertilizer traffic since 1991 has been little short of breathtaking. Starting from a base of just 140,000 tonnes in that year, the upward trend has continued, with gains in recent years being vertiginous.

The Port of Klaipeda also has five other main bulk commodities that it handles regularly: minerals and aggregates, which amounted to 1.559mt in 2012, up 14.6%; ore (784,000 tonnes, up 25%); scrap (282,000 tonnes, down 31%); sugar (291,000 tonnes, down 29%); and peat (351,000 tonnes, up 34%).

"In 2013, we expect to handle about 15mt of dry bulk, up 4% on last year," says a spokesperson.

Given the increasing volumes of dry bulk handled over the last ten years, various infrastructure development projects have been implemented in Klaipeda Port to allow larger vessels to be accommodated, with the maximum admissible draught now being 13.4m. In addition, the port's various stevedoring companies have also invested in warehousing, handling equipment and processing technology. Once all current projects have been implemented, capacity, which stands at 23mt, will have been boosted even further.

The port currently has around 80 units of large-size cargo handling equipment at its disposal, ranging from portal cranes to transporters and port trucks, although the actual number increases year-on-year. These are owned and operated by the port's six dry bulk terminals, belonging to the following stevedoring companies: KLASCO, Bega, Biriu Kroviniu Terminalas, Malku jlankos Terminalas, Vakaru Krova and Mabre LPC.

"Loading capacities are currently anything up to 1,500tph [tonnes per hour], while unloading we can achieve around 300–400tph," noted the spokesperson.

All handling companies at Klaipeda Port enjoy broad gauge rail connections with neighbouring countries to the east. Approximately 75% of all cargo handled by the port is transported by rail, while the port authority calculates that up to 95% of dry bulk cargoes arrive or leave by train.

Vessel sizes for transporting dry bulk average in the region of 25,000–30,000dwt, although the largest bulk carrier to access the port to date was of 96,000dwt

"The current 13.4m draught is our main limiting factor at the moment, although ongoing dredging will eventually deepen this to enable larger vessels to call," says the spokesperson.

With Klaipeda equipped with a range of covered warehouses, silos, bunkers and open stockpiles, plans do exist among the stevedoring companies to offer value added services for dry bulk commodities in the near future.

Sea Port of Saint-Petersburg is the largest operator in the Greater Port of Saint-Petersburg, handling a variety of dry bulk commodities, in addition to containers, ro-ro, reefer vessels and finished vehicles.

In 2012, volumes of dry bulk cargo doubled to 1.8mt, which the company puts down to optimizing the technology involved in product handling and modernizing IT and logistics systems linking the port with its customers.

"We also introduced a new marketing strategy for the company, which allowed us to attract additional cargo flows,"

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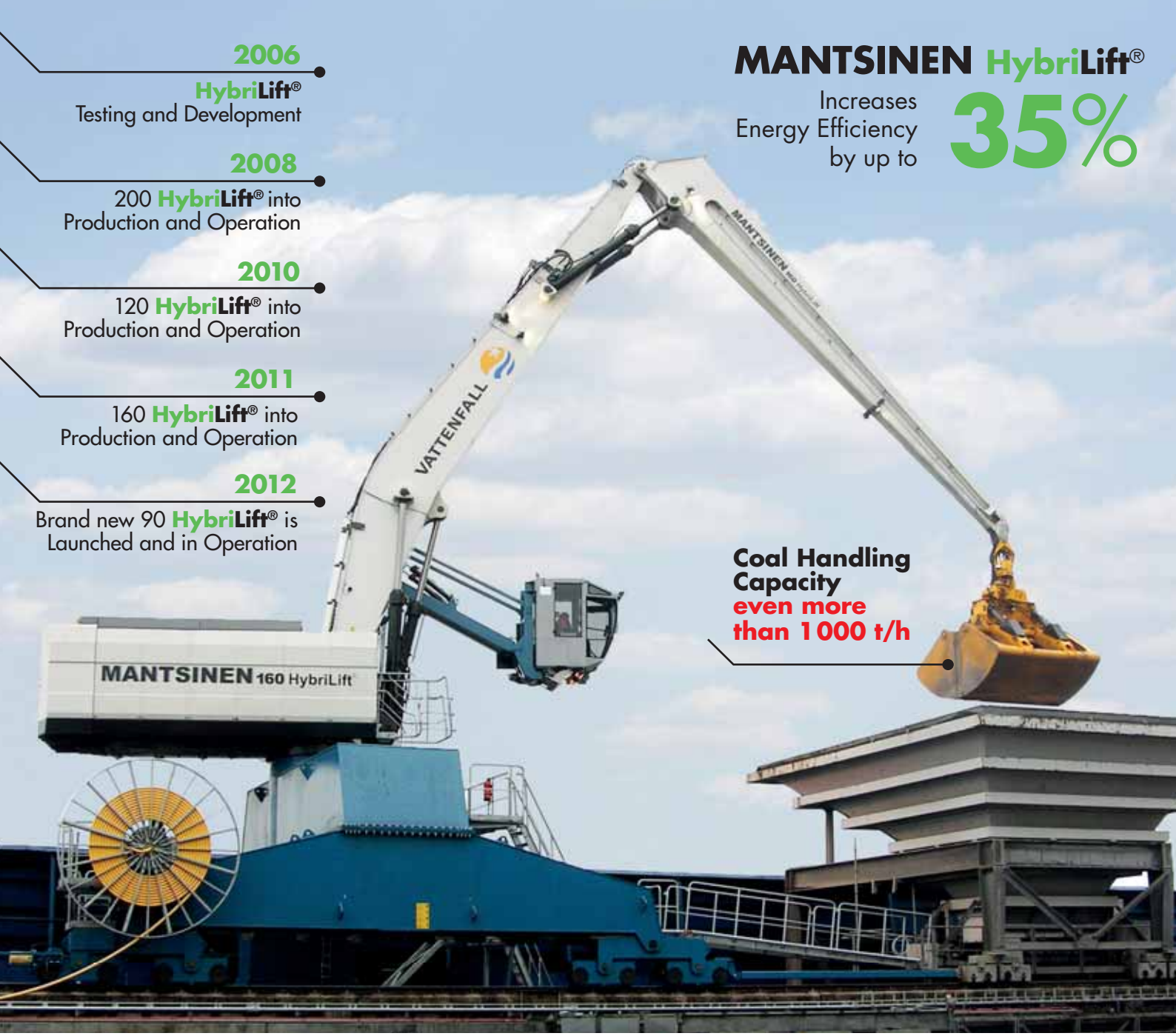

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Port of Saint-Petersburg.

says managing director, Pavel Oleynik.. "We are forecasting that this positive trend in dry bulk volumes will continue this year, although everything depends on the situation of the market. Quite how much that growth will be also relies on what demand there is for domestic and overseas products."

Asked about Saint-Petersburg's capacity for handling dry bulk, Oleynik points out that this is dependent on several factors, for example, berths being occupied by other cargo, the volumes involved and how long it takes to handle them, as well as on the number of vessels requiring stevedoring services at any one time.

"Sea Port of Saint-Petersburg is an universal operator and if necessary we can efficiently change technological processes, using all and any available capacities to handle dry bulk in whatever volumes our customers need."

Within the port, there are grabs, gantry cranes and bucket loaders available to handle dry bulk. One interesting innovation is the deployment of a 300-tonne capacity floating crane (*Bogatyr*), which is used to transfer inbound minerals directly from railway wagons into a docked vessel. On the landside, a 150-tonne Liebherr mobile crane also sees significant deployment on dry bulk shipments.

Mineral fertilizer traffic is concentrated in a dedicated facility capable of handling up to one million tonnes per year.

"In respect of dry bulk, we are planning to expand our production base by putting into operation both new hi-tech equipment and new infrastructure, specifically to meet the needs of our partners," says Oleynik.

Sea Port of Saint-Petersburg also has well-developed railway infrastructure. Nowadays, all dry bulk cargo flow is transported by rail, which involves close co-operation between the railway company and the port. In order to ensure the delivery and withdrawal of the required number of rail wagons, port-rail infrastructure has been specifically designed, allowing wagons to discharge directly into hoppers. Co-operation between port and railways has boosted productivity in this area considerably.

At present, the company mainly handles mineral fertilizer, ore, grain and coke at its own berths. However, because it is permitted to undertake activities throughout the port, it can, potentially, be asked to handle a wide spectrum of cargoes.

"The majority of commodities that we handle don't require on-dock storage; they are moved directly from rail to a waiting

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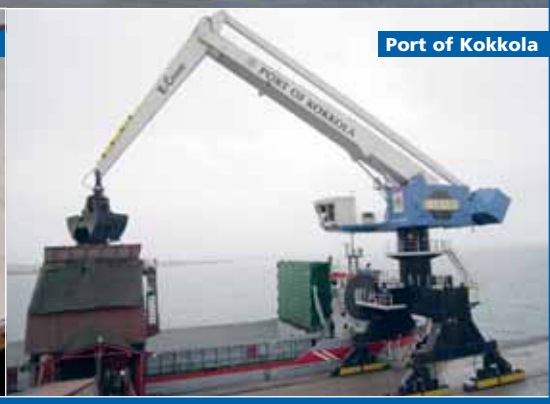
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The Port of Gdansk.

vessel. This helps customers avoid losing time and avoids incurring additional expenses," says Oleynik.

In 2012, of the 27mt of freight handled by the Polish Port of Gdansk, dry bulk accounted for 7.3mt, or just over a quarter. Main commodities handled were coal and coke, aggregates, artificial fertilizer and cereals. Although overall port tonnage was lower in 2011 — 25.3mt — the figure for dry bulk — 7.6mt — was actually higher. The difference is the result of slightly depressed demand for road building materials and fewer cereals, although coal did slightly better.

"For this year, the forecast is for a continuing decline in dry bulk traffic, essentially because of suppressed demand for road building materials. However, this pessimism was not borne out in January, with traffic in coal extremely buoyant, as well as strong demand for both cereals and chemical fertilizer," says a port spokesperson.

In terms of capacity in the inner port, around 15mt of import and export dry bulk can be handled. However, only export consignments are shipped from the deep water berths in the outer port, with up to 50,000 tonnes being loaded every day. Additional capacity is being provided by the Sea-Invest Group, which is building a new, dedicated facility, the Bulk Cargo Terminal, which will be able to handle 5mt of coal annually for both import and export per year.

The existing deepwater Coal Terminal has an entirely automated loading system, with a conveyor belt network feeding several ship loaders. Stevedores managing the port's cereals transshipment operations also have similar equipment. Other bulk quays use standard port cranes, where productivity can vary depending on the type of material being handled.

"We can load up to 50,000 tonnes of coal a day using the ship loaders, while using more traditional methods in other terminals, rates are around 10,000 per day," says the spokesperson.

In July of this year, operations are due to commence at the deep water Gdansk Bulk Terminal, which will be equipped with a 60-tonne Liebherr LPS 600 crane and an extensive system of RBL-PRITIP belt conveyors. It will also have the largest ship loader of any Polish port, which is being supplied by a Polish firm from Kluczbork.

Given the nature of the commodities handled at Gdansk, it is unsurprising that the vast majority come to the port by rail, but only building materials are moved in any quantity by road.

"Draught is not a problem at Gdansk," insists the spokesperson. "We are an ice-free port all year round, and in the outer part of port we can offer a water depth of up to 15.5 metres, which means we can accommodate the largest ships that come to the Baltic. In contrast, movements in the inner port

The Port of Gdansk.

are limited to vessels drawing 10.5 metres of water, which is usually means not more than 50,000dwt vessels."

In terms of storage, building materials are stacked and processed in specialist areas, while coal and coke are kept in dedicated stockpile areas, where some additional processing does take place. The port authority also provides warehousing for cereals and fertilizer, but time to time happened that transshipment tends to be direct between vessel and truck, or between truck and vessel, without the need for intermediate storage.

The cross border Copenhagen–Malmo Port has yet to release figures regarding its dry bulk traffic in 2012, but in 2011 it handled a combined 3.4mt of dry bulk, which was 0.7mt more than in 2010.

Bulk manager Perry Emchen, notes that there is a variety of terminals split between the two ports. In Sweden, there is Swede Harbour, which is the largest bulk port in Western Sweden, able to handle fully loaded Panamax bulk carriers. It covers an area of 100,000m^2, with 16,000m^2 of covered storage, and is accessed via a 200m quay.

Also in Sweden, there is the Södra Bulk Terminal, which has a 330m quay that is normally used by much smaller vessels.

"In 2012, we constructed a new, 250m-long quay for dedicated cement handling, while Cementa built a new 90m-high silo for the exclusive distribution of cement," says Emchen.

In Copenhagen, there are smaller facilities. Amagerværket is a dedicated terminal for the local power plant, which imports both coal and bio-fuel. In addition, Margreteholmen quay handles minor building materials, while Nordhavnen is a similar facility catering for salt, sea-dredged materials, broken stones, and other aggregates.

"We also have our largest dry bulk terminal in Denmark, which is at Prøvestenen. This used to cover an area of 180,000m^2 and be served by three quays, totalling 554 metres.

However, in 2012, we effectively doubled the operating area, by adding a further 180,000m² and an extra 650m of quay. Today, therefore, Prøvestenen is 360,000m² in extent, with 1,204 of berthing line divided among five different quays.

In Denmark, all materials handling equipment is owned by the terminal operators, not by the port. In Malmö, however, the port authority has three rail-mounted 20-tonne cranes positioned in Swede Harbour. In addition, the port owns a 64-tonne mobile crane, two Multidockers and one Fuchs 360 material handler. Significantly, one of the Multidockers was bought in 2012, while a large Volvo 350F front loader was bought in September 2012, it being the largest of its kind that Volvo manufactures.

"Our decision to go ahead with the expansion of Prøvestenen, in Denmark, is naturally predicated on our belief that more cargo will be handled there," says Emchen.

The main commodities handled across the various quays of the joint port include scrap, raw sugar, stone, sand and gravel, glass, limestone and cement. Asked about productivity rates, Emchen says it is difficult to generalize, since these very much depend on the type of cargo, vessel size and volume. Rates, overall, are competitive with other regional competitors.

With pressure growing on ports to switch as much traffic as possible from road to rail, Emchen notes that, in Malmö, all dry bulk terminals are linked by rail, while the cement facility has a rail track that passes directly into the silo. Stena Environment also operates several trains conveying loads of scrap and iron products each week.

"We are handling a lot of transshipment cargo," stresses Emchen.

In terms of vessel size, at Prøvestenen, Yeoman and Stema vessels of around 97,000dwt operate, while Swede Harbour handles fully loaded Panamax bulk carriers.

"As for adding value, Stena Environment has a hub operation at the port, importing via road, rail or coastal vessels, thereafter separating and shredding consignments, then shipping them out on fully loaded Panamax vessels. We also have key warehousing facilities at Swede Harbour for raw sugar," says Emchen.

The Swedish port of Helsingborg reported handling 270,000 tonnes of dry bulk traffic in 2012, consisting of grain, soyameal, salt and limestone, compared to just 156,000 tonnes the previous year. In addition, it has a buoyant trade in wood pellets, which amounted to 170,000 tonnes in 2011 and 155,000 tonnes in 2012, although wood pellets are forecast to decrease by about 30% in 2013, as a new heating plant built for Öresundskraft will burn rubbish rather than wood pellets.

Öresundskraft is one of the port's largest customers. It uses a single grab crane to unload inbound pellets, which is more than sufficient for a business that generates 12–15 vessel calls each year.

The other big customer is the Swedish Farmers' Association, which operates its own, dedicated facility within the port, which has the largest grain storage capacity in Sweden. It deploys pneumatic equipment to handle a two-way flow of traffic, with the port authority only responsible for dropping bobcats in the hold to help clear consignment remnants.

All dry bulk into and out of the port moves by road, although the wood pellets are actually burnt at a facility within the port. Previously, coal was used to generate the same heating, but was made illegal some six years ago.

Draught at the port varies from 14m and 7.5m, divided across five different quays, with wooden pellets handled at a 180m long quay, with alongside draught of 13m.

"Traffic is essentially captive to Helsingborg, given substantial investment in facilities by our two most important customers," notes a port spokesperson, who adds that the port authority is trying to replace the rapidly decreasing number of wood pellet consignments with other dry bulk, with road salt one target. DCi

Coal handling operations at Copenhagen–Malmo.

United Kingdom

the business of bulk

Jay Venter

BMT completes berth capacity study

BMT Isis (BMT), a subsidiary of BMT Group, the international engineering, maritime and risk management consultancy, has recently completed a berth capacity study for Knauf ahead of significant planned investment for its jetty located on the River Swale in the south east of England.

The Grovehurst Jetty near Ridham Dock is operated by Knauf to import and transport gypsum to its factory in Sittingbourne, Kent where the mineral is used to produce plasterboard. In a bid to assess the feasibility, identify the effects and estimate the likely costs of changes to the gypsum import process, Knauf turned to BMT for a transparent and impartial assessment.

BMT assessed a range of options including bringing larger ships alongside the jetty, changing the ship chartering arrangements, increasing the cargo storage capacity and upgrading or replacing cargo discharge equipment. By creating an analytical computer model, BMT was able to simulate the existing cargo discharge operations and assess the effects of changes to the existing infrastructure such as cranes, hoppers and conveyors — all of which are used to transfer the gypsum from the ships to the factory stockpile.

Bob Hockham, business development manager at BMT Isis explains: "Increasingly, simulation is being used as a cost-effective way to make operational and investment decisions. By developing a well-built and validated simulation model, we were able to replicate the cargo handling processes for Knauf and identify potential efficiency improvements."

The results from the analytical model showed that the greatest gains in efficiency were likely to be achieved by increasing the amount of storage space on the jetty, replacing the existing cranes with a new unloading system and increasing the

conveyor speed.

A number of recommendations were put forward enabling Knauf to plan their future investment with confidence.

Hockham continues: "From concept to planning, design and construction, right through to operation and maintenance, BMT's holistic approach combines valuable engineering experience with sustainable environmental management and economic practicality to deliver high-value solutions for ports and terminals customers."

BMT Isis Ltd

BMT Isis provides high quality and cost-effective technical consultancy, providing safety, environmental, and risk management services to investors, regulators, operators and equipment suppliers.

The company specializes in providing support to high-hazard industries, particularly in maritime and transport; energy and resources and defence. BMT Isis's consultants are experienced and recognized in these key markets, and it is able to transfer and apply appropriate expertise, techniques and approaches between market sectors where this is appropriate.

Barrier foil FIBC liners by Protective Packaging Limited

Barrier foil liners manufactured by Protective Packaging Limited, combined with an FIBC, offer total moisture, oxygen and odour protection for powders and granules. The growth of FIBCs over recent years has reflected their ability to provide cost-effective bulk outer packaging. However there have been limitations in their ability to provide complete climatic protection for very hygroscopic and oxygen sensitive materials.

Combined with a barrier foil liner, they can be used to pack bulk products which previously had to be shipped in sealed containers such as steel, plastic or fibreboard drums. Not only does the barrier foil liner with FIBC offer a material cost saving, but shipping space efficiency can be improved by up to 40% over drums.

FIBC liners have developed markedly over the last ten years and can be open topped or with a filling spout, and can have a discharge spout fitted to the bottom. Liners can also be fitted with relief valves. With the option of several different material combinations, liners are suitable for food contact, and hot fill products up to 170°C.

Protective Packaging Limited has invested substantially to automate the liner manufacturing process and this has increased production efficiency to produce up to 80,000 liners per week.

More and more companies are benefiting from barrier foil liners combined with an FIBC to protect bulk shipments and industries include pharmaceuticals, foodstuffs, chemicals and polymers or any product which may be susceptible to moisture.

Protective Packaging Limited's Barrier Foil Liners, combined with an FIBC offer total moisture, oxygen and odour protection for powders and granules.

Negative implications of UK ORR's policy changes for rail freight market

The United Kingdom's Office of Rail Regulation (ORR) consulted on changes to rail freight track access charges back in August 2012. Despite the consultation now being closed, the row rages on — and no wonder when one looks at some of the negative implications the changes could have.

ORR's proposals included a freight specific charge, variable usage charge and 'geographic' charging for the next five-year 'Control Period' that sets Network Rail (Britain's rail infrastructure owner) income for the years 2014 to 2019, *writes Chris MacRae, Rail Freight Policy Manager, Freight Transport Association.*

All of this looks set to see the charges freight operators pay to use the network increase, which will inevitably be passed to the end customer sooner or later. The changes represent a clear shift in ORR policy, which up until now has been to reduce freight Track Access Charges (TAC), leading to freight growth. ORR has a statutory duty to promote rail freight as well as having regards to the funds available to the UK Secretary of State for Transport and Scottish Ministers (the latter given the devolution of rail powers to the Scottish Government under Scottish political devolution). It now seems that the latter is taking precedence over the former.

However, it's not as simple as that all freight TAC will go up. Actually it won't necessarily — at least not yet, and not for all sectors. ORR is seeking to maximize recovery of 'freight avoidable costs' and it also wants to look at putting mark ups on the TAC charged to rail freight sectors where the market can bear this. EU law allows this, ORR's lawyers insist. The ORR has therefore chosen electricity supply industry (ESI) coal, spent nuclear fuel and also iron ore to bear this. Leaving aside whether or not they can bear this (and the first and last of these certainly say they can't), this confuses those in say the intermodal or retail traffic sectors, thinking this applies to them too, or will possibly at the next five-year Control Period. The ORR's definition of a freight market segment that is inelastic and can bear these additional charges is if no more than 10% of rail traffic in that sector were to move back to road as a result of these increases. So in an age of EU modal shift targets as highlighted in the White Paper on transport, it's okay to shove 10% of ESI coal traffic to power stations off rail and onto Britain's road network? This traffic travels long distances (by UK standards) from open cast mines in Scotland, the power stations of the Aire and Trent Valleys in central England.

At the same time ORR wanted to introduce 'geographic' track access charging, or in its economists' jargon 'cost reflective geographic disaggregation of charging'. In plain speak, this means a route that is hillier or curvier with more bridges and structures, tunnels, embankments, cuttings etc. will cost more to use. This could seriously skew the market in terms of routes to ports. It also adds so much more complexity to rail freight operations. How do you account for diversionary routes during engineering work for example? For rail to win more business, it has to offer a seamless service offering, more akin to road freight logistics. A criticism often voiced by those who have considered but not pursued rail freight is that it is more complex to price and use than road — well this will make it even more so.

Overall, this is seriously spooking the rail freight market, not just operators and logistics service providers, but also terminal owners, developers and end customers. Investment in rail freight assets has an investment pay back period beyond that of the ORR's five year Control Periods. Boards of European and Global PLCs are just not going to sign off such long term investments when their financial basis can be wiped out by such changes by ORR. This affects operations and jobs in Britain: in a globalized economy steel makers and aggregates companies will take their investment abroad and source their products there. But such concerns are not part of ORR's statutory duties it seems. A specific concern is the Scottish ESI coal supply industry. It could be damaged by this. Scottish Government is concerned. On all this FTA has lobbied ORR, helped its members in one to one meetings with ORR, lobbied MPs and MSPs in Westminster and Holyrood, while trying not to put shippers off considering rail freight as we develop our Mode Shift Centre aimed at helping industry comply with EU, UK and Scottish Government carbon reduction and mode shift objectives. But now we do need to signal such alarm in public. It's also ironic that the Westminster and Scottish Governments are investing £230m between them in Britain's rail network to enhance it for freight in 2014–2019 while at the same time ORR is threatening to wipe out the benefit of that investment.

ORR announced its conclusions on freight track access charges on 11th January this year. Its key points are:

- ORR will proceed with setting an early 'cap' for freight on the variable usage charge at a level of £1.68 per gross tonne km. This is a cap and ORR expects the final level of the charge to be lower reflecting their challenge to Network Rail's costs in the full periodic review (which will conclude in October this year). ORR states that this early cap should be helpful for the industry's planning.
- ORR will proceed with introducing a 'freight specific charge' for Electricity Supply Industry ('ESI') coal, spent nuclear fuel and iron ore. Following lobbying, ORR have acted on the concerns raised by the industry and its customers in their consultation and therefore are:
  - Not introducing a charge from other coal (non-ESI coal)
  - Not introducing the charge at all until 2016
  - Asking Network Rail to phase the charge in gradually after then so that the full levels of the charges will not be introduced until 2018
  - Taking the lower end of the estimate of freight avoidable costs (which the charges seek to recover) so that the full level of the charges — above existing variable charges and the freight only line charge - (per 1,000 gross tonne miles)

will be £4.04 for ESI coal, £11.76 for spent nuclear fuel and £2.96 for iron ore. The ESI coal rate is equivalent to the £5 per thousand net tonne km – the lowest of the three options that ORR's consultants tested to inform their consultation. ORR calculates that the iron ore rate is equivalent to £2.50 per thousand net tonne km (compared to the options their consultants tested of £5, £10 and £15 per thousand net tonne km).

- ORR will consult shortly on whether to levy a charge on biomass on the same basis as ESI coal.
- ORR are not proceeding with geographical charging at this Control Period.

ORR comments that it "understand[s] that these decisions are not what some of our stakeholders would have liked to see, but we have taken the view that this represents a fairer way of charging for rail services.

"We hope people will see that we have taken into account the points raised in the consultation and that our decision is fair and balanced one, and will appreciate that freight will still receive substantial public support reflecting the benefits it delivers for the British economy and society".

Overall, FTA's message to ORR is to get out of the economists' text book and realize how real businesses have to operate and compete in a global economy.

Port restrictons and high barge charges are causing ship supply costs to spiral warns Hutton's

Port delivery restrictions to ships are forcing ship suppliers to use barges for the supply of ship stores – resulting in hundreds of pounds of increased logistic costs, warns the UK's leading ships' chandler Hutton's.

Restrictions are enforced for a number of reasons, including security, safety and weight limits. Meanwhile barge costs are rising with the charges becoming prohibitive at some ports. Hutton's warns the problem is an issue worldwide and especially prevalent on continental Europe where barge supply has become commonplace.

"Ship operators are already under pressure to save costs and high barge fees put further burdens on their stretched budgets," warns Hutton's managing director Alex Taylor, a member of both the British Association of Ship Suppliers (BASS) and the International Ship Suppliers and Services Association (ISSA).

He advises vessel operators to factor in barge transfer costs when planning port calls to ensure transfer costs for ship supplies and spares are managed efficiently. Strategically selecting supply ports can result in a significant reduction to logistic costs when taking into account high barge costs which can reach £1,500 ($2,500).

"There are still some ports where shore to ship supply is possible, especially in the UK, and we advise our customers to use these whenever possible," says Taylor. "Careful planning when ordering stores can eliminate the additional costs of a launch or barge and the savings can be considerable."

As part of Hutton's commitment to helping its customers keep costs to a minimum the company has produced a chart clearly showing the delivery restrictions at UK ports and this is displayed on its website.

"This service is key to operators reducing costs" explains Alex Taylor. "Our extensive branch network covers all UK ports so we are uniquely placed to be able to provide our customers with expert advice on where they can efficiently transfer stores and spares at the most cost effective locations for them."

Hutton's has developed as the UK's one-stop-shop facility providing the full range of products and services to the International Shipping and the Offshore Industry.

With a history dating back almost 200 years, Hutton's ensures the highest standards are provided to customers from its branch network covering all UK ports.

The company also boasts first class facilities and a fleet of state-of-the-art climate controlled vehicles which deliver a full range of food and technical products to customers.

Drewry Dry Bulk Forecaster & Insight reports for February 2013

Scrapping to rise as bulk owners suffer

Drewry's latest *Dry Bulk Forecaster* report suggest that strapped shipowners will scrap younger and younger ships this year as the dry bulk market wallows in the doldrums. A ship as young as 15 years has already been sold for scrap in recent months, and the average scrapping age of Chinese-built Capesizes was 21 years in 2012.

Drewry does not expect any improvement in the freight market in 2013 and foresees a growing number of dry bulk shipping companies getting into financial difficulty. Demolitions in 2013 are expected to be above 36 million dwt, more than what was seen in 2012, and the average scrapping age will fall even further as middle-aged vessels struggle to find employment.

The average scrapping age of the smallest segment, Handysize, will fall below the 30-year mark in 2013, having dropped from 32.4 to 30.1 years last year. This sector lost a bigger proportion of its fleet to the scrapper's torch in 2012, driven by increasing obsolescence as ports expand. Similarly, demolitions in the Panamax segment were also relatively high, given its older age profile and the increasing popularity of the larger and younger post-Panamax design.

Demolition reached record levels in 2012 as freight rates slumped to their lowest level for a quarter of a century. Preliminary data suggests that as much as 32.7 million dwt of dry bulk tonnage was sold for demolition, with the fourth quarter amounting to 6.8 million dwt: more than double what it was in the last quarter of 2011. Nearly 11mt of Capesize tonnage was sent for scrap, which was more than all the dry bulk tonnage scrapped in 2009.

But even this frantic level of scrapping will not push freight rates up because the dry bulk fleet is growing even faster. It added 35 million dwt last year to reach 679 million dwt (9,490 vessels), which was a 12.3% expansion, following 15.2% in 2011. While 'only' 28 million dwt is due for delivery this year, two-thirds of that increase will come in the post-Panamax and VLOC segments. These fleets are already very young, so there is very little chance that scrapping will ease the pressure on freight rates.

Capesize misery continues

Drewry's latest Dry Bulk Insight report shows that the Drewry Hire Index suffered a further decline in the first month of the New Year. The main culprit was the Capesize segment, where lower demand eventually led to a decline in their freight rates.

The outlook for 2013 remains bleak, with unpromising demand projections keeping the bridge between supply and demand wide enough and delaying the freight market recovery. Dry bulk shipping, for now and at least a couple of years to come, is desperately dependent on growth in commodity trade since ship supply is growing at an unstoppable pace.

Activity languished in the Asian market ahead of New Year holidays in China. To add to the problems, weather disruptions in Queensland in Australia put a further dent on demand in the segment. The ex-tropical cyclone *Oswald* has disrupted coal shipments from Hay Point, Dalrymple Bay and Gladstone. Major railroads that transport coal from the mines to the ports have been closed by severe weather. Many producers including Xstrata, Rio Tinto and Anglo American have suffered from the bad weather. This caused Capesize freight rates to dip further, which filtered through to the Drewry Hire Index. Prospects look promising for the iron ore market after the Lunar New Year prospects. Restocking after the holiday will create demand for Capesizes.

Harsh drought conditions spread through key US farm states in the Midwest over the first week of February. The prognoses for the US — the biggest exporter of grain — have been slashed by a sizeable extent, but the IGC has raised its grain trade forecast for 2012/13, owing largely to better export prospects from South America and India. Compared with the previous forecast of 62.4mt (million tonnes), the US is now expected to export only 56.9mt of grain in 2012/13. In 2011/12, the US had exported 72.5mt of grain.

The Drewry Hire Index takes 18 different trade routes, covering all the sectors of dry bulk market. Each sector is weighted within its market to produce a time charter earning index. These are averaged into the overall Drewry Hire Index. January 2002 is designated as the point where all indices equal 100.

About Drewry

Drewry Maritime Research is the research arm of the Drewry group. Drewry also includes two advisory brands, Drewry Maritime Advisors and Drewry Supply Chain Advisors and specialist investment research brand Drewry Maritime Equity Research.

Drewry has over 40 years' experience within the maritime sector, employing over 90 specialists across its international offices in London, Delhi, Singapore and Shanghai.

Offering research reports and advisory services, it is in the position to assess the market and give its clients the required knowledge to make critical decisions.

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London Gateway cuts lorry miles: New mega port removes 9,000 lorries from UK roads

London Gateway received 90,000 tonnes of aggregate for the construction of the port's gate complex, in a single direct delivery by the bulk cargo ship *Yeoman Bridge*, saving 9,000 lorry journeys on the national road network.

Yeoman Bridge *delivering over 90,000 tonnes of aggregate for London Gateway's Gate Complex.*

Colin Hitchcock, London Gateway Harbour Master, said: "*Yeoman Bridge* is the largest aggregate ship to come this far up the River Thames to date. The 249 metre long ship arrived with a 14 metre draft and docked safely along London Gateway's berth two on Sunday."

Andrew Bowen, London Gateway Engineering Director, said: "This mega delivery was going to be landed at a smaller port in the South East and then transported to us by road, but we insisted the ship make arrangements to unload its cargo here at London Gateway. We were aware that by ensuring the ship docked at London Gateway we would remove 9,000 lorry trips, which is a massive saving in terms of emissions, fuel consumption and impact on our national road infrastructure."

"In addition to taking shipments by sea and rail, we are recycling and reusing materials and have our own concrete batching on site, to reduce the number of lorries we have coming and going from site."

The material from the ship will be used to create London Gateway's fully automated port gate complex, which will use state of the art technology including optical character recognition to read container and vehicle information to manage traffic through the gate process.

Charles Meaby, London Gateway Commercial Director, said: "London Gateway is all about reducing the cost of road miles. We have reduced the number of lorries on the road in the construction of London Gateway and we offer our customers the ability to reduce their lorry miles and save on CO_2, fuel and time costs as London Gateway is simply closer to the UK's major markets, not just in the South East but also the Midlands and the North West."

Drewry, the independent shipping consultancy, has estimated London Gateway will reduce round-trip transport costs by £59 per container to the Midlands and the North- West, and £189 per container for London and the South-East.

In addition to being closer to major markets, London Gateway will have Europe's largest logistics park, allowing shippers to cut the cost associated with taking goods to distant distribution centres. London Gateway estimates 65 million road miles will be saved from DP World's £1.5 billion pound investment into UK transport infrastructure.

About London Gateway

Opening in Q4 2013, London Gateway will be the UK's first 21st Century major deep-sea container port and Europe's largest logistics park. Owned and operated by DP World and situated on the north bank of the River Thames, London Gateway will provide unrivalled deep-sea shipping access to the largest consumer markets in the UK.

The port's location, with its superior operational systems and service, will ensure ships load and unload as fast as possible, making London Gateway a world class asset for the UK.

About DP World

DP World operates over 60 terminals across six continents(As of 29 January 2013. Includes non-container terminals.), with container handling generating around 80% of its revenue. In addition, the company currently has 11 new developments and major expansions underway in 9 countries.

DP World aims to enhance customers' supply chain efficiency by effectively managing container, bulk and other terminal cargo. Its dedicated, experienced and professional team of more than 30,000 people serves customers in some of the most dynamic economies in the world.

The company constantly invests in terminal infrastructure, facilities and people, working closely with customers and business partners to provide quality services today and tomorrow, when and where customers need them.

In taking this customer-centric approach, DP World is building on the established relationships and superior level of service demonstrated at its flagship Jebel Ali facility in Dubai, which has been voted "Best Seaport in the Middle East" for 18 consecutive years.

In 2012, DP World handled more than 56 million TEU (twenty-foot equivalent container units) across its portfolio from the Americas to Asia. With a pipeline of expansion and development projects in key growth markets, including India, China and the Middle East, capacity is expected to rise to around 103 million TEU by 2020, in line with market demand.

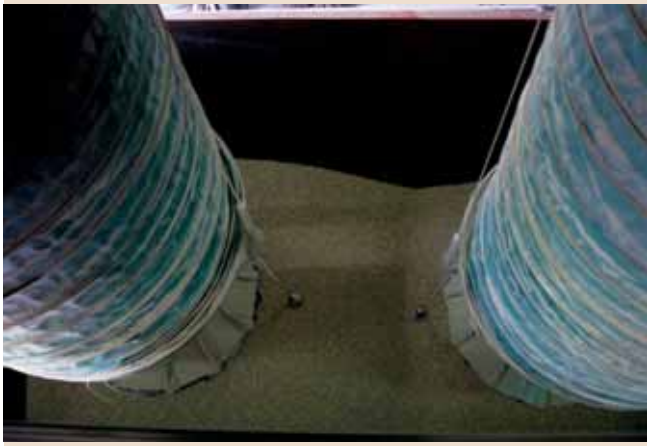
Cleveland Cascades Limited – at the forefront of biomass loading solutions

Global manufacturer of loading chutes, Cleveland Cascades Limited, is seeing increased interest in biomass wood pellet applications, on top of another year of sales growth in 2012 that saw the company post record annual sales and be short-listed for two prestigious local business awards.

The Teesside-based (UK) company is well known for its shiploaders, silo loaders and road loaders for dry bulk materials such as potash, fertilizers and coal, with over 500 of these loading chutes already supplied throughout the world.

"This year, our supply references have included potash silo loaders to North America, coke shiploaders to Australia and rail loaders for sulphur in Kazakhstan," says managing director, Matthew Barnard. "In many ways, this is our core business, as these are the types of applications we have supplied over the past decade. We are however also seeing increased enquiries for our Cascade loading chute for biomass loading on top of the projects we have already supplied for this product to UK power stations and the port of Tyne."

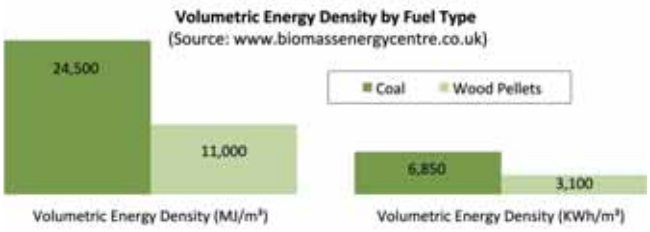
The Cleveland Cascade loading chute allows the controlled and efficient loading of material from conveyor to ship, silo, stockpile or rail/road loader. This photograph shows biomass wood pellet loading of a road tanker at the port of Tyne, United Kingdom.



The material is supported the full length of the chute by means of an arrangement of oppositely inclined cones. This arrangement controls the mass flow of the material; loading at low velocity and high volume which means that products can be transferred with minimised degradation and segregation of product, meaning more efficient loading and minimized dust emissions.

Biomass wood pellets are being increasingly used as a renewable fuel source, predominantly as an alternative to coal. The loading of biomass wood pellets poses particular loading challenges however. Wood pellets are brittle and are prone to material degradation, therefore improper handling can result in increased dust emissions.

The material is also relatively low bulk density but needs to be handled in huge volumes to be economically viable. Wood pellets also have a lower calorific value than coal, which all means that the Cascade loading chutes need to be capable of handling large volumetric loading rates. This also means that silos need to be bigger and taller, meaning longer chute lengths. "This is something that we have encountered in the biomass projects we have already delivered. As in all our projects, our design teams worked closely with their client counterparts to develop the best possible solution to these issues."



Its lower bulk density and lower calorific value means that more than twice the volume of wood pellet biomass is required to produce the equivalent thermal and electrical energy of coal.

Traditional loading chutes that allow the freefall of material from conveyor to pile would result in high material velocity, subsequent material degradation and dust emission. The higher the loading drop, the greater the material velocity and the bigger the problems. This is avoided with the Cascade loading chute, as the material falls for a minimal distance from cone to cone throughout the length of the chute. As the pile height increases during the loading process, the chute is retracted, which allows greater pile heights and optimizes storage utilization in the vessel or silo.

2012 saw Cleveland Cascades deliver and commission loading chutes for the loading of wood pellet biomass in port unloading facilities and power station storage applications.
Unlike coal, which can be stored outside, biomass wood pellets need to be stored in a dry environment to prevent biological degradation. Storage of the material also needs to be continually rotated, as

prolonged residence times in the silo can lead to further degradation. The Cleveland Cascades Cascade loading chute allows the safe and efficient loading of wood pellet biomass and is available in a variety of configurations:

- *Shiploader;*
- *Silo loader;*
- *Road loader; and*
- *Rail/tanker loader.*

The importance of biomass wood pellets as a source of renewable energy looks set to continue, with industry estimates of a threefold increase in demand by 2020. Cleveland Cascades recognizes this, and its staff recently attended a biomass training course at the renowned University of Greenwich Wolfson Centre for Bulk Solids Handling Technology.

This is part of the company's proactive and innovative approach to bulk solids handling, which has resulted in continued sales growth and peer recognition in the upcoming North East Business Awards. "We have been shortlisted in two awards, the Export Award and Manufacturing Award" says Matthew Barnard. "It is a nice bonus to be recognised in this way, especially given the strength of competition in these categories."

C.H. Robinson introduces Navisphere App for customers

C.H. Robinson Worldwide, Inc., a international logistics company, has developed a mobile app to extend the reach of the Navisphere platform, allowing users to access critical shipment information with Apple or Android™ mobile devices.

Navisphere app users are able to view detailed shipment information by searching for shipments via pickup or drop off dates, container, customer reference, or C.H. Robinson load numbers. In addition, users are able to view events of a shipment, imaged documents, and can email their account representative with questions on a particular move.

C.H. Robinson introduced Navisphere®, the next version of the company's single global technology platform, in November 2012. The platform allows customers to leverage C.H. Robinson's technology investments and gain access to a centralized network of more than 100,000 supply chain partners, without the need to integrate with each provider individually.

"Supply chains are constantly in motion, so having continuous visibility to each movement is a requirement for logistics professionals," said Tom Mahlke, chief information officer at C.H. Robinson. "The Navisphere app gives customers another method to stay connected and informed on all their shipments."

This release marks a continuation of C.H. Robinson's commitment to mobile technology. In November 2011, C.H. Robinson introduced its CHRWTrucks.com mobile app for carriers and other providers. The carrier app allows a motor carrier to enter critical shipment information, such as check calls and delivery information, as well as post empty equipment locations.

About C.H. Robinson

C.H. Robinson is a freight forwarder in Europe, with a dynamic network of 34 offices providing coverage throughout the region. C.H. Robinson Europe is a subsidiary of C.H. Robinson Worldwide, Inc., one of the largest transportation and logistics providers in the world, with more than US$10 billion in revenues.

As part of a powerful global network the freight forwarder brings best practices from around the world and applies them to each relationship, providing customers with flexible, reliable service that sets it apart from other competitors, and give carriers greater access to available freight and quick payment options. The company's motivated, multilingual and customer-focused employees apply their local knowledge and expertise to every transport challenge and build strong, personalized relationships with the customers and carriers they serve.

4B launches new JUMBO CC-S® ultra-heavy-duty elevator bucket line

4B Braime Elevator Components, a worldwide manufacturer of material handling and electronic components, has designed a new large-sized ultra-heavy duty elevator bucket line intended for the most severe agro-industrial uses, such as port and river terminals, ethanol and fertilizer plants, or frac sand and aggregate operations.

The new super strong JUMBO CC-S® bucket offers greater carrying capacity, along with ultra-durability and wear resistance. It has the thickest front lip, front corners and walls available for longer life. The JUMBO CC-S® is a High-Efficiency™ elevator bucket, and comes in six sizes ranging from 14 × 8" to 24 × 8" with additional sizes pending.

The new super strong JUMBO CC-S® bucket offers greater carrying capacity, along with ultra-durability and wear resistance.

As an extension of the proven and successful heavy duty CC-S® elevator bucket, the JUMBO CC-S® also incorporates the long lasting Iceberg® Edge front wear lip and the unique tapered bottom. Designed for the closest possible vertical spacing (up to 4.6 buckets/metre) the tapered bottom ensures efficient bucket fill and discharge, especially in low-profile configurations. This design allows the buckets to nest inside one another, delivering transport cost savings and storage efficiencies. "The JUMBO CC-S® offers a substantial upgrade opportunity for anyone requiring thicker walled elevator buckets", said Carl Braime, sales director at 4B Braime Elevator Components.

About 4B Braime Elevator Components

Founded in the 1971 as a subsidiary of The Braime Group, 4B has been active in developing high quality, innovative, and dependable material handling components for the agricultural and industrial sectors.

4B's product line ranges from elevator buckets, elevator bolts and belts and drop forged conveyor chain to level monitors, speed switches and hazard monitoring systems.

With offices in North America, Europe, Asia, Africa and Australia along with a global network of distributors, 4B can provide practical solutions for applications in any location. DC

Iceberg® Edge technology ensures smooth discharge.

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More than 5000 breakbulk & project cargo shippers, forwarders and service providers will attend Breakbulk Europe. What do they know that you don't?

ATTEND

The Breakbulk Europe Conference is the largest conference in Europe focused on traditional breakbulk and project cargo trade and transportation issues. This conference has nearly doubled in size each year since its inception, an indication that there is a great need for education and networking in this market. During this conference, shippers have the opportunity to learn about breakbulk and project cargo issues as they relate to European trade and to meet with specialized carriers, ports, terminals, freight forwarders, equipment companies and packers. Conference program includes education sessions as well as networking functions and an exhibit hall.

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World premiere: SENNEBOGEN 875 E-Series – ideal for port handling operations

SENNEBOGEN will present its 875 E-Series at the bauma exhibition in Munich in April. The 875 E-Series is an innovative machine, with ranges of up to 27m and a maximum load capacity of 7.5t, which completely satisfies demanding port handling requirements. Whether handling piece goods or bulk goods, the new SENNEBOGEN 875 is impressive with its high material handling capacity, proven low energy and operating costs that have even been further reduced, thanks to a new energy recovery system. Customer-specific gantry or pylon solutions and variable cabin elevation offer an ideal overview and maximum operating comfort.

The new SENNEBOGEN 875 E-series is ideally suited for port handling and industrial applications.

With an operating weight of up to 150t, the 875 E-Series is ideally suited for port handling and industrial applications. A newly developed energy recovery cylinder is being implemented for the first time. This cylinder compensates the boom weight and thus significantly decreases energy costs. When lowering and braking the boom, the energy is buffered in a third cylinder that is positioned between the two hoist cylinders. This energy, virtually without loss, is then available again for the next work stroke.

SENNEBOGEN Mastercab.

With equipment lengths up to 27m and a maximum load capacity of 7.5t, the 875 extends the previous product line of the SENNEBOGEN port handling machines. Equipped with a modern Cummins 391kW diesel engine, the machine fully satisfies the Tier 4i requirements. Alternatively a 430 kW energy-saving electric motor is available.

Maximum comfort and ideal overview for port handling applications

The elevating horizontally-adjustable Maxcab Industry is standard equipment for the SENNEBOGEN 875. The maXcab Industry offers the operator a pleasant workplace with automatic air conditioning and high-precision joystick control. Optionally the machine can also be equipped with the new Mastercab in combination with the variable Skylift 900 cabin elevation unit. With the Skylift 900 the operator cab can be variably adjusted over a height of 9.5m. The proven SENNEBOGEN modular concept offers extensive superstructure variants to meet customer requirements. From mobile undercarriage to crawler and rail undercarriage, extending to sophisticated gantry and pylon solutions for special application areas, all can be can be individually implemented. With gantry and pylon superstructures in particular, the SENNEBOGEN 875 achieves an outstanding viewing height — a valuable work facilitation and added safety when unloading ships.

Green Efficiency technology and intuitive control

In addition, the SENNEBOGEN 875 E-Series is impressive with optimal environmental compatibility and concurrent low consumption values. The SENNEBOGEN Green Efficiency technology sets new standards in the areas of performance, and operator comfort, with concurrent environmental compatibility.

Thanks to the well-designed engine technology, innovative ECO Mode and idle stop automation, the SENNEBOGEN 875 manages the balancing act between increased performance and reduced consumption. When working in so-called Eco Mode at reduced speed, and thanks to automated idling and stop processes, the machine saves a lot of fuel. In addition to the new motorization the new SENNEBOGEN Control System, or SENCON in short, offers a maximum of safety and easy menu guidance. Machine parameters can be read out centrally on a generously proportioned, intuitively operated display, and the operator can conveniently make individual fine adjustments himself.

In daily operation the SENNEBOGEN 875 is characterized by its high level of serviceability and ease of maintenance. The walk-on uppercarriage with continuous gallery ensures uncomplicated access to maintenance and service points. Typical for SENNEBOGEN in this regard is also the clear arrangement of all components, and the proven longitudinal installation of the engine offers service advantages. Moreover, the all-round railing, an additional access ladder to the cab, as well as powerful LED headlights and peripheral cameras that support the operator in his work, ensure safety.

SENNEBOGEN 875 E-Series — in summary

The SENNEBOGEN 875 of the new E-Series supplements the extensive range of Green Line materials handling machines for port handling and scrapyard applications. Versatile configurations are available for these implementations, and they can easily satisfy customer-specific requirements.

- power at the highest level: Cummins diesel engine with 391kW/525 hp – 1880, Tier 4i. Alternatively: electric motor with 430kW at 400 V — 50/60 Hz;
- superior load capacities: Up to 7.5t at 27m reach;
- versatile equipment: K21, K26, K27, B26;
- flexible modular system: with mobile undercarriage, crawler undercarriage, pylon variants, gantry solutions, rail undercarriages;
- modern Maxcab Industry — comfort cab for continuous relaxed work, optionally available with Mastercab; elevation and horizontal adjustment are standard equipment;
- Skylift 900: vertical adjustment over 9.5m, convenient ground entry, ideal in port implementation;
- highest safety standards: easily accessible maintenance via walk-on uppercarriage, railing and gallery on the cab and uppercarriage, LED headlights, peripheral cameras right and rear; and
- energy saving drives: all machines are optionally available with electro-hydraulic drive solutions, the energy recovery cylinder is standard equipment.

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LIEBHERR
The Group

Liebherr reviews performance of its mobile harbour cranes in 2012

In 2012 Liebherr Mobile Harbour Cranes achieved the highest annual turnover in history, as well as reaching a remarkable milestone with the delivery of its 1,000th mobile harbour crane.

Liebherr launched its LHM 420 in March 2011, and the model is already popular among customers.

Proven excellence in cargo handling

Liebherr received the Innovative Technology Award for its LHM Noise-Control Initiative at the IBJ Awards 2012. This initiative comprises a number of technical solutions implemented to achieve significant noise reduction. Additionally, Dr Isolde Liebherr was awarded the Lifetime Achievement Award in recognition of her life's work on the global bulk industry.

In May, the State Prize Clean Technology Austria was presented to Liebherr-Werk Nenzing GmbH. The company, renowned in the mobile harbour crane sector, convinced the jury with Pactronic® — the first hydraulic hybrid drive for cranes and construction machinery to achieve increased handling performance with reduced fuel consumption.

These awards emphasize Liebherr's continuous commitment to research and development. Today, Liebherr Nenzing employs more than 230 technical engineers in the fields of research and development, technical design and all fields of drive technology. In close proximity to the customer, Liebherr will continue to explore new ways ensuring that its mobile harbour cranes will remain the most innovative available on the market.

More than 1,000 deliveries worldwide

Liebherr relies on nearly 40 years of experience in the mobile harbour crane business. In 1994, 20 years after market entry, Liebherr delivered its 100th LHM. In 2005, the 500th LHM started operation. Just a few years later this impressive figure has been doubled. Thus, thanks to a continuously rising demand for flexible and efficient cargo handling solutions Liebherr accomplished a major milestone in 2012. The 1,000th LHM, type LPS 550, was delivered to Montoir Bulk Terminal (MBT) located at the French Atlantic coast (pictured above). Equipped with the powerful and energy-saving Pactronic® hybrid drive system, the crane is going to play a major role in the cargo handling chain of the terminal in order to increase turnover efficiency.

LHM 420 proves popular

Launched in March 2011, the LHM 420 has already experienced high market acceptance. Today, Liebherr's latest model, capable of up to 124 tonnes, represents the second most in demand Liebherr mobile harbour crane with 18 deliveries worldwide in 2012 alone, which equates to 19% of all LHMs supplied last year. Generally speaking, the LHM 550 has retained its position as best-selling model accounting for almost 45% of last year's deliveries.

Sales review and outlook

Although the economic environment has been bumpy and a bunch of issues, like the excessive public debt in several countries worldwide, needs to be resolved, Liebherr truly succeeded in 2012. Liebherr delivered 94 mobile harbour cranes worldwide and achieved the highest annual turnover in history: €291 million. Compared with 2011 this is a rise of nearly 11%.

Due to their flexibility regarding application and efficiency in cargo handling, Liebherr mobile harbour cranes are globally recognized as a solid investment. For that reason more and more customers opt for these state-of-the-art machines.

A notable trend towards bigger and stronger machines is still evident. Comparing the deliveries of 2011 and 2012 clearly underlines this tendency. In 2011, every fourth delivery was a member of the lightweight mobile harbour crane family, covering all types up to LHM 320. In 2012, the share of the lightweight range has dropped to 19%.

In regard to the regional distribution of deliveries, Europe (including Russia) is by far the biggest market accounting for more than 40% with 38 LHMs delivered, a significant plus of 12 cranes compared to 2011. The African market also showed a very positive development accounting for over 21% (20 LHMs), an increase of eight machines. Thanks to this strong demand, Liebherr achieved another important milestone last year, supplying the 100th LHM to Africa in March 2012. Deliveries to Latin America (16%, 15 LHMs) and India (13%, 12 LHMs) remained stable on a high level. Additionally, LHMs deliveries to customers in North America, Asia, Middle East and Oceania emphasize the global importance of sophisticated mobile harbour cranes.

In 2013, many countries around the globe expect a higher GDP growth which may result in a higher global trade volume and additional investments in port equipment. As the LHM order backlog is very promising, Liebherr is optimistic that the demand for its state-of-the-art mobile harbour cranes will remain on a high level and that 2013 will be another strong year for the mobile harbour crane sector.

CFS Handling unveils EGV 260/8-1000 electro-hydraulic grab

Italian company CFS Handling has given *Dry Cargo International* details of its latest grab, the electro hydraulic EGV 260/8-1000, which has been specifically designed for scrap handling.

The nominal capacity of the grab is 10m^3 with a net weight of 10,800kg. The main body of the grab is constructed from FE 510 C EN 10025, while the jaw plates, supports, tips and internal covering are all made from HARDOX 450.

The carrying capacity of the EGV 260/8-1000 is 22.5 tonnes at a time, grabbing the scrap with specific weight of 1.7t/m^3. The opening time is 9.5 seconds. and the closing time is 15.5 seconds. This rate means that the grab can handle 750 tonnes of scrap per hour. It is equipped with a Rexroth variable displacement axial piston pump, a protective cage for the hydraulic cylinders, a 400V, 50Hz electric motor and a 110V, 50Hz solenoid valve.

Should it become necessary for maintenance, the cover of the grab can be easily removed, making it possible to take out the complete electro hydraulic unit with its oil tank, so that it is not necessary to transport the whole grab to the workshop for repairs.

Also, to meet the needs of its customers, in countries where temperatures get very high, CFS Handling Srl installs air-oil heat exchangers on its grabs and buckets, to maintain the temperature of oil at correct levels.

Indexator – a Swedish family business

In 1973, Allan Jonsson bought the Swedish company Indexator. Since then he has continuously expanded it with products that were at first focused on the needs of Scandinavian users.

He realized early on, that rotators offered more flexibility for a number of industrial sectors. As a result, Indexator has now grown to be a globally recognized producer of rotators for the transport, materials handling and recycling industries.

Rototilt — a flexible solution

The primary goal of the company was always to be a leader in the area of product development and to offer robust, powerful equipment.

This led to the concept of Rototilt®, a solution to enable the more flexible use of excavators, and allowing them to take on a multi role function in existing and new applications. Rototilt allows digging, tilting and rotating in a single movement.

Ultra modern manufacturing plant

To fulfil the high expectations in quality, availability and dependable deliveries, Indexator continuously invests in its ultra-modern manufacturing plant.

A total of 200 employees work at Indexator and most of them in the North-Swedish town of Vindeln, generating a turnover of circa SEK 430 million.

Indexator uses a Computer Integrated Manufacturing (CIM) solution, which includes a Flexible Machining System (FMS).

This allows full integration of the design, sales ordering, production planning and manufacturing functions. To ensure the

quality of the complex designs, work is done exclusively via a modern 3D CAD system. Indexator is rightfully proud of its world class manufacturing abilities.

Strong brand and a worldwide business

Within the forestry sector Indexator is a worldwide-established brand, the experience gained is now being applied to great effect in both the construction and waste recycling sectors.

Indexator exports about 65% of its production to over 40 worldwide markets. In addition to the international distributor network Indexator also has two subsidiaries, Indexator GmbH that covers Germany, Austria and Switzerland and Indexator Inc that covers North America.

Besides rotators for forestry, general cargo and materials handling, Indexator also manufactures Rototilt for excavator attachments.

Indexator invests considerable resources in product design and development, working closely with the world's leading manufacturers of forestry, transport, construction and recycling equipment.

Manufacturing of Indexator rotators takes place in Vindeln, Sweden, in the company's technically advanced factory which ensures the high quality and finish of every single component used in its wide range of rotators.

All Indexator rotators are individually tested ensuring that the company delivers a precision manufactured, reliable product to its customers.

Indexator has an extensive worldwide network of distributors and service centres to offer comprehensive backup for its rotator and Rototilt products.

Indexator — the quality factory

Quality is what characterizes Indexator. Everything it does is governed by delivering the best quality possible. Its rotators always, at the very least, meet its customers' requirements and expectations. Production technology is important, but it is the employees who have the lead role in the quality work.

Everything under one roof

Indexator's production facilities are located in Vindeln, outside of Umea in northern Sweden. The 8,500 square metre production facility for rotators shares space with corporate management, product development, sales and after-market support.

This closeness provides advantages in the form of an overview and short decision-making channels.

Competence and commitment

Indexator's rotator factory is designed for rational flows and high-capacity utilization. In the centre is the completely automated material handling system, FMS, and advanced processing machines. The collective competence and commitment of the company's employees is what allows Indexator to live up to the name "quality factory".

Full-scale testing

Not everything is automated. Preliminary and final assembly is done by hand in order to ensure quality and configuration. All rotators undergo a test cycle where all functions are checked. Testing is completely automated to avoid human influence, but is monitored by an operator. No deviations are tolerated.

Quick spare part distribution and local service

Indexator's rotators are designed for tough work and long life, but sometimes parts have to be replaced. When that happens the customer wants the parts fast!

Indexator is there

Indexator has developed an efficient system for global spare part provision and service in close proximity to customers. This can be organized in different ways — every market area has its own prerequisites.

But the goal is always the same: to quickly get the ordered spare part in order to minimize downtime and lost revenue for the customer.

Qualified technical support

Indexator provides technical support via telephone and e-mail. A staff of experienced employees with major product knowledge accepts questions and orders from customers and workshops.

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Rotator Systems

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COMPLETE SOLUTION Swivel, bearings and motor packaged in one well protected rotator – the materials and components are carefully selected.

HIGH TORQUE VANE MOTORS The modular design together with few moving parts make these rotators durable and easy to service. Documented long lifetime.

www.indexator.com

From quarry to consumer

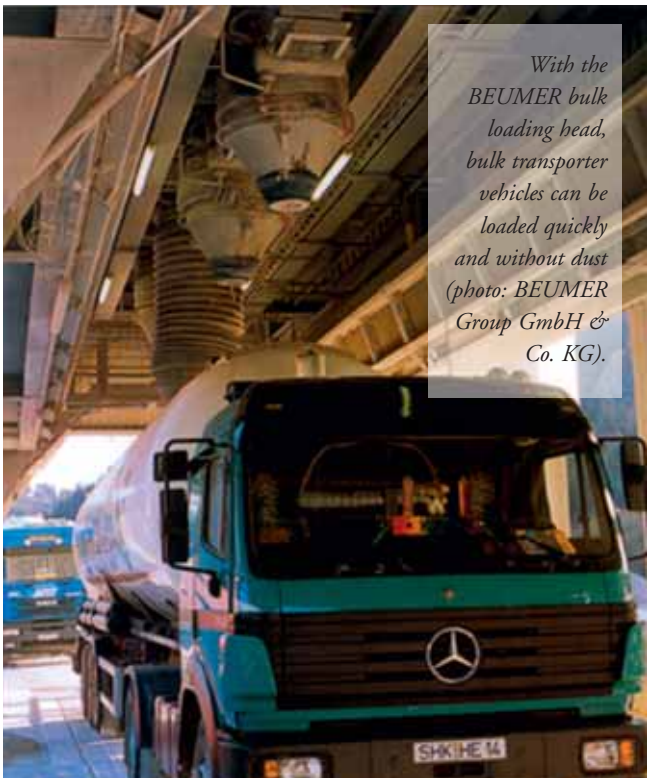
The heavy duty technology from BEUMER: the new bucket shape allows for smoother running and therefore less noise generation (photo: BEUMER Group GmbH & Co. KG).

Beumer to present equipment at 'bauma' exhibition in April

At bauma 2013, the international trade show for construction machinery, building material machines, mining machines, construction vehicles and construction equipment (April 15–21, Munich, Germany), BEUMER Group will display its comprehensive competence in conveying, loading, palletizing and packaging technology. Visitors will also learn about BEUMER customer support, which ensures the systems' high levels of availability.

The BEUMER Group — headquartered in Beckum — will present its innovative solutions for bulk materials. For example, the BEUMER portfolio includes curved belt conveyors. Both troughed belt conveyors and pipe conveyors are used to transport various bulk materials over large distances and often across impassable terrain. Using BEUMER belt apron conveyors, hot materials, such as cement clinker, can be safely and efficiently transported. The conveying system can withstand high temperatures. It builds on proven belt technology, like the technology used in bucket elevators. BEUMER will also present its heavy-duty bucket elevators. These machines transport chunky, highly abrasive bulk material with piece sizes up to 120 millimetres. At bauma, BEUMER will display models of a belt bucket elevator and a pipe conveyor.

In order to load bulk materials quickly and without dust, BEUMER offers bulk loading heads. They are designed according to the double-wall system. The material inlet and the dedusting unit are separated from each other. In order to balance out any minor positional deviations of the vehicle, the bulk loading head can be moved laterally during placement. Stationary bulk loading heads are often no longer sufficient for large loading capacities as, for example, in the cement industry. It should be possible to move the bulk loading head to each filler neck of the vehicle. For this purpose, BEUMER has developed mobile loaders that adapt to the length of the vehicles. If open vehicles are to be



With the BEUMER bulk loading head, bulk transporter vehicles can be loaded quickly and without dust (photo: BEUMER Group GmbH & Co. KG).

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loaded without dust, various telescoping loading systems are available.

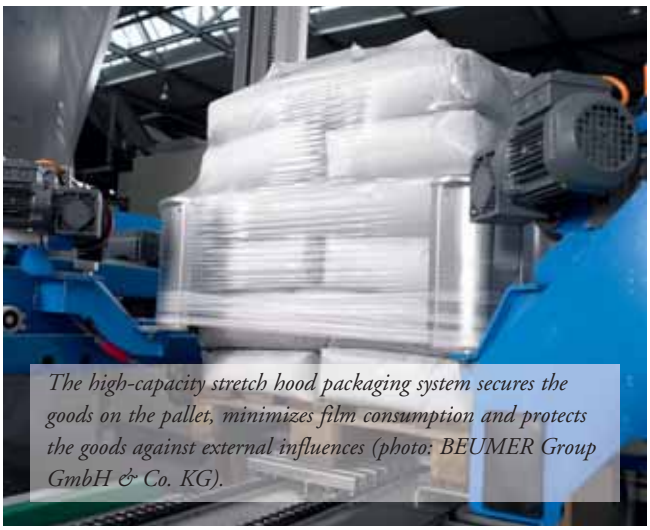
The BEUMER portfolio offers the loading and palletizing system autopac 3000 for fully automatic loading of bagged bulk materials on to lorries, wagons and ships. The machine simultaneously loads and palletizes bagged goods directly on lorries without using pallets. Loading bags with this BEUMER system is particularly efficient, because significant manpower would otherwise be required. This is especially important in emerging market nations, where the transshipment of bagged bulk goods is increasing and labour costs are climbing.

Belt conveying systems enable rapid and efficient transport of bulk material from the quarry to the destination also through rough terrain (photo: BEUMER Group GmbH & Co. KG).

From the palletizing technology product range, BEUMER will display the paletpac range. This layer palletizer palletizes bagged bulk materials. The BEUMER paletpac 5000 impresses with a very high capacity at low processing speeds, due to bag flow distribution. For this reason, this version is primarily used for palletizing building materials such as cement or mortar. The geometric precision and the stability of the palletized stacks allow for easy storage and ensure reliable integration in downstream packaging systems. With it, BEUMER will present the versatile high-capacity packaging system, the BEUMER stretch hood. It packs palletized goods with minimal film consumption and secures the load on the pallet with a perfectly fitting film hood. This protects the products from environmental stresses, such as moisture, dirt or ultraviolet radiation, ensuring clean and dry outdoor storage.

To ensure high levels of system availability for the customer, BEUMER Group has competent experts on duty worldwide with its customer support. These experts handle proper maintenance and repair, deliver spare parts and conduct customer training.

BEUMER Group is an international manufacturer of intralogistics for conveying, loading, palletizing, packaging, sortation and distribution technology. Together with Crisplant a/s and Enexco Teknologies India Limited, BEUMER Group employs about 3,200 people and achieves an annual turnover of about €500 million. With its subsidiaries and sales agencies, BEUMER Group is present in many industries worldwide. DC



The high-capacity stretch hood packaging system secures the goods on the pallet, minimizes film consumption and protects the goods against external influences (photo: BEUMER Group GmbH & Co. KG).

Carrying the bulk load

keeping up with conveyor belt technology

Skirtboards help reduce spillage and dust, containing the load until it assumes a stable profile.

Louise Dodds-Ely

Improved maintenance reduces risk, raises profitability in conveyor operations

When times are tight, it's more important than ever to minimize risk with ongoing maintenance and safety programmes that help protect workers, reduce waste and maximize efficiency, *writes Larry Goldbeck, Manager of Conveyor Technology at Martin Engineering.*

Few would argue with the assertion that a single serious conveyor accident can cost more money and anguish than virtually any safety programme. Most people would also agree that employees in conveyor-relayed industries deserve to have the safest workplace that is reasonably possible. Yet as downsizing trends advance and the economy continues to struggle, there is a temptation to postpone maintenance activities and safety upgrades in an effort to preserve profitability.

Unfortunately, there are a number of subtle expenses that typically result from this approach, ultimately costing far more than the savings from service and safety cutbacks. And many of the concerns are the same issues that conveyor operators first identified in the 1930s. The primary difference is that conveyors are larger, longer and faster in today's operations, with greater power and risk potential. When coupled with increasing productivity demands, particularly on aging equipment, plant owners can put themselves and their earnings at unnecessary risk.

The path to injury

Conveyors apply large amounts of mechanical energy to what is essentially a giant elastic band, stretched tight and threaded through a maze of components. This stretched band is burdened with a heavy load of material and moved at high speed, sometimes with drive motors as large as 600HP (450kW). Given the inertia and kinetic energy, enormous forces are involved. The human body, able to generate less than 1HP, is simply no match.

A report from the Mine Safety and Health Administration found that over a recent four-year period, more than 40% of injuries were caused while a worker was performing maintenance or checking a conveyor. Nearly as many more were hurt while the subject was cleaning or shoveling near a moving belt.

In another study of more than 200 fatal mining accidents, data compiled by MSHA and the U.S. Department of Labor observed that 48 of those involved conveyors. Activities most often leading to conveyor-related fatalities were maintenance (such as replacing idlers or clearing blockages) and cleanup (including shoveling or hosing). Together they accounted for more than 50% of the total.

Some of the costs associated with these accidents can be

easily identified, including medical treatment, lost wages, equipment downtime and potential legal liability. Less apparent are the costs of finding and training new employees, subsequent production delays and the supervisory time for investigating/ reporting, not to mention damage to equipment or tools.

In 2007, the National Safety Council in the United States estimated the average cost of a work-related death to be around $1.2 million, a figure that's likely to be even higher now. The accounting included medical expenses, wage and productivity losses and administrative costs, but not property damage.

New advancements include an innovative design with a primary seal clamped to the skirtboard and an 'outrigger' strip to capture fines.

Training

The single most critical element in conveyor safety and efficiency is training, beginning with management. While managers are often too busy to take a course on conveyor systems, they'll frequently require attendance by an employee who has little or no influence in the decision-making processes that affect the safety and efficiency of the plant. The commitment to reduced risk must be initiated by managers and supervisors, if they expect the troops to buy in to the concept.

Many industries require specific amounts of training for new employees, and some demand continuing education, a good practice for reducing risk and maximizing productivity. These programmes typically provide an introduction to the work environment, and may also include topics such as hazard recognition, risk avoidance and health/safety. Unfortunately, there are few standards that focus on conveyor training, and in light of the number of conveyor-related accidents each year, it appears that existing programmes have not accomplished their mission.

As part of a good training programme, operators will learn the importance of observing the speed limit and capacity rating on any conveying system, ensuring that design specs are not exceeded. A safety 'walk-around' will become second nature any time inspection or repair is performed, so that all tools and work materials are removed before re-starting the conveyor. In a well-designed system, emergency shut-offs and controls will be located close to the belt, with ready access that is unobstructed by debris.

It's important that only competent, well-trained personnel — equipped with the proper tools — perform conveyor service and maintenance. These individuals should be trusted veteran employees empowered with the authority to shut down a conveyor for minor repair that is likely to prevent a major outage or equipment expense. One way to optimize maintenance is to document standard procedures for performing each task, ensuring that it's completed in the safest and most efficient manner possible.

A computerized maintenance management system (CMMS) is an excellent tool for archiving these service procedures. The specialized software will administer work orders and manage information, so the maintenance staff can perform tasks according to priority. Most systems will also track expenditures, an essential element in justifying equipment upgrades or purchases.

Belt selection

While it might sound basic, improper belt selection remains a common problem in conveyor systems, decreasing belt life and creating potential hazards. Belt conditions such as cupping and camber are often a result of improper specification, which leads

to spillage, mis-tracking and improper loading. Belt selection must be based not only on the system length, width, material conveyed and angle of incline, but also on the parasitic drag of components such as idlers, bearings, belt cleaners and skirt board seals.

In specifying the correct belt, thicker is not always better. It should be selected to deliver the proper pounds per inch of width that it's intended to carry, as well as the optimum trough angle, aspect ratio and cover material. While many suppliers are simply middle men who will sell whatever stock belt is best suited to the application, a better match will usually be obtained by using a quality software programme to design and select the belt according to specific criteria.

Fugitive material

One of the primary approaches to reducing risk and improving profitability is to manage fugitive material. There are many ways that fugitive material from belt conveyors can create hazards, the most apparent being that it creates the need for personnel to perform maintenance around moving conveyors. Any time that employees are in close proximity to the moving belt, even minor or inadvertent contact can become a serious injury or fatality in just seconds.

By nature, spillage costs money. If people are cleaning up fugitive material, they're wasting labour. If material is escaping, it's wasting a valuable resource or product. While some operations can return the spilled material to the process, it often contains impurities that can raise product quality issues.

In other facilities, the material must be discarded or washed away, a particularly expensive approach if the conveyor's contents have already undergone some amount of refining by the time they reach the spill point.

A settling zone controls the air current travelling with the material stream, allowing airborne particles to fall back into the bulk material.

In an example not uncommon in bulk materials handling, one facility conveying 800tph (tonnes per hour) was found to be literally washing an estimated $1.2 million worth of material down the drain every year. An effective system of fugitive material control that is properly installed can drastically reduce waste, often paying for itself in as little as 6–12 months.

Another problem caused by fugitive material is flow restrictions. Chute or bin blockages can bring even a large-scale process to a standstill, causing thousands of dollars in downtime, corrective measures and lost production. Blockages can also cause material boilover and sudden surges, as large amounts of material suddenly break free and drop through a receiving vessel and onto the belt. Both conditions are major contributors to spillage, which can also introduce belt tracking error that can

Modular components such as track-mounted pulleys and cradles can deliver slide-in / slide-out convenience.

damage equipment and increase the risk of injury.

A well-designed conveyor system will often employ skirtboards for reducing spillage and dust, used to contain the load as material is placed on the belt and until it assumes a stable profile. Skirtboards at each transfer point must be engineered to match the characteristics of the material, the receiving conveyor, drop height and transfer point design.

Another form of fugitive material is dust, whether settled or airborne. In addition to the potential fall hazard, risk occurs primarily when fine, lightweight particles are sufficiently disturbed to launch them into the air, where their low mass causes them to hang suspended and travel in the wind.

Dust inhaled by workers or members of the surrounding community can irritate airways and exacerbate conditions such as asthma. From a purely financial perspective, when equipment air intake includes significant amounts of dust, it can lead to more frequent maintenance and greater engine wear, causing operating costs to rise. Conveyor dust can also generate complaints from local residents and businesses, affecting community relations, creating obstacles to future operating permits or leading to increased scrutiny.

As material escapes, it accumulates on idlers and other components, contributing to premature failure. Once a bearing seizes, the constant belt movement can wear through an idler shell with surprising speed, leaving a razor-sharp edge that poses a threat to workers and the belt itself.

Spillage can also contribute to the risk of fire by interfering with pulleys and idlers and by providing potential fuel. Most conveyor fires are ignited by friction-generated heat from a pulley turning against a stalled belt or a belt moving over a seized idler. A conveyor belt fire of any size is a serious issue, not only because the belt or its contents may burn, but also because the length and movement of the belt can spread a fire a great distance in a very short time. One overheated bearing and a small amount of powdered material can quickly turn into a large-scale event. Even worse, in confined spaces, airborne particles can create the right ingredients for an explosion.

An elastomer edge seal is often used to prevent the escape of fines, typically constructed from steel plate. In addition to managing the bulk material to control spillage, the skirtboard and sealing system form a settling zone that contributes to effective dust management. In this zone, the air current travelling with the material stream is slowed and controlled, allowing airborne particles to fall back into the bulk material.

When a conveyor has multiple loading points relatively close together, it may be advisable to install a continuous skirtboard between the loading zones. An experienced supplier of conveyor technology should be well-versed in the design options and able to provide sound advice on optimum features to suit an individual application.

The symptoms of carryback are most often seen as return roller buildup that causes belt tracking problems. Often, an





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employee will try to clean the return roll while the belt is running, a highly dangerous and potentially fatal decision.

Absent or inefficient belt cleaning is both a safety hazard (because an employee is typically required to somehow remove the carryback) and an efficiency drain (because this material isn't getting delivered to the desired destination). While it may seem like a small amount of inevitable waste, in reality it's a preventable loss. If it's material that has already been processed in some way, then an even greater investment has been made without any return. Belt cleaning systems can drastically reduce the amount of carryback. Unfortunately, many bulk material handling systems exhibit symptoms of all forms of fugitive material: spillage, carryback and dust, complicating the effort to correctly identify the sources and apply effective remedies.

Guarding

It's essential that pinch points be equipped with well-designed guards to prevent accidental or unwise encroachment by employees. This includes rotating components like pulleys and idlers, as well as equipment that may create sudden movement, such as gravity take-ups. Many plants are beginning to totally enclose hazardous spaces as a way of protecting employees and visitors using walkways and inspection points, with heavy guards fabricated from metal mesh or screen that permits observation of moving parts without posing an opportunity for injury.

Safety guidelines for the US are published in *ASME Standard B-2.1-2006: Safety Standard for Conveyors and Related Equipment* and in *B15.1: Safety Standard for Mechanical Power Transmission Apparatus*. While almost every nation has individual requirements that apply to the placement of guards, local and general industry standards should also be consulted and implemented.

Scheduled inspection & maintenance

It's easy to focus on the fact that companies make money only when the conveying system is loaded and running, especially if employee compensation is tied to plant performance. As a result, there's a reluctance to shut down a running line until there's a compelling reason, which creates a 'We'll fix it when it breaks' attitude.

What some managers fail to recognize is that this approach will change their conveyor service from scheduled maintenance to crisis management. Such short-term thinking is an almost certain path to component failure — probably catastrophic — which will ultimately cause more system downtime, higher repair costs and more labour investment than if a sensible plan had been created and followed from the outset.

It's critical that the production schedule allows adequate system downtime to perform necessary inspections and maintenance. A formal inspection and service schedule must be developed for the material handling system and followed religiously. This programme should include review of emergency switches, lights, horns, wiring and warning labels, as well as the conveyor's parts and accessories, such as chutes, cleaners and other components.

There are certain conveyor safety practices that should always be observed, regardless of the size, design or operating environment. Lockout/tagout/blockout/testout procedures must be established for all of the belt's energy sources, as well as accessories and associated process equipment. Bulk material handling systems can still present a hazard from the energy that is stored in a stretched belt after its motion has stopped, which can cause the conveyor to move suddenly, even when the system is de-energized.

Pinch points should be equipped with well-designed guards to prevent accidental or unwise encroachment by employees or visitors.

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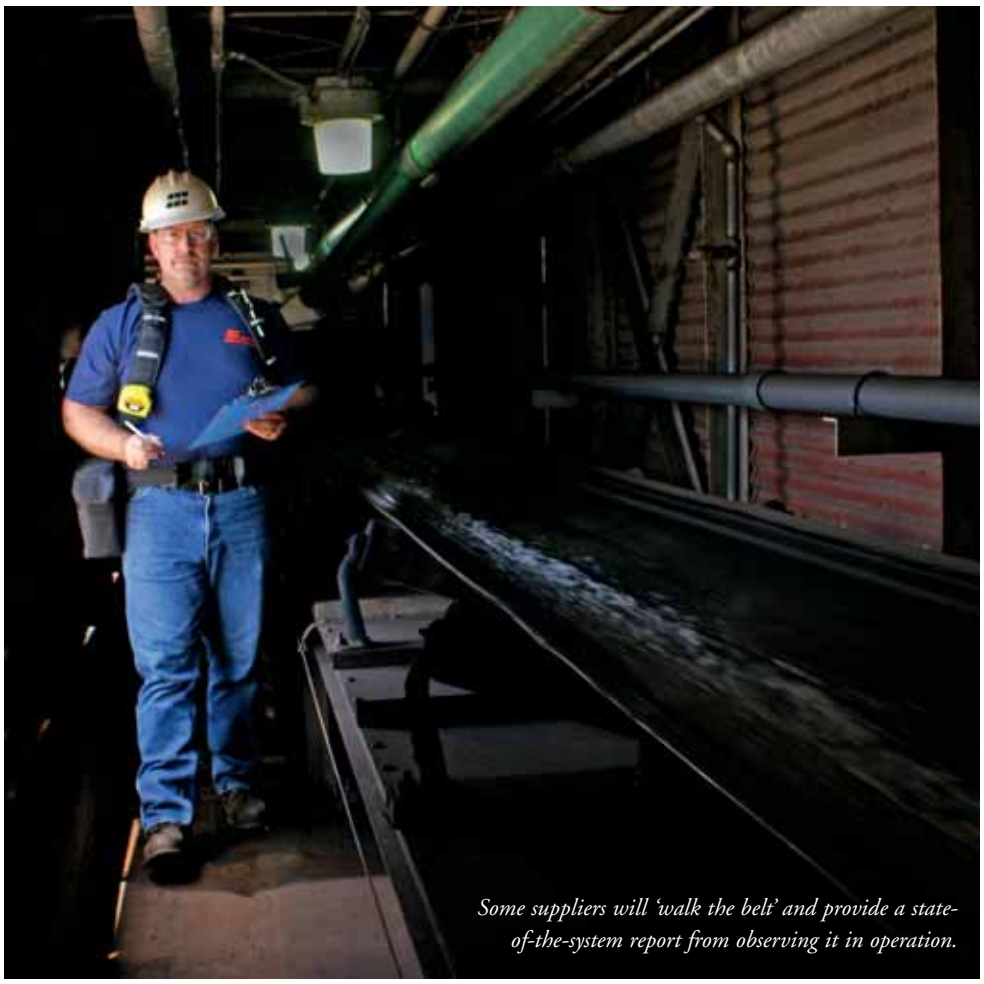

Some suppliers will 'walk the belt' and provide a state-of-the-system report from observing it in operation.

Lockout and tagout alone may not be enough to ensure a worker's safety, so it's imperative that the conveyor be blocked and tested to confirm that it cannot move. These procedures should be followed before beginning any work in the area, whether it be construction, installation, maintenance or inspection.

Safety by design

The most efficient way to address conveyor safety and maintenance is by building the system from the outset with those features in mind. But even without that luxury, a thorough evaluation of the conveyor system will help identify potential problems and upgrades, whether performed by a qualified staff member or by an experienced independent supplier.

While any conveyor supplier can build a system to transfer material from one place to another, adding safety and fugitive material control as critical elements will complicate the equation for some manufacturers. For optimum safety and productivity, a conveyor system should be designed for easy installation, maintenance, repair and cleanup. Specifiers should look for standardized components that can be easily serviced; maintenance access points at strategic locations; comprehensive barrier guards at all pinch points; and upgradability options to meet future requirements.

The design should provide adequate walkways, platforms and utilities such as water, electricity and compressed air to facilitate maintenance and service. Modular components such as track-mounted pulleys can deliver slide-in/slide-out convenience. Even if a procedure is only required infrequently, the time and money savings can be significant.

Dust-resistant structures, engineered flow chutes and properly designed skirtboards all contribute to fugitive material control, helping to reduce maintenance and downtime. Common features such as wear liners, seals and belt cleaners help minimize waste and maintain consistent belt tracking, while customized designs may include specialized chutes and belt-washing systems. Modern 3-D drafting and fabrication techniques now allow conveyor suppliers to build and arrange components in non-traditional ways, without greatly increasing the costs.

Contract services

When the economy lags, plants often reduce their head count. In an effort to concentrate the efforts of remaining staff on core activities and stabilize maintenance costs, many bulk materials handlers are entrusting their conveyor installation and service to outside contractors. Most will find the best success with specialty contractors whose sole focus is conveyor systems and bulk material flow. These specialists, employed by a proven manufacturer, trained and certified to specific standards, will have conveyor expertise which exceeds that of a general contractor.

Having an outside expert opinion often helps to identify problem areas that plant personnel may have come to view as normal. Some suppliers will offer to 'walk the belt' and provide a state-of-the-system report from observing it in operation. While no repairs should ever be attempted with the belt in motion, watching and listening to the system will help an experienced conveyor mechanic to identify components in need of attention, often before a catastrophic failure or safety incident occurs.

Trustworthy parts/service providers will provide upfront quotes on the equipment and labor they supply, as well as performance guarantees to ensure customer satisfaction. They should be skilled in conveyor science and safety, able to identify opportunities for system improvements and quantify the potential benefits. Some will also offer operator training programmes and continuing education, helping to facilitate a company-wide commitment to safety and preventive maintenance, while fostering a culture of continuously reducing risk and enhancing plant performance.

All forms of bulk material movement carry their own risks and safety concerns, but properly designed, maintained and operated conveyor systems remain one of the most effective modes of material transport. Rather than view them purely as an operating expense, owners and crews would be better served to investigate the opportunities to improve both safety and productivity. Thorough planning by well-trained personnel will help maximize efficiency by eliminating fugitive material and minimizing hazards as much as humanly possible. The result will be healthier, happier employees and an improved bottom line.

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Globalization has for many years been an integrated part of Rulmeca identity.

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At Bauma 2013 Rulmeca will display the complete range of idlers/rollers and motorized pulleys: special focus will be given to the new belt tracking roller, to the anti runback roller and to the 1000HD motorized pulleys.

Widely used in the mining industry and other conveyor related industries, the Rulmeca belt tracking roller responds instantly to the misalignment of the belt and does so without special modifications to the structure. The Rulmeca belt tracking roller accommodates belts ranging from 450–2,300mm.

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Rulmeca will present the new 1000HD motorized pulleys, a newly developed motorized pulley with an outstanding power range of 160–250kW, making it the largest and most powerful motorized pulley available from any supplier globally.

Dirty deeds in the conveyor belt industry?

Most of us have long been aware of the increasing trade in counterfeit goods. Such activities are usually associated with famous 'designer' brand names within the fashion industry and also illegal duplications within the world of music and film. Many consumer protection organizations are reporting a huge increase in complaints fuelled by the economic crisis with the food industry being particularly hard hit. But counterfeiting and 'misrepresentation' is even affecting the normally unglamorous and unexciting world of conveyor belt manufacturing. Because of the potentially serious consequences to many of our readers we decided to take a closer look by talking to senior managers at one of the most famous brand names of them all, Netherlands-based Dunlop Conveyor Belting.

"Conveyor belt manufacturing has always been a highly competitive industry and that can only be a good thing for the end-users," explained general sales manager Les Williams. "But what isn't a good thing for users of conveyor belts is that we are seeing a growing trend where lower quality belts, often of very dubious origin, are being bought by some unscrupulous traders and distributors and then sold on as being manufactured by one of the relatively small number of 'big name' brands. I can't speak for others but we are certainly victims of this practice; and the problem is growing."

What is happening?

So, what is actually happening? Well it appears that the major manufacturers are unwitting victims of these dirty deeds. No evidence has yet been found which points to a manufacturer falsely branding its products. In other words, there is no sign of actual counterfeiting. What does seem evident, however, is that large scale 'dumping' of belting, primarily from Asia is now taking place on an unprecedented scale. And with the trading and fitting of conveyor belts to end users worth many millions each year, it is hardly surprising to find some who are willing to deceive in order to earn bigger profits.

Rather than buy direct from the manufacturer, a large proportion of belts are purchased by end-users from traders as well as from vulcanizing companies and distributors who supply and fit the belts. This is a long-standing practice and according to Dunlop, the majority of traders and distributors operate perfectly honestly. However, Dunlop maintains that it is finding more and more cases where its customers believe they have actually been supplied with genuine Dunlop belts but which in reality have actually been manufactured elsewhere and are invariably of inferior quality or below the required international standards.

End-users are increasingly insisting that their belts should be made in Europe rather than, say, in Asia. However, even this approach can be prone to malpractice with belts imported into Europe, housed in a warehouse and then re-shipped to customers using certificates that state the country of origin as being European.

Identity theft

Dunlop recently discovered that it has become a victim of another illegal practice that virtually amounts to identity theft. An organization in India (as yet unidentified) has created a website using the Dunlop Conveyor Belting name and has even copied text extracts from Dunlop's own website to create the illusion that it is Dunlop's official Indian operation. This enables it to attract enquiries from would-be Dunlop customers who innocently believe that they are buying genuine Dunlop quality at lower prices.

"It is very difficult to deal with this kind of fraudulent practice" explains Williams. "Even if you manage to have one website closed down they will quickly create another. Realistically, all we can do is to continually confirm to the market that genuine Dunlop rubber multi-ply belts are only made here in Holland. It is a never-ending battle."

Serious consequences

Not only are such practices illegal, they also have very serious consequences not just for the big name manufacturers but also for their customers and authorized distributors. Sales and marketing director Andries Smilda has worked in the industry for more than 20 years and he believes that the problem has a very widespread impact. "Dunlop has established a worldwide reputation over many generations for producing conveyor belts of the highest quality and naturally that is of enormous importance to us," said Smilda. "If our customers buy belts of inferior quality in the mistaken belief that they are using Dunlop then that will not only result in lost sales but also damage our good name and the good name of our authorized distributors, agents and service partners. Using inferior quality belts also puts our customer's operational efficiency at risk."

It has long been standard practice for Dunlop to carry out exhaustive laboratory tests to measure performance qualities and conformity to recognized international industry standards. These tests are not only performed on the company's own belts but also those of its competitors. "We have to know precisely what we are competing against so that we can maintain quality and continue to develop even better products. We must also enable our salespeople and distributors to prove the superiority of our products," explained Smilda. "You would be amazed at the differences between our belts and those of other manufacturers. The difference in vital qualities such as resistance to abrasion or heat can easily be up to 50% or more. Conveyors can carry tonnes of material at quite fast speeds. If these belts fail or if they are not sufficiently resistance to fire for example then the results can potentially be very dangerous."

Several examples were pointed out by the Dunlop technicians including one where a unique specification of Dunlop belt (UsFlex) had more than three times greater rip and tear resistance compared to what they referred to as 'cheap imitations'. One of the problems seems to lie with the fact that, at first glance, industrial conveyor belts all look very similar — big long lengths of thick black rubber! According to Smilda, to the untrained eye it is almost impossible to tell just by looking at the belt. "The end user who thinks he has bought a quality belt at a cheap price can often face paying a heavy cost in the longer term because the belts do not last so long and/or they incur lost production and higher maintenance costs."

More legislation?

Does the answer lie with extra legislation of some kind? The Dunlop management certainly do not think so. They argue that the law in most countries, especially within Europe, provides sufficient recourse if malpractice can be proved. Somewhat surprisingly, they lay much of the responsibility on the doorstep of manufacturers including themselves. Research and development director Dr Michiel Eijpe says that permanent branding during the production process has not always been consistent. "I think that perhaps we [Dunlop] have been a little complacent in the past but times have obviously changed. During the past few months we have introduced new branding methods using coloured rubber compound vulcanized into the belt that describes the belt type and also includes the wording "Made in Holland". We also place much more emphasis on the use of branded packaging, again making the fact that the belts have been made in Holland very visible".

Buyer beware!

Dunlop's advice to all who buy conveyor belts, regardless of supplier, is never assume that the belt being delivered is precisely what was ordered. It urges caution and recommends that unless the belt has been delivered directly from the manufacturer then a few basic checks should be carried out before fitting. "If the original manufacturer's packaging has been used then that is a good sign but unless it is a full sized roll then there may not be any packaging," explained Les Williams. "The most important check is to inspect the top and bottom surfaces of the belt to see if the manufacturer's branding can be seen."

According to Dunlop, the most important message is that if the buyer is at all suspicious then they should contact the original manufacturer. "They will usually know if they have supplied a particular specification of belt to a trader or distributor. In our case, we can also either test a sample for authenticity and compliance or, wherever practical, send an expert to the site." In other words, 'buyer beware!'

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The MULTIDOS® is a 'classic' multi-talent for medium to high

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Multi-idler belt scales

MULTIBELT® BMP is an dual-idler belt scale for feed rates up to approximately 15,000tph (tonnes per hour), whereas MULTIBELT® BMC is a multi-idler belt scale for feed rates up to around 20,000tph.

Single-idler belt scales

MULTIBELT® BEM is a single-idler belt scale for feed rates up to approximately 4,000tph, whereas MULTIBELT® BEP is a single-idler belt scale for feed rates up to around 6,000tph. Finally, MULTIBELT® BED is a single-idler belt scale for feed rates up to approximately 15,000tph.

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method of conveying bulk materials smoothly, gently and economically. Material is induced to move like a liquid through a slender dust tight steel casing, horizontally, on an inclined plane, vertically and around bends. The conveyor feeds itself at any point with a uniform load.

The skeletal flight configuration induces the material to flow in a solid, placid column. There is no internal disturbance or pressure on the material and the load can be discharged at any opening, where it is permitted to fall away from the flights. The conveyor is not a scraper conveyor. There is no dragging or scraping action, material simply moves forward in a solid placid column, 'en-masse'.

Movement of the chain when buried in the material will induce the whole mass to move forward gently in a solid, placid column 'en-masse'. Material dragging, particle tumbling or rolling does not occur. MoveMaster® Conveyors are manufactured in a standard range of sizes from 200mm wide upwards, enabling them to meet every requirement. Multiple inlets and/or outlets for conveyor intake or discharge. 'Two-way' conveyors will convey in both directions.

Movement of the chain when buried in the material will induce the whole mass to move forward gently in a solid column. The eleveyor design permits the column of material to be moved vertically or on an inclined plane. Eleveyors are manufactured in a standard range of sizes from 200mm wide upwards, which enables them to meet every requirement.

Cost effective

Capital costs prove very competitive with other forms of handling equipment, thus giving quicker 'payback period'. Power running costs are significantly lower than most other forms of equipment, i.e they can be as low a 1/10 of dense phase conveying. Maintenance costs are also low. Heavy duty rigid construction in simple modules, high strength chain, choke detectors, overload and underspeed switches all ensure easy maintenance at infrequent intervals.

Labour saving

Manual to fully automatic control of single or multiple machine systems provided by proven BASIC control systems. No specialized maintenance staff required.

Environmentally acceptable

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Versatile

Specialized features of 'en-masse' equipment offer versatility to plant layout. Handles virtually all types of dry bulk products.

Size

Size and duty comparison with alternative forms of handling equipment.

Gentle handling

Materials moves 'en-masse' slowly in a solid placid column with the conveying elements; thus degradation is virtually eliminated. Chain design permits material column to change direction through bends, without degradation.

Belt optimizer opens new premises

Stanam Industries, which manufactures the patented LIFTUBE® conveyor belt optimization system, has opened a new site in the USA.

Stanam Industries specializes in industrial vacuum cleaning and bulk handling solutions. It designs and manufactures equipment that facilitates the storage, free-flowing, conveying and cleaning of powdery and bulk products. The company believes in constant innovation, which means that it is able to offer the latest, most efficient technologies.

The company's new premises were inaugurated on 6 February this year in Tampa, Florida, USA. Close to a motorway junction, the site is extremely well connected and can supply its customers in a very short time: indeed, it boasts a storage facility that is dedicated to minimizing lead times. Customers in the United Sates and in Latin America will benefit from a quick response time, due to the proximity to the storage warehouse.

With the move, Stanam Industries has improved its storage capacity and the number of parts available, and is closer to its customers to provide them with a customized, faster response.

The LIFTUBE® is a patented system which optimizes the sealing of conveyor belts. It is available a standard or scalable option and is very easy to install on new or existing conveyor belts: a removable hood fits over a central roller in order to ensure the reduction of dust emissions. The product is also available in different variants, including large widths, and models that can withstand high temperatures.

The company also manufactures the Airchoc® air cannon to unclog silos and hoppers, as well as its Gironet which enables mechanical cleaning without interrupting operations. It also includes industrial vacuum cleaning.

Stanam Industries has four central principles:

- providing innovative solutions tailored to customers' requirements to generate added value;
- optimize manufacturing processes;
- ensure a clean and safe working environment; and
- reduce maintenance and production costs.

For industries in sectors such mining or quarrying, cement or incineration plants, it is essential that sites are safe for all the employees. Furthermore, environmental regulations regarding dust emissions are becoming stricter. Stanam Industries' equipment ensures that its customers are able to comply with the law.

Stanam Industries inaugurated its new premises in Tampa, Florida in February.

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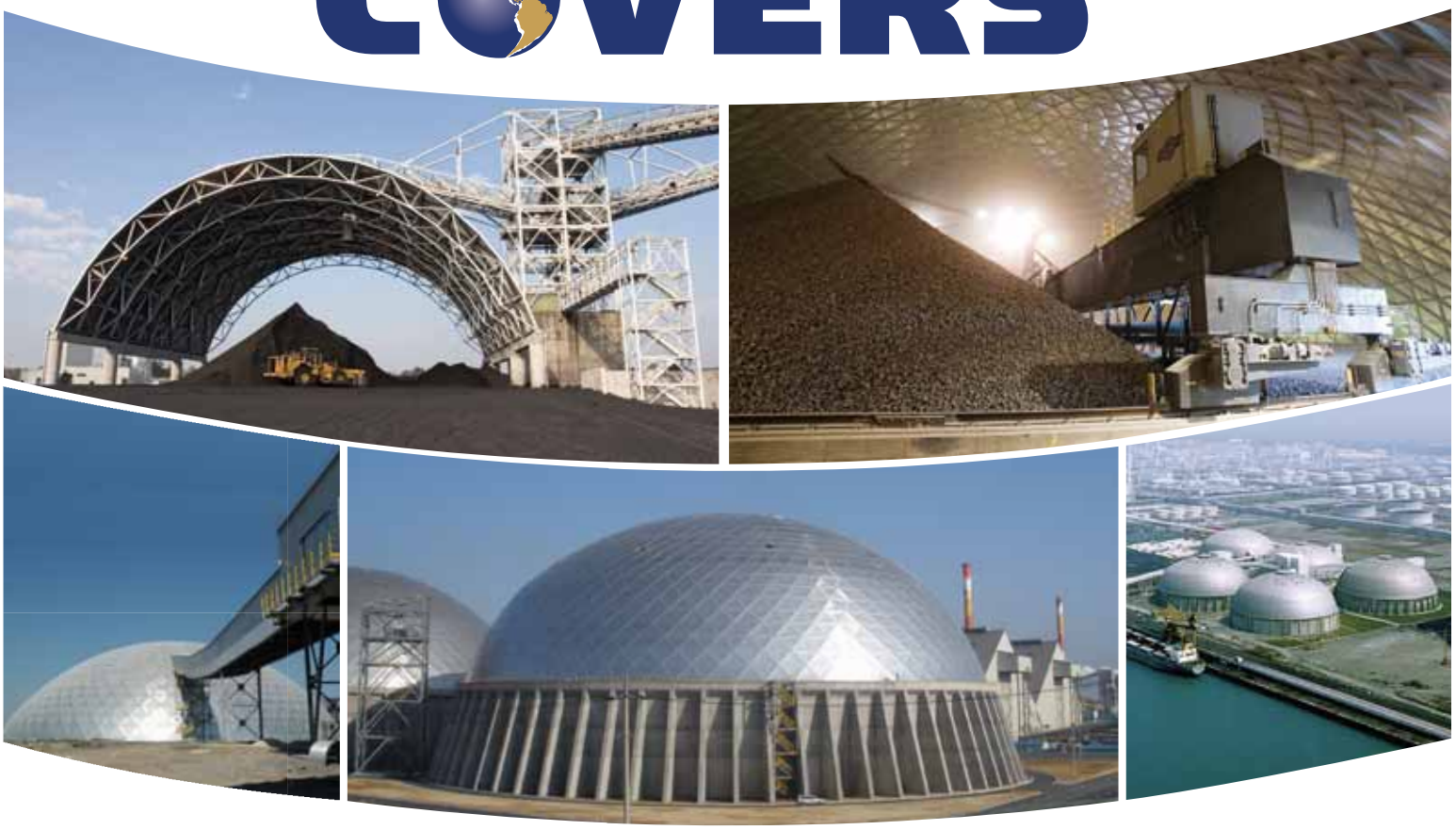

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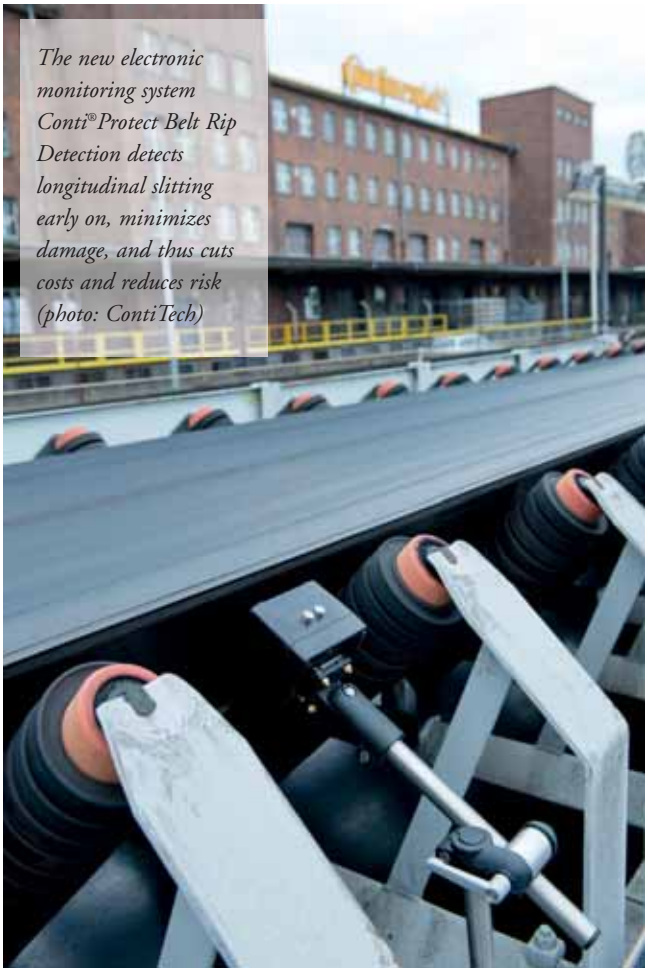
ContiTech's electronic monitoring system enhances conveyor belt safety

Conti®Protect Belt Rip Detection detects longitudinal slitting early on and prevents extensive damage, reducing repair costs and accident risks.

Longitudinal slitting in conveyor belts can be costly. Sharp objects always end up on the conveyor belt together with the materials conveyed, especially in the mining industry, in wood processing, or in recycling plants. "If they fall in an unfortunate position during belt loading, they may get caught up and split the moving conveyor belt longitudinally. In the worst-case scenario, the belt can be written off completely," asserts Dr. Andreas Jungk, application engineer at ContiTech Conveyor Belt Group. More protection against failures and expensive repairs is provided by the new electronic monitoring system Conti®Protect Belt Rip Detection, which has only been on the market for a short time. It detects longitudinal slitting early on, minimizes damage, and thus cuts cost and reduces the accident risk. This makes it possible for the conveyor belts to be used for even longer. Conti®Protect Belt Rip Detection can therefore contribute to reducing operating costs and protecting the environment.



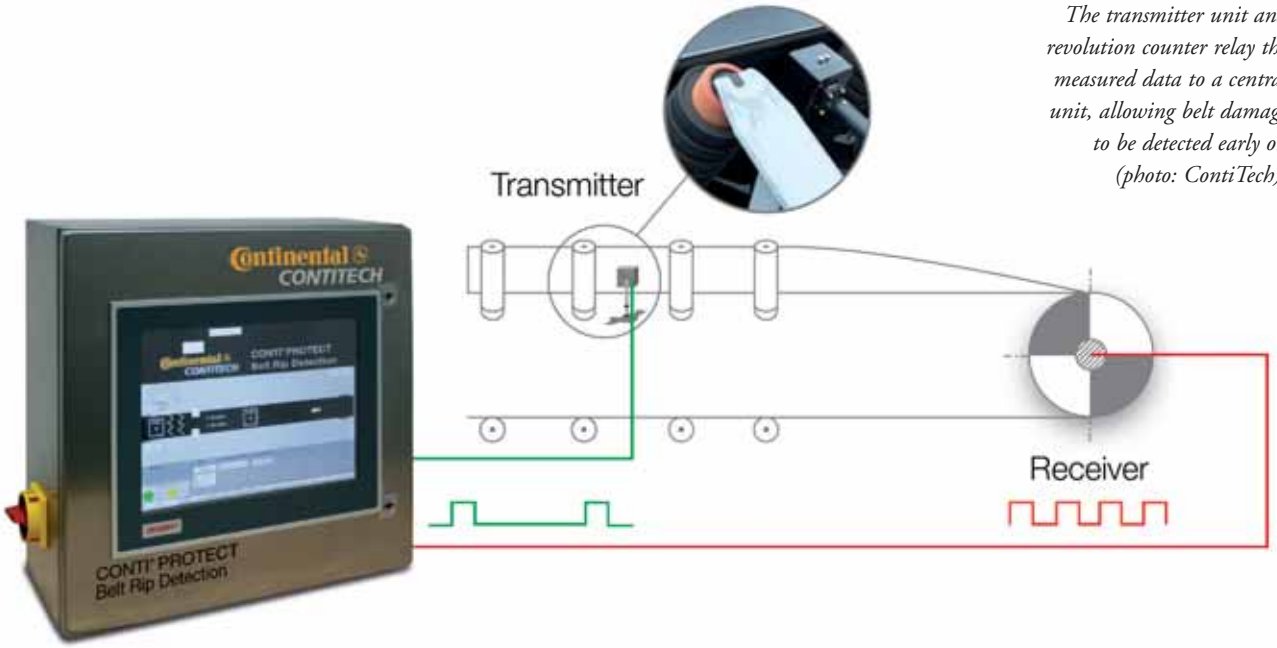
The new electronic monitoring system Conti®Protect Belt Rip Detection detects longitudinal slitting early on, minimizes damage, and thus cuts costs and reduces risk (photo: ContiTech)

Automatic stop protects conveyor belt

Monitoring takes place via conductor loops, which are vulcanized into the conveyor belt. These loops transmit a high-frequency signal between a transmitter and receiver. If a loop is damaged, the signal will break down on the receiver end. The system control then stops the conveyor belt automatically. How long the system needs to come to an emergency stop is determined by the distance between the conductor loops, which can vary between 20 and 50 metres. During an initial learning cycle, these distances are recognized and saved by the system.

The new monitoring system is also extremely easy to use. "All the signal sequences can be called up electronically so that, if necessary, one can conclude from them about the quality of the loops. An Ethernet connection means that the system can be controlled via a PC and also via the Internet," explains Jungk. Many of the systems allow ContiTech specialists to connect to the system on request to carry out remote maintenance. All of the components used in the Conti®Protect Belt Rip Detection system are extremely robust, which enables them to meet the high demands of the mining and bulk material industries.

ContiTech is a division of major automotive supplier Continental. It is one of the foremost suppliers of a host of technical elastomer products and is a specialist for rubber technology. The division develops and produces functional parts, components and systems for the automotive industry and other important industries. ContiTech has a workforce of approximately 29,000 employees. In 2011, it achieved sales of approximately €3.6 billion. Continental currently has approximately 170,000 employees in 46 countries.



The transmitter unit and revolution counter relay the measured data to a central unit, allowing belt damage to be detected early on (photo: ContiTech).

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Conveyor belts as valuable transport arteries for commerce

Technical setup for manufacture and exchange of the conveyor belts in the Los Pelambres copper ore mine. Belt loops, steel scaffolding and vulcanization table (photo: REMA TIP TOP).

Conveyor belts can do more than just transport unit loads or bulk cargo from A to B, *writes Michael Labbé of REMA TIP TOP Latin America Spa*. They form the backbone of efficient production processes, particularly when faced with current economic challenges such as raw material shortages and exactly synchronized global value-add chains. Conveyor belts and conveying equipment are thus a central influencing factor for companies' competitiveness. To maintain their peak performance over the long term, regular maintenance is a must. The timely exchange of worn components can effectively prevent a sudden failure of the conveyor belt. A project in the Chilean Los Pelambres copper ore mine, however, demonstrates how such economic loss can be avoided. Here, while still in operation, two of the heaviest-duty conveyor belts in the world — with a total length of 23km — were completely replaced.

Whether in mining or general industry, conveyor belt systems nowadays form an integral part of both the raw material extraction and modern production. They optimize transport routes, make complex logistics processes more efficient and bridge short or medium distances for the transportation of goods. The demands on the conveyor belts concerned are many and high. As well as high levels of conveying performance and load-carrying capacity, factors such as low wear and maintenance costs and a high degree of production safety play an important role. Another main goal of the operators of conveyor systems is to have the conveyor belts run as efficiently as possible over a long service life and avoid downtimes to the greatest possible extent.

Flexible system solutions for companies

In addition, every industrial sector assesses the characteristics of the system differently. Conveyor belts in the raw materials industry, for example, need extremely high levels of tensile strength and operational safety as well as extreme resistance to wear to be able to cope with the load caused by the transported materials over long distances. To meet these differing operator requirements, custom-made and flexible system solutions are required that are matched to that particular location of the conveyor system, its type of use and the range of tasks involved. Flexible solutions for the construction of plant equipment therefore also require a flexible approach to the repair or maintenance of these systems.

For conveyor systems used for raw material extraction, the belt and other components must be changed after a certain operating time. Conveyor systems used in opencast mining are exposed to particularly difficult conditions that affect the structure of the belt and thus limit its life expectancy. On the other hand, the extraction of natural resources, particularly in regions that are geographically exposed, has again become very lucrative. High demand from the industries of economically emerging nations, the resulting scarcity of certain resources and their increase in price are making conveying projects that were only a few years ago classed as unprofitable again attractive. In this case, the materials and equipment used are often exposed to extreme temperatures, higher levels of insolation or high humidity levels.

With the help of specialists who have the necessary know-how and knowledge, professional maintenance and the trouble-free exchange of worn components such as conveyor belts, drive and redirector drums and carrier rollers can be guaranteed. Even large conveyor belts that run round-the-clock, are several kilometres long, or carry especially heavy materials, can be successfully exchanged using proven techniques and innovative approaches.

Phoenix to showcase products at 'bauma'

Minimizing maintenance costs and ensuring the adaptability of record-setting conveyor belt systems are benchmarks that Phoenix Conveyor Belt Systems has been setting itself for many years. The technology specialist will showcase impressive and clear examples of its innovative art of engineering with its cutting-edge conveyor belt concepts and captivating high-tech solutions at bauma 2013.

The Independent Phoenoguard® PX Localizes Any Damage

Phoenix Conveyor Belt Systems is introducing a revolutionary new development with Phoenoguard® PX. The autarchical monitoring system continuously measures the current overall condition of the conveyor belt, internally and externally. From notching on the covers to penetration of foreign bodies and damaged steel cords, this unprecedented technology not only records damage but also intervenes automatically in the operation of the system in cases of emergency. If the system identifies damage that could result in breakdown of the conveyor belt, Phoenoguard® PX immediately shuts the conveyor system down. In the case of minor damage that has no direct impact on the condition of the conveyor belt, the system triggers an alarm. Users can adjust these settings in line with their requirements. Phoenoguard® PX uses this method of targeted intervention to prevent serious damage from occurring and dramatically reduce maintenance costs. If users want to get an impression of the overall condition of the conveyor belt, the system is able to provide a comprehensive snapshot image at the click of a mouse.

Introducing Steep-Angle Conveyor Belting to the Phoenix Product Range

On show will be the range of Phoenix S-Wall™ corrugated sidewall belt's. These steep-angle and vertical conveyor belts are the latest state-of-the-art products to be added to the Phoenix product range. Advantages of this system are that it eliminates the need for transfer points which in turn helps to minimize spillage. The system also allows for the maximum utilization of space, especially where this is at a premium. Phoenix has expanded on the conventional cold-bonding manufacturing technique, to now include hot vulcanization. This method uses heat and pressure to vulcanize the side-walls and cleats to the base-belt, leading to exceptional adhesion levels. This allows the belts to be used in both higher temperature and particularly stressful applications. This durable and resilient bonding method noticeably increases the service life of the belt whilst reducing maintenance costs in special applications.

PHOENIX displays record book

Visitors will also gain an insight into the potential of the many solutions offered by Phoenix: the world's strongest conveyor belt, belts with the highest conveying capacity — Phoenix technology is what lies behind these records and many other extreme conveyor belt solutions. Across the globe, the customized conveyor belts transport goods under the most complex of requirements and, in doing so, set some spectacular records. The new Extreme Conveyor Belt Solutions brochure gives an insight into the possibilities and the great performance capability of Phoenix conveyor belts.

Replacing the heaviest-duty conveyor belt in the world

An example of this is the replacement of two conveyor belts in the Chilean Los Pelambres copper ore mine, one of the most profitable copper mines in the world. This opencast mine lies in the Andes at a height of 3,300m. More than 8,000 tonnes per hour of copper ore are transported for further processing at a height of 1,600m by means of steelcord conveyor belts. At times this means downhill transport gradients of up to 10% for the conveyor belts. Together with the mine operator, REMA TIP TOP developed an approach which would allow the replacement of both conveyor belts without long plant downtimes, the goal being to keep production losses to a minimum during the maintenance work. "The normal method of changing a belt, making a splice and pulling it in roll by roll would have meant a downtime of over nine weeks" explains Jan Severing, Reliability Engineer at REMA TIP TOP. "Taking into account the then copper price of at least US$6,000 per tonne, an immense production loss of around US$250,000 an hour threatened."

To keep the production loss as low as possible, a REMA TIP TOP team of experts created a sophisticated technical solution that permitted both belts to be simultaneously exchanged in parallel with the running operation. Both old belts were replaced by the new ones directly on site. In the first phase, half of the belt length was vulcanized together for each belt. The kilometre-long belt loops made in this way were positioned in pits made for this purpose and later attached to the existing belt. This process was then repeated for each second belt half.

A smooth sequence of events is decisive, particularly in critical phases such as this that directly affect the production operation. To ensure this, and taking into account the high weight of around 44 tonnes per belt length and the length of the splice, 13 people were permanently assigned to each belt. By having the trained personnel operate in two shifts, and through the high degree of work efficiency and the use of state-of-the-art materials and tools, both conveyor belts — a total length of 23km — could be simultaneously and successfully exchanged. The specialist team worked in the copper mine from October 2010 to March 2011.

"In addition to the high requirements regarding quality and work protection, the efficiency of the work processes was also right at the top of the priority lists for this project," notes Michael Labbé, REMA TIP TOP Latin America Spa. "This meant that we had to use find and use tools and machines that were state-of-the-art, above all for time-consuming work such as the rubbing down of cover plates, the stripping and brushing off the steelcord or the filling of steelcord interstices. Only the assembly of the vulcanization process — with 10 heating plates and 48 beams — could not be accelerated through the use of machines. "Here the fitters were actually even faster than using a crane," continues Labbé.

Los Pelambres shows that for the maintenance of conveyor systems, flexible approaches tailored to the area of use are required. A relatively high work and materials effort in situations such as this can quickly provide a good return, because the production process remains unaffected by only undergoing short conveyor system downtimes that are fully under control. This example also makes clear the 'reach' possessed by conveyors in both senses of the word — they are not only necessary for efficient transportation of materials from remote or inaccessible regions, but are also central transport arteries that keep global business alive and well.

Positioning and fixing the belt loops in the Los Pelambres copper ore mine (photo: REMA TIP TOP).

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TAIM WESER reports on recent belt conveyor contracts

TAIM WESER has been supplying bulk handling solutions for over 100 years. Today, the company is able to provide optimum solutions for its clients within all industries including power sector, ports, iron and steel, fertilizers, mining and cement industries. Its solutions can be used to handle a wide range of materials including, grain, fertilizers as well as coal and minerals.

With an emphasis on innovation and technology, TAIM WESER has its own in-house R&D and design teams that create new products and develop projects using proprietary patterns and state of the art technology. TAIM WESER supplies its products on a turnkey basis and has specialized workshops equipped with state-of-the-art machinery that manufacture key components to the most demanding quality standards.

TAIM WESER provides either individual specialized equipment or turnkey installations, integrating all key elements and auxiliary equipment giving its clients tailor-made solutions. The company works with the latest technology and its product range covers all the necessary equipment for unloading, conveying, storing, reclaiming and loading of bulk materials.

TAIM WESER has consolidated its international position within the bulk handling market with various projects undertaken all over the world and in the last few years in Europe, South America, the Middle East and North Africa. Its bulk material conveying systems can be found in main industrial sectors, with lengths up to tens of kilometers and capacities of up to tens of thousands of tonnes per hour.

In this field, TAIM WESER has recently supplied and received order for various conveying system projects, such as two complete storage plants — one for petroleum coke and the other for sulphur — at a Spanish refinery. The scope of supply consists of two complete storage facilities, and includes the stockyard machinery. The petcoke storage facility is intended to transport the raw material produced in the drums and temporarily store in piles, to be taken later to the port facilities. In this case, TAIM WESER's supply will include the petcoke crushing, transport, stockpiling, reclaiming, storage and truck loading operations. The longitudinal stockyard has a capacity of 75,000 tonnes and stockpiling and reclaiming capacities are 500tph (tonnes per hour) and 600tph, respectively.

The sulphur storage facility transports the solid particles generated during the solidification process at the plant and temporarily stores them in storage piles to be taken later to the port facilities. This operation also includes crushing, transport, stockpiling, reclaiming, storage and truck loading. In this case the longitudinal stockyard has a capacity of 30,000 tonnes and stacking and reclaiming capacities are 400tph and 500tph respectively.

Current belt conveying projects

At the moment, the bulk material handling business unit of TAIM WESER is working on several recently awarded contracts related to conveying equipment. It will supply the iron ore conveying systems and stockyard machinery for the Super Porto Sudeste, the new port terminal which is being constructed in the Sepetiba Bay, Itaguaí, Brazil. Here, TAIM WESER will supply all the equipment needed for conveying operations, storage and loading of iron ore at the port stockyard. The equipment consists on the one hand of a complete conveyor belt system — from reception area to its loading onto ships, with a capacity of 12,000tph and a total length of 13,000m. On the other hand, the contract includes four combined stacker/reclaimer machines with a stacking capacity of 10,000tph and a reclaiming capacity of 12,000tph to be installed in the two new iron ore storage yards.

In addition and also in South America, TAIM WESER is developing two new linked projects for the new loading and exportation port terminal for concentrated minerals (copper, zinc and lead) located in Puerto del Callao, Peru.

The first project comprises the concentrated minerals reception, storage and warehouse filling systems as well as the conveying systems for minerals sending to the open access point of the port terminal, for its onward transportation to the export area. The supply includes belt conveyors, trippers and feeders with capacities from 600tph to 2,400tph, and the project has been designed to provide a safety service both in the respect of the environment as well as the belt conveying.

The second project comprises the complete concentrated minerals loading and export systems. The scope of supply includes the belt conveyor system, capacity 2,500tph, to the wharf where the loading terminal and a rail-mounted shiploader (capacity 2,500tph, for vessels up to 60,000dwt) can be found.

Both projects conform to strict environmental legislation and therefore they include the most advanced materials cleaning and dust suppression systems, both in the belt conveyors systems as in the shiploader.

"A man who stops advertising to save money is like a man who stops a clock to save time"

– Henry Ford

Pit to Port with Royal HaskoningDHV






Minimizing Pit to Port investment risks through integral masterplanning

'Pit to Port' operations are widespread throughout the resource industry. Because coastal reserves deplete and demand increases, there is a general push towards inland reserves, increasing the distances between pit and port. The transport corridor, therefore, often becomes the main costs determining factor when initiating a Pit to Port mining operation.

Investing in Pit to Port mining operations has significant risks. The price levels of resources and shipping rates are volatile and other economic, political, legal, institutional, environmental and social variables are subject to change, especially in developing countries. These variables all affect the overall feasibility of a mining and export operation. Therefore, the total cost of ownership of a complete Pit to Port operation is difficult to estimate up front. Together with the unpredictability of the actual mine production, there is a big financial risk for investors.

Due to this financing risk it is often inevitable that mining operations start relatively small (low CAPEX). The choice for a Pit to Port transport modality (e.g. road, rail, inland waterways or belt conveyor) and the type of port operations are therefore also dictated by the available investment budget. Later on, if the mine production increases, the transport and port operations are up-scaled in parallel. For example: by driving more trucks over a hauling road. In the long term, this approach may not be optimal from a total cost of ownership or total profitability perspective, but it does pose the lowest risk and is therefore easiest to finance. However, at a certain mine production level a switch to a different modality may significantly increase the long-term profitability; this logistical re-evaluation is often not possible or overlooked because mining, transport and port operations have not been designed integrally.

There are numerous Pit to Port mining operations worldwide which have 'outgrown' their initial concept and therefore have sub optimal profitability. A few typical examples:

- The sunk costs into the continuous upgrading of the hauling road and increasing truck numbers make switching to another modality unattractive halfway the operational life of a mine. However the OPEX of this type operation are very high when compared with an overland conveyor for the same annual throughput.
- Limited space for stockyard expansion necessary to cope with increased annual throughput and larger vessels.
- Jetty upgrade and expansion which is necessary to cope with increased vessel sizes and loading rates conflicts with the ongoing export operations. This results in a sub-optimal expansion solution.

To avoid issues of this kind, it is essential that an integral masterplan is made during the initiation phase which incorporates the envisaged capacity increases throughout the complete supply chain and also takes all significant risks into account (resource price levels, socioeconomic variables etc.).

This ensures that no decisions are made during start-up which will be difficult to correct later on. This masterplan is a critical part of the bankable feasibility study. A bankable feasibility study of this magnitude includes bankable cost estimate of several alternatives/scenarios for the realization and operation of the mine, the processing plant, the inland transport and the port operation.

Ideally this approach results into a pit to port operation which can be scaled to the actual production, has manageable risks and near-maximum profitability throughout its life span. It is this solution which has the highest expected return when investments costs are corrected for risks.

As worldwide consultancy and engineering service provider, Royal HaskoningDHV is experiencing an increasing demand for integral supply chain services. Therefore, Royal HaskoningDHV has combined its experts throughout the supply chain and the economical and environmental experts, resulting in newly branded Pit to Port services. With these services, the company is positioning itself as project enabler in both financial and technical terms. RHDHV can perform complete and comprehensive Pit to Port projects from the initiation phase through design, tendering, realization and completion:

- logistic analysis;
- financial modelling;
- market analysis;
- masterplanning;
- open pit and underground mining;
- mineral processing;
- materials handling;
- rail transport;
- inland waterways;
- hauling roads;
- port development;
- dry bulk terminals;
- coastal engineering;
- sea shipping;
- electrical power generation and distribution; and
- environmental and social impact assessment (ESIA)

This 'one-stop-shop' approach of a Pit to Port project ensures that the complete mineral supply chain can be tailored towards the client's wishes (e.g. lowest investment cost vs. lowest life cycle costs). RoyalHaskoningDHV's global presence allows it to incorporate local knowledge and to have transparent and efficient communication.

Successful merger

Due to the recent merger of Royal Haskoning and DHV into Royal HaskoningDHV, the capabilities of two established companies have been combined. The two former companies complement each other well in expertise and geography and the added scale allows Royal HaskoningDHV to bid for larger projects as well. Royal HaskoningDHV is now the largest privately owned engineer/consultancy firm in the Netherlands and is in the top 10 worldwide. Royal HaskoningDHV has a broad portfolio of expertise and covers, amongst others, aviation, buildings, industry, energy & mining, infrastructure, maritime & waterways, planning & strategy, rivers, deltas & coasts, transport & asset management, and water technology.

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- *Choosing Green Ships.*
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- *Challenges Facing Dry Bulk Terminals in Developing Regions.*
- *Raw materials trades - EU Policy and the impact of developing countries on future trade flows.*
- *Performance Analysis and Benchmarking for Bulk Operations.*
- *Emerging techniques for clean bulk handling in ports.*
- *Advances in Biomass handling at ports and terminals.*
- *Safe Fertilizer Handling at Ports and Terminals.*
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- *Handling and transshipment solutions at bulk facilities to cope with the increased trade of wood pellets from the USA to Europe. From bigger vessels to silos and river barges, the discharge of river barges directly to the power stations and efficient handling solutions*
- *The redesign of bulk terminals (on the design of new or expansions of existing bulk terminals).*
- *Large scale fuel storage silos for coal, petcoke and wood pellets.*
- *Quebec City Terminal management case study: Developments in materials handling equipment installations and analysis of tonnage throughput within the context of the St Lawrence Seaway, the "Northern Corridor" trade route.*

Current Speakers

Olle Östensson, President, Caromb Consulting

Dr Corina Hebestreit, Director, Euromines

Jeffrey Landsberg, Managing Director, Commodore Research & Consultancy

David Peel, European Manager, RightShip Pty Ltd

Prof.dr.ir. Gabriel Lodewijks, Head of Department-Marine and Transport Technology, Delft University of Technology

Han Ozturk, Director, The Nectar Group

David Trueman, Sales Director, DBIS

Geoff Lemont, Vice President, St Lawrence Stevedoring

ir. Thomas van de Sande, Dry Bulk & Logistics Engineer | Business Unit Mining & Heavy Industry, Royal HaskoningDHV

Professor Mike Bradley, Director, The Wolfson Centre

Mr Nicholas Dechamps, Managing Director, Vigan

J.P.J. Ruijgrok, Managing Director, ESI Eurosilo BV

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DRY CARGO Events

BULK PORTS, TE

Sunday/Registration / Monday/Session 1/Session 2 Confe

Sunday May 12, 2013

17:00 Exhibition Opens

18:00 Welcome Cocktail Reception

Monday May 13, 2013

08:30 Exhibition Opens

09:15 Welcome - Jason Chinnock, Publisher, Dry Cargo International

SESSION 1 - Commodities and trades analysis & Shipping

09:30 **Demand outlook for major dry bulk commodities,the rise and fall of the Euro: consequences for the dry bulk trade**

China has been driving most of the global economic dynamism in recent years. But China isn't the only story. European weakness has been a major factor behind trade developments through its impact on demand for exports from Asia and other emerging regions. A return to stable growth in Europe would do much to reset the world economy and dry bulk markets and it looks like it may be about to happen. Europe will not in the short term for instance reclaim all of the third of its crude steel production that it lost in the aftermath of the financial crisis. But sorting out its debt management may allow it to become a positive factor for growth. There is still need for caution, however. There are traps on the road back to economic expansion and so far Europe has been good at finding traps by walking into them.

Olle Östensson, President, Caromb Consulting

10:00 **Raw materials trades - EU Policy and the impact of developing countries on future trade flows**

Dr Corina Hebestreit, Director, Euromines

10:30 NETWORK BREAK (EXHIBITION HALLS)

11:00 **Chinese Macroeconomic Outlook (Dry Bulk Divergence / Capesize Comeback)**

Presentation will discuss growth trends in China including the emergence of the Chinese middle class and geographical development trends. In addition, the presentation will discuss the current state of the Chinese steel market and will provide our estimates for future steel production. The presentation will also discuss current Chinese iron ore production, prospects for future iron ore production, current Chinese
iron ore imports, and prospects for future iron ore imports. Related dry bulk shipping rates for capesize, panamax, (and to a lesser extent supramax market) and iron ore trade will be highlighted.

Jeffrey Landsberg, Managing Director, Commodore Research & Consultancy

11:30 **Choosing Green Ships**

David Peel, European Manager, RightShip Pty Ltd

12:00 **European Dry Cargo Shipping Trends**

James Leake, Managing Director, ICAP Shipping Ltd

12:30 LUNCH (EXHIBITION HALLS)

SESSION 2 - Bulk Terminal Management & Logistics

14:00 **The redesign of bulk terminals (on the design of new or expansions of existing bulk terminals)**

Prof.dr.ir. Gabriel Lodewijks, Head of Department-Marine and Transport Technology, Delft University of Technology

14:30 **Challenges Facing Dry Bulk Terminals in Developing Regions**

Han Ozturk, Director, The Nectar Group

15:00 NETWORK BREAK (EXHIBITION HALLS)

15:30 **Performance Analysis and Benchmarking for Bulk Operations**

David Trueman, Sales Director, DBIS

16:00 **Quebec City Terminal management case study: Developments in materials handling equipment installations and analysis of tonnage throughput within the context of the St Lawrence Seaway, the "Northern Corridor" trade route.**

Geoff Lemont, Vice President, St Lawrence Stevedoring

16:30 **Planning the logistics chain from pit to port**

Presentation will discuss the total logistics chain from pit to port including the complete logistics management of various bulk types, starting from the pit until delivery to the customer.

ir. Thomas van de Sande, Dry Bulk & Logistics Engineer | Business Unit Mining & Heavy Industry, Royal HaskoningDHV

17:00 NETWORKING RECEPTION (EXHIBITION HALLS)

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RMINALS & LOGISTICS 2013

rence Programme

Tuesday/Session3/Session 4

Tuesday May 14, 2013

07:30 Registration

08:30 Exhibition Opens

SESSION 3 - Commodity Specific Handling at bulk terminals

09:30 Advances in Biomass handling at ports and terminals

Biomass is probably the biggest growth area in ports across Europe right now, and one which looks set to continue growth for a while. However, as a material, biomass is not without difficulty: stowage factors are low and very variable, the handling properties vary enormously and the hazards from dust, explosion, asphyxiation and fire are high compared with traditional fuels, having claimed a substantial number of lives over the past few years. These, together with uncertainty over the long term future, is making it difficult to get investment decisions right. This paper will explore some of these fundamental problems, what methods can be used to overcome them, and examine some of the forthcoming potential technology disruptions that we need to keep an eye on!

Professor Mike Bradley, Director, The Wolfson Centre

10:00 Handling and transshipment solutions at bulk facilities to cope with the increased trade of wood pellets from the USA to Europe.

From bigger vessels to silos and river barges, the discharge of river barges directly to the power stations and efficient handling solutions

Mr Nicholas Dechamps, Managing Director, Vigan

10:30 NETWORK BREAK (EXHIBITION HALLS)

11:00 Large scale fuel storage silos for coal, petcoke and wood pellets.

J.P.J. Ruijgrok, Managing Director, ESI Eurosilo BV

11:30 New Opportunities in Handling Pelletized Bulk Materials

Recent developments in the field of pelletizing with the target to

- Pelletize different products than common so far
- Reduce the size variation of pellets
- Increase the quality of pellets

Dr Holger Lieberwirth, Executive Vice President, TAKRAF GmbH

12:00 LUNCH (EXHIBITION HALLS)

SESSION 4 - Engineering at the bulk terminal

14:00 Mobile conveyors - an alternative and cost effective way to handle bulk material in ports and inland terminals

Philip Waddell, International Sales Manager, Telestack

14:30 Safe Fertilizer Handling at Ports and Terminals

To be confirmed

15:00 Emerging techniques for clean bulk handling in ports

Belan Velan, Managing Director, Scorpio Engineering Ltd

15:30 CLOSING RECEPTION (EXHIBITION HALLS)

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Mobile shiploading system for Riga

Mobile radial telescopic shiploader loading a vessel at a speed of 500tph.

Telestack materials transfer & shiploading system for Riga Fertilizer Terminal

Telestack has recently installed and commissioned a mobile materials transfer and shiploading system for Riga Fertilizer Terminal (RFT) in Latvia. The transshipment terminal, when completed at the end of 2014, will be the most advanced and safest handling facility for fertilizer in Northern Europe.

The material is brought by rail from Russia via RFT's partner Uralchem. The rail wagons are then unloaded and transferred by a series of conveyors to covered dome storage, each with a capacity of 25,000 tonnes. Telestack was involved in this project to supply custom design mobile feeding/material transfer/ shiploading solutions for the Phase One of the project. This system has enabled the company to export fertilizers before the complete project is finished, hence enabling it to have a revenue stream before complete construction is finished. The Telestack system will be used for the first three years as the main shiploader and, after this period, will be used as supplementary capacity and back-up for fixed installation.

The Telestack System

Due to the proximity of the terminal to the city of Riga, the complete system incorporated fully covered conveyors and fully sealed transfer points as well as dust extraction to minimize dust emissions into the nearby environment. This was paramount in the facility being granted permission to export from the terminal, and was something that was foremost in Telestack's design brief.

The material is reclaimed from the dome storage via two Liebherr 576 wheel loaders. These feed the material into a Telestack HF514 mobile hopper feeder, which has a 15m³ capacity with a 1,200mm-wide belt feeder. The hopper is fully lined with 6mm polyurethane liners to minimize wear and protect the paint finish. The feeder and incline conveyor speeds are controlled by a variable-speed drive. This is required as RFT will handle a variety of materials with densities ranging from 0.7t/ m³ to 1.4t/m³. The variable-speed drive also enables the operator to run the belt speeds as slow as possible so as to minimize dust creation at transfer points.

Mobile hopper feeder and link conveyors feeding shiploader.

After the hopper feeder, the material is then transferred to a series of Telestack 30-metre mobile link conveyors. These link conveyors are wheel mounted and can be manoeuvred around the site by a wheel loader. The link conveyors also incorporate a dust extraction system at each transfer point. Telestack used Donaldson Torit, an internationally recognized manufacturer of

Mobile link conveyors feeding shiploader.

quality extraction systems. The filter element used on the extraction unit was made up of a special neoprene fabric which is suitable with use for fertilizers. The extraction systems also featured a intelligent automated monitoring system which maintained efficiency of the units.

The extraction units were supplied with pneumatic air by means of a 150-litre compressor mounted on each link conveyor. The link conveyors also featured a variable speed drive to control the belt speeds. As with all the transfer points, the link conveyors utilized the fully enclosed chutes both at discharge points and at the intake point.

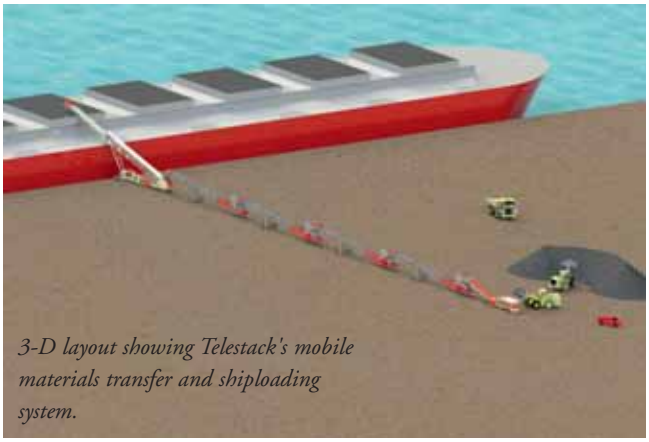
The final Telestack mobile link conveyor also had a radial drive incorporated into the wheels which enabled the unit to radial 45° of centre line, so as to feed the shiploader at two positions to load each hatch on an 8,000dwt coaster vessel. This enabled a quick set up time for the hatch changes.

The Telestack Mobile shiploader supplied to RFT is a custom-design TS 542 (500tph [tonnes per hour] at a 42-metre maximum extension). The unit incorporates complete dust extraction and containment features, some of which include fully sealed transfer points, fully covered conveyors both on the inner and the outer, dust extraction and transfer points, complete under trays to prevent material dropping onto the jetty and an 8.5-metre freefall chute to contain the dust right into the ship's hold.

The TS 542 is crawler tracked mounted and is fully mobile to move from hatch to hatch. The crawler tracks also have rubber pads to protect the concrete structure of the jetty. The telescopic, luffing and radial ability enabled RFT to completely trim the 8,000dwt vessel from the two loading positions.

The Telestack mobile solution of RFT is easily moved around the terminal as required giving RFT significant flexibility.

Mobile radial telescopic shiploader loading vessel at a speed of 500tph.



3-D layout showing Telestack's mobile materials transfer and shiploading system.

Due to the corrosive nature of the fertilizer, a very high paint specification has been used on all machines with average dry film thickness of 250 micron 2 pak epoxy paint finish. The complete system is powered by RFT's mains electricity which enables very low operating costs for the complete system.

The system complies with environmental dust pollution regulations. Maris Rudzitis, engineering manager commented that he is very satisfied with the attention to detail, the quality of the construction and the timely delivery of the equipment. "The system has proved very reliable and we are very happy with our purchase. Telestack's ability to guide us through concept stage to the right solution and customize a system to our individual specific requirements was a major factor why we awarded Telestack the contract," he says.

Telestack offers a range of mobile bulk material handling solutions which are in operation across the globe handling materials such as coal, iron ore, aggregates, fertilizer, grain etc in mines, ports, quarries, power plants, steel mills and cement kilns. DCi

Mobile Shiploading Systems

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Mobile Radial Telescopic Shiploader loading fertiliser to coaster vessels from warehouse

Mobile Links feeding Shiploader from warehouse

Mobile Hopper feeder fed from wheel loader in warehouse

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Argentine terminal opts for E-Crane

Terminal 6 in Argentina chooses E-Crane for unloading soyabeans

In early 2013, Terminal 6 S.A in Argentina placed an order for a new 1500 Series, Model 11264 PD-E E-Crane with 26.4m (86.5ft) outreach and a lift capacity of 19 metric tonnes (20.9 US tons) to unload soyabeans from Mississippi and Paraná-sized barges onto a conveyer system.

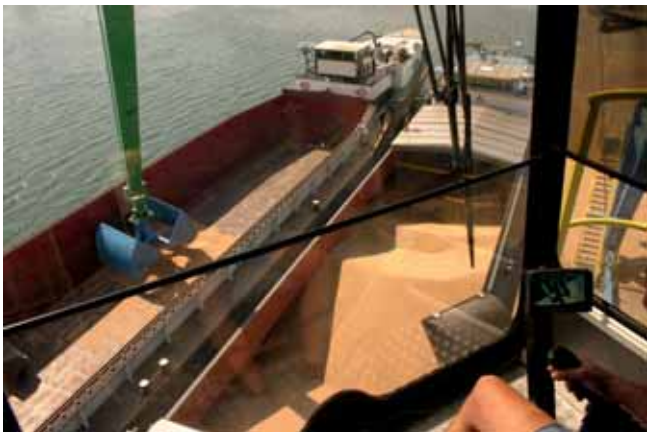
Largest soya meal exporting company

Terminal 6 S.A. is a joint venture between Bunge, and Aceitera General Deheza. It was founded in 1985 and has grown to become the largest soya meal exporting terminal in Argentina. The terminal also ships and handles grains and vegetable oils, along with other dry agribulk. Terminal 6 S.A. is Argentina's first private port, and has the facilities to store up to 950,000 tonnes of dry bulk materials as well as 110,000 tonnes of liquid materials.

Terminal 6 S.A. began talks with E-Crane about a potential project on the Paraná river back in 2007 with a goal of increasing the productivity and capacity of the port. The soyabeans were originally unloaded using a cable crane and a small material handler. Each machine was achieving a production rate of about 400tph (tonnes per hour). Terminal 6 S.A. considered many different material handling options, but ultimately chose the E-Crane to maximize its operations. The cable crane will be removed, and the new E-Crane will be installed in its place. The E-Crane will be pedestal-mounted directly onto a new addition to the existing dock. An unloading rate exceeding 900tph is expected.

Why Terminal 6 chose the E-Crane

Terminal 6 S.A. realized the benefits of the equilibrated crane's efficient design. The E-Crane is a truly unique and revolutionary machine with the lowest power consumption cost in the industry. It runs on clean electric energy, saving customers huge amounts of money when compared to diesel powered equipment. There are also very little associated maintenance costs due to E-Crane's innate design.



Design of the original balanced crane

The key to the E-Crane's efficiency is the parallelogram design linking the stick to the moving counterweight. This unique four-bar mechanism 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 allows gravity to work for you instead of against you, reducing horsepower requirements and power consumption by up to 50%, reducing maintenance and operating costs.

Proven solution for bulk handling

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

design and custom solutions make it the ideal equipment for any bulk handling application. E-Crane is purpose built for dedicated tasks including:

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

Turnkey bulk material handling solution

E-Crane offers more than just the crane. 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, fertilizer, grain, cement clinker and coke, E-Crane is an ideal solution. DCi

Biomass logistics

SAMSON wood pellet shiploader with telescopic link conveyor and fully dust controlled, local storage at the Port of Panama in Florida (©AUMUND).

SAMSON – streamlining random woody biomass and wood pellet logistics

New markets like the biofuels industry transcend oceans and connect suppliers and partners across continents, *write Andy Blythe and Hugo van Benthem of SAMSON Materials Handling Ltd., part of the AUMUND Group*. Biofuels creates demand for sophisticated, yet flexible logistics chains that can piggy-back on existing infrastructure and seamlessly support the high-volume transfer of wood-based fuel products to support the European Union's carbon reduction ambitions.

Biomass power plants, although not without environmental issues, are relatively straightforward and represent a truly carbon-neutral alternative to traditional fossil fuel generating stations. CHP (Combined Heat and Power) linked to basic industries or local heating schemes are really beginning to look very attractive with extremely high operating efficiency, around 90% or more.

For smaller CHP plant, typically to 50MW in generating capacity — or a combination of steam and electricity to a similar value — locally sourced random woody biomass may be an option, allowing the fuel to be sourced close by to minimize the carbon miles associated with transportation.

A recent installation in Scotland at Markinch is typical of such a venture. It is linked to the Tulliss Russell paper plant providing both process steam and electrical power, the excess of which is exported to the national grid. The new scheme entirely replaces the old coal boilers, with a net reduction in CO_2 of some 250,000 tonnes annually. In this application, four SAMSON™ surface feeders from SAMSON Materials Handling Ltd (formerly B&W Mechanical Handling Ltd) receive locally derived forest by-products and other woody combustibles. This is prepared off-site at a new facility operated by 'RWE npower renewables', including chipping and storage, with short haul transportation to Tulliss Russell in enclosed bulk vehicles. The new SAMSON™ feeders are set up in parallel and are all mobile. As such, they can be easily repositioned to enable feeding at a controlled rate, in any combination, to the new conveyor transport and silo storage system providing for effectively 100% redundancy in operation ensuring continued availability 24/7.

Similar SAMSON™ units are operating at UK power plants, handling a range of biomass fuels from chicken litter to sludge and other waste agricultural materials. The only viable option for larger plants in general is wood pellet. The establishment of proper quality standards based on EN 14961-2 make such certified pellets a fuel resource of predictable quality that may now be traded in a manner similar to other commodities.

The commoditization of biomass fuels took an important step forward into a global market in November 2011. The preparation steps towards the launch of a biomass trading platform were started in 2008 when APX-ENDEX, in partnership with the Port of Rotterdam, launched the Industrial Wood Pellets price index, providing a reliable cost comparison. The new exchange allows market participants to trade standard contracts on a futures listing and provides for certification that the source material complies with the established sustainability guidelines and criteria.

All of these activities, driven by government sustainability obligations, are forcing the market towards huge volume increases in the trade of biomass fuels with the UK. It is estimated that some 50mt (million tonnes) will be required by the end of 2020, of which a substantial amount must be imported in the form of wood pellets.

SAMSON Materials Handling is in a unique position to cater for this market using fast track mobile solutions for the loading of large deep sea vessels in ports such as Panama (Florida) and, more recently, at Eastport in Maine, USA. In both solutions, a system of static conveyor equipment brings the pellet from

Four SAMSON™ mobile surface feeders installed at Tullis Russell (Markinch) handling locally sourced woody biomass (©AUMUND).

covered storage to the berth and from the fixed conveyors a combination of mobile link-conveyors and a mobile shiploader load vessels typically up to Handymax. These are typical applications for shiploaders with mobile feeding conveyors allowing the complete equipment to be moved off the berth when not loading a bulk ship and thus freeing the area for handling other cargoes offering maximum berth utilization with the minimum of fixed port infrastructure.

The most recent order for shiploading equipment is from a major German wood pellet trader and provides for a loading rate of 1,000tph (tonnes per hour) receiving pellet from a fixed quayside conveyor. The SAMSON shiploader includes powered multi-directional travel on rubber tyres allowing fast manoeuvring along the vessel for movements between hatches and hold trimming. A telescopic trimming chute allows accurate placement within the hold to maximize the material stowage, essential with these relatively light cargoes.

Covered storage is vital for the export of wood pellets with storage volume sufficient to load the size of vessels likely to be handled and the capacity to discharge the storage and convey the pellets at high speed to the vessel to minimize potential demurrage costs. Using SAMSON standard solutions, with shiploading rates of up to 1,000tph, is entirely practical, sufficient for a Panamax size vessel. Significantly the intake of fuel is dependent on the availability of material from pelletizing plants generally in the hinterland or port catchment area. For the most part, inland logistics will depend upon existing rail connectivity both at the pellet plant and at the port plus the availability of railcar loading and discharge facilities.

SAMSON is also well placed to serve this burgeoning wood pellet import market with its range of Eco-Hopper systems for the dust-controlled import of bulk cargoes from grab-fitted mobile harbour cranes.

In conclusion, for both the export and import of wood pellets, the mobile handling solutions offered by SAMSON Materials Handling for installation on the berth offer an ideal package for the biofuels market worldwide allowing users to capitalize on existing port infrastructure and facilities. DCi

The Samson™ handles wood chips from walking floor trucks for intake to a biomass boiler for plant steam generation at two famous brewery complexes (©AUMUND).

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Specialized logistics

coping with out-of-gauge cargoes

Transporting wind turbines.

The provision by logistics majors of project logistics and specialist warehousing and storage services is now a global affair, *writes Michael King*.

Global forwarders take a variety of approaches to offering out-of-gauge cargo and warehousing services to customers. Take the ever-growing DHL, for example. Although associated in many minds with its express delivery and air freight services, as previously reported in *DCI*, the company's interests spread far and wide, even taking in bulk carrier ship chartering and, of course, project logistics.

The company's Industrial Projects division is one of the fastest growing segments of DHL Global Forwarding, providing specialized solutions to niche project sectors that call for Out of Gauge cargo movements. This can include anything from mining and cement plants through to oil and gas exploration projects or nuclear power plants.

"From entire power generating plants to 1,000-tonne heavy reactor columns, our global Industrial Projects team transports oversized equipment around the world," said Li Jiang, Vice President and Head of Industrial Projects in the Asia Pacific at DHL Global Forwarding. "We incorporate various kinds of transportation services — either domestic or overseas — by air, ocean, river barge or trucking."

In India this saw the completion of various projects for the Shanghai Electric Corporation which supplied power equipment to Reliance's 3,690 MW Sasan Ultra Mega Power Project, a pit head coal based power plant project located in Madhya Pradesh.

DHL provided a raft of services including a project feasibility study, route survey, rehabilitation study, transport design and engineering as well as project Health Safety Security Environment planning. "These solutions resulted in smooth operations and the ability to solve a big cargo loading challenge when one heater reached the maximum weight limit of the ship's crane," said Jiang.

The division's expertise lies in the sound execution of solutions through standardized management, tailor-made operations systems and processes, as well as its experienced personnel and a global network covering over 220 countries. Jiang said DHL was able to use its size to not only negotiate favourable pricing from sub-contractors and suppliers at all stages of the supply chain, but also to source the most qualified companies and personnel from outside the company when required.

"In order to enhance our core competitiveness, we also offer break bulk charter services to establish relationships with subcontractors and lower transportation costs for customers," he added.

Unlike DHL, which has a sizeable portfolio of owned and rented physical assets, BDP International takes a non-asset based business structure. It believes this enhances the ability of managers to focus on what is the best solution for an individual customer, rather than on the need to utilize its own assets. This has seen the company win a whole raft of major energy projects in the Middle East covering all modes of project transport.

"Our approach is to fully understand what the customer is trying to achieve, then we bring together the different parties to deliver the result," explained a spokesman. "This makes our approach very flexible and customizable. We hire physical assets for every job we do. But our people are our most important asset — we do not outsource our customer servicing to third parties.

"We need to have great people who are committed to utilising every physical asset available to them to get the best results."

Agility Logistics was originally established as a Middle East-owned logistics provider and has since expanded its network around the globe, with particular emphasis on the fastest-growing emerging markets. It now offers the full range of logistics services to provide specialist turnkey project solutions on a worldwide basis.

"Our specialty focuses in the sectors of Oil & Gas,

Petrochemical, Refinery, Mining, Power, Construction, Marine Agency and Wind & Renewable Power," explained Grant Wattman, President and CEO of the company's project team, which is supported globally by over 500 Agility-owned offices in 100 countries with over 20,000 professionals on staff.

When approached by a client regarding a new project, Agility immediately engages with the client to develop a Project Logistics Plan which includes identifying the scope of work, and reviewing the implementation schedule and mobilization plans. Procedures, method statements, KPIs and a comprehensive HSE/QA plan are also developed. "We determine the resources needed and perform risks assessments all to ensure safe and timely deadlines are met," said Wattman.

While experienced personnel play a major role in Agility's project logistics offerings, the company also runs assets based in specific regions around the globe. These include trucking services in the Middle East and Asia and, to support the Oil & Gas industry in Asia Pacific, Agility now operates its own daily Tug & Barge service from Singapore to Batam, and manages pipe yards in four countries in SE Asia. "By having our own assets, it allows for creativity in finding effective routes," said Wattman.

The company also offers a variety of warehousing and distribution services around the world with facilities equipped to handle heavy lift, out-of-gauge and over-dimensional cargoes. In-storage services available take in receiving, put-away, storage, inventory management, picking, packing and shipping, with value-added and distribution capabilities supported by the company's strong freight forwarding business.

"We operate owned and leased warehouses with a combined space of over 10 million square metres," explained Wattman. "Agility operates temperature controlled, refrigerated and open area facilities based on the requirements of our customers. Our facilities are strategically located near major ports and airports for ease of reach and equipment access. We provide flexibility in size and type of warehouse, and we are able to utilize an existing facility as well as to set up a new site in an optimal location for our customer."

Most of the cargo DHL's Industrial Projects division handles is also usually outsized and/or overweight. The major factor involved in determining the use of storage and warehousing is price. "Warehousing can only be afforded for relatively small cargo pieces within an acceptable price range," said Jiang. "If we do need warehousing, which is often rented on contract, storage prices and site conditions for transportation and lifting would be of high importance.

"Large cargo would normally be directly lifted and transported from ships to trucks or vice versa, though it may be laid for short storage periods at the lay-down area in ports occasionally."

He said the challenge was to always deliver cargo in adherence with customers' requirements as per contract terms. "Our operations team specializes in project technical design and engineering capabilities," he added. "Our port captains have profound knowledge of cargo lifting, binding, stevedoring, storage, etc. And dedicated HSSE experts ensure a sound environment of health, safety and security."

While many hazards and obstacles are encountered during major projects, typically these can be divided into two categories: service and the cargo itself. Service-wise, said Jiang, the big risk for any forwarder would be not being able to meet a required transportation time as this would not only create a financial risk, but also delay the whole project and cause tremendous trouble for the customer. "Unfortunately, anything could cause these problems, including a postponement of shipment date or any force majeure factors," he added.

"On the other hand, risk may lie with the cargo itself. Any inappropriate stevedoring or transportation could cause severe cargo damage, which sometimes can be irreversible. Such hazards, however, exist literally in each and every instance of lifting and shipping."

Another major furnisher of global project logistics storage and transport services is GAC, which now boasts more the 300 offices globally. The company, according to Per Thornblom, GAC Group Project Logistics Manager, is well covered to handle project logistics at any location, offering a holistic package "rather than simply offering services from ship owners and heavy-lift operators, adding a few dollars and selling to the customer".

Operating from Gothenburg, due to the benefits derived from being in the same time zone as leading heavy-lift and breakbulk shipping clusters, GAC's project team serves a wide range of industries including pulp and paper manufacturing, the oil & gas upstream sector, steel mills, power generation, petrochemical, railways and shipping.

"We are constantly exploring ways to perform better than other operators serving the market," said Thornblom. "For example, can we avoid congestion by choosing other ports than the main ones? Can we reduce costs for the customer by handling the cargo some other way than using ships' cranes?

"Traditional forwarders ask owners and tonnage operators to issue method statements or cargo manuals. Not GAC. We believe the forwarder must take greater responsibility to be competitive."

He said all project shipments were now carefully planned using specially-designed software. "Most recently we have invested in advanced CAD [Computer Aided Drawing] technology in order to illustrate how cargoes will be handled on trucks, barges, coasters and on ocean vessels," he explained. "Our latest investment is in lashings calculation software which calculates the best way to secure cargo on-board a vessel as well as the related acceleration forces to conform with Lloyds and DNV standards.

"Ultimately, it is the vessel's Master who is responsible for lashings on-board, but by making such calculations ourselves we can help ensure that what is done on-board is correct and in compliance with all the relevant rules and regulations."

GAC owns and operates warehouses and open yards at numerous different locations globally. "We also own and operate off-shore bases serving the off-shore industry," he said. "When necessary and appropriate, we also use external contractors to help meet the demands of specific heavy-lifts and other projects."

He said GAC's service main selling point in a competitive market was its ability to offer integrated services as part of complete transportation solutions for turnkey projects. "For example, we work closely with the Swedish Metrological and Hydrological Institute to provide a range of weather routing services to aid vessels take the safest and most economical route in light of current or predicted weather conditions," he said. "We also have a dedicated bunker fuels trading arm, GAC Bunker Fuels, through which customers can purchase bunkers at the best location and price.

"These, and a wide range of other complementary services, can be provided by the GAC Group through a single contact. By controlling as much as possible in-house, GAC is able to stay competitive in the global project logistics industry." DCi

Hamilton exports massive unit cargoes

In September last year, as part of a departure from the Port of Hamilton, Hamilton/Oakville-based manufacturer Hooper Engineered Vessels International (HEVI) loaded four process towers, measuring between 155ft and 250ft in length and weighing between 320,000lbs and 400,000lbs each, aboard a heavy-lift ship destined for a Mississippi power plant currently under construction.

HEVI's highly specialized engineered vessels will be used in the Kemper County integrated gasification combined cycle (IGCC) plant, which is due for completion in 2014.

The four enormous process towers were loaded September 25th and 26th aboard the heavy-lift ship *Stellaprima* for delivery via the Port of Mobile, Alabama.

HEVI's location on Pier 26 at the Port of Hamilton gives the company a competitive advantage, with access to over 500 feet of immediate deep water dock for barge and ocean shipments. From Hamilton's strategically-located Great Lakes port, HEVI cargo has access to the Mississippi River, Atlantic Ocean, and global destinations.

This shipment was followed by a delivery of eight large HEVI-produced reactors for the same power plant project later in the year.

"Access to the Port of Hamilton via the HEVI facility is integral to our continued success in delivering the difficult projects. This shipment celebrates the tremendous efforts of the many people and many hours of hard work, to support an important client's power generation project," said Chris Hooper, Vice President of Sales & Marketing for Hooper Welding. "Hooper/HEVI has manufactured complicated, heavy, high-pressure/temperature ASME pressure equipment for the process industry for over 60 years. The company is made up of the finest manufacturing personnel and expertise in the industry and delivers the most challenging projects and equipment for our clients in Canada, United States and International markets. The

continued quality and service delivered, defines our reputation in the marketplace as a global leader of ASME pressure equipment."

Project cargo at the Port of Hamilton

The Port of Hamilton offers an ideal location for large manufacturing shipments. Hamilton is the largest Canadian port on the Great Lakes, with access to 100 million North American consumers, and extensive multimodal transportation connections. More than $2 billion worth of cargo of all types passes through the port each year.

The HEVI shipment is among several big cargoes that arrived or departed from the Port of Hamilton in autumn last year. On the import side, the heavy lift ship *Stellaprima* arrived in port in mid-September carrying 175mt rotors from Rotterdam destined for the Bruce Nuclear plant in Goderich, Ontario. The port also later handled a delivery of 200 rail cars from a Hamilton-based manufacturer to a customer in Saudi Arabia, as well as a large shipment of windmill components.

"Project cargo is an important part of the Hamilton Port Authority's growth and diversification strategy," said Ian Hamilton, HPA Vice President, Business Development & Real Estate, noting that project cargo quadrupled from 2008 to 2011, and is on-track to grow further. "We have the experience, the facilities, and the location, so we are expecting even more traffic in the coming years as domestic and foreign manufacturers take notice."

"The presence and capabilities of the Hamilton Port Authority are immense assets to this community. Few cities in Ontario can boast of the multi-modal transportation infrastructure that is present in this city," said Neil Everson, Director of the Economic Development Division at the City of Hamilton. It is partners like the Hamilton Port Authority that are the reason why Hamilton is ranked as the number one location for business investment by Site Selection magazine."

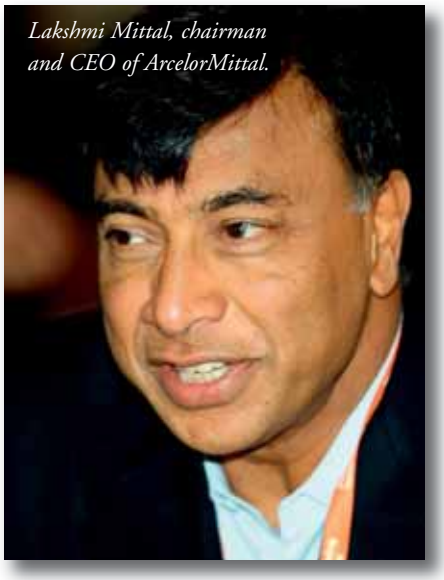
The Port of Hamilton is the largest Canadian port on the Great Lakes in terms of both size and cargo handled. The Hamilton Port Authority's strategic vision is to be the Great Lakes port of choice. DCi

Steel industry has 'annus horribilis'

Overcapacity across the continents, a disturbingly large fall in demand — particularly from Europe which is struggling to recover from the 2008/09 brutal recession — and prices down between 8% and 10% depending on products and markets made 2012 an *annus horribilis* for the world steel industry, *writes Kunal Bose in New Delhi.*

How bad the year was becomes evident from ArcelorMittal, the world's largest steel group by a very big margin, piling up a net loss of $4 billion in the last quarter and $3.7 billion for 2012 and China Iron and Steel Association saying that, after tax, profits of the country's more than 80 steelmakers fell 98.2% to 1.58 billion yuan ($251m). What, however, needs to be factored in for ArcelorMittal working is write-downs of over $5bn, almost all of it on the group's European operations.

Explaining the reasons for such dismal performance, the India-born ArcelorMittal chairman and CEO Lakshmi Mittal says, "2012 was a very difficult year for the steel industry, particularly in Europe where demand for steel fell a further 8.8%." The European steel demand is down about 30% since 2007 and analysts don't rule out possibility of further demand erosion.



Lakshmi Mittal, chairman and CEO of ArcelorMittal.

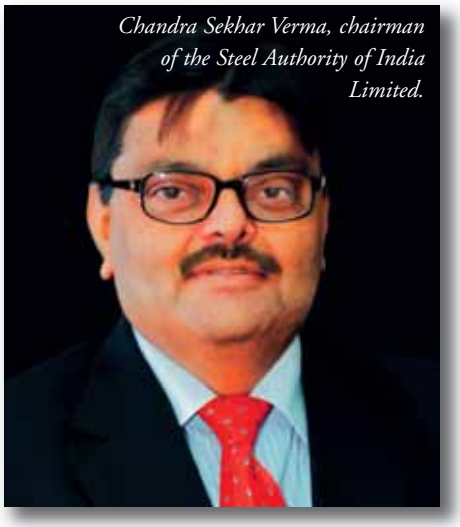
Contraction in steel use was inevitable as auto production in the continent has shrunk 20 during the period when there was also considerable shift in consumer durables manufacturing capacity to China mainly and also to some other Asian countries. In the circumstances, ArcelorMittal was not left with an alternative to knifing through some high cost blast furnaces in Europe, where it produces nearly 45% of its steel. The group simultaneously exercised production discipline, resulting in a 2.3% shrinkage in steel shipments to 83.8mt in 2012. Mittal admits to the fact that the industry was taken by surprise by steel market behaviour in Europe and China in particular. Moreover, he says, the industry was found wanting in making adjustments to production quickly enough "leading to oversupply and weak pricing."

Braving union protests and earning displeasure of politicians,

some other leading European steel groups like Tata Steel Europe (Corus in its earlier avatar) have also gone through asset optimization programmes principally amounting to capacity resting till improvement in outlook and some selective deletion. Even then, the steel industry is not fully rid of excess capacity. "The industry needs to continue to shrink because there is probably 20% overcapacity," says Dalton Dwyer, head of London-based merchant banker Industry Corporate Finance.

What are the steel prospects like in the current year? Mittal says "challenges" are to continue largely due to the fragility of the European economy even though the recession bite could become less severe. But unlike in Europe, businesses in the US are getting loans from banks more easily and that will support steel demand growth. He is hoping for a 2% to 3% rise in steel shipments of ArcelorMittal in 2013 on the back of demand improvements in China, Brazil and the US. ArcelorMittal has a strong product portfolio for oil and gas sector and automobile and heavy equipment industries and all of them are expected to fare well in the three markets. What, according to Mittal, should also be supporting an improvement in "profitability of our steel business in 2013" is restructuring in Europe. Because of its overarching presence in Europe and America (both North and South), ArcelorMittal is seen as the bellwether of the steel industry in the west.

What about China which last year raised steel production by 3.1% to 716mt to claim a share of 46.3% of world output of 1.548bn tonnes. China, seen as the growth engine for world steel use, proved to be a disappointment in rise of metal consumption at only 2.5% (against 6.2% in 2011) to about 640mt. This happened because the Chinese economy grew at its slowest pace in 13 years in 2012 at 7.8%. Besides weaknesses at home, China having emerged virtually as a factory to the world had to bear the brunt of global downturn. What, however, is encouraging is that Beijing could avoid crash landing for the economy belying fears of many at home and abroad. World Steel Association (WSA) said in an outlook report that Beijing stimulus measures are likely to moderately improve the economic situation in 2013 leading to steel demand growth of 3.1%. According to the country's ministry of industry & information technology (MIIT), China's steel production and consumption will this year climb to 750mt and 700mt, respectively leaving a surplus of 50mt for exports. It is, however, doubtful if demand growth of this order will lead to any major improvement in profitability of Chinese mills, for there is an overhang of surplus capacity in the country.



Chandra Sekhar Verma, chairman of the Steel Authority of India Limited.

Chandra Sekhar Verma, chairman of the Steel Authority of India Limited, a keen observer of China scene says, "expect the country to rid itself of uneconomic and polluting capacity by scrapping blast furnaces of up to 400 cubic metres and electric furnaces of up to 40 tonnes. I will say as China builds new steelmaking capacity of 270mt by 2020, it will at the same time extinguish 60mt of existing capacity to finally have capacity of 1.05bn tonnes." Parallel to exercising restraint in capacity building, China has set its sights on achieving mastery over making very high grades of steel for which it is now largely import dependent. In this endeavour, it is partnering with leading overseas steelmakers like ArcelorMittal and Nippon Steel,

repository of some exclusive technologies, as it is exploring the possibility of employing Corex, Finex and ITmk3 processes at some new mills to be built. In both these pursuits, Verma has put SAIL on the same path as China.

Explaining the compulsions to induct such processes, Verma says, "they allow iron making using iron ore fines, the disposal of which is a perennial issue and non-coking coal of which local deposits are plentiful." Powdered iron ore is nearly 25% cheaper than pellets. General coal used in a Finex mill costs at least 20% less than high class soft coal. Moreover, the technology dispenses with raw materials preparation stages like sintering and coke making. "Finex recommends itself for low emissions and economy in construction cost. Moreover, a Finex plant with mini flat mill will need 60% of area of a blast furnace plant of identical capacity. You know how difficult it has become to acquire big parcels of land in India to host new steel mills. That way Finex technology will be of help," says Verma. SAIL is in talks with Posco, owner of Finex technology, to build a 3mt mill at Bokaro in India using the closely held technology.

Bokaro is where SAIL is expanding crude steel capacity of its mill from 4.38mt to 7mt. Expansion of Bokaro mill is part of SAIL growing crude steel capacity at all its plants to 24.6mt and at the same time modernizing existing facilities from raw materials handling through the entire chain of value addition. "As we complete this phase of expansion cum modernization programme calling for an investment of Rs720bn ($13.1 billion) in another year, SAIL will have all its steel continuously cast, a must for clean steel. Equally importantly, over 70% of SAIL steel in post modernization will be value added. We need volume to maintain our share in the rapidly growing Indian market. Selling large volumes as value added products instead of semi-finished steel will give us better margins. SAIL Vision 2020 programme is designed to lift our capacity to 60 mt and that is to give us a 30% share of the domestic market," Verma told *DCI*.

Naveen Jindal, chairman of Jindal Steel & Power, says "steel is a critical metal to help emerging nations to become developed countries." No doubt China's might in steel and also in other metals, including aluminium is a critical factor in the country becoming the world's second largest economy. For Jindal, the fact that India is the world's fourth largest steel producer and is

on the way to figure only next to China will not be distraction from ground reality that "low urbanization is the reason for our steel *per capita* consumption being only 57kg against world average of 215kg and 460kg in China." According to McKinsey & Co director Frank Bekaert, residential and commercial buildings, public infrastructure, machinery and transportation account for 75% of steel demand growth in China. In fact, all these sectors plus the pace of urbanization will also be principal drivers of steel demand growth in India. By 2020, China will have steel *per capita* use of 621kg and India 111kg, says Neil J. Bristow, managing director of H&W Worldwide Consulting. In the last decade and a half, China gave thrust to urbanization and infrastructure development creating ideal condition for rapid steel capacity and use growth.

The Chinese economy will pick up pace in the current year to 8%, if not slightly more, indications of which were available in the final quarter of 2012 when growth picked up to 7.9% on the back of recovery in industrial production and exports. The new Chinese leadership headed by 59-year-old Xi Jinping has not lost time in green lighting infrastructure projects one after another. In an economic slowdown, the government has to take some counter-cyclical measures as part of macro-economic management.

China will continue to have large demand for infrastructure projects, not least due to the emphasis on urbanization. This will sustain demand for steel. No doubt, from here Chinese steel demand, as Bekaert says, will grow at a slower rate than recent history to rise to 820mt by 2020. China having a leviathan like presence in the world steel industry will at all times have a major bearing on the steel market. In this context, Arun Jagatramka, chairman of coking coal and coke producer Gujarat NRE said in his presentation at 'Global Steel 2013' conference, "China, as through last year, might have been down, but it was not to be out. On China much will depend as to how prices of steel and minerals like iron ore and metallurgical coal will behave at any point."

Next to China, the principal growth centre for steel capacity is proving to be India. Its Planning Commission has fixed a target for the industry to commission new capacity of 60mt to take the total to 149mt in the 12th five-year plan period ending March 2017. The 2020 capacity target for India is 200mt. "The roadblocks to building mega steel projects (10mt and more) remain. India accounts for 17% of world population but owns only 2.5% of its land. What follows is the difficulty in acquiring very large tracts of land to house big steel plants. We have plenty of resources like iron ore and thermal coal. But unfortunately, mining here is shrouded in controversy making it difficult to open new mines," said Jindal at Global Steel conference. To give one example, South Korean Posco, which wants to build a 12mt plant in Orissa has not been able to acquire all the land it needs in the last eight years, thanks to agitation by villagers and protests by NGOs. There, however, is hope. At the initiative of prime minister Dr Manmohan Singh, National Investment Board has been created to come to the rescue of Posco like projects.

While China, India and South Korea in particular in Asia will grow capacity in the years ahead, Europe will go through the inexorable march of capacity contraction. WSA data show steel production in 27 member European Union in 2012 was down 4.7% to 169.4mt and that includes a fall of 3.7% to 42.7mt in Germany, 5.2% to 27.2mt in Italy, a marginal decline of 1.1% to 15.6mt in France and a whopping 12.1% setback to 13.6mt in recession battered Spain. North America, which in the past lost much capacity and went through a great deal of churning in industry, could last year raise production by 2.5% to 121.9mt, of which the share of the US was 88.6mt. This happened because energy cost in the area is comparatively less than in Europe and it also has the benefit of good reserves of metallurgical coal.

Brazilian steel industry optimistic about the future

With imports curbed by the weaker real and spending on infrastructure gathering speed, the Brazilian steel industry looks forward to a much better year, *writes Patrick Knight.*

Helped by the weaker real, which has made exporting steel to Brazil less attractive, and by a surge in demand for steel from numerous infrastructure projects, Brazil's mills hope to sell 3mt (million tonnes) or 4mt more on the domestic market this year than in 2012.

The industry used only 70% of its 45.5mt capacity last year, but hopes to push that up to 80% plus this year.

Aided by the devaluation of the Brazilian currency, which fell by 17% against the US dollar during 2012, by numerous anti-dumping measures and the ending of tax cutting by ports anxious to attract import business, Brazil's steel industry hopes that up to 2mt less steel will be imported this year compared with the 4mt of 2012.

More than $100 billion is to be spent each year on upgrading the country's creaking infrastructure from now on. Notably, this work will include building or improving up to 10,000km of railway track, upgrading 7,500km of the road network — almost half of which is in a poor or very poor condition — and expansion work at the ports which are struggling to cope with a series of record harvests.

Partly because of this, the steel industry hopes to sell 5–6% more this year than the 25mt used in Brazil in 2012, when the economy hardly grew and manufacturing industry made 2% less goods than in 2011.

Not everybody is in favour of the protection Brazil's steel industry benefits from.

The motor industry, set to repeat last year's output of 3.5 million cars — and which is the leading importer of sheet steel from China, Russia, Taiwan and South Korea — claims that Brazilian steel, which now costs about $1,800 a tonne to make, is amongst the world's most expensive.

Faced with a flood of imports, and losing export markets, the motor industry has pressed the government to make no more concessions to the steel men.

The government has refused to take more anti-dumping measures. As industry's profits have not been affected by the extra imports, this seems unlikely to happen.

The steel industry also pressed for the export of scrap, of which the industry uses about 9mt a year, to be halted. But the scrap industry, which claims to export only 300,000 tonnes a year, has fought back strongly and won its case.

Investments shelved or slowed

Plans by the Chinese Wisco company to build a 3mt-capacity mill alongside the new Acu port built in Rio de Janeiro state by companies in the OXX group, headed by Eike Batista, Brazil's richest man, have been put on hold. A similar plan by the Argentine–Italian Techint company, which took control of the Usiminas group last year, to also build a new mill near the Acu

port, have been shelved as well.

So far the 3mt-capacity mill being built by Vale and the South Korean Posco and Dongkuk companies adjacent to the port of Suape, in the north eastern state of Ceara, seems to have survived. Vale has, however, slowed expansion work at its Alfa mill at Maraba, on the Carajas railway, where 300,000 tonnes are now made.

The fate of the 5mt-capacity slab 'South Atlantic' CSA mill — built at a cost of about $10 billion by the ThyssenKrupp company near Rio de Janeiro and which started up two years ago — is expected to be known soon.

After huge cost overruns, which have severely damaged the German company, the CSA mill, along with a mill in Alabama where 60% of the slabs produced in Brazil are processed, has been put up for sale by ThyssenKrupp.

Although there are several bidders for the mill in the United States, including Arcelor-Mittal and Nucor, only Brazil's National Steel, CSN company and perhaps Techint, seem interested in the CSA mill.

CSN chief executive Benjamin Steinbruch, who failed to get control of the Usiminas group last year, has sought help from Brazil's National Development Bank, the BNDES. Steinbruch says CSN is prepared to bid almost US$4 billion for the mills in Brazil and Alabama.

Steinbruch argues that following the takeover of the Tubarao and other companies first by Arcelor then Mittal and the purchase of Usiminas by the mainly Italian owned Techint, Brazil's steel industry risks falling increasingly into the hands of foreign interests. So it is important that CSA should become Brazilian, he says.

One problem is that Steinbruch has made many enemies as he has consolidated his grip on CSN, Brazil's oldest mill — not least with the Vale company, which owns 26% of the South Atlantic mill and which also has a contract to supply CSA with all the iron ore it uses.

Like most Brazilian steel companies, which until a few years ago bought most of their ore from Vale, CSN is now not only self-sufficient in ore but — following the development of its Casa da Pedra mine — has become a leading ore exporter as well. Getting full control of the Cas da Pedra mine involved a legal battle with Vale, and CSN is also in dispute with the BNDES.

A few years ago, CSN won the concession to build and operate the 1,500km Transnordestina railway, which will eventually link the Atlantic ports of Pecem and Suape, in Ceara and Pernambuco states, with the north–south line. When the north–south line is complete, it will link Vale's Carajas line with lines in Minas Gerais, Rio and Sao Paulo states.

The north–south line, on which work first started in 1985, runs southwards through leading soya- and maize-producing areas. The line will soon become a major artery for exports, as well as for goods on their way to and from the free zone at Manaus, on the Amazon river.

It had been hoped that the first stretches of the Transnordestina line would have opened to traffic a year ago. However, difficulties in obtained way leaves from thousands of landowners on its route, as well as problems with the environmental authorities, have delayed construction. This has annoyed politicians anxious to see the soaring cost of getting grains to ports by road reduced, as well as to be present at opening ceremonies in their constituencies.

Despite buoyant sales of cars, as well as consumer durables such as refrigerators and cooking stoves and strong growth by the construction industry, which uses more than 60% of the steel made in Brazil, the average Brazilian still uses only about 135kg of steel a year, compared with the 400kg used by the average Chinese.

STEEL NUMBERS, MILLION TONNES

Year	Production	Domestic sales	Imports	Exports
2012	34.682	21.588	3.783	10.847
2011	35.220	21.418	3.783	10.087
2010	32.928	20.716	5.988	8.488
2009	26.506	15.970	2.332	8.668

Source: Brazilian Steel Institute

The difference is mainly explained by the low spending on infrastructure, which has received less than 1% of Brazil's GDP in the past few years, compared with several times that in China and India.

Just to maintain what exists, 3% of GDP needs to be spent on infrastructure.

Because so little has been spent for decades, many of Brazil's outdated roads, railways and ports are gradually deteriorating.

With Brazilian industry producing and exporting less every year, but with imports soaring, exports falling and with the economy stagnant, the government has finally decided to take action.

Massive investments in new railways, including a controversial 'bullet' train to link Brazil's two largest cities, Sao Paulo and Rio de Janeiro, are to be made. More than half the 400km of track for this line will be either in tunnels, or on viaducts and bridges, so large amounts of steel will be needed for this project. Other high-speed trains are planned as well.

Work is also well under way on building or re-building a dozen football stadiums which will be needed for the World Cup competition to be held in Brazil next year, as well as for the Olympic Games, to be held in Rio de Janeiro in 2016.

Brazil had a record 84mt crop of soyabeans this year and up to 45mt of that, as well as 20mt of maize and close to 30mt of sugar, will be exported this year, two thirds from Santos, Paranagua and Rio Grande. These exports, plus those of coffee, meat and other farm products, are now responsible for 40% of all Brazil's export earnings.

But concern is growing that the soaring cost of transport, up by more than 30% this year, means it may not be possible to get all of it, particularly that grown in Mato Grosso state, which is 2,000km from any port, to a ship for below the world price for the commodity.

The loss of competitiveness of some commodities explains the sudden urgency of the road and rail building programmes. These will soon be followed by improvements to waterways, by far the lowest cost of bulk transport. Even when all the new railways are completed, they will not be able to handle all the extra traffic.

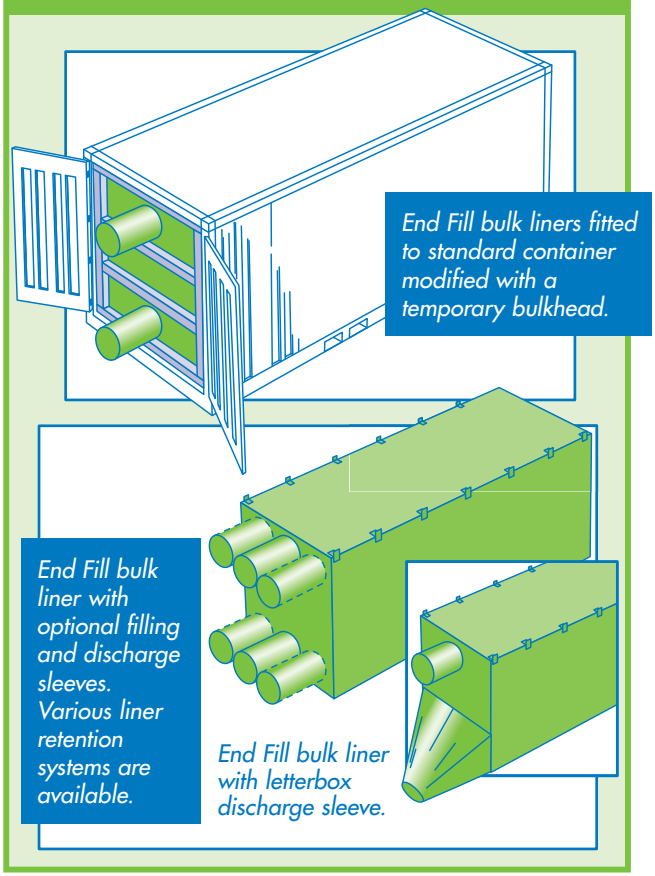
There are plans to build 30 locks, most of them alongside existing hydroelectric power stations, or under construction, in the next few years.

With Brazil's exports of manufactured goods slowing and imports rising, the steel industry complains that the vehicles, construction machinery and consumer goods now imported each year contain 9mt of steel which could be made in Brazil.

In 2012, for example, 800,000 cars were imported, but only 300,000 sold abroad.

CorrPakBPS offers a complete range of sea bulk container liners designed to transport your dry bulk products safely, efficiently and cost-effectively.

END FILL BULK LINERS

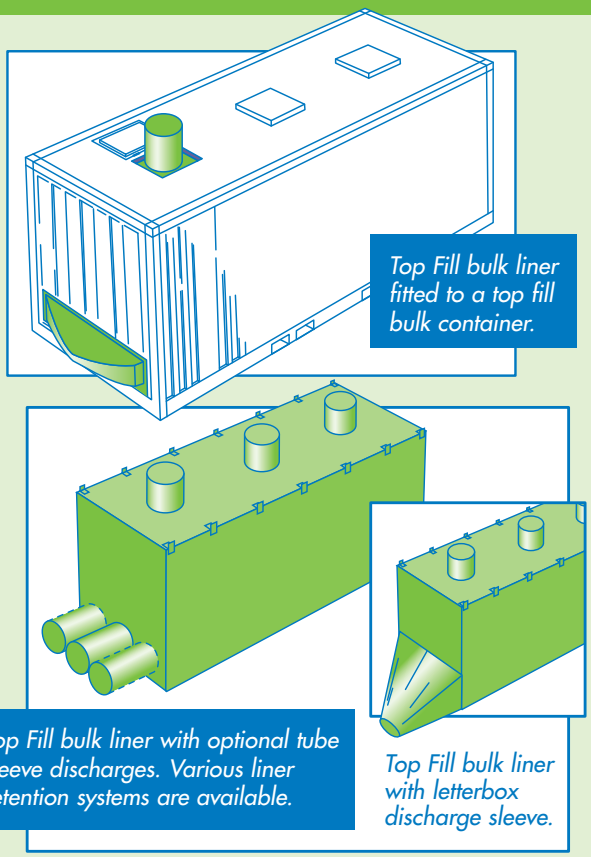


End Fill bulk liners fitted to standard container modified with a temporary bulkhead.

End Fill bulk liner with optional filling and discharge sleeves. Various liner retention systems are available.

End Fill bulk liner with letterbox discharge sleeve.

TOP FILL BULK LINERS

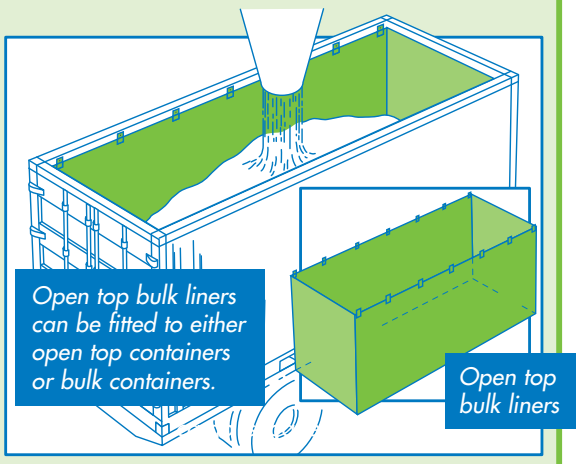


Top Fill bulk liner fitted to a top fill bulk container.

Top Fill bulk liner with optional tube sleeve discharges. Various liner retention systems are available.

Top Fill bulk liner with letterbox discharge sleeve.

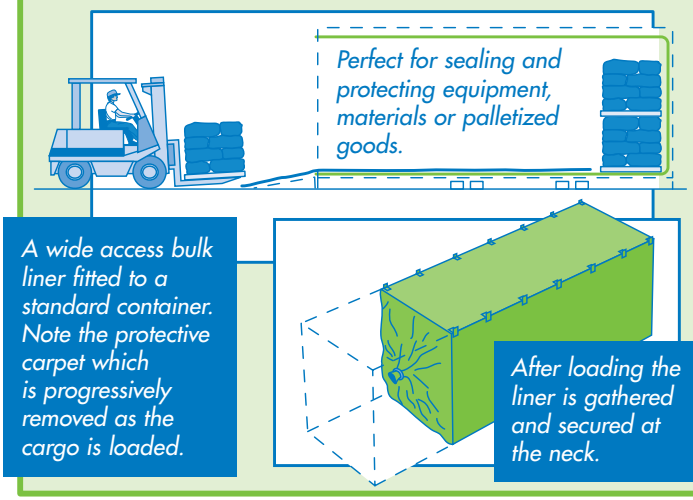
OPEN TOP BULK LINERS



Open top bulk liners can be fitted to either open top containers or bulk containers.

Open top bulk liners

WIDE ACCESS BULK LINERS



Perfect for sealing and protecting equipment, materials or palletized goods.

A wide access bulk liner fitted to a standard container. Note the protective carpet which is progressively removed as the cargo is loaded.

After loading the liner is gathered and secured at the neck.

Bulk Liners are the perfect solution for shipment of dry, free flowable goods such as: PE, PVC, PET, PTA resins, sugar, minerals, grains, malt, and other products in flake, granule, powder or pellet form.

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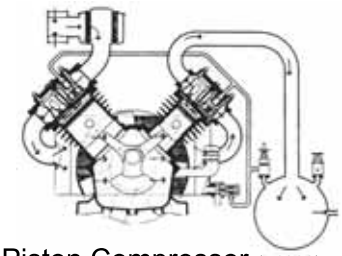
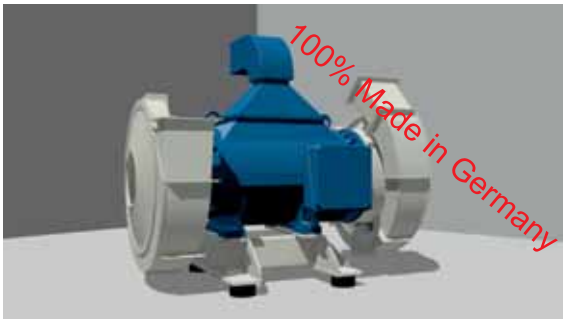

Piston Compressor (<1800)


Roots Blower (1900)


Fan with Air Flow Regulator (1960)


Fan with frequency inverter and automatic belt tension (2000)


TURBO POWER single stage (2009)



TURBO POWER double stage (2011)

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