



# DRY CARGO

*international*

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## FEATURES

- Global Grain Trades
- Baltic Ports
- Project Cargo
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- Belt Conveyor Systems & Technology

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**MARCH 2015 issue**

*featuring...*



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# Slowing growth in dry bulk trade

**V**arious signs point to a sizeable increase in global seaborne dry bulk trade during 2015. Import demand around the world, for many commodities, almost certainly will rise but, after last year's slower growth, a decelerating pattern seems to be evolving. There is still a heavy dependence on the expansion of China's commodity purchases.

Strengthening momentum in global economic activity could provide a more solid backdrop for trade movements. Additional demand for the products of industries importing dry bulks can be expected to have a beneficial effect. The recent large reduction in oil prices, assuming that it persists, will boost many economies. Although China's slowing mode is predicted to continue, a gradual pick up elsewhere may be seen.

## IRON ORE

After growing rapidly last year, world seaborne iron ore trade could expand by 62mt (million tonnes) or about 5% in 2015, to 1,398mt as shown by table 1. Other forecasts suggest higher growth is likely. Most of the extra volume probably will be bought by China, the dominant importer, similar to the pattern seen in previous years. Predictions therefore reflect assumptions about key influences shaping Chinese purchases.

A rise in China's imports this year of about 6%, raising the total to 990mt, is part of the overall iron ore trade forecast. An enlarging proportion of ore from foreign suppliers, displacing domestic supplies, is a key influence. Among other importers including Europe, Japan and South Korea, additional volumes are also envisaged.

## COAL

The upwards trend in coal trade evidently ceased last year, but growth could resume during 2015. Higher volumes of both steam and coking coal trade are foreseeable. Steam coal, the largest portion, comprising almost three-quarters, is still benefiting from growing power station usage of imports in some countries. In the coking coal segment higher steel production at blast furnace mills using this coal type, in several areas, could provide more impetus.

Overall world seaborne coal trade during the year ahead

is forecast to grow slightly by 22mt or 2%, reaching 1,215mt. Positive indications for a number of importers in Asia are apparent, but there is considerable uncertainty about China's purchases after last year's big reduction. India also is a major focus of attention, but the outlook for these imports seems favourable, amid an increasing dependence on foreign coal supplies.

## GRAIN

Vigorous growth in grain trade last year may be followed by only a limited further rise in 2015. However, forecasts for this commodity, especially beyond about six months ahead, are highly speculative. This feature reflects the difficulty or impossibility of predicting weather patterns which will determine both importers' domestic harvests and exporters' production volumes.

World seaborne grain trade (including wheat, corn and other coarse grains plus soyabeans) may be fairly flat this year at 376mt. During the conventional crop year used in statistics, a 2% wheat and coarse grains trade reduction in the current period ending June 2015 is indicated. Conversely, soyabeans trade in the period ending September could be 2% higher, assuming increased imports into China.

## MINOR BULKS

The large and varied minor bulks sector comprises about one-third of global seaborne dry bulk trade. Following last year's estimated flat performance overall, resumed expansion of about 3%, to 1,540mt seems likely in 2015. Advantages for industrial bulks related to manufacturing and construction, the largest part, could evolve from reviving economic activity in several regions.

## BULK CARRIER FLEET

A further slowdown in the world bulk carrier fleet's expansion over the past twelve months could be followed by an acceleration in 2015, as shown by table 2. An increase of 41m deadweight tonnes or over 5%, to 797m dwt at end-2015 is estimated. Despite an envisaged rise in scrapping, higher newbuilding deliveries are set to ensure robust fleet growth.

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

	2010	2011	2012	2013	2014	2015*
Iron ore	1,005	1,069	1,124	1,210	1,336	1,398
Coal	954	1,014	1,111	1,191	1,193	1,215
Grain (including soyabeans)	297	313	328	352	374	376
<b>Total major bulks</b>	<b>2,256</b>	<b>2,396</b>	<b>2,563</b>	<b>2,753</b>	<b>2,903</b>	<b>2,989</b>
% growth from previous year		6.2	7.0	7.4	5.4	3.0
source: Bulk Shipping Analysis estimates and forecasts		*forecast				

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

	2010	2011	2012	2013	2014	2015*
Newbuilding deliveries	80.8	100.0	100.2	62.8	49.0	58.0
Scrapping	6.5	23.2	33.4	23.3	15.9	17.0
Losses	0.4	0.5	0.1	0.4	0.1	0.2
Other adjustments/conversions	4.7	4.0	-1.1	0.0	-0.9	0.0
Net change in fleet	78.6	80.3	65.6	39.1	32.1	40.8
<b>Fleet at end of year</b>	<b>539.1</b>	<b>619.4</b>	<b>685.0</b>	<b>724.1</b>	<b>756.2</b>	<b>797.0</b>
% growth from previous year		14.9	10.6	5.7	4.4	5.4
source: Clarkson Research (historical data) & BSA 2015 forecast		*forecast				

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## Good prospects for soybean production in South America

"The prospects for soybean production in South America in 2015 and for the next ten years, are good," writes *Ruben Oliveira*, Marketing & Sales Director, Inspectorate Agriculture Division.

South America will continue being the main world producing and exporting area for soybeans, as well as for soybean meal and soybean oil.

"We base our assessments on our intimate knowledge of the market having served all parts of the soybean complex in South America over the last two decades. Inspectorate achieves insight into production in addition to official statistics due to our privileged position in assessing quality of crops in Argentina, Brazil and Paraguay not only by country but also by region. Our market understanding is built on through helping transactions between producers and traders, supervising receptions and loadings in country and at ports. We also see the whole process through by supervising discharge at ports as the supply chain nears its end.

"Our current assessment is made in mid-February with the soybean harvest in Paraguay coming to an end. Between the end of March and mid April harvesting will finish in Brazil and towards the end of March Argentina will have begun its harvest. A record soybean harvest in the United States has been confirmed, amounting to 108mt [million tonnes], and it is now South America's turn. In this 2015 season, both Brazil and Argentina are expected to record harvests with projected production volumes of 93mt and 58mt respectively.

"On the basis of current information, the United States is expected to continue to be the lead world exporter of soybeans, with a record volume of 48.7mt, followed by Brazil with a net export volume of 46mt and Argentina maintaining its exports in the 8mt range. The United States will turn out to be the only

country increasing its exports in 2015. China will consolidate its position as the foremost world soybean importer, with a volume of 74mt, as well being the world's largest soybean processor, with 74.5mt crushed. From this it can be seen that 100% of the crushed soybeans by China for its domestic market is imported. And this trend will remain in the years to 2024/25, a time at which the Chinese will need to increase their soybean imports by 33.7mt, thus reaching a total of 107.7mt. This is equivalent to the entire soybean production of the United States in this 2014/5 season.

"Brazil will see the largest increase in exports, with a projected 22.3mts by 2025. Argentina will be far behind with an increase of just 4.1mt in its exports, and the United States will have a 3.4mt increase. In conclusion, Brazil will be the main country supplying China's projected demand growth during the coming decade. The rest of the soybean-importing countries are not projected to undergo significant changes in their demand by 2024/25. They will consolidate their positions as soybean meal and soybean oil importers, that is processed by-products, as they do not possess soybean-crushing industries that can compete with the most efficient in the world.

"We expect that Southeast Asia, North Africa and the Middle East are going to be the regions with the largest soybean meal imports increases by 2024/25, with growth of 5.3 and 2.4mt each. Argentina will continue being the world's main soybean meal exporter, and by 2024/25 is projected to have an increase of 10.3mt, bringing its total for such exports to 38.1mt. Inspectorate believes that Argentina will be able to capture 87% of the growth in soybean meal world trade. Brazil will continue being the second largest, with an increase of 3.8mt, and with total exports of 17.9mt," concludes Oliveira.

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# China's dry bulk imports pace slackens

A sharp reduction in China's dry bulk commodity imports growth rate occurred last year, after a lengthy period of rapid expansion. Following 13–14% annual increases for several years, the 2014 rise was very limited at under 2%. This dramatic change could indicate a new era beginning, including much slower advances than seen in the recent past.

Following astonishing growth over the past decade, imports into China now comprise about one-third of world seaborne dry bulk cargo trade. Consequently prospects for China's commodity purchases are a key aspect of the outlook for global movements. Further additional volumes are still likely, but the pace of this trend may differ from its recent evolution.

Commodity consumption in China will be adversely affected by the slackening rate of growth in economic activity which is forecast to continue for some time. Specific factors affecting individual commodities are expected to modify the effects on imports, however. GDP growth last year, at 7.4%, was lower than seen in the preceding twelve months, emphasizing a decelerating pattern.

According to a recent (late January) IMF updated forecast, China could see a slackening to 6.8% GDP growth in 2015, with perhaps another half percentage point deceleration next year. This trend reflects government policy aiming to rebalance the economy away from capital investment spending and exports, towards more consumer spending.

## UPWARDS IRON ORE IMPORTS

Iron ore comprises the dominant part, about 60% of China's vast dry bulk imports. In 2014 the iron ore total rose by 113mt (million tonnes) to 933mt, a 14% increase from the previous year, as shown by the table. This volume, including some land movements but mostly seaborne, comprises two-thirds of global iron ore trade.

In preceding years, the rising trend accompanied growing steel production at Chinese mills. Last year, crude steel output was only marginally (by 1%) higher at 823mt, although that volume may be revised upwards eventually. A more specific indicator, pig iron production at blast furnace mills, was up by an even smaller margin at 712mt. These figures corroborate evidence that iron ore imports gained market share from Chinese domestic ore output.

Some forecasters are predicting that in 2015 another large expansion of iron ore imports into China will occur, despite expectations of little or no growth in steel production as a result of slack demand. Lower international ore prices, reflecting foreign suppliers ramping up their output, have resulted in enhanced import competitiveness. As a result, more high-cost Chinese domestic material may be displaced by foreign purchases.

## DOWNWARDS COAL IMPORTS

Following a strongly rising trend over several years, China's coal

imports abruptly declined in 2014. The annual total last year, including lignite, fell by almost 36mt or 11%, to 292mt. Coking coal for the steel industry was 17% lower, at 62mt, while steam coal, mainly used in power stations, was down by 14% at 166mt. Low-quality lignite, also used by power stations, was 6% higher at 64mt.

This downturn was caused by a number of factors. Electricity generation at coal-fired power plants was adversely affected by much higher hydro-electricity production. The government's increasing emphasis on using cleaner fuels also contributed, together with measures to discourage coal imports.

During the year ahead it seems possible that coal imports into China will fall again although, alternatively, some analysts foresee a slight recovery. Potential negative influences are very prominent. Measures to reduce air pollution from coal-fired power stations is one key aspect, together with attempts to reduce imports of low-quality coal. In these circumstances, price-competitiveness of foreign supplies is not the main determining factor.

## RISING GRAIN AND SOYA PURCHASES

Cereals and oilseeds imports by Chinese buyers continued to strengthen in total last year. This trend has been assisted by expanding consumption amid a growing population, improving living standards and changing diets for many people. While domestic output of these agricultural products is massive, a large volume of imports is needed.

The biggest imports element in this category is comprised of soyabeans. As shown in the table, these were 8mt or 13% higher in 2014, raising the annual figure above 71mt. Imports of the main grains — wheat, corn, barley and oats — were almost flat at about 11mt.

Domestic grain production in China has risen in recent years but the mid-2014 harvest was almost unchanged at 349mt. Together with ample stocks, this output has limited demand for imported supplies. Domestic soyabeans output supports a much smaller part of that market segment and, amid vigorously expanding usage of soyameal and oil, the result is growing imports.

## VARYING MINOR BULKS EVOLUTION

Among China's dry bulk imports many others are prominent and, as a group, form a very substantial quantity. But two of the largest individual commodities declined steeply last year. Nickel ore (used in the steel industry) was down by 24mt (33%) to 48mt, while the aluminium raw material bauxite/alumina was 34mt (45%) lower at 42mt.

Prospects for this very diverse sector are mixed. During 2015 imports of some commodities may increase. There may be partial rebounds in bauxite/alumina and nickel ore, after destocking in the past twelve months following previous stockbuilding in advance of Indonesia's minerals export controls. Conversely, decreases are quite possible elsewhere. *Richard Scott*

## CHINA'S DRY BULK IMPORTS (MILLION TONNES)

	Main bulk commodities					
	2010	2011	2012	2013	2014	% change**
Coal*	184.6	222.2	288.9	327.2	291.6	-10.9
Iron ore	619.1	687.0	745.5	820.3	933.1	+13.8
Soyabeans	54.8	52.6	58.4	63.4	71.4	+12.6
Steel products	16.4	16.3	13.4	14.0	14.1	+0.1
Bauxite/alumina	34.7	47.1	45.1	75.4	41.8	-44.6
Nickel ore	25.1	48.3	65.0	71.2	47.7	-33.0

source: China Customs, USDA, BSA \*coal includes lignite \*\* 2014 compared with previous year

# Global Grain Trades



Maria Cappuccio

## PROSPECTS IMPROVE FOR 2015 WHEAT CROP BUT RISING STOCKPILES PRESSURE WEAK GRAINS/SOYBEAN PRICES

In the latest economic assessment of the global economy, global growth is expected to receive a boost from lower oil prices although other negative factors, including investment weakness and diminished prospects for medium-term growth in many advanced and emerging market economies, led the IMF to revise the global growth forecast down to 3.5% and 3.7% in 2015/16, reflecting a reassessment of prospects in China, Russia, Japan and the euro area, as well as weaker activity in some major oil exporters because of the sharp drop in oil prices. The US was the only major economy for which growth projections were raised. US employment data released in March confirmed a further rise in the number of jobs, which helped send the dollar to a 12-year-high, expected to prompt the US Federal Reserve to begin raising key short-term interest rates later in the year, at precisely the same time as China and other central banks around the world, cut interest rates and loosen credit, with the European Central Bank (ECB) set to launch a €1 trillion quantitative-easing (QE) package to stimulate growth in the euro area.

In agricultural commodity markets improving supply prospects for 2015/16, following back-to-back record global production for corn, wheat and soybeans in 2013 and 2014, contributed to stock rebuilding, lowering concerns about price volatility, and softening export demand; while record-high grain and oilseed stocks have pressured weak wheat, corn and soybean prices.

## GLOBAL WHEAT CROP MARGINALLY LOWER IN 2015

The global wheat area increased by 1% to 224m/ha, with most of the winter wheat in the Northern Hemisphere, developing or soon to break-dormancy and spring plantings under way in some countries; prospects for 2015/16 remain mostly favourable despite

## GLOBAL WHEAT PRODUCTION (MT)

	2011	2012	2013	2014	2015
Europe	142	138	148	160	151
EU	138	134	144	156	147
E.Europe	4	4	4	4	4
CIS Baltic's	115	78	104	112	106
Russia	56	38	52	59	56
Ukraine	22	16	22	25	22
N &C America	83	92	99	98	92
US	54	61	58	55	58
Canada	25	27	38	29	30
S America	26	18	20	24	23
Argentina	16	9	11	13	12
N East Asia	39	37	42	35	42
Turkey	19	16	19	15	21
F East Asia	236	249	249	257	255
China	117	121	122	126	126
Africa	25	23	27	26	25
North Africa	18	17	20	19	18
Australia	30	23	27	24	26
<b>Total</b>	<b>696</b>	<b>659</b>	<b>716</b>	<b>725</b>	<b>720</b>

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



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problems in Russia, and dryness in the US Southern Plains Hard Red Winter wheat-growing region and parts of Far East Asia — assuming average yields and normal growing conditions for the rest of the season, an increase in the supply of high-quality milling wheat is expected despite an overall decline in world wheat production — the UN's Food and Agricultural Organization (FAO) forecasts the global wheat harvest at 720mt (million tonnes) in 2015, higher than other estimates including the IGC at 710mt and only slightly below the record output in 2014, reflecting an expected decline in the EU and CIS countries.

#### WHEAT OUTPUT TO RISE IN US AND CANADA

The USDA estimates the US wheat area at 55.5m/ha, 1.3m/ha below last year and, based on average yields and reduced abandonment, forecasts a crop at 56mt in 2015 slightly below the FAO estimate of 58mt. Production of HRW (hard red winter wheat), WW (whole white) wheat and durum are set to rise as price premiums provide a strong incentive for producers, at the expense of SRW (soft red winter) wheat and other spring crops. While Canadian wheat production is also tipped to rise to 30mt including over a 10m/ha increase in spring wheat plantings, that more than offset a sharp fall of 33% in Canada's winter wheat sowings, due to a late harvest and other delays. Despite a rise in Canada's sowings and a drop in domestic demand, wheat stocks at the end of 2015/16 are expected to shrink to 4.8mt, a near record low. Agriculture & Agri-Food Canada (AAFC) forecasts a small rise in Canadian wheat prices to C\$210-240/t (US\$166-US\$190/t) next season, reflecting smaller supplies and a weaker Canadian dollar.

#### EU CROP OUTPUT LOWER

The EU soft wheat planted area is expected to fall by 0.2m/ha to 24m/ha due to heavy rain that hampered sowings in Bulgaria, Hungary, Croatia, and to a lesser extent in Italy. For the rest of the EU growing conditions were mostly favourable, despite some dryness in eastern EU countries, assuming yields return to average after last year's exceptional highs, FAO forecasts production to be lower at 147mt; Strategie Grains forecasts a crop of 148mt-including durum wheat to rise to 7.9mt while output in both the UK and Germany, is cut by 2mt. By contrast Abares forecasts the EU crop to slump to 143mt.

#### COLD WEATHER, LOWER YIELDS TO REDUCE RUSSIA'S WHEAT OUTPUT

Although an expansion in the total area planted (including the spring crop) is forecast, wheat production in Russia is expected to decline to 55mt — cold weather and severe frost has reportedly affected nearly one-fifth of the winter crops and yields are expected to decrease from the high level of last year. In Ukraine crop conditions are better having received adequate snow cover during the winter months, although preliminary estimates point to a drop in production to 22mt; wheat output is expected to increase for Kazakhstan up to 13.5mt and Uzbekistan 7.5mt. While soil and moisture conditions for spring-sown plantings are likely to be better-although sharply depreciating currencies, tight financing conditions and higher cost of inputs, in both Russia and Ukraine may temper growers' appetite for spring-sown crops that have lower yield potential.

#### FAVOURABLE OUTLOOK FOR WHEAT IN CHINA, INDIA AND PAKISTAN

China's Ministry of Agriculture forecasts the winter wheat sown

area at 22m/ha slightly higher than last season, while other sources forecast a small reduction, due to an unchanged minimum purchase price yuan 2360/t (\$376.85/t) and environmental pressures (urbanization and water shortages). China's crops are making good progress due to ample rainfall at planting followed by bouts of rain and snow in winter — the FAO forecasts the crop at 126mt similar to last year. An increase in India's minimum support price for wheat, coupled with favourable growing conditions (sufficient supplies of irrigated water and fertilizers, and average yields), is expected to increase output to 94.5mt, slightly below last year. The wheat crop in Pakistan, due to better yields is expected to rise to over 25mt.

#### AUSTRALIAN OUTPUT TO RISE, WHILE LOWER PRICES CUT PLANTINGS IN ARGENTINA

Conditions for Australia's wheat plantings, due to take place from mid-April through June appear reasonable with cooler temperatures and decent precipitation in Eastern Australia and slight dryness in Western Australia; Abares expects the area planted to wheat to remain steady, with increased yields in eastern Australia likely to push national production up to 24.4mt. Argentina's 2015 wheat plantings are forecast lower in response to falling prices.

#### US WHEAT FARM PRICE TO AVERAGE \$5.10/BU IN 2015/16

Assuming broadly unchanged consumption levels, global wheat stocks are expected to rise to 203mt by the end of 2015/16. USDA forecasts the US wheat farm price to average \$5.10/bu (\$187.39/t), a decline of 15% from the current year; Rabobank forecasts futures averaging \$5.60/bu (\$203.76) in the October to December quarter 2015 — well above the December contract close at \$5.105/bu (\$185.75/t-6 Mar'15); while Abares tips global wheat price to fall by \$5/t averaging US\$265/t.

#### ROBUST DEMAND FOR FEED WHEAT AT RECORD LEVEL

Further upward revision to global wheat output, forecast at a record 725mt in 2014/15, well above initial estimates, and outpacing demand forecast to rise to 715mt. Greater uptake of wheat for feed use to rise, by over 9mt to 140mt, predominantly in the EU, CIS and China, with a small increase for global food/industrial use up by over 1mt to 575mt.

#### US\$100M CREDIT LINE HELPS SECURE US WHEAT SALES TO EGYPT

US wheat exports-handicapped by a strong dollar and uncompetitive freight for most of the season, were given a much-needed boost following the introduction of a US\$100m credit line for Egypt that helped secure sales in February totalling 290,000/t of US HRW wheat at an average price of

### GLOBAL WHEAT SUPPLY & DEMAND

	2011–2014/15 (mt)				
	2011/12	2012/13	2013/14	2014/15	2015/16
Production	696	659	716	725	720
Consumption	697	680	704	715	715
Trade	154	147	162	160	150
Stock	197	176	188	198	203
China	56	54	60	63	-
Major exporters	63	48	52	63	-

Source: USDA/FAO/IGC

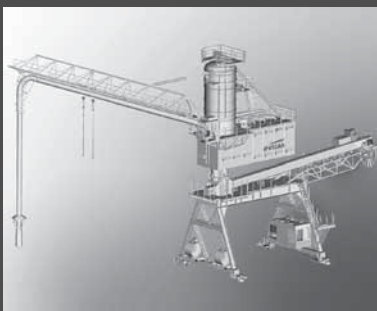


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\$273/t CIF (cost, insurance, freight). The General Authority for Supply Commodities (GASC) confirmed that Egypt — the world's largest single buyer — bought five cargoes of wheat from Cargill Inc., Groupe InVivo, Louis Dreyfus Corp. and Ameropa AG. Since the marketing year began in July 2014; prior to the credit line, GASC bought only one 55,000/t cargo of US wheat, compared with almost 2mt of French, over a 1mt of Romanian and additional supplies of Black Sea grain.

#### RUSSIAN TAX, WEAK EURO BOOST EU WHEAT EXPORTS

Global wheat trade is forecast at 160mt in 2014/15, only 2mt lower than last year, due to better harvests. CIS exports are forecast at almost 38mt (Russia 20mt, Ukraine 11mt, Kazakhstan 6mt) slightly more than the previous season. Informal curbs on Russian exports were apparent, before the government levied a 15% tax (\$39/t) on all Russian grain exports from 1 February until the end June 2015, to quell rising domestic wheat prices prompted by a further slide in the rouble. Since the beginning of 2014, the Russian rouble has lost some 50% of its value while Ukraine's hryvnia 70%, with food price inflation up by almost 21% in Russia and over 30% in Ukraine, increasing the risk of increased trade-protection to keep food prices from rising further. Fewer exports from the Black Sea, and a weak euro, improved EU wheat prospects, prompting a surge of sales to Algeria, Egypt and North Africa — with feed wheat offers at \$200/t — beating competition from India and boosting exports up by a 1mt, to over 31mt this season, making the EU the most competitive supplier to the Middle East.

#### GLOBAL WHEAT STOCKS FORECAST TO CLOSE AT 203MT

Export quotations of wheat declined significantly in February and March, as ample world supplies continued to weigh on international prices. Further improvements in supply prospects for 2015/16 also added to the downward pressure. A strong US dollar had negative impact on sales from the US contributing to the decline in export prices. In the absence of a significant weather development global wheat prices are expected to remain pressured. Global wheat stocks are expected to reach 203mt by the end of 2015/16 marketing year, reflecting further stock accumulations in the EU, China, India and the Russian Federation. US HRW wheat average prices FOB (free on board) are down by over \$78/t to \$238/t (5 March) year-on-year. Revived concerns for the CIS crops and frost damage to US winter wheat briefly revived futures, before falling back again. Wheat May contract at the CBOT, closed at \$4.8225/bu (\$177/t — 6 March 2015). Paris wheat May contract closed at E184.50/t (\$210/t — 8 March 2015) helped by the continued strength in EU wheat exports; while London wheat for May closed £117.75/t (\$177/t — 8 March 2015).

#### ABARES FORECASTS GLOBAL CORN PRICES TO RISE IN 2015/16

USDA projected US corn plantings to fall by 1.6m/acre to 89m/acre surprised markets anticipating a larger fall in acreage and, based on trend yields of 166.8bu/acre, US production is forecast at 13,595M/bu (345mt) 16mt below last year's record. In the Ukraine corn production is expected to fall by 20% and also in Russia — affected by high interest and input costs for seed, expensive fertilizer and chemicals, with growers expected to plant other crops like wheat, barley and sunflowers. Abares forecasts the global corn crop in 2015/16 at 965mt below this year's 991mt crop but higher than the IGC's preliminary forecast. This includes a smaller US crop of 345mt, in line with the USDA estimate, and a smaller EU corn harvest at 65mt. A

rise in corn prices is expected, as measured at Gulf ports to \$193/t in 2015/16 — equivalent to \$4.90/bu — reflecting an increase in demand for corn and a reduction in record output achieved in 2014/15. While Abares saw improvement for corn and barley, less so for wheat with soybeans expected to hit a nine year low.

Corn prices, pressured by large US and global supplies, saw new crop futures during the first half of February average \$4.15/bu, down \$1.57/bu from two years ago; while bids for 2015 fall delivery at Central Illinois elevators \$3.78/bu are down \$0.47/bu from last year-lower prices reducing growers' returns. With corn and soybeans strong competitors for acreage in US spring planting programmes any movement/shift in the soybean/corn ratio in coming weeks to determine how much of each crop farmers will sow.

#### STRONG FEED DEMAND DRIVES COARSE GRAIN USE IN 2014/15

Despite lower prices at the start of the year, global output of coarse grains 1.275Bn/t is just shy of last year's record, due to a huge corn crop in 2014. Abundant supplies and lower prices are expected to increase consumption up by 24mt to 1.265Bn/t mostly driven by feed up by almost 27mt to 763mt, with a small contraction for food/industrial use down to 502mt. Global coarse grain trade is expected to fall by 9mt to 155mt due to better harvests, smaller imports into China and the EU, while global stocks forecast to rise to 219mt, a level not seen for 15 years.

#### COARSE GRAIN SUPPLY & DEMAND

	2010–2014/15 (mt)				
	2010/11	2011/12	2012/13	2013/14	2014/15
Production	1,099	1,156	1,136	1,280	1,275
Consumption	1,129	1,155	1,136	1,238	1,265
Trade	116	133	132	164	155
Stocks	168	169	169	211	219
China	50	60	68	78	79

Source: USDA

#### LARGE CROPS, COMPETITIVE PRICES BOOST GROWING CORN USE

Global corn production is expected to rise to a record 990mt lifted by a huge 361mt US corn crop, and better crops in the EU 74mt, offset by slightly smaller crops in China 216mt, Brazil 75mt, Argentina 24mt, and Ukraine 28mt. Growing consumption is pegged at a record 977mt with feed use expected to grow by 24mt to 597mt. In the US, this growth is set to be by over 5mt to 135mt; China up by 4mt to 158mt; Mexico 2mt to 34mt; and in countries like South Korea, more corn and less feed wheat. Food and industry use is expected to contract slightly to 379mt. Average export prices for US Corn 3YC have fallen year-on-year from \$233 to \$178 Fob (Mar 5 '15).

#### ETHANOL PRODUCTION, MARGINALLY LOWER IN 2015/16

USDA project corn use for ethanol at 5,225M/bu (132.7mt) for 2015/16, down 25M/bu (0.6mt) although reflecting steady fuel demand through 2015. Ethanol blending rates continue to be effectively limited to 10% due to constraints in distribution and use of higher blends. While lower fuel prices have increased fuel use, the Energy Information Administration (EIA) forecasts a slight reduction in domestic fuel consumption for 2015/16, reflecting increased vehicle efficiency and rising fuel prices. Production of ethanol reached a record 14.3Bn gallons in 2014/15, using over 133mt of corn and producing 39mt of

livestock feed (35mt Distillers Dried Grains and Solubles [DDGS] 4mt corn glutenfeed/meal). US exports of ethanol rose to 825M/gallons, as did exports of 11mt of DDGS, a valuable feed co-product; over 5mt of DDGS is exported to China. In 2013, shipments of US corn to China were rejected following the discovery that they contained the gene strain (MIR162) not approved in China, which disrupted the trade in corn and was also extended to corn products, like DDGS. In December 2014, the Chinese authorities approved the gene strain (MIR 162) clearing the way for US exports to resume.

#### LARGE DOMESTIC CORN STOCKS CONTINUE TO RISE

China's corn production is expected to fall by 3mt to 215mt in 2014/15 as dryness in some of the key producing regions (Henan, Hebei, Shandong, Liaoning, Shanxi and Inner Mongolia), which account for around 40% of total corn production, led to lower yields. Despite lower corn output, imports are revised down to 2.5mt — given record-high domestic stocks — which USDA forecasts are higher than official estimates and close to 100mt. Corn production continues to be supported by the government this year. Plantings are expected to be similar to last year, beginning in southern regions in March and in the north in April. On the Dalian exchange, the September corn contract traded stood at yuan 2536/t (\$405/t-10.09-Mar 9'15).

Global corn stocks are expected to rise to 190mt in 2014/15, aside from the large build-up of Chinese stocks, US stocks are forecast to rise to 46mt. Average export prices for Corn (yc3), are 178/t FOB (9 March) some \$55/t lower than last year. Corn futures have recovered slightly since the beginning of February, CBOT May corn closed at \$3.898/bu (9 March) well-below last year.

#### AUSTRALIA'S BARLEY SALES BENEFIT FROM BAN ON CORN

Barley output fell to 141mt in 2014/15, smaller acreage and harvests in Argentina, Australia, Canada, Turkey and Morocco, partially offset by better crops in Russia 20mt and Ukraine 9mt. Barley use is expected to increase by 1mt to 141mt (slightly lower feed 96mt offset by increase in Food/industry use of 46mt). With better domestic crops and corn more competitive, trade is forecast slightly lower at 23.6mt; mainly due to reduced imports to Saudi Arabia 6.5mt almost offset by an increase in China's imports to 6mt. The Australian barley market picked up 2mt sales of barley to the Chinese market, with feed millers often paying a premium of (\$10–15/t) above the Saudi market, when US corn and corn products (DDGS, corn gluten feed/meal) were banned. While the majority of imported feed barley is for animal feed, a small amount is also used by the brewing industry for lower-quality malting products. Global barley stocks are forecast lower at 24mt in 2014/15 — smaller supplies and strong demand have supported international prices — UK feed barley ex-farm £105–115 (\$158–174 5 March 2015); EU barley prices (France) FOB Rouen have strengthened over the week to \$198/t (5 March 2015) albeit some \$55/t lower than last year. Paris Futures malting barley May contract closed at E221/t (\$240/t) (Mar 9'15).

#### RISE IN CHINESE DEMAND BOOSTS SORGHUM TRADE

Production of sorghum increased by 2mt to 62mt in 2014/15 helped by a bumper harvest in the US and Sudan, partially offsetting lower crops in Mexico, Nigeria and India. Meanwhile, consumption — mainly feed — rose by 3mt to 63mt; trade is forecast at a record 10mt, with rising Chinese imports up by 3mt to 7mt — due to increased feed and liquor production —

China now purchases the majority of US sorghum (7mt), significant amounts of barley (6mt) and a large quantity of US DDGS used mostly as a feed, and expected to continue. In 2014/15, China is expected to import a combined total of sorghum and barley over 13mt — international prices of sorghum reflect strong demand relative to corn-sorghum export price FOB April-Nola \$254.32/t (6 March 2015).

#### GLOBAL SOYBEAN PRICES FORECAST LOWER REFLECTING EVEN LARGER STOCKS IN 2015/16

With soybean prices much lower than last year, USDA forecasts soybean (planted) acreage to be marginally lower at 83.5m/acre in 2015/16 (contested by many analysts) and with typical yields would imply another record US soybean crop of 103mt (3.8Bn/bu). Abares forecasts global soybean prices, measured at Gulf ports, to fall by \$33/t to \$390/t in 2015/16, reflecting large global soybean stocks rising from 89mt to a record 102mt at the end of 2015/16; with stocks expected to rise in all three major exporting countries, Argentina, Brazil and the US.

#### RECORD OUTPUT IN 2014/15 TO WEIGH ON PRICES IN 2014/15

Global oilseed output is expected to reach 532mt boosted by record soybean output, in nearly all of the major exporting countries, either already harvested, or forecast for harvest in early 2015, lifting production to 315mt. Smaller increases are expected for other crops including rapeseed 71mt and palm kernel 16mt, and slightly lower crops for cottonseed 45mt, sunflowerseed 40mt, groundnut 39mt and copra 6mt. Abundant soybean supplies are expected to increase negative pressure on weak soybean prices, exacerbated if producers harvest large crops next year. Global crushings, are expected to rise by 14mt to 432mt. There will be increases in a number of countries, especially China and Argentina, as lower prices improve crush margins supported by strong demand led by feed in a number of countries, with meal use up to 284mt. While global oilseed trade is forecast up to 137mt, global oilseed stocks at the end of 2014/15 are expected to rise significantly to 103mt led by an almost 40% hike in soybean stocks, mostly held in South America (Argentina 35mt, Brazil 25mt) and the US 10mt.

#### CURRENCY FLUCTUATIONS SLOW PACE OF SOUTH AMERICAN SALES

Short-term supply disruptions in South America — wetness flagged in Argentina's Cordoba, northern Santa Fe, dryness in central Buenos Aires, rain slowing harvesting in the north west of Brazil, the Brazilian truckers' strike — delays, and the slow-

### GLOBAL MAJOR OILSEED PRODUCTION

	2010–2014/15 mt				
	2010/11	2011/12	2012/13	2013/14	2014/15
Production	461	448	476	504	532
Soybean	264	241	269	284	315
Trade	108	111	118	134	137
Crush	377	395	397	418	432
Use: Meal	247	258	259	272	284
Use: Oil	145	152	158	166	173
Stocks	86	68	70	81	103
Soybean	71	54	57	66	89
US	6	5	4	3	10
S.America	45	29	37	45	61

Source: USDA/Meal use excl. fishmeal c.5m/t

## SOYABEAN &amp; SOYABEAN MEAL MAJOR PRODUCERS 2012/13–2014/15 (MT)

Importers	Soybeans			Soybeanmeal		
	2012/13	2013/14	2014/15	2012/13	2013/14	2014/15
EU	13	13	13	17	18	19
Asia	72	83	87	17	18	19
China	60	70	74	-	-	-
L. America	1	2	2	6	6	6
N. America	5	6	5	2	3	3
Mexico	3	4	4	1	1	2
MidEast/Africa	3	4	4	8	6	6
Others	2	2	2	4	5	5
<b>Total</b>	<b>96</b>	<b>111</b>	<b>114</b>	<b>54</b>	<b>58</b>	<b>62</b>

Source: USDA

pace of soybean sales have influenced the market. However, they are unlikely to change the long-term fundamentals for South American production, forecast at 166mt (Brazil 95mt, Argentina 56mt Paraguay 8.5mt others 6mt). The slow pace of soybean sales this year is related to falling global prices — US No 2 soybeans Fob Gulf \$388/t (6 March 2015) down from \$565/t a year ago; a strong US dollar and depreciating real — led growers to hold soybeans anticipating further falls in the real. For the first time in more than a decade, the real touched R\$3.08 to US\$1.00 (9 March). Currency fluctuations are likely to further challenge growers when they buy inputs that are mostly based on US dollar pricing. Meanwhile, as the South American harvest gathers momentum, competing pressures on storage should quicken the pace of sales.

Indonesia, Vietnam and South Korea, due to strong demand for protein. Elsewhere, Russia's soybean imports are up 0.4mt to 1.1mt reflecting much higher crush and demand. US soybean exports are expected to increase over last year to 49mt followed by Brazil with exports of 46mt.

## SOYBEAN PRICES SIGNIFICANTLY LOWER IN 2014/15

With back-to-back-record oilseed crops, supplies have increased while prices have plummeted. Average export price for soybeans No 2 FOB Gulf \$388/t (6 March), some \$177/t below last year; while Argentine soybeans up river \$438/t (6 March) some \$132/t below last year. CBOT Futures-May soybeans closed at \$9.85/bu (6 March).

## CHINESE DEMAND FOR SOYBEAN MEAL TO SLOW

Wilmar's CEO Kuok Khoon Hong, expects China's soybean meal demand to slow-down in the next year or two and likely to be slower than in last few years, reflecting an austerity drive in the country. And despite the sharp fall in China's soybean crush margins in December 2014, expects margins to stay positive this year due to a recent decline in imports; Bunge also confirmed that deteriorating crush margins that fell from about 100 renminbi/t at the start of the October to December quarter to some 10 renminbi/t by the end, had undermined Bunge's profits in Asia. While volatility resulting from industry overcapacity in China is likely to continue, Soren Schroder, Bunge's CEO forecasts better times ahead, where the "market is improving, and we expect a return to more normal results."

Projected soybean meal exports are raised by 5mt to 65mt mainly due to growing Argentine sales up by 4mt to 29mt to South East Asia in 2014/15, more than offsetting declining Indian meal exports.

Average export price for Argentine Soybean meal Pellets, Up River FOB \$419/t (15 January); CBOT Futures-May soybean meal closed at \$327.7/t (6 March 2015).

## SOYABEANS MAJOR PRODUCERS

	2010–2014/15 mt				
	2010/11	2011/12	2012/13	2013/14	2014/15
US	91	84	83	91	108
Brazil	75	67	82	87	95
Argentina	49	40	49	54	56
China	15	15	13	12	12
India	10	12	12	10	11
Paraguay	7	4	8	8	8
Canada	4	4	5	5	6
Others	12	15	16	16	19
<b>Total</b>	<b>264</b>	<b>240</b>	<b>269</b>	<b>284</b>	<b>315</b>

Source: USDA

Global soybean trade is raised by 4mt to 117mt in 2014/15, due to rising Asian imports forecast at 87mt. China is expected to import 74mt this season with increased imports also expected for Japan, Malaysia, Philippines, Taiwan, Thailand,

## OILSEEDS AND MEAL SUPPLY/DEMAND 2014/15 (MT)

Oilseeds	Oilseeds				Meal		
	Prod	Trade	Crush	Stocks	Prod	Trade	Use
Soybeans	315	117	255	89	201	65	198
Sunseed	40	2	37	3	16	6	15
Rapeseed	71	14	68	7	40	6	40
Copra	6	*	6	*	2	1	2
Palm kernel	16	*	16	*	8	7	8
Peanuts	39	3	17	2	7	*	7
Cottonseed	45	1	34	1	15	*	15
<b>Total</b>	<b>532</b>	<b>136</b>	<b>432</b>	<b>103</b>	<b>289</b>	<b>84</b>	<b>284</b>

USDA: \*less than 200,000/t. Meal totals excl. fishmeal

## Grain sampling and analysis with Alex Stewart Agriculture Ltd

Grain and oilseed inspection and analysis are a core businesses of Alex Stewart Agriculture Ltd. (ASA), a superintendent and analyst member of the Grain and Feed Trade Association (GAFTA).

ASA works with many leading grain traders by providing trustworthy professional inspection and laboratory services globally. In addition, ASA can arrange fumigation services in most areas of the world to ensure that cargoes are treated as with the greatest care. Upon nomination, ASA's mission is to protect its clients' interests at loading and/or discharge ports worldwide. ASA is also able to provide collateral management services such as supervision of long-term storage of grain or control of transportation between storage facilities.

The head office of Alex Stewart Agriculture Ltd in the UK also provides consultancy services. Strategically and commercially located operations offices offer support and advice regarding ports and silos worldwide and will provide its customers with information concerning the latest industry standards in sampling and analysis.

### AGRICULTURAL LABORATORIES

Huson & Hardwick and A. Norman Tate Laboratories are GAFTA/FOSFA-registered analytical laboratories that specialize in the analysis of oilseed and edible oil, grain, barley, rye and wheat, animal feed, sugar and food products operate from Alex Stewart's head office in England and are able to perform a full range of commercial and shipping sample including protein, fat, fibre, ash, moisture analysis via classical wet chemistry and hi-tech instrumentation including NIR, ICP and HPLC; also infestation, foreign matter and admixture, hazardous contents, fuzarious grains, nutritional values, toxic contents (eg. arsenic, mercury and lead) mycotoxins and pesticides.

### DRY BULK COMMODITIES CERTIFIED BY ALEX STEWART

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ASA's highly experienced and knowledgeable inspection team has built a trusted reputation within the international fertilizer-trading arena. The fertilizer division offers first class inspection and analytical services for bulk, bagged and liquid fertilizer with

the aim of protecting clients' interests at the production site, during transportation, or at store. ASA has fertilizer laboratories in the UK, Belgium, Ukraine, Russia, South Africa, China and India. Its offices in the UK, Belgium and the Ukraine are all members of the International Fertilizer Association.

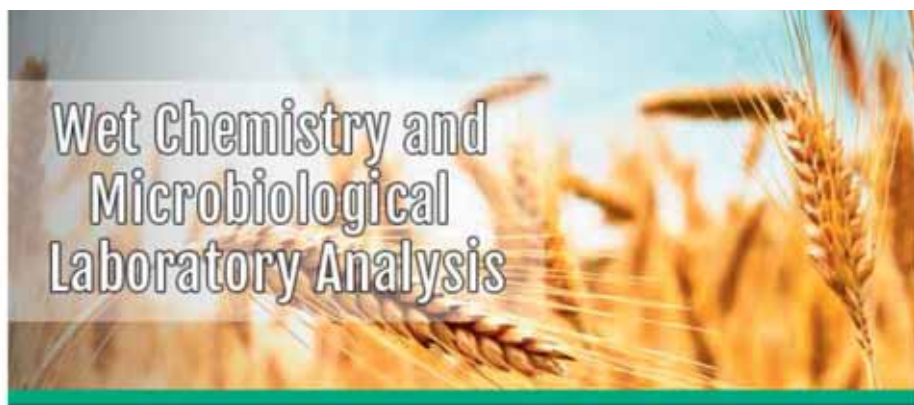
#### Animal feed

The Alex Stewart Group provides a fully comprehensive package of inspection and analytical services. Its GAFTA/FOSFA-registered and approved laboratories strategically located around the world perform a full range of analysis for soya, oilseeds — sunflower and rape, and fish meal including infestation, foreign matter and admixture, hazardous contents, fuzarious grains, toxic contents (e.g. arsenic, mercury and lead) mycotoxins and pesticides.

#### Grain and wheat

Grain inspection and analysis is a core business of Alex Stewart Agriculture and is a superintendent and analyst member of GAFTA, working with many leading grain traders by providing monitoring, testing and consultancy services globally. In addition fumigation services can be offered as ASA works closely with fumigation companies to ensure that cargoes are loaded and stored in appropriate condition and quality is not affected during transportation.

Grain inspection services also extend to providing collateral management services such as supervision of long term storage of grain or control of transportation between storage facilities.



**Alex Stewart Agriculture** is supported by the A. Norman Tate, Huson & Hardwick and Food Test Laboratories to offer a complete range of laboratory analysis, inspection, weighing and sampling certification services for the facilitation of the international trading of soft commodities including animal feed, oilseeds, oils & fats, bio diesel, grains and cereals, fertilizers, raw & refined sugar and other food products.



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**Vessel hatch inspection:** service includes checking hatch condition ensuring that they are free from loose rust and paint flake, free from previous cargo, checking that hatches are tight fitting, checking hatch open and closing operation is functional and timely, inspecting hatch rubber condition, hatch hose water testing, checking that holds are water-tight.

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**Continuous supervision:** ASA guarantees continuous supervision of clients' cargo loading and/or discharge (24 hours), representative sampling/sealing as per contract.

**Quality control inspection:** packaging reporting as applicable.

**Weight verification:** gross, tare and net weighing.

**Weighbridge control:** test weight checking, scale calibration and certification check, recording truck movements across scale ensuring that all cargo is weighed.

**Bagging supervision and tallying:** full tally and checking for bag strength and durability (laboratory testing is available) and verifying markings.

**Continuous information updates:** ASA's busy administration centre is in contact with all of its inspectors operating in the field and provides customers with up-to-date, hour-by-hour detail of all loading and discharging operations.

**Documentation:** ASA uses state-of-the-art technology to supply standardized reports and certificates; certification and reporting can be tailored to suit clients' requirements. Photographic reports by conventional and digital camera can also be supplied for evidence purposes.

**Damaged cargo assessment:** establishing possible source, cause, and severity.

**Loss prevention:** supervision of

reconstitution of acceptable cargo.

**Container services:** supervision of stuffing and unstuffing, container sealing, container condition surveying (on/off hire, damage assessment).

**Transportation services:** whether the commodity is manufactured, stored, shipped, railed, trucked or containerized, ASA can assist clients in trading activities.

**Consultancy:** ASA offers consultancy services to assist clients on methods concerning material handling, weighing, transportation, sampling and analysis. Local knowledge and years of experience are primary assets of ASA's business.

## KEY AGRICULTURAL GAFTA/FOSFA SUPERINTENDENT OPERATIONS WITHIN ALEX STEWART AGRICULTURE

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## Idle capacity in all ship categories is bad news for charter rates

Charter rates for dry bulk commodities from grains to iron ore and coal at any point will depend on growth rate in seaborne trade and supply of vessels in different size categories. The world shipping industry continues to suffer as world trade growth since 2012 has remained well below the long-term average growth of 5%. This is happening when the industry is nursing considerable idle capacity in every vessel category. Ahead of the 2008 global financial crisis, since the late 1970s global trade grew strongly, encouraging shipping groups to order new vessels with lengthening delivery periods.

The legacy of pre-financial crisis exuberance in ordering ships, which again returned for two years in 2010 and 2011 in tune with strong rebounding of trade, has now left shipping companies high and dry. Shipping had its good time when world trade would grow faster than global gross domestic product (GDP) resulting in an ascending share of trade in world output rise. The International Monetary Fund has projected global growth of 3.5% for 2015 and 3.7% in the following year. International trade, therefore, will continue to register anaemic growth. So more and more shipping groups will have to put up with hard times until a semblance of balance between demand and supply of cargo space is achieved by way of accelerated elimination of ageing ships. In any case, it is becoming increasingly difficult for shipping companies to rustle up funds to place orders for new vessels. Funds which took bets on rebound of fortunes in the shipping industry are ruing their decision.

Nothing will describe the pathetic state of dry bulk segment of shipping industry more tellingly than three shippers filing for bankruptcy in February. Freight rates staying for long in deficit of ship operating expenses for most vessel owners first claimed a victim of privately owned Danish group Copenship and then China's Winland Ocean Shipping filed for bankruptcy protection in the US under chapter 11. Filing with a US federal bankruptcy court under the chapter for protection allows a debtor to reorganize business. South Korea's Daebo International Shipping has too filed for debt rehabilitation. Banks are not sure if they will be able to recover money lent to shipping groups now in the doldrums. Funds which took positions in the shipping counter in expectation of a turnaround have burnt their fingers badly.

The Baltic Dry Index, an aggregate of indices for Capesize, Panamax and Supramax size vessels for tracking dry bulk shipping and trading costs, is staying at an all-time low despite some recent improvements in freight rates. Whatever rates improvement is happening is, however, solely due to rises in bunker prices. Supply of dry bulk tonnage remains much in excess of demand as world trade growth has remained well below the two decadal average of 5.3%. Even after providing for routine New Year-related distortions in foreign trade data for January and February when the Chinese economy virtually takes a two-week break, nearly 20% fall in imports in January by the world's second-largest economy did not bode well for the shipping industry.

The super size Capesize and Panamax vessels took a hit last year as the amount of coal burnt in China fell for the first time this century leading to lowering of coal imports. The 2014 fall in coal use caused by increasingly greater reliance on electricity generated by hydel and other renewable sources contrasts with 5% to 10% annual fossil fuel use growth rate for most of this century. Less burning of coal by China is no doubt good for the environment. But that leaves dry bulk shipping capacity idle. A rise in Indian coal imports could only partly compensate for



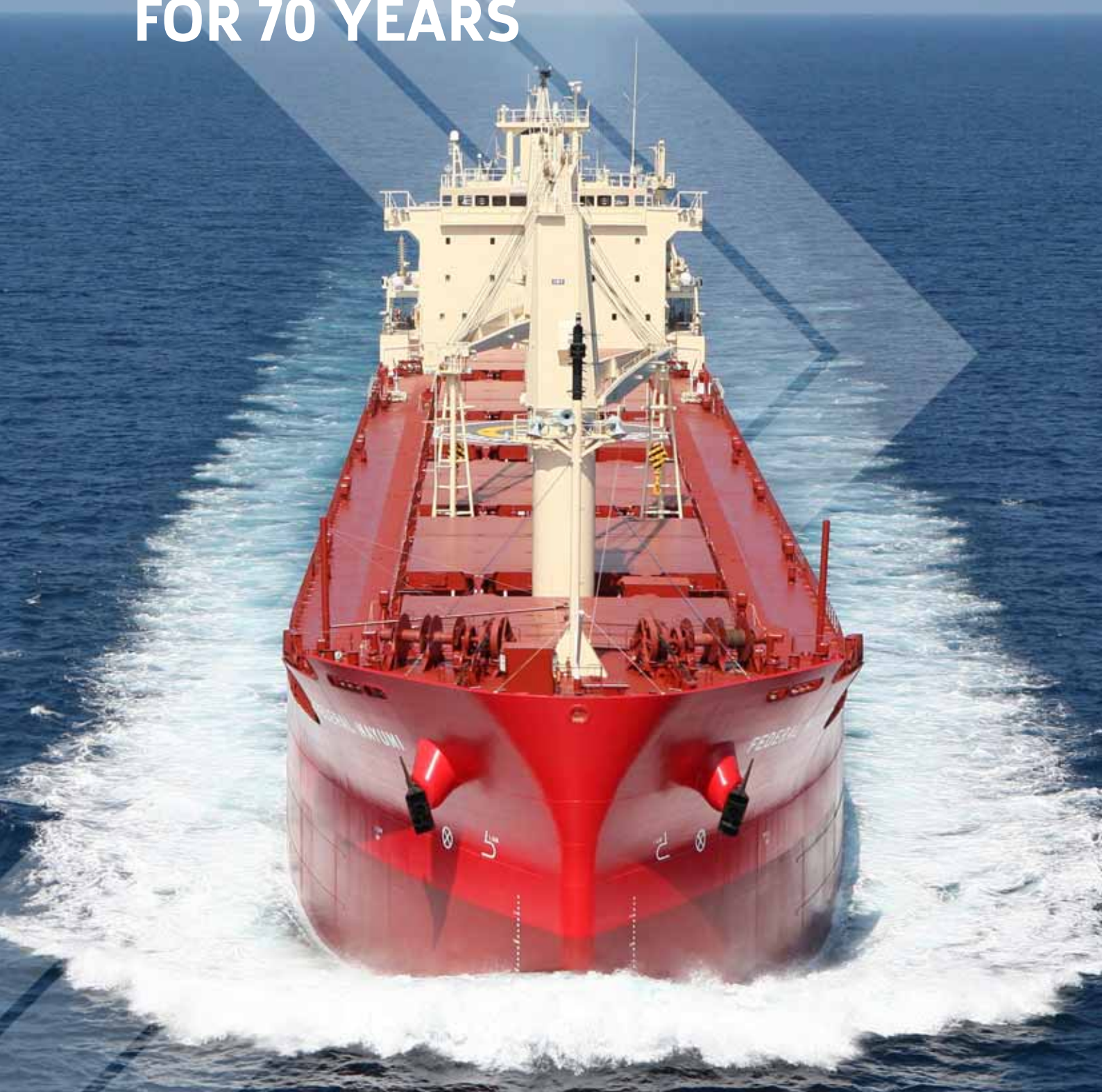
shrinkage in Chinese imports. No wonder so many more Capesizes and Panamaxes are employed to ship iron ore from Brazil and Australia to China — taking advantage of a nearly 50% collapse in ore prices and low freight lifted imports of steel-making ingredient by 112.2 million tonnes (mt) to 932.5mt. China's January steel production fall of 4.7% to 65.5mt on a year-on-year basis remains a concern for ore exporters. But January is seen as a 'silly month' for Chinese business setting no trend for the rest of the year.

Hasn't China Iron and Steel Association said the country's ore imports will climb to a record 1 billion tonnes (bt) this year with Australia and Brazil claiming a share of 80%? Ore inventories in Chinese ports have been used up to a point which should give a push to imports. This will bring some relief to shipping lines. "Capacity overhang in dry bulk segment is so deep that freight rates will continue to remain under pressure for at least next couple of years," according to Peter Cremers, CEO of ship management major Anglo-Eastern Group. Weather-beaten shipowners have finally made a spirited beginning in cutting overcapacity. They are consigning vessels to scrapyards at one of the busiest paces in recent decades. Demolition activity is most pronounced in dry bulk segment of the industry. In January, the number of Capesizes sold for scrapping nearly totalled the number decommissioned in the whole of 2014. Even then it will not be too soon before demand catches up with shipping tonnage.

A year ahead of 2008 global financial crisis, investment in shipbuilding was a staggering \$226 billion. Since the crisis triggered by Lehman Brothers filing for bankruptcy happened in September, orders for new ships claimed another large investment of \$178 billion in 2008. Then battered by collapse in commodities market and freight rates, investment in new ships in 2009 fell drastically to \$44 billion. However, Clarksons Research informs that since then that investment in the range of \$91 billion and \$131 billion has been made annually. But banks are not any longer comfortable in financing new ship construction. This explains why some contracted dry projects are being swapped to wet projects, meaning postponement in new ship deliveries. Abundance of capacity has translated into world cargo fleet productivity declining from a peak of 9.1 tonnes of cargo per deadweight tonnage (DWT) in 2004 to 6.5 tonnes per DWT in 2014. Productivity fall is due to global seaborne trade growing by 44% during this period in the face of 102% fleet capacity expansion.

*Kunal Bose*

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## DA-Desk announces new managing director

In late February, DA-Desk announced the promotion of Hans-Christian Mordhorst as Managing Director of DA-Desk to support the continuous commercialization of value-adding services to the company's fast-growing list of customers.

"Following a record year of new customer gains, we continue to pursue business process improvements, with the overall goal of delivering more savings and better value to our customers. From our talented pool of senior leaders, we have chosen Hans-Christian Mordhorst for this position, primarily because of his track record of leadership. In addition, his appointment is in keeping with our goals:

to ensure that DA-Desk is in a strong position to continue growing its client base, and to continue leading the company in delivering long-term value to our stakeholders," remarked Jens Lorens Poulsen, co-founder and CEO of The Marcura Group.

Mordhorst served as Deputy Managing Director of DA-Desk as of early 2014, while also responsible for relations with existing and new customers, agents and partners in the role as Commercial Director since 2012.

Prior to DA-Desk, Mordhorst held high-level positions within leading shipping companies, including Chief Commercial Officer for Team Lines, Managing Director for Maersk Line in Russia, Finland and Baltic states; and European Sales & Marketing Director for P&O Nedlloyd.

"Our investments in data and analytics are delivering exceptional services to our customers and partners. I am incredibly proud to be part of this industry-leading company and



*Hans-Christian Mordhorst.*

very committed to challenging our organization and operations to continue raising the standards of the industry," says Mordhorst, who assumed the role effective 10 February 2015.

DA-Desk is one of several companies within The Marcura Group; as Mordhorst assumes the role of Managing Director, he will simultaneously serve as an appointed executive member of The Marcura Group Board. Poulsen, who served as Acting Managing Director of DA-Desk for a year aside from his group CEO role, adds: "By relinquishing my role as acting Managing Director of DA-Desk, I can now focus on

growing our new business units and the overall strategic direction of our group in my primary role as group CEO. With Hans-Christian's leadership of DA-Desk, we are confident in our vision, our strategy and our group's prospects in 2015 and beyond."

DA-Desk was founded in 2001 on the principle that an independent disbursement account (DA) processing company — not owned by port agencies or shipping companies — could provide an objective, automated DA process that would benefit both principals and agents. Today, the privately owned company, headquartered in Dubai, UAE, is the world's largest port cost management services provider. Its IT-enabled services and tools deliver operational efficiencies, enhanced security and cost savings while mitigating regulatory compliance risks for more than 220 customers across the globe making over 140,000 port calls annually.

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## Republic of the Marshall Islands Registry strengthens global presence

The Republic of the Marshall Islands (RMI) Registry is the third largest registry in the world, standing at more than 117 million gross tonnes (GT) and over 3,395 vessels at the end of January 2015. International Registries, Inc. and its affiliates (IRI) provide administrative and technical support to the RMI Maritime and Corporate Registries.

Irrespective of the growing challenges faced by the maritime industry, the RMI Registry has had a particularly successful year, having grown by over 320 vessels and 16 million GT, which is a 17% increase in GT from the previous year. The largest group, bulk carriers, represents 29% of the RMI fleet in terms of number, and 36% by GT.

The RMI Registry's success in enhancing its fleet and reputation in 2014 is largely attributed to its Greek clients, as the largest percentage of the RMI Registry's fleet derives from the Greek shipping community. Nearly 40% of bulk carriers in the RMI fleet are Greek owned, and a recent paper published by the Greek Shipping Cooperation Committee (GSCC) notes the RMI Registry is reaching the top position in the Greek market, gaining more than 43% of the gross tonnage and nearly 55% of the total number of vessels gained overall.

Two key competitive advantages of the RMI Registry are its decentralized operations and experienced worldwide personnel. With personnel in IRI's Piraeus, Greece office outnumbering all offices with the exception of IRI's headquarters in Reston, VA, the amount of IRI staff outside of the United States (US) has surpassed those in the US. IRI's main initiative is to provide timely quality service to its clients through qualified personnel with experience at sea and ashore. With the largest network among any registry, IRI has 26 full-service offices with the ability to handle all types of ship registry and corporate services. In 2014 IRI expanded its London office to a second floor, and opened a second office in Hong Kong for the purpose of processing seafarer documentation and providing further maritime service in the region. By continuing to strengthen its

team worldwide, IRI ensures a high level of service and continuous improvement to the decentralization of registry related services for the increasing number of RMI flagged vessels. IRI's global staff is available to respond to inquiries regarding RMI maritime and corporate matters on a 24-hour basis. IRI strives to ensure consistency among its network of 26 worldwide offices in terms of registration and ongoing technical and operational support, and aims to simplify procedures so that documentation is processed swiftly.

The RMI has received the highest ratings in port State control (PSC) international rankings. The RMI is the only major open registry to be included on the White Lists of both the Paris and Tokyo Memorandums of Understanding (MoUs) and has maintained Qualship 21 status with the US Coast Guard for ten consecutive years, which is unprecedented. Such achievements are attributed to the RMI Registry's thorough pre-registration vetting and assessment process for ships entering and remaining in the RMI. The pre-registration screening process for every vessel and operator, and the point score system for fleet assessment, is monitored closely by marine safety and technical personnel, enabling the RMI Registry to maintain these high rankings. Managing the considerable growth of the RMI fleet while maintaining quality service is key to the RMI Registry's reputation as a first class registry.

A major challenge faced by the maritime industry is the increasingly stringent international regulatory environment. The RMI is a signatory to and enforces all major conventions and their related codes. The primary responsibility of the RMI Registry's Technical Department is to oversee the implementation of the applicable national maritime laws and to ensure that the International Maritime Organization (IMO) codes and conventions are carried out to the fullest extent practicable on vessels in the RMI fleet. With an assigned permanent representative and active delegation at the IMO, the RMI plays a significant role in shaping future regulations, allowing the RMI to

proactively manage the implementation of new requirements by owners and operators of RMI flagged vessels.

IRI continuously monitors the current economic, regulatory, and technological environment to ensure that the RMI Registry is properly and adequately resourced worldwide. This allows the RMI Registry to stay in close contact with owners and operators and maintain first class service.



# Staying safe at sea



safeguarding crew and  
vessels on the water

## Guarding against water ingress with Martek Marine

Water ingress detection and hatch cover testing on bulk carriers are two essential procedures for safe operation and husbandry of vessel, cargo and crew. *Bentley Strafford-Stephenson from Martek Marine* highlights the common causes of water ingress on bulk carriers and the means by which to reduce risks.

Ultimately there are three main causes of water ingress; the failure of the metallic structure of the vessel, hatch-cover tightness and the liquefaction of certain bulk cargoes which causes loss of stability. The structural elements of the vessel mean that regular structural surveying and condition monitoring is required but the two most common causes in recent years are hatch cover tightness testing and cargo liquefaction.

Bulk cargoes each come with their own unique properties and characteristics which in turn create their own transportation, loading/unloading and stowage issues. The International Maritime Solid Bulk Cargoes Code (IMSBC) dictates the requirement of the shipper to declare to the master of the vessel in writing any information of the particular properties of the cargo to be loaded, a certificate of moisture content and a certificate of Transportable Moisture Limit (TML). Cargo should only be accepted by the master that has actual moisture content less than the TML and not simply rely on the physical appearance of the cargo which may look dry as during transit cargoes could transform from a solid state to a viscous fluid as a result of agitation from engine vibrations, vessel motion and wave impact which compact the cargo.

The unique properties of bulk cargoes call for due precaution when transporting. Certain types of coal for example could cause liquefaction due to their moisture content but the most

troublesome cargo that has been reported in the last five years is nickel ore. Due to excessive moisture within the commodity liquefaction is a serious risk factor which causes cargo shift and loss of stability. Other commodities that can suffer from the same problem include fluorspar, pyrites, millscale and sinter/pellet feed.

Cargo can be further damaged by water ingress as a result from hatch cover leaking. Poor maintenance of hatch covers and coamings or unsecure hatch covers after loading are the two main causes of water ingress as a watertight seal between the rubber packing on the holds and steel compression bars is required.

There are several types of testing for hatch cover tightness; visual inspection of the cargo, the traditional chalk or hose tests and ultrasonic testing. Visual inspection simply requires an inspection of the cargo and the inside of the holds to check for any visual water damage and the traditional hose and chalk tests mean that tests can only be carried out when holds are empty. It is only during a voyage that a holds hatch cover's true tightness can be tested due to the strains presented on a vessel's structure during transit. You cannot test true accuracy of the tightness and compression.

The use of ultrasonic equipment such as Martek's Hatchtite™ is considered by most surveyors and insurance companies to be the most reliable, accurate and safe method. Hatchtite™ is a portable and lightweight instrument for accurate and reliable cargo hatch cover testing approved by ABS, fully compliant with IACS Unified Requirement U.R.Z17 and approved by insurers and P&I clubs.



With ultrasonic testing only one person is required to carry out the testing rather than two as is what is required with the other methods and testing can be done when the vessel is fully loaded and *in situ*. Microscopic gaps can be detected that cannot be seen by the chalk or hose tests or the naked eye. Testing so accurately for potential weak points can significantly reduce the cost of repairs and the surveyor can guarantee a consistent reading.

A transmitter is placed inside the cargo hold (full or empty) which emits ultrasound waves. The hatch cover is closed and a hand held telescopic microphone (which is connected to a receiver along with a set of headphones) is placed at the hatch cover interfaces and the surveyor or operator uses an ultrasonic detector to 'listen' from the outside and pick up all 'leaking' ultrasonic sounds that leak through the sealing arrangements, vents and cracks. The receiver will display the decibel level of any ultrasound leak and is also heard through the headphones.

A water ingress detection system (WIDS) is mandatory on all bulk carriers since 1 July 2004 to monitor water ingress in cargo holds, ballast tanks and dry spaces as per the SOLAS XII Regulation 12, IACS UR S24, IMO performance standard and IACS UI SC180 yet a high number of casualties still occur each year. Old faulty systems need to be replaced with new working systems and it must be checked by authorities that systems have not been turned off during voyage due to false alarms. Now the regulatory compliance window is over, all existing vessels in theory should have WIDS fitted. The majority of Martek's Bulksafe™ customers tend to be new builds with the majority coming from yards in China.

When the SOLAS regulations were being created, Martek was a key stakeholder in the drafting of the performance standards with Lloyds Register particularly concerning the performance standard of testing before loading cargo of the



WIDS system to ensure it works properly.

The company's WIDS, known as Bulksafe™, works on float switch technology and as such is guaranteed to not cause false alarms. Some of Martek Marine's competitors use electrodes which are cheaper but are prone to giving false alarms due to the sweating of cargo and the subsequent moisture hitting the sensors.

Martek developed its Bulksafe WIDS using intrinsically safe MMS900 float level switches made of Delrin to guarantee the elimination of false alarms and the risk of corrosion for a longer lifetime. The system comprises a central control and alarm panel connected to the MMS900 water level detectors that are installed totally isolated from the cargo and protected from mechanical damage during cargo operations. They can be installed without the need for any structural alterations or piping work within the cargo

holds. Bulksafe™ is type-approved, very simple to install and is made in such a way that maintenance and testing are possible while carrying cargo.

Each MMS900 level switch is totally corrosion proof, protected against dust ingress and carries a lifetime warranty. The Bulksafe™ control and alarm panel indicates the alarm status for each named compartment with discrete signals for 0.5m and 2m alarm levels. The system incorporates an optional function to provide a fully automatic 'in-situ' functional test of all detectors, even whilst cargo is present in the holds.

Included with each MMS900 level switch as standard, is 30m of marine-approved cable for termination to deck/duct keel. The cable is fully bonded to the switch during manufacturing providing a totally immersion proof IP68 protected device even for 25m-high ballast tanks. Sensors relying on sealing of cable terminations during installation, cannot guarantee this protection, and will be prone to failure in service giving potentially disastrous false alarms.

Inside each MMS900 level switch is a heavy duty filter to stop cargo debris from clogging up the water level detector and preventing it from working. The filters are made from stable polymer making them corrosion resistant for all bulk cargoes. In addition, the back flushing allowed by the MMS900 water level detectors offers optimum service life.

Founded in 2000, Martek Marine provides equipment and services designed to enable the shipping and offshore sector to meet the latest environmental and safety regulatory standards. The company provides world beating systems for BNWAS, engine emissions monitoring, gas detection, water level detection, and cargo tank monitoring. The company also supplies a specialist marine defibrillator. Martek provides an extensive system servicing and system spares service for customers.

Martek Marine is headquartered in the UK and has a regional office in Singapore as well as a strong global network of sales and services offices.



# 'Inaction' over liquefaction draws fury

The apparent lack of action from the IMO (International Maritime Organization) over losses caused by cargo liquefaction has been blasted by the Greek Shipping Co-operation Committee.

In a press release, the GSCC has declared itself "profoundly shocked and dismayed" at the recent sinking of the *Bulk Jupiter*, which was lost on 2 January this year. Eighteen crew members died, and only one survived.

The ship was carrying bauxite, and its loss is widely regarded as being caused by cargo liquefaction. The cargo of bauxite is believed to have liquefied due to the heavy monsoon rains experienced in December, caused the vessel to capsize and sink.

Bauxite, unlike iron ore and nickel ore, had not previously been included among the 'Group A' cargoes, according to the IMO Solid Bulk Cargoes Code (IMSBC). Currently, the IMSBC Code classifies bauxite as a Group C cargo but a high moisture content could see it reclassified.

The GSCC believes action from the IMO is now essential.



"The shipping industry, and its regulatory body, the International Maritime Organization, know very well what needs to be done to stop these tragic occurrences. "Without decisive action by the industry, more lives continue to be put at risk on a daily basis," it

said.

Intercargo has added its voice to liquefaction warnings following *Bulk Jupiter* sinking. "The recent capsizing and sinking of the Bahamas flag *Bulk Jupiter* in the opening days of January, with the loss of 18 of its 19 crew, may again prove to be yet another casualty statistic in the long list of bulk carrier losses caused by cargo liquefaction," Intercargo said.

"Port states have an obligation to ensure that the condition of cargoes they permit to be loaded in their ports are safe for carriage. There is no doubt that if this obligation was strictly adhered to by all port states through consistent implementation by competent authorities, the risk to bulk shipping would be greatly reduced," said David Tongue secretary-general of Intercargo.

## Safety comes in many different forms

MacGregor aims to provide safe ships through quality design and hardware, operator friendly systems and good lifetime service

In most maritime sectors, seafarers are more likely to be killed or injured performing routine occupational tasks than as a result of their ship sinking. However, significant numbers of bulk carriers continue to be lost at sea, sometimes in a sudden and catastrophic manner.

MacGregor says this is a worrying and unacceptable situation and it is committed to promoting safe bulk carrier operations at all levels. In terms of vessel integrity, it offers hatch cover systems ideally suited to a vessel's size, design, projected cargoes and operational profile.

MacGregor backs up its hatch cover design, manufacture and installation activities with lifetime inspection, maintenance and repair services provided through its global customer service network, supported by an effective supply of original spare parts.

Hatch covers may appear simple enough, but their design involves arriving at the correct compromise between stiffness and the ability to adapt to the changing shape of the coamings as the hull flexes in a seaway. The correct choice of sealing arrangements is an

important factor in maintaining weather tightness at sea.

MacGregor offers a full range of hatch cover sealing solutions to meet the needs of all vessel types. For modern bulk carriers, MacGregor FlexSeal is very popular. It absorbs no water, eliminating the risk of freezing and reducing the likelihood of corrosion for the retaining channel and compression bar. The solid rubber profile maintains its original shape and offers good tear strength. Consequently, hatch cover weather tightness is

*MacGregor's FlexSeal is a very popular sealing solution for modern bulk carriers. It absorbs no water, eliminating the risk of freezing and reducing the likelihood of corrosion for the retaining channel and compression bar.*



*MacGregor's wireless control system is easy to implement and allows the operator freedom of movement throughout all hatch cover operations.*



maintained for up to twice the life expected from conventional sponge rubber seals, resulting in lower replacement costs and reduced vessel downtime.

Securing arrangements and the weather tight integrity of hatch covers must be periodically inspected and tested. High-pressure hose testing can only be carried out with empty holds. Ultrasonic testing does not present a risk of cargo damage, so this restriction does not apply. The strength, integrity and overall effectiveness of a hatch cover, its coaming, sealing system and securing system can be severely compromised as a result of inadequate maintenance or the use of non standard parts. Relevant personnel must be properly trained in operational and maintenance procedures.

#### **PERSONNEL SAFETY ON DECK**

Macgregor places great emphasis on the safety of personnel operating, and working in the vicinity of its hatch covers and other deck machinery.

Some tasks are inherently dangerous, so it is good sense to design equipment that makes it unnecessary for personnel to be in risky situations in the first place. Hatch covers which can be opened and closed without direct manual intervention are a good example.

However, the traditional, fixed, hatch cover control stand can severely limit the operator's view of the machinery under his or her control. An operator may not be able to see whether the covers are opening or closing as they should, and may not be

immediately aware of something unexpected happening. Portable control units, connected to the main control stand by a cable, can help to alleviate this problem but the operator's freedom of movement is restricted by the length of the cable. Coiling the cable and transferring the device to another hatch is time consuming.

Full, independent remote control offers the ideal solution. Historically, wireless operation has been seen, perhaps with some justification, as expensive, unreliable and complicated. In the last five years radio remote control technology has become very robust and affordable, so much so that MacGregor now offers a wireless control system that has real safety and commercial advantages. It is available for bulk carriers equipped with MacGregor's MacRack electric side rolling hatch cover opening and closing systems, and for electrically-driven MacGregor piggy-back hatch covers on bulk carriers and general cargo ships.

MacGregor says its wireless solution is easy to implement and allows the operator complete freedom of movement throughout all hatch cover operations. The ability to operate hatch covers more safely, quickly and efficiently are obvious, important benefits.

When used to control hydraulic systems, the wireless remote controller reduces the hydraulic power unit (HPU) idling time, as the HPU can be switched off directly from the controller whenever hydraulic pressure is not required; saving power, minimizing noise and reducing system wear.



## GUARDIAN – safeguarding seafarers worldwide

GUARDIAN™ anti-piracy barriers are protecting some of the biggest blue chip companies in the world from pirate attacks on offshore drilling rigs, high risk fleets and ships, including CMA-CGM.

Whilst most maritime piracy measures focus on trying to remove pirates from ships, GUARDIAN is designed to stop pirates getting on board in the first instance. The first real alternative to razor wire, GUARDIAN works by covering a ship's safety rails with a specially designed barrier. Once installed, GUARDIAN provides a highly visible, robust and simple way of making access to ship or rig virtually impossible.

GUARDIAN is provided by Guardian Maritime Limited, a UK-registered company specializing in the development and installation of vessel protection systems. It is run by husband-and-wife team David and Teresa Stevens, who spent a year developing a solution to the problem of unwanted boarding under sail, at anchor or in port.

During installation, GUARDIAN units are tailored to fit around fairleads and unique structures. A single unit or section can be removed or refitted in minutes, for operations such as mooring or vessel maintenance. GUARDIAN can be fitted at sea, offering minimal disruption to day-to-day operation.

GUARDIAN is designed with a high level of UV protection, resistant to a wide range of chemicals (acids, alkalis, oils etc), and will remain robust over the temperature range experienced by vessels. Ideally suited to a maritime environment, the units are made from a polymer that does not absorb water and can be swapped between vessels. A BMP 4-compliant installation, GUARDIAN is environmentally friendly, recyclable and saves operating costs by lasting three to five years. It can also be tailored to suit any colour or type of sea going vessel.



In product testing, two ex-Royal Marines tried to board a ship protected with GUARDIAN anti-piracy barriers. Following the trial the commandoes concluded it was impossible to breach GUARDIAN's defensive barrier — despite perfect conditions and assistance given to them.

A new development, following customer demand, saw the launch of GUARDIAN Greenwater to deal with the issue of greenwater on-board deck following turbulent weather conditions. This results in two-fold benefits in using GUARDIAN; it not only prevents against unwanted boarding but aids with the issue of green water, which causes untold damage and expense. The first units are due to be fitted on-board a tanker imminently.



Last year saw Guardian Maritime further expand its worldwide coverage and distribution, firstly signing a deal with SINWA Group, one of Asia Pacific's leading marine supply and logistics companies, and then with Mares Shipping GmbH, specialists in the supply of spare parts and technical equipment for ships, to become stockists and agents for GUARDIAN. This enables faster response times to both ship fitments and the supply of replacement units by specialist teams of installers — ensuring ship owners and operators great fast and effective customer service.

GUARDIAN is currently protecting over 200 vessels which includes tankers, container ships, oil drilling ships and a number of ancillary ships. The combined vessel value protected by GUARDIAN is in excess of \$22 billion, with over 4,000 seafarers protected by GUARDIAN on average each day.

# Ensuring cargo safety with ClassNK

"The dry cargo sector is a vital part of the maritime industry, and ensuring the safe operation of bulk carriers is paramount, writes Mitsuhiro Kidogawa, Operating Officer and General Manager of Hull Department at ClassNK. Bulk carriers account for over one-third of the world's merchant fleet, the largest portion of any vessel type, and are essential to global trade. The industry recognized our commitment to supporting the safe operation of these vessels, and in addition to being one of the largest classification societies in the world, we also classify more bulk carriers than any other classification society in the world.

"With increasing numbers of regulations coming into force over the recent past such as harmonized CSR [common structural rules], and the mandatory code on noise levels on board ships, the industry has stepped up to improve design standards and offer solutions to tackle these new challenges. However, despite the industry's great efforts in complying with new regulations, ensuring cargo safety still remains a major issue. Just as ClassNK has worked to help shipyards and operators to address the challenges of new structural design requirements, ClassNK is also working with the industry to ensure safer transportation in the dry cargo industry.

"Four years ago a string of catastrophic incidents involving nickel ore cargoes shocked the industry. Liquefaction of nickel ore cargoes resulted in the loss of stability, subsequently capsizing these vessels, and costing the lives of 66 seafarers. While cargo-related matters had traditionally fallen outside the realm of ship classification, these tragedies spurred us to find solutions to prevent such losses in the future. The first result of this was the First Edition of our *Guidelines for Safe Carriage of Nickel Ore* in May 2011.

"These Guidelines compiled the loading requirements and transport procedures of the IMSBC code, with best practices, precautionary measures, and recommendations for safely loading and transporting nickel ore gleaned from onboard operators. While these procedures were quickly implemented by the industry, other problems with transporting these cargoes came to light. The difficulty of moisture control at stockyards during monsoon season, and the accuracy of moisture content testing for nickel ore cargoes still presented major hazards during transportation.

"ClassNK began examining the effects on vessels, in terms of structure and stability, when loaded with nickel ore with moisture content in excess of the transportable moisture limit. We employed extensive testing and numerical simulations on cargo properties and the behaviour of nickel ore with the advice and support of an independent panel of experts over a six month

period. Based on this research ClassNK established the world's first standards for the stability, hull strength and other requirements necessary for vessels to safely carry nickel ore cargoes in any condition regardless of moisture content. The results of these efforts were published in the Second Edition of the *Guidelines for the Safe Carriage of Nickel Ore* in February 2012.

"The Guidelines include the world's first requirements for the Specially Constructed Cargo Ship for the carriage of nickel ore in line with the IMSBC code, which were first approved by the Panama Maritime Administration. This was followed by approval from other flag administrations including Liberia, the Marshall Islands and Japan. The world's first vessel built to the Specially Constructed Cargo Ship requirements, a 27,000dwt open hatch bulk carrier was constructed and designed by Naikai Shipbuilding Corporation to NK-class and delivered on 19 September 2012.

"The Guidelines were widely praised by the industry, earning top honors at the Lloyd's List Awards and Seatrade Awards amongst others, and have been acknowledged as the *de-facto* standard for transporting nickel ore.

While awareness of the dangers associated with transporting these cargoes has helped greatly reduce accidents during transportation, the dry cargo industry is still faced with many challenges. Casualties due to the suspected liquefaction of cargo have occurred with vessels transporting cargoes not categorized as cargoes which may liquefy in the current IMSBC code, drawing concerns that liquefaction may affect more cargoes than previously considered.

"Building on our experience examining nickel ore, ClassNK has begun collecting definitive information on these accidents, as well as the properties and behaviour of these cargoes in order to determine their causes. We hope to develop more solutions to prevent any further casualties and ensure the safety of these vessels and their crews," concludes Mr Kidogawa.



*Nickel ore, liquefied in the hold of a bulk vessel.*

## Servowatch contributes to development of the ‘world’s most advanced lifeboat’

The known issues around bulk safety arise from cargo stability, water ingress and fire hazards. There have been various measures introduced to address these concerns, such as water ingress detection systems, fire detection systems, and advice on better cargo handling/loading. The standard of industry training should also be addressed.

Equipment from Servowatch provides an interface to ship alarm, monitoring and control systems in its raw form. The benefit is that Servowatch can centralize data from all the external measurement and detection systems, integrate stability data, and provide reports that can be relayed back to management company offices, or allow for remote access into the system.

Servowatch is a global specialist in marine automation and system integration with approaching 40 years experience in this field, having provided bespoke systems using its own purpose-designed state-of-the-art software. Its alarm systems and communication technologies are used on bulk vessels — and others — to improve overall safety.

The ultimate safety of the vessel comes down to how the people on board operate in their roles, their levels of expertise and training being paramount. Servowatch’s system is able to provide raw data, undertake pre-defined analysis of data and issue in basic reports, or allow remote access to that data. In the end, it is how that data is used and acted upon which determines the ultimate safe operation.

Another consideration is the condition assessment of machinery, maintenance intervals and maintenance work. Servowatch’s system is able to incorporate specialist applications and provide data to support maintenance programmes, from simple machinery repairs to preventative actions. Efficient machinery working in optimum conditions also contribute to overall ship safety in port and at sea.

### SERVOCORE

Drawing on its experience, Servowatch has developed a product line named ‘ServoCore’, which has been specifically created to deliver COTS (commercial-off-the-shelf) solutions for all shipping sectors including: bulk carriers, container ships, tankers, passenger ships, offshore support vessels, tugs and salvage vessels, inland waterway and small leisure craft. The standard ServoCore packages are future proofed for the integration of additional components.

ServoCore is a real winner for shipbuilders, given the complexity of existing ship automation and integration solutions. It is a fit-and-forget, plug-in-and-play system offering shipbuilders faster installation and shorter lead times, making use of pre-configured system engineering data.

The ServoCore Alarm, Monitoring and Control System (AMCS) option is an entry-level system, that offers a reliable and highly cost-effective solution, and is available with three pre-configured Remote Terminal Units (RTU), each with up to 50% expansion capacity.



Embedded at the heart of every Servowatch system is the award winning WinMon software package. This dynamic product, developed through generations of applied knowhow, enables state-of-the-art integration and comprehensive system expansion into the bespoke ServoFusion™ package found on more complex and mission focused vessels.

### CASE STUDY

Servowatch systems are an integrated part of the ‘world’s most advanced lifeboat’, which is in service with the Royal Netherlands Sea Rescue Institution (KNRM).

In November last year, when the KNRM was presented with the prestigious KNVTS Ship of the Year Award for its revolutionary new search and rescue craft, Nh1816, the Institution’s CEO Roemer Boogaard remarked that its development was a “process of true cooperation”. Taking almost five years to develop, Nh 1816, the first in a series of next generation SAR (search-and-rescue) 1906 vessels, was devised in close collaboration with KNRM, Delft University of Technology, De Vries Lentsch Naval Architects, MARIN, Damen Shipyards, Lloyd’s Register and Servowatch Systems — a consortium of renowned ship specialists that has managed to improve on KNRM’s Arie Visser-class; a design that already has a reputation for being one of the best lifeboats in the world.

“The SAR 1906 is sailing proof that investment in R&D and innovation works!” said Damen’s Head of High Speed Craft, Jaap Gelling. “We started working on this next-generation lifeboat in 2009. Various concept designs were jointly made and these were extensively tested by Delft University of Technology. There is no other lifeboat in the world that has benefited from such an enormous amount of R&D. The final design was only reached due to the excellent co-operation among all the parties.”

Nh 1816, named after sponsor insurance company De Noordhollandsche van 1816, is a 35 knot self-righting vessel, with an aluminium hull and composite wheelhouse. The hull design, based on Damen’s revolutionary Axe Bow and adapted for lifeboat operation, gives unparalleled sea keeping with a lower resistance (drag) compared to existing craft, resulting in an improved fuel consumption of up to 20%. It was designed specifically to improve high-speed craft operability, comfort and crew safety and, compared to the Arie Visser-class, the SAR 1906 design benefits from substantially reduced G-forces on the hull, resulting in significant noise and vibration reductions.

### Systems integration

In addition to the Axe Bow, the Nh 1816 is outfitted with retractable fins abaft that can be lowered for increased stability or raised for enhanced manoeuvrability. In the wheelhouse, state-of-the-art fully integrated electronics permit real-time data exchange for ship-to-shore communications. It is in fact the extensive array of Servowatch Systems’ integrated communications technology that has not only placed this vessel in an altogether different league but drove KNRM to sail across

# Thome Ship Management: quality comes first

Thome Ship Management, based in Singapore, is part of the Thome Group of Companies, a dynamic provider of integrated ship management services to the international shipping and offshore industries. Today, Thome Ship Management ranks among the world top best performing global ship management companies with a wide range of clients from every corner of the world.



The company's Marine Manager Bulk Division, Hardeep Munda, has taken the time to respond to some questions related to vessel safety.

**Q:** *What safety/maintenance measures do you offer?*

**A:** "We have seen through statistics that quality has an impact in safety on board the ships. Vessels that are not funded well, either with stores and or equipment, crew etc, do operate less efficiently. To succeed and be the preferred partner in the market and to be the best management company in the world, we need to operate our vessels in safe and efficient manner. Investing in quality is not an expense it is in fact an investment to generate more revenues. We show this to our clients/Owners through our KPIs [key performance indicators]."

"We have dedicated superintendents who focus on voyage planning, monitoring vessels speed and consumption so as to save time and bunkers for our owners. Vessels navigating on critical passages, with regards to limited UKC and or other operational constraints, are also monitored and supported from ashore through purple finder/AIS live. We also give port specific guidelines to our vessels to assist in port state control (PSC) inspections ensuring clean PSC inspection. Guidance is also given on cargo specific loading/discharging and hold cleaning operations (in addition to charterers' instructions). Special guidance and enhance monitoring is done to the vessels that are carrying cargoes susceptible to liquefaction.

With ever changing regulations, we have to be always on the ball. We have a dedicated Health Safety Security and Quality department (HSSEQ), who are monitoring the changes in the legislative requirements and are then accordingly always updating our safety management system (SMS) procedures. Our dedicated security team in our office, ensures that all are vessels while crossing high risk areas (HRA) are monitored and guided through the HRA passage.

Most of our vessel engage arm guards while transiting HRA."

**Q:** *What strategies do you employ to improve the safety of dry bulk vessels?*

**A:** Operating a tanker vessel is different from operating a dry bulk carrier as the risks are different. However there is a lot to learn from the tanker industry. Certain elements from tools like tanker management and self assessment (TMSA), which provides a standard framework to assess a tanker ship operators management system, can also be used in the dry industry to gauge the operating standards.

"We strive to make sure that our vessels are always operating in utmost safest condition, are well maintained and have zero breakdowns and or off hire.

"In Thome Ship Management we believe in utilizing technology to the utmost while operating our vessels. And as such we do not always follow conventional system/processes to maintain our vessels.

"Some of our bulk carrier vessels are fitted with 'engine doctor' systems to monitor main engine and auxiliary engine performance. We encourage minimum usage of power tools on deck for carrying out chipping; instead we use grit blasters. Hatch coamings water tightness is confirmed by ultrasonic testing kits. This is one of the core measures to ensure that the cargo does not get wet during the sea passage. To maintain crane wires we have 'Masto Lubricator' for greasing. We also have ultrasonic cleaning units to clean fuel oil filters

"In Thome Ship Management we have initiated vessel performance and monitoring system (NAU — a web-based software) with the intention to streamline vessels noon reports so as to put into perspective real time results for data monitoring purposes and also ensuring that the engine parameters are closely monitored. Another measure that we have adopted is to compute Specific Fuel Oil Consumption (SFOC) and compare it with the shop/sea trial data. Any deviation noted is accordingly corrected to reduce the gap."

a wintery North Sea to Essex in order to bestow an award for excellence on the company's Head of R&D, Stafford Williams. Williams was honoured for his 'exception work' on the new lifeboat and, with his team, was presented with a 'Statue of the Bronze Rescuer' for their specialist work on the project. The bronze is a replica of the artwork designed by Charlotte van Pallandt at the request of Noordwijk City Council to mark KNRM's 150th anniversary in 1976. Retired KNRM Coxswain C van den Berg and his daughter sat for the artist as she designed a monument representing a lifeboat rescuer saving a drowning girl.

Speaking during the presentation in January, Roemer Boogaard said: "Without doubt it is the advanced Integrated Platform Management System (IPMS) that makes the SAR 1906 series special. It incorporates all navigation, communication and optical systems on the vessel, integrating them into a simple to use application available from multiple workstations. This is absolutely paramount to successful life-saving operations."

Explaining the system in detail, Williams said: "The IPMS is built upon the latest technology currently available utilizing as much commercially-off-the-shelf (COTS) equipment as possible to reduce the reliance on proprietary hardware and keep costs down. "At the heart of the system is Servowatch Systems' award-winning WINMON software, which offers multifunctional capabilities and a multi-redundant operating platform for the crew. And with duality of key operational sensors and complete adaptability to changing conditions the system has no single point of failure."

### Bespoke solution

The bespoke solution aboard the Nh 1816 is built upon a distributed network-based arrangement of computers and data input/output devices designed to assist in the management, operation, control and data recording of a highly advanced SAR vessel. The result is an ergonomically designed wheelhouse of composite construction with true multifunction capabilities, including, navigation radar, ECDIS electronic charting, internal communications, external communications, navigation data, mission logging, alarm, monitoring and control.

All bridge components run on a Windows 8 platform, providing the possibility of a future OS upgrade on the same hardware platform and the integrated radar system utilizes the Transas 4000 series broadcasting digitized radar to all connected workstations. A Transas electronic chart system on each workstation provides individual operators with full independent charting capability.

The integrated navigation sensor package also includes direction finding, GPS, heading, speed, water depth and AIS, whilst the suite of integrated communications system technologies include a capability for multiple wireless headsets, incorporating VHF and MF interfaces. Remote terminal units provide vessel wide alarm, monitoring and control functionality.

For added security, the Servowatch scope of supply included an integrated CCTV monitoring and surveillance package capable of broadcasting digitized video to all workstations. Cameras with full pan, tilt and zoom functions can be controlled from workstations without the use of joystick control.

All components located outside of the Watertight Electronic Space (WES) have a minimum rating of IP65, except for the LCD and workstation input devices, which are front sealed only, protected by the enclosed wheelhouse arrangement. Anti-condensation and environmental controls monitor and control the ambient temperature of the WES.

Servowatch Systems Chief Executive Officer Wayne Ross said: "We are proud to have been associated with this revolutionary vessel. KNRM required a vessel with an exceptionally high level of automation and systems integration and the Nh1816 is rightly seen as the most advanced all-weather, self-righting search and rescue boat in the world."

### SERVOWATCH TECHNOLOGY PUTS CATHELCO BWTS AHEAD OF THE GAME

Servowatch Systems' co-operation with UK-based Cathelco has resulted in what is claimed to be the most technically advanced new generation ballast water treatment system (BWTS) on the market. Servowatch, has been working closely with Cathelco to develop a fully integrated alarm, monitoring, and process control system for its combination filtration and UV BWTS, a key component of IMO approval and US Coast Guard AMS acceptance.

Cathelco's projects and development manager, Steve Ellis said: "We wanted to develop a ballast water treatment system that could remain effective in the most challenging water conditions and in order to do that we needed an advanced monitoring and control solution capable of automatically adjusting to different water qualities. Servowatch fully understood what we wanted to achieve and provided a solution that has allowed us to introduce one of the most advanced ballast water treatment systems currently in the market place."

Wayne Ross, Servowatch Systems' chief executive officer, said: "By fully integrating Cathelco's ballast water management system with a ship's computer system, a single operator can control all of the functions from one location, saving considerable time and effort in complicated ballasting operations. But this is only one aspect of the technology; it also monitors the 'health' of all the major components and logs the data in a way that can be easily extracted for use in the *Ballast Water Handbook* — an essential part of the Type Approval requirements."

BWTS filters and UV chambers are constantly analysed so that cleaning cycles can be initiated with all data automatically logged in compliance with IMO requirements. This includes tank number, time/date of event, mode of operation, flow rate, temperature, power to UV lamps, UV transmission and calculated UV dose. "Using standard MODBUS protocols, this higher level of integration and data acquisition, with multiple screens in different areas of the vessel, simply offers greater control and monitoring flexibility," said Ross. "The Cathelco BWTS not only prevents the transfer of alien aquatic species but it takes the administrative sting out of ballasting."

Ellis added: Servowatch Systems unique capability went beyond simply designing a very sophisticated control and monitoring system; it developed a prototype and manufactured the panels. It provided a complete turn-key solution.

Based on a combination of advanced filtration and UV technology, the Cathelco BWTS is available with capacities ranging from 34m<sup>3</sup>/h to 2,400m<sup>3</sup>/h. Each unit features a space-saving twin UV chamber with only two lamps and is designed for both seawater and fresh water operation.

"Together, we have been able to develop a ballast water management system that has no restrictions on the salinities in which ships operate in US waters. It has been approved and accepted to work in marine, brackish and fresh water, allowing vessels to enter the Great Lakes and other inland waterways," said Ellis. The system received IMO Type Approval and Alternate Management Systems (AMS) acceptance from the US Coast Guard in May and November 2014, respectively.

## Finding the best method for testing the water-tightness of hatches

Poor maintenance of hatch-covers, seals and coamings, resulting in water entering a ship's hold can lead to devastating consequences. Testing that hatch covers are weather-tight is a fundamental requirement for preventing damage to cargo and ensuring the safety of a vessel and its crew. Ultrasonic testing is the preferred method of inspection by P&I Clubs but there are others in use.

### LIGHT TESTING

Hatches are fully battened down and a surveyor will view the underside of the covers to see if any visible daylight is shining through gaps. If the sunlight level is insufficient a strong torchlight will be shone directly from above instead. This is the simplest method for identifying defects and their location but it may not be so easy to identify very small gaps.

### CHALK TESTING

Chalk powder is applied to the coaming compression bars and panel cross seams, the hatches are then closed and re-opened. The rubber joints are carefully examined. If there are irregularities in the chalk markings then it is assumed that these areas are not weather-tight. This method was the traditional way for testing hold cover compression but does not test the watertight integrity of the hold. IACS states that this test should be followed by a hose test.

### HOSE TESTING

The hatches are secured, with one surveyor in the hold. On deck a constant jet of pressurized water is then directed at the hatch-cover seams and joints. Any water leaking into the hold should then be seen by the surveyor inside, indicating a defect in the seams or joints. Although the most common method of testing hatch-covers, this method does have a number of disadvantages:

- ❖ the hold must be empty;
- ❖ a minimum of two surveyors is required;
- ❖ it cannot be performed in sub-zero temperatures;
- ❖ run-off from the deck which can lead to pollution — some



*Reliable ultrasonic hatch cover testing of seals on a German Panamax.*

port authorities will not permit this;

- ❖ it cannot accurately pinpoint leakages as water might travel along drainage channels and enter the hold at a different point or travel through the drain valves and back onto deck;
- ❖ variance in water pressure and distance of the jet can affect results; and
- ❖ it is time consuming.

### ULTRASONIC TESTING

This is an accurate, repeatable and convenient method of testing hatch-covers, doors, ventilators, access hatches, etc.

A transmitter emitting ultrasound is placed in the hold and the hatches are then fully closed. On deck the surveyor wearing headphones will walk around the periphery of the covers using a hand-held receiver or detector and will be able to hear ultrasound leaking through any defective seams or joints — even through the smallest of openings.

A percentage scale is used with an open hatch emitting 100% of the ultrasound. DNV and ABS state that during an inspection any reading over 10% indicates an area of potential leakage.

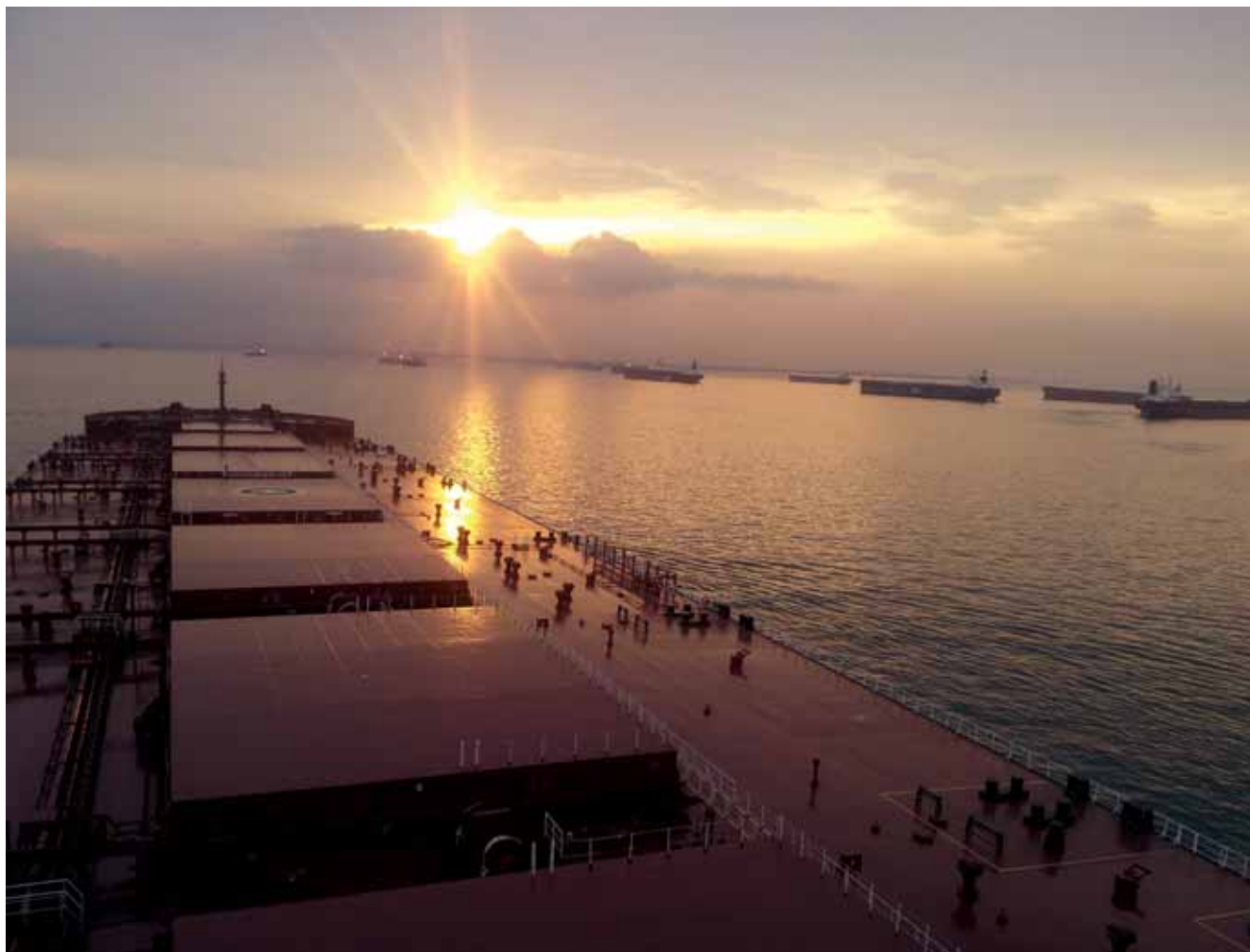
When a vessel is at sea and is pitching and flexing, seals that were demonstrated to be tight when the ship was stationary might potentially leak. A benefit of the ultrasonic method is that the level of compression of a seal can also be detected and monitored through periodic maintenance checks. A higher percentage reading indicates a lower level of compression and could indicate a seal which will leak when the ship is in rough conditions.

### CYGNUS INSTRUMENTS' INVOLVEMENT IN HATCH TESTING

While ultrasonic hatch-cover testing has been available since the 1980s, Cygnus Hatch Sure has advanced the current technology with fully automatic Open Hatch Calibration (OHC) to set the Open Hatch Value (OHV). This ensures consistent results from hold to hold with a lightweight and extremely powerful 19 × 40Hz element transmitter. This is powerful enough to saturate the largest cargo hold with ultrasound. The variable output transmitter has six selectable power levels allowing the unit to also be used in confined spaces, such as for testing watertight doors. Designed for ease of use and powered by standard rechargeable batteries, the whole system is extremely light and aircraft friendly for passenger cabin transportation.

Cygnus Hatch Sure is ABS type approved and the Cygnus product training syllabus has been endorsed by the International Institute of Marine Surveyors (IIMS).

## Safety remains a top priority for Bernhard Schulte Shipmanagement



Bernhard Schulte Shipmanagement (BSM) is a highly integrated maritime services company and at the top of its game in terms of quality, versatility and fleet size.

In an era of extremely high demand for shipping skills, Bernhard Schulte Shipmanagement provides a high-quality concentration of shore and ship-based maritime and engineering expertise.

The company's infrastructure of Service and Crew Delivery Centres in over 30 locations around the globe maintains the highest degree of operational and safety integrity over a managed fleet of more than 600 ships.

Over 20,000 employees onboard and ashore are at the heart of the company's success.

The company's services include:

- ❖ consultancy services;
- ❖ IT solutions and software development;
- ❖ corporate and financial services;
- ❖ maritime hospitality services;
- ❖ newbuilding and conversion projects;
- ❖ crew, technical and commercial management;
- ❖ maritime training; and
- ❖ corporate & seafarer travel.

BSM has a strong focus on safety, operational excellence, responsiveness and innovation. Safety has always been a priority for BSM. Continuous investment in training underpins the development of competent and professional BSM seafarers who provide customers with clear competitive advantages through:

- ❖ consistently delivering cargoes on time, and in the same good condition as they are shipped;
- ❖ maintaining ship owners' assets in peak efficient operating



*Crew training remains a major tenet of BSM's operations.*



condition, and within agreed budgets; and

- ❖ protecting its customers' reputations.

BSM's commitment to safety at sea and in the port includes the fitting of equipment which goes beyond the requirements of Class and IMO conventions, such as hull stress monitoring systems fitted to large ore carriers that enable actual stress levels to be monitored rather than being calculated from the loading instruments thereby ensuring that inadvertent overstressing of the ship's structure is avoided.

BSM is a renowned operator of dry bulk vessels, particularly the largest vessels such as Capesize and VLOCs (very large ore

carriers). It has extensive experience and knowledge gained from managing ships for some of the world's leading dry cargo operators. This is key to safe, reliable and efficient vessel operation and provides an ability to pro-actively anticipate potential hazards and risks, misdeclared cargo loaded on board for example, and take action to avoid and mitigate these.

Other actions aimed at optimizing efficiency and performance over the vessel's life include monitoring of vessel operation to ensure that the engine is being operated in optimum condition, close monitoring of the ballast leg to ensure best possible draught and trim condition, maintenance attention to ballast

tanks and coatings and regular hull inspection and cleaning.

BSM's competitive capability also encompasses design optimization and newbuilding supervision to deliver superior safety, operational performance and cost efficiency for owners through consulting, advisory and project management services from the vessel design stage.

Major clients include Bernhard Schulte, Vale, MOL, Shoen Kisen Kaisha, Frontline Management, and Seacastle Singapore.





## Strong ships, safe ships

The key to both safe ships and lower steel maintenance costs is an initial good design for a strong ship. That's according to Konstantinos Chatzitoliou, Manager, Bulk Carriers, Bureau Veritas. "It sounds simple but of course it is not," he says. "The ship design has to balance the need to minimize steel weight and maximize cargo weight with the need to be both strong globally and locally, and at the same time to have a high fatigue resistance. With pressure on freight rates there is always a drive to get more cargo deadweight into a given size of ship and yards will always want to economize on steel. Class has a strong role to play in maintaining the balance between the conflicting requirements."

Chatzitoliou believes that great strides have been made in structural safety in recent years. "Better software and more computing power helps a lot, plus the final thrashing out of the Harmonised Common Structural Rules means we have a common platform now," he explains. "Bureau Veritas was right at the heart of the rule harmonization process, which enabled us to really understand the rules and quickly incorporate them into updated versions of our hull structure analysis suite, VeriSTAR HULL. We can use the software to focus on fatigue hot spots and help eliminate them, which in turn dramatically reduces steel maintenance costs for the ship going forward."

Despite a slowing in global new orders, Bureau Veritas' bulk carrier-classed fleet and newbuilding order book for bulkers both grew during 2014.

Growth for Bureau Veritas came from sustained new orders from owners seeking to maximize the cargo capacity of vessels in specific market segments and from substantial transfers of ships in service into BV class. Greek owners led in both areas, closely followed by Japanese and Croatian owners with the bulk of the new orders to be built in Chinese yards. At the year's end BV's bulk carrier fleet stood at 1,024 vessels totalling 69m dwt and the newbuilding order book had surged to 150 ships totalling 12m dwt. BV's market share with Greek owners ordering in China was around 20%.

Despite volatile freight rates and falling oil prices two market trends were clear. Owners still had access to finance from private equity and stock markets and eco-ships became the norm as owners looked for maximum capacity on minimum fuel



*The Cancun, 206,000dwt owned by TMS Dry (Cardiff Marine).*

consumption. Clear evidence of this was the series of 15 Newcastlemax 208,000dwt bulkers ordered by Oceanbulk and Cardiff Marine at SWS, China.

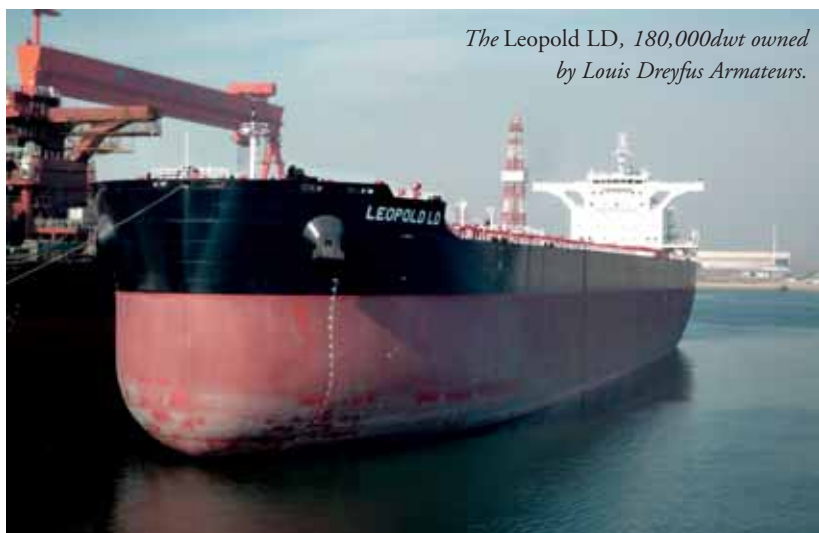
In the eco-bulker sector Bureau Veritas emerged as a clear leader with 19 Crown 58s, 40 Crown 63s, including ships on order, 34 SDARI Dolphin 64s, nine SDARI Dolphin 82s, two SDARI Green Dolphin 38s and six B Delta 37s either building or delivered.

One reason why bulk carrier owners chose Bureau Veritas was because of its good working relationship with the leading Chinese shipyards. These yards value the work which Bureau Veritas has done to smooth the implementation of the Harmonised Common Structural Rules, especially the swift updating of BV's tools and rules and the swift approval of new compliant designs. They also made good use of BV's co-operation with HydrOcean on CFD. China's Hudong and Greece's Thenamaris both benefitted from CFD optimization studies.

"An economical hull design can also be an efficient cargo carrying design with enough opportunity to optimize the hull shape," says Chatzitoliou. "That's where Computerised Fluid Dynamics is such a powerful tool. We can run multiple studies of hull types in different load conditions in a short period to get exactly the profile the yard needs."

Of the 65 new bulkers ordered to BV class during 2014 some standout examples include the 12 208,000dwt vessels ordered by Oceanbulk at SWS, the four 81,600dwt vessels ordered by Japan's Nisshin Shipping to be built in Jiangsu Hantong, China and the four 39,200dwt Ice Class IA vessels ordered by Jadroplov to be built in 3 Maj Brodogradiliste, Croatia. Croatia's Atlanska Plovidba ordered two 64,000dwt eco bulkers to be built in Qingshan, China.

The year 2014 saw the delivery of 46 new bulkers built to BV class, totalling around 3m dwt. Some examples include two 180,000dwt vessels built for Louis Dreyfus Armateurs at Tianjin Xingang, two 82,000dwt vessels built at Sainty for Singapore's Raffles Shipping and four 63,800dwt eco-bulkers built for Nisshin Shipping at Jiangsu Hantong.



*The Leopold LD, 180,000dwt owned by Louis Dreyfus Armateurs.*

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## Nidera invests in Constanta

The Nidera agribusiness company has bought the USA/USC terminal at the Romanian port of Constanta, which belonged to the United Shipping Agency (USA). The Dutch group already uses the facility to export cereals.

The new facility has capacity to store up to 250,000 tonnes and simultaneously attend to two Panamax vessels.

Nidera already operates two silos in Romania and is in the process of building a further two.

BC

## New fertilizer contract for Pasajes

An Australian company, Highfield Resources, which in Spain is based at the city of Pamplona, has signed a memorandum of understanding with Pasajes (Pasaia) port authority in respect of shipping up to 440,000 tonnes of fertilizer through the port's facilities. The company is also seeking a similar deal

with the nearby port of Bilbao.

According to Pasajes port authority, it has confirmed its willingness to provide up to 1,000,000 tonnes of capacity annually. Highfield is expected to start production of fertilizer in the first half of 2017 at a new potash mine in Muga. BC

## Cabinda development under way

In Angola, work will begin in June on the first of a three phase development of a new deepwater port at Cabinda. Construction is to be undertaken by Caio Porto. The initial phase will cost \$600 million, involving the extension of the commercial quay to allow vessels of up to 200m to dock. The access channel of 150m will also be expanded and there will be a new road access to the port. This initial phase should be open for business by mid-2016.

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## 'Happy Star' arrives at the Port of Sept-Îles bearing two giant shiploaders

The Port of Sept-Îles has announced the arrival of the *Happy Star* with the two gigantic shiploaders destined for the port's multi-user dock. The ship, which left the Port of Longxue in Nansha, China, on 29 December for a 43-day, 10,275-nautical-mile voyage via the Panama Canal, arrived in Sept-Îles at 7:30am on 11 February. Immediately on arrival, the *Happy Star* docked at the multi-user dock and began unloading. The new equipment will complete this world-class facility, increasing its loading capacity to make it the highest in North America.

The *Happy Star*, which specializes in this type of transport, is the property of BigLift Shipping, one of the world's leading oversized cargo carriers. The shipowner anticipates that unloading could take between 14 and 21 days, given the scale and complexity of the operation. The cargo consists of two shiploaders, including elevator and tripper car, and 27 conveyor galleries totalling 73 components and weighing in at 3,023 metric tonnes, each shiploader weighing 1,200 tonnes.

The equipment manufacturer, Sandvik Canada, deployed an innovative solution to carry the shiploaders, conveyors, and

components aboard a single ship and ensure they are unloaded in the proper sequence to optimize installation dockside. These cutting-edge shiploaders were assembled using North American components for the drive system, electrification, and instrumentation. These components were shipped to the assembly site by container ahead of time.

This is the recently built *Happy Star*'s maiden voyage to North America, and the ship and its remarkable cargo even attracted the attention of the producers of the Discovery Channel show 'Mighty Ships'. A camera team from the show joined the vessel for its Panama Canal crossing in order to put together a feature on the transport and unloading of these extraordinary giant machines at the Port of Sept-Îles.

Boasting diverse state-of-the-art facilities, the Port of Sept-Îles is North America's foremost ore-handling port, with an annual volume of close to 28 million tonnes. The port infrastructure at Sept-Îles plays a vital and strategic role in the economy of Eastern Canada. Annual economic impacts are estimated at nearly \$1 billion and almost 4,000 direct and indirect jobs.

*photo: Carl Allard.*





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## COAL INTO GERMANY

via Rhenus Midgard's Seaports

**BTW (Bulk Terminal Wilhelmshaven) former Niedersachsenbrücke, Jade Bay (Germany):**

- New: Capesize Vessels up to 250.000 dwt with a draft up to 18,50 m (60') sw
- Rail connections into Germany's hinterland and neighbourhood countries

**Coal Terminal Nordenham on the River Weser (Germany):**

- Rail- and inland waterway connections to Germany's hinterland and beyond
- Panmax- and partly laden Cape Size Vessels with a draft up to 13,10 m (43') fw

Both ports handle more than 5 million tons exceeding 10% of the imported coal into Germany.

Rhenus, a company with a long history, is one of the world's leading providers of integral logistics services and has annual turnover totalling 4 billion Euro.



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# Baltic ports

*Aerial view of Tahkoluoto harbour at the Port of Pori.*

## Finland under the spotlight



Barry Cross

Finland's Port of Pori imports more cargo than it exports, with inbound dry bulk one of its most important cargo sectors. The main import is solid fuel, which includes coal, coke and concentrates. Raw minerals are also important, but the volumes involved are significantly smaller.

As for dry bulk exports, ferrous sulphate is the most significant commodity handled.

In addition to international trade, Pori is also a coal hub for the domestic market, resulting in some quantities of imported coke being transhipped to pusher barges for onward transit.

In terms of market changes, Pekka Sundberg, the port authority's development manager, notes that traffic in concentrates is steady, given the presence within the port's hinterland of both a copper and a nickel smelting plant.

"Coal, in contrast, can fluctuate wildly in terms of volumes handled. These can vary from between 1mt [million tonnes] and 2.5mt in any given year. However, this is relatively captive traffic, since there are actually two power plants situated within the port boundaries that burn coal. Nevertheless, a question mark hangs over the long-term use of coal in generating stations, given both the energy policy in Finland and also of that of the EU," he says.

As for developing new commodities, Sundberg notes that there has been something of a mining boom in Finland, but because of the recession ports are not greatly benefiting from

that at present.

"We have informed the mining industry about the advantages of using the Port of Pori. For example, we have a fairway with draught of up to 15.3m, which means Capesize vessels can operate into Tahkoluoto harbour. In addition, there is a 12m draught all the way to Mäntyluoto harbour, which is sufficient to accommodate the needs of Panamax vessels," he says.

Significantly, the Port of Pori also claims to be the best winter port in Finland. Because ice-breakers are seldom needed, tariffs are lower.

There are also plenty of available industrial sites for development in the area.

"An LNG terminal will open in 2016, providing energy for new smelting plants, while ore could also be enriched adjacent to our own facilities," says Sundberg, who says that bio-fuels could also potentially be attracted to the port.

In the meantime, traffic has plateaued. In 2014, for example, this amounted to 2.7mt, broadly similar to traffic handled in 2013. However, volumes handled could double even without upgrading the infrastructure, so capacity for new products is available.

"Draught is not a limitation at the port, given the 15m draught. Instead, vessel size tends to be dictated by commercial considerations. On imported coal, for example, Panamax vessels are mostly deployed. For other dry bulk commodities, vessel

size can vary greatly," he says.

Another factor limiting vessel size is the imposition of the Sulphur Emission Control Area in the Baltic and North Sea, which makes it difficult for Capesize vessels to call.

On the landside, movements of concentrates are undertaken by rail, with scheduled block trains operated to a smelter at Harjavalta, which is just 60km from the port. Road is used exclusively for export commodities.

In terms of adding value, the two aforementioned power plants within the port obviate the need for coal to be shifted externally. A proposed LNG terminal will also be connected by pipeline to the Huntsman titanium dioxide plant, some 20km distant from the port.

In Finland, the Port of Inkoo is unique in being privately owned, whilst also functioning as an effective public commercial port. It is actually part of Inkoo Shipping, which provides all handling equipment and facilities, as well as undertaking stevedoring duties.

At present, the port has no regular liner traffic, with shipments delivered on an *ad hoc* basis.

According to spokesperson René Fagerstrom, Inkoo port is very much specialized in handling and storing dry bulk. This consists of coal, limestone, quicklime, kaolin, boron products,

Winter operations at the Tabkoluoto harbour.



grain, crushed stone, road salt, scrap metal and so on.

"About 60% of our traffic is import and 40% export," he explains. "Overall, grain volumes are increasing, while the rest are relatively stable."

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Despite the wide profile of dry bulk commodities handled at Inkoo, the port has also recently begun to attract regular flows of wood pellets, having previously handled just odd shipments. Fagerstrom also notes that discussions are under way with companies interested in bringing in further new products.

In 2014, traffic amounted to 1.4mt, compared with about 1mt the year before. Around half of all tonnage is warehoused on site prior to despatch, with stevedoring and warehouse work undertaken by the same crew.

“Currently, we have enough capacity to handle our existing business, with some spare if volumes grow. However, if ongoing negotiations do result in more traffic arriving at Inkoo, we will invest in more capacity,” says Fagerstrom, adding that Fortum’s Inkoo power station is located next to the port whose facilities can also be used if necessary.

The average vessel size calling at the port is quite small, being in the region of 2,000dwt, although some calls have been made in the past by Panamax vessels of up to 63,000dwt. The fairway, which offers draught of 13m, is only rarely covered in ice, making it relatively inexpensive to use Inkoo port.

“We have no rail link, so everything arrives and leaves the port by road. However, not all traffic has to exit the port. For example, around 400,000 tonnes of crushed stone is actually quarried and crushed in the port area prior to despatch by sea,” explains Fagerstrom.

In addition to this, Inkoo Shipping also provides bagging services for some customers and bulk consolidation for others.

As for why customers are attracted to Inkoo, which is situated in the Bay of Fagervik, this is because it is competitive and can provide flexible handling and storage possibilities. It is also very well connected by road, being about 60km to Helsinki, 30km to Lohja, 150km to Lahti, 120km to Turku and 200km to Tampere.

In terms of infrastructure, there are two quays: one of 225m and one of 145m, both with alongside draught of 7.8 metres. On the longer Quay 3, a 10-tonne quay crane, which runs on rails, can provide handling of 200–400tph (tonnes per hour). In addition, two mobile cranes work across either quay, averaging 150–400tph productivity on dry bulk goods. For gravel, a loading belt can handle flows of up to 300tph.



**STORAENSO IS ONE OF FINLAND’S LARGEST PRODUCERS OF TIMBER AND PAPER PRODUCTS.**

According to a company spokesperson, at Kotka, its main port outlet in Finland, it mostly concentrates on exports, with pulp, paper, chipboard and sawn timber the main commodities shipped.

In respect of which commodities are currently doing best, the spokesperson simply noted that “volumes follow general developments in the marketplace.”

“However, at this current period in time, we are not trying to develop any new dry commodities in the paper and pulp trade.”

As a matter of course, StoraEnso does not disclose information about traffic volumes it handles at the Port of Kotka, although the spokesperson did concede that, at times, shipping capacity at the port could be ‘limited’, although this merely prompted shipments to be switched to alternative, nearby ports.

Significantly, there has been a notable drop in transit traffic to Russia, something which has affected all parties in the transport marketplace.

As for operations conditions at its Finnish hub, the spokesperson noted, “We don’t regard the existing draught at the Port of Kotka to be in any way a limitation over the size of vessel that is used to transport our products; rather, vessel size tends to be dictated by commercial considerations”.

In respect of land side transport alternatives, StoraEnso will use either road or rail, depending on mill location and the service required by the customer.

“We don’t, as a matter of course, undertake any processing of



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our products in the actual Port of Kotka. This is all done prior to delivery," said the spokesperson.

#### PORT OF RAUMA

UPM Logistics handles cargo at the Port of Rauma, last year accounting for approximately 3.5 million tonnes. Ninety-two per cent of its volume is exported paper, pulp and timber, while the remaining 8% is accounted for by imported china clay.

"In 2014, traffic handled by us at Rauma went down by about 5%. However, we do expect to recover part of that drop in 2015. In part, that will be through increased pulp exports, but mainly by handling more containers," says Jukka Hölsä, Director, Maritime and Port Network.

Quizzed about how the various commodities are currently performing, he notes that, given that the majority of the company's business in the port is in paper, there is little expectation of any dramatic increase or decrease in traffic.

"In contrast, pulp export volumes are increasing," he says.

As for the overall portfolio of products, these are not expected to change dramatically in the foreseeable future, either.

UPM Logistics' policy is not to own either terminals or warehouses at Rauma, but rather to operate at common user facilities, which Hölsä says provide better cost efficiency and allow the company to add in the type of flexibility that enables it to cope with volume fluctuations. As a result, the company undertakes no added-value services in the port, either.

"The current capacity at Rauma does meet UPM's existing requirements. However, while it's not our policy to invest in port facilities, we wouldn't hesitate to ask the operator to do so, if we needed something," he says, adding that Euroports in Rauma is currently investing in improvements to its container handling capability, which is very much a UPM-driven initiative.

As for the size of vessel used to transport dry bulk at Rauma, on intra-Europe exports this tends to be 8,000dwt, rising to 15,000dwt on transatlantic traffic. These same 15,000dwt ships also carry inbound china clay shipment, while much smaller 5,000dwt vessels handles intra-Europe china clay imports.

"Vessel size tends to be influenced more by commercial considerations than draught, although draught does restrict vessel sizes on transatlantic clay imports," explains Hölsä.

As for land side movements, inbound cargo for export is normally handled by rail, while china clay is moved to UPM's own production units in Finland by either truck or rail.

#### PORT OF LOVIISA: SAWN GOODS EXPERT

The Port of Loviisa is justifiably famous for handling most of Finland's conventionally loaded sawn goods, traffic which amounted to 643,000 tonnes in 2014.

In addition, the port handles grain, the majority of which is exported, but also some imports, and both imported salt and clay.



*At the Port of Loviisa, cement is stored at two silos which belong to Cemex.*



"We used to handle coal, which amounted to about 200,000–300,000 tonnes per year. However, at the moment, Loviisa has no coal traffic," says port director Tiina Vepsäläinen.

She notes that the port authority is investigating possibilities for various future commodities and is very much open to suggestions regarding new business, since available capacity exists.

In 2014, Loviisa reported dry bulk traffic of 278,000 tonnes, compared to 383,000 tonnes last year. Vepsäläinen explains that this large decrease was mainly due to a drop in both imported and exported grain, which in turn was brought about by prevailing weather conditions.

"At present, we are looking at attracting possible new grain business, which would also imply making investment in new silo capacity," she says, pointing out that, currently, the silo operated by Suomen Viljava Oy can accommodate up to 60,000 tonnes.


Cement, amounting to 140,000 tonnes last year, is stored at two silos within the port, which belong to Cemex.

In total, the port covers about 85ha, with a further 12 warehouses other than those already mentioned used to shelter both timber and dry bulk cargo.

Vessels loading and discharging dry bulk at the port vary considerably in size, with the smallest being just 1,000dwt.

"We do get calls from vessels of up to 37,000dwt, although these can only operate partially loaded, because of the 9.5-metre available draught. However, the majority of vessels we see are mostly in the 3,000–10,000dwt range," says Vepsäläinen.

Loviisa port is rail connected, but currently almost all dry bulk consignments either arrive or depart by road.

"No processing of dry bulk is yet undertaken within the actual port area, although this could be a future possibility and we are always willing to discuss with our customers what their future needs are and how we can best realize them," she says. 

The 225m long bulk carrier, Rosco Poplar, loaded the largest shipment of grain ever to leave the UK at the Port of Tyne.



# United Kingdom BULK

Jay Venter

## UK's largest ever grain shipment on record loads at the Port of Tyne



one of the biggest barley buyers in the world.

Investment of over £120m at the port in the past 10 years has created the infrastructure to deliver continued growth of the Port's diverse businesses.

The Port of Tyne adds £507m to the economy of the North East supporting 10.5k jobs.

One of the largest shipments of grain to ever leave the UK has been loaded at the Port of Tyne (United Kingdom).

The large bulk cargo vessel *Rosco Poplar* spent around seven days loading over 60,000 tonnes of barley which has been brought to the Port by Tynegrain, the North's leading grain drying and storage co-operative owned by more than 100 farmer members in Scotland and North East England.

Gary Bright, director, said: "The UK barley market is bucking the global trend with increased supplies of good quality barley available — around 2,310 truckloads will be loaded and the ability to export in such large vessels increases export opportunities from the local and wider region."

Steven Harrison, chief operating officer of Port of Tyne, said: "The Port of Tyne has invested heavily in handling equipment for a variety of dry bulk cargoes and it is good to see grain as a commodity experiencing this resurgence."

The barley will be exported for animal feed to Saudi Arabia –



## Rhenus delivers new graduate scheme initiative

Freight forwarder Rhenus Logistics UK, based in Manchester, with an additional 11 facilities in the UK and Ireland, has launched a new graduate programme as part of its ongoing investment in the UK. The scheme aims to attract students with an array of skills from non-traditional subjects to encourage the next generation to take up a career in the logistics sector.

The Rhenus programme consists of two separate placements; one focuses on managerial skills and the other is engineering specific, both of which will run for 24 months. The overall objective is to give the successful recruits a platform to build a successful career with one of Europe's leading logistics providers.

Chester University Archaeology graduate, Michael Beeston, will be completing the system programme, located in the Bradford facilities. Throughout the 24 months, Michael will be working closely with Germany, developing a new Road Transport Management System (RTMS) to be integrated across the whole of the UK initially and eventually implemented with The Rhenus Group internationally. James Cowper, recently graduated with a maths degree from Manchester University, will take on the management focused graduate placement. He will be based at Rhenus' UK headquarters in Manchester working alongside the managing director. As well as completing managerial tasks from attending sales meetings to visiting a number of Rhenus departments in the UK, James will also support fellow graduate Michael on implementing the RTMS.

David Williams, managing director at Rhenus, said: "As the logistics sector grows, it is crucial we play a part in supporting and inspiring the next generation. The reason we have created our graduate scheme programme is to provide a career for graduates from a non-traditional background and to encourage

students to consider a career in the logistics industry. The two separate programmes will provide our new recruits with a comprehensive, hands-on experience, including taking on a number of different roles within the business. Once completed, we aim to provide a permanent position at Rhenus with allowances for steady career progression."

Through a network of 11 facilities strategically located across the UK, Rhenus delivers a fast and flexible import and export service. The business specializes in meeting its clients' needs with a proactive approach that ensures an efficient supply chain is maintained. Rhenus is currently celebrating a number of new high profile partnerships, including Austria's Transdanubia and Serbia's Milsped. After appointing a number of new recruits, its growth is set to continue throughout 2015.

### ABOUT RHENUS LOGISTICS

Rhenus Logistics UK is based in Manchester, with an additional 11 facilities in the UK and Ireland. With 75 years of proven performance, Rhenus Logistics UK is an established major freight forwarding operator, providing services direct to overland markets and global destinations. Rhenus Logistics UK specializes in all modes of freight forwarding, road, rail, air and sea transport for sectors including automotive manufacture, hazardous cargo and express consignments..

### ABOUT RHENUS

The Rhenus Group provides logistics services around the globe and has annual turnover of €4.1 billion. It employs over 24,000 people at more than 390 locations worldwide. The Rhenus business areas – Contract Logistics, Freight Logistics, Port Logistics and Public Transport – manage complex supply chains and provide a wealth of innovative value-added services.

## ISS Palumbo UK acquires Union Transport (Newcastle)

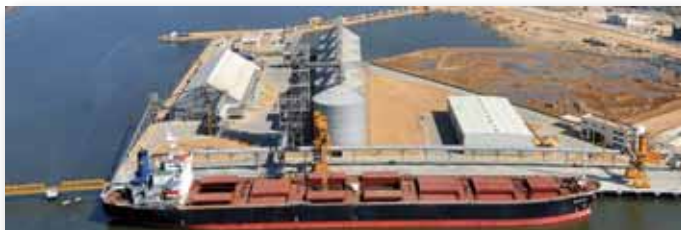
ISS Palumbo UK, part of maritime services provider, Inchcape Shipping Services (ISS), has acquired UK freight forwarding specialist Union Transport (Newcastle) Ltd.

The merger of the Union Transport business with ISS Palumbo and its worldwide network will enhance the unique combination of global project freight forwarding and integrated logistics ISS Palumbo offers to its customers, including ENI, SAIPEM and Air Products.

Based in Newcastle, the new venture will be responsible for managing existing and future projects, as well as winning new business in the UK and internationally. Union Transport is very well established in project cargo freight forwarding and has excellent contacts for sea, air, trucking and agency services.

Said Andrea Palumbo, President of ISS Palumbo: "I'm very pleased with our new acquisition which combines the global network of ISS and ISS Palumbo with the capabilities of Union Transport in international freight forwarding services and logistics, especially in the offshore sector."

ISS Palumbo is a fully integrated division of Inchcape Shipping Services, a renowned global maritime services provider. With some 300 proprietary offices in 67 countries, and a workforce of over 3,800 the company's diverse global customer base now includes owners and charterers in the oil, cruise, container and bulk commodity sectors as well as naval, government and inter-governmental organizations.



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## Servowatch Technology and Cathelco BWTS develops new generation BWTS

Servowatch Systems' co-operation with UK-based Cathelco has resulted in a technically advanced new generation ballast water treatment system (BWTS) on the market.

UK-based Servowatch, developer of automated ship control systems, has been working closely with Cathelco to develop a fully integrated alarm, monitoring, and process control system for its combination filtration and UV BWTS, a key component of the IMO approval process and US Coast Guard AMS acceptance.

Cathelco's Projects and Development Manager, Steve Ellis said: "We wanted to develop a ballast water treatment system that could remain effective in the most challenging water conditions and in order to do that we needed an advanced monitoring and control solution capable of automatically adjusting to different water qualities. Servowatch fully understood what we wanted to achieve and provided a solution that has allowed us to introduce one of the most advanced ballast water treatment systems currently in the market place."

Wayne Ross, Servowatch Systems' Chief Executive Officer, said: "By fully integrating Cathelco's ballast water management system with a ship's computer system, a single operator can control all of the functions from one location, saving considerable time and effort in complicated ballasting operations. But this is only one aspect of the technology; it also monitors the 'health' of all the major components and logs the data in a way that can be easily extracted for use in the Ballast Water Handbook — an essential part of the Type Approval requirements."

BWTS filters and UV chambers are constantly analysed so that cleaning cycles can be initiated with all data automatically logged in compliance with IMO requirements. This includes tank number, time/date of event, mode of operation, flow rate, temperature, power to UV lamps, UV transmission and calculated UV dose.

"Using standard MODBUS protocols, this higher level of integration and data acquisition, with multiple screens in different areas of the vessel, simply offers greater control and monitoring flexibility," said Ross. "The Cathelco BWTS not only prevents the transfer of alien aquatic species but it takes the administrative sting out of ballasting."

Ellis added: "Servowatch Systems' unique capability went beyond simply designing a very sophisticated control and monitoring system; it developed a prototype and manufactured the panels. It provided a complete turnkey solution."

Based on a combination of advanced filtration and UV technology, the Cathelco BWTS is available with capacities ranging from 34m<sup>3</sup> per hour to 2,400m<sup>3</sup> per hour. Each unit features a space-saving twin UV chamber with only two lamps and is designed for both seawater and fresh water operation.



*Servowatch Systems has supplied a fully integrated turnkey alarm, monitoring and control package for Cathelco's new generation BWTS.*

"Together, we have been able to develop a ballast water management system that has no restrictions on the salinities in which ships operate in US waters.

It has been approved and accepted to work in marine, brackish and fresh water, allowing vessels to enter the Great Lakes and other inland waterways," said Ellis.

The system received IMO Type Approval and Alternate Management Systems (AMS) acceptance from the US Coast Guard in May and November 2014, respectively.

### ABOUT SERVOWATCH SYSTEMS

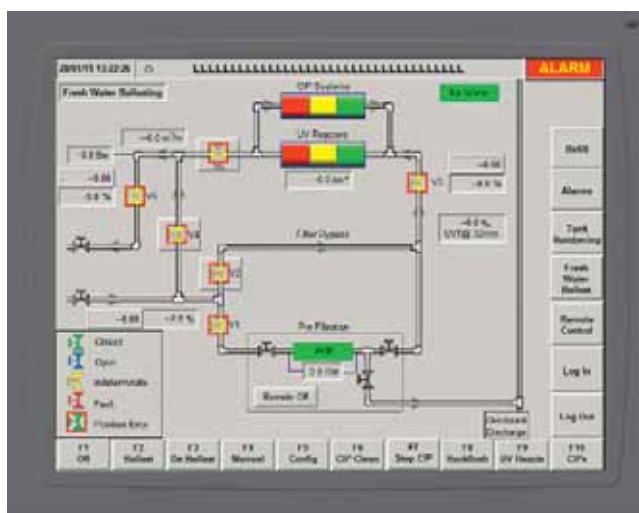
Servowatch Systems is approaching 40 years' experience supplying and integrating state-of-the-art technologies to the international merchant marine, naval, luxury yacht and pleasure craft markets.

Originally established as Bond Instrumentation & Process Controls in 1975, the company evolved from its service and support roots with the UK Ministry of Defence into a major award-winning manufacturer of ship control and alarm monitoring systems for the global maritime industries, achieving a number of significant

contracts.

In 2012, India-based engineering conglomerate Larsen & Toubro completed a share sale agreement to acquire Thalest Ltd, the holding company of Servowatch Systems, Bond Instrumentation & Process Controls, and Servowatch (USA).

With strong financial backing and renowned for its investment in product development, Servowatch is expected to see exponential growth across all marine segments.



*"By fully integrating Cathelco's ballast water management system with a ship's computer system, a single operator can control all of the functions from one location," said Servowatch Systems' CEO Wayne Ross.*

## Powder storage silos – disasters waiting to happen?

**THE LATEST SILO PROTECTION TECHNOLOGY PROVIDES MUCH MORE THAN A SAFETY SYSTEM TO PREVENT OVER-FILLING AND OVER-PRESSURIZATION.**

According to Hycontrol's MD Nigel Allen, many powder storage silos are disasters waiting to happen, putting lives at risk and posing serious threats to the environment.

Level measurement specialist Hycontrol has been designing specialist silo protection systems for over 20 years and has extensive experience of the potential problems that exist on sites, especially in the quarrying, cement, bitumen, food, plastics and waste water industry sectors. "Our findings are worrying to say the least and the photos taken by our installation engineers speak for themselves," says Allen. "Companies just don't seem to understand the consequences of poorly maintained protection systems. It's quite frightening that operators accept pressure blow outs via the pressure relief valve (PRV), erroneously citing that 'It's OK — the PRV is doing its job'. This couldn't be further from the truth — PRVs are there as a last resort. If the silo protection system is working correctly and is fitted with an automatic shut-off feature to prevent over-filling, the PRV should never be used. If a PRV blows, then there's an inherent problem with the system or the filling protocol and corrective action must be taken."

"Material in and around a PRV is a tell-tale sign that there's something wrong and a catastrophic blow-out is waiting to happen," continues Allen. "The material blown out from the silos will almost certainly solidify over time and this will, at best, prevent the PRV from working correctly and, at worst, completely clog it up. Unfortunately many maintenance engineers just don't realize the potential dangers that lurk beneath. They often think that simply cleaning off the material on and around the PRV is good enough. They don't realize that if the PRV doesn't lift next time an 'event' occurs, the over-pressure could easily rupture the silo or eject the filter housing from the top. On an ATEX-rated silo, the over-pressure could be sufficient to simulate an explosion and open the protective blast panels, resulting in costly loss of product and silo contents being left open to the elements.

With regard to filter housings, Hycontrol engineers have witnessed another worrying practice at a number of sites where companies fit chains to prevent the housing being blown off the top of the silo, almost accepting the inevitable is going to happen.

### WHAT CAUSES OVER-PRESSURIZATION PROBLEMS?

Silo protection systems are designed to prevent the damaging and potentially dangerous consequences of silo over-filling or over-pressurization when powdered material is being transferred pneumatically from road tankers to silos. Unfortunately, perched out on the top of silos, such protection systems are all too often 'out of sight - out of mind' — that is until a major problem occurs!

Problems during the filling process usually arise through an inherent problem with the silo protection system or with the air filtration system on top of the silo. Problems can also occur through tanker driver/operator error. Delivery tankers are pressure-tested vessels typically capable of withstanding up to 2 bar (29psi) pressure. Storage silos are designed to withstand the weight of material stored in them and can rupture at pressures as low as 1–2psi above atmospheric pressure. The consequences of over-filling or over-pressurization include:



- ❖ serious or fatal injury to workers and the public;
- ❖ catastrophic silo damage;
- ❖ loss of material and production plus;
- ❖ harmful environmental pollution; and
- ❖ damage to company reputation.

A key issue with many silo protection systems is that without adequate ground level testing capabilities, operators don't know if they will work when needed. Working at height, restrictions limit silo top inspections and maintenance, especially in adverse weather conditions. However, the main problem is what can engineers actually do when they are at the top of the silo? How





*PRV with the cover removed  
— there is no chance  
whatsoever of this working.*

do you physically test a relief valve or pressure transmitter unless you remove them?

Even if the protection system does its intended job and prevents a major incident, companies rarely investigate the root cause of the problem so that remedial work can be carried out to prevent the situation re-occurring. Important 'near miss' events such as PRV lifts, high level events and high pressure events are routinely not recorded and often conveniently dismissed. Hycontrol have clear evidence that in practice there are more 'near misses' than realized and that the situation is a ticking time bomb.

Filter housings at the top of the silos are designed to vent the silo during filling, whilst preventing dust escaping into the atmosphere. Normally these are fitted with some form of self-cleaning system to keep filters clear. These are typically mechanical shakers or reverse jet systems. Although filter manufacturers give recommended check routines and filter replacement schedules, in practice it would appear these guidelines are regularly ignored. Faulty operation can be caused by a range of issues, including blockages and the fitting of unsuitable or wrongly-sized filters. Most powders form hard compounds when mixed with water from the atmosphere, further exacerbating the problems at the top of the silo.

#### EFFECTIVE SILO PROTECTION

The MPA (Mineral Products Association) publishes comprehensive guidelines for silo protection systems in quarries and cement works, but there are little or no such recommendations for powder silos used in a broader range of industries including food and beverage, chemical, water treatment and plastics. However the primary principles are the same for protecting any pneumatically filled silos.

Even with guidelines in place, the bench mark for the



*What are the chances  
of this PRV working?*

effectiveness of any silo safety protection system can only relate to the last time all the components were fully tested.

#### INTEGRATED DESIGN – KEY COMPONENTS FULLY TESTED IN LESS THAN 10 SECONDS

Hycontrol takes an integrated approach to silo protection design. Its SPS Advanced Silo Protection System allows the testing of the PRV, pressure sensor and high level alarm at ground level, prior to each fill. Only when all these safety devices have passed the checks will the safety interlock allow the silo inlet valve to open and the delivery to commence.

In addition, the SPS serves as a powerful predictive maintenance diagnostic tool by recording critical near-miss events that occur during the filling process. This information allows managers to carry out effective predictive maintenance by means of a logical step-by-step root cause analysis (RCA) process to understand why the problems are arising. For example, high pressure and PRV lift events may be due to filter problems, prompting questions such as.

- ❖ are the filters the correct size?
- ❖ is the filter cleaning regime fully operational?
- ❖ have the filter bags/cartridges been changed as per manufacturers' recommendations?

In parallel the logs will also indicate if the tanker drivers are routinely over pressurizing during the fill process.



*Solidified material on the top of a silo.*

In summary, the Hycontrol system features:

- ❖ pressure sensor, hi-alarm level sensor and PRV testing (essential);
- ❖ simple 'I' button press to test all components in six seconds;
- ❖ silo filling auto shut-off control;
- ❖ pneumatic cleaning of pressure sensor;
- ❖ recording of the number of events on incidents of over-pressure (time /date stamp);
- ❖ recording of the number of events of PRV lift and opening (time /date stamp);
- ❖ recording of the number of events of high level probe activation (time /date stamp);
- ❖ filter ON / OFF output option to check filter status; and
- ❖ filter air supply monitoring alarm option.

#### CONCLUSION

The practical reality is that powder storage silos can split or rupture at pressures as low as 1 or 2psi above atmospheric pressure. Malfunctioning filter housings can be ejected at similar pressures.

Cursory visual inspections of silo protection equipment is woefully inadequate. Therefore it is imperative that any installed safety system must be capable of providing reliable protection that can be easily verified by testing critical components before each and every delivery — without having to climb on top of the silo.

Hycontrol believes that many silos are 'disasters waiting to happen'. The company has invested extensive time and money in understanding the stringent requirements for a fail-safe Silo Protection System and clear evidence shows that they are the only company that can provide total silo safety; protecting assets, the environment and most importantly site personnel and the public. The company has also developed specialist test equipment and strict routines for testing and maintaining silo protection systems.



*Complete system, which should stay relatively clean.*

# Artex Easyfairs acquires Dry Cargo Europe Conference & Exhibition

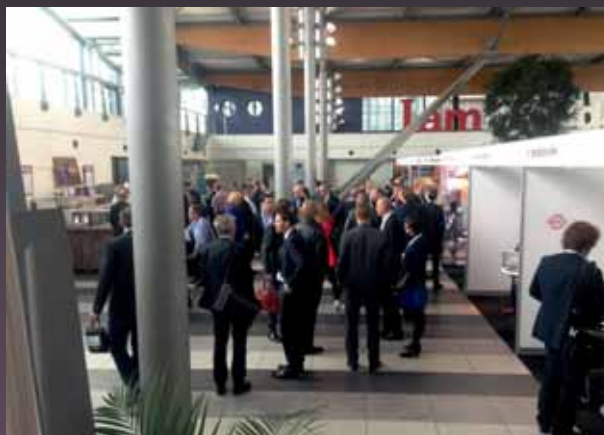
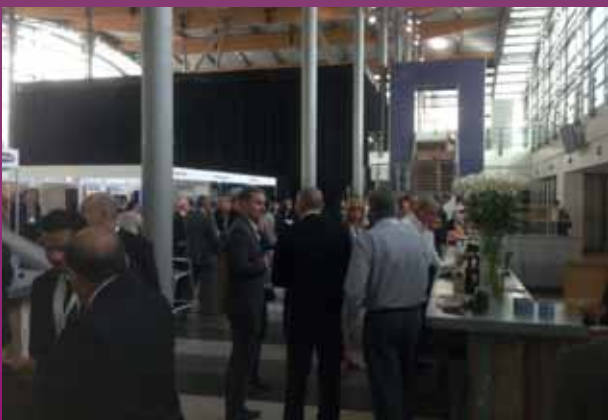
On 6 March 2015 Artex Easyfairs acquired the management of the Dry Bulk Conference and Exhibition from the publishers of *Dry Cargo International*. The event will henceforth be branded the 'Dry Cargo Europe Conference and Exhibition' and will open its doors to visitors on 30 September and 1 October 2015 at Ahoy Rotterdam in The Netherlands, alongside Artex Easyfairs' highly successful trade show for powder and bulk technologies, Solids.

Jason Chinnock and Andrew Hucker-Brown, joint publishers and owners of *Dry Cargo International* commented, "We are very pleased with this co-operation and are looking forward to the event immensely. We understand the



integrated nature of the dry bulk solids market and it makes perfect sense to combine these events, which together will showcase the best in maritime and onshore technologies for the transportation of bulk materials, as well as solids handling and processing. Artex Easyfairs has extensive experience in organizing industrial trade shows, and by working together, we will offer professional communities excellent opportunities to network and debate issues and challenges across the complete value chain."

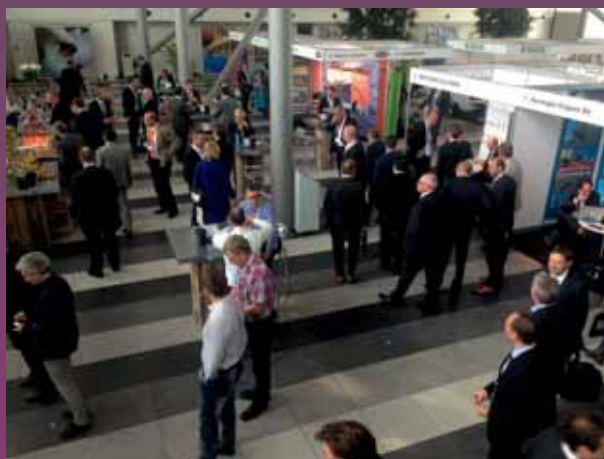
Bas van Gent, Group Event Director of Artex Easyfairs added, "Dry Cargo Europe is going to be a great addition to the Solids. The international visitors and delegates will be able to get an overview not only on what is happening in dry



cargo logistics, but also in the treatment, storage, handling and processing of powders and bulk solids. We are delighted that we will be welcoming many new exhibitors and delegates to Rotterdam, the world's fourth-largest port complex."

Dry Cargo Europe will consolidate its position as the global meeting place for ship-owners, operators, charterers, agents, exporters, importers, traders, ports, terminals, logistic providers and bulk material handling suppliers. The event will focus on:

- ❖ dry bulk trade, shipping, logistics, ports, terminals and engineering; and
- ❖ port and terminal technology and operations.



Solids Rotterdam currently attracts 180 exhibitors and is not only the leading event for the powder and bulk solids community in the Benelux, but also forms part of Europe's largest network of events in this sector, the Solids European Series with further editions this year in Antwerp, 11 & 12 March, Basel 6 & 7 May, St Petersburg 27 & 28 May, and Dortmund 4 & 5 November.



# Caterpillar unveils its MH2033 and MH2024 wheeled material handlers

The new Cat® MH3022 and MH3024 are the smallest models in the new Caterpillar line of wheeled material handlers in the greater-than-20-tonne size class. Building on the solid reputation of their predecessor models, the MH3022 and MH3024 feature a new engine and redesigned hydraulic system that combine to reduce fuel consumption by up to 10%. Redesign of the cab and cab access, added lighting, and vision-enhancing cameras promote greater safety, comfort, and convenience for the operator, and a wide choice of dedicated front linkages, work tools, guards, and undercarriages allow the new purpose-built models to work productively and durably in industrial, scrap-recycling, mill-yard, and waterway applications.

Intensive field surveys help Caterpillar continuously improve the design of wheeled material handlers for low-cost operation and maximum value, while maintaining proven quality, reliability, and features, such as the Cat Smartboom™, load-sensing hydraulics, dedicated swing pump, and large working envelope.

## FUEL EFFICIENCY AND SUSTAINABILITY

The MH3022 and MH3024 use the Cat C7.1 ACERT™ engine, rated at 169 horsepower (126kW, 171 PS), and have operating weights of 22.7 and 25.7 metric tonnes, respectively. The engine meets US EPA Tier 4 Final/EU Stage IV emission standards and features refinements that yield added torque and faster response to changes in load. With a durable, field proven design, the engine now integrates an emissions after-treatment system, which requires no attention other than periodically replenishing the diesel exhaust fluid (DEF) tank.

Emissions technology includes the Cat NO<sub>x</sub>-reduction system, selective catalytic reduction, diesel oxidation catalyst, diesel particulate filter (DPF), and high-pressure/common-rail fuel system. An engine-idle shutdown system saves fuel by shutting down the engine when it has been idling for a preset amount of time. In addition, the Eco Mode has been refined and reduces engine speed with no reduction of power, providing reduced fuel consumption with no compromise in performance.

## COMFORT AND SAFETY

The exterior has been completely restyled, including a new operator station, with higher pressurization, larger door with added glass, new windshield with parallel wipers, new mirrors (with a heated option), new rain visor and light protectors, larger skylight, standard rearview camera, and a right-side camera with a separate in-cab monitor. Cabin guards are available for additional operator protection when required.

Entering and exiting the cabin is now easier with redesigned three access steps and a newly designed door handrail. A fourth step is integrated directly into the skirt of the upper carriage. Inside the cabin, the left-hand console tilts to facilitate entering and leaving the seat, and the console includes an integral safety lever. Also new is the steering wheel, which is height adjustable and features a tilting column. The cabin has an interior sound level of just 71 dB(A), and vibration levels have been reduced.

The standard lighting package for the new models, now includes a counterweight light, three cabin-mounted lights, and light on the boom as well as new stick lights. Standard LED lights replace the previous halogen lighting for enhanced illumination, lower power consumption, and longer life. Optional guards are available on the front linkage lights for applications in which falling and flying debris are hazards. Two counterweights are available to



match application needs, increase stability, and provide great lift capacities. The MH3022 and MH3024 also incorporate a PIN-code anti-theft system.

## EASY TO OPERATE, MAINTAIN AND SERVICE

An automatic system senses machine parameters and locks the axle-oscillation function and sets the service brakes, readying the machine to work. This reduces operator fatigue by removing the need to constantly press the brake pedal and results in added productivity. Brake and axle lock are automatically released when the operator presses the travel pedal again.

The engine is longitudinally mounted with the cooling package forward of the engine, resulting in easy, ground-level access to routine maintenance points. An electric fuel-priming pump eliminates filling filters before installation. All the coolers are now grouped in the same compartment, and the condenser can be tilted with no tool for ease of cleaning. Electrical and hydraulic components are now grouped in specific areas for ease of service, and an automatic centralized greasing device (Auto-lube) is standard. Access to the top platform is improved, including a new service platform for DEF and fuelling, and new handrails.

## INTEGRATED CAT CONNECT TECHNOLOGIES

To assist customers in improving jobsite efficiency and managing the MH3022 and MH3024 for optimum return on investment, Cat Connect offers LINK and DETECT technologies. Product Link™ helps fleet owners track locations, hours, fuel consumption, idle time, events and diagnostic codes by wirelessly reporting all via the online VisionLink® user interface to help lower owning and operating costs.

## VERSATILITY AND WORK TOOLS

The MH3022 and MH3024 can be equipped with a variable angle boom, one-piece boom, or material handling boom, as well as a choice of sticks, quick coupler, and work tools. As matching work tools with the machine is critical for productivity and efficiency, a variety of Cat work tools are offered to dig, sort, load or strip any kind of material. Machine hydraulic pressures and flows can be easily adjusted from the in-cab monitor, while the operator can adjust the machine behaviour to the task and to personal preference.



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**ORTS** GmbH



# ORTS Maschinenfabrik reports on recent orders



*ORTS DHS-B 16m<sup>3</sup> radio-controlled diesel-hydraulic grabs.*

Major German grab specialist, ORTS Maschinenfabrik, has won new orders for its bulk handling equipment.

A new customer has placed an order for three EHS-B electro-hydraulic units, with 20m<sup>3</sup> volumes. On top of that, a further order has been received from an Australian customer for radio-controlled DHS-B radio-controlled diesel-hydraulic grabs.

The radio-controlled diesel-hydraulic grabs were developed by ORTS GmbH 20 years ago. No other manufacturer has 20 years

of experience with this type of grab.

ORTS developed a new range of smaller radio-controlled diesel-hydraulic grabs for biomass handling and construction companies. These small diesel-hydraulic grabs are fast and powerful and can operate also on constructions cranes, which generally do not have such a big lifting capacity.

Earlier this month (March) ORTS completed two shipsets of EHS-B 12m<sup>3</sup> electro-hydraulic grabs; each set comprised four grabs and the necessary crane equipment for the deck cranes, for a German and a Greek shipping company.

Already on the way to a customer in southern Africa are some DHS-B 16m<sup>3</sup> radio-controlled diesel-hydraulic grabs.

An orange-peel diesel-hydraulic grab was sold to Hungary for scrap handling and another grab, electro-hydraulic for wood bundles, was also delivered to another customer in Hungary.

ORTS has a special way of testing the grabs together with DNVGL: the complete test load is lifted by the grab using only the clamshell knives — akin to lifting something using only your fingernails. This is a very hard load, and a strain for the whole construction, but it does also show the stability and quality of ORTS grabs. No other maker is doing the load testing in this way.



*Load testing, using only the clamshell knives to grip the cargo.*

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# Safe storage prevents losses

The Cimbia Unitest 5G is a newly developed state-of-the-art temperature measurement system.

It is a fully-automatic system for the monitoring of temperature in grain and other crops or woodchips. The system can be used in all types of grain storage facilities and can be installed in both new and existing installations.

The temperature is constantly monitored by means of a number of sensors which are fitted in carrying cables specially designed for the installation in question.

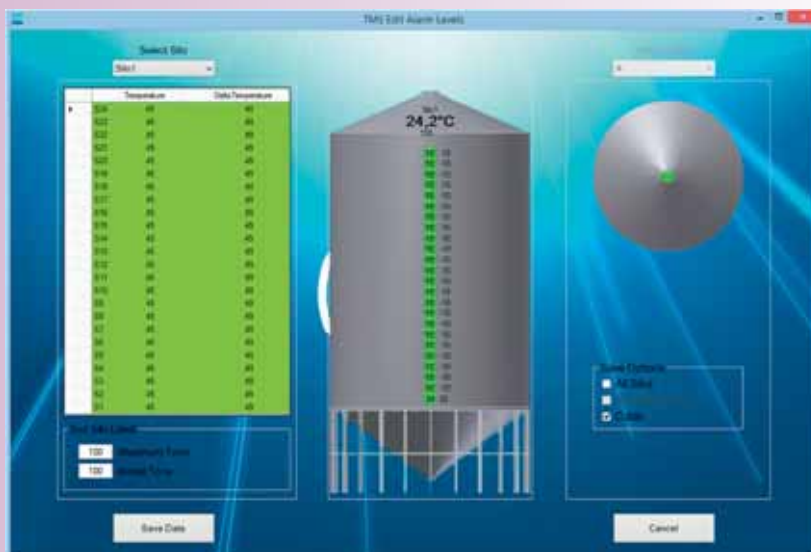
Unitest 5G software ensures great user-friendliness, it can easily be adapted to all languages, and with the help of icons Cimbia has simplified the use of the system to ensure global user understanding. Unitest 5G software is available with multi-access level, whereby the use of passwords provides protection against unauthorized use.

Automatic ventilation of silos is important when heat is generated, but it is also of great importance that this takes place at the right time and at the right outdoor temperature. Unitest 5G has been developed with focus on this aspect, such that unnecessary ventilation is avoided. This ensures that savings are achieved in terms of electricity consumption.

Unitest 5G is not just a temperature measurement system; it can also be used to measure product level and thus calculate volume.

The software update also enables better access to statistics, hard copies/extracts from the database, the option of email reporting, as well as easy implementation with existing systems, e.g. SCADA.

Globally, the Unitest system has been installed on more than 6,000 plants, which means that Cimbia occupies a position amongst the absolute leaders in the field.



During the development of Unitest 5G it has been essential not only to look forward, but also to cast a glance backwards to ensure that Cimbia's existing customers are taken into account, and that they are also able to have the new software implemented without necessarily having to replace existing hardware.

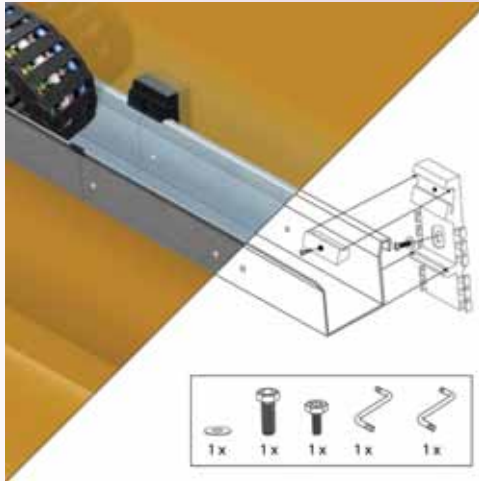
## UNITEST 5G FEATURES

- ❖ temperature measurement;
- ❖ level control;
- ❖ storage statistics;
- ❖ from single to multi-user;
- ❖ SQL database for easy and hassle-free data storage;
- ❖ data acquisition at the main office;
- ❖ multi-language;
- ❖ new graphical user interface (GUI);
- ❖ 3D view; and
- ❖ automatic back-up procedure.



# guidefast® — the new quick e-chain trough for indoor cranes

Energy supply specialist igus® has launched a guide trough system for energy chains that is quick and easy to install. guidefast® is a simple modular system



that comprises mounting brackets, clips and a trough— significantly fewer components than standard systems, thus reducing installation time by up to 80%. The cost effective guidefast® system is part of the complete igus® offering for crane applications, which includes the trough, E2/000 series energy chain and chainflex® cables.

“The modular design of



*Great for indoor cranes: brackets are mounted directly to the crane beam via welded bolt or drilled and bolted connections. The trough is available in steel, stainless steel and as black powdered versions/pre-harnessed readychains® are available as part of the complete package.*

## light & quick for heavy-weights



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the guidefast® system simplifies the installation process at every step,” comments Justin Leonard, director, igus®. “The special brackets are mounted via screw/thread or welded bolts and allow vertical fine-adjustments. Furthermore, the static cable runs can be fixed directly to the integrated strain relief part of the bracket — this simplifies the installation process considerably as additional cable clips or hose clamps are no longer required.”

The guidefast® system is available in galvanized steel, stainless steel and black powder coated steel to cater for a variety of application environments. Additionally, the troughs are available in 2m lengths and in a variety of widths to accommodate a large range of harnessed energy chain sizes and associated fill weights. Cable entry points and prefabricated hole patterns are located along the length of the trough at 500mm intervals for attaching the energy chain, speeding up installation time and reducing costs.

As always igus® is dedicated to providing innovative products and cost-effective, time saving solutions to its customers. Further to this, all igus products and pre-harnessed cable carrying solutions go through vigorous in-house testing and are delivered with the igus longer life guarantee. During testing, guidefast® has proven its strength and resistance against vibration and harsh environmental conditions.

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# Obituary: Heinz Kaenel

*Dry Cargo International* is saddened by the news that one of our industry's true leaders, Heinz Kaenel, passed away at home on 2 February. Heinz had been battling cancer for more than two years and had only recently retired as Key Industrial Director – Material Handling for FLSmidth's material handling division in Wadgassen, Germany. He was 65 years old.

Born in Switzerland and educated there as a Mechanical Engineer, Heinz had worked for Bühler in Switzerland and Bühler-Miag and Koch Transporttechnik in South Africa, rising from Project Engineer and Manager to Managing Director of the respective divisions. In 1993, he transferred to Wadgassen as the Technical Director for Koch where he was pivotal in setting the technical direction of the company for projects around the world. In 2002, Heinz was recruited away in order to start MVT's material handling division in Dillingen, Germany and five years later as CEO of MVT, was brought back to Wadgassen after FLSmidth acquired the



interests of MVT in 2005 and Koch in 2007. He was named Managing Director of the combined companies in a corporate realignment. In 2012, Heinz was promoted one more time to the Key Industrial Director position for FLSmidth, from where he retired in 2014.

Heinz was not only an extraordinarily gifted engineer and manager; he was a personal mentor and coach for dozens of presently practising engineers and technicians in the industry. His intelligence, wit, sense of humour and overriding concern for his fellow workers, customers, managers and subordinates will leave a void in their lives and the bulk material

handling business in general.

*Dry Cargo International* wishes to pass on the condolences of our staff and colleagues in our industry to Heinz's wife, Kathy as well as his three sons and their families and the many friends and contemporaries who had the pleasure of working with and knowing Heinz over the years.

## Legacy Building Solutions opens new office in Chile

Legacy Building Solutions, designer, manufacturer and installer of tension fabric buildings, has opened a new satellite office in Santiago, Chile. The new location gives the company a stronger foothold in the emerging Latin America market for mining, industrial warehousing, fertilizer storage, aviation, military, athletics and other building applications.

"Legacy is committed to providing a high level of service to our Latin American customers to match our superior engineering and building techniques," said Francisco Anguita, executive director of Legacy's Chilean office. "We will continue to provide the most structurally sound fabric structures on the market, and we look forward to meeting the evolving challenges of the industries and clients we serve."

The company has completed recent fabric building projects in Chile: Rockwood Lithium, La Negra sector in Antofagasta, and Lomas Bayas Mining, Sierra Gorda sector in Atacama. Industry professionals in Latin America can learn more about Legacy Building Solutions during the Exponor mining exhibition which will take place from 11–15 May in Antofagasta, Chile, and at the EXTEMIN mining technology exhibition from 21–25 September in Arequipa, Peru.

"We are extremely pleased to begin this new venture in Chile, and are especially excited that Francisco Anguita will be leading our team to success throughout Latin America," said Ben Fox, president of Legacy Building Solutions. "Expanding our global reach is a necessary step in our business development as the popularity of our fabric building engineering continues to grow. We are dedicated to constant innovation and delivering the best



*Legacy supplies tension fabric buildings that are ideal for use in the bulk industry.*

customer service in the industry."

Legacy Building Solutions is the first manufacturer to create tension fabric buildings on structural I-beams. This rigid-frame engineering concept provides a higher level of design flexibility, enabling users to specify the exact dimensions and building accessories they require. Legacy fabric buildings feature durable polyethylene or PVC fabric with high translucency that allows buildings to be filled with natural light.

To date, Legacy's in-house, professional installation crews have constructed more than 30 million square feet of fabric buildings.



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# Bedeschi signs shiploader contract



In July 2014, Bedeschi Spa signed a contract with OHL for the supply of a new shiploader in the port of Coatzacoalcos, in the State of Veracruz, Mexico. The Port of Coatzacoalcos is an international port of entry that provides shipment of oil and petrochemicals and its derivatives. Once the installation is complete, the shiploader is expected to have a capacity of approximately 13,200 tonnes per day of sulphur pills produced in the Pemex facility.

The supply includes all the auxiliary belt conveyors connecting the plant with the dock and the relevant automation control. Commissioning is expected to take place in winter 2015.

## AUMUND Fördertechnik appoints new managing director

On November 1st last year, AUMUND Fördertechnik GmbH in Rheinberg appointed a new managing director. Robert Gruss (49) joined AUMUND from SMS Siemag AG and is responsible for sales, service, technology as well as for research and development. Together with Dr. Volker Brandenburg (responsible for finance, controlling, general administration, purchasing and production), he forms the management board of AUMUND Fördertechnik GmbH. Step by step, Gruss will take over additional responsibilities from the managing partner Franz-W. Aumund.

For the conveying specialist, Gruss will develop the order intake beyond the cement industry and further diversify into metallurgy, mining and minerals and other industries. Among his tasks is the enhancement of the representative network, raising efficiency in sales, innovation and product management as well as intensification of co-operation with the foreign subsidiaries of the internationally operating AUMUND Group.

Gruss started his professional career with SMS in 1995. For several years he worked in Italy, Beijing and Belgium in managing positions. The new managing director will face his new challenge with the most diverse experiences from sales, international market development, supply chain management and process



Robert  
Gruss.

optimization.

During this year, President Franz-W. Aumund will gradually retire from operational business. He will continue as managing director of AUMUND Holding B.V. and as member of the advisory boards of the product and subsidiary companies. Primarily he will dedicate himself to steering and controlling of the AUMUND Group.

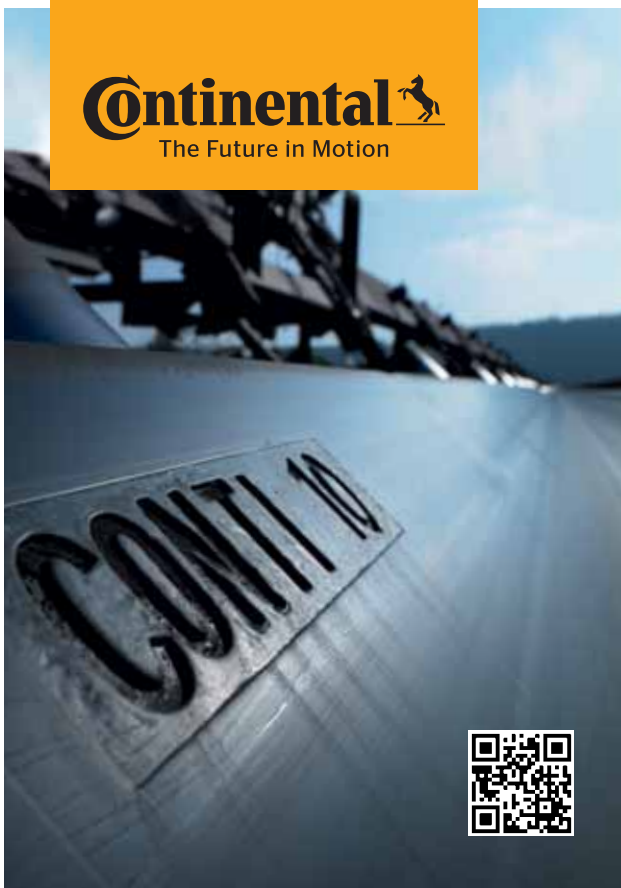
### ABOUT THE AUMUND GROUP

The AUMUND Group is active worldwide. The conveying and storage specialist has great expertise in dealing with bulk materials. With their high degree of individuality, both its technically sophisticated as well as innovative

products have contributed to the success of AUMUND Group today in many areas of conveying and storage technology. The manufacturing companies AUMUND Fördertechnik GmbH (Rheinberg, Germany), SCHADE Lagertechnik GmbH (Gelsenkirchen, Germany), SAMSON Materials Handling Ltd. (Ely, England), as well as AUMUND Logistic GmbH (Rheinberg, Germany) are consolidated under the umbrella of the AUMUND Group. In conjunction with the headquarters of the manufacturing companies, the global conveying and storage technology business is spearheaded through a total of eight locations in Asia, Europe, North and South America.

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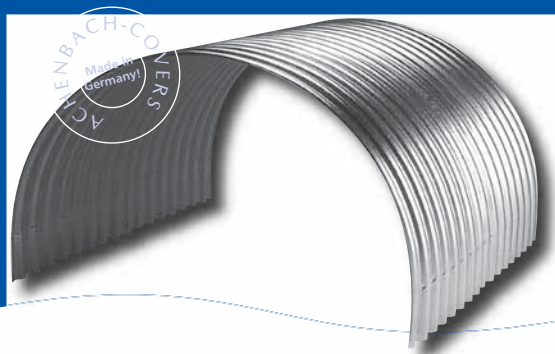
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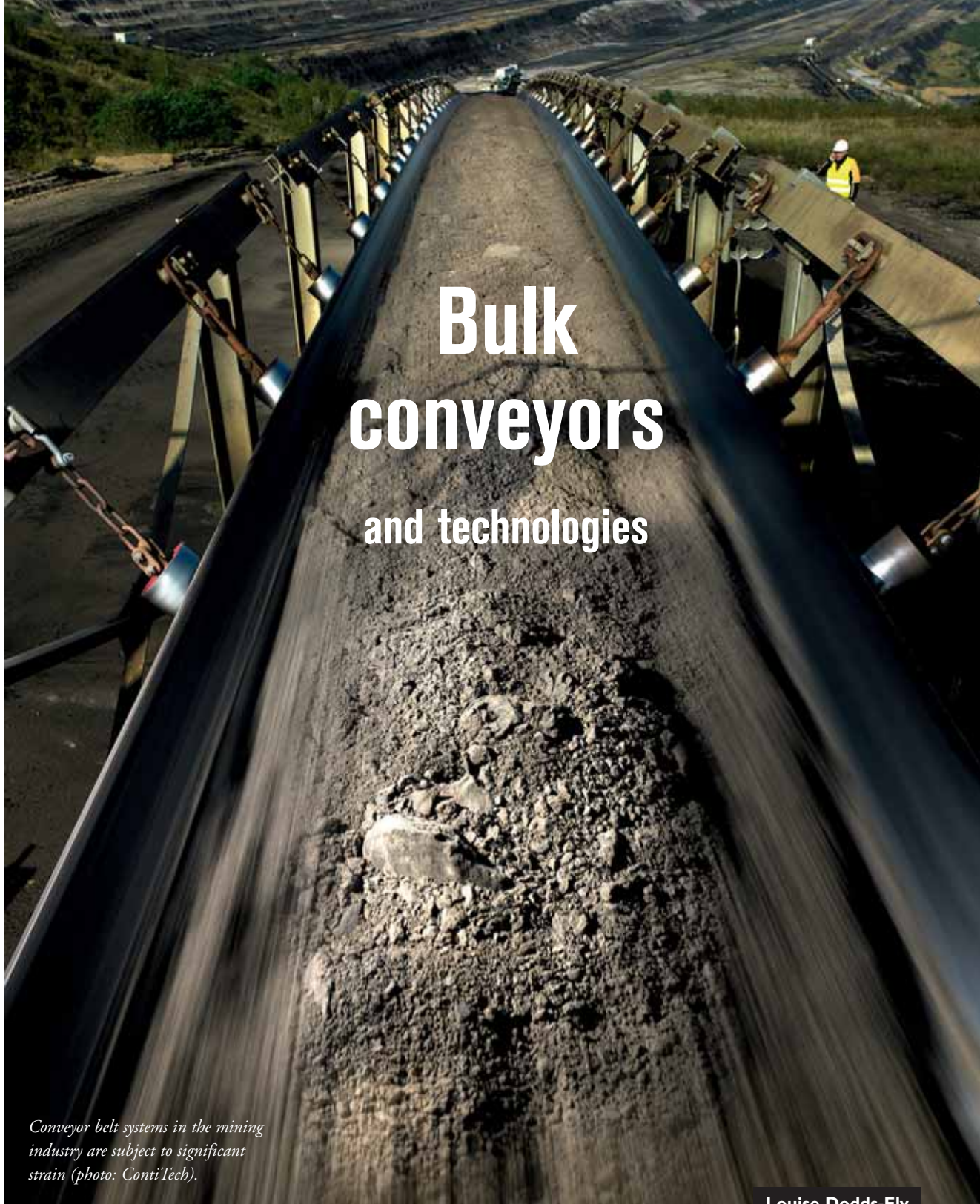
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# Bulk conveyors and technologies

*Conveyor belt systems in the mining industry are subject to significant strain (photo: ContiTech).*

Louise Dodds-Ely

## ContiTech monitoring systems make mining more efficient and secure

### STATE-OF-THE-ART CONVEYOR BELT MONITORING SYSTEMS KEEP OPERATIONS SECURE AND MAINTENANCE COSTS DOWN

In the coal mining and power industries, conveyor belts are the key element in many conveyor belt systems. But tough conditions certainly leave their mark on them. When they are damaged, lengthy downtimes can be the result, ultimately causing the entire production chain to collapse. That's why mine operators are increasingly turning to preventative measures to keep their conveyor systems running smoothly and efficiently. A series of innovative electronic conveyor belt maintenance systems by the ContiTech Conveyor Belt Group helps them to

determine the exact condition of their belts at any time so they can identify and repair damage early on.

**CONTI® PROTECT: Protection through prevention**  
CONTI® PROTECT Systems detect longitudinal tears and splice faults early on and automatically halt the conveyor belt, if need be.

One of them is the CONTI® PROTECT Splice Elongation Measurement System. This is designed for use on larger conveyors that are under significant strain from the traction needed to cover major distances or altitude differences. It

works with the help of markers that have been vulcanized into the belt. These allow the length of the belt's splices to be precisely measured while it is in operation. A splice that stretches continuously is likely to cause lasting damage or possibly even fail completely.

A type of damage that can be costly are longitudinal tears, which often require complex repairs and lengthy downtimes. In coal mining, sharp-edged materials often land on belts along with the freight they are intended to transport, and can even penetrate them completely, if they land the wrong way. This can cause tears along the belt's length and, in the worst case, destroy it entirely. That's why the CONTI® PROTECT Belt Rip Detection system provides added protection to reduce the likelihood of downtimes and costly repairs. Hazardous damage of this kind is detected with the help of conductor loops that have been vulcanized into the belt. Made from metal, these work by using a high-frequency signal that passes between a transmitter and a receiver. If the loop is damaged, the receiver will not pick up the signal and the conveyor is automatically halted.

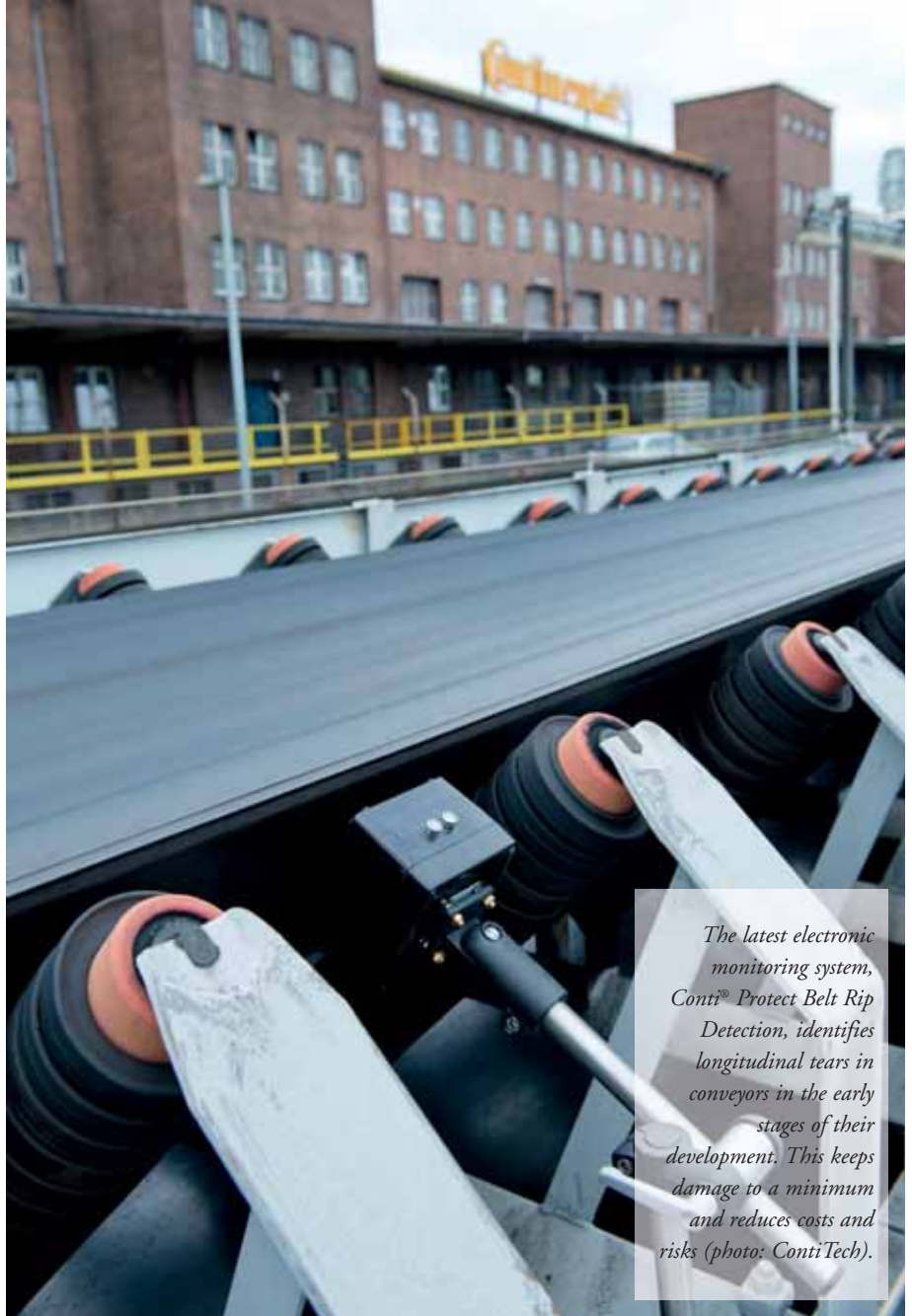
Built to the highest standards of the automotive industry and developed in intensive processes, both CONTI® PROTECT systems meet the rigorous quality standards of the mining industry. An intuitive user interface and 15-inch touch screen make them easy to use, and they can be installed by experienced ContiTech engineers if required. In addition, customers benefit from online support, with ContiTech experts accessing their systems remotely to verify and optimize their processes if necessary.

#### **CONTI® INSPECT: reliable forecasts for a longer life**

To plan maintenance work effectively, it helps to know in advance exactly what damage requires treatment. Finding out is now faster and easier, thanks to automated, digitized analyses by ContiTech. CONTI® INSPECT systems offer all the data needed for a system to be serviced and to help detect any signs of wear early on in order to reduce downtimes. Mobile and flexible, these systems can be used with all the usual conveyor belts. But their primary advantage is that they allow belts to be monitored without interrupting operations.

The data they gather provides a reliable picture so that planned maintenance shutdowns can be used as effectively as possible. In addition, costs can be estimated more easily, and because these systems also offer sufficient data to predict a belt's remaining lifetime, customers can plan more exactly when to organize a replacement.

One typical sign of wear on a belt is abrasion. Caused by the materials being transported on the conveyor, this can lead to the cover on the upside wearing thin, leaving the belt open to



*The latest electronic monitoring system, Conti® Protect Belt Rip Detection, identifies longitudinal tears in conveyors in the early stages of their development. This keeps damage to a minimum and reduces costs and risks (photo: ContiTech).*

damage. The mobile CONTI® INSPECT Belt Thickness Measurement System allows changes such as this to be monitored and can forecast a belt's remaining service life.

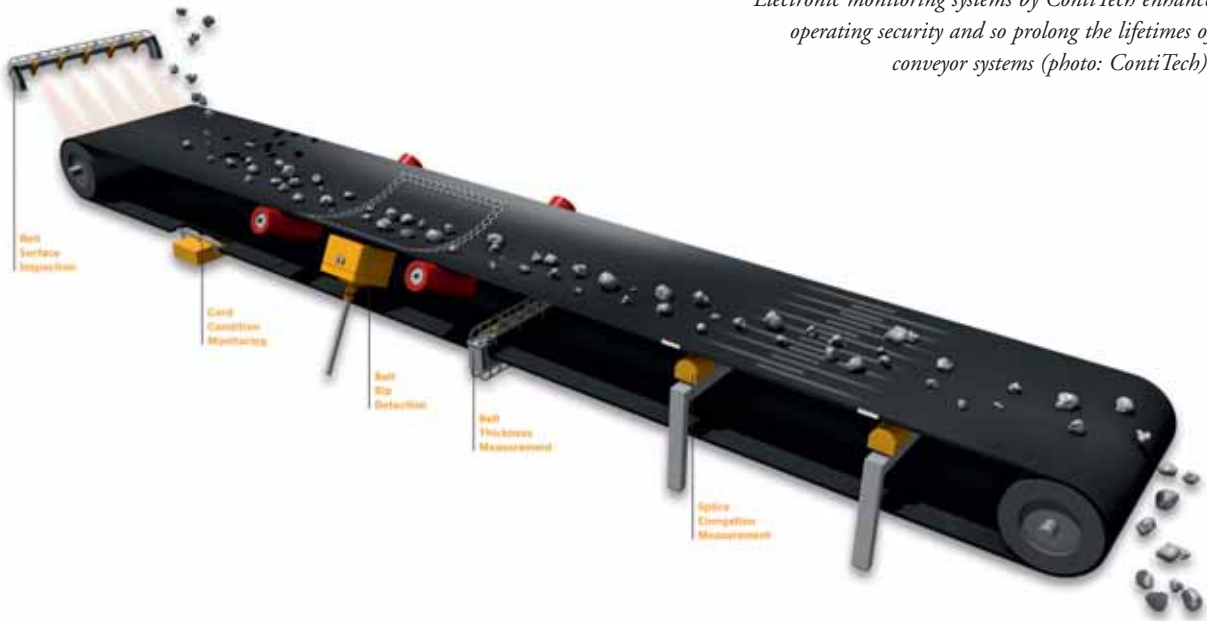
Damage to the surface of a belt can be detected early on with the help of the CONTI® INSPECT Belt Surface Inspection System. This uses state-of-the-art line-laser technology to scan the entire surface of the belt. It then maps its findings showing every point at which covers are damaged. It also allows a virtual 3D analysis and automatically generates a report.

Meanwhile, CONTI® INSPECT Cord Condition Monitoring detects damage to steel cords. Working on the basis of magnetic induction, it reveals even the tiniest impairments, gathering its data while the conveyor is working at full speed. It carries out a 2D evaluation that shows the splices.

#### **On-site service**

From maintenance and repair work to training courses for mine operators, the expert team from the ContiTech Conveyor Belt Group offers a wide range of on-site services to help customers use their CONTI® PROTECT and CONTI® INSPECT systems. Customers benefit from detailed final reports that outline every detail of the analysis. Moreover, if required, ContiTech provides cost estimates for upcoming maintenance or belt replacement work and supports customer in selecting their next belt. In

*Electronic monitoring systems by ContiTech enhance operating security and so prolong the lifetimes of conveyor systems (photo: ContiTech).*



addition, the team provides the tools and equipment needed. In training courses ContiTech experts pass on their specialist knowledge about installing and splicing belts.

Continental develops intelligent technologies for transporting people and their goods. As a reliable partner, the international automotive supplier, tyre manufacturer, and industrial partner offers sustainable, safe, comfortable, customized, and affordable solutions. In 2014, the corporation generated preliminary sales of approximately €34.5 billion with its five divisions, Chassis &

Safety, Interior, Powertrain, Tire, and ContiTech. Continental employs approximately 190,000 people in 49 countries.

The ContiTech division numbers among the leading suppliers of a host of technical rubber products and is a specialist for plastics technology. The division develops and produces functional parts, components and systems for the automotive industry and other important industries. ContiTech currently has a workforce of approximately 31,400 employees. In 2013 it recorded sales of about €3.9 billion.

## Cleveland Cascades Ltd

Providing the industry standard for loading solutions

**World Leader in the design & manufacture of bespoke retractable loading chutes for the handling of dry bulk materials.**

- Based in the UK, Cleveland Cascades Ltd has a dedicated team of experts in the design, assembly and commissioning of loading chutes and materials handling equipment.
- With a growing range of bespoke solutions for the handling of difficult dry bulk materials, our product range includes the unique 'cascade' concept, dust-controlled conveyor transfer points and dust-controlled hoppers.
- With over 600 reference installations operating worldwide, with applications in ship, silo, road, rail & tanker loading, the company's key to success is its proven ability to provide a well-engineered solution with professional and committed support.
- Winners of prestigious Queens Awards for Environmental Achievement, Export Achievement, Enterprise in International Trades and many more.

**Contact Cleveland Cascades Ltd**

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E-mail: [enquiries@clevelandcascades.co.uk](mailto:enquiries@clevelandcascades.co.uk) | Website: [www.clevelandcascades.co.uk](http://www.clevelandcascades.co.uk)



# THINK THIS IS NEW TECHNOLOGY? THINK AGAIN..



Australia  
Titanium Ore – 50°  
Mobile shiploader – 1000 t/h



Canada  
Diamond ore – 50°  
3 units – small footprint



Spain  
Green Pet Coke – 90°  
"S"- Shape



Canada  
Pebble Ore – 90°  
Ability to fit in tight space

**DSI Snake Sandwich High Angle Conveyor**  
elevating coal at a 75° angle for a steel plant  
in Northern Spain.

**Dos Santos International** is the world's foremost authority on high angle conveyor applications and design of sandwich belt high angle conveyors. With more than thirty years of materials handling and engineering experience, we offer the most advanced high tech conveying solutions. **BUT THE TECHNOLOGY ISN'T NEW.** DSI's high angle solutions have been proven time and time again to be the most reliable and economical solution in the industry.

The DSI Sandwich Belt High Angle Conveyor offers many advantages. It's **PROVEN** in over 100 installations worldwide. It's **RELIABLE** for rugged mining conditions, yet gentle enough for friable materials. It's **ECONOMICAL**, fitting into tight spaces and small footprints. Elevating millions of tons of material at various installations all around the world, users have agreed it's the most reliable, low cost and low maintenance conveyor system available. **Let us prove it to you.**

- THE GREATER THE LOAD •
- THE HIGHER THE LIFT •
- THE BETTER WE LOOK •

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## Largest DSI Snake links storage yards – high angle technology in action

Dos Santos International has been awarded a contract near the Gulf of Mexico, which includes engineering support and supply of a DSI Snake Sandwich High Angle Conveyor — the widest belt width, highest volumetric rate DSI Snake to date.

Dos Santos International has long provided expert engineering support to a major transfer terminal on the Mississippi River delta, North American Gulf of Mexico. Barge tows of coal and coke from all over the USA travel south on the Mississippi River to the terminal where they are unloaded to storage. The stored material is later reclaimed and loaded into ships that deliver the coal and coke to power plants, steel mills and chemical plants, along the Gulf coast and all over the world. The terminal transfers 20 to 30 million tonnes annually.

### BACKGROUND

When built in 1965, the terminal consisted of a bucket ladder type continuous barge unloader (CBU), a storage yard, served by a reversing yard belt with a bucket wheel type stacker reclaimer (S/R), and a slewing, luffing and telescoping type loader for Gulf barges and small ships. The main market was the power plants along the North American Gulf coast. Additional down river dock structure was later added along with clamshell type unloading equipment to handle speciality materials.

International coal trade increased dramatically through the 1970s. A major expansion of the terminal, in the early 1980s sought to capitalize on the increased coal trade. A second, parallel, but higher-capacity system was added just up-river from the first. The new system included a double bucket ladder, pivoted arm type continuous barge unloader (CBU), a storage yard served by a reversing yard belt with a bigger, higher capacity stacker reclaimer (S/R) and a new travelling, luffing, telescoping shiploader on a new dock structure between the two storage yards. The new travelling shiploader could easily load large ships. Parallel tripped conveyors at the new dock, one running up-river, the other down-river, allowed the shiploading of the coal from either yard. Other than sharing the common shiploader, the two storage yards remained isolated from each other depending entirely on the availability of their local equipment. At each stockyard it was not possible to simultaneously stack and reclaim.

A major expansion currently under way will end the isolation. Ahead of the expansion, the original S/R of the down-river yard was replaced with a new, modern S/R with the increased operating parameters of the upstream system. The current major expansion includes:

- ❖ An additional parallel reversing yard belt at each storage yard, served by the yard's stacker reclaimer.
  - a. either yard belt tripper can feed the S/R to stack-out; and
  - b. in reclaim mode, the S/R can load either yard belt through a bifurcated chute with actuated flop gate.
- ❖ Two additional stackers at each yard; one on either side of the S/R:
  - a. each stacker has a reversing boom conveyor that can stack to either side of the track
  - b. Each stacker is loaded by either of its two yard belt trippers
- ❖ Up-river and down-river conveyors to direct material flow from either CBU to either storage yard or from reclaiming at either yard to shiploading via either end of the main dock
- ❖ Three new slewing, telescoping shiploaders, located down-river of the main dock. These new shiploaders, though

stationary are designed with the combined operating range to load large ships without repositioning.

The isolation is ended with the new up-river and down-river conveyors that link the two storage yards. To preserve maximum stacking range along the yards the up/ down-river conveyors must hug the CBU dock line, locating them alternately over land and over water. The original yard belts are broken into two flights at the respective junctures with the up/ down-river conveyors. Thus, from either CBU, material flow can be alternately directed to either storage yard for stack out or directly to any of the shiploaders.

### HIGH-TECH TRANSFERS

The new expansion maximizes flexibility allowing continuous stack-out at either or both yards with simultaneous continuous reclaim to ship loading from either or both storage yards. This flow path flexibility is facilitated through elaborate junctures of high-tech control flow chutes, particularly at the ends of the new up/ down river conveyors. These transfers are contracted separately to the control flow specialists of Power Techniques of Alma, Illinois, USA and M & J Engineering of Germiston, South Africa. These control flow chutes are well known in the trade as Weba Chutes.

### ENVIRONMENTAL AND OPERATIONAL IMPROVEMENTS

The current expansion afforded the opportunity to establish better environmental controls and to better deal with nagging operational issues. These are related. Whereas conventional open troughed belt conveyors can ideally operate at inclines as high as 15° to 17°, practically, variations in material characteristics can greatly affect this, significantly lowering the incline angle.

Barged coal often arrives in very wet condition. The barges may have been loaded with wet coal and/or the open barges may take on additional moisture from long exposure to downpours of rain. In transit, excess water tends to gravitate to the bottom of the barge. When unloaded by the bucket ladder type CBU, the first 'hogging' pass delivers a moist coal mix but the final pass drags the barge's bottom and bails the excess water. In many cases such a wet material/free water mix cannot be conveyed at any significant incline and tends to run back, spilling from the conveyor. Operational and design parameters for the terminal expansion were developed from such experience. As a result: 1) conveyor incline angles are limited to 9° throughout the terminal; 2) All new elevated conveyors are to have full length drip pans to catch any spillage so that wash-down can direct it to a strategic collection point. These two mandates promise to improve the environment at and around the terminal.

### DSI SNAKE, OPTIMAL PATH FROM THE DOWN-RIVER CBU

The new system layout required a new conveying path from the down river CBU to the new down-river transfer complex. The direct path to discharge over the down river yard belts subtends an incline angle that far exceeds the capability of any conventional open troughed belt conveyor. The reflexive solution was to use two conventional conveyor flights in a switch-back arrangement. The 9° maximum incline limitation and the location over water made this a costly proposition. The large (environmental) footprint was also a negative.

Because of the long relationship with Dos Santos International, terminal personnel knew there was a better solution: a DSI Snake Sandwich High Angle Conveyor. At

3,629tph [tonnes per hour] (4,000stph [short tonnes per hour]) of coal this will be the highest volumetric rate to date for a Dos Santos Sandwich Belt High Angle Conveyor. The terminal management, in their due-diligence, sent key professionals to visit the operation of Dos Santos Sandwich units handling coal at high volumetric rates. These visits, and discussions with operating and maintenance personnel, confirmed that the DSI Snake was the best solution.

The DSI Snake was ordered in April of 2014. Presently in engineering, the high angle conveyor will deliver by year end and will begin operation in early 2015. The new DSI Snake profile is depicted in Figure 1 along with the alternate conventional conveyor solution for contrast. Figure 2

shows the Snake arrangement along with a summary of the design specifications and features. At 2,438mm (96") of belt width this is the widest Dos Santos Sandwich Belt unit.

The Snake is part of the coal flow path from the original down-river CBU to the top of the new down-river transfer tower. The bucket ladder type CBU unloads the coal from the barges and discharges it onto the gathering 'A' conveyor, which discharges to the connecting 'B' conveyor. The DSI Snake receives the coal load from the B-conveyor discharge and elevates it continuously up to the transfer tower, for distribution to the alternate terminal destinations. The CBU travels up and down the support tower as required; to clear the empty barge at the highest river level and to dig into the fully loaded barge at the lowest river level. Thus the tail of the connecting B-conveyor follows the CBU travel while the head end pivots to the resulting incline angle. The material discharge onto the DSI Snake unit will vary accordingly.

Special features of the Snake include galvanized steel structure, corrugated covers and wind guard, and a full length stainless steel drip pan to a strategic discharge point at the foot

of the inclined structure. Naturally, at 52° incline the drip pan will be self-cleaning. Additionally the bottom belt tail end is extended back, behind the loading area, in order to facilitate belt splicing.

The lower end of the Snake will be largely supported on existing structure while the main incline structure will be supported on a new pile group at the bottom and on the new transfer tower at the top. A pair of smaller piles will support the bottom belt take-up area.

The DSI Snake Conveyor will be a substantial improvement over the switch-back conveyor arrangement originally conceived. Its use will eliminate a transfer, along with the substantial additional tower and foundations that would be required to support the switch-back transfer. Its shorter path and material containment will further limit the environmental impact of the material handling system. These, among other benefits of the DSI Snake, make this unit an ideal solution for this application.

This latest order is proof of the continued growth and confidence in the DSI Snake Sandwich High Angle Conveyor technology and its many advantages.

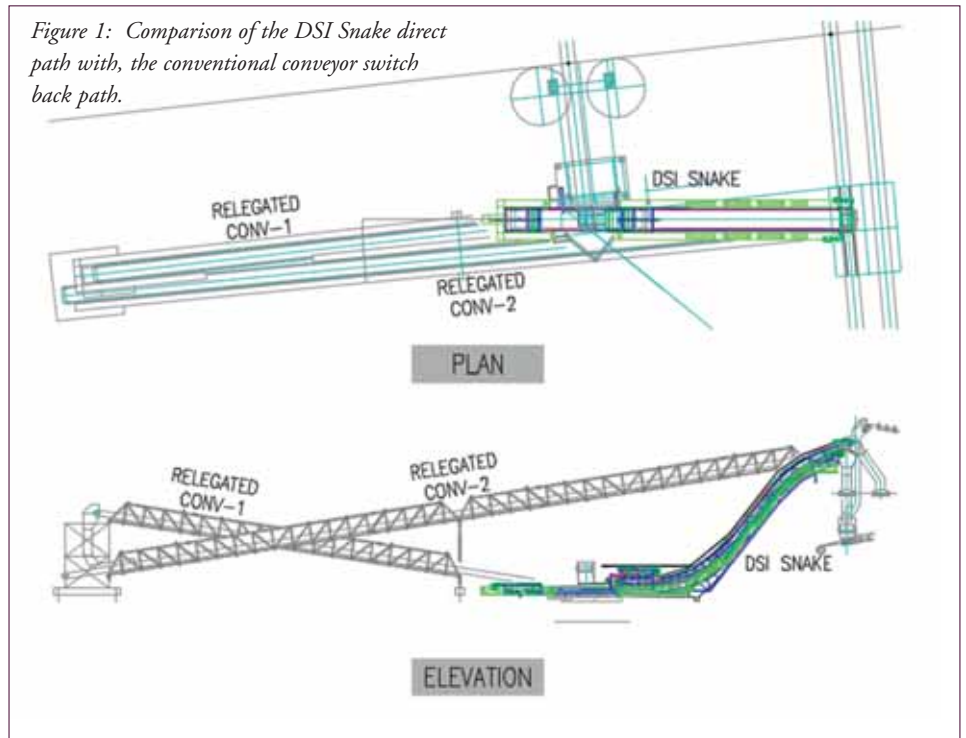


Figure 1: Comparison of the DSI Snake direct path with the conventional conveyor switch back path.

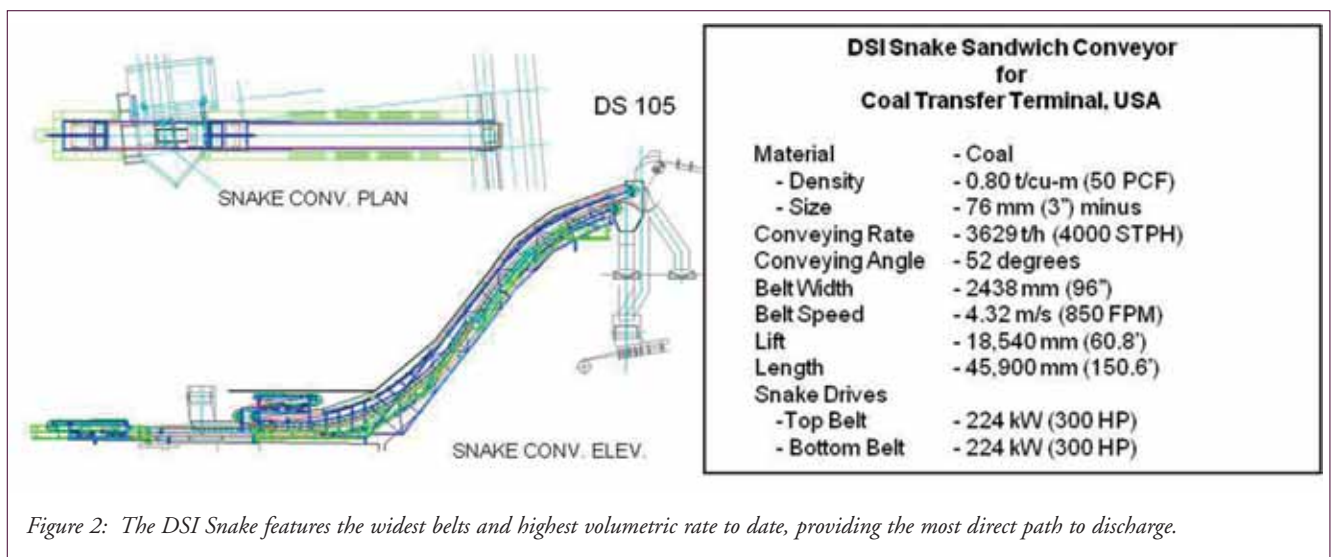


Figure 2: The DSI Snake features the widest belts and highest volumetric rate to date, providing the most direct path to discharge.

# 10 LITERS SAVINGS PER HOUR\*

## Green Hybrid-System

- fuel savings due to effective energy-recovery with third hydraulic cylinder

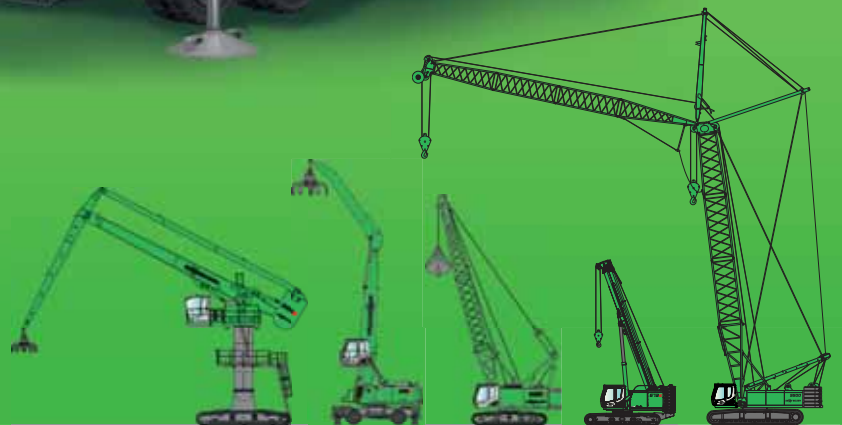
## Versatile

- 27 m reach with 7,5 t load
- various undercarriages: mobile, crawler, gantry, rails



\* with Green Hybrid system  
depending on material and situation

Tier IV compliance • low consumption  
emission reduced



balancer  
130-300 t

material handling  
20-160 t

duty cycle crane  
30-300 t

telescopic crane  
8-120 t

crawler crane  
80-300 t



Alfred Endl



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Maschinenfabrik GmbH

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94315 Straubing, Germany

→ [alfred.endl@sennebogen.de](mailto:alfred.endl@sennebogen.de)



## Bulk materials handling group sees opportunity in emerging markets

The Martin Engineering RSA business unit sees significant opportunities for its technology in developing regions, such as China, India, South Africa and parts of Latin America. Headquartered in the USA, the company operates in 15 countries, providing technology to make bulk material handling cleaner, safer and more productive.

Martin Engineering has traditionally had a heavy focus on the coal mining and coal-fired power industries, and while most North

American coal operations have already incorporated a number of engineered products into their bulk handling systems, many operations in developing regions have yet to integrate these components.

Martin Engineering also has an established a footprint in other industries, including cement, rock/aggregates, biomass handling, ore mining, pulp/paper manufacturing, among others. After the development of a number of successful industrial vibrator designs during the company's first two decades, management made a decision in the 1960s to begin engineering high-performance products for conveyor applications. That business has grown into a rich product line of belt cleaners, dust containment products, transfer point solutions, safety components, flow aids and many other innovations to improve bulk material handling.

Several elements have helped establish the firm as a globally respected brand, one of which is the education and training that assists customers in improving their levels of safety, regulatory compliance and productivity. "Safety has always been one of the driving forces behind



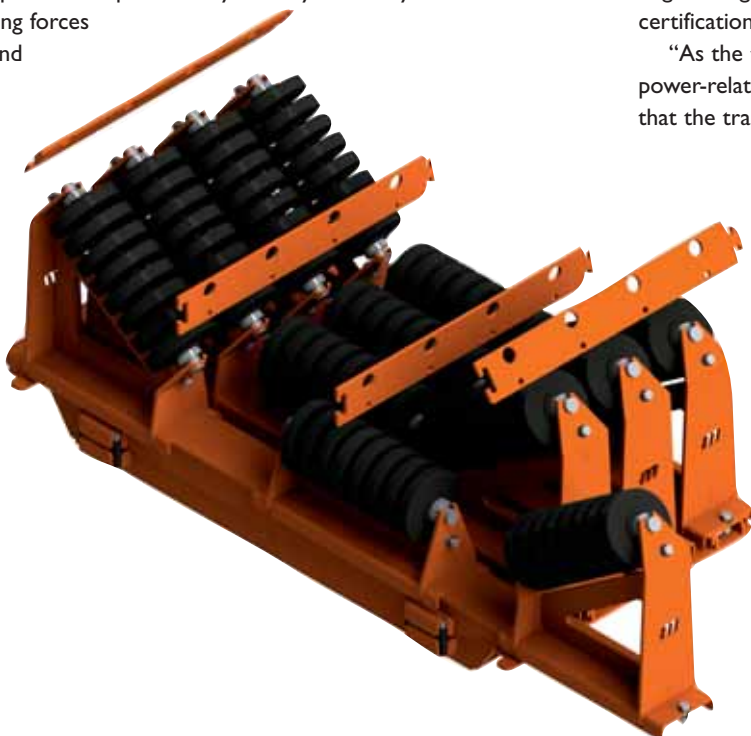
Martin Engineering's business, as exemplified in its products, services and training," said Hannes Kotze, managing director Martin South Africa. "It was one of the motivations for the company's very first commercial products, and remains a key element of every design."

Kotze said that some products are developed specifically to meet safety objectives, such as conveyor guards, safety shields, roller guards and inspection doors. But in all cases, whenever a new product design is being considered, safety and ease of service are among the foremost considerations.

As conveyor systems continue to get larger, longer and faster, the importance of safety training grows. The first edition of Martin Engineering's *Foundations*<sup>TM</sup> series of reference books was published in 1991 as a practical resource for helping bulk materials handlers operate more safely and efficiently. Now in its fourth edition, the book has become a vital component of the international training programmes developed by Martin Engineering, which include on-site workshops, online courses and certification.

"As the trend toward downsized operations in coal and power-related industries continues, many customers are finding that the training has become an essential component of their own continuing education programmes, and they are outsourcing this critical function to the expert teams at Martin Engineering," Kotze added.

In the future, Martin Engineering management envisions a rise in the trend of global information sharing, with its Center for Innovation (CFI) as an institution growing beyond the walls of the actual facility, collecting and disseminating information, creating new designs and developing new ideas. The company will also continue encouraging students in the study of engineering, collaborating with universities, contributing sponsorship support and offering internships that help build and diversify its global team.







#### NEW FROM MARTIN ENGINEERING

In a move designed to strengthen its strong position in dust control for bulk material handlers, Martin Engineering recently acquired TNJ Industries, an Arizona-based firm specializing in dust management for crushing and conveying of mined materials. The decision further broadens Martin Engineering's extensive line of dust control products, allowing customers to benefit from an even wider range of components and experience to address fugitive material issues.

Among the company's new product introductions is a high speed roller cradle designed to reduce roller and frame damage from heavy conveyor loading conditions in mining, coal handling,

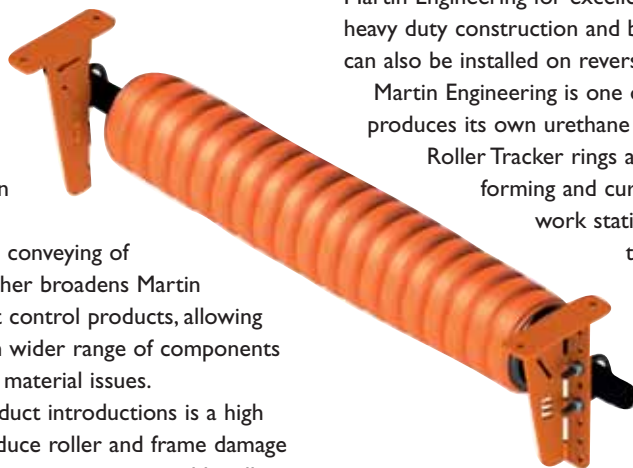
aggregates and other applications involving dense materials and/or high volumes. The rugged EVO® High Speed Roller Cradle is engineered to withstand brutal operating conditions, reducing roller failures and service requirements. One customer estimates that the new cradles from Martin Engineering paid for themselves in just the first week of service at the company's copper handling facility, due to the savings in maintenance and downtime.

Also introduced in 2014 was the Martin® Roller Tracker, a return side belt tracker that can be installed in place of a return roller to automatically center the belt. Developed by Martin Engineering RSA, the Martin Roller Tracker is canted forward and employs a pivoting design to improve belt tracking. It uses special urethane rings that are designed and manufactured by Martin Engineering for excellent traction and durability. With its heavy duty construction and bearings, the Martin Roller Tracker can also be installed on reversing belts.

Martin Engineering is one of the only manufacturers that produces its own urethane components, including the Martin

Roller Tracker rings and belt cleaners. By mixing, forming and curing its own designs in the modular work station — rather than subcontracting

the production as most suppliers do — the company is taking complete control of the entire process. As a result, customers from any region in the world can benefit from rapid deployment of components meeting the highest standards for quality control.



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## Specialists in Mining & Handling

Turnkey projects for mineral processing and bulk material handling facilities, mainly concentration plants and loading/unloading terminals at ports.

With over 150 years' experience, the company boasts over a hundred references in various different countries in Europe, America, Asia and Africa.





## Rugged Energy & Data Transmission Systems

Conductix-Wampfler has one critical mission: To keep your bulk material handling operations running 24 / 7 / 365. You need proven, worry-free energy solutions - and Conductix-Wampfler has them. Our systems provide reliable electric power and water to stacker/reclaimers, barge and ship loaders/unloaders, bulk conveyors, tripper systems, and gantry cranes. Conductix-Wampfler systems are rugged, low maintenance, and time-tested in tough, dusty environments. All products are backed by the largest sales and service network worldwide!

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### Cable Chain

- Rugged design for demanding environments
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DELACHAUX GROUP

## Converting to mobile conveying with Telestack

Whilst there will always be a need for the more traditional methods of fixed conveying systems and mobile harbour cranes, Telestack mobile solutions are becoming more popular as the industry becomes familiar with the innovative technology that Telestack can offer. The company offers a wide range of mobile conveying solutions that are used internationally in numerous sea ports and inland river terminals.

Most types of free-flowing dry bulk materials can be handled with a Telestack product, and the company has experience with coal, petcoke, iron ore, bauxite, gold, copper, fertilizer, grains, wood pellets, wood chip, aggregates — basically any dry bulk material.

Based on many years of experience Telestack can offer up to 3,000tph (tonnes per hour) on a single mobile system, making its solutions suitable for a wide range of applications within the port.

### OPTIONS TO SUIT EVERY APPLICATION

The Telestack range of mobile shiploaders is suited to nearly all budgets and can be used to load vessels from barges and coasters up to Baby Capesize.

The shiploaders can be fully self contained for power using on board gen-sets or they can be operated via the ports own power supply. Telestack understands the importance of dust control and offers a wide range of dust containment/suppression options including discharge chutes as well as options to minimize and eliminate spillage.

Telestack shiploaders can be fed using existing port conveying system of by a range of Telestack mobile feeders. These mobile feeders can be loaded with a front end wheel loader or can be fed direct from trucks to eliminate double handling.

### ADDED BENEFITS OF MOBILITY

When the Telestack shiploader is not in use, it can quickly and



*TU 1016 R truck unloader feeding a TS 1242 radial telescopic shiploader at the Port of Imbituba, Brazil.*

safely be relocated away from the jetty edge until the next vessel is due, thus freeing up valuable jetty space for other activities.

The same Telestack shiploader can also be used as part of an unloading solution where the ship can discharge into a Telestack unloading hopper which can then feed the shiploader (being used as a stockpiling conveyor in the port stockyard).

### STOCKYARD MANAGEMENT

Within the stockyard of the port, Telestack can offer a wide range of solutions for handling dry bulk whether the port is exporting or importing materials.

For export terminals, Telestack has products for receiving material directly from trucks coming into the yard and stockpiling the materials. Solutions are also available if trains are bringing in the materials as Telestack can offer rail unloading / stacking solutions.

Whenever a vessel is ready to load, a range of Telestack reclaim hoppers/link conveyors can be used to get material from the stockyard to the shiploader.

### INNOVATION BUILT — QUALITY, MANUFACTURE AND INSTALLATION

As an ISO 9001:200-certified manufacturer, Telestack places special emphasis on the procedures required to ensure that it



*TU 1015 R mobile truck unloader & TS 1242 radial telescopic shiploader in petcoke application, East Coast Australia.*

# ARE YOU READY...

## For Post Panamax?

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Maximum Panamax Ship Size:

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Draft	12.6m	15.2m

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*Link conveyors with TS 542 telescopic shiploader transporting grain from warehouse to ship, Baltic Region (and photo, bottom).*



specifies the right solution to meet customers' requirements and that the equipment ships on time, within budget and to the necessary quality standards.

Design and manufacture takes place under the one roof and the Telestack innovative designs enables it to fully assemble all the equipment at its factory to ensure that all electrical, hydraulic and mechanical functions are working properly.

The equipment is then dismantled and packed into 40ft containers to reduce the freight costs for customers. When the containers arrive on site, the assembly process is quick and requires limited specialist labour/services. For example, a 1,000tph telescopic shiploader can be assembled on site in five to seven days, ready to start loading the vessel.

Telestack's unique containerization design also ensures that

the resale value is much better than traditional fixed material systems as a Telestack can be quickly dismantled, packed into containers and sold anywhere in the world.

Telestack's proven record of performance around the world has resulted in many blue chip clients in the ports, mining, power, quarry sectors turning more and more to the mobile conveying solutions offered by the company.

#### COMPANY BACKGROUND

Telestack specializes in the complete design, manufacture, installation and commissioning of mobile, bulk material handling systems.

Telestack has a global proven record in a range of applications including the coal, mining and quarry industries, stockyard

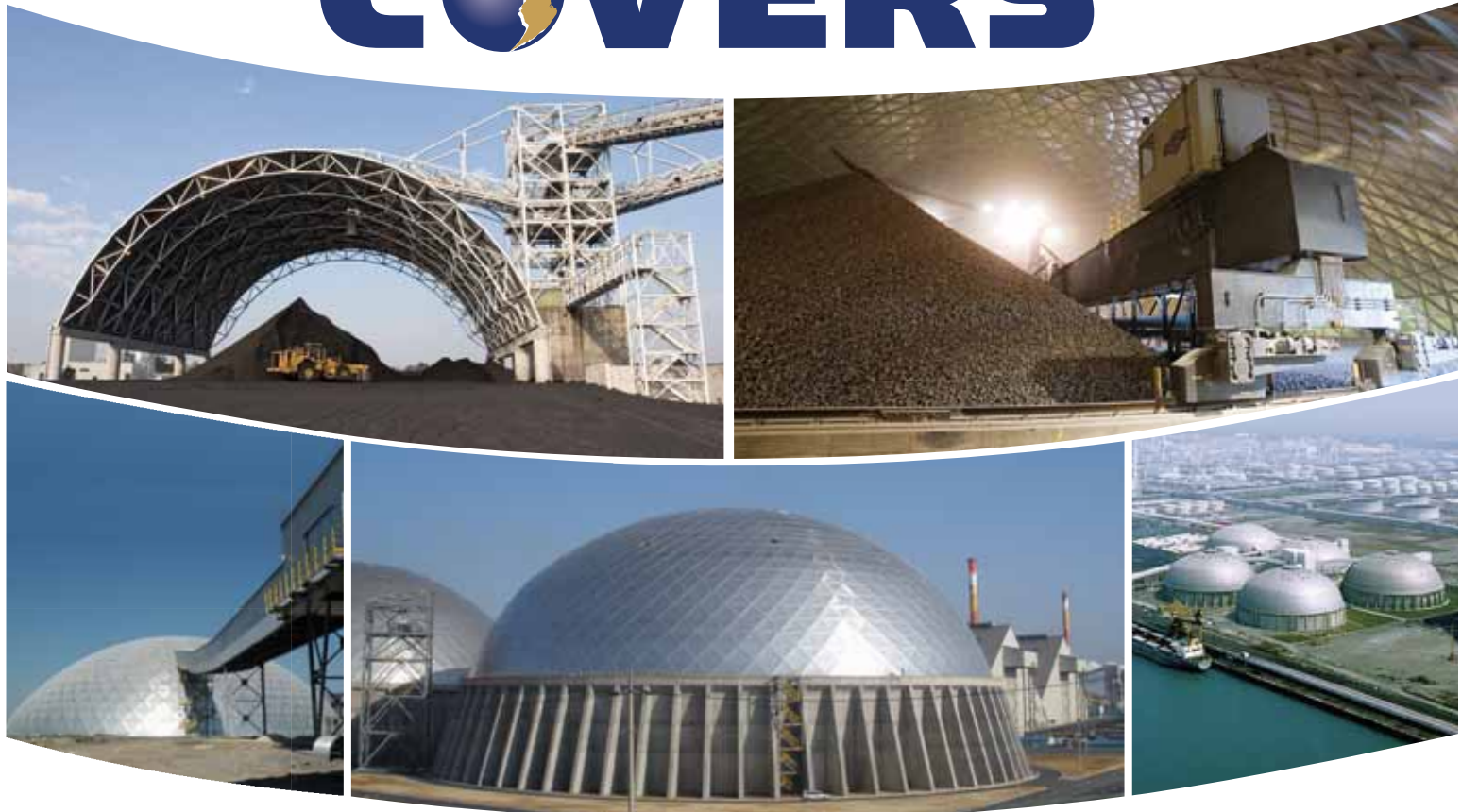
management, ports and inland terminals, power stations, rail yards, steel mills, cement kilns and many other bulk material handling industries.

Telestack's mobile solutions offer significant operating cost savings compared to traditional methods of material handling (wheel loaders, haul trucks, static conveyors), as well as providing environmental, health and safety and other benefits. Other significant benefits include not requiring planning permission due to product mobility and flexibility to move Telestack products to work on other projects.



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# Keeping it clean with ASGCO: coal handling systems in focus

## CONSIDERATIONS FOR THE CORRECT SPECIFICATION, INSTALLATION, AND MAINTENANCE OF CONVEYOR BELT CLEANING SYSTEMS FOR COAL HANDLING

Higher-speed conveyors with ever-increased tonnage present significant problems for coal handling personnel at mine sites, prep plants, load out and shipping terminals, and generating stations, writes Mark Bayley Vice President of North American Sales at ASGCO® 'Complete Conveyor Solutions'. Belt cleaners are an essential part of any conveyor system. They help

remove product carry-back and prevent it from falling off at various points along the return side of the belt causing various housekeeping and maintenance problems.



Always install an inspection/access door with the belt cleaning system: ASGCO®'s Safe-Guard® chute inspection door.

- ❖ accumulation of material falling off idlers and structure to the ground or on buildings, vehicles or even people; and
- ❖ negative and unsafe work environment

### CARRY-BACK CAN LEAD TO:

- ❖ excessive build-up and wear on belt idlers and pulleys;
- ❖ conveyor belt misalignment due to the artificial crown created by the carry-back;

### FACTORS THAT AFFECT CLEANING ABILITY INCLUDE:

- ❖ cuts and gouges;
- ❖ changes in belt surface;
- ❖ mechanical splices with exceedingly high leading edge;
- ❖ material accumulation in the head chute; and
- ❖ tensioning.

### TERMINOLOGY

- ❖ **carry-back:** material on the return strand of the belt after the head pulley.
- ❖ **primary cleaner (Super-Skalper®):** the first cleaner in the system



Razor-Back® secondary belt cleaner features tough, self-adjusting, replaceable tungsten carbide blades.



Skalper® conveyor belt cleaner is a superior primary belt cleaning system for every application.

- ❖ **secondary cleaner (Razor-Back®):** the second cleaner in the system.
- ❖ **tertiary cleaner:** the third cleaner in the system.
- ❖ **wash box:** a self-contained tank utilizing water spray bars and multiple secondary belt cleaners.



Super Skalper® conveyor belt pre-cleaner for the toughest bulk material handling applications.

### BASIC RULES FOR BELT CLEANER SELECTION

- ❖ cleaners work more efficiently in a system;
- ❖ a system is made up of multiple cleaners and access and inspection doors;
- ❖ belt life and cleaning efficiency is better with multiple lightly loaded cleaners rather than one overloaded cleaner; and
- ❖ a single cleaner is false economy.

When selecting a pre-cleaner, it is usually better to have blade coverage only the width of the material being conveyed not full belt width. Always install an inspection/access door with the belt cleaning system. In older facilities, sometimes there is no room to accommodate one or two secondary cleaners. Two pre-cleaners can be used or make chute modifications to accommodate secondary cleaners. This is also an excellent opportunity to install a wash box outside the head section.

### OTHER GUIDELINES FOR EFFECTIVE BELT CLEANERS ARE:

- ❖ design for optimum clean with the least amount of pressure;
- ❖ position the blade out of the main flow of the material;

# Motogroup's autonomous unloading conveyor

*Motogroup has discharged a barge and stored the bulk goods in a box.*



Belgian company Motogroup has given *Dry Cargo International* details of one of the conveyor projects in which it has been involved. Motogroup is a dynamic SME, which has been located in Bruges, Belgium, for more than 55 years.

## UNLOADING WITH MOTOGROUP MOBILE CONVEYOR

After mooring of the barge and positioning of the mobile conveyor, a crane starts to empty the cargo space of the barge. The crane drops its contents into the hopper of the mobile conveyor.

Meanwhile, the extraction conveyor and the inclined conveyor start to operate and unload the bulk material from the hopper into the storage box on the quay.

The hopper, extraction conveyor and inclined conveyor all are mounted on a chassis with four wheel blocks that can rotate independently.

This mobile conveyor system is equipped with its own power generator and can be remotely controlled. The installation has a capacity of 800tph (tonnes per hour) for e.g. sand. The dump height of the inclined conveyor is about 12m.

This installation is also equipped with a weighing unit and

a moisture-measurement unit.

Along the inclined belt conveyor, a walkway is mounted so the top side of the installation can easily be accessed for maintenance or inspection reasons.

Motogroup designs, builds and maintains customized components and turnkey installations to transport and store bulk goods, mechanically. Motogroup stands for high-quality solutions and wishes to build long-term relationships with its customers, suppliers and employees.

Motogroup offers total solutions from advice, design and engineering to construction until installation on site and maintenance. The company's engineers create layouts and detailed drawings with 2D and 3D software. Motogroup is also able to offer all kinds of auxiliary equipment such as dedusting, weighing systems, level detection, cabling and software. This means that it can install its projects mechanically as well as electrically using its specialized teams. Finally, a turnkey project is commissioned with all required instruction manuals and a complete technical file. After delivery and installation, Motogroup can draw up a preventative maintenance plan for regular checks of the equipment as well as accidental maintenance.

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- ❖ if possible, install the belt cleaners in the main chute or an area that will easily be cleaned and maintained; and
- ❖ cleaners should be engineered and designed to handle 'worst case' conditions and temperature fluctuations.

**QUICK AND SIMPLE REPLACEMENT BLADE CHANGE**

Choose a tensioning system to maintain tension throughout the life of the blade.

**WASH BOX BELT CLEANING SYSTEM**

Where space to accommodate and climate conditions are favourable, a wash box is the perfect way to maximize a belt cleaning system.

The wash box is installed as a secondary conveyor belt cleaner and is designed to work on the return side of the



*ASGCO® Wash Box belt cleaning system.*

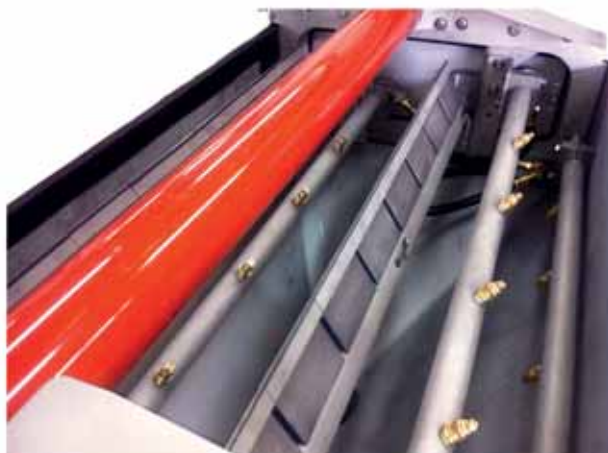
conveyor belt. Each steel enclosed box is equipped with a combination of pressure rollers, spray bars and secondary belt cleaners. It can also be customized to meet conveyor systems' needs. The nozzles apply a spray of water which softens the bulk material carry-back and lubricates to maintain effective cleaning pressure.

**MAINTENANCE**

Belt conditions, material characteristics and climatic conditions are all important considerations when selecting belt cleaners. However, of greatest importance is proper and regular maintenance. Belt cleaners should be selected according to ease of maintenance, and operators should make sure, either with their own personnel or with an outside contractor, that maintaining belt cleaners becomes a priority and not an afterthought.



*Underground coal mine head section with ASGCO's Super-Skalper pre-cleaner and Razor-Back secondary belt cleaner.*



## Clean and efficient: Schulte Strathaus conveyor accessories improve operations

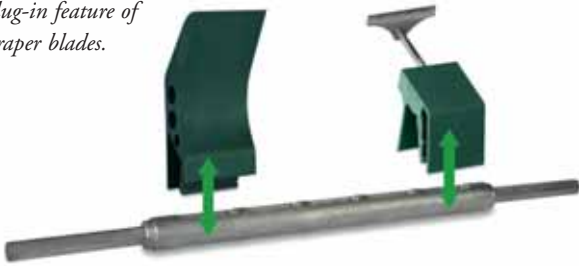
The company Schulte Strathaus, founded in 1952 in Unna, Germany, specializes in the supply of components for belt conveyors for all kinds of bulk handling industries. The main focus is on its STARCLEAN® conveyor belt scrapers, which are a problem solver designed to improve the efficiency of belt conveyors.

The main idea is to provide an optimum cleaning result throughout the lifespan of the blades and not, as is the case with some manufacturers' products, only for a short time. This is achieved by the 'TWIST-SWING®' feature, which ensures that every blade adapts to the belt, thus compensating for individual wear and providing a long lifespan.

As experts in the field of belt cleaning, Schulte Strathaus knows it is essential to keep conveyor downtime to a minimum; when scraper blades are worn, it should be possible to replace them in the smallest timeframe. All STARCLEAN® scrapers provide a plug-in foot, and are inserted into the shaft without the use of any tools. This feature, paired with the one-touch quick-tensioning devices, ensure that maintenance can be carried out within minutes.

All belt cleaners provide the best possible belt-saving properties, and are used in the toughest bulk handling operations worldwide.

*Plug-in feature of scraper blades.*



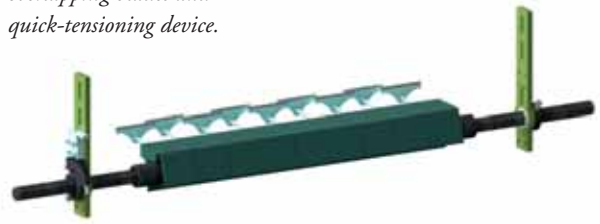
*Primary scraper blades compensating individual wear.*



*Secondary scraper blades with individual adaption to the conveyor belt in overlapping design.*



*Secondary scraper with overlapping blades and quick-tensioning device.*



*Primary scraper with quick-tensioning device.*



Known as technologically advanced in the field of belt cleaning, the company has just introduced some breathtaking innovations:

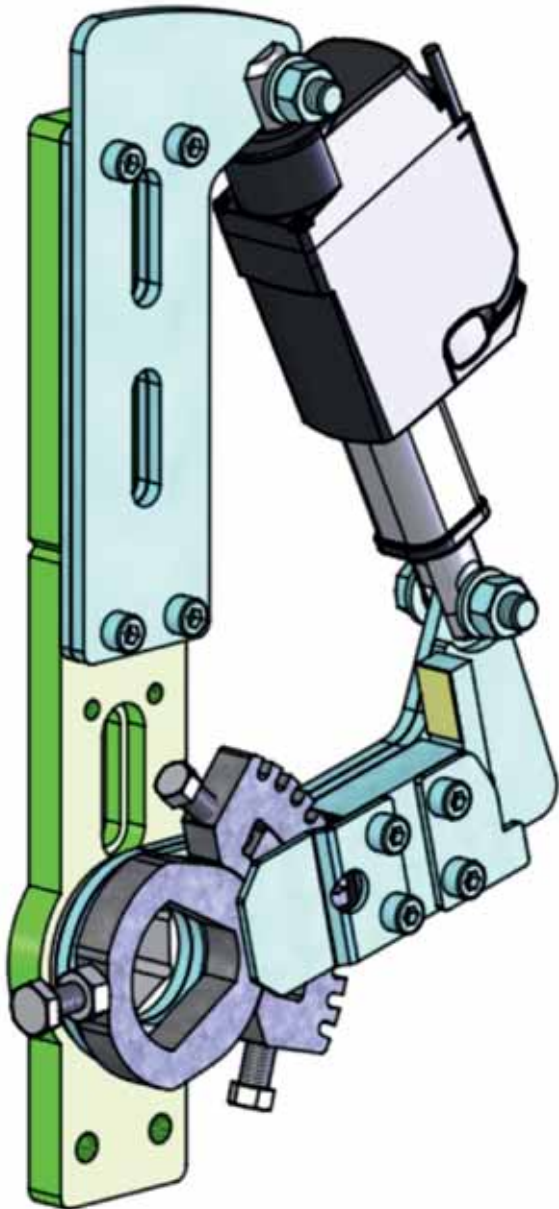
- ❖ **a torsion tensioning device for heavy duty primary scrapers.** With this new tensioning device for belt widths up to 3.2m and speeds up to 11m/s, primary scrapers do not have to be retensioned during the lifespan of the blades. A big problem for operators of heavy duty conveyors is the re-tensioning of the scrapers. With this new tensioning device, keeping the perfect tension until the blades are worn, there is no need anymore for unscheduled retensioning.
- ❖ **electrical tensioning device:** according to the motto KIS (keep it simple), the company has introduced a new electrical tensioning device. Used with tungsten carbide scrapers, the new device can disengage the scraper, for example during reversing operation or maintenance, and then move back automatically to the preset tension. As an option the device can readjust the tension automatically also for primary cleaners when wear occurs.

*Heavy-duty primary scraper with torsion-tensioning devices.*

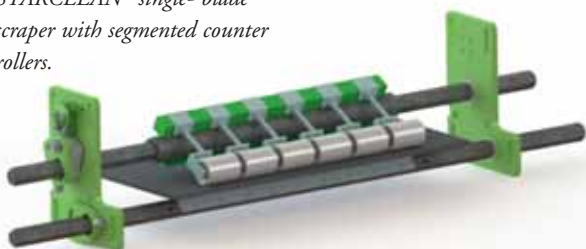


- ❖ extremely sticky materials can be cleaned off the belt with the new STARCLEAN® single-blade scraper with segmented counter rollers. In order to make sure that material can't build up, this system uses a single-blade scraper. Because

Electrical tensioning device.



STARCLEAN® single-blade scraper with segmented counter rollers.



single blade scrapers cannot adapt to the belt properly and therefore the cleaning result is more than limited, Schulte Strathaus uses an assembly with segmented rollers at the inside of the belt, which gently adapts the belt to the cleaner. With this new system, even the stickiest materials can be perfectly scraped off the belt, without material buildup on the scraper. The roller assembly is equipped with the proven quick tensioning device for easy tensioning.

**SAFEBELT®**

In addition to conveyor components, the company has launched the innovative closed conveyor belt system SAFEBELT®.

The SAFEBELT® system is the ideal conveyor for bulk material handling when it is important to avoid transfer points, to go around obstacles and to convey the material in a protected, closed and dustless way. To achieve this, the belt-loop stays closed from the loading point to the unloading point. The execution with various possible horizontal and vertical curves enables the conveyor the easy adaption to the local conditions. The simple and effective concept (modular system) in connection with the known Schulte Strathaus Quality reduces both the engineering efforts and the operation costs.

- ❖ **cost reducing:** the closed belt design reduces total costs, because complex enclosures are not needed
- ❖ **environment saving:** the bulk material is completely enclosed in the belt. There is hardly any inlet or outlet for dust or liquids.
- ❖ **low odour:** odour is held in the belt as far as possible. This leads to a minimum of disturbance through odours.
- ❖ **simple extension possibilities:** the lightweight steel support and the fact that no special frame-work is needed guarantee for a simple extension possibility and enable flexible changes of direction.
- ❖ **fewer transfer points:** due to the possibility of extremely small vertical and horizontal curves additional transfer points are not needed.

Schematic view of the SAFEBELT®.



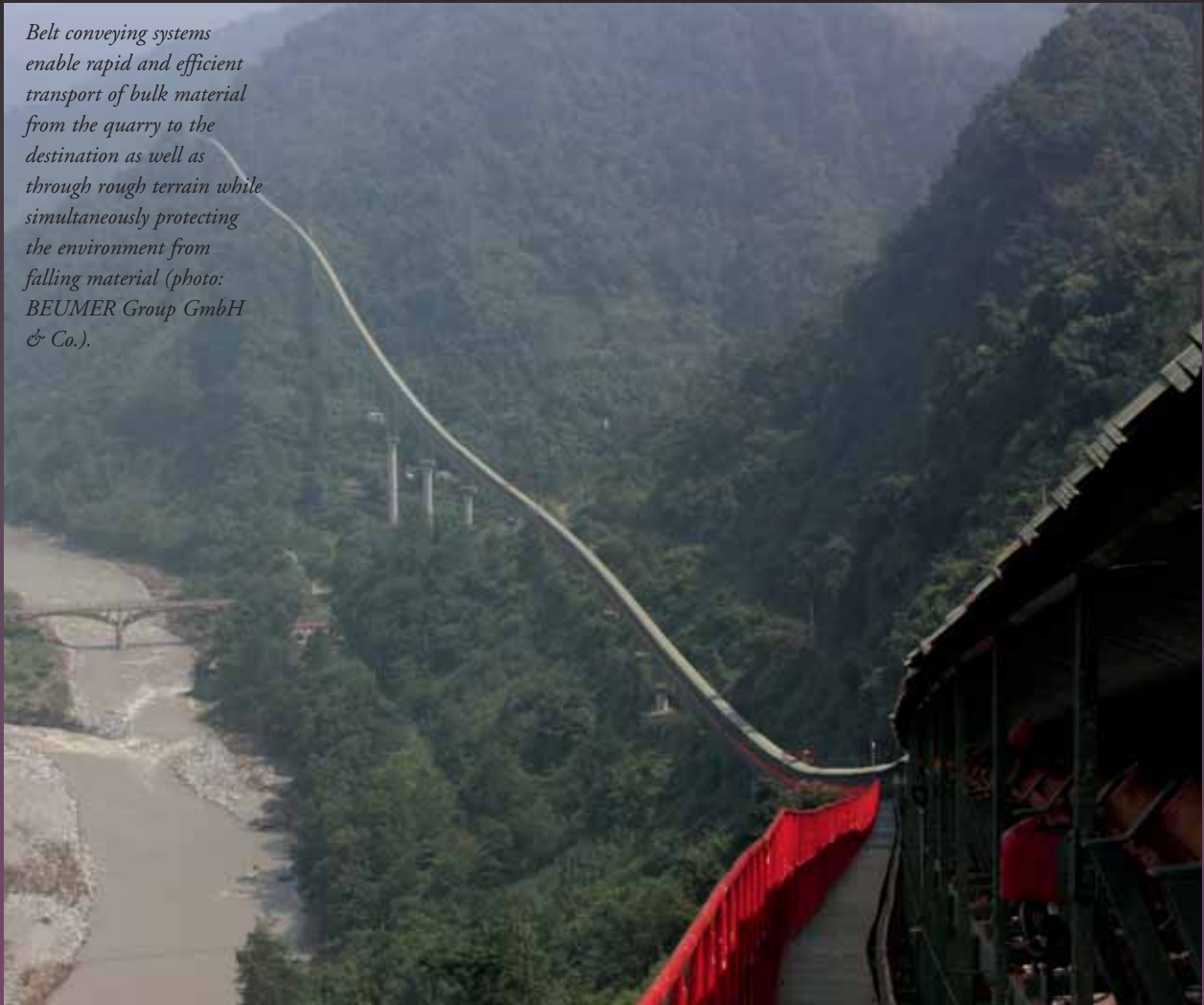
SAFEBELT® operation.



SAFEBELT® discharge point.

# Dust-free conveying with BEUMER

*Belt conveying systems enable rapid and efficient transport of bulk material from the quarry to the destination as well as through rough terrain while simultaneously protecting the environment from falling material (photo: BEUMER Group GmbH & Co.).*



BEUMER provides plants and systems for the transport, loading and filling of bulk material – with significantly less dust formation, and almost no lost product. This article focuses on BEUMER's conveyor solutions.

Bulk material — like building materials, coal, cereals, fodder or mineral compounds — are often transported via motorways, railways, waterways or through nature reserves. The large quantities of dust generated during this process can pollute the environment considerably. Dust clouds can also occur during loading, filling and palletizing. This not only creates considerable clean-up for the employees, but chemical industry products can also present a health hazard and cause dangerous reactions. With its conveying, loading, filling and palletizing systems, BEUMER Group ensures minimal dust emission.

BEUMER Group is a renowned systems provider for transporting, loading, filling and packaging bulk material. The BEUMER portfolio includes curved belt conveyors for fast and cost-efficient transport of large quantities of bulk material from the quarry or mine to the factory or port. The belt conveyors are able to navigate long distances, high angles of inclination and tight curve radii, and can be adapted individually to the belt or pipe conveyor bulk handling solutions. Depending on the customer's requirements,

BEUMER provides either troughed belt or pipe conveyor bulk handling solutions. Open troughed belt conveyors are recommended for larger throughputs, higher mass flows and wider curved radii. Closed pipe conveyors protect both transported items from environmental influences and the environment from falling items. Troughed belt conveyors can also be covered or encased to minimize dust formation during transport. This seal guarantees dust-free transport.

BEUMER's portfolio also includes mechanical vertical conveyors such as belt bucket elevators. They are an essential production link in the cement industry. BEUMER reliably seals the shaft casings of these bucket elevators, which stops dust from escaping. Instead, the dust trickles into the bucket elevator boot that is equipped with a dynamic bottom. Wet and sticky material cannot accumulate but is fed back into the transport process.

BEUMER Group is an international manufacturer in intralogistics in the fields of conveying, loading, palletizing, packaging, sortation and distribution technology. Together with Crisplant a/s and Enexco Teknologies India Limited, the BEUMER Group employed some 3,700 people in 2013. The group generated an annual turnover of approximately €627 million. With its subsidiaries and sales agencies, BEUMER Group is present in many industries worldwide.

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For more information, visit [www.beumergroup.com](http://www.beumergroup.com)



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DIFFERENT**

## High efficiency conveyor drives made by Brevini Power Transmission

Brevini Power Transmission, a company of Brevini Group, designs and manufactures planetary transmissions, parallel and right angle gearboxes and winches for industrial applications and self propelled machines.

Today the company is amongst the Top 5 worldwide in the field of mechanical power transmission.

To meet the demands of its worldwide customers in the mining and material handling industry, Brevini offers a wide range of products: from planetary gearboxes or helical and bevel helical gearboxes and winches to complete drive packages, including motors, couplings, brakes and base frames. Thanks to their exceptional performance, compact size and high efficiency, the company's gearboxes are ideal for driving all sorts of heavy duty systems: conveyors, apron feeders, excavators, shredders, mixers, container and bridge cranes, shiploaders and unloaders and many more.

Brevini can offer standard gearboxes or individual solutions engineered specifically for the needs of the customer, and prides itself on always being able to find the right solution for bulk handling needs.

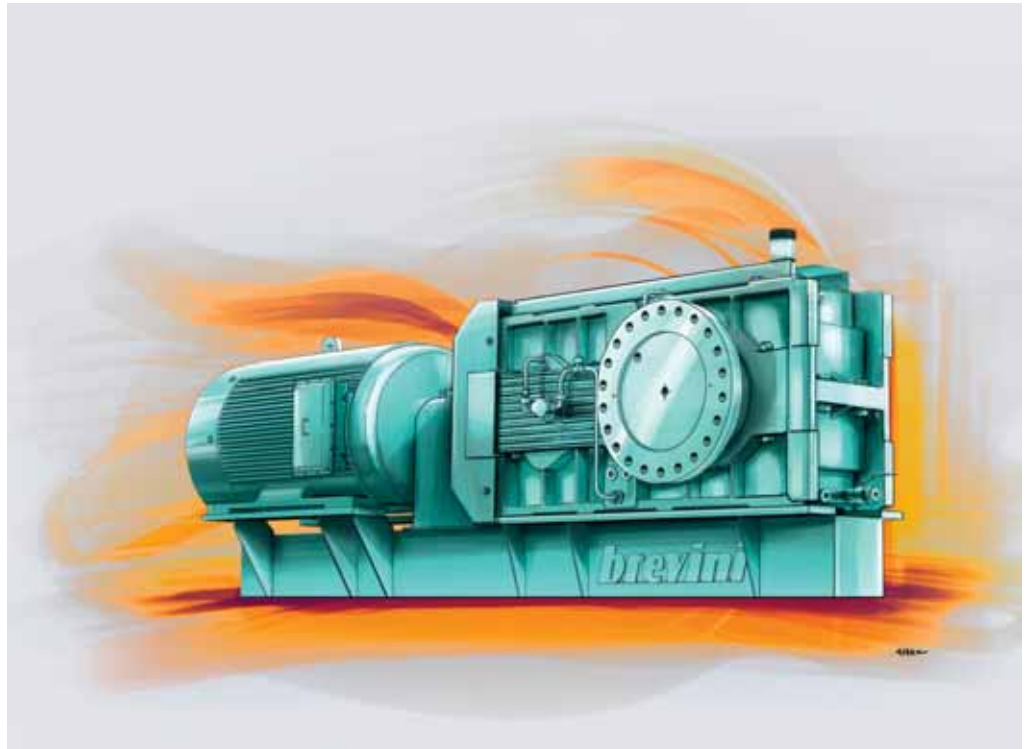
In applications that require low-speed power transmission, the gearbox is at the heart of every movement. So whenever the job is tough, Brevini and PIV Drives (another Brevini company) product lines offer advanced, innovative solutions. It works closely with the client, always in search of excellent results.

Hundreds of conveyor drives and other gear boxes are running to the full satisfaction of the leading mining companies in all continents.

Brevini is passionate about technology and innovative solutions. It believes firmly in 'continuous innovation', and constantly introduces new and updated products according to the changing needs of the markets it serves.

Products include:

- ❖ **high efficiency new conveyor drives:** nominal output torques up to approximately 940,000Nm;
- ❖ **proven standard POSIRED 2 helical and bevel-helical gearboxes:** nominal output torques up to 2,000,000Nm;
- ❖ **universal and compact right angle gear motors:** nominal output torques up to 25,000Nm;
- ❖ **gearboxes for lifting with extended centre distance:** nominal output torques up to 1,000,000Nm;
- ❖ **compact shaft mounted gearboxes:** nominal output torques up to 35,000Nm;
- ❖ **the best of two technologies – high power gearboxes:** nominal output torques up to 2,500,000Nm;
- ❖ **high torque S series planetary gearboxes:** nominal output torques up to 2,500,000Nm;



- ❖ **compact and efficient planetary slewing drives:** nominal output torques up to 135,000Nm; and
- ❖ **flexible and modular planetary gearboxes:** nominal output torques up to 170,000Nm.

### QUALITY AND INNOVATION

The PIV Drives plant in Bad Homburg is located near Frankfurt with convenient access to most countries in the world. On a surface area of 60,000m<sup>2</sup>, including a new assembly hall for gearboxes up to 50 tonnes, PIV produces helical and bevel helical gearboxes as well as single and twin screw extruder drives. All the core competencies are located in Bad Homburg: research, development, design, production and testing of gearboxes. Experienced engineers as well as latest production technologies guarantee the development and production of top quality gearboxes and customized technological solutions for all kinds of demanding industrial applications.

Thanks to the high quality of its products made in Germany, the PIV Drives product line has a solid position and excellent reputation in the marketplace.

Brevini Power Transmission is a mechanical engineering company that is active all around the world with headquarters in Italy and production facilities in Italy, Germany, China, the USA and Brazil.

The planetary gearbox that is the result of extensive research is also gaining ground in 'high torque' applications and in systems with dimensional restrictions, where the compact size, lower cost, and high performance of the planetary gearbox are most successful. Brevini products are always at the leading edge of technology.

The new Brevini Power Transmission headquarters in Reggio Emilia has a total surface area of 83,000m<sup>2</sup>. The office building covers 8,000m<sup>2</sup>, the production area 15,000m<sup>2</sup>, and its production lines were created according to the Brevini Manufacturing System, which adopts lean manufacturing principles to suit Brevini's needs.

**ALWAYS CLOSE TO THE CUSTOMER**

Brevini's clients recognize its great service: engineering and design consultation, its ability to understand the needs and functioning of complex machines, and a deep respect for the relationship and partnership between client and supplier.

On every latitude and in various markets, the company's strategy focuses on growth, as it has happened in Germany or China, and as it will happen in Brazil and other countries in the near future. But, the final objective of establishing production units is always to get close to the customer and to better serve local markets. The point of departure will always be its sales and service subsidiaries, which lies at the heart of the organization's global approach.

**POSIRED: MADE IN GERMANY**

The new conveyor drive series POSIRED ADVANCED is made in Germany by PIV Drives. PIV has been known worldwide for more than 80 years as a producer of mechanical gear units that meet the demanding requirements of modern industry – in terms of quality, reliability, exceptional performance and life expectancy. These are some of the main reasons for the good 'Made in Germany' reputation of PIV products.

**Increased benefits at a lower cost**

The new Brevini conveyor drive range, made by PIV, is especially designed for the tough requirements of customers in the mining and bulk material handling industry. It features an impressive range of improvements, as detailed below.

The heart of PIV's concept is the modular thermal system. This allows improvement of the performance of conveyor drives according to the specific needs of the application.

**Higher mechanical efficiency and increased thermal capacity**

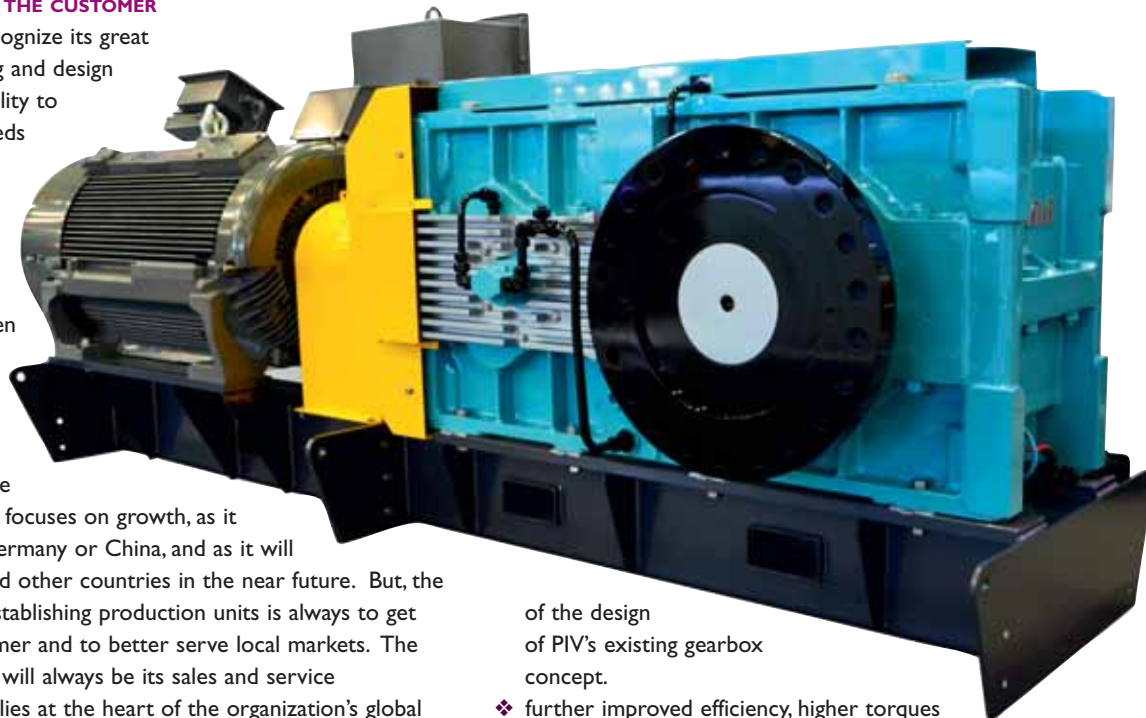
The modular system of Brevini's POSIRED ADVANCED gearboxes, together with the company's new modular thermal system, guarantees the best solution for users: tailored to meet customers' power requirements and perfectly adapted to local conditions.

Advantages include:

- ❖ higher mechanical efficiency;
- ❖ increased thermal capacity;
- ❖ increased torque capacity;
- ❖ reduced total cost of ownership across the range; and
- ❖ extended oil change period: increases up to 7,500 hours (up to 15,000 hours for synthetic oils).

The new POSIRED ADVANCED range for conveyors combines these advantages:

- ❖ worldwide proven performance and extraordinary reliability of the Posired 2 concept for helical and bevel helical gearboxes; and
- ❖ the new modular thermal system together with optimization



of the design of PIV's existing gearbox concept.

- ❖ further improved efficiency, higher torques and a massive improvement of thermal capacity made possible through significant mechanical and thermal improvements; and
- ❖ outstanding mechanical performance and increased thermal capacity of the new conveyor drive reducers offers competitive advantages. In many cases, the selection of a smaller gearbox is possible.

The POSIRED ADVANCED range of gearboxes all include:

- ❖ **sophisticated lubrication system with mechanical oil pump:** integral forced lubrication system to reduce oil change period, improve bearing life and increase thermal capacity.
- ❖ **cover plates with active cooling fins:** on both sides and top of housing for better air-cooling. Fins for extended surface area and integrated oil pipes for bearing lubrication.
- ❖ **axial cooling fan:** higher air flow rate for better cooling of the gearbox.
- ❖ **optional synthetic oil:** higher efficiency, increased thermal capacity, extended oil change period, higher oil temperature possible, lower costs of lubrication.
- ❖ **optimized teeth:** higher torques, less power dissipation and increased thermal capacity.
- ❖ **contactless seals:** on input and output. Higher efficiency, increased thermal capacity, lower oil level, lower inspection costs.
- ❖ **swing base with air conduction:** integral air tunnel along the underside of the gearbox sump giving increased airflow and cooling effect.
- ❖ **high quality housing:** for higher stiffness, and less deformation, which lead to longer bearing life. Standard material EN GJL 500-7 (GGG50).

All of Brevini's POSIRED ADVANCED new conveyor drives have three-stage bevel helical gearboxes; are available in sizes 31 to 85; offer ratios of 18 to 112 (lower ratios are available on request); and output torques up to 940,000Nm.

Brevini offers a range of accessories and options, including back stops, external cooling systems, heating systems and double extended shafts. The POSIRED drives can be retrofitted to existing drives.

## New conveyor belt cleaner design reduces cost of ownership

*By minimizing the non-consumable portion of the blade, the new Martin QBI Cleaner reduces the amount of landfilled urethane.*



A new conveyor belt cleaner has been engineered to contain a smaller total volume of urethane, while maximizing the usable area, produced in a streamlined process that allows the manufacturer to reduce the purchase price and overall cost of ownership. By minimizing the non-consumable portion of the blade, the heavy-duty primary belt cleaner delivers the same performance and durability as the model it replaces, while reducing the amount of urethane going to landfills. Manufactured with Martin Engineering's unique CARP (Constant Angle Radial Pressure) technology to maintain the most efficient cleaning angle throughout its service life, the Martin® QBI Cleaner HD features a no-tool replacement process that can be performed safely by one person in less than five minutes.

"We've simplified the manufacturing process and also re-engineered the blade itself," explained Global Engineering Manager Paul Harrison. "The new profile will be less complex to produce, and because it can be roll formed or manufactured on a press brake, it will be easier to source throughout the world from any Martin Engineering manufacturing site," he said.

The reduced weight will also facilitate easier blade replacement, and the one-pin mounting system helps reduce downtime for maintenance. To replace the QBI, maintenance personnel simply pull the locking pin, unclamp the bracket and slide the blade out of the mainframe. The new pre-cut blade is slipped onto the square mainframe and clamped.

CARP technology is exclusive to Martin Engineering, designed to keep the blade at a consistent angle and pressure against the belt. Typically set at about 2PSI (13.8kPa) for the QBI HD, the low blade-to-belt pressure helps protect the belt, splice and cleaner itself. As the blade wears, neither the surface area nor the angle is compromised, ensuring maximum performance throughout its life.

To introduce material back into the product flow, the QBI

HD is installed on the face of the head pulley. On a dual cleaner system, the new pre-cleaner is installed immediately in front of the secondary cleaner. For applications involving enclosed pulley chutework, Martin Engineering recommends that one of its steel inspection doors be installed.

The redesigned cleaner was engineered under the company's EVO philosophy, which re-examines every aspect of component design and function to achieve greater efficiency and fugitive material control. In addition to its cost advantages, the QBI HD features a mainframe that has been rotated 45° to shed dust and spillage. The urethane formulation can accommodate belt speeds of up to 900fpm (4.6m/sec) and service temperatures of -40° to 160°F (-40° to 70°C).

The QBI HD is available in lengths of 18 to 96 inches (457mm to 2,438mm) and can also be ordered in 10ft (3.05m) slugs, allowing distributors or customers to cut to length for increased versatility. "This design also features a simpler cut-to-length process," Harrison continued. "Instead of keeping a number of different blade sizes in inventory, distributors and customers can stock the 10ft sections and cut to length as needed."

Harrison said that the same type of re-design can be applied to the company's other belt cleaners, hinting at the opportunities for future product development. Martin Engineering is an acknowledged expert in the development and manufacture of high-performance urethanes for specialized belt cleaning applications. These colour-coded urethanes can be supplied in blades for any of the company's pre-cleaners, as well as pre-cleaner designs from other manufacturers.

Martin Engineering is also one of the only manufacturers in the world that forms and moulds its own urethane belt cleaners. The company has one of the most responsive ordering systems in the industry, typically able to ship from its just-in-time



*The unique design maintains the optimum cleaning angle throughout its life and features a safe, no-tool replacement process of less than five minutes.*



manufacturing cells within 24 hours.

“We are always looking for ways to reduce our environmental footprint,” Harrison concluded. “The fact that innovation is leading the way to a lower cost of ownership and reduced waste indicates that the bulk handling industry and environmentalism can work hand-in-hand.”

Founded in 1944, Martin Engineering makes bulk materials handling cleaner, safer and more productive. The company

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

## THE XR-PROGRAM is ready for the market

The XR-program consists of compact and powerful rotators with strong bearings. Thanks to the proven vane motor technology the XR-rotators are high torque, have good compliance and also have balanced braking.

Their compact and robust construction provides an ability to withstand heavy static and dynamic loads, both positive and negative forces as well as side forces.

The XR-rotator provides high oilflow for grapple cylinders due to large channels – ensuring high productivity and overall economy.

NEW





*The unique design maintains the optimum cleaning angle throughout its life and features a safe, no-tool replacement process of less than five minutes.*

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*Make sure you don't miss the next issue...*

## Martin Engineering new business unit in Russia will focus on conveyors

Martin Engineering has announced the formation of a new business unit in Russia, created with an initial focus on applications for conveyor technologies, flow aids and engineered vibration. Martin Engineering made the announcement as the company continues to expand its presence in the Customs Union of Russia, Belarus and Kazakhstan, initially targeting industries that include coal and mining, cement, gas and oil.

Staffed by native Russian speakers to facilitate communication with customers, the new group is already supplying components that have achieved TR CU (formerly GOST) certification (technical standards for products marketed in the three countries, similar to UL in the United States or CE in Europe). The company is also pursuing EAC certification on all products it will market in the region, as those new requirements are soon to be in place. "The EAC Mark of Conformity will be instrumental in assuring ready availability and reasonable lead times for products sold into the three member countries," commented Branch Manager Oleg Meister.

Martin Engineering's CRM business management software delivers a Russian customer experience with no language barrier, allowing the collection, storage and management of data from a variety of business activities. "If a customer contacts us for support, we're structured to respond and communicate in Russian," Meister continued. "We also have a well-developed Russian web site, with the look and functionality common to all the global business units, including access to product / service information, resources and company history."

Russia has a wealth of natural resources, but extracting, transporting and processing those resources is a complex equation. "Companies throughout the region are seeking technologies to help their operations run more efficiently, profitably and safely," Meister observed. "Technical advances that improve productivity and reduce risks have been of particular interest, including belt cleaners, transfer chutes and air cannons."

While the company is in the process of adding sales, customer service and technical support personnel, the new group is supported by the global Martin Engineering team, including an experienced staff in neighbouring China. The Russian Business Unit also draws upon the resources of Martin Engineering locations in Europe, as well as the Corporate BU in the United States.

The new business unit will be based in Moscow. "We chose Moscow as a first step because we wanted to find a location that would allow us to serve the greatest number of customers possible," Meister added. "With its economic development, industrial base and transportation opportunities, Moscow was a logical starting point.

Martin Engineering has also begun scheduling its



*The new Martin Engineering business unit in Russia will initially focus on conveyor technologies, flow aids and engineered vibration.*

Foundations training seminars in the region, recognized throughout the industry as a means of improving the knowledge level and risk awareness of attendees. The driving forces which have helped influence the receptivity of Russian companies include their search for technologies that can contribute to greater system efficiency, with particular interest in energy usage, as well as reducing carryback and the wide-ranging problems it causes. Another motivator is the need to improve system reliability and extend equipment life through preventative maintenance.

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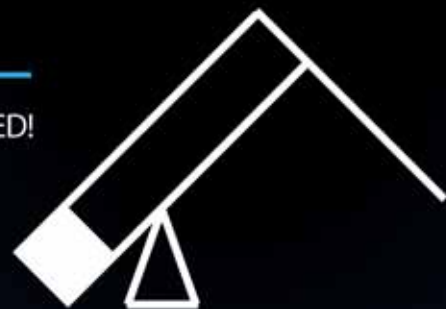
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## Saving energy and reducing noise with RULMECA pulley



### RULMECA Motorized Pulley 1000H INSTALLED IN A BUCKETWHEEL EXCAVATOR AT MIBRAG OPEN CAST MINE IN GERMANY

The company MIBRAG (Mitteldeutsche Braunkohlengesellschaft mbH) is dedicated to the extraction and proportionate processing of lignite. The energy generation from lignite makes up for one quarter of the total electricity production in Germany. In its open-cast mines, MIBRAG produces more than 10% of the lignite extracted in Germany, supplying modern power and processing plants in the middle of Germany.

In 1999, the open-cast mine Schleenhain was brought on line again after a complete modernization. Schleenhain extracts about 11 mt (million tonnes) of lignite and 25–30 million cubic metres of overburden per year. The main lignite consumer is the power plant Lippendorf, generating the electricity necessary to serve five million households and providing district heating for the bulk of the city of Leipzig.

For years, MIBRAG and RULMECA have worked together. During that time, miles of overland conveyors have been equipped with thousands of RULMECA heavy-duty rollers.

Facing high energy and maintenance costs and new noise reduction requirements, MIBRAG decided to replace the existing 160kW exposed drive system on one of five bucketwheel excavators (conveying capacity of lignite or overburden 2,500m<sup>3</sup>/h) with the new RULMECA Motorized Pulley 1000H. Noise measurements confirmed a noticeable decrease of 5dBa after the installation of the motorized pulley — leading to a reduction in the emitted sound pressure level by two thirds. On

top of that, the installation of a motorized pulley instead of the bulky tail drive constellation with external gear box, couplings and motor lead to a considerable saving in the space required at the conveyor head. Due to its lighter weight compared to exposed drive systems, the Motorized Pulley 1000H was very easy to install as it was not necessary to revise the conveyor structure. As all vital parts such as the gear box and the motor are protected within the motorized pulley shell, maintenance work is considerably reduced. Only one oil change is recommended after 50,000 hours in operation. Controlled by a variable frequency drive on 500V — three-phase — 50Hz power supply, the motorized pulley allows for easy adjustment according to the requested belt speed. Hence the Motorized Pulley 1000 H was the ideal choice for the bucketwheel excavator conveyors.

#### ABOUT RULMECA

The RULMECA GROUP is a privately owned international expert in research & development, manufacturing and sales of rollers, motorized pulleys and components for belt conveying systems in the global bulk handling market.

RULMECA Holding SpA, Italy, is the holding and mother company of the group, now comprising ten manufacturing units and 12 sales companies.

The company's core products are conveyor idlers and motorized pulleys. Additional products such as pulleys, scrapers and covers form the complete product range.

The key markets are typically mining, power stations, coal, steel plants, ports cement, recycling. Therefore, where loose



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materials are being conveyed via belt conveyors, Rulmecca offers application solutions and products on a global basis.

RULMECCA works closely with engineering companies, OEMs and special machine manufacturers as well as directly with final end-users.

With an ongoing focus on market demands and customer requirements, the RULMECCA Group offers:

- ❖ a close partnership and consultancy with the customers for the correct selection of products;
- ❖ a range of products designed to last;
- ❖ own RULMECCA company or distribution in all major countries with a strong tradition in bulk handling activities;
- ❖ a high-quality product range within rollers and motorized pulleys distributed globally;
- ❖ a group-wide implemented quality system helps to ensure RULMECCA is meeting and exceeding customer expectations;
- ❖ a continuously expanding and evolving product range; and
- ❖ constant improvement in technical, design, and service.

Market demands for improved efficiency and higher throughput simply do not allow for maintenance stops or breakdowns. The selection of quality rollers and motorized pulleys is more vital than ever to ensure a long trouble-free life for the conveyors.

The result of RULMECCA's total quality philosophy is evident in the expansion of the group and its major worldwide presence and reputation. From research and development to the final product quality control, the RULMECCA Group's commitment to quality is always evident. RULMECCA's focus on quality has led to a group-wide policy oriented towards continual investment in



manufacturing and technology, in the quality of the materials used and in research and development.

This unwavering commitment has received a positive response from the market.

#### THE MOTORIZED PULLEY

The RULMECCA motorized pulley was first produced in 1953 especially for conveyor belt systems. The aim was to produce an extremely compact, totally enclosed and highly efficient belt conveyor drive, resistant to dust, water, oil, grease or harmful substances and a device which would be quick and simple to install and would require virtually no maintenance. These aims were achieved and today the RULMECCA motorized pulley is considered to be one of the most reliable and effective belt conveyor drives available throughout the world. The motorized pulley is a highly efficient geared motor drive, hermetically sealed within a steel shell. The shell which is usually crowned to ensure central belt tracking, is fitted with bearing housing incorporating precision bearings, double lipped seals and rotates about a static pair of shafts. The motor stator is fixed to the shafts and the

motor winding cables pass through one of the shafts, eliminating the need for slip rings and brushes. The squirrel cage induction motor, manufactured in steel laminate, is machined concentric to high tolerances and designed to 200% start up torque for 3-phase versions. The rotor pinion is coupled directly to the gear box which transmits torque to the shell through a geared rim and provides highly efficiency motor with very little friction losses. The motorized pulley is oil filled, which acts as both a lubricant and coolant. Heat is dissipated through the shell and the conveyor belt.



*Copyright MIBRAG  
Photographer: Rainer Weisflog*

## Conquering curves with RBL-REI

RBL-REI, a privately owned French company, has installed a number of conveyor systems employing Curvoduc™ technology, a trademarked system that is well-suited for conveyor projects that often must negotiate long, twisting, uphill, and downhill routes to deliver ore, coal and other bulk commodities. Using this Curvoduc™ technology, conveyors can extend up to 20km per flight and can be built with tight curve radii of 250m, offering flow capacities up to 20,000tph (tonnes per hour).

One of the company's more noteworthy projects includes two parallel belts running between a quarry and what is regarded as the largest cement plant in the world, owned by China Resources, at Fengkai, China. Initially, this project involved two parallel belts stretching a length of 40km. Each line comprises three flights: one that is 10km long, a second of 13km long and a final section of 17km long.

The system can transport 2,500tph of limestone and is driven by 28.5MW of power. Its three flights include 13 horizontal and 83 vertical curves. The first half of the original project was commissioned in 2010, 18 months after engineering began; the second line, six months later. However, the project hasn't ended; in the coming months, it will extend the overall distance covered by the system by adding an additional 13km flight running from a quarry to the initial start point of the existing system, making the entire conveyor network 53km long.



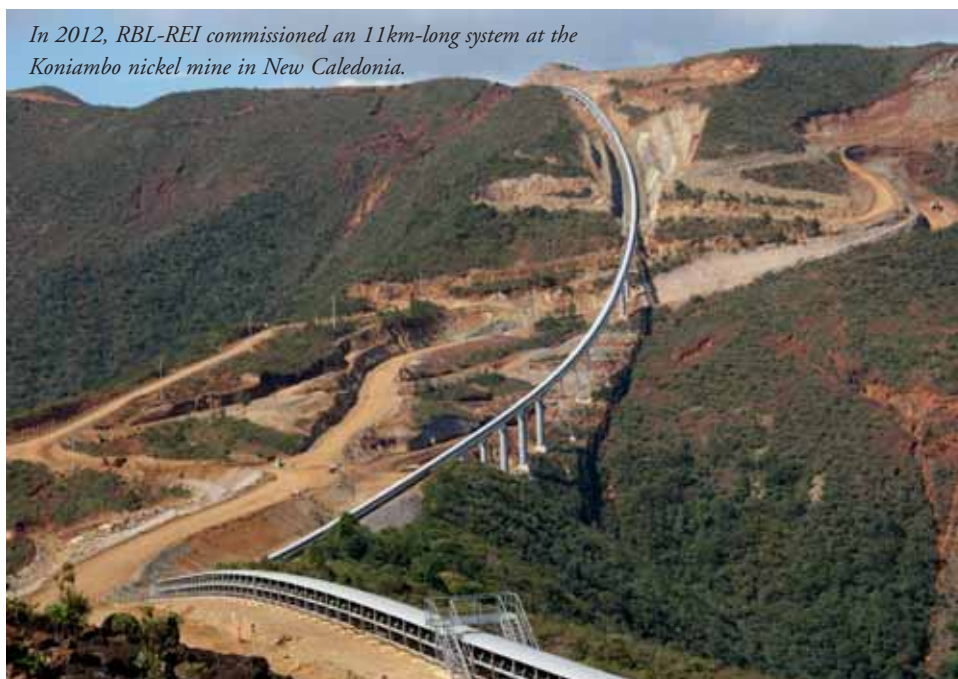
*Curvoduc™ in operation for the China Resources cement plant in Fengkai, China.*

In 2012, RBL-REI commissioned an 11km-long system at the Koniambo nickel mine in New Caledonia. Koniambo Nickel SAS is a joint venture owned by Société Minière du Sud Pacifique SMSP (51%) and Glencore Xstrata (49%).

The conveyor system links the mine, situated in a mountainous environment, with the process plant located on the shore of the island. It consists of two overland conveyors that negotiate 11 horizontal and 43 vertical curves over the 11km route. Because much of the route is downhill, the system was built to provide regenerative power — up to 500kW — to the mine's power grid.

In the next few weeks, the company will commission a 1.5km-long conveyor in Peruvian Andes at 4,800m above sea level. Thanks to its 800m horizontal curve, the conveyor avoids a very rocky hill and an archeological zone, and will discharge gold ore onto plant stockpile directly from crushing station.

Last but not least, a large project for potash producer Uralkali is currently in the engineering phase, for sylvinitic ore extraction in the Perm region of Russia. The system will connect a new mine to an existing plant, and will also return tailings from the processing plant to the mine for backfill. RBL-REI's two-way system will transport ore at a rate of 2,500tph and tailings on the return side at 900tph, over a route that includes a number of horizontal and vertical curves. This isn't the first time that RBL-REI has designed that type of setup; it installed a similar system in Australia — where it has been running for more than 20 years — and another in China.



*In 2012, RBL-REI commissioned an 11km-long system at the Koniambo nickel mine in New Caledonia.*



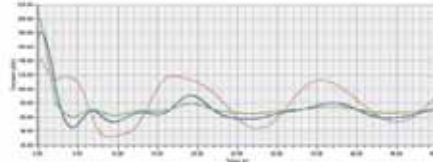


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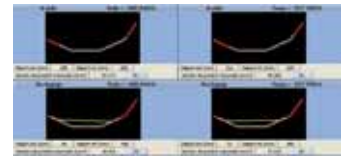
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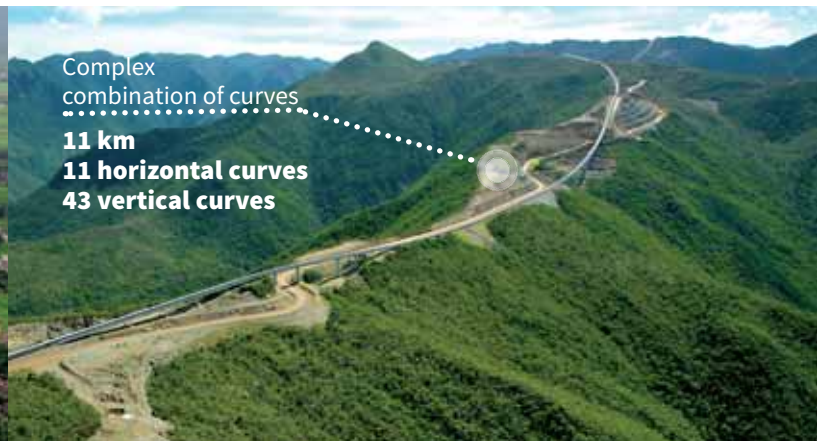
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## STM: provider of belt conveying system solutions



STM is an Italian company which specializes in the engineering and supply of belt conveyor systems for bulk materials handling facilities, with headquarters and manufacturing plant in Tito Scalo (Potenza). Since it was set up as family business in 1975, it has provided worldwide innovative integrated solutions that increase efficiency, reliability and cost savings for its customers' production processes.

STM offers a full range of project services: engineering, fabrication and commissioning. It carries out every step by developing flexible, individual and effective solutions. In this way,

it is able to create equipment of any size and complexity which fully meets its customers' needs.

The whole supply process, from feasibility studies to final delivery and commissioning, is completely implemented in the STM factory in order to support the customer at every stage of the project up to the full implementation. This allows STM to optimize the design, the industrialization time and the information exchange with the customer.

Thanks to its strong expertise, focus on quality and the continuous improvement of industrial practices and standards,

STM is globally recognized as a trusted partner in developing custom-made solutions.

Over the years STM has developed a deep knowledge operating in many fields, with specific cutting-edge solutions for each application.

### COAL PROCESSING: FROM MINE TO THE POWER STATION

In the mines where the expansion and relocation are necessary as the mine develops, STM's systems can expedite, optimize and economize the process of overburden removal,



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redistribution and stacking. The conveyor systems for this application are designed for a long lifetime and to minimize extraordinary maintenance and downtime risk. STM is committed to delivering high-value performance and to meet customers' needs for excellent reliability, investment costs, delivery time, lower operating costs, high standards of safety, and sustainability. STM's flexibility makes it possible to manage a wide range of different plant configurations, both for size and typology, including mobile plants. This configuration is one of the latest trends in a sector in which the plant owner wants to have freedom to move the plant after limited time usage in a determined area.

STM also supplies conveyor systems to power generation plants, where fossil fuel, such as coal, is burnt in order to have pressurized high temperature steam and to use it to rotate a turbine, with electricity production as result. Handling these kinds of materials in a complex power plant makes it essential to design a system with exceptional reliability in order to avoid any kind of shutdown for decades. STM is able to provide a complete engineering solution, including specific back-up systems, limited maintenance devices and best-in-class components manufacturers.

#### BRINDISI THERMAL POWER PLANT



A valuable example of STM's long experience in coal handling is the supply of seven conveyor belts to ENEL's Federico II power plant. This coal-fired thermal power plant has a total capacity of 2,640MW installed. It is located in the Cerano area, in the territory of Brindisi (Italy). With an area of about 270 hectares, this is the second-largest thermal power plant in Italy and one of the largest in Europe. The whole line of belt conveyors, provided by STM to this power plant, comprises seven conveyors, with one of them reversible, two distributors, four tank feeders, two transfer towers and all the support steel structures for the conveyors and mixers. This conveyor system is used to transport light humidified ash which is the result of the coal combustion. For this reason, the STM team created conveyor belts able to handle very hot material with high level of moisture and abrasiveness. Moreover, the conveyors are situated outdoors so they are equipped with a rainproof roofing and they are treated so that they can cope with different atmospheric conditions like temperature leaps and a saline and industrial atmosphere.

#### RENEWABLES

In a plant for electricity production from waste, STM usually carries out the complete engineering of the conveyor systems,

using cutting-edge software and providing full details from structural calculation up to detailed drawings of all the plant for flows exchanges, paths for personnel, access points, maintenance areas, load bearing structures, pylon towers and conveyor switching. Even if the material in this case is not so difficult to process or to transport, the low density means it is necessary to change the design approach to handle a high volume of material but at same time to guarantee high values of tonnes-per-annum to feed the processing machines adequately.

#### OIL REFINERIES



Petroleum coking is an environmentally responsible recycling process used in some oil refineries to make the most use of hydrocarbon residuals that otherwise would go to waste. Enclosed conveyors are often used to move the coke into a storage building and then onto docks for loading, onto barges, ships or to land-based transportation loading facilities. The conveyor used in this field is known as pipe conveyor and has very particular features. Indeed this system does not have rollers and the rubber belt closes itself to form a pipe and moves on air cushions — avoiding any friction it can reach high speeds. STM supplied this kind of conveyor system to Eni refinery in Gela, Sicily (Italy).

#### TUNNELLING

Conveyor systems provide an efficient, reliable, cost-effective and lower-risk method of removing muck and spoil from tunnelling excavation sites. Thanks to core competencies, expertise, and on-going investment STM is able to provide continuous conveyors to its customers. The continuous conveyor is globally recognized as the most efficient and effective solution for the handling of material extracted by tunnel boring machine (TBM). This equipment is specifically engineered to smoothly handle the transport of materials from the tunnel excavation site to the surface and beyond. Large Belt Storage capacity increases TBM utilization, reduces construction time and results in lower costs.

#### CONCRETE PLACING

STM developed a specific system for the concrete placement, both for conventional concrete both for roller-compacted concrete (RCC). RCC has the same basic ingredients as conventional concrete: cement, water, and aggregates, such as gravel or crushed stone. However, unlike conventional concrete, it's a drier mix — stiff enough to be compacted by vibratory rollers. Typically, RCC is constructed without joints. It needs neither forms nor finishing, nor does it contain reinforcing



dowels or steel. RCC concrete is mainly employed for gravity dams. To reduce the entire duration of the construction site, to meet operative, financial, environmental benefit and to deliver as soon as possible such important infrastructure to the local community, contractors are increasingly looking for equipment able to guarantee them continuous feeding with flexible use mode. These features are provided by a conveyor line able to follow the dam growing, with special devices as elevation tools for conveyors and distribution devices as swingers, crawler placers, tripper conveyors.

In this field STM was awarded a contract to supply the belt conveyor system at Ulu Jelai dam. The project is located approximately 200km north of Kuala Lumpur in the state of Pahang, Malaysia. The main component is the construction of the dam on the Bertram River, more than 80 metres high and constructed entirely using the advanced technology of RCC. Furthermore, at the moment, STM is working to supply the belt conveyor package at Neckartal Dam, in the Karas region, Namibia. The Neckartal dam, made from RCC and standing around 80 metres high, will harness water from the Fish River to produce energy and to create a reservoir capable of holding 857 million cubic metres of water.



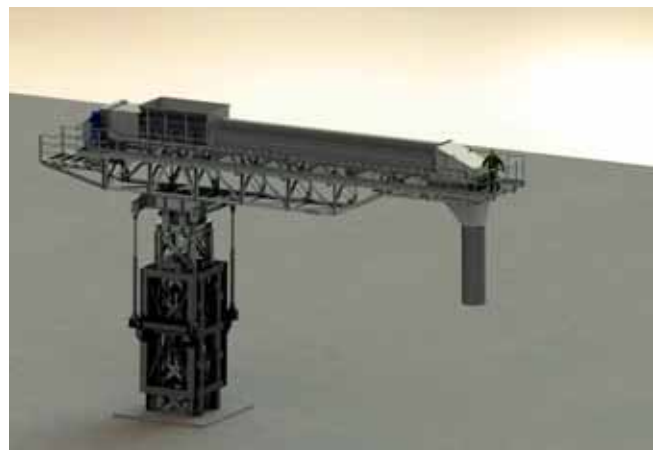
#### TECHNOLOGICAL DEVELOPMENTS

In the last few years, applications in the STM portfolio have become more challenging and specialized in order to satisfy even the latent needs of its customers. One of those is the new swinger conveyor: this special conveyor's main feature is that it is able to rotate, even up to 360°, as well as self-elevation.

Focusing on the elevation feature, it is possible to have two main systems to use in order to carry out the elevation and change to height of discharge point.

The first is the self-elevating tower system: the support tower is inserted into a bigger structural tower that will be the pivoting point necessary to modify the height.

The second system use an external support as pivoting point, usually precast concrete modules. In this second way the main support will be a cylinder, that will move in the well below.



## Industry-wide solutions from Schenck Process

Schenck Process is a major supplier of bulk handling systems, and offers particular expertise in alternative fuel systems and mechanical conveying solutions.

The company is renowned for its solutions in measuring and process technologies in industrial weighing, feeding, conveying, screening, air filtration and

automation. It is a reliable partner for customers planning processing plants, feeding bulk solids, controlling material flow, recording commodity flow, weighing goods or automating manufacturing and transportation operations.

Schenck Process has expertise in:

- ❖ cement, gypsum, sand & gravel, steel and non-ferrous metals, railtec, transport processes;
- ❖ chemicals, food, pharmaceuticals and plastics;
- ❖ coal, iron ore, base metals and minerals;
- ❖ coal-fired plants and associated industries; and
- ❖ spare parts, service and components.

Schenck Process operates in the whole range of industry. This article focuses on the company's mechanical conveying solutions.

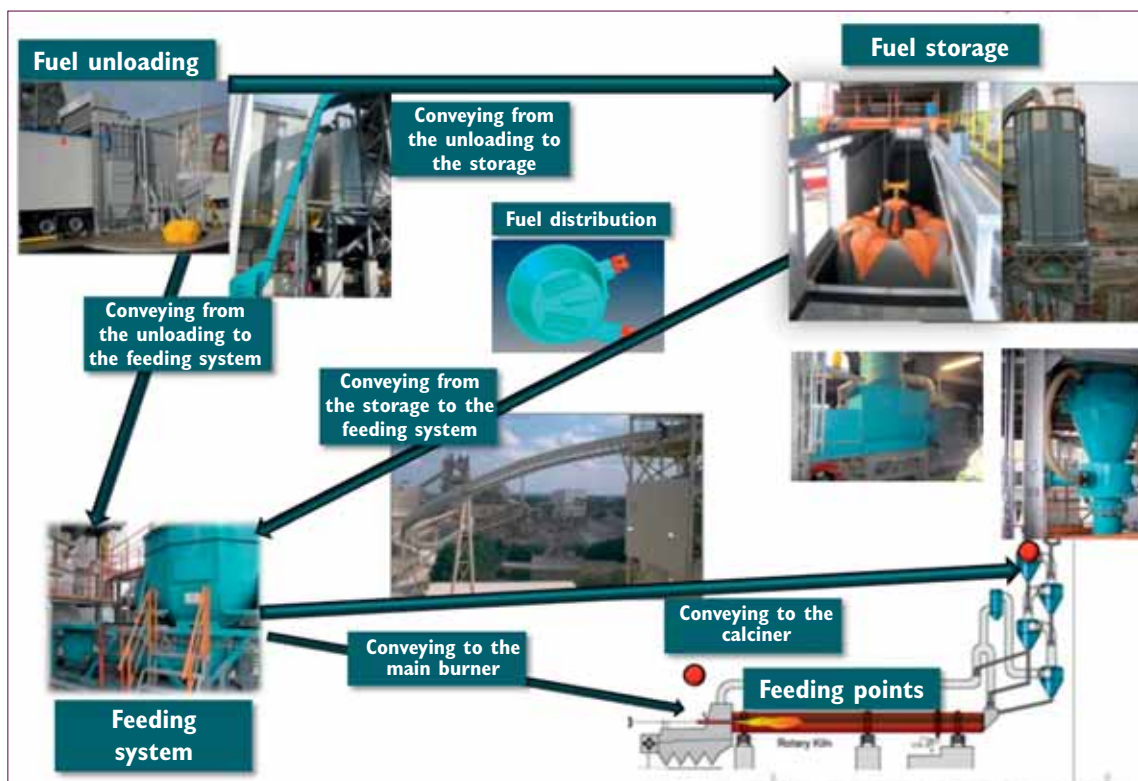
The graphic above illustrates a whole range of products necessary for optimal material feeding and conveying. This system consist of a docking station for material unloading, fuel storage in crane hall, several types of conveyors (belt, tube, chain, corrugated board belt, screw, helix), separation, weight feeder, pneumatic injection in kiln, or mechanical to calciner.

### MECHANICAL CONVEYORS PRODUCED BY SCHENCK PROCESS.

#### Tube conveyor

The tube conveyor is a special type of conventional belt conveyor that prevents material spillage by having the belt closed to form a tube.

At the place where the material is loaded, the belt is open as on a conventional belt conveyor. After the loading section, a special configuration of rollers wraps the belt to a tubular shape in which the belt remains along the whole transport path supported by hexagonal configuration of rollers. At the discharge



*A special configuration of rollers wraps the belt to a tubular shape in which the belt remains along the whole transport path supported by hexagonal configuration of rollers.*

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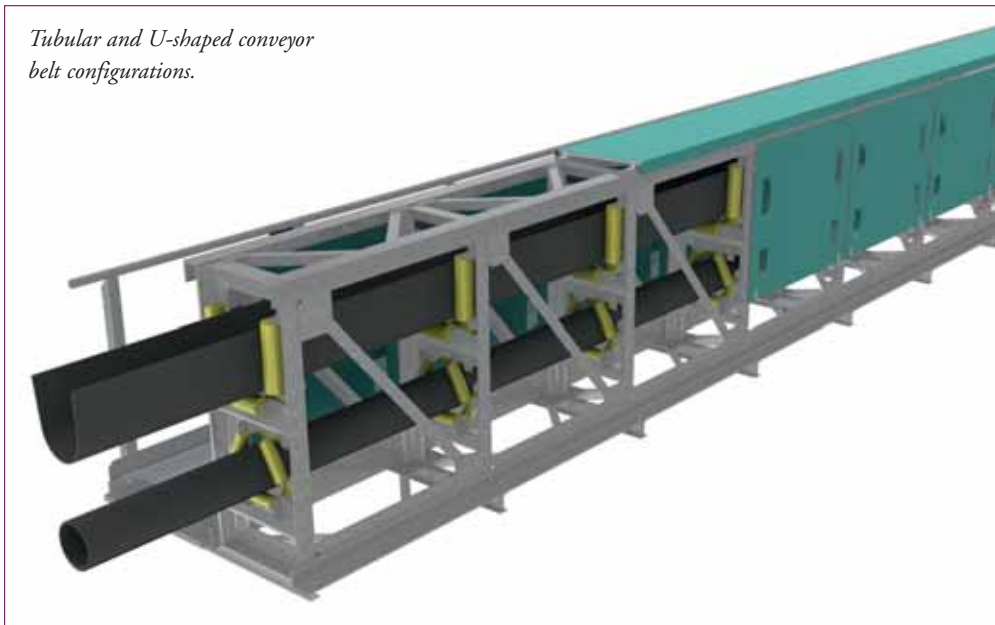


station, the belt is opened again by a similar arrangement of the rollers as at the feeding station and the material is discharged as on a conventional belt conveyor.

The return belt is wrapped 'dirty-side-in' preventing dust emissions and material spillage.

The tubular shape of the belt along the transport path allows the tube conveyor to cope with relatively tight vertical and horizontal curves on conveyor track. The tube also protects the material from weather conditions as well as protecting the environment from the product transported. This makes the tube conveyor ideal e.g. for moisture sensitive, dusty, smelly or other hazardous products.

*Tubular and U-shaped conveyor belt configurations.*

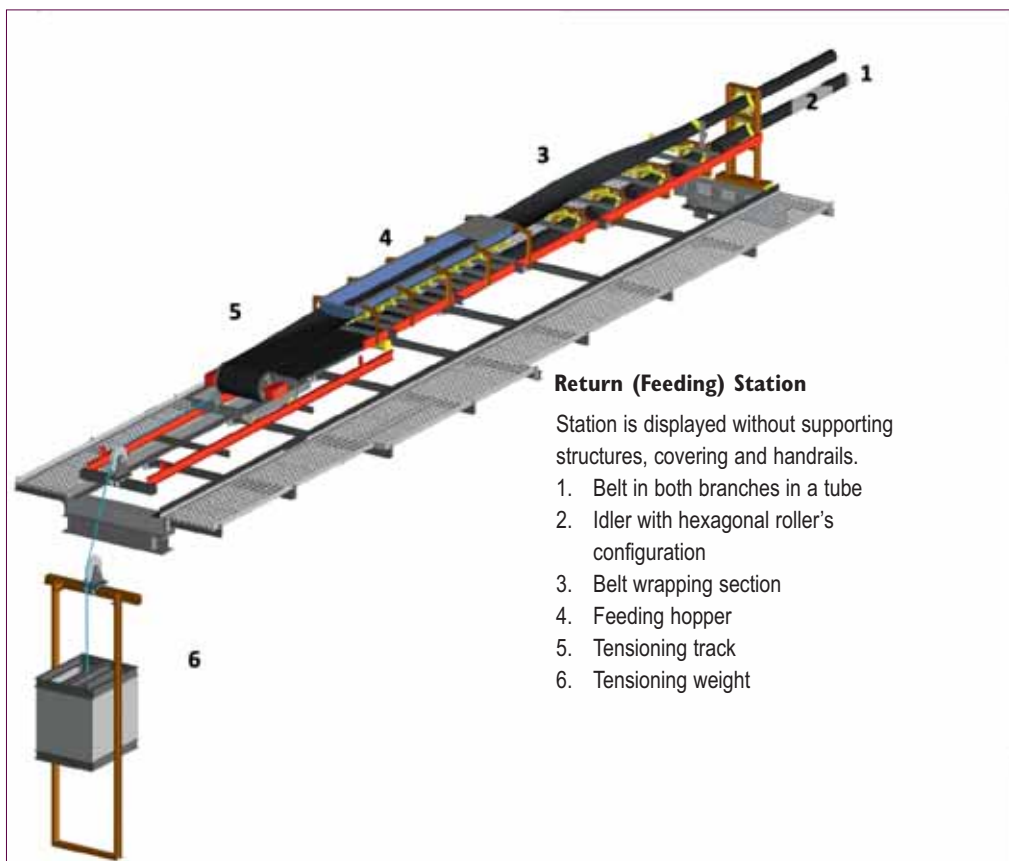


Tube conveyors have many practical benefits, including:

- ❖ ease of integration in existing plants;
- ❖ suitability for long distances in terrain with difficult topography;
- ❖ tight curves and steep inclines;
- ❖ conveyed material protected against weather;
- ❖ dust and spillage free conveying;
- ❖ low power consumption;
- ❖ low noise emissions; and
- ❖ low maintenance requirements conveying in both directions possible (in special arrangement).

Conveyed products:

- ❖ bulk density 0.05–4.0t/m<sup>3</sup>;
- ❖ maximum lump size: a third of tube diameter;
- ❖ maximum temperature 80°C (200°C);
- ❖ dusty, sensitive, hazardous.



**Chain conveyor — MoveMaster C-AF**

Application

The MoveMaster C-AF chain conveyor is used for conveying and elevating of all kinds bulk solid fuels used mainly as a fuel for heating in all kinds of heavy industry, especially cement or lime producing kilns as well as boilers at power plants or combined heat and power plants. The material processed include all kinds of alternative fuels.

Equipment

The MoveMaster C-AF is designed for continual conveying and elevating of bulk solids mainly from the docking station to the other machines in technology.

The heart of the machine is the use of forged, machined and case hardened high strength chains, driven by hardened sprockets and leading by trailing wheels.

Two strands of chain are used with plastic cross flights with sheet extension to convey the material. The casing is bent steel plates with chain runners.

Functions and key benefits

- ❖ inclination of conveyor from 0° up to 75°;
- ❖ optimal speed of the chain for optimizing wear;
- ❖ single or multiple outlets;
- ❖ smart shaft-less construction of trailing wheels in tension end prevent wrapping of stripes on the shaft;
- ❖ independent tension of the chain branches;
- ❖ patented system of tensioning: tension paddles show strength of limits (over-tension and under-tension) of tension and make the right size of stretching force that also optimize wear;
- ❖ spillage-free conveyor;
- ❖ low friction, noise emission and temperature because of plastic runners; and
- ❖ ATEX-compliant designs available.

**Corrugated board belt conveyor**

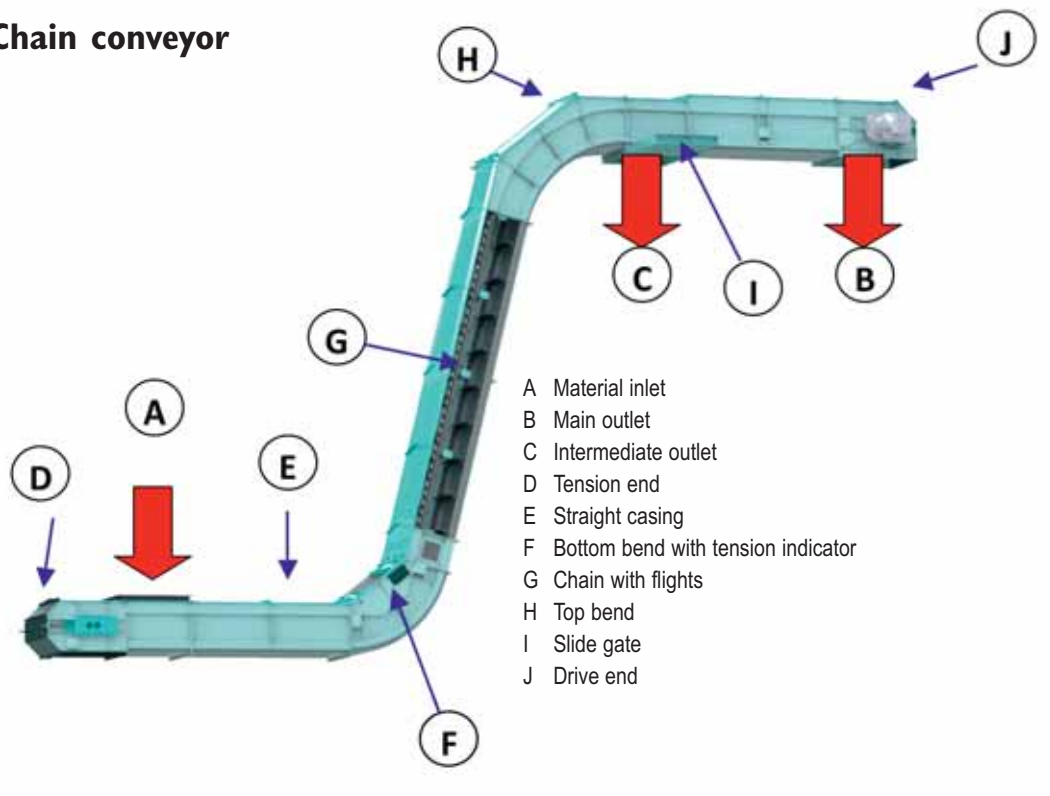
Working principle

Corrugated belt conveyors are designed for transport of bulk materials where combination of transport in horizontal, inclined, and vertical direction is possible using just one machine. Also, at certain configurations, the end stations can have mutual angular displacement up to a full 180°.

The transport belt of the corrugated belt conveyor is of special design with lateral ribs and corrugated side walls. The ribs and side walls together form pockets for the transport of the material.

The amount of material in each pocket is, besides belt width and height of the ribs and side walls, given by the greatest incline of the conveyor track and by the properties

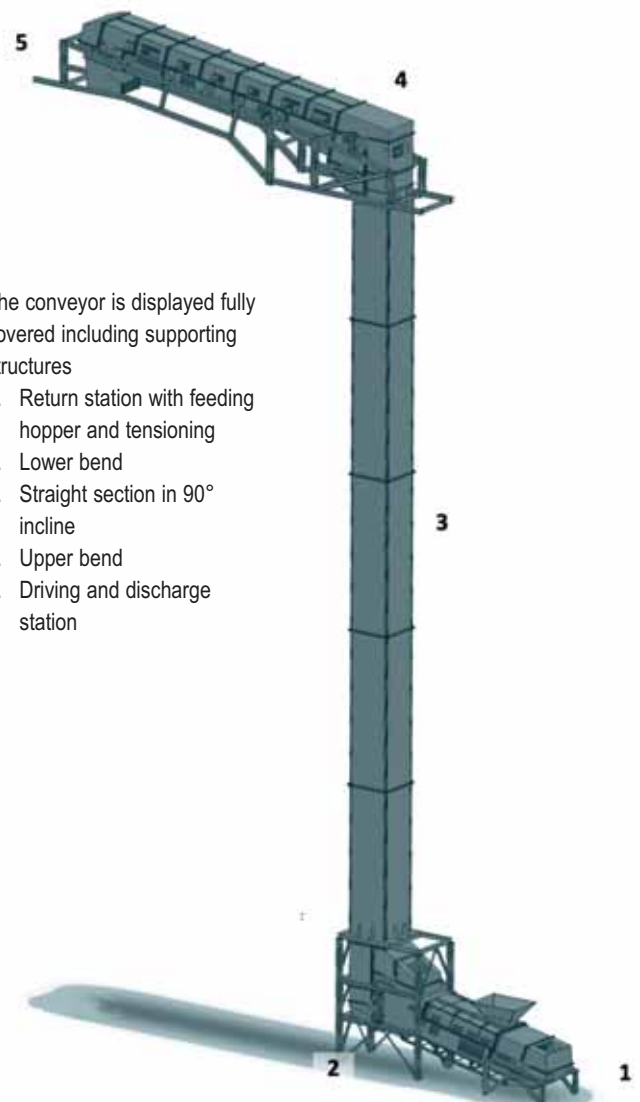
**Chain conveyor**



for the transported material.

The whole conveyor path between the loading and the

**Corrugated board belt conveyor in 'z' arrangement**



The conveyor is displayed fully covered including supporting structures

1. Return station with feeding hopper and tensioning
2. Lower bend
3. Straight section in 90° incline
4. Upper bend
5. Driving and discharge station

discharge is completely covered, providing protection to the product transported as well as the surroundings is protected from contamination by the transported product.

The corrugated belt conveyor has also a self cleaning function. The spilled material inside the conveyor enclosure is collected and returned back to the feed side of the conveyor belt. This ensures low operation and maintenance requirements.

#### Practical benefits

- ❖ easy and fast to integrate into existing plants;
- ❖ suited for combination of vertical and horizontal transport in one piece of equipment;
- ❖ conveyed material protected against weather;
- ❖ dust- and spillage-free conveying;
- ❖ self-cleaning function and collection of spilled material inside of conveyor body;
- ❖ low power consumption;
- ❖ low noise emissions; and
- ❖ low maintenance requirements.

#### Conveyed products:

- ❖ bulk density 0.05–4.0t/m<sup>3</sup>;
- ❖ maximum lump size: 200mm;
- ❖ maximum temperature 80°C (200°C);
- ❖ dusty, sensitive, hazardous

#### Conveying capacity:

Maximum conveying capacity: 3,000tph (tonnes per hour)/1,500m<sup>3</sup>/hr.

#### SCHENCK PROCESS TEST FIELD

For Schenck Process, the development of its machines is a continuous process. A team of engineers upgrades the design of equipment according to experience gained from operations and from the company's test field.

The main tasks of the test field are to:

- ❖ demonstrate and verify functionality of equipment;
- ❖ test different materials (customization); and
- ❖ test Schenck Process equipment, and optimize conveying and weighing solutions for various materials

Schenck Process's R&D office, in co-operation with its test field, has developed among others a completely new design of chain conveyor which is highly appreciated by customers.

The test field can analyse all kinds of material and, according to results, can modify the machines and provide tailor-made solutions for customers.


#### CASE STUDY CEMENT PLANT MOKRÁ (CZ)

From its portfolio of products, Schenck Process supplied several products to the Cement Plant Mokrá in the Czech Republic. Besides all types of scales, it installed complete systems for kiln and calciner heating, consisting of docking station, mechanical



conveying, screening, weigh feeders and feeding system. Moreover, it delivered five tube conveyors with a total length of 615m.

Jiri Strapina, operations manager of the Mokrá plant, says of the co-operation with the company: "Specialists from Schenck Process always provide us with appropriate solutions. They make the effort to find out best technical and economical solution. We appreciate having a reliable supplier for the complete system as Schenck Process covers whole range. After installing systems for AF feeding by Schenck Process, we can save huge amount of primary fuels, which is an excellent benefit for the sustainable development of our company."



One Source

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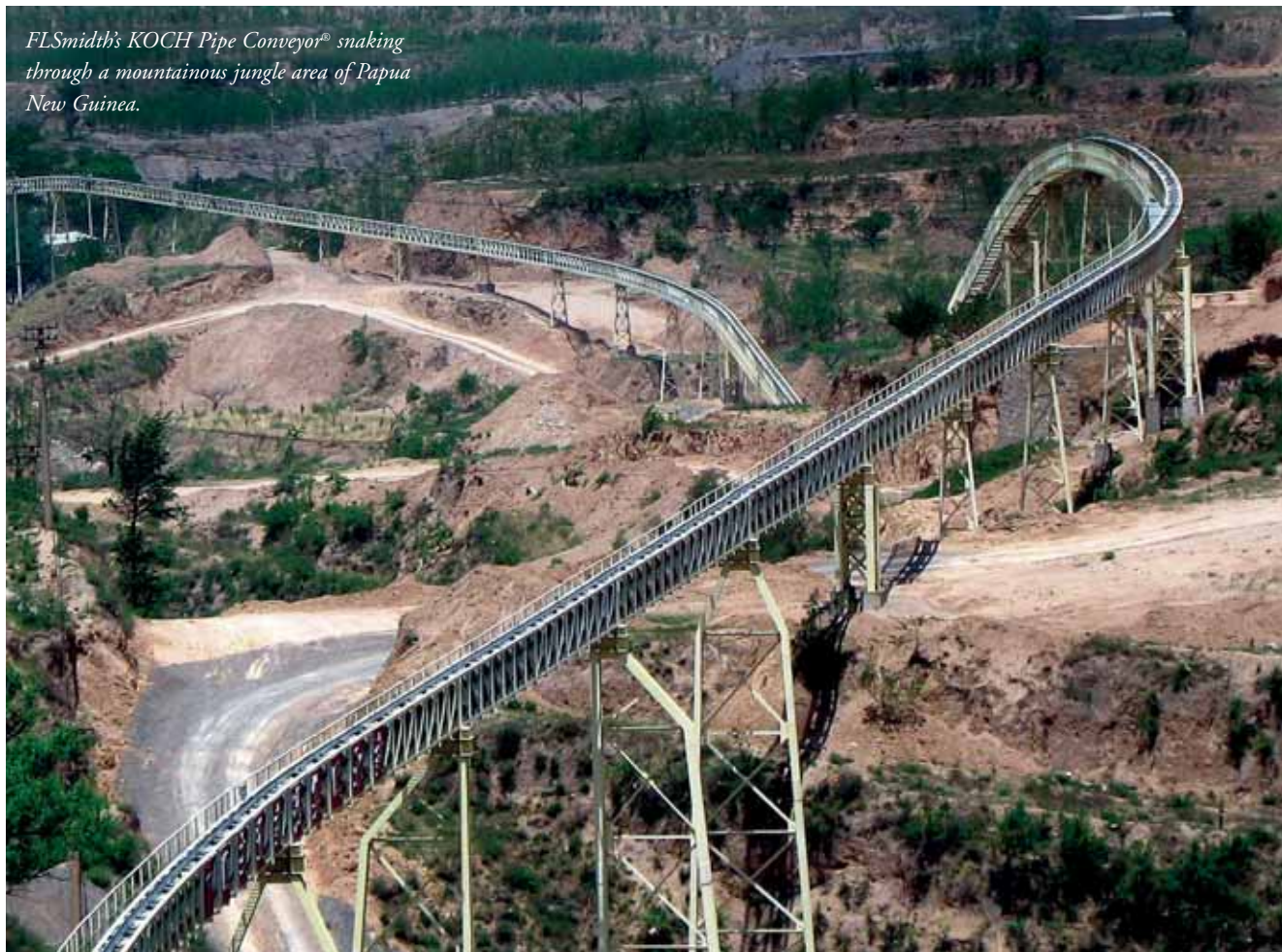
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## FLSmidth: customized solutions for conveyor customers

*FLSmidth's KOCH Pipe Conveyor® snaking through a mountainous jungle area of Papua New Guinea.*



Major equipment manufacturer FLSmidth offers a wide range of conveyor solutions amongst its myriad bulk handling equipment products.

The company focuses on, and manufactures, discrete products that readily integrate to form system solutions aimed at targeted markets. As well as conventional trough conveyors, it also manufactures unique conveying equipment including pipe conveyors, extendable, relocatable, and fully mobile conveying systems.

FLSmidth's equipment is able to handle the vast majority of bulk commodities, including cement, overburden, coal, dry tailings, iron ore, gold, copper, and fertilizers.

FLSmidth is able to remain competitive in the market by constantly working to innovate its equipment supply. It also focuses on working closer to the clients' requirements by listening to their needs. It gears its efforts to the trends in this cyclical market. Market research and analysis are performed to work with today's client market.

FLSmidth offers full service solutions in six core focus industries: copper, coal, iron ore, gold, fertilizers, and cement. Its core technologies and services range from material handling in the quarry throughout processing to end product. Capable of supplying fully furnished complete solutions including service, operation and maintenance within our focus industries and flow

sheet, FLSmidth does not regard products and technology as the end but the means by which it supplies full-service solutions to its customers.

The global target market is primarily mid- to top-tier mining houses, and cement and power plants. FLSmidth's conveying systems handle material at capacities ranging from 500tph (metric tonnes per hour) to 20,000tph. The company enjoys a close relationship with its clients throughout the lifespan of a project. This allows FLSmidth and the client to design the best solution



*FLSmidth's KOCH Pipe Conveyor® shown underground.*

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*FLSmidth RAHCO® Mobile Stacking Conveyor Tripper.*



for the project. Its relationship also carries to aftermarket support where it continues to support the installed equipment and develop further solutions with its clients.

FLSmidth strives to differentiate itself from its many competitors within its focus areas in the minerals and cement industries, and to maintain and sharpen its competitive edge while meeting customers' needs.

FLSmidth's conveying technology can be applied to most any mine plan from small in-plant conveyors to some of the longest overland conveying applications in the industry.

FLSmidth equipment is installed in some of the most severe environments in the world. It supplied a 4,400tph overland conveyor to the Veladero Mine in Argentina. This 4km overland conveyor operates in frigid temperature at an elevation of 4,300m (14,000 feet).

For more than 30 years, FLSmidth's KOCH Pipe Conveyor® has been integrated optimally in existing plant. It minimizes conveying distances, regardless of the landscape parameters, thereby permitting cost-

effective line arrangements. Benefits of the pipe conveyor technology include the ability to transport bulk materials dust free with low noise emissions and a totally enclosed transportation method over roads, tracks, waterways or open seas, through existing plants, over public streets, and in



*FLSmidth overland conveyor.*

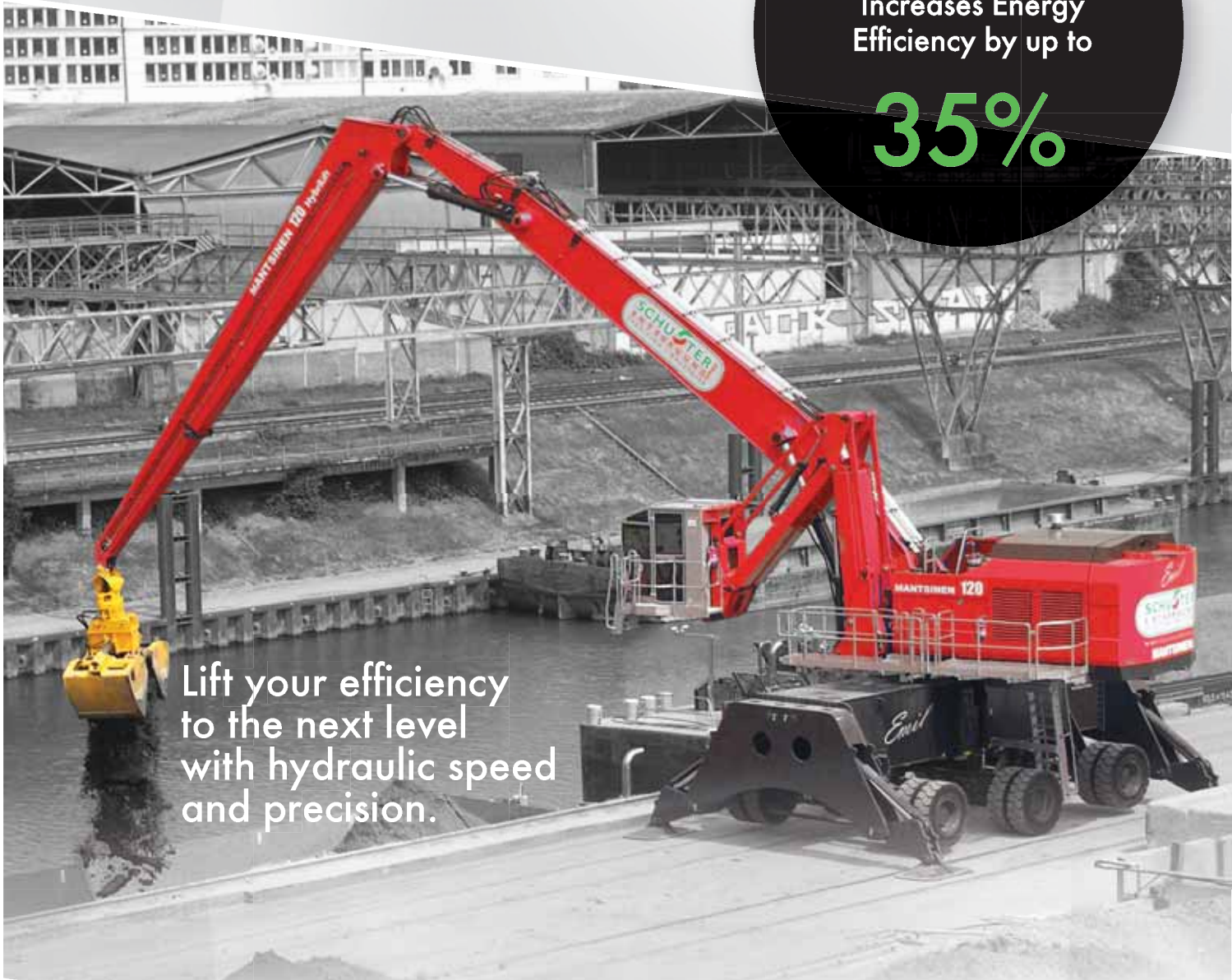
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*FLSmidth RAHCO® Mobile Stacking Conveyor handling dry tailings at La Coipa.*



environmentally protected zones. Even contaminated materials are conveyed without any negative environmental impact. Pipe conveyors can handle inclines up to 30° with undulating horizontal and vertical curves. A curve's minimum radius can be as low as 45m. If required, the KOCH Pipe Conveyors can simultaneously convey different materials on the upper and lower strands and accommodate multiple feed points. Examples include a pipe conveyor installation to connect a harbour with a cement plant in Lima/Peru over a distance of 8.2km to transport cement and coal simultaneously; and the 550mm diameter pipe conveyor for 4,000tph plus 3,000tph transport of iron ore pellets and DRI over a distance of 1,4km between steel plant and ship loading/unloading facility in North America.

Malayan Cement transports fresh cement to a shiploading station at sea — securely protected in the KOCH Pipe Conveyor® against the high humidity. Since 1995, the system has proven to be highly reliable and available for operation under extreme conditions, like similar pipe conveyors that have been in operation since the mid-1980s.

A coal-fired power plant in Lippendorf, Germany operates an approximately 2.2km-long KOCH Pipe Conveyor. This is one of the most productive dual pipe conveyors in Europe, conveying approximately 1.1 million tonnes/year of wet and dry ash, gypsum and filter cakes.

This pipe conveyor is part of a complete FLSmidth plant for power plant waste disposal — including the innovative FLSmidth 'Reaction Belt' for the preparation of ashes and REA waters. One challenge encountered was the transportation route. The Pipe Conveyor and FGD-pipes climb in the area of the old power plant over the evaporator unit, curve around old power plant buildings, cross paths, rail systems and roads.

FLSmidth has longtime experience in the field of pipe conveyors. The technology is continuously developed to serve requirements like high capacities. On this view a 4.4km-long pipe conveyor was recently taken into operation to transport 4,000tph which is adequate to move 5,000m<sup>3</sup>/h of coal to a power plant in south-east of India.

In terms of recent technological developments, FLSmidth has unveiled a commercialized version of the Dual Truck Mobile Sizer (DTMS) specifically aimed at the big volume material handling applications. The technology provides a high level of flexibility and opportunities for in-pit mobile excavation and transport equipment. As operations in the mine progress, the travel distance between the excavation face and the process area increases. FLSmidth's DTMS is designed for simplified relocation. Minimal ground preparation is required and can be easily relocated using a single transporter.

When paired with relocatable or extendable bench and overland conveyors, the material transport cost per tonne is greatly reduced. Mines can also reduce their carbon footprint by reducing haul truck travel distance. Fuel and haul truck maintenance costs are positively impacted by the shorter travel distances and reduced manpower required for maintenance and operations teams.

With the expanding interest in dry tails stacking, the development of the world's largest capacity filter press (120 filter/plates with a size of 2 × 4m) allows, for the first time, large capacity dry tails stacking opportunities for the mining industry. This filter press technology combined with a conventional trough or pipe conveyor and mobile stacking systems allows clients to efficiently convey and stack dry tails, eliminating the need for costly and potentially dangerous tailings dams. Dry stack tails can be easily rehabilitated to match the surround environment once a mining project has been completed.

With reduced head grades and ever increasing demands for larger equipment, FLSmidth offers equipment solutions that work to reduce operating costs and allow mine operators to more efficiently invest in the future of their operation.

Today, the company offers a comprehensive, flexible and global service. With offices in more than 50 countries and service centres in its primary regions, FLSmidth is on the spot to help customers with every stage of their operational process, from strategic planning to overcoming everyday challenges and facility lifecycle management.



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## Conveyors form an important part of NMH product portfolio

NMH was founded in 2010 in Sered, Slovakia, mainly as a production facility. NMH is a member of the Heilig Group, which was founded in 1978. Today it consists of 11 associated companies in five countries, namely: France, the Netherlands, Germany, Poland and Slovakia, and employs more than 300 people. NMH offers experience; an individual approach, adaptability, complete service, reliability, and a team of professionals.

NMH has a shop floor size of almost 5,000m<sup>2</sup>. The company focuses on manufacturing for all subsidiaries to the Heilig Group, mainly to B+B Anlagenbau, Bezner and Bezner-Oswald. Although NMH exists as a young subdivision, the Heilig Group has decades



of experience in waste management, recycling, bulk handling and wood processing.

Heilig group members are:

- ❖ N.M. Heilig B.V. (The Netherlands)
- ❖ N.M. Heilig exploitatie B.V. (The Netherlands)
- ❖ Bezner (Germany)
- ❖ Bezner Projects GmbH
- ❖ Bezner-Oswald (Germany)
- ❖ B + B Anlagenbau GmbH (Germany)
- ❖ Nederhoed B.V. (The Netherlands)
- ❖ Antha-Pol (Poland)
- ❖ HDC Food Technology B.V. (The Netherlands)
- ❖ Beemster Electro Trading BV; and
- ❖ NMH s.r.o. (Slovakia)



NMH's professional team consists of 80 employees: ten design engineers, with full 3D & 2D design application software; 50 technical assemblers

welders and other technicians; and eight project managers who keep projects organized. Quality assurance and inspection is adhered to through the complete life cycle of the manufacturing process. Technical expertise in combination with years of practical experience guarantees a high quality product. Many of NMH's installations are supplied as turnkey solutions.

### PRODUCTS:

#### Conveyor belts

With diverse experience, knowledge, inventiveness and adapting to its customer's needs, NMH can apply its knowledge in multiple applications. The company's conveyor belts are manufactured mostly for: bulk commodities; recycling and waste recovery; compost processing; and non-metallic minerals, timber & glass etc.

Conveyors are a major part of NMH's production line. Since the company was founded in 2010, it has produced 287 conveyors. This equals almost three kilometers of conveyor. These conveyors were divided over 14 different projects, the



biggest one of which contained 80 conveyors. More than 300 conveyors have been produced since 2010, equalling a total of 4,500 metres of conveyor in total.

#### Mobile bunker

This conveyor is suitable for the transportation of bulk material. It is a typical roller conveyor with an infinite rubber belt. One advantage is that it can be a reservoir for the transported material with a capacity up to 50m<sup>3</sup>.

This mobile bunker offers a possibility of tilt adjustment (6–16°) and therefore a change of transport height. It is possible to reposition the conveyor depending on the customer's site environment, with a rigid independent chassis design. It can be made in the width from 800 to 1,600mm.





### Wood machines

NMH is responsible for the production of wood processing machines for Bezner-Oswald. It manufactures machines for rounding, profiling, peeling, cutting, chopping, splitting and such.



Besides the standard machines, NMH can produce many other types. The machines are constructed robustly, have high reliability, and little maintenance is needed. For wood processing, NMH has different types of machines available. These include: cutting and sawing machines; rounding machines; profiling machines; horizontal screen; pole peeling machine; and special solutions.

### Waste sorting

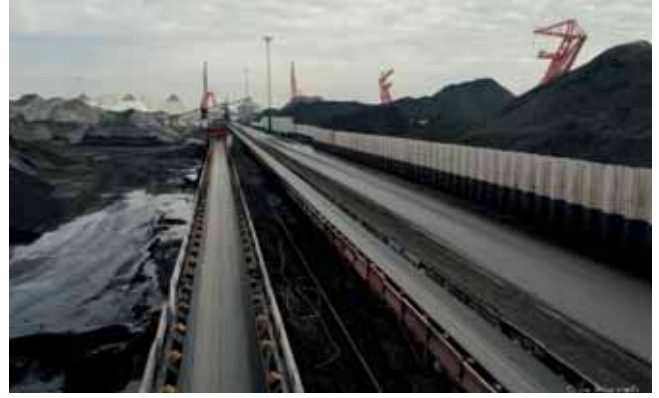
NMH also produces machines for waste sorting industry, which are able to process different kinds of waste, including construction and demolition waste, municipal solid waste, commercial and industrial waste, paper, cardboard and plastic. They can be used for sorting the material to a variety of fractions, also for sorting ferro magnetic from non-ferromagnetic. For waste sorting, NMH's products include: ZZ air classifiers; air separators; horizontal screening machines; drum screens; separation tanks; circular vibratory screens; and friction separators.

Separation of the light and heavy fractions is achieved by a specific and quantity-adjustable air flow within the fall range, shortly after leaving the conveyor.

### PET (polyethylene terephthalate) recycling

NMH produces recycling plants that can completely process PET bottles and other plastic waste, it means from debaling through shredding into flakes, separating, washing and drying to big-bags packing. NMH's installations can recycle: PET and PP plastics; municipal waste; paper and cardboard; and individual customer specifications.

NMH builds both individual machines and complete recycling lines. It has already produced over 170 machines for PET



recycling and the total capacity of all these installations together equals 32 tonnes per hour.

### Bulk handling

NMH is a producer of installations for bulk handling industry. Dry bulk commodities are usually divided into two categories; major bulks and minor bulks. Some examples of major dry bulk commodities include coal, ore and grain. Minor bulks include steels, sugars, cements etc.



NMH specializes in equipment for loading, unloading and storing bulk products such as: minerals; sand & gravel; wood; and other bulk materials.

Equipment includes: long distance conveyors; loading conveyors; chain conveyors; pipe-conveyors; vibrating screens; and turning belts. NMH also supplies the following spare parts: conveyor accessories; lining solutions; repairs and upgrades; supervision and maintenance; and parts replacement/training.

### Stainless steel

NMH provides equipment to process stainless steel, either just for parts or complete machine installations. These machines and parts are of a very high quality; they are air- and water-tight for aggressive environments. For stainless steel processing, NMH uses the TIG welding technique — this means that the welds are formed by the inert gas, which guarantees their strength and resistance. NMH maintains a high standard of quality control and inspection of its products, that ensure completely professional work.



# TRAMCO

- TRAMCO has been involved in the design, application, engineering and manufacturing of the world's most extensive line of chain conveyors, enclosed belt conveyors, specially designed conveyors and conveyor conversions since 1967.
- Our products are robust, reliable and designed to handle severe processing applications. Our variety of designs allows flexibility to specify the size of conveyor for your capacity, at the best value.
- Since 2000, we have had a design and manufacturing facility in Hull. We employ local people with a diverse range of skills, including bespoke product design, fabrication, welding, machining, assembly and painting.
- TRAMCO conveyors offer solutions for delivering product for various industries such as chemical, coal, food and grain, mining, plastic, pulp, rubber and paper, or solid waste and recycling.
- Our philosophy is to produce high quality, reliable equipment that meets specific customer needs. Our production facility offers cutting, machining equipment and robotics which allows for complete in-house production.
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BUCKET ELEVATORS

## The contribution of conveying systems to bulk bagging operations

Everyone has rules of thumb when it comes to choosing a conveying system — rules based on bulk material characteristics, required flow rates and distances, source and destination, facility configuration, and other variables. But those with experience in all types of systems will tell you that the first rule is, ask the experts.

With over 20,000 installations worldwide, Flexicon certainly qualifies as an expert in the design and manufacture of bulk handling equipment. Flexicon systems transport, discharge, fill, weigh and feed a broad range of powder and bulk solid materials. From this diverse range has grown the company's comprehensive

Fig 2.



Image Courtesy the Flexicon Corporation

understanding of the materials and the process as they relate to the strengths and limitations conveyor types.

Business is booming for this USA-based corporation: in the past three years alone, the company has doubled the size of its US facility, expanded to a second, larger building in the UK (see Figure 1) and has established sales offices in Chile and Singapore. All told, Flexicon systems are manufactured on four continents. Every Flexicon system is backed by the company's Lifetime Performance Guarantee and supported by its worldwide network of factory-trained technicians.

Customers reap the benefits from consultation with a Flexicon specialist who does not have a vested interest in selling only one type of equipment, but will instead weigh each parameter and recommend the best solution to a material handling dilemma. Flexicon's product line includes three distinct conveying technologies:

- ❖ **flexible screw conveyors** (see Figure 2) — these conveyors consist of a stainless steel flexible spiral, enclosed in a polymer outer tube and driven by an electric motor. Rugged and reliable, these conveyors are economical to operate and take up minimal floor space.
- ❖ **dilute-phase pneumatic conveyors** (see Figure 3) — dilute phase pneumatic conveying systems consist of a single air

Fig 1.



Image Courtesy the Flexicon Corporation

source, either positive pressure or vacuum, that suspends the material and moves it at a high velocity, long or short distances, from the inlet to the discharge point.

- ❖ **tubular cable conveyors** (see Figure 4) — ideally suited to transport fragile materials, this conveying technology gently slides bulk materials through smooth stainless steel tubing using low-friction polymer discs attached to stainless steel or galvanized cable. The discs and cable are driven by a wheel at one end of the circuit, and put under tension by a wheel at the other end.

All three conveyors will handle a wide range of products and can be designed to move materials that are friable or fragile, as well as temperature-sensitive materials. Flexicon's diverse experience facilitates the correct selection of conveyor technology based on their vast storehouse of knowledge about the propensities of the material to be conveyed, including bulk density, flow properties, temperature, moisture content and other characteristics.

Flexicon has also pioneered the technology behind efficient bulk bag handling, leading the way with innovations to bulk bag discharging, filling and conditioning systems. Just as bulk bags (aka FIBCs [flexible intermediate bulk containers] or big bags) changed the way bulk material is stored and shipped, Flexicon's bulk bag handling systems revolutionized the way these bags are conditioned (see Figure 5) discharged (see Figure 6) and filled

Fig 3.



Image Courtesy of the Flexicon Corporation



(see Figure 7); dramatically improving convenience, safety and cleanliness before, during and after the bulk bag handling process. Each of these designs satisfies a distinct range of bulk bag

handling applications, and is available with performance enhancements to meet individual requirements, from basic, low-cost stand alone units to automated, high-capacity systems and everything in between.

A corollary to the first rule (ask the experts) is test before purchasing. Testing will assure that the specified system will, in fact, convey the material the required distance without degradation or undesirable changes in product characteristics. Flexicon has fully equipped state-of-the-art testing facilities (see Figure 8) in the US, UK, South Africa and Australia, each containing full-size systems that are easily reconfigured, as well as a full range of accessories and peripheral equipment. Test results will produce an objective recommendation based on the actual material. By verifying performance prior to fabrication, Flexicon customers can avoid costly misjudgments and delays in getting



their system up and running.

Flexicon also realizes that the economies of scale are also a factor in selecting a system. While experience and testing may clearly indicate the advantages of one technology over the other; finding a solution that is most suitable economically may be the decisive factor. For example, one handler may require a lower capital investment and operating costs, while another may be able to absorb higher initial cost, realizing greater cost effectiveness when conveying in higher capacities and/or over longer distances. Every phase of each system's development, from initial design to final shipment, is handled by Flexicon, eliminating outsourcing issues and keeping a tight control on the cost, quality and scheduling of the order, regardless of its size and scope.

# LNK Industries

## from terminals to chemical plants



Why has Latvian company LNK Industries become a leader of integrated projects of marine terminals? asks Lyudmila Pribylskaya. What risks can participation in *Dry Cargo International's* conference and exhibition *Dry Bulk Europe* help to prevent? How can transshipment technology increase the profitability of chemical enterprises? The answers to these and other questions are given by Konstantin Volinschikov, Director of Strategic Planning and Development of the TTS – Transportation Technology Systems plant (a division of LNK Industries).

“As you know, in this day and age, every project is implemented on a competitive basis. The competition is preceded by a technical assignment. Planning of the technical assignment for Russian projects mainly considers, or will consider, the specific expertise demonstrated by LNK Industries at the existing bulk (loose) cargo terminals – Riga Fertilizer Terminal (RFT) and Riga Bulk Terminal (RBT). At these sites, a lot was done for the first time in the world — because of the uniqueness of the general contractor that handled the design, construction of above-ground and maritime sections, technological equipment and automation.

“There is a saying: the contractor is good, if it has been hired three times. At first, such contractor was able to win a tendering process or two... And finally it was just called...” These words of the founder of LNK Group (Latvijas Novitātes Komplekss – Latvian Innovative Complex) Alexander Borisovich Milov, EngD, underscore the willingness of his company to compete fairly for the right to perform works. But as for bulk

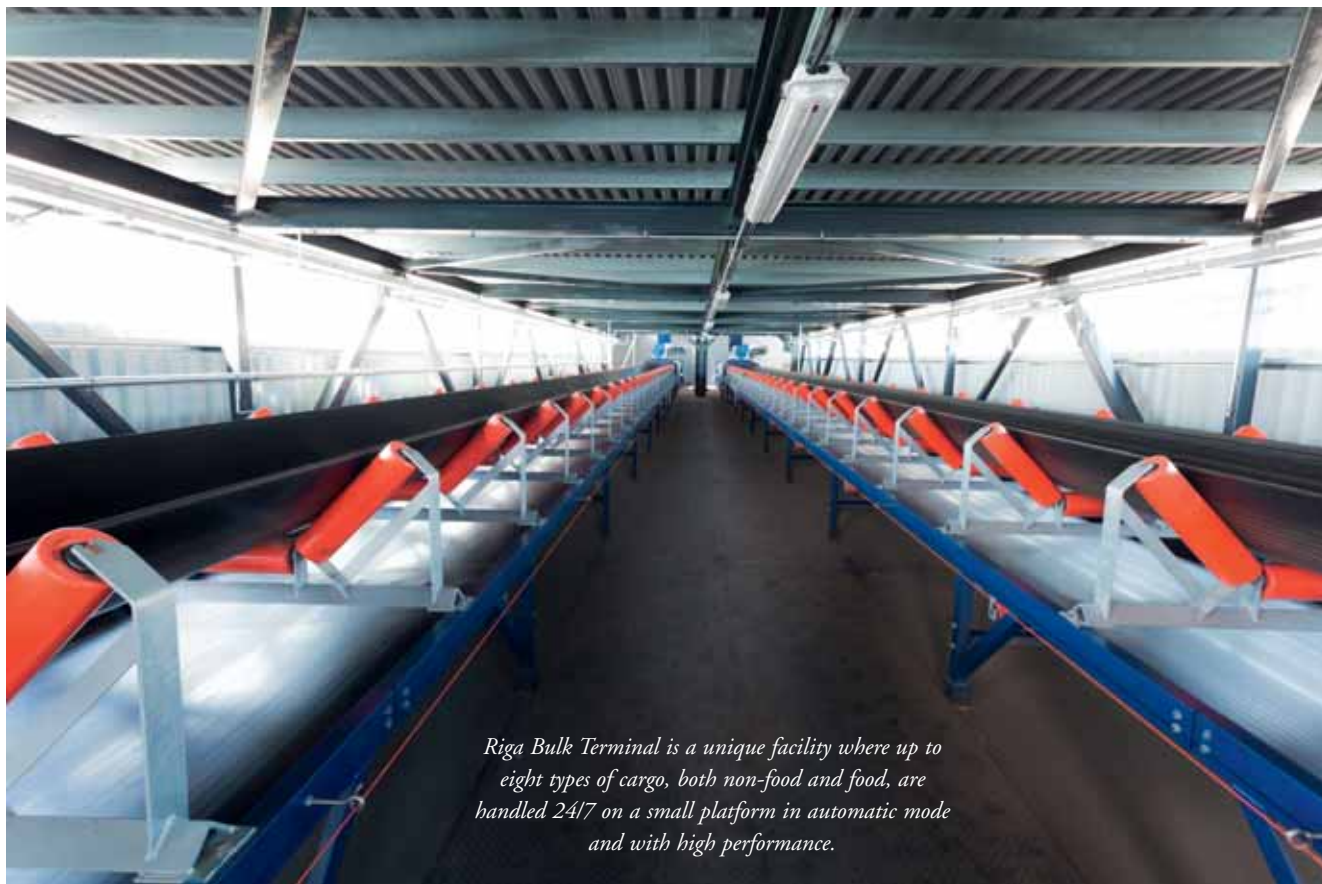
*Konstantin Volinschikov, Director of Strategic Planning and Development of TTS: “We often improve an existing site by building a terminal or upgrading a factory with certain conveyor systems. We’re striving to solve problems, minimize limitations and create conditions so the car can be unloaded faster.”*



cargo, LNK Industries has a strong reputation in the market. The company has an integrated approach in terms of design, construction and fitting of transfer sites without stopping production.

**So here is the question: if the general contractor has already built sites worth millions, would it be interested**





*Riga Bulk Terminal is a unique facility where up to eight types of cargo, both non-food and food, are handled 24/7 on a small platform in automatic mode and with high performance.*

#### **in such a small task as the repair of a beat-up terminal?**

"I always say: it's boring sharpening a screw for grandma's meat grinder. Because it never pays off," Volinschikov smiled. "All projects start with small things. First, you have to make friends with people and screw in at least a couple of bolts. And when it comes to business, they will remember you. Usually, projects last for a very long time. Therefore, it is particularly important to establish a correct concept and a time reserve for growth.

#### **TERMINALS TO GROW INTO**

"We always start designing from the end, from the last part," Volinschikov continued. "Because almost every customer prefers stage-by-stage construction. It is very expensive and time-consuming to build everything simultaneously. Stevedores cannot afford to stop, build for two years and then start to work.

So everybody tries to get money from shareholders/investors gradually. Let us first spend a million and get an effective output. And then we can move on.

The RFT project was implemented in Riga in three stages as well. We built a pair of domes, then a mobile transport system, then began operating them and then started accepting cargo. And now RFT is ready and waiting for the next batch."

#### **Do you offer to plan not just one step ahead, but five?**

"We start from a final result that a customer wants. We will lay out a territory and place warehouses accordingly. Yes, sometimes we spend a little more money, because we warn our customers: "You know, you'll build a warehouse, but you'll immediately need to lay down the foundation in order to expand it. And to extend the conveyor slightly. Right now, it may look like you do not need it. But later you'll have to stop operating this warehouse; otherwise piling will destroy the existing structures".

This is the moment to convince the customer. We always try to provide versatility, because our experience is vast and it tells us that markets are unstable. And, for example, *Dry Cargo*

*International's Dry Bulk Europe 2014* conference that we attended in September last year shows the same thing.

Projects have great momentum. Two years is considered fast. We built RBT in Riga in a year-and-a-half, but that's our all-time high. On average, a project is completed in five years — from the idea of 'let's build something' to the first ship.

And look, five years ago, you thought that grain was selling well. So it was necessary to build a grain terminal. After five years, you started to build it; however, the industry experienced a harvest failure, or grain embargo, which has already happened in Russia. "So, let's start importing pellets!" "We cannot process pellets, because we have designed our terminal for grain only."

China is a major consumer of iron ore. The country consumes more than the rest of the world. We have precise data for the year 2012 — 745.4mt are consumed by China, followed by Japan with 131.1mt, and all 27 EU countries imported only 145mt of ore. This September, China will enter into a contract with the Vale S.A. company from Brazil and the whole world vector will be changed. Contracts will be cancelled and all the other mining companies may be out of business...

Therefore, we ask the customer: "Do you plan to have mineral raw materials only?" "Yes, we want urea." "You want urea now, and two years ago your neighbours wanted the same. If they complete their construction quicker than you — you won't see urea."

Yes, Uralchem knows its exact volumes. It is difficult to compete with them; because they know that world grain production is growing along with sales of mineral fertilizers.

And what about a company that enters the market and fights for customers, declaring: "I will freight cheaper and faster than anyone else?" The cargo owner says: "Sounds good, we will work with you." The early bird catches the worm... So, must one leave business relations that are already operating? You could do that. But then competitors should provide better conditions for the client to easily abandon good connections and neglect certain

amenities. Will it be cost effective to freight something at a low cost?

In order to avoid a difficult situation, let us think it over thoroughly and include the following idea in the original project: mineral fertilizers of this type are fine, but let's build slightly more expensive warehouses, so we can freight more or handle something else."

#### Is this thinking typical for the Russian market?

"There are oligarchs there who see the world trends a hundred times better than we do. But the decisions and preparations of business plans at the site are more often made by technical officers. Their view is narrower.

Experience shows that one needs to build multi-purpose terminals that can be easily converted. In terms of new trends, Riga Bulk Terminal is a perfect project."

#### EFFICIENCY = VERSATILITY

Since demand trends are unstable, the market pushes us towards multi-purpose terminals. Riga Bulk Terminal once housed eight kinds of cargo on a small platform. They started with three, and not of those kinds that they thought about at first.

"Yes, we struggled and invented things. And now, look what fancy stuff we can make in difficult conditions. After all, everyone's conditions are 'bad': platforms are small, the railroad is bad, the fate of future cargo is uncertain. But we know how to make a terminal as versatile as possible. And we do not just know it — we have already done it once!" Volinschikov said. "Technology must prevail in such a project. A pier and concrete alone are the things no one wants to have. Effectiveness isn't affected by a place, but something that will be placed on it — a shiploading machine, a warehouse, an automated cargo handling system.

LNK Industries has united the project engineers, builders, designers and manufacturers of production equipment and

automation, erecting personnel and operators under one roof. They are all separated in Russia. The following trend exists: design something in theory, and then look for someone who will build it. Germans say: we will supply equipment, but it is not the best option.

It is true that one famous German company produces the fastest wagon tippers. But in order to mount it, you need to dig a pit 12 metres deep, and in Latvia it will cost so much money that it is better to place another tippler that requires a less deep pit. The Germans do not consider this part at all. But we do. Because no customer wants to know the cost of the equipment itself. But it must be mounted and commenced nonetheless. A big-name company says: 'It's not our concern.' And that is its weakness."

**How does a method of production included into the design of the terminal regulate its concept — the vision of terminal construction and operation? For example, the railway is a 'bottleneck'. You have installed facilities that help to unload the rail cars in seven minutes instead of 14. Does this help to pass through a bottleneck faster, or vice versa?**

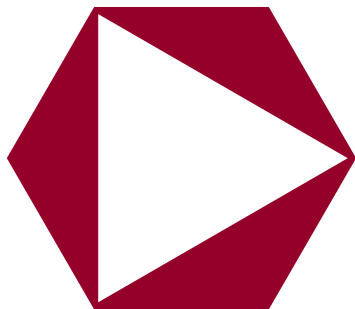
"We do not live in an ideal world. There are always some sort of limiting conditions. These include existing features — geographical or engineering. Or a federal property that cannot be demolished. Or conditions limiting cost — 'not more than...' This is normal.

We often improve an existing site by building a terminal or upgrading a factory with certain conveyor systems. We're striving to solve problems. We cannot make a customer to do something, if the municipal authorities or circumstances prohibit someone to do something.

Yes, sometimes we have to conclude: 'unfortunately, your requirements for this site are unattainable.' For example, if the railway cannot handle more than a certain number of wagons,

*A new large 5-axis machine allows TTS to independently produce precision components for the shiploading machine and other large industrial facilities.*





# TTS

LNK INDUSTRIES



[WWW.TTS.LV](http://WWW.TTS.LV)

**TURNKEY BULK CARGO TERMINALS**

even with the maximum possible rate of their unloading... We try to minimize limitations and create conditions so the car can be unloaded faster.

For example, our customers from St. Petersburg have chosen us to be process engineers. They came and said: 'In the theoretical cycle, you have written that it takes four minutes to unload a wagon.'

And we said: 'Yes.'

'But it is impossible! This is nonsense! You've said that just to show off! Let's be realistic.' People with experience look at us as dreamers.

'Well, actually we perform loading/unloading works pretty fast,' we replied. 'Let us go to the port.'

#### A MINUTE AND A HALF PER WAGON

'So, we arrived at the port, where our guests were surprised to see that the wagon was unloaded in 1.5 minutes. There were good weather conditions or maybe the cargo was not that complex at all. But we've managed to unload it not in four minutes, as we wrote, and not 12 as they do in St. Petersburg, but in 1.5.

'Well, you will probably never be able to achieve that in our country,' our guests doubted. 'We've never had that.'

'But you've never worked in the same manner as we do here,' we assured them. 'You see, our employees here are the same as yours, they were taught the same things by the same people and we have the same Russian railroad cars and cargo. These are not some sort of Euro-wagons with some kind of Euro-rail tracks. These wagons are from the Perm region, they went through the cold and moisture. Wagons range from very beautiful to completely horrifying. But in general, all of them are freighted like this. Not because of luck, but because certain people spent some nights counting: how much free space should be left, where a certain vibrator should be located and a gripman should be placed. And then, if you follow certain technological steps, it works.'

Yes, there may be difficulties. The wagon hatch might not open, and it generally can delay the unloading for an hour. But as we guarantee that we'll unload the wagon in four minutes, and actually do it in one and a half, this hour of downtime will be offset. Riga Fertilizer Terminal is now operating ahead of schedule. We can see that thanks to the control system.

So, here's the idea: we try to optimize everything. People have not seen the new approach, even though they have travelled around the world, from Latin America to Antarctica. They are always in doubt thinking: 'Well, the Baltic states are so good because their grass is green, they have alpine air, beautiful wagons and the best fertilizers. And our conditions are worse.' The Norwegian stevedores also blame their bad cranes, bent hooks and wet slings.

Our confidence is based on practical experience. We know: there will be difficulties, but everyone has them. In fact, we adjust to specific conditions, firmly knowing that the wagons will be terrible, cargo will stick together and the winter is cold."

#### And how can the participation of LNK Industries in inspections and designing help to save investors' funds? That you, for example, lay the groundwork for future activities?

"Often, further development becomes impossible if you do not shape your future. It can be difficult to convince the customer that he has to pay 5% and dramatically win in quality. 'Why do we have to make a hopper made of stainless steel? It is four

times more expensive than a regular one!' But that is nothing within the scale of the project. And it could work without the process shutdown typical for Russia — a day when no products are handled and everyone is involved in cleaning, adjustment and repairs. Four days per month of 22 working days — that's where the quality solves problems. Currently, we are negotiating with a certain producer of mineral fertilizers. For 20 years, they worked with German firms that do not exist now. They need to buy new equipment. But they are being offered completely different solutions."

#### Which are not compatible with the existing ones?

'Will it work at all?' the customer asks. And the customer is being assured that it will. 'And where are your references?' 'We have none.'

And that's when we come around. We introduce everything in the way as it should be. Plus, we are ready to listen to the customer, adapt to their needs, rather than sell a pup. Moreover, we are ready to adapt wisely.

Customers often try to repeat or slightly improve what they always do. But equipment becomes obsolete. We try to listen to the customer and suggest better, cheaper and easier solutions — or more complex, but more effective ones. This is the main difficulty: people everywhere are conservative, especially the technical experts.

What matters here is not technology, but attitude. Our woodworking customers from Perm are still telling us: 'You are warm-hearted guys.' Germans and Finns are different... We understand our customers. And it works."

#### DIRECT LOADING OR WAREHOUSE?

The biggest difficulty of all the ports, whether Baltic, Russian or Western European, is accessibility. The railway falls behind regarding handling capacity and control procedures. Therefore, technology must be capable of allowing millions of tonnes to pass through the 'needle's eye' of the railway. Wagon unloading speed

*Alexander Milov, EngD,  
founder of LNK: "By  
combining a variety of  
innovative skills sets, LNK  
Industries has gained a  
foothold in the market  
with products that have  
no analogues in the  
world."*





*The construction process of the multifunctional terminal in Klaipeda port, the largest terminal in Lithuania that has unique automated rolro ramps.*

is one of the elements of such technology. If the wagon frees up the tracks faster and exits the port, its presence in this logistic section along with usage costs is minimized.

Informational support of railway must be fast: marks for non-contact communications allow you to automate the unloading/loading processes, issue papers and manage railway data.

“All trucks of the major forwarder are equipped with GPS, so each of them knows where its driver is. A wagon may contain cargo that is five times more expensive than the cargo in the truck,” Volinschikov noted. “And in some ports of Russia, 2% of cars are lost, 6,000 cars are waiting on the railway tracks; sometimes they were pushed down a hill, sometimes railway points were set incorrectly... The shipment may have been loaded onto a ship long ago, so it’s easier to roll out a wagon somewhere and forget that it was there on the first place.”

#### **And that makes warehouses so crucial?**

“Everything must be perfect in order to perform direct loading. And this does not happen in the real world. As soon as we move away from the ideal, the reliability margin decreases. In the case of direct loading, we will be stuck if the wagon is lost, if snow covered tracks or if your neighbour’s train came so yours cannot enter. Ship demurrage starts... Having a warehouse, we uniformly accept wagons, accumulate a batch and easily deliver it to the ship.

The warehouse means security. The warehouse means an increase in transshipment volume. Any port features a marine cargo front, storage facilities and a railway cargo front. If there is no warehouse, then the relationship between the fronts come dangerously close. There is no security buffer, which may allow one to accumulate something or optimize loading and unloading, accept the wagons not when they arrive only when all the other stevedores are vacated, accept the cargo in the evening because the warehouse has a free spot, etc.

#### **About your dome-shaped warehouse technology — is this really effective, or is it just a fashionable and expensive feature?**

“Economic categories refute the thesis stating that dome-shaped warehouses are supposedly expensive. Such a design allows for the application of the principle ‘first in/first out’ (FIFO). The dome-shaped warehouse is loaded through the top: the first cargo enters from the top. It will exit first through the bottom. The cargo will be evenly replaced.

When bulk storing, the top cargo crushes the bottom cargo. And something on the bottom could lay there until it turns into some kind of fossil. To avoid this, one requires very competent staff and clear procedures. The cargo should be monitored and removed layer by layer. This means more men, extra costs and additional energy.”

#### **Now, we roughly understand how you transship mineral fertilizers from the railroad to the ship. But what about managing a warehouse at the enterprise itself?**

“It’s practically the same thing. The logistic rules don’t change — they do not depend on your proximity to water. In fact, we are now thinking about entering the segment of the market where they produce fertilizers. This segment has the exact same shipment and fronts. The only thing different is the direction.

However, there is one ‘but’. In Russia, production plants, mines and other facilities are designed by special institutes. They offer process solutions about how the things will operate EXACTLY and not who would supply a conveyor or which one is better. ‘It would be great to have a conveyor, preferably a belt one. And details are not our problem.’ Let us take part in the designing of a plant, because when they begin searching for those willing to manufacture it, it will be easier to approach those who participated in the design. And we will be the first choice.”

#### **DRAYMEN AND UNCLE TOM’S CABIN**

“In LNK Industries, we have equipment designers and suppliers

right here, but in Russia, they are a part of the work and estimated costs of a site. And we always encounter a question: Latvian engineers said that the site costs approximately 5 million. Would it be possible to buy something cheaper somewhere? And they begin making requests for such things. Therefore, vendors, even the most reliable and smart ones, can't complete this jigsaw puzzle. What do we do about it?

"We teach, explain and demonstrate, with numbers, formulas and calculations. No one believes in words — we are a young company. Although we are already able to compete with some renowned masters. Progress does not stand still," Volinschikov said. "We cannot go to Russia to build facilities yet, especially the small ones, as they wouldn't pay off. But at least we have partners that can say exactly how much the construction would cost. And this is a big advantage. We always look for a construction partner that is strong in the desired region."

#### **The customer of the terminal in St. Petersburg requested a large packing shop. What for?**

"Studies say that it is most profitable to ship using the largest ships and in bulk, but life shows that not everyone needs such large batches. Asia, Africa — there is no infrastructure there. Of course, it is being built, but it's still nowhere near completion! Uncle Tom's cabin, draymen — it's all there even now.

Since there are no railways in Asia, a new trend is to pack fertilizers in containers. Cargo is stuffed into big bags — two-tonne or 50kg bags. Why? The latter can be lifted by a strong man. The ocean ship comes into port where cranes load batches of bags on barges, which then carry them throughout the country by river, where people unload and carry these bags on their backs walking on planks...

In Russia, they have this new trend — there are not enough mineral wagons, because they are closed wagons with hatches, which also quickly wear out since they transport chemically active substances and are susceptible to corrosion. So they

thought of using open wagons — there are plenty of them and they make the cheapest rolling stock. But the fact is, they are just open boxes, and rain or snow will happen along the way for sure. Necessity is the mother of invention: you can sew a bag the size of a wagon, gently fill it, tie it and be on your way.

The same is with the containers. They can be lifted by any crane, so no ship-loading machine is needed. They also fix the bag there, fill it with the selected substance using the thrower, compact it, close the door — and off they go. Non-bulk shipments of bulk cargo — that is the new trend right there. Again, you can use any ship. Cargo in bags doesn't damage metal, so no cargo hold damage, no dust, and you can even transport the grain in the same ship with minimal cleaning after transporting fertilizers...

Trends are working in both ways."

#### **BIOFUELS — AN EXPLOSIVE SUBJECT**

LNK Industries regularly participates in professional forums in Europe, gathering new knowledge bit by bit. These forums include *Dry Cargo International's* conference and exhibition Dry Bulk Europe. Increasingly covered at such industry forums is biofuel transshipment technology, which has been studied by the University of Greenwich for ten years. This subject proved to be much more dangerous than coal, which has heated England for 120 years. And now the web is full of articles about explosions and fires at the stations that switched to biofuels. Why? If badly cleaned, dust may accumulate on certain surfaces. So the chain of explosion may occur — it explodes in one place, raises the dust, and this dust explodes consecutively and blows up half of the station.

"We will befriend the University of Greenwich now", Volinschikov said. "We will involve them in our first project concerning biofuel. They are going to teach us. Can you imagine that biofuel is different all the time, depending on the season and suppliers? Also, it is very light. To get the same calorific values



you must burn five times more of it. We can water coal and that's it — no dust, no fire. But when it comes to biomass, one should be watered to prevent fire and another shouldn't be moisturized at all. It is prohibited, because bacteria become more active in moisture and warm up the biomass.

The University of Greenwich has a home page, but it doesn't mention that they have the leading expert on transshipment of biomass. He sent me the materials and I do not even know whether you can buy them somewhere or not. For example, we are working with fertilizers.

This is a very interesting market with its own specific features, but there is no reading material on it and local studies are performed by fertilizer manufacturers and they won't reveal anything to anyone. They just put us in front of the fact: "our substance has the following characteristics." But why? It's a secret. We paid serious money for two booklets published by the Mineral Fertilizer Terminal of Tallinn. They have an expert who presented all his experience in these books. We read them and were warned about many things.

At a conference in Amsterdam, it was interesting to hear about the scientific approach to solve certain problems; how to perform tests on wall roughness in relation to the material to learn how it will drip. And there are laboratories for that. We already test cargo in RBT and are thinking of our own Mini Lab. But right now, our chief designer does the testing himself. He pours fertilizers in tubs, adds some bolts and watches as they rust. Because their actual corrosion differs from that described in books. Sometimes, a bolt rots to dust while in fertilizer for three days. And we offer a guarantee for three years. So we would prefer it to remain in good condition for 20 years.

One fertilizer terminal has some parts completely gone after 12 years due to rust, in spite of the fact that we painted the equipment each year — it still did not help. We should have spent some more money in the first place and used stainless steel, rather than paint carbon steel every year. It really is more

expensive. So you can learn from your own experience or go and listen to the smart English guy at the Conference, who has been in transshipment for 30 years and visited 28 ports in 16 countries."

#### **So, does it mean the acquisition of expertise for you?**

"A conference is a large meeting of professionals; it's more than a marketing event. It's a place where we can meet with good suppliers, contractors and experts. It is also an experience. A local conference of field experts is interesting because there you can immerse yourself in subjects otherwise impossible to find."

#### **And what possibilities do you see regarding the development of the Black Sea region?**

"Everything is very difficult right now. The Russian side has a certain potential for sure. Odessa, South Port — they are switching to something else.

Experts make no forecasts. But I think that the most promising region is actually the Far East. Japan, Korea, China, the Pacific coast of the United States. Right now, we see it in every decision of the Ministry of Transportation of the Russian Federation: they have numerous plans there.

But even the Baltic states have prospects for growth. For example, Ust-Luga port. I do not share fears that if Russia builds Ust-Luga Port, the Baltic ports would be 'making ends meet'. I believe that there will be enough cargo for everyone, because the amount of shipments is growing.

Everything looks good in the *Seaports of Russia* guidebook with routes covering every inch of the map. But when looking at Google Maps, you can see a wasteland sometimes. And there are river ports as well. A huge amount of cargo was transported by river shipping companies in Russia until the 1990s!

They still carry it on the Rhine and in Holland. They even have barges that were built in 1896. People live on them, build floating hotels... Russia is still returning to the waterways." **DCi**



*LNK Industries Team — construction of civil and infrastructure facilities, engineering, machine-building industry and a creative approach to any challenge.*

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# Steel market crisis?

nerves of steel needed to ride out market woes



## Russian and Chinese steel exports threaten India's steel giants

The world steel industry is facing a major crisis of poor demand growth, low capacity use and falling prices which is unlikely to ease anytime soon, writes Kunal Bose. Steelmakers in Russia, however, have not been singed by the global crisis. The relief for them has come in the form of steep fall in the value of rouble and the push given to US dollar-denominated exports of steel products. Explaining the phenomenon, Chandra Shekhar Verma, chairman of Steel Authority of India Limited, says "Russian producers of steel could be found counting their moolah when their peers in all other countries are in a struggle to keep their heads above water simply because they are paying bills for wages, transportation and logistics in rouble while their export income is in dollar or euros."

In an identical tone as Verma, ArcelorMittal's chief financial officer Aditya Mittal says, "Russian steel exports are very competitive, the rouble has depreciated a lot... The Russian economy has fallen into recession, which means lower domestic consumption, which means more tonnes for exports." Barring exceptionally high-value steels like automotive high strength



*Chandra Shekhar Verma, chairman of Steel Authority of India Limited.*

steel (AHSS), developed to fend off competition from aluminium and other metals, where Russia does not have a presence, it is undercutting rivals like the world's largest producer ArcelorMittal in flat and long steel products.

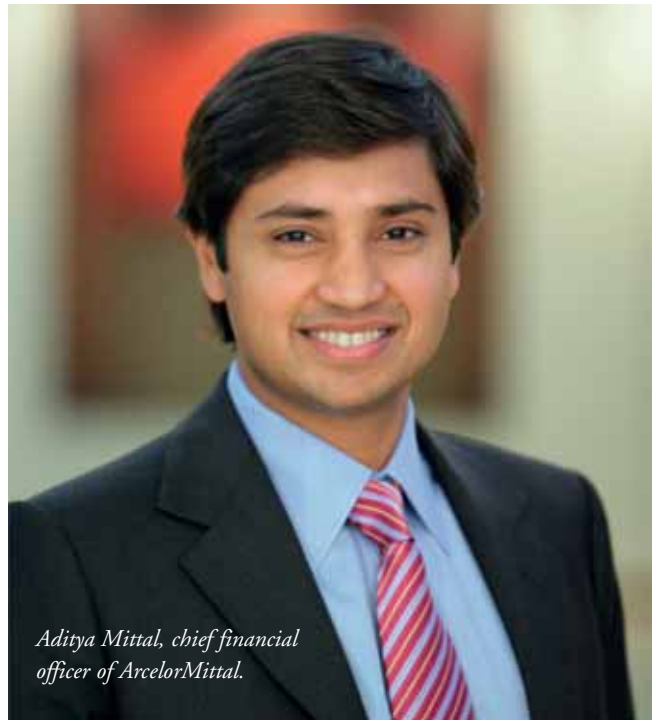
The Russian steel industry now has to contend with a few negative developments. First, as ArcelorMittal chairman Lakshmi Mittal says, the global apparent steel consumption growth in 2015 will be in a range of 1.5% to 2%. This will boil down to softening of steel import demand. "All exporting countries, Russia or otherwise, had to contend with ferocity of Chinese steel sales in the world market through 2014 when these rose by 50.5% to 93.78mt (million tonnes). Imports by China restricted to principally very high grades of steel were on the other hand up only 2.5% to 14.43mt," says Verma. The Chinese export avalanche is continuing in the New Year.

Customs data for January, subject to modifications, show China's steel exports rising 1.2% month on month to a record 10.3mt, beating market forecasts. What will explain this unprecedented export thrust? Verma provides the answer. "Read prime minister Li Keqiang's 5th March message to the National People's Congress suggesting growth of 'about 7% this year' on the back of slowest growth in nearly a quarter century of 7.4% in 2014. When he said economic difficulties in the coming days could be even more formidable than in 2014 and downward pressure on the economy was intensifying, the portents for the country's steel industry could not but be ominous."

Industry analysis and consultancy group CRU points to a fall in Chinese investment growth in house building to 10.5% last year from 19.8% in 2013. This, for steel, translates into local demand shrinkage for long products. In a demonstration of continued weakness of the manufacturing sector, China's steel purchasing managers index (PMI) in China hit an 11-month low of 43 in January. Even after giving allowance for the Chinese New Year holiday and routine winter slowdown, demand improvement from now on will remain tepid. Hasn't Li said the government had anticipated slowdown as attempts were made to build a strong and steady economy? For the first time in 30 years, China experienced a fall in steel consumption in 2014 when exports climbed to a record high.

ArcelorMittal suffering like producers elsewhere due to China's export surge is expecting the country's steel demand to grow between 1.5% and 2.5% in 2015 to which Verma agrees, saying, "I shall welcome steel demand improvement there. To the extent more steel is consumed in China, the pressure will expectedly be less on local producers to export." Verma thinks if China is to realize a growth target of 7% this year, Beijing will have to provide a bigger fiscal support to economic activities over the cut in bank reserve ratio by 0.5 percentage points done earlier. He reminds of Beijing intervening last year by way of loosening monetary policy and giving a shot to public spending to ensure that growth didn't slip much below official target.

The issue is how much of extra liquidity will flow to traditional industrial sectors making any positive impact on steel after meeting demands of "hi-tech and industrial projects." One major steel consumption point the housing sector in China is unlikely to see any improvement in outlook till the second half of 2015. According to the country's National Bureau of Statistics, home sales in 2014 fell by nearly 10% from a year ago, while residential property investment grew by 10.5%. Will the first- and second-tier cities in China lead the recovery in the housing market by the second half of 2015 and smaller cities joining the recovery at some point but not before latter half of



*Aditya Mittal, chief financial officer of ArcelorMittal.*

next year as some agencies have forecast? Doubts remain.

Weak domestic demand resulting in further steel price falls in February in \$30 to \$60 a tonne range could not but have a domino effect in export and domestic prices in all other markets. Russian FOB (free on board) Black Sea prices for long and flat products are significantly down. But Russian steelmakers like Severstal and OAO Novolipetsk continue to enjoy their best profitability since the commodity boom preceding the global financial crisis of 2008/09, thanks to rouble weakness and dollar-denominated export prices converted in rouble staying much higher than domestic prices. Severstal, with an earnings before interest, tax, depreciation and amortization (EBITDA) of 32% in the fourth quarter of 2014, the highest since 2002, remains an exception in the world steel industry. No wonder, profits being this high, that Severstal and OAO Magnitogorsk share prices have more than doubled in the past 12 months.

What must be said in favour of Russian steelmakers is that, by investing billions in their mills over the past several years, they have made operations cost effective, improved product quality and lived down the Soviet-era stigma of ageing technology, high production costs and environment unfriendliness. Europe's largest producer, Russia lifted steel output by 2.6% to 70.7mt in 2014. In contrast, China Iron & Steel Association (CISA) has said recently that up to 70% of the industry could not meet the country's environmental standards. Chinese steel mills will need to spend up to Rmb (\$15.96) a tonne in capex to avoid closure and meet new regulations, says Standard Bank.

Hit by punitive economic sanctions by the US and Europe, and with crude prices staying mostly below \$60 a barrel, the Russian economy is likely to contract by 4% this year. Remember Russia is a big exporter of oil and gas and export income on this account is steeply down. All this will result in domestic steel demand fall of about 7%, making Russia an even more aggressive steel exporter. Morgan Stanley estimates Russian steel exporting this year is poised to take a leap of 16% to 28.8mt, amounting to 44% of output. Yet another constituent of the former Soviet Union Ukraine is found as aggressive a seller of steel in the world market as Russia and China are.

If anything, Ukraine has suffered a bigger fall in its currency since 2014 start than Russia. In exports, Ukrainian mills have

found their viability. But importing countries, especially the ones like India and the EU nursing considerable idle capacity, are realizing to their cost that unrestrained exports by China, Russia and the Ukraine are inflicting incalculable harm to their domestic industries. Imports at a time when economic growth is at the best marginal are keeping domestic steel products prices low while rendering large steelmaking capacity idle. That Chinese steel exports are buffeted by subsidies, hidden as well as not so hidden, find confirmation in anti-dumping suits in the US and EU.

An analyst has raised the issue if "Ukraine and Russia are not becoming a new China in export markets, not in terms of volume, but in terms of their impact on prices." In a voice of dissent Verma says, "large imports are greatly worrisome for us steelmakers in India. With margins thinning in steel, imports rising by 67.3% on a year on year basis in the first 11 months of 2014/15 to 8.38mt could only be damaging for Indian steel market." Indian steelmakers have, therefore, joined hands to ask New Delhi to exclude the metal from free trade agreements (FTAs) with South Korea and Japan, the two major import sources over the last couple of years.

FTAs with the two Far Eastern countries have provisions to bring down import duties on steel products in phases to nil. The Indian industry wants steel import duty at 25 per cent, irrespective of sources, as it obtains in Brazil. Fear remains as Chinese economy settles down to 7 per cent growth, steelmakers there will come under further pressure to export the metal and India will remain among their principal target markets.

Flat global steel demand and high steel exports apart, what also is keeping metal prices low are iron ore settling around \$60 a tonne and metallurgical coal at less than \$120 a tonne. Low steel margins prevailing for a long time is not conducive for India to chase a capacity target of 300mt by 2025 against about 105mt now. Not only does the Indian industry need protection from imports, but steelmakers proposing big projects should get allocation of iron ore deposits to create ideal capacity growth condition. Land acquisition for hosting steel mills is becoming increasingly difficult. The answer to untying the knot is in supportive government policy and project promoters having a humane approach to adequately compensating land givers and their rehabilitation. What is not in doubt is that India will be the world's next major steel consumption growth centre once major infrastructure development projects take off and urbanization takes root. In India, capacity growth must happen both through blast furnace-basic oxygen furnace (BF-BOF) route and electric arc furnaces and induction furnaces.

Therefore, it is essential that sponge iron manufacturers get adequate allocation of gas and coal as feedstock.

Let's look at some positive indicators for steel as seen by ArcelorMittal. In key markets of the company manufacturing output continues to expand. As of 15 January, its PMI was a comfortable 52.3. The two positives for the US are consumer spending at higher levels supported by low oil prices and investment continuing to grow despite reduction in oil industry investment.

As for the Eurozone, growth was stable in 2014 final quarter. PMI and confidence in the 28-nation EU block have been improving since December. Industrial output is stabilizing in Brazil, though at low levels where any substantial recovery is not expected until 2016. Pitched against these zones is China where economic deceleration continues despite low oil prices supporting consumer spending. Russian outlook remains weak with falls in both investment and steel demand. So the steel market will continue to face destabilization from exports from China, Russia and Ukraine.

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## Real's fall in value turns Brazilian users to cheaper domestic supplies

With demand for consumer goods falling, the steel industry in Brazil is frustrated by the slow start to the long-promised expansion of infrastructure projects designed to take their place, writes *Patrick Knight*.

It had been hoped that 2015 would see a start made to the long-delayed upgrading and expansion of ports, roads and railways in Brazil, as well as an acceleration of the development of deep sea oil finds. Such projects will require large quantities of steel and so bring new life to an industry facing severe difficulties, as Brazil's economy slows. But with the economy not now expected to grow at all this year, and with investments being cut back, the industry faces many serious challenges.

The economic slowdown means that consumer spending and borrowing, which had been buoyant for almost a decade and been the main motor for growth, has slowed sharply in the past two years.

Ten years of growth allowed the two leading markets for steel in Brazil, the construction and motor industries, between them responsible for 70% of all the steel used in the country, to grow extremely fast. But contrary what had been planned, the cutback by consumers has not so far been replaced by increased spending on upgrading the country's creaking infrastructure. Brazil's poor infrastructure adds greatly to costs of transport, damages the country's competitiveness and so prejudices exports. This is particularly important at a time when the prices of most commodities has fallen from their peaks, cutting revenues sharply.

The sharp fall in the world price of crude oil and refined products has coincided with the discovery of a massive financial scandal at the country's state controlled oil company, Petrobras. With its finances in deep trouble, following the collapse of its share price, Petrobras has been forced to cut back, and in some cases, halt exploration and field development work. Large new markets for drilling rigs and production platforms, as well as for the ships needed to carry the oil ashore or for export, had been expected to open up for steel, while a large network of new pipelines to carry gas, now becoming the leading means of generating electricity in Brazil, would require a massive amount of steel.

There has been one positive result for steel from all the financial gloom. This is because the Brazilian currency, the real, which had been overvalued for several years, when interest rates were kept at record levels to attract foreign capital and ease pressure on inflation, has fallen by up to 20% in the past six months.

One result of the collapse in the real is that imported steel, which in recent years had come to form about 15% of the 30mt (million tonnes) used each year in Brazil, has become much more expensive. Some of the steel imported in the past few years, is now being substituted by steel made in Brazil steel by much of industry, and by construction companies, many of which have switched from using reinforced concrete, to steel in recent years. In addition, Brazilian steel has become much more competitive in world markets, so much so that it has been able to take advantage of the increase in demand from leading market the United States, always an important destination for exports, and with which Brazilian companies have close links. The important Arcelor-Mittal company has started up a blast furnace at the Tubarao complex in Espirito Santo state, which had been mothballed for several years. Brazilian steel slabs are used in the US market to make sheet steel, and this trade has begun to fill

the gap caused by weak demand in other markets, notably members of the EU and elsewhere in Latin America. These countries were previously important importers of Brazilian steel, but many now prefer to buy lower cost steel from China. Following the slowdown of its economy, China now has a 40mt surplus of steel, which is available for export. Brazil has never exported more than 5–6mt of steel in a year, so is not in the same league.

The fall in the value of the real, which is expected to remain low for a considerable time, was not only because of the weakness of the Brazilian economy, but also because of the sharp falls in the price of numerous commodities. These include iron ore, soya beans and meal, Brazil's top two export earners, as well as pulp, leather, cotton, tobacco, wood and a range of others. The lower prices and weaker demand resulted in Brazil's exports earning less than the country's imports cost in 2014, the first time this has happened for more than a decade. When the real was strong, imported goods were often cheaper than the manufactured goods made in Brazil. This brought some benefits, notably that inflation was held down as cheaper imported goods replaced high cost ones made in Brazil. But the strong real also greatly harmed Brazil's own industry and, with it, demand for steel. One result of the increase in imports in recent years, has been that the contribution manufactured goods formed of the gross national product, fell from the more than 30% of GDP 20 years ago, to little more than 10% of GDP last year. The strong real not only caused severe harm to the steel industry, as less Brazilian-made steel was used compared with a decade previously, and goods containing steel made abroad replaced Brazilian-made goods. Goods imported each year contain about 30mt of steel, displacing much which was previously made in Brazil.

Because the cost of imports has now increased sharply, the replacement by imports of goods made in Brazil, referred to as 'de-industrialization' — a process which had earlier affected numerous countries in Europe — has started to go into reverse. With imports so much more costly, many manufacturers, notably in the key construction and motor industries, as well as makers of consumer durables, are now switching back to buying Brazilian-made components and steel. The Brazilian steel companies claim to have invested about \$20 billion dollars in modernizing in the past few years, so Brazilian steel is better placed to compete on quality as well as price.

For decades, most of the buildings and other structures built in Brazil, were made of reinforced concrete, and Brazil became one of the world's leading users of this material. But steel has gradually gained ground in recent years and now forms 15% of all new buildings. Steel has many advantages over reinforced concrete. Steel frame buildings can be erected far faster than those made of cement. They weigh less, so their foundations are less substantial and because so many components are pre-fabricated, considerably less labour, as well as time, is needed to construct a steel building than one made of reinforced concrete. This means that the cost of a steel structure is often only a little more, or sometimes less than one made of concrete.

For the past ten years, Brazil has been governed by politicians from the 'Workers Party' which, as its name suggests, has tended to favour the less well off who had fallen behind in previous times when inflation was extremely high. Basic wages, notably the 'minimum wage' paid to the great majority of workers in the public sector and the lower paid in the private sector as well,

have been raised by substantially more than inflation every year. At the same time, various social programmes and pensions were widened and extended. As a result, an estimated 30 million Brazilians, almost 15% of the country's total 200 million population, have seen their purchasing power rise by enough to allow them to be considered as belonging to the middle class. Millions have been able to buy a wide range of consumer goods, such as cars and white goods, previously out of reach.

At the same time, partly because of the stabilization of the Brazilian currency, partly resulting from the strong economic growth in most of the rest of the world, inflation fell. The stabilization of the economy allowed credit to be made available to millions more people than before. The amount lent by banks for the purchase of a house or flat, for home improvements and for large consumer durables such as cars and white goods, grew by an average of about 20% a year. This allowed these key industries to grow far faster than the economy as a whole, pushing up demand for steel. But this phase has now come to rather an abrupt end, and with a high proportion of consumers deep in debt, the model is unlikely to be resumed for some time.

Aware of the changed situation, the government decided to switch spending away from consumption as the main motor for growth, towards spending on infrastructure. But problems associated with obtaining finance, and getting planning permission in what continues to be a very bureaucratic country, has meant making a start on many project announced with a fanfare by politicians, continues to be delayed.

Rather than replacing the motor and civil construction industries this year, as had been planned, the increase in spending on infrastructure now looks more likely to only start making an impact in 2016.

Attracted by the fast growth in car sales, numerous vehicle manufacturers from countries such as China, South Korea, and Japan, as well as from Europe, have built new assembly plants in Brazil. Companies were attracted by the fact that although vehicle sales have boomed in recent years, the number of cars per head of population still lags well behind that in more developed countries. If all goes well, many millions more cars will be needed each year for some time yet. Whether there is space for all the numerous vehicle assemblers now present in Brazil remains to be seen. Several firms are making small, or no profits. On the other hand, prospects for exporting vehicles, which had fallen sharply during the period the real was so strong, are increasing again.

The threat of climate change, something made very obvious in the past year by a long and very severe drought which has reduced water levels in lakes used both to power hydroelectric power stations, and to provide water for populations in Brazil's still fast-growing cities to critical levels, is a new worry in Brazil. The lack of water, both for generating electricity and for use by industry, not least the steel industry, has forced some companies to halt, or slow production. The Brazilian government has now been forced to take the threat of damaging climate change seriously. Measures aimed to reduce fuel consumption and emissions of CO<sub>2</sub>, are obliging manufacturers to reduce the weight of vehicles, either by using lighter steel, or switching to

using aluminium.

Until recently, most of the 11 large companies which own most of Brazil's 29 steel mills, which between them have capacity to make 48mt of steel each year, preferred to buy much of the iron ore they need each year from the massive Vale company. Vale now extracts more than 300mt of ore each year from its mines in Minas Gerais and Para states. But anxious to take advantage of the sharp rise in the world price of ore caused mainly by strong demand from China, but with its own output not rising as fast as demand, a few years ago, Vale decided to give priority to exporting, neglecting local mills. Most steel companies reacted by investing in developing their own often large deposits of ore and in some cases moving to compete with Vale in export markets as well.



The ore price has fallen by up to 40% in the past few months, while Vale's production is on course to rise sharply in a year's time when a new mine at the Carajas complex starts producing what will eventually be up to 100mt of extra ore; the company might prefer to sell more in Brazil. But most of the private companies are unlikely to switch back to buying their ore from the giant, although many have shelved expansion plans at their own mines following the collapse in the price of ore, or ceased

exporting. In the past couple of years, companies such as CSN and Arcelor Mittal, had earned as much from exporting ore as they did from their exports of steel, maintaining profits in this fashion. But this state of affairs has now come to an end.

Brazil's steel companies claim to have spent the equivalent of \$20 billion on upgrading mills, and increasing the quality of the steel they make in the past few years, as well as taking measures to reduce the still fast rising cost of labour. Mills say they can make steel as cheaply as any company in the world. But they are handicapped by high overheads, the high cost of obtaining capital, and by the high cost of transport. Although the steel companies have a share in several of Brazil's railway companies, no less than 75% of the steel made and sold in Brazil is taken, often very long distances, by road. This should gradually change over time, particularly when the new railways come into service.

Until 20 years ago, the CSN company operated a plant which made rails. But as more lines were abandoned as were built, and while most existing lines were not even upgraded, this plant was de-activated. In theory, thousands of kilometres of new rail track are to be laid in the next few years, and much of the existing 30,000km of track will also need replacing. But despite this, no company has yet taken the decision to build a new rail-making plant. This seems to indicate that the steel companies at least, are not yet convinced that the new tracks will be completed according to plan. With the completing of numerous part built lines long delayed, there is no reason to question their judgement. But because of the lack of rail making capacity, Brazil now spends hundreds of millions of dollars on importing rails each year, most from China, from where 70% of the steel imported by Brazil each year now comes. In some parts of the north east of the country, it costs less to import steel from China, than it does to bring it up by road from Brazilian mills, most of which are located in the south east and south of the country.



# Critical Mass



## Project Cargo & Warehousing: handling all shapes and sizes

*VCK Logistics-Port Logistics Waterland Terminal  
— this all-weather facility offers customers highly  
efficient and competitive logistical solutions.*

Jay Venter

## Port of Amsterdam and the breakbulk and container sectors: leading, rising and enterprising

For over 750 years the port of Amsterdam has been offering the world its experience and know-how as a breakbulk centre. From New York to Tasmania and from St. Petersburg to Cape Town, the influence of Amsterdam is everywhere.

Amsterdam is a very important hub for breakbulk. With dedicated terminals it facilitates various customers with a wide range of cargo, resulting in an import and export throughput of 2.1mt (million tonnes) each year. Not only are various breakbulk goods handled, stored and transhipped in the port of Amsterdam, a significant quantity of the commodities is processed in the port area as well. All breakbulk terminals are equipped with heavy lift and project cargo facilities, meaning they can offer tailor-made solutions and a congestion-free environment.

### THE LATEST ADDITION: HOLLAND CARGO TERMINAL

One of the latest additions to the list of experienced terminals in the port of Amsterdam is Holland Cargo Terminal (HCT). HCT recently launched on the site previously occupied by Amsterdam Container Terminal and owned by ECT, part of Hudson Port Holdings. HCT stems from an elite background, as it is owned by MEO, an expert in maritime logistics, which is in

turn part of the TMA Group. TMA offers full-service solutions for land, sea and air transport, stevedoring, cargo transshipment, project cargoes, storage, customs handling, value added services and more worldwide. As such HCT possesses all expertise necessary to effectively run a multi-purpose terminal. Project cargo and transshipment of pipelines are the young company's main activities at the moment. Around 55 hectares of HCT's terrain is suitable for project cargo, offering five STS cranes with a lifting capacity of 100 tonnes each. Neighbouring terminal United Stevedores Amsterdam, another terminal for project cargo, has LMH 500 mobile cranes. Both terminals are connected to the hinterland by road, rail and water, giving shipping lines the opportunity to serve their customers in a fast, efficient, reliable and sustainable manner. As from Q2 2015 HCT will start operations facilitating the 'Westermeerwind', a large windmill project close to Urk (the Netherlands). HCT will execute its activities in co-operation with turbine producer Siemens and heavy lift and heavy transport expert Mammoet.

### UNIQUE CARGO HANDLING: ALL-WEATHER WATERLAND TERMINAL

The VCK Logistics-Port Logistics Waterland Terminal is a state-



of-the-art, multimodal, all-weather terminal for Lo-Lo (lift on, lift off) and RoRo (roll on, roll off). The combination of facilities that this terminal offers is unique in Europe. The 'one roof all weather' concept, extensive experience and an innovative stance, offer customers highly efficient and competitive logistical solutions. Waterland Terminal opened its first hall in 1998. Since then, traffic volumes have grown to around 1.3mt in 2014. The Waterland Terminal boasts three all-weather berths and two open docks (RoRo).



*Aerial view of the port of Amsterdam.*

Transshipment, storage and distribution continue 24 hours a day, seven days a week. With the 'one roof all weather' concept, weather conditions have no impact on the speed or quality of operations. The terminal includes a warehouse with dehumidifier for the storage of steel goods. Waterland Terminal also offers storage for materials like aluminium, zinc, steel, paper, wood and pulp. Facilities include a broad range of open storage options for e.g. RoRo goods and containers. Waterland Terminal offers 40-tonne overhead cranes and a covered rail terminal.

**CUSTOMIZABLE SOLUTIONS**

In the port of Amsterdam many warehouses are available that can treat all types of project cargo with different overhead cranes. The port also offers extremely flexible labour situations, combining and utilizing a lot of expertise within the project cargo sector. Port of Amsterdam focuses on niches and always strives to supply tailor made solutions. It places high value on offering the best for its customers and giving them a red carpet treatment. The port of Amsterdam is one of the world's key

international logistical hubs and can facilitate all project cargo perfectly. The port of Amsterdam region consists of four ports: IJmuiden, Beverwijk, Zaanstad and Amsterdam. IJmuiden and Beverwijk are very active in project cargo as well. Recently, the *Rambiz* (a heavy lift vessel) handled a 900-tonne transformer station for Cofely Fabricon in IJmuiden. This assignment was executed for 'Luchtduinen', an offshore wind project run by sustainable energy provider Eneco.

**READY FOR THE FUTURE**

Port of Amsterdam operates a lightering facility to handle ships prior to passing the lock in IJmuiden Port. This facility enables Amsterdam to receive the biggest bulk carriers up to a draught of 17.8m. In December 2014, the capacity of the lightering facility was extended from 2mt to 4.5mt for dry bulk only. This extra capacity will be utilized in 2015, allowing, for example, the import of larger quantities of coal. Even when the new and bigger lock becomes operational in 2019, the lightering facility will remain important. Port of Amsterdam has invested in

improving the conditions of the facility and is developing plans for a new harbour basin before the lock. At the moment, Port of Amsterdam is having exploratory discussions with regional parties in IJmuiden (public as well as private) to further extend the possibilities of the lightering facility. One of the possibilities is combining the nautical infrastructure for board-to-board transshipments with the creation of a land area meant for the offshore business, oil and gas, and wind. The bigger lock and continued improvement of the lightering facility mean Port of Amsterdam is ready for both the near-term and the distant future. The port of Amsterdam region still has a lot of room for growth in the project cargo and breakbulk sectors.



*The lightering facility that handles ships prior to passing the lock in IJmuiden Port enables Amsterdam to receive the biggest bulk carriers up to a draught of 17.8m.*

## Co-operation speeds up cargo transports in the Port of Turku

The goal of the Port of Turku in Finland is to enhance the transportation of parcelled goods and project cargo. Growth in cargo transport is sought by increasing co-operation with shipping companies and port operators. The growth potential is also supported through improvement of warehouse buildings and modernization of cranes. One of Turku's strengths is large outdoor storage areas that serve the needs of project cargo in particular.

### DOUBLED VESSEL CAPACITY ON THE NORWEGIAN ROUTE INCREASES EXPORTS IN THE PORT OF TURKU

The Port of Turku's connections in the Baltic Sea region improved when the Norwegian shipping company Nor Lines AS doubled its vessel capacity on its Baltic Line route in March 2014. The vessel *Link Star* started operations and opened a direct sea connection from Turku to Poland and Denmark in addition to Norway. *Baltic Betina* continues on the route alongside the new vessel. Operating with two vessels made it possible to switch to regular weekly departures.

"The weekly connection provides our customers with even better opportunities to schedule their export shipments as per



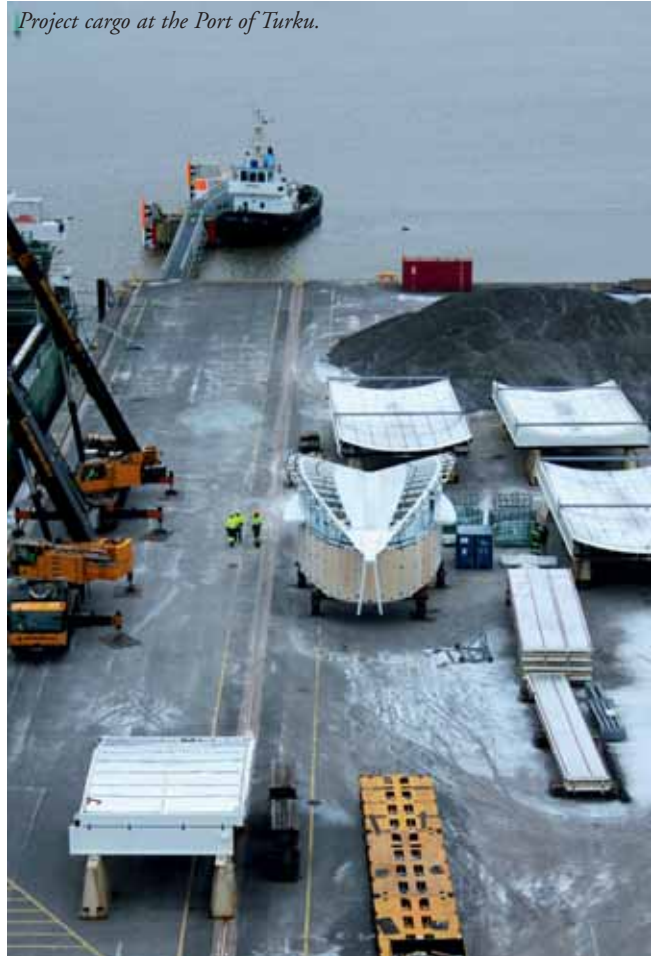
*Ro-Ro vessel Stena Foreteller.*

their own customers' wishes. Furthermore, our customers can now ship cargo directly from Turku to Poland and Denmark where our ports are Swinoujscie and Fredericia. The new ports of call mean that Baltic Line now offers an important alternative for the flow of goods transported via the Baltic States to Poland and via Sweden to Denmark," says Tomas Uschanow, managing director of Baltic Line Finland Oy.

### MANN LINES INCREASES CAPACITY ON THE ROUTE TO GERMANY AND ENGLAND

The Port of Turku's transport capacity to Continental Europe and England grew considerably when Mann Lines chartered a larger vessel on the route as of the beginning of 2015. Chartered from Stena Line, the ro-ro vessel *Stena Foreteller* added 700 lane metres and the total capacity now stands at 3,000 lane metres. The increased capacity serves particularly the engineering workshop and forest industries that transport products via Bremerhaven, as well as different project loads.

Increasing the capacity is linked to the strategic co-operation between Mann Lines and Stena Lines started on 1 December 2014, on the basis of which Mann Lines also acts as a sales agent for Stena Lines' entire route network.



*Project cargo at the Port of Turku.*

"The Port of Turku aims at increasing scheduled traffic, especially to Germany. The goal is to reach a frequency of five weekly departures in traditional cargo transports to Continental Europe," envisions Jarmo Koskinen, Director of Cargo Traffic in the Port of Turku. This is efficiently supplemented by Mann Lines' weekly departure via Germany to England and Baltic Line's weekly connection via Denmark and Poland to Norway.

The Port of Turku's technical readiness is developed to meet the need of growing traffic

The Port of Turku is preparing for the growth of cargo transports as per its strategy by improving its technical readiness. The plans include revamping of the port's crane services and increasing the lifting capacity of the cranes to the required level. These measures will also help in more efficient use of the port's large outdoor storage areas and warehouse capacity, for example for services to project loads.



*Mantsinen loading Baltic Line's ship.*



## Port-La-Nouvelle grows to meet floating wind farm industry

*Handling of 250 mt power generators at Port-La-Nouvelle.*



Port-La-Nouvelle is France's third largest commercial port on the Mediterranean. Known for its remarkable reliability and supported by both quality infrastructure and labour, the port handles some heavy lifts.

Ships must be geared as the port only proposes cranes with a maximum lifting capacity of 84 metric tonnes (Liebherr LME 280). The quay, deserved by rail, has a common 6 tonnes resistance per square metre within 10 metres from quay end. After 10m, the resistance reaches 15 tonnes per square metre. Operators can easily use specialized multi-axles trailers.

The Port of Port-la-Nouvelle has planned a huge port expansion with 2,000m of new quays and a

*Floating foundation developed by IDEOL for offshore wind. Image copyright : IDEOL*



new admissible draught of 14.5m (8m today). Delivery is expected by 2020. New bulk and breakbulk terminals will be created with a particular focus on heavy lifts as the French government studies the development of parks of floating wind turbines in the areas. Two areas are directly located in front of the port, one is in front of Fos/Marseille and one is located at mid-distance of both ports. The floating technology induces new concepts of very heavy underwater structures which should create new industries or assembly sites directly located on the quay side. Each park comprises 100 machines, also with the possibility of future exports, this emerging industry meets the growing activities of Port-la-Nouvelle and its ambitious development projects.



*A 100-tonne barge being lifted in Port-la-Nouvelle.*

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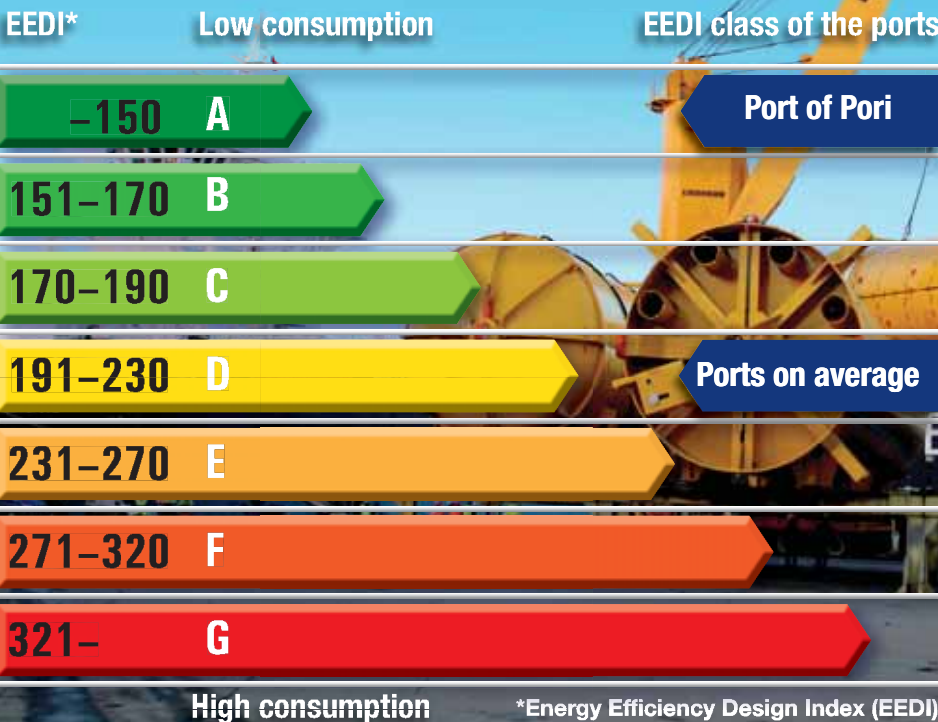
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## Fair winds in the Port of Pori

Windmill farms are springing up at several locations along the Finnish coastline, as well as inland, at record-breaking rates.

In tandem with the wind energy boom, the Port of Pori has become extremely successful handling of windmill parts in southernmost Finland. There are several reasons for this. The Port of Pori's infrastructure is ideally suited for windmill handling. The investments made in 2011 were strategically important. A new 12.0m quay was built, the fairway was dredged to 12.0 metres and more storage space was filled nearby the new quay. Also, a new Liebherr LHM 550 with a lifting capacity of 144 tonnes was acquired.

The Port of Pori's Mäntyluoto harbour has been the hub for project cargo for decades, but the new investments strengthened its position. About 30 windmill units have been handled in



*A pilot offshore windmill. An offshore wind farm and a wind power construction cluster is developing in Pori.*

Mäntyluoto harbour during the two past years. The future is also looking bright. In Finland, several projects for building up windmill farms will be accomplished in 2015. Handling of windmill parts in Mäntyluoto harbour has been based on import of the parts abroad. A new project will diversify handling operations. The first offshore wind farm in Finland will be built in the sea area near the Port of Pori. The turbines will be situated about 0.6–2.5 kilometres offshore, where the conditions are nearly similar to those prevailing at open sea. The goal of the project is to demonstrate wind turbine solutions and offshore foundations that are suitable for winter and offshore conditions of the Baltic Sea. In the long run, the aim is to generate an industrial concentration for offshore wind power construction. This concentration would be located in the M20 Industrial Park in the port area and in the immediate vicinity of the port area. The Ministry of Employment and Economy has granted €20 million in investment subsidies for the implementation of the offshore wind farm project. The company, which will carry out the project, will make a decision on the investment during March. It estimates that the project would be completed by the end of 2016.

Why was Pori chosen as the location for the offshore wind farm and not one of the coastal cities in Northern Finland with more arctic conditions? Of course steady wind conditions are essential, but also the port itself has a significant role. The strengths of the Port of Pori in windmill parts handling are broadly the same as in project cargo handling generally. The infrastructure is excellent for project cargo handling. The water under keel does not run out. There is a 12.0m fairway to Mäntyluoto harbour and 15.3m fairway to Tahkoluoto deep



*Port of Pori has plenty of storage space to handle windmill parts.*

harbour, where dry bulk is handled. Pori is situated in the belt, which is known for mechanical engineering industry. The main Finnish industrial cities can be reached in four hours by road. Highways are coming to Pori from five different directions. The Port of Pori is a central point of the high and heavy road transport network in Finland. The Port of Pori's initiative of prolonging the European road E14 Trondheim-Sundsvall to Finland via Pori and in the first stage to Tampere, has been supported by regional councils. There is also a railroad connection to the Port of Pori. In Finland the railway gauge is the same as in Russia.

Port of Pori's lifting capacity is the best in Finland. In addition to the earlier mentioned Liebherr mobile crane, the Port of Pori has the most powerful fixed harbour crane in Finland, with a lifting capacity of 200 tonnes and several other cranes. In the shipyard next to the port even more lifting power can be found. In the Pori region there are several companies that provide moving, lifting and hauling services of large components.

Port operator Oy Hacklin Ltd has superior competence of handling project cargo. A committed work force is specialized in handling project cargo. The company also has a liner service to Hamburg. Beside containers, the vessel also takes project cargo. Containerships Oy Ltd is the other liner service provider in the Port of Pori. Port operator Oy Hacklin Ltd carries out dry bulk handling in Mäntyluoto harbour as well in Tahkoluoto deep harbour. Ahtauskone Oy handles dry bulk as well.

Port of Pori became a limited liability company at the beginning of this year. The Port of Pori Ltd has good prerequisites to serve also the potential offshore wind construction concentration and other clusters manufacturing large components. M20 Industrial Park in the immediate vicinity of the port offers diverse sites for industrial companies, international trading and logistic businesses. The area is one of the few industrial and logistics areas in Baltic Sea Region that still offers space for growth to companies next to a general port. Clustering is nowadays a key to growth. In the Pori region several manufacturing, planning and transport companies form a metal product cluster dealing with large components. Wind farm and the windmill construction concentration will also be part of offshore and energy clusters in the Pori Region. The companies which are interested in establishing their production in the M20 Industrial Park will have several options to choose the energy form. The energy mix will enlarge in 2016, when the wind farm will start its production and LNG terminal, which is being built in Tahkoluoto harbour, will be completed.

## Transnet Port Terminals' Western Cape Terminals invest in project cargo facilities



*Bird's-eye view of Saldanha Terminals.*



*Trains and wagons entering the tippler at the Saldanha Iron Ore Terminal.*



*Cape Town Terminals close-up.*

Project cargo facilities operated by Transnet Port Terminals (TPT), an operating division of Transnet SOC, are supporting economic growth in the Western Cape Region as the TPT Cape Town and Saldanha Terminals provide efficient and reliable services to a wide range of industries, including mining, agriculture and renewable energy. The increase in volumes handled by TPT reflects the growth of the South African economy. In just ten years, 2004–2014, container volumes handled by TPT have risen from three million to 4.6 million twenty-foot equivalent units (TEUs).

TPT's investment decisions are determined by its Market Demand Strategy, which is geared to ensure that there is sufficient capacity ahead of demand. The investment in the Cape Town Terminals, as a success story, will ensure that TPT can support the anticipated growth in imports and exports for the medium term. According to Velile Dube, TPT's General Manager for Western Cape Operations, "investment in the Cape Town Terminals include the rehabilitation of quayside surface, replacing the forklift and trailer fleets, and the procurement of skips for breakbulk."

One of the most successful project cargo operations being

handled by Cape Town Terminals is the importation of locomotives for the Passenger Rail Agency of South Africa (PRASA). A total of 70 AFRO 4 000 Spanish-built diesel locomotives will be handled by the Terminal over the next 18 months for PRASA. "We discharged the first nine without any incident, demonstrating our capabilities in the handling of high and heavy cargo. TPT prides itself on a good safety record where everything mechanism is put in place to ensure that all those involved in the discharge operations are in constant communication with all role-players," says Dube.

TPT takes charge of the process, planning and execution of unloading and transferring giant locomotives from vessel on to rail. TPT is responsible for co-ordinating the on-board rigging by stevedores from a safety perspective. "TPT is responsible for keeping all role players informed on estimated time of arrival (ETA) amongst other functions. We also co-ordinate the activities of all the relevant stakeholders including Transnet Port Terminals, Transnet National Ports Authorities, Passenger Rail Agency of South Africa and South African Revenue Services. We have the capacity, experience and the skill to handle any type of project cargo," informs Dube.

According to Dube, the Cape Town Terminals were chosen for project cargo operations mainly because of its efficiency levels, safety awareness, and handling techniques which are driven by its interest for the protection of customer cargo. "With our continuous innovative approach, we are always ensuring that the new project cargo reaches its destiny and its hinterland within the set timeframe," says Dube.

At the Saldanha Terminals, TPT is investing to meet the growing demand for both traditional skip handling and more sophisticated skiptainer handling facilities for bulk cargo and warehousing. TPT is also increasing its fleet of mobile ship loaders to accommodate skiptainer operations for bulk cargo mobile shiploaders to accommodate the growth in bulk cargo, which has increased from 2.6mt (million tonnes) in the 2013/14 financial year to 5.1mt in the current year. In the same financial year, TPT has invested additional equipment for the quayside operations, in addition to front-end loaders and forklifts. Over the 2015/16 financial year, TPT will build new warehouses to handle manganese under roof storage; phosphates for a mine in Hopefield near Saldanha, storage for garnets mined in Vredendal; and warehousing for magnetite from a mine in Aggeneys.

The Saldanha Terminals are also a vital entry point for wind turbine components, as well as transformers. "Imports started in 2013 and are expected to continue for seven years," says Dube. Saldanha Terminals were chosen as the gateway because of the availability of space within the multi-purpose terminal, and the port infrastructure together with the supporting roads. "There are no peak traffic limitations at the Saldanha Terminals," highlights Dube.

Services provided by Saldanha Terminals include providing a coil handling service, transport from customer premises to the terminal, and the loading of coils onto the vessel. Saldanha Terminals also handle the importation of steel pellets for TPT's customers.

"This includes the discharge of the pellets onto road trucks, loading into a Tipbox at the bulk terminal premises, and then transferring the pellets via an underground conveyor to our customer's stockpile at their plant," informs Dube. TPT also handles the offloading of iron ore and manganese from trains, and the subsequent loading on-board vessels.

## Port of Salina Cruz for multimodal support

Salina Cruz is a multipurpose port, which forms part of the network of international and regional ports that serves as a platform for the development of the economy and the maritime trade of the South-East of Mexico; infrastructure and services are effectively integrated to the logistics system in the region of the Isthmus of Tehuantepec.

Established as multimodal port and strategically located at the south of the Mexican Pacific, it enables the fastest connection to the Atlantic linking freight traffic through this logistics corridor with the South and South-East of the country. The Hinterland of the port is made up of the states of Chiapas, Veracruz, Tabasco, Campeche, Yucatán, Quintana Roo, Puebla, Tlaxcala and Guerrero.

Listed as an operator port, it is through its facilities that the payload of the southern and southeastern region is mobilized.

With a new logistics scheme, the port improves road and railway connectivity due to the construction of 162.2km of highway to Oaxaca City (Road 190), which will reduce the travel time and link the port with the State of Puebla. The



*Oversized cargo being handled at the Port of Salina Cruz.*

farms operating in this corridor and most of components of these windmills have entered through the port.

Besides this cargo, it also has a specialized containers terminal with a capacity of 3,600 TEUs and the equipment for handling agricultural and mineral bulk. Port operators are able to coordinate any kind of manoeuvres required to consolidate, load and unload cargo. As for oversized cargo, the port also has a partnership with major operating companies, that allows for operations unloading parts that weigh up to 700 tonnes.



*Windmill blades.*

The port of Salina Cruz was built early last century, based on current design boats at that time. In the 1980s, it was restructured with the construction of the containers terminal that attended Eastern direct routes. Today, more than 30 years ahead, it is immersed in a process of modernization of its infrastructure and equipment.

modernization and widening of the highways to Veracruz (Road 185) and Chiapas (Road 200) will help the increase of cargo flow. The new Salina Cruz tunnel allows reducing travel times and transit of goods in urban centres such as Salina Cruz, Tehuantepec and Juchitan. As for the railway, the port is connected to the Atlantic Ocean through 319km of rail tracks, which ends at the Port of Coatzacoalcos in the Mexican Gulf. Different types of cargo are transported by rail, and with the last improvements to the rail tracks, nowadays it is possible to use double stowage while moving containers. Inside the port facilities there are 8km of rail tracks, which turns Salina Cruz into a multimodal port.

Due to the closeness to Tehuantepec Isthmian Eolic Corridor, since 2009 it has become the gateway for cargo projects of different manufacturers and wind farm developers that have landed their components at the port. These pieces come from different countries such as China, Brazil, Spain, United States, Indonesia, Denmark and Italy. Today there are already 21 wind

The announcement of the Transisthmian Logistics Corridor (SCT) and the Interoceanic Corridor projects (PEMEX) will resize commercial and industrial activity in South-East region and through major public-private investments will be possible to boost the economic development and social welfare of Mexico.



*Windmill nacelles and hubs.*

## Terminales Marítimos de Galicia S.L. – long-time project cargo operator



*Newly built 5,200m<sup>2</sup> warehouse to store agri-food products in bulk in La Coruña New Outer Port.*



*Two of TMGA's mobile cranes working together on a cargo project.*

Terminales Marítimos de Galicia S.L. (TMGA) is a port logistics services and stevedoring company located in the northwest of Spain. Established in 1995 in La Coruña, its activity is centred in the Galician Region, mainly in state ports like La Coruña and Ferrol, but the company also operates in smaller regional ports (Mugardos, Cee, Laxe, Cariño, Celeiro, Burela and Ribadeo).

### INFRASTRUCTURES AND TECHNICAL EQUIPMENT

Since TMGA was founded, it has carried out a number of investments, which allows the company to have the most advanced technical means available to deliver its services. During the last year, it has undertaken strategic investments to become the first stevedoring company to operate in La Coruña's New Outer Port.

The following investments have been made:

- ❖ Construction of a 5,200m<sup>2</sup> warehouse for storing agri-food products in bulk. The warehouse measures 119 metres in length and 42 metres wide. It has a capacity of approximately 35,000 tonnes of agri-food products in bulk.
- ❖ Purchase of a Liebherr LHM 550 mobile crane for port operations. It is the latest-generation crane with which port operations can be performed with the best results.
- ❖ Acquisition of a port hopper with double truck capacity for discharging cargoes in bulk.

These new assets came into service in February 2015 with the arrival of a vessel carrying 2,000 tonnes of petcoke followed by another with 20,000 tonnes of corn.

In line with the developments of these new infrastructures, TMGA is starting the construction of two new warehouses which will be completed this summer. Both warehouses will be situated in La Coruña's New Outer Port. One will have a size of 5,000m<sup>2</sup> and the other one of 2,500m<sup>2</sup>. By next summer, TMGA will have warehouses totalling 12,500m<sup>2</sup> in the New Outer Port. TMGA will be the operator with the highest storage capacity available.

These have all been in addition to TMGA's existing installations and equipment with which it has been offering its customers the best services possible up to this moment, consisting of: five mobile port cranes up to 140 tonnes lifting capacity (Liebherr – Gottwald), one material handler mobile crane up to 25 tonnes lifting capacity (Sennebogen), three rail-mounted cranes up to 30 tonnes lifting capacity, 16,000m<sup>2</sup> storage capacity alongside berths with handling systems such as trippers and weighbridges, bulk storage facilities with closed conveyor belt system and two ecological hoppers.

### PROJECT CARGO

TMGA has a wide range of experience and specialization in handling all types of cargoes:

**General cargoes:** logs, wood chipboard, timber, steel products, aluminium, etc.

**Containers:** dry cargo, reefers, stuffing, etc.

**Bulk cargo:** grain, coal, petcoke, fertilizers, etc.

One of the cargoes that has been handled since TMGA's foundation is project cargo. TMGA has wide experience in this



*Handling wind turbine components in Ferrol Inner Port.*



Full deck loaded with tower parts and blades



A 3-high stack of blades on deck



Lifting blades with 2 TMGA mobile cranes in tandem.

type of cargo, ranging from large and complex structures to important quantities of wind industry components. In fact, TMGA was a pioneer in manipulating and loading wind industry components in the Galician region.

In 2003, TMGA established itself in Ferrol port to start loading operations of wind industry components and structures. Subsequently it started to carry out this activities in other Galician Ports such as La Coruña. During all these years, TMGA has loaded more than 700 vessels with these components and handled more than 5,000,000m<sup>3</sup> of cargo.

TMGA has a team specialized and trained to handle project cargo. It works closely together with its customers, defining and implementing new logistics solutions, complying in each case with any quality procedures or requirements necessary.

The company also has all the necessary means to handle large cargoes such as spreaders, lifting girders, C Hooks, cargo slings up to 50 tonnes. All this equipment is approved with CE

standard certification. TMGA builds and supplies its customers with all the necessary structural supports, lashing material and support cradles.

**TMGA'S COMMITMENT TO SAFETY, QUALITY AND THE ENVIRONMENT:**

**Safety:** TMGA provides a safe working place, equipment, training and safety system that is easy to use and which doesn't involve any risk to health or safety to workers.

**Quality:** TMGA satisfies the requirements of its customers and executes quality projects up to their expectations and requirements.

**Environment:** TMGA delivers sufficient instructions, public awareness, continual review and regular inspections of systems, information and training of all workers to ensure its activities do not involve any risk to health and/or to the surrounding environment.



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## Port of Gijón, serving the Asturias region



The Port of Gijón is located in the middle of the Northern Spanish Coast. It is the main port in the Asturias region, which maintains a long, deeply rooted industrial tradition, and a history as a mining, iron and steel region.

The Port of Gijón handled more than 18mt (million tonnes) in 2014. It is an excellent logistics platform for those companies located in its hinterland and it is equipped with modern facilities suitable for handling all types of cargo, such as specialized terminals for dry and liquid bulks, cement, containers, RoRo (roll on/roll off) and steel-related products.

Its sheltered waters and easy access means large vessels can be accommodated all year round, without limits due to weather conditions. The port is directly connected with the national motorway and rail network. Its location outside the city allows for easy transportation and handling of heavy cargo.

The Port of Gijón is widely experienced in handling breakbulk and heavy lift cargo. With 7,000m of berthing line, and draughts from 7m to 23m, the port has extensive covered and uncovered storage areas close to the berthing lines. All of these are well equipped with power and water supply. These areas are available

for the storage of the large-sized pieces or for final works such as assemblies, welding, and painting or for modular constructions.

In 2010 the extension works of the port were completed, doubling the port land surface. This new 1,250m-long quay allows the simultaneous berthing of three VLC vessels.

In addition, the Logistics and Industrial Activity Area of Asturias (ZALIA), is located 8km away from the port. This logistics platform has more than 400ha well connected with the Port by road and rail.

In order to provide new solutions and to encourage collaboration between the different links of the logistics chain, the Port of Gijón created in 2013 the 'Project Cargo Working Team' made up of freight companies, logistics operators, transport companies and the Port Authority. In this context, in December 2014 the Port Authority organized the '1st NATIONAL PROJECT CARGO SUMMIT' that was attended by 150 participants, with the aim of becoming a biennial key space for networking and for the reflection and debate on the current situation of Spanish project cargo business.





## Handling project cargo and more - Port of Venice

There are three main reasons why the Port of Venice is one of the most important project cargo Ports (on average, the port handles around 900 special cargo items each year, that is to say approximately 76,000 tonnes — cargoes worth the equivalent of €0.7 to €1 billion each year) in Europe and in Italy: the geography, the economic and productive areas included in the Port of Venice's hinterland and the infrastructural asset, writes Antonio Revedin.



The geography of the port's surroundings, and of the Po Valley in general, is particularly advantageous for special cargo and assures easy access to the port as a result of only slight slopes, or a complete absence thereof, on roads as well as a lack of tunnels or narrowing on primary and secondary roads.

Regarding the economic and productive areas we are talking about an enormous regional potential in terms of demand for manufacture goods in general and project cargo in particular. The Veneto region, Friuli and a large part of Lombardy (the North east of Italy), are indeed Italy's manufacturing and industrial heart, with points of excellence in the field of industrial plant and equipment (mainly giant boilers, transformers for power stations and towers for refineries). As of today, 55% of the project cargo handled in the Port of Venice originates from or is destined for this region, and 70% thereof is destined for markets in the Middle East and in the Far East.

But a geographic advantage and relevant economic and productive surrounding areas do not mean anything if they aren't linked together. That's why Venice Port Authority worked (and is working) for the infrastructural implementation of the connections between port and main transport networks; transport networks that, referring to the Port of Venice, mean not only the highways to Milan (westbound direction), to Trieste (northeast direction) or to Ravenna (southbound direction) but also the only inland cargo waterway in Italy (straight to the heart of the Italian productive and manufacturing areas).

The infrastructural improvements so far accomplished have, in the past few years, guaranteed excellent performances by the Port of Venice in the project cargo sector. These have, in turn, generated qualified expertise and a network of terminal operators, transporters, agents and forwarding agents specialized not only in transport proper, but also in the numerous and complex activities associated with handling what is considered special, challenging and high-value cargo. Thanks to the quayside infrastructure and the expertise gained over the years by operators, the Port of Venice has received exceptional cargo,

transported by road, weighing up to 700 tonnes, up to 65 metres in length and sizes of up to 10 by 10 metres.

Besides the uncomplicated access routes to the port, the hub in Venice also offers companies plenty of space to set up business. For larger weights and sizes, there is the exceptional option of transporting project cargo by river. Cargo can be transported along the waterway without any limitations of weight and with heights up to eight metres, thanks to the use of semi-submersible barges.

How to guarantee a certain future to the consolidated know-how and expertise acquired by the operators to offer dedicated services to cater for the exceptional nature of transports? How to value terminal and port operators infrastructures as, for example, the cranes (they can lift up to 300 tonnes in tandem) or the quayside capacity, that can reach all the specific needs, thanks to the use of plates and structures for distributing cargo?

In that sense, the Port of Venice has already activated a 'smart gate' to cargo terminals. The road access to the commercial port terminals in Marghera (Multi Service, TIV, TRI, Vecon) is regulated in order to divide and rationalize the commercial flows sector by sector (container, project cargo, general cargo etc.).

Finally, on 8 January this year, Venice Port Authority signed an agreement with the Italian Ministry for Economic Development, Veneto Region and Venice's local government for the recovery and the qualification of industrial and productive area of Porto Marghera (where the commercial and industrial port of Venice is located). Out of €153 million provided by the agreement, €69.5 million will be managed by Venice Port Authority for specific infrastructural interventions and implementations mainly concerning the creation and modification of the docks, the implementation of yards and road interventions. Through these works, there will be an improvement of the capacity of the port and greater efficiency in terms of operations of the port terminals. After all, better accessibility and capacity mean greater competitiveness.

## MtlLINK's one-stop-shop port logistics connecting containers, transloading, storage, and transportation



Montréal's container business is booming. To keep cargo moving smoothly when space at the port is at a premium, shippers can turn to MtlLINK, an off-dock port logistics and transloading facility that specializes in value-added container services.

"We're located within 4km of the Port of Montréal's largest container terminals. If your cargo has arrived and you need extra space to unload, our drayage and pre-pull team can be there in less than ten minutes," says Jonathan Hébert, general manager of MtlLINK. "Once on site, we provide transloading for both import and export shipments, inventory management, and can even coordinate final delivery to your clients with our trucking partners."

MtlLINK (a member of the Logistec group) works with all types of dry cargo. The terminal regularly handles general cargo in various modes (palletized, jumbo bags), metal and mining products, forest products, granite, project cargo, and oversized pieces such as machinery and wind energy components.

"Solving problems is our speciality," says Geoffry Lewis, sales and logistics manager. "We listen to our customers and offer a flexible service package. Some are very experienced in the logistics market and only require a particular service. Other clients are not as familiar with cargo-handling operations, and look to us as an outsourcing partner who manages drayage, transloading, and transportation so that they can focus elsewhere."

Transloading is MtlLINK's most popular service, since the terminal has direct access to rail and can accommodate up to 24 railcars at a time on two sidings. It is also equipped to handle CN On-deck mobile transport trays (MTT).

Trucking partners access MtlLINK directly via two major highways (25 and 40). The facility is also a short drive from the Louis-Hippolyte Lafontaine Bridge-Tunnel for quick access to the South Shore, and onward into the United States. MtlLINK is bonded and provides exporters with steel cutting, rebundling, crating, block and brace (with IPPC lumber), and cargo control documents (A8A, in bond).

"Shippers and forwarders have strict deadlines to meet, so we're open seven days a week, all year round. They appreciate our flexible working hours, our commitment to health and safety, and the efficiency of our operations staff," says Richard Daneau, sales and marketing manager. "We have a wide variety of specialized equipment available including a grapple, scrap metal magnet, container tipper, top-pick container handler, and lifters that handle up to 35 tonnes."

MtlLINK's modern indoor warehouse space and extensive outdoor storage area offers safe, controlled short- and long-term options for break-bulk, oversized cargo, and containers. Its new paper-grade warehouse, completed last December, has four doors with direct access to rail, five docks to accommodate trucks of any size, and two ground-level oversized doors. Additional site renovations will resume in the spring, including new pavement throughout the terminal and additional laydown area.

"Because we're a part of Logistec, we can work closely with our clients on an overall logistics package that leverages our extensive network of 23 ports and 34 terminals in Eastern Canada. Multiple and diverse offerings can bring the cargo closer to the client's end market, including remote project sites," adds Daneau.

Logistec operates in 44 terminals and 31 ports along North America's East Coast, from the Canadian Arctic to the southern United States. In addition to MtlLINK, the company offers port logistics services at on- and off-dock Canadian locations in Halifax and Saint John, as well as in the United States through its CrossGlobe Transport Ltd. subsidiary.

MtlLINK provides a wide variety of port logistics, transloading, and value-added container services within 4km of Montréal's largest container terminals.

- ❖ Drayage, container pre-pull and export staging
- ❖ Transloading of 20' and 40' containers (standard, flatracks and/or open top)
- ❖ Multi-commodity transload services to/from truck, rail, and container
- ❖ Lifting capacity up to 75,000 lbs
- ❖ 750,000 square feet of level surface
- ❖ Rail spur (up to 24 railcars at a time)
- ❖ CN's On-deck mobile transport trays (MTT)
- ❖ Cross-border services ("truck-to-truck" to respect USA/Canada weight limits)
- ❖ Steel cutting, rebundling, crating, block and brace (with IPPC lumber)
- ❖ Cargo control documents – A8A (in bond)
- ❖ Safe indoor/outdoor storage, short/long-term
- ❖ New warehouse: 50,000 square feet, paper-grade, connected to rail
- ❖ Inventory management, scanning, and EDI
- ❖ Onsite container inventory system

## Heavylifts and oversize cargoes welcome at Maritima Dominicana

Maritima Dominicana offers specialized services for the handling of heavy lifts and oversize project cargo. A well-trained and experienced staff assures an individual and specialized management during all stages of a project. Among the services provided custom clearance, inland transportation, loading and discharge of cargo in ports and at job sites as well as ocean and air transportation are included. Having this chain of logistics in place, Maritima Dominicana can assure its customers its absolute attention to the successful and timely delivery of their cargo.

These oversize cargoes require specialized transport as well as detailed planning. Typical items handled are generators, turbines, boilers, towers, and windmills for power generation. The absence of standardization is what makes for individual transport planning. Special trucks or flatbeds are used. The company owns and operates a large fleet of vehicles and lifting equipment guaranteeing the proper handling of the cargo. Among these it has lowboys with: two axles, 35-metric tonne capacity; three axles, 50-tonne capacity; and four axles, 70-tonne capacity. It also has modular trailers (Prime movers) with: six axles, 80-tonne capacity; and 12 axles, 200-tonne capacity. It has rigging, jacking and sliding equipment. The rigging equipment is ideal for the positioning or sliding of heavy cargo in places where a crane may not be used usually due to space restrictions where the cargo is being moved.

As transportation and planning of heavy lift and cargo projects are among the most challenging and complex logistic services, Mardom Projects is a dedicated division of the company, created to handle all these requirements and follow up on all the special instructions with a team specialized in heavy lift cargo.

### STORAGE AND WAREHOUSING

Maritima Dominicana also provides warehouse services for both



long and short-term storage. A consolidation and de-consolidation warehouse which offers container lines, and importers in general, a number of services and all types of cargo storage and warehousing. For the clients' convenience there is a Customs House branch office within the premises, in order to expedite dispatch of the cargo. The warehouse has a storage capacity of 4,800 square metres and also has heavy equipment for handling the different commodities that are stored, whether they are palletized or not.

Maritima Dominicana's bonded warehouse was established to provide a quality service for integrated logistic processes and proper management of the supply chain, for both companies operating at a local market, as well as those at the international one. The services offered are: storage in dry and refrigerated areas as general, bonded, re-exporting deposit, cargo management, stock list management, insurance services, customs brokerage, distribution, and specialized logistics for free zones.

Warehousing and distribution are key factors in container logistics, hence Maritima Dominicana also offers off-dock storage for all sorts of imported containerized or break bulk and project cargo. Containers vessels load/unload in Caucedo, Rio Haina, Puerto Plata and Manzanillo. Caucedo is a dedicated container port and in Manzanillo there is constant traffic of reefer containers as fruit is exported. Containers can be moved off-dock, close to their final destination to save costs, enhance/complement the supply chain and facilitate the transport and distribution of containers. The company operates off-dock container terminals to handle empty containers and export cargo located strategically in the close vicinity of the ports of Caucedo, Rio Haina and Manzanillo.



Maritima Dominicana's Off-Dock Terminals were established in Haina, Caucedo and Manzanillo to create the first chassis pool and chassis and container repair facility in the Dominican Republic. The staff attends to all aspects of a chassis and container repair facility. Approximately 2,000 chassis are in the pool. In its warehouse the company has a complete inventory of all parts required for container and chassis repair as well as the necessary tools and equipment. For major repairs it suggests mobilizing the container to its terminal, though minor repairs as well as washing and sweeping (food grade) may be done at the ports.

Maritima's mission is to provide a complete array of quality services in ocean transportation, cargo handling and



warehousing. It has a firm commitment to provide services that comply with the highest standards of the industry.

## Harnessing the opportunities of change in multi-purpose shipping

Kyriacos Panayides, Managing Director of AAL, looks at the leading trends in multi-purpose shipping and what it takes to meet the transport needs of the burgeoning wind energy industry

As shipping continues to recover from the global economic downturn, the industry still faces significant challenges. While today's low oil prices have alleviated the pressure of extreme fuel costs, and provided much-needed profitability for many operators, the challenges of low freight rates, environmental regulations, pressures on sustainability and increased competition still exist. Put simply, corporate and commercial apathy is not an option. Companies that understand this, and put in place progressive strategies and the right infrastructure to drive growth within the changing dynamic of the industry will seize the opportunities that change inevitably brings.

This is particularly the case with the multi-purpose sector — where AAL has been a major player for 20 years — which has been similarly affected in line with other segments of the shipping industry. In conjunction, the company has also seen increased competition coming from the container and bulker sectors, although the entrance of 'non specialist' operators has created a polarization in the quality of services and transportation solutions within the market. It has also further impacted freight rates, although AAL is cautiously optimistic that rates will recover throughout the course of 2015.

In terms of dominant regions, China continues to take centre stage for breakbulk and project cargo shipments, although lately, exports and sourcing out of China has slowed down compared

*Kyriacos Panayides, Managing Director of AAL.*



to the past due to many fabrication plants and shipyards having increased spare capacity with reduced order books. However, based on the current global economic dynamics, we can be confident that China will still remain the key manufacturing and fabrication base and the main source of these cargoes, with India and Southeast Asia as secondary markets in Asia.

Naturally, the decline in oil prices and the uncertainty within the oil and gas industry could impact the demand for project cargo. For example, a number of projects could be postponed. Despite this, the fact that many

nations with poor infrastructure are investing significant budgets to drive development could act as a counterbalance.

However, it is the growth within the renewable energy sector in particular where AAL sees significant opportunities for the project cargo market.

The search for alternative viable energy sources continues at a pace, and there has been exponential growth in wind, solar and other renewable power. Companies involved in the development of these huge infrastructure projects have significant opportunities. Nevertheless, on the back of continued growth and competition, they also face real challenges when it comes to the logistics of transporting the equipment required.

As a result, the global demand for high quality, specialist breakbulk cargo and heavy lift transportation services for the machinery, equipment and components needed for renewable energy projects has become increasingly critical.

This is particularly prevalent in the wind energy market where the transportation challenges have become greater and far more complex. As the capital costs of wind power have decreased over the past few years, due to significant technological advances, it has resulted in the development of larger machines and generators with increased power yield, higher hub height, longer blades and greater nameplate capacity. Moving a wind turbine that is 250 feet tall is no small feat and requires meticulous planning and considerable expertise.

At AAL we have been operating on the front line of these transportation challenges for a number of years. In 2012, AAL took the largest shipment of wind energy equipment ever transported into Europe, which involved the movement of 12 full sets of towers and components from China to Spain, nearly 56,000m<sup>3</sup> of wind turbine generator sets. It was a highly significant project where, for the first time, a wind plant in Spain utilized technology from a Chinese manufacturer.

Since 2012, AAL has completed nearly 50 voyages for some





of the world's leading wind energy companies. It has transported towers totalling 35,000m<sup>3</sup> from Indonesia to Australia. It has carried 56,000m<sup>3</sup> of wind turbine generators for the first wind energy project in Panama and the biggest in Central America. And in 2014, AAL developed a solution for one of its key customers to transport 125,500m<sup>3</sup> of blades, towers and nacelles for a wind farm in Australia that will comprise 67 wind turbines with a capacity of 113.90Mw.

From a shipping perspective, the increase in the transport challenges associated with wind energy, as well as associated sectors within renewables, requires significant investment and



the development of modern, technologically advanced and innovative fleets to meet the needs of the market. It requires specific and early planning from the outset for every individual shipment, and robust technical engineering capabilities in order to develop and implement customized transportation solutions. As well as the specialist heavy-lift equipment and expertise that is required to do this, the focus must be on providing the most flexible, safe, cost effective and efficient solutions possible.

As competition within the renewable energy market



intensifies, the importance of keeping capital and operating costs down is paramount. Shipping solutions that drive efficiencies throughout the supply chain, minimize downtime and ensure the safe and timely delivery of the high value equipment that is required for specialist projects has a significant role to play.

This is the position from which AAL has developed its strong

reputation as a global carrier; investing in the creation of one of the largest, youngest and most innovative fleet of multi-purpose vessels, and creating the global infrastructure to expand its trade routes in line with its customers' needs. This has created the platform from which to build close, trusted and loyal partnerships with customers founded on the value that AAL brings to them through the transportation solutions that it provides; a flexible safe, reliable and efficient service. It is this philosophy that has enabled exponential growth, doubling



revenues over the past few years. It is also the foundation from which to meet the challenges and seize the opportunities of a changing industry. There is no place to rest on laurels.

#### ABOUT AAL

AAL is one of the world's foremost global breakbulk, project cargo and heavy lift shipping operators, providing a unique dual tramp and liner service for its customers throughout Asia,



Europe and the Americas. Established in 1995, the company operates the youngest fleet in the multipurpose (MPP) sector, comprising owned vessels as well as chartered-in tonnage, all specifically designed for transporting heavy lift and project cargoes, traditional breakbulk, earth moving equipment, wind energy and offshore equipment and floating cargo such as boats and yachts.

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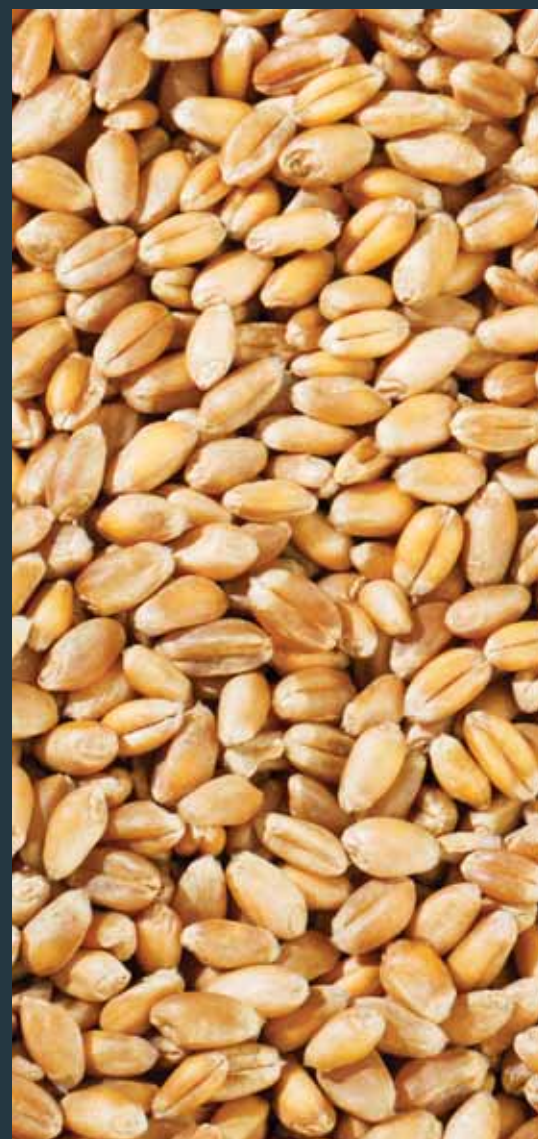
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