DC: DRY CARGO international

ISSUE NO.180 MAY 2015

FEATURES

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- Scandinavia Focus
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ISSN 1466-3643

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Coal trade growth support fading

Although signs of growth in many commodity imports into numerous countries remain prominent, offsetting influences are evident also. China is still seen as a key contributor to global seaborne dry bulk trade expansion. However, one of the main elements of Chinese purchases, coal, is showing a distinct tendency to weaken further, after declining sharply already.

A slightly more upbeat assessment of global economic prospects was published last month by the International Monetary Fund. Aided by lower oil prices and favourable exchange-rate changes, world economic output growth is expected to strengthen in 2015 and through next year, despite a continued slowing in China. Some benefits for dry bulk trade from this trend can be envisaged.

Coal

Prospects for coal trade growth have become more muted. A recent forecast by the Australian Government Department of Industry suggests that world steam coal trade (including land movements but mainly seaborne) could increase by 19mt (million tonnes) or under 2% in 2015, to 1,077mt. Coking coal trade may be 7mt (just over 2%) higher this year, at 316mt.

Estimates of steam coal imports into several Asian countries are shown in table 1. While India's volume seems set to rise strongly again, China's requirements could continue falling. India's economy is performing briskly, power demand is rising and coal, which cannot be adequately supplied by the domestic mining industry, is the principal fuel being used for additional electricity output.

Iron ore

Demand for steel in the principal producing countries which import iron ore are not especially bright, according to World Steel Association estimates published last month. Global demand for finished steel products is forecast to grow only marginally again, by just 0.5% in 2015, after a similar small 0.6% rise in the previous twelve months.

However, in some countries negative changes are likely. China's steel demand could see a 0.5% reduction in each of the next two years, while Japan may experience a 2.4% decline this year before a pick up follows next year. By contrast, in the European Union, amid a modest economic revival, steel demand could grow by 2–3% annually in both 2015 and 2016.

Grain

Global grain trade over the past twelve months has evolved much more solidly than foreseen. After the rapid expansion seen in crop year 2013/14 ending June 2014, a sizeable reduction was expected. But estimates have been progressively revised upwards, and a small increase now seems predictable.

One of the principal reasons is changed expectations for China's purchases. Following a strong surge in wheat and coarse grains imports into China during 2013/14, doubling the annual volume to over 19mt, a sharp reduction seemed likely. However, despite another good harvest last summer, domestic grain supplies in some areas appear to be tightening, and consequently imports could remain around the previous high level.

Minor bulks

Within the minor bulks trade sector, agricultural and related cargoes comprise probably around one quarter of the total. Sugar, oilseed meals and fertilizers are key components. Although there are no signs of especially rapid expansion currently, positive influences are visible in some trades such as soyameal and other oilseeds and meals.

Bulk carrier fleet

Much attention has been focused on the Capesize segment of the bulk carrier fleet recently, as a result of the heavy scrapping which has resulted from very depressed freight rates.

Sales of these ships for demolition in this year's first quarter reached 5m deadweight tonnes, surpassing last year's annual 4m dwt total. As shown by table 2, tentative estimates point to slightly higher Capesize newbuilding deliveries in 2015 as a whole, but a larger offset from greatly increased scrapping could reduce this fleet's growth rate to around 3%.

TABLE 1: STEAM COAL IMPORTS IN KEY ASIAN COUNTRIES (MILLION TONNES)

	2010	2011	2012	2013	2014	2015*
Japan	107.9	106.6	113.7	114.5	114.2	114.0
South Korea	95.2	103.2	98.9	100.1	100.8	103.0
Taiwan	53.2	56.0	55.2	57.1	57.0	57.0
China	119.0	138.4	181.5	192.0	165.5	148.0
India	74.5	92.7	123.4	144.1	173.0	190.0
total of above	**449.8**	**496.9**	**572.7**	**607.8**	**610.5**	**612.0**

source: various & BSA estimates **BSA forecast*

TABLE 2: CAPESIZE (100,000 DWT & OVER) BULK CARRIER FLEET (MILLION DEADWEIGHT TONNES)

	2010	2011	2012	2013	2014	2015*
Newbuilding deliveries	38.6	45.6	41.9	22.0	18.5	21.0
Scrapping (sales)	2.7	10.5	11.7	8.1	4.2	11.0
Losses	0.2	0.0	0.0	0.2	0.0	0.0
Plus/minus adjustments	4.1	4.8	–0.2	0.1	0.0	0.0
Fleet at end of year	**210.1**	**250.0**	**280.0**	**293.8**	**308.1**	**318.1**
% change from previous year-end	+23.0	+19.0	+12.0	+4.9	+4.9	+3.2

source: Clarksons (historical data) & BSA 2015 forecasts **BSA forecast*

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South America's bounding grain and soya exports

SOUTH AMERICAN GRAIN AND SOYA EXPORTS (MILLION TONNES)

Argentina and Brazil — wheat, corn, sorghum, soyabeans, soyameal (varying marketing years — see text)

	2010	2011	2012	2013	2014	2015*
Wheat	6.3	12.0	14.9	5.2	2.3	7.1
Corn and sorghum	29.9	26.4	44.5	45.5	39.6	36.9
Soyabeans	42.9	44.2	38.0	50.7	53.3	55.5
Soyameal	42.5	41.9	35.8	37.6	41.2	44.0
Total	**121.6**	**124.5**	**133.2**	**139.0**	**136.4**	**143.5**
% change from previous year	+34.0	+2.5	+7.0	+4.1	–1.8	+5.3

source: US Dept of Agriculture (09 April 2015) & Bulk Shipping Analysis ** USDA forecast for 2015*

Higher exports of grain and soya from South America, probably reaching well over 140mt (million tonnes), are predicted for 2015. This huge volume, equivalent to around 2,800 Handymax-size bulk carrier cargoes, comprises about 30% of world trade in these commodities. Ports in Brazil and Argentina, handling cereals and oilseeds, are poised for another dynamic season.

Soyabeans and meal comprises by far the largest part. Shipments of these could reach just under 100mt this year, after growth of 5% from the previous twelve months. Grain shipments, predominantly corn could increase by a similar percentage, to about 44mt.

A guide to changing volumes is provided by forecasts prepared last month, summarized in the table. But expectations for harvests now under way in South America, and implications for export availability, may be revised through the harvesting period. Estimates of global import demand, and predictions for competing suppliers in other countries, are constantly being modified also. Thus the figures for South American exports are provisional.

An upbeat forecast

Exports of grain (wheat, corn and other coarse grains), plus soyabeans and meal, from Argentina and Brazil, could total 143mt during 2015. Compared with last year's quantity, this impressive total is 7mt or 5% higher, resuming an upwards trend after the previous 2% annual reduction

This overview is based on several separate US Dept of Agriculture forecasts, published in mid-April. The marketing year periods used for oilseeds and cereals exports in the two main South American supplying countries differ slightly. Consequently, the calculated overall total is not as precise as it seems at first sight. Marketing periods differ mainly because of the varying timing of crop harvests.

The forecast provides an indication of what can be expected, based on evidence currently available. Twelve months ago the expectation for 2014 was for a 1.4% marginal decline. The outcome was a 1.8% decline. Not all estimates prove to be similarly accurate, however.

Wheat and corn prospects

Argentina's wheat harvest starts South America's annual cereals and oilseeds production cycle. The Argentine wheat harvest completed several months ago was an estimated 19% above the previous crop at 12mt, benefiting from a larger crop area. Exports in the marketing year ending November 2015 are likely to more than double to over 5mt.

Production of corn and sorghum in Argentina this year is now approaching completion and is estimated to fall by 2mt (8%) to 28mt, amid lower crop areas. In the marketing year ending February 2016, exports are forecast at 16mt including 15mt corn, a 2mt (12%) reduction.

In Brazil, corn sales have become a key part of the regional and global export picture within the past few years, exceeding those of the traditional exporter, Argentina. Brazil's corn output, derived from two separate crops, is likely to be down by about 6% this year at 75mt. USDA expects a small 2% fall in sales to foreign markets during the period ending March 2016, to 20mt. Wheat is a relatively minor element: output is around 5mt annually, and exports are small.

Outlook for soyabeans and meal

South America's sales of soyabeans and meal to markets around the world increased rapidly last year to 94mt, a 7% increase. Another rise is expected in 2015, when combined exports from Argentina and Brazil could be 5mt or 5% higher at over 99mt. The upwards trend reflects strong competitiveness in many markets, especially China where consumption and import demand is still expanding robustly.

Brazil's soya production in the current harvest looks set to show further rapid expansion, rising by about 9% from twelve months ago, to 95mt. Continued growth in the crop area under cultivation has been advantageous. Beans and meal exports in the 2015/16 marketing year ending January could be up by 2mt (3%), at 61mt, based on USDA's estimates.

In Argentina as well an increased soya harvest seems likely, rising by 6% to 57mt, assisted by good weather and a higher average crop yield. During the marketing year ending March 2016, beans and meal exports could be 3mt (9%) higher, at 38mt.

Import demand support

These export forecasts are affected by a number of factors. Changes in the producing countries' outputs and surpluses are fundamental influences, but are not the sole determinants. Likely import demand in a wide range of foreign markets over the twelve months ahead is another key aspect. Also, Brazil and Argentina compete with the USA and other suppliers.

Positive influences strengthening global soyabeans and meal import demand are prominent. Signs of expanding purchases are clearly visible, especially in China but also in many other countries. Importers elsewhere in Asia, the Middle East area and Europe are seen as supporting robustly increasing trade.

Overall import demand for wheat and coarse grains is currently buoyant after expanding at a fast pace up to mid-2014. China's requirements are down but rises in numerous countries are more than offsetting. From mid-2015 onwards, progress is more difficult to foresee. Any significant changes in grain output from summer domestic harvests in northern hemisphere importing countries, which are not yet predictable, will have a large impact on import demand.

During the period after mid-2015 South American sales could be affected by changes among exporters. New crop US grain and soyabeans availability, and Black Sea grain supplies will be key factors.

Richard Scott

Global cement trades

Global giants keen to get a slice of the Indian cement pie

Why are global cement giants like Holcim, Lafarge and Heidelberg already in India staying busy in identifying capacity expansion opportunities both by way of acquisition of operating factories and building greenfield units? *asks Kunal Bose*. Or for that matter the ones which are not already present here so keen to have a slice of the Indian cement market? Indian cement use has the potential to grow at a rate next only to China, which has a share of nearly 60% of the most basic of building materials. Industry officials say Chinese producers like CNBM and Anhui Conch, both sharing space with world cement giants, are likely to take a shot at India, especially as debt-driven growth in their own country is slowing on official direction. Cement being a low-cost heavy product, it does lend itself to only short haul sea trade. This is why, even with greater domination of the global cement industry than steel where China has a share of about half the production, the country is not involving itself with either the European Union or the US.

Cement, unlike steel or aluminium, is no good for any long distance transfer from factories to distant consumption points. Heavy weight and low value stand in the way of cement shipments over long distances. The point is well illustrated by the fact that, even while capacity utilization by the Indian cement industry is well below 70%, it is able to export just about 3% of production and then only of clinker, an intermediate material for cement making. While India's exports are restricted to neighbouring countries like Sri Lanka and Bangladesh, it at the same time receives cement from Pakistan. Or take the case of Singapore where *per capita* cement consumption is among the highest in the world. Since its banning of units engaged in clinker grinding on environmental grounds, the city state Singapore is importing cement from Malaysia and other countries close by through bulk cement terminals. Only by being physically present in India could Chinese cement makers be part of a market with promise of growing at a compound annual rate of between 8.96% and close to 10%. After all, besides its own rosy projection of outlook, global agencies, including the International Monetary Fund and World Bank, are saying India is all ready to overtake China's gross domestic product growth rate.

Demand for cement depends on housing activity, infrastructure development and commercial and industrial construction. Growth rates in cement use will necessarily be higher in emerging economies like China, India and Brazil than in countries with virtual saturation of infrastructure development. India's appeal is not only in sustainable high demand growth potential but also in abundant availability of limestone and coal deposits. Moreover India, being the world's third-largest producer of steel and generating huge volumes of coal-fired electricity, its supply of supplementary cementitious materials (CMCs) slag and fly ash is steadily rising. Most concrete produced anywhere in the world has in it one or both these

materials. Holcim subsidiary in India ACC uses both slag and fly ash besides the principal raw material limestone.

The National Council for Cement and Building Materials estimates Indian reserves of cement grade limestone at 123,829.64mt (million tonnes) of which 31,758.72mt are proved 39,028 for 56mt probable and 53,042.35mt possible. What helps in building new cement capacity is continuous growth in reserves on the back of intensive prospecting and exploration leading to discovery of geological occurrences of limestone. Based on exploration carried out by Geological Survey of India and other official agencies up to a maximum depth of 1,200 metres, the country has non-coking coal resources of 266bn tonnes. Resources may be available in plenty, but getting allocation of new coal and limestone deposits remains caught in a tangled web of bureaucracy.

In India, cement manufacturing units are given 'linkages' to government-owned Coal India Limited (CIL) or its subsidiaries like Mahanadi Coalfields, under which an agreed amount of fuel is to be supplied on long-term basis. In the last few years, in most cases supplies to cement factories as also to steel and aluminium groups fell short of the contractual amount, forcing all of them to import coal or buy the fuel participating in CIL-conducted auctions. Coal procurement outside 'linkage' arrangement entails extra expenditure raising fuel bills. ACC, which happens to be among the industry's best-performing groups, power and fuel bill constitutes 21% of total income from operations. The power bill of the company would have been more but for "steadily improving operating efficiencies of kiln and captive power plants and benefits derived from waste heat recovery system."

To make a success of prime minister Narendra Modi's 'Make in India' programme, it is absolutely essential to make substantial improvement in coal supplies to all industries, including cement. Fortunately, New Delhi has woken up to the situation and has asked CIL to be more responsive to consumer demands and told the railways, again government-owned, to make available larger numbers of wagon rakes for quick evacuation of coal from mines to consumption points across the country. Despite the country owning the third-largest coal resources in the world, its coal imports jumped 33.5% to 242.4mt in 2014 and this year imports could further rise to 260mt. An official of the Cement Manufacturers Association says "assurances of much-improved supplies of coal from CIL and our member units securing coal blocks will create ideal conditions for growing cement capacity from present 366mt to 480mt by 2017."

India's *per capita* consumption of cement at 190kg compares poorly with China's 1,581kg, South Korea's 911kg and Brazil 330kg. High *per capita* consumption of Saudi Arabian kind of 1,700kg is indicative of actual investment made in infrastructure development and urbanization. In fact, the higher the *per capita* GDP, the greater the *per capita* use of cement in an emerging nation. *Per capita* use of cementing material in countries like the US, Germany and Japan with highly developed infrastructure, therefore, ranges from 250kg to 350kg. India's 12th five-year plan covering the period 2012–17 proposed a big investment of $1 trillion in infrastructure development. Unfortunately, since the previous federal government headed by Dr Manmohan Singh became increasingly weak, most big projects requiring a host of sanctions remained stalled. Modi government is working overtime to get these projects going. Moreover, the decision to create 100 smart cities across the country will create substantial new demand for cement.

If forecasts of 7.5% GDP growth in 2015/16 come true, and also if the country's central bank reduces interest rates encouraged by falls in price inflation, then house development will get a boost to the delight of cement industry nursing much idle capacity. This is because housing sector remains the biggest

demand driver accounting for 67% of total Indian cement consumption. Infrastructure with a share of 13% will claim a much bigger share of cement cake once work starts on much delayed projects. Commercial construction and industrial construction respectively have 11% and 9% share of cement use. Behaviour of weather has a significant bearing on rural cement demand. Unseasonal heavy winter rains and hailstorms in all northern states from Jammu & Kashmir to Uttar Pradesh have destroyed or damaged significant portions of standing crops. Income of farmers and those engaged in agri commodities trade have as a result fallen to an extent that they are left with no alternative but to postpone all construction of residential buildings and warehouses to future dates. This has impacted cement demand in the first quarter of 2015 and prices of the building material were also down.

OP Puranmalka, managing director of the country's largest producer and exporter Ultratech Cement says, "the industry volume saw a single digit fall in the March quarter. In March alone, volume decline was 15% to 18% due to weak government spending and impact of unseasonal rains. Volume trends were better in April than in previous month but not on a year-on-year basis." Now the government and all industries, including cement are concerned about weather forecasts of a weak southwest monsoon (June to September) this year. The inevitable fallout of a weak monsoon is a rise in prices of farm commodities making reduction in interest rates a difficult proposition. Puranmalka, however, says "it's too early to predict how the weak monsoon will impact cement demand. The rural market is quite important for us. At the same time, government initiatives like housing for all, smart cities, infra spending and concretization of roads are likely to have a positive impact on the cement industry in the next three to six months."

One redeeming feature of Indian cement industry is capacity consolidation, which is continuing apace. Holcim of Switzerland and Lafarge of France have had separately major presence in the Indian market. Merger of the two world leaders will further strengthen the combined group's position here. Ultratech, the flagship company of Kumar Mangalam group, continues to up its capacity both by acquiring working cement factories and building clinker and grinding units. Last year it bought a plant each in Gujarat and Madhya Pradesh from Jaiprakash group, and since raised production quality of the two units to Ultratech level. By next March, Ultratech will have capacity of 71mt to be further raised to 100mt by 2020.

Tough times for Brazil's cement industry, as country's economy slows to a halt

Brazil's cement industry is facing difficult times at the moment, *writes Patrick Knight*. After a decade during which the amount of cement used doubled from 35mt (million tonnes) a year in 2003 to more than 70mt in 2012, demand has stagnated in the past couple of years. There are few signs of any improvement in the near future, and the economy could even shrink this year.

The industry in Brazil is facing a big shake-up as well, following the merger of two of the world's largest cement companies, Lafarge and Holcim, both of them leading players in Brazil. Between them, the companies will have to dispose of close to 20% of the almost 20mt capacity they control in Brazil, the world's fifth-largest market for cement.

In common with what is to happen in all the other countries where Lafarge and Holcim operate and will be obliged to dispose of capacity, the surplus in Brazil is to be sold to the Irish CRH company, reportedly the world's leading asphalt maker.

As a result of this sell-off, the existing companies in Brazil will have to face something they had tried desperately to avoid in recent years by various blocking tactics, the arrival of a large new player, bringing the possibility of much greater competition and lower prices.

The Brazilian economy grew by only 0.1% in 2014, the smallest amount for more than a decade, while there was a 3% fall in output in the first quarter of this year. The low growth was caused by the combination of the sharp fall in the prices of most of the commodities which now generate two-thirds of Brazil's export earnings and the end of a 15-year period when consumers' incomes grew steadily each year. This was caused mainly by steady rises in real wages and pensions and because, after growing by up to 20% a year for a decade, access to credit was curbed last year after many borrowers got into difficulties.

The situation has been made worse by a series of financial crises, the most serious involving the country's giant oil company, Petrobras. State-owned Petrobras has been involved in a massive corruption scandal, involving pay-offs by suppliers to politicians and others. This has greatly undermined the authority of a government whose president was only re-elected at the end of last year, but who is now rejected by almost two-thirds of voters.

DOMESTIC CONSUMPTION

	(million tonnes)
2014	70.0 (est)
2013	71.6
2012	68.8
2011	64.1
2010	59.1
2009	51.7
2008	51.9
2007	46.4
2006	41.8
2005	37.7
2004	35.7

Source: National Union of Cement Industries, SNIC.

A total of 75% of the 70mt of cement now made and sold in Brazil each year is used by the civil construction industry. But with a sharp fall in the number of new properties sold last year, despite the fact that house prices have fallen by up to 20% in the past few months, demand for cement by this key industry has fallen sharply. Although demand by 'self builders' — people building and upgrading their own properties — continues fairly strongly, this is not sufficient to keep demand growing as it has done for the past ten years.

Because of the ongoing enquiry by Brazil's monopoly commission Cade into alleged restrictive practices and overcharging by companies in the industry — with five leading companies liable for massive fines — the National Union of Cement Industries, SNIC, is not permitted to publish production and sales figures at the moment. Demand grew by an estimated 2.5% in 2013, but fell by as much as that last year, to reach an estimated 70mt. Sales are expected to fall again this year. The industry now has sufficient capacity to make about 85mt at its 300 or so mills. It had been anticipated until recently that all this capacity would be being used by the end of this year or early in 2016. This will not now happen.

An economic model which allowed more than 30 million Brazilians to be vertically mobile in the past 15 years, most able to consume considerably more than in times when very high inflation prejudiced the majority of the population, has now run its course. Aware of this, the government decided to switch priorities and encourage massive investments in Brazil's creaking and seriously inadequate infrastructure.

Plans to build or improve tens of thousands of kilometres of roads and railways, and to upgrade ports and airports in an attempt to ease bottlenecks, many prejudicing exports, were prepared. It was envisaged that up to $US200 billion would be invested each year on new projects needed to reduce the present high cost of transport. There has always been a long delay between decisions being taken to invest and work actually starting on the ground in Brazil. As a result, many projects which it had been anticipated would move forward last year, are still on the drawing board. The government's severe financial difficulties, including a fall in tax revenues and greatly increased difficulties in borrowing, has meant that work has had to be halted on numerous partly completed projects as well. This, coupled with the delay in starting new projects, is having very adverse consequences for the construction industry as a whole, and the demand for cement in particular.

The merger between the world's number one cement maker, the Swiss-owned Lafarge, and the French-owned Holcim, now number three, will have a major impact in Brazil, the world's fifth-largest market for cement, and until the past couple of years, one of the fastest growing. The *per capita* consumption of cement in Brazil averages only about 350kg a year, far below that of other 'BRIC' countries, notably China, which spends far more on infrastructure than does Brazil, so in theory there is plenty of scope for further growth.

The multi-billion-dollar deal first announced early last year has been given the go-ahead by Cade, with the proviso that the two companies should each sell some plants which are near one another. Concerned that there is insufficient competition in Brazil, a state of affairs which has allowed prices to remain well above the international average, Cade wants plants owned by the same company to be at least 300km from one another. The merged company will have to sell two or three mills, with capacity to make about 4.5mt.

The merger of Lafarge and Holcim apparently almost came unstuck in March this year. This was mainly because of the fluctuations of the two currencies involved, the Swisss franc, in which Lafarge's assets are measured, and the Euro, in which the assets of the French-owned Holcim are set, caused the initial calculations the deal was based on to be altered. However, changes have now been made to take account of this, and the deal is now set to go ahead.

The assets which Lafarge and Holcim will have to dispose of, in numerous countries mainly in both western and eastern Europe, as well as Brazil, will be taken over by the Irish CRH company, reportedly the world's largest asphalt maker.

Following the sale of assets, CRH seems set to become the fourth-largest company in Brazil's cement industry, after Votorantim, which has a 40% share, the Joao Santos group, which now has about 11%, and the Camargo Correa group, with 10%. The merged Lafarge/Holcim group, which before the merger had about 19% of the total sold, will have slightly less than that in future.

One of the claims of Cade, was that the big players in Brazil, agreed between them to manipulate prices in an attempt to ensure that no new players were attracted to the market, and threaten prices which are generally considered to be substantially higher than those elsewhere. Votorantim had apparently hoped to obtain some of Lafarge's and Holcim's assets, but this would not be regarded with favour by Cade, in a market already seen as excessively concentrated, while the giant Cemex company had also been eyeing the Brazilian market. DCi

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GAC launches eco-friendly hull cleaning solution

HullWiper debuts at Sea Asia 2015

GAC EnvironHull's eco-friendly, diver-free hull cleaning technology makes its Asian debut at this year's Sea Asia exhibition, marking its introduction at one of the world's busiest ports, Singapore.

The innovative HullWiper Remotely Operated Vehicle (ROV) system was launched in late 2013 in the United Arab Emirates and has since been rolled out to other countries in the Middle East, and in Sweden. It is now being offered to vessels in Singapore, through GAC EnvironHull's local partner, T&T Salvage Asia Pte Ltd (T&T). T&T will be the exclusive service provider for the promotion and supply of hull cleaning services using the HullWiper in Singapore and Malaysia.

At the launch of Hullwiper at Sea Asia 2015 in Singapore, from left: Christer Sjödoff, GAC Group Vice President – Solutions; Robert Andersen, Technical Director, GAC EnvironHull; Gurumurthi Shankar, GAC Group Sales Director; Kevin Teichman, Managing Director, Teichman Group; Hasan Abbas, Director Subsea Services, T&T Salvage Asia; and Ken Lim, Director, T&T Salvage.

A clean hull significantly enhances vessel speed and performance by reducing resistance, thus decreasing carbon emissions and fuel consumption. However, traditional hull cleaning methods using divers with brushes can present a risk to the delicate eco-system and damage expensive anti-fouling hull coatings.

HullWiper is the response of global shipping, logistics and marine services provider GAC to growing demand for environmentally sound and cost-effective hull cleaning solutions to optimize vessel performance at a time when ever more stringent environmental restrictions are coming into force.

Despite its compact size of just 3 x 1.5 x 0.80m, the high-speed HullWiper ROV can clean up to 2,000m² of hull per hour without causing any damage to anti-fouling surfaces, thanks to brushless technology which uses adjustable pressure water jets to remove marine fouling. As no divers are involved, cleaning can be done alongside during loading or discharging operations, and any risk to life is significantly reduced. HullWiper cleans about five times faster than conventional cleaning methods with divers, and hence, reduces cleaning time by approximately half.

The entire process is in line with the GAC Group's stringent Health, Safety, Security and Environment (HSSE) and compliance policies, as well as all local and regional environmental regulations. Residues and harmful marine growths captured during cleaning are disposed of in an environmentally-friendly manner instead of being discharged into the sea as done using traditional methods.

Simon Doran, Managing Director of GAC EnvironHull, says: "The time is now right for HullWiper to enter the Asian market. Since HullWiper's launch less than 18 months ago, we have received many enquiries from around the world and its innovative features have been recognized with accolades, including an international innovative technology award."

"For Hullwiper to be launched in Singapore, it first had to be tested and certified by the local authorities as a safe method of hull cleaning. I am pleased that Hullwiper has passed all the tests thrown at it and is now able to start cleaning hulls in Asia for the first time," says Christer Sjödoff, GAC Group Vice President – Solutions. He adds that Singapore's strategic location makes it the ideal gateway to Asia for HullWiper. "We see great potential for our hull cleaning solution in this part of the world, and our eco-friendly solution dovetails neatly with the country's Maritime Green Initiative."

"Through this partnership, GAC and T&T will deliver to the shipping industry, an environmentally-friendly solution that meets both operational and regulatory requirements," says Syed Hasan Abbas, Director for Subsea Services, T&T. "This complements T&T's HSSE policy, which is to deliver quality services safely and efficiently, parallel to our respect for the sanctity of the environment and the fragile marine ecosystems in which we operate."

Hull cleaning operations using the HullWiper will commence in the Republic in the second half of this year.

About GAC Group and GAC EnvironHull

GAC EnvironHull is part of the GAC Group, a global provider of integrated shipping, logistics and marine services. Emphasizing world-class performance, a long-term approach, innovation, ethics and a strong human touch, GAC delivers a flexible and value-adding portfolio to help customers achieve their strategic goals. Established since 1956, GAC employs over 10,000 people in more than 300 offices worldwide.

GAC EnvironHull provides cost-effective, efficient and environmentally-sound marine cleaning services for vessels of all shapes and sizes.

About T&T Salvage

As part of the Teichman Group, T&T Salvage is part of a comprehensive service oriented organization, created and inspired by the legendary Rudy Teichman, who was considered a salvage industry leader, whose ingenuity, experience and dedication to improve industry, business and community became the company's best known trademark throughout the world. T&T Salvage operates one of the most extensive emergency response networks in the world. Pre-positioned throughout the United States, Singapore, Hamburg, Rotterdam, and South America, the Teichman Group of companies own and maintain a comprehensive inventory of state-of-the-art fast response firefighting systems, inert gas generators, nitrogen generators, high capacity dewatering pumps, ship-to-ship (STS) lightering systems, anti-pollution systems, three-dimensional sonar, ROVs, and diving systems. Using its experienced team of divers, T&T Salvage is committed to conducting the safest and most responsible diving operations throughout the globe.

ABS appoints new Chief Technology Officer

New appointment reinforces ABS's technical position

ABS, provider of classification services to the global marine and offshore industries, has announced the appointment of Howard Fireman to the position of Senior Vice President and Chief Technology Officer (CTO) in a move that strengthens alignment and generates further synergies across all of ABS's technical programmes.

Fireman, who will report to ABS Chairman and CEO Christopher J. Wiernicki, assumes this role following former Senior Vice President and CTO Todd Grove's appointment as ABS Group President and CEO.

Technology continues to be a core element of the ABS mission of protecting life, assets and the environment. Fireman's appointment further strengthens the ABS commitment to technology and innovation needed to support members and clients.

Howard Fireman.

Fireman joined ABS in 2013 following a 35-year career with the US Navy, where he was recognized as a technical leader in ship design, total cost of ownership, systems engineering, design integration, research and development and operational support. He also served as Chief Naval Architect and Director of Surface Ship Design and Systems Engineering.

Fireman holds a BSE and MSE in Naval Architecture and Marine Engineering from the University of Michigan and has a Master's degree in Technical Management from Johns Hopkins University.

"ABS continues to lead the industry in advancing the application of technology to meet today's marine and offshore challenges while anticipating those on the horizon," ABS Chairman and CEO Chris Wiernicki said. "Howard's strong technical experience will be important to continue our long history of innovation and drive our global research and development agenda."

This appointment became effective on 20 April.

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

Mediterranean crisis — shipping industry responds

Merchant shipping industry repeats call for urgent and immediate collective action by EU member states

Following the meeting of EU Foreign and Interior Ministers in Luxembourg on 20 April, the European and global shipping industries have welcomed the increased attention that all EU Member States are giving to the humanitarian crisis in the Mediterranean. This includes the '10 point plan' adopted as a result of the impetus provided by the terrible tragedy involving the loss of hundreds of lives in mid-April.

The European Community Shipowners' Associations (ECSA) and the International Chamber of Shipping (ICS) particularly welcome the decision to call an extraordinary session of EU leaders to address this crisis, which is spiralling out of control.

Speaking from Brussels, ECSA Secretary General, Patrick Verhoeven, commented: "The scale of the tragedy is unprecedented and European leaders can no longer ignore the catastrophe occurring on the EU's maritime border."

The shipping industry agrees there is a vital need to find a means to clamp down on criminal people smugglers, as well as the complex root causes of this mass migration by sea of tens of thousands of desperate people. "But the urgent and immediate priority is for EU Member States to increase resources for Search and Rescue operations before thousands more people die," said Verhoeven.

"The provision of additional funding and resources to SAR is a positive step but more clarity is required to understand the implications of operating within the FRONTEX mandate."

Peter Hinchliffe, Secretary General of the London-based International Chamber of Shipping said: "We really need an EU *Mare Nostrum*," referring to the humanitarian Italian Search and Rescue operation which, before being suspended last year, co-ordinated the rescue of around 200,000 people in 2014, about 40,000 of them rescued by merchant ships.

"Italy, Malta and other Mediterranean nations, and the merchant ships on which they have relied to assist with hundreds of large scale rescue operations, many involving hundreds of people at a time, simply cannot continue to manage the situation without the collective support of all EU Member States, which need to act now without further delay," he said.

The membership of ECSA and ICS comprises the world's national shipowners' associations in Europe and globally, representing more than 80% of the world merchant fleet. At the beginning of April, ECSA and ICS, supported by seafarers' unions, wrote to EU leaders calling for action.

Bibby Ship Management Philippines receives FAME Award

Bibby Ship Management Philippines, Inc, has been recognized by the Filipino Association for Mariners' Employment Inc (FAME) for its vital role in the development of the Philippine maritime industry.

The company, part of the Bibby Ship Management Group Ltd, received a plaque in recognition of its "active support and loyal affiliation" to the Association for the last 15 years. FAME is celebrating its fourth decade in the maritime manning business.

Jonathan Palma, President/CEO of Bibby Ship Management Philippines, received the award during FAME's 40th anniversary celebrations, which culminated in an 'Appreciation and Recognition Night' on Thursday 19 March in the Pandango-Polkabal Ballroom of the Manila Hotel. Business leaders and government representatives joined together in celebrating the important role FAME has played over the past 40 years and the Philippine industry's manning success.

Palma said: "Bibby Ship Management takes an active role within the Filipino Association for Mariners' Employment and we are delighted to be recognized in this way during this time of celebration for the Association. We congratulate FAME on a successful forty years and wish them every success for the coming decade."

Founded in 1971, the Filipino Association for Mariners' Employment Inc is the first and largest organization of manning and shipping companies in the Philippines, with 120 regular members and seven associate members. FAME is a successful example of public/private partnership, linking manning companies and government agencies in jointly developing the Philippine maritime sector which contributes almost 30% of the world's seafarers.

The Association is committed to ensuring high management standards and business ethics. Its membership provides competent, qualified and competitive seafarers to the world's shipping industry, meeting international maritime standards, and ensuring safe, efficient and environmentally sound vessel operations.

ClassNK releases PrimeShip-GREEN/ProSTA

ClassNK has released PrimeShip-GREEN/ProSTA, making it the world's first classification society to develop software which analyzes and calculates a ship's speed trial results for EEDI calculation in compliance with the latest IMO Guidelines on 1 May 2015.

ClassNK has also developed support tools such as PrimeShip-GREEN/ProSTA for shipyards, shipowners, and the greater maritime industry to enable smooth adoption of the amended standard.

The software enables ship designers to calculate the ship's speed in compliance with ISO15016:2015 and reduces the workload required for EEDI calculation.

Panama Canal expansion

coming, ready or not

Ray Dykes

With a year to go before the opening of the US$5.25 billion Panama Canal expansion there is a frenzy of activity in some ports and even angst in others throughout North America's East and West Coasts.

Some port authorities are busily deepening shipping channels, beefing up berths, and preparing for an influx of larger vessels — up to 13,000 TEUs (20-foot equivalent units) for container ships from the current capacity of 5,000 TEUs, or up to 120,000dwt for dry bulkers and others — with billions of dollars currently being spent on capital projects.

Work began on the Panama Canal addition of a third lane for shipping way back in September 2007 using reinforced steel for the first time, more concrete than used in the entire canal locks before, a series of 16 rolling gates, and dredging at both the Pacific and Atlantic entrances.

The expansion was initially due to be open and operating by now. However, hassles over contracts with the building consortium Grupo Unidos Por el Canal (GUPC) and consequent cost overruns have bumped the opening date to April 2016. One estimate puts lost revenues from the delayed opening caused by the dispute at over US$400 million so far.

However, the delay has also helped some United States ports get better prepared. The South Carolina Ports Authority in Charleston is several years into a ten-year US$1.3 billion capital plan with another $725 million of port-related infrastructure projects being funded by the State Government. Major among these projects is the deepening of the Charleston Harbour to 52 feet by the end of the decade. Wharf strengthening at the Wando Welch Terminal will allow it to handle larger ships up to 14,000 TEUs. Two new super-post-Panamax cranes are arriving in the spring of 2017.

The Port of Houston Authority is committing US$275 million for significant infrastructure improvements to allow it to handle larger vessels for containers and for bulk and general cargo. The Georgia Ports Authority has begun a US$135 million Savannah Harbour Expansion Project to deepen the main river channel to 54 feet at high tide, which will allow it to take Super post-Panamax vessels from the Suez Canal and the post-Panamax ships from the expanded Panama Canal.

But, the Panama Canal expansion is also good news for bulk shippers. As well as shipping and receiving more trade by container, there are also prospects for increasing dry bulk shipments including coal from Canada to countries such as Brazil using larger Post-Panamax vessels. Chemical and polymer shipments are also expected to increase from the US Gulf ports, especially to Asia.

Interestingly, of the world's 100 largest container ships, over half are in the 13,000 TEU range, which the Panama Canal will be able to handle by next April. However, with container ships around the world now up to 20,000 TEUs, the move to 13,000 TEUs by the Panama Canal Authority could be too little, too late.

The Suez Canal in Egypt — with no locks and no apparent shipping restrictions except for supertankers — has been open since 1869 and is well ahead of the Panama Canal in capacity even with the latest major expansion. About 50 vessels a day use the Suez, travelling in convoys and using bypasses along the canal with its depth of 24 metres.

This autumn should see the completion of a second canal for half of the length of the Suez in an $8.4 billion project aimed at increasing the canal's capacity.

No wonder the Panama Canal Authority is already talking of another expansion as it nears the opening of the current one. This even more ambitious project will cost $17 billion and would allow the canal to handle the world's largest container ships and battle the Suez Canal head on.

It took six years of research and over 100 studies to prove the economic feasibility, market demand, environmental impact and other technical engineering aspects of the current Panama expansion. Panama Canal Authority head Jorge Quijano says a fourth set of locks could be completed within 15 years and meetings have already been held with possible financiers from China.

The ultimate decision will depend on trade growing to sustain the investment and at least one major shipper, Maersk, has doesn't see it happening soon. Maersk CEO for Latin America and the Caribbean, Robbert Jan van Trooijenbeen, was recently quoted as saying: "For me, to see any of those [mega] ships coming near Latin America, that's the very distant future."

Not to be outdone, a Chinese businessman is continuing to pursue an idea to build a rival $50 billion canal across Nicaragua, but so far it remains just an expensive dream according to some industry experts.

Meanwhile, the continuing congestion in the Ports of Los Angeles and Long Beach following trucking and a tentatively settled waterfront contract dispute has meant the loss of valuable business. The malaise has encouraged some Asian shippers to use the Suez Canal rather than the West Coast Ports and rail to get to the major North American markets in the Mid-West and on the East Coast. There were nine vessels still at anchor outside the Los Angeles breakwater early in April.

"Our congestion problems have seen more of our cargo moving to the East Coast than usual and I know that the ports of Savannah and New York-New Jersey are busy," says Marcel van Dijk, marketing manager for the Port of Los Angeles.

Rather than coming directly to the West Coast, van Dijk says some cargo owners "don't see the love here on the West Coast anymore" and are exploring sending more of their cargo through the Panama Canal or the Suez Canal if the logistics are there.

The Port of Los Angeles isn't taking the declining traffic sitting down and van Dijk says "we're stepping up our play to keep our market share," as it digs out of its congestion problems.

The troubles have brought the rival Ports of Los Angeles and Long Beach more closely together spending billions of dollars on dredging deeper shipping channels; improving on-dock rail services; and other harbour upgrades. And van Dijk says the major railways don't want to lose business either and are beefing up their services across to the US mid-west.

At the Port of Long Beach, the Director of Business Development, Don Snyder, says work is continuing on infrastructure improvements including numerous capital projects to smooth the interface between ship and land facilities. Terminal tenants continue to invest heavily on new equipment "to make sure the interface is as good as it can be," and there is a standing dredging committee keeping the main shipping channels open.

The two West Coast ports don't have the vessel restrictions the Panama Canal faces, even with the expansion to double ship capacity, and Snyder says they're already handling 14,000 TEU vessels. For Long Beach, Snyder says "we can handle the biggest ships, the sky is the limit." Such things as water depth, crane height and utilization of backland space are optimal and "tenants are investing heavily on that for us."

As ocean carriers continue to produce bigger and bigger ships, Snyder contends "we can handle them effectively and efficiently."

Long Beach has a new CEO since last June in Jon Slangerup and he has championed the improvements of infrastructure, but he is also insistent that there has to be changes in how the port operates.

With the approval of the US Federal Maritime Commission earlier this year, Slangerup and his executive team held their first meeting with Port of Los Angeles Executive Director, Gene Seroka, himself relatively new, and the POLA executive team on ways both ports can improve supply chain efficiencies.

With the two San Pedro ports — the busiest seaport complex in the United States — under their control, the two executive teams agreed at their first joint meeting late in March that their primary goal in collaborating is to get cargo moving more efficiently "and keep our gateway as the No. 1 choice for shipments to and from Asia."

The ports, which face the threat of losing business to the expanded Panama Canal, are not prepared to sit around and wait to see if there is any cargo fall off. With the new collaboration they intend to refine the efficiency of marine terminal, trucking, rail and vessel operations. They also plan to discuss legislative advocacy, security enhancements, infrastructure, technology and environmental improvements related to supply chain organization.

The previous Port of Los Angeles Executive Director, Geraldine Knatz, who is now jointly a professor at the University of Southern California in Los Angeles Price School of Public Policy and the USC Viterbi School of Engineering, recently told US Congress just what the Panama Canal expansion will mean for North America.

After visiting the canal expansion project she raised some eyebrows when she said developments in the shipping industry around the world, particularly the consolidation of global marine operations, could be an even bigger threat than the Panama Canal expansion.

Changes in the global ocean carrier industry and larger and larger container vessels could affect US ports differently. The West Coast already receives the big container ships, but the canal expansion means East Coast ports will receive cargo in fewer but larger ships. This could create more competition among East Coast ports many of which need infrastructure improvements to handle the bigger ships, she told members of Congress. And that could be the bigger challenge ahead. DCi

Dry bulk supply chains

logistics in action

The GAC Group is a major logistics player involved in dry bulk transport.

Michael King

The world of logistics is changing in front of our eyes in many and varied ways, mostly driven by new technologies that have transformed how the needs of the world's growing number of middle class consumers are met. Healthcare, automotive, FMCG [Fast Moving Consumer Goods] chemical, perishables and a whole range of sectors have seen huge change. Supply chains were already complex and global, but the needs of today's consumers have put even more focus on last-mile delivery as e-commerce becomes a common feature of many lives.

All of which may seem rather disconnected from the dry bulk trades. However, that is not entirely the case. Rather, the two worlds are increasingly coming together as the foremost companies in the logistics sector seek out new markets, and those with an already strong presence in commodities take steps to guard their own supply chains and create new profit centres from cargo origin to destination, often through processing, but also by adding value and turning a profit from transport and distribution activities as well as asset plays.

"Not only are there a host of economic, security, legal, political and societal pressures on the logistics industry but bubbling up from underneath are a plethora of disruptive forces, many of which are a result of new technologies," said John Manners-Bell, chief executive of UK-based Transport Intelligence. "The full implications of this collision of top-down and bottom up developments has yet to be fully realized, and the timescale in which this will play out is still unknown. However it is clear to me that the industry is facing a revolution and in ten years' time will resemble little of what we see today."

In the bulk trades there has been something of a revolution already. Cement and agricultural companies were among the first to see the benefits of investing in their supply chains as those sectors consolidated. But most major bulk producers and traders have also gradually adopted the strategy and started investing in their own ships, ports and railways.

Hong Kong-based Noble group has been a prominent exponent. Back in the first half of the last decade the company was primarily a commodities trader with few fixed assets of its own. Since then it has built up a global logistics network which has helped it increase turnover from US$12bn in 2006 to more than $85bn in FY 2014. Noble reported record operating income from supply chains at US$1.6 billion in FY2014 as tonnage moving through its commodities pipelines increased 19% to 278mt (million tonnes). Yusus Alireza, Noble Group Limited CEO, said Noble's strategy was to be the "best company in the world at moving a physical commodity from the producer to the consumer and managing the market, credit and operational risk associated with that."

While Noble's approach has involved major investments in supply chains assets, the company considers its strategy to be largely asset-light to reduce its operational risks. Vale has, by

contrast, invested heavily in assets to improve its competitiveness in Asian markets against producers with a geographic advantage. As *DCI* went to press, speculation was growing that the Brazilian commodities giant was set to order a further 50 'Valemax' 400,000dwt bulk carriers, a move with the potential to put immense downward pressure on global ocean freight rates for years to come.

The company launched its first tranche of 35 owned and chartered in Valemaxes back in 2011 in a bid to reduce its freight disadvantage into Chinese ports against rival iron ore suppliers in Australia. However, until earlier this year the company has been forced to transship iron ore onto smaller ships at ports in South East Asia due to a ban on the vessels calling at China ports. Signals that more orders could be on the way suggest a final, lasting deal may have been struck with China's authorities.

Vale is also a leading operator of logistics services in Brazil and other regions of the world with a growing network of railroads, maritime terminals, distribution centres and ports. Two of its four iron ore systems include an integrated railroad network linked to port and terminal facilities.

"We have been expanding the capacity of our railroads and ports primarily to meet the needs of our iron ore business," said a company statement. "To support our commercial strategy for our iron ore business, we have developed a distribution centre in Malaysia. We also operate a distribution centre in Oman and two floating transfer stations in the Philippines.

"In order to position ourselves for the future expansion of our coal production in Mozambique and leverage our presence in Africa, we are currently expanding the local railroad capacity by rehabilitating the existing network and building new railroad tracks to develop the logistics corridor from our mine to a new port under construction at Nacala-à-Velha, in Mozambique."

In the second half of 2014, Vale completed the construction of a maritime terminal located in Teluk Rubiah, Malaysia. The terminal has a private jetty with enough depth to receive Valemax vessels with capacity of 400,000dwt and a storage yard with capacity of 3mt. The centre has throughput capacity of 30mt per annum of iron ore products.

Many of the major commodities groups also rely on third parties to undertake some of their logistics needs. And the logistics industry is itself undergoing major changes which are increasingly impacting on the dry bulk transport industry and creating new opportunities for those involved.

As economic growth has driven demand and supply chains have gone global, the industry has seen consolidation through acquisition, but also major forwarders and logistics companies expanding across verticals and geographies organically. Companies such as DHL, UPS FedEx, DB Schenker, Damco, Japan Post, Expeditors, GAC Kuehne & Nagel and Panalpina have become global giants in the process.

Many of these majors originally focussed on a specific segments such as postal or express services, or ocean shipping and forwarding. But increasingly they offer a full portfolio of multi-modal and specialist services covering everything from complicated project contracts to full management of manufacturing and raw materials producers' global supply chains. All are involved in the 'dry bulk' industry at one level or another. For some this means handling the movements of major pieces of mining equipment to a new site. Others handle breakbulk and containerized grains. Most offer services that keep offshore or remote commodity product sites supplied with parts, food and, in some cases, IT services. Some take this further and offer a wide portfolio with multiple options including full door-to-door cargo delivery with various value-added options.

At present DHL is perhaps the most notable example of a traditional light asset logistics supplier moving into territories it is not usually associated with. Best known by many for its door-to-door express services, the company in fact also has major forwarding and contract logistics divisions with tentacles stretching around the world and across all sectors, including commodities and energy. This has seen DHL get heavily involved in 'Industrial Projects' and commodities over the last 15 years, a strategic move largely prompted by Li Jiang, Global Head of Bulk Chartering at DHL Global Forwarding.

"I first saw the possibilities of combining the two business sectors to best serve our clients as well as to enhance our competitiveness," Jiang told *DCI*. "Now we are a leading player in the commodities business in the Pacific. In the meantime, the business serves our Industrial Projects clients quite well especially in the sectors of mining, power and infrastructure where we not only provide logistics solutions for site construction, we also serve our clients when the sites are put

Speculation is rife that Brazilian commodities giant Vale is set to order a further 50 'Valemax' 400,000dwt bulk carriers.

Bulk expertise

How major logistics companies approach the dry bulk sector according to Li Jiang, Global Head of Bulk Chartering at DHL Global Forwarding.

DCI: What's the difference between managing a bulk cargo supply chain compared to, say, a supply chain for a client in the Fast Moving Consumer Goods (FMCG) sector? Are the skills similar once the cargo is off the boat?
Jiang: The chartering industry is quite different from normal freight forwarding. The focus in FMCG is more on inventory and distribution management, which is different from the commodities business.

DCI: If you were handling the logistics for a major energy exploration or mining project, in a typical scenario, how would you explain what you can offer the client and how would you then go about providing this?
Jiang: Let's take for example that one of our clients would like to build a power plant in China. Before the project starts, we will carry out route surveys and feasibility studies. Transport design and engineering plans for heavy and out-of-gauge cargo will then be provided so as to ensure a smooth transport to the jobsite. HSSE planning is also provided for an operational excellence.

DCI: And how do you stay involved once the project is up and running?
Jiang: After the power plant is put into operation, we will sign COAs with the client to provide long-term coal transport services or through-voyage charters to provide spot cargo transportation. Normally we carry the cargo from the loading port to the discharging port. But in some cases, we would even provide inland transportation services as per our clients' requirements.

into operation. For example, we transport ores for the mines and supply coal for the power plant. It proves to be an excellent combination."

As a light-asset operator in the chartering sector and a forwarder in the Industrial Projects sector, DHL does not own any vessels or assets. Instead it uses a global vendor and project management system to establish strategic co-operation with vendors to offer clients competitive prices and first-class service. "We also have people as our valuable assets," said Jiang. "Our professionals from the chartering, engineering, HSSE, operation, commercial, research and other teams work very closely to make us the obvious choice for our customers."

As part of its combined role in the sector, DHL has developed into a major bulk carrier charterer. "Our role in the market is a ship operator," said Jiang. "We have a professional chartering team and the team has an average of over 14 years of experience in the market. We are equipped with in-depth understanding of the market dynamics and know when to hire the vessels at the best time with the best price. We also have a comprehensive risk control and credit check system to ensure that we work with reliable and reputable owners. Above all, we also make sure that the vessels are environment-friendly and consume less energy."

DHL mostly ships coal and iron ore, but also grain, bauxite, coke, steel and other ores and minerals. "Intra-Asia has been our focus for the last decade and each year large quantities of coal are transported from Indonesia, Australia, South Africa, Canada and Russia to China and India by our commodities team," he explained. "We have been a leading player in the Pacific area especially in the Far East market."

The GAC Group is another major logistics player involved in dry bulk transport. But the company approaches the market from a different angle than DHL due to its origins as a ship agent which also offers forwarding services. "We have a proven track record of more than 50 years in serving large dry bulk players globally," said Eric Barnard, GAC Group Sales Director – Shipping. "GAC serves the bulk business as ship agent. Today, we deliver ship agency services for a wide range of dry bulk markets. Backed by our global coverage, we can handle vessels at both origin and destination ports. That is, we can act as load port and disport agent for the same vessel, thereby ensuring a smooth and seamless operation in full compliance with local regulations."

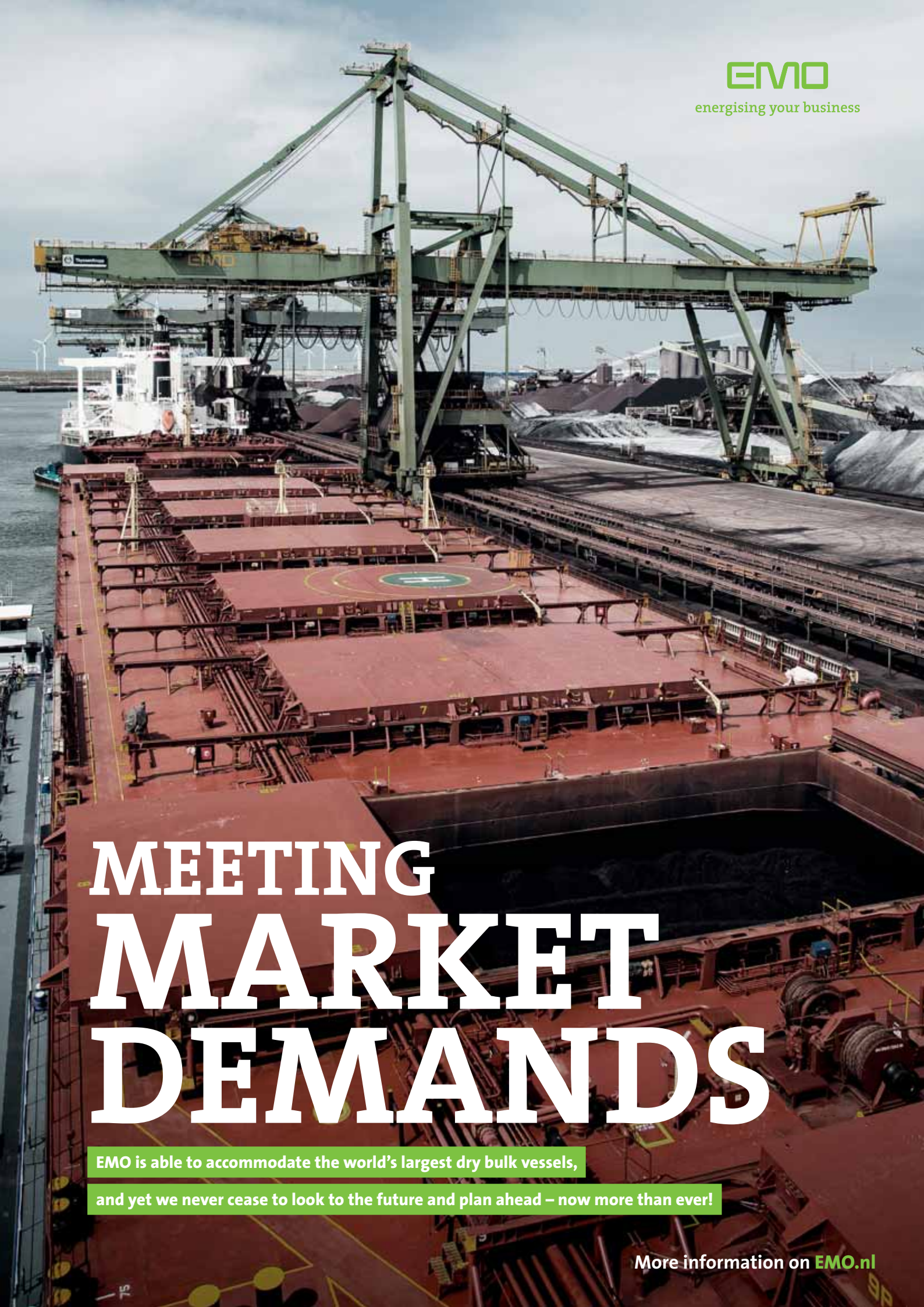
GAC uses custom-built port operations and shipping software GACagent to keep customers up to date on shipment progress and to monitor the needs of vessels. Barnard said that despite the downturn in the shipping industry, GAC had managed a stable 2013 and 2014 and port call volumes had increased slightly last year. "In both Australia and Indonesia, the growth in coal exports has added to higher demands for our port agency in major Australian and Indonesian ports."

However, he admitted competition in the bulk market was tough. "Unfortunately everything nowadays revolves around costs and no longer the actual quality of service being rendered," he added. "At GAC we pride ourselves on delivering high-quality service to our customers. This high quality may appear to come at a slightly higher cost than some of the extremely low fees being offered by our competitors. However, as the fees drop, so will their service levels as they will spend less time driving to the port to supervise the vessel/cargo operations, less time using their mobile phones etc. So the lower fees will most definitely have an impact on the service provided and ultimately the turnaround time of the vessel compared with a proactive GAC agent that is on board and offering a quality service."

DHL for one expects its role in the dry bulk markets to continue grow. Jiang told *DCI* the company aims to become a global player in the commodities business irrespective of the downturn in prices that have affected many. "There is no doubt that we will continue to grow in the sector," he said. "As a light-asset operator, we are less affected by the downturn of the freight market.

"There is a market for us as long as there is international trade. We have already witnessed growing demand in many places of the world other than China and we will continue to expand and embrace the opportunities. Another reason why we will continue to grow in the sector is that it is mutually beneficial with our Industrial Projects business, which I believe is our core competitive advantage."

As with most of the non-traditional companies that are looking at the bulk market with envious eyes and big plans, offering a global network and high service quality is where the logistics companies hope to use their leverage and find their own place in the heavier end of the shipping world. DCi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Port of Long Beach to consider cement import facility

The Port of Long Beach in the USA has prepared the final environmental impact report (EIR) for the Mitsubishi (MCC) Cement Facility Modification Project. The Port's Board of Harbor Commissioners will consider the adequacy of the final EIR at its regular meeting 11 May, and whether to approve the proposed project.

Mitsubishi Cement is proposing modifications to its existing import cement facility located on Pier F at 1150 Pier F Avenue. The facility receives bulk cement and cement-like materials (including Portland cement, blast furnace slag, pozzolans, and fly ash) via bulk cargo vessels at Berth F208. The product is stored in a warehouse and loading silos. It is then loaded onto customer trucks via three truck loading racks and transported to local and regional concrete batch plants.

The proposed project would consist of constructing 40,000 metric tonnes of additional storage capacity consisting of storage and loading silos on vacant port property adjacent to Mitsubishi's existing facility. The existing site would increase in size from 4.21 acres to 5.92 acres. It would also include installing an emission control system (Dockside Catalytic Control System) to capture and reduce nitrogen oxide emissions from ship auxiliary generators at berth, as well as upgrade ship unloading equipment and land side structures.

The Port's Board of Harbor Commissioners is scheduled to act on the proposed project during a public hearing (Spanish and sign language translation services provided) on Monday 11 May at 6pm, during the Board's regularly scheduled meeting, at the Harbor Department Interim Administration Offices.

The Board will consider any further comments regarding the proposed project at that time.

Upgrades on the way for Rio Grande

In Brazil, the Ports Ministry has authorized investment of $118 million to undertake a comprehensive dredging programme at the port of Rio Grande. The dredging programme will last for eight months, having started in February.

Rio Grande is Brazil's fourth-largest port in terms of volume handled, boosting throughput last year by 10%. *Barry Cross*

Tegram starts operations

In early February, the new Terminal de Grãos do Maranhão (Tegram) received its first consignment of soya. Vessels began arriving in early March.

The US company CHS has a 25% stake in the terminal and operates one of four large warehouses on site. The remaining 75% of the equity is held by NovaAgri.

A second warehouse on site is maintained by Glencore, with three warehouses expected to be fully operational as of early March and the fourth by the end of the month, these belonging to CGG Trading and to the Crescimento consortium, which is a joint venture between Amaggi and Louis Dreyfus.

Forecasts suggest that for 2015, 2mt (million tonnes) of soya and corn will be exported by Tegram. First phase development of the terminal will have a capacity of 5mt. As part of a second phase, a second berth will open, effectively doubling capacity.

A significant quantity of export grain handled by the terminal will be transported by the Norte-Sul railway following construction of a link to the port, which is expected to be operational by May. *BC*

Grain exports in Argentina down by a quarter

In 2014, Argentinian ports exported almost 8mt (million tonnes) of grain fewer than they did in 2013. According to figures released by the Ministry of Agriculture, combined, all the various port terminals dispatched 32mt of grain, compared to nearly 40mt the previous year. In 2012, export grain had amounted to 41.7mt, indicating that over the last three years the country has sent abroad 10 million fewer tonnes, which is a fall of around 23% based on the 2012 figure.

In 2014, corn exports fell by almost 4 million tonnes. This was due to a poor harvest yield, but also down to increased domestic consumption by livestock and also for a switch in use as biofuel. At the same time there was 1mt fewer of both corn and soya brought down to Rosario by barge from neighbouring Paraguay and Bolivia, along with fewer consignments of sorghum, wheat and barley.

With the exception of the ports of Ramallo and Villa Constitución, all others lost export dry bulk cargo in 2014. Those in and around Rosario were worst hit, losing almost 3mt. In 2013, these dispatched cargo amounted to 9mt compared to just 6.1mt last year. As for San Lorenzo and General San Martín, these lost a combined 2mt in 2014, falling from 16.3mt to 14.3mt. Terminals in and around Bahía Blanca was similarly hit, seeing traffic fall from 6.4mt to 5mt. *BC*

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ADM to acquire full ownership of Black Sea export terminals

Archer Daniels Midland Company announced on 6 May that it has reached an agreement to acquire complete ownership of North Star Shipping and Minmetal, enhancing the company's European origination and transportation network through the addition of export facilities at the Romanian Port of Constanta on the Black Sea. North Star and Minmetal operate grain elevators and bulk commodity storage and warehousing as well as port services, stevedoring operations and a shipping agency at the mouth of the Danube River. ADM was previously a partner in both North Star and Minmetal.

Among the assets included in the acquisition are:

- ten vessel berths, including seven deep sea berths;
- port terminals with annual throughput capacity of up to 6mt (million metric tonnes);
- on-site grain storage capacity of 330,000 metric tonnes;
- two floating cranes for direct barge-oceangoing vessel transfer;
- mobile shore cranes and equipment;
- a vacuum discharge and ship loader; and
- an iron ore and coal terminal located on 21 hectares

"This acquisition helps us to meet our goal of strategic expansion though diversification and expansion of our trade and origination territory," said Joe Taets, president of ADM Europe Middle East and Africa, and of the company's Agricultural Services business unit. "We've talked about the potential to double the volume of our grain business. Here, we're taking a great step in that direction with this strategic expansion of our European network. By becoming full owners of these facilities on the Black Sea, we're building on the investments we have made in our Danube River network since 2011, which enhances our origination, logistics and export capabilities in Eastern Europe, and allows us to reach more customers around the globe."

The Port of Constanta sits on the Black Sea at the mouth of the Danube River, and is one of the most strategically significant ports in the region. The Danube River outlet into the Black Sea makes the Port of Constanta the primary ingress and egress point for bulk commodities being traded into and out of Romania, Bulgaria, Serbia and Hungary.

In 2011, ADM announced a substantial expansion of its grain origination, storage, transportation and export operations along the Danube River. Today, the network includes eight elevators on the Danube, with two more under construction; two inland origination facilities; shallow water port facilities in Braila; and 50 barges and six tug boats. The new Constanta Port assets add to those origination, logistics and processing capabilities in Romania and Eastern Europe.

ADM, through its minority stake in North Star and through Minmetal — a separate 50-50 joint venture owned by ADM and North Star — previously owned approximately 45% of the Constanta assets.

Forward-looking statements

Some of the above statements constitute forward-looking statements. ADM's filings with the SEC provide detailed information on such statements and risks, and should be consulted along with this release. To the extent permitted under applicable law, ADM assumes no obligation to update any forward-looking statements.

About ADM

For more than a century, the people of Archer Daniels Midland Company have transformed crops into products that serve the vital needs of a growing world. Today, ADM is one of the world's largest agricultural processors and food ingredient providers, with more than 33,000 employees serving customers in more than 140 countries. With a global value chain that includes more than 460 crop procurement locations, 300 ingredient manufacturing facilities, 40 innovation centres and a major crop transportation network, ADM connects the harvest to the home, making products for food, animal feed, chemical and energy uses.

Cement terminal for Azhikkal

Kerala Ports Department has issued a new tender in respect of a cement terminal at the port of Azhikkal. Previous attempts to attracted investor to the port produced just one bid, with the company behind this then having to abandon its investment for various reasons. An unnamed Gujarat-based company is, nevertheless, said to be interested in the concession this time around. *BC*

ArcelorMittal given Brazilian concession

The National Waterway Agency (Antaq) has signed a contract with ArcelorMittal to run a port installation in the state of Espírito Santo, where the company will oversee the movement and warehousing of cargo at Terminal de Barcaças Oceânicas. ArcelorMittal has effectively been granted a 25-year concession to operate the 854,000 m² terminal for its own dedicated traffic. Contract extensions could be granted after that period in return for additional investment. *BC*

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GPA introduces breakbulk tracking

In the US, Georgia Ports Authority has introduced a proprietary tracking system for the processing of break bulk cargo, which will henceforth be dispatched more quickly and also be tracked in real time. According to executive director Curtis Foltz, "It is another facet of our ongoing effort to improve GPA operations and reduce the transit times of cargo flowing across our docks."

The general cargo system software will be deployed at the port of Savannah, where items for dispatch can be monitored down to single item level. At the same time, the turnaround time for road haulage vehicles has been improved along with cargo visibility at the adjacent rail yard. *BC*

Tegram handles first consignment

The new Tegram grain terminal in the Brazilian port complex of São Luís has dispatched its first shipment of soya, effectively providing a new outlet for this commodity. The Panamax vessel, which is typically used on this trade in Brazil, was loaded in three days. According to the terminal, this first shipment was very much a test of existing systems and has allowed certain adjustments to be made.

The consortium operating the terminal - consisting of Glencore, Amaggi, Louis Dreyfus, CGG Trading, CHS and NovaAgri — forecasts exporting 2mt (million tonnes) of grain in 2015, although the terminal currently has capacity to handle 5mt. However, given that the harvest in Brazil is almost over, it will not be able to fully realize its capacity until next year. *BC*

New Gijón port concessions

At the Spanish port of Gijon, the port authority has granted a seven-year concession to Cargas y Estibas Portuarias to operate a 1,500m² area on Muelles de la Osa. Here, it will handle and store dry bulk traffic, be it for its own use or for that of third parties, which will be loaded or unloaded on public quays at the port.

Separately, the port authority has awarded two concessions to Bergé Marítima. The first, of 3,000m², can be used either for dry bulk handling or for container stuffing. It will run for eight years. As part of a second concession, the company will be allowed to run the Figar I and II storage sheds, again for the handling of dry bulk either for its own purposes or for that of third parties. This concession, which will cover an area of 12,000m², will run for five years. *BC*

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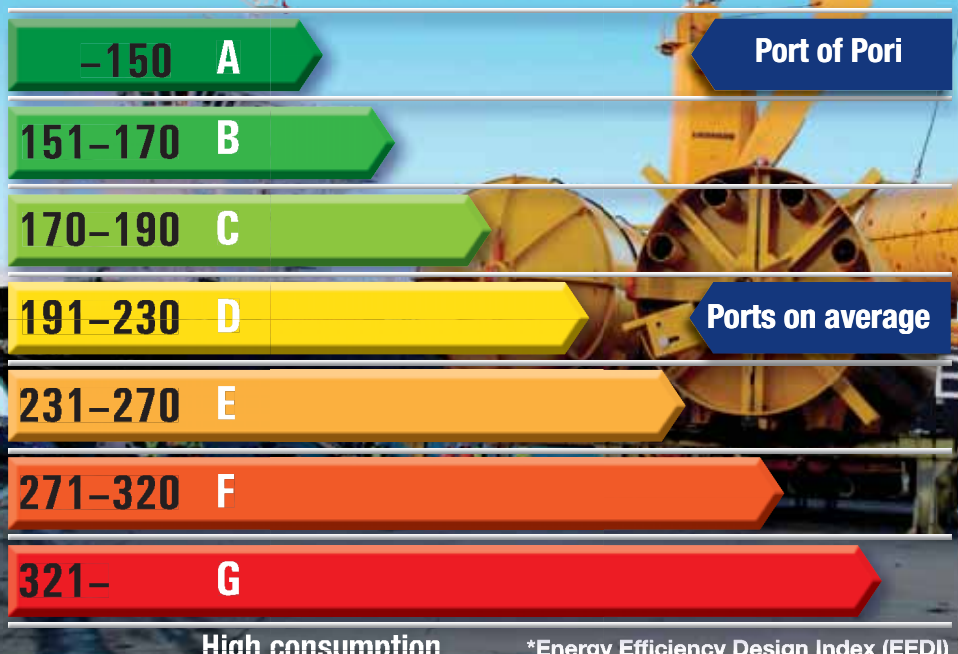

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dry bulk operations in the Scandinavian region

Loading sawn timber into containers at the Swedish Port of Gothenburg.

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Sweden's specialist ports weather the storm

In recent years, it has become more and more apparent that those ports in Sweden that have concentrated on particular traffic sectors have fared somewhat better than rivals intent on handling everything imaginable that is transported by sea. Not every port nowadays handles dry bulk, although some, like Gothenburg, are taking another look at niche commodities.

For the last 20 years, Gothenburg has not been a major player in the Swedish dry bulk market and has no plans to be so again. However, Claes Sundmark, VP for the Cargo Business Area, points out that the decision taken by the port authority to effectively pull out of the traditional dry bulk market some 20 years ago and instead concentrate on containers, cars, ro/ro and energy products has been borne out by the port's bottom line success.

"In Sweden, those ports that have not specialized in particular areas — but instead try to handle a wide range of commodities — are not profitable. In contrast, those ports that have been successful have stuck to what they do best and concentrated resources on those areas," says Sundmark.

When Gothenburg pulled out of the dry bulk market, much of the existing traffic passed to either Uddevalla or Varberg with which Gothenburg had established the 'West Sweden Seaports' association.

"However, we have now identified a demand for shipping dry bulk traffic from Gothenburg to non-containerized ports in areas such as the Middle East and Africa," says Sundmark.

This realization that there was a breakbulk market that the port could profitably service grew out of the establishment of a new rail-connected facility that the port authority developed just outside its boundaries. Here, sawn timber from northern and central Sweden arrives by rail, and also by truck from saw mills closer to Gothenburg. Shipments are then moved to the port, where they are stuffed into containers or trailers for despatch worldwide.

"Although saw mills that we have spoken to confirm that ever larger amounts of their output is being containerized or despatched within Europe by trailer, there is still demand out there in markets such as Egypt, Libya and Morocco for

traditional breakbulk shipments of commodities such as pulp, timber and maybe paper, and it is those that we are now planning to reintroduce into Gothenburg," he says.

"I should stress that we are definitely not considering going back into iron ore, scrap or salt handling, but are rather targeting high value breakbulk, where we can add value."

Although he concedes it is difficult to calculate exactly how much additional traffic this initiative will generate, he does point out that it will not be a 'game changer'. Nevertheless, saw mills currently using Gothenburg for their containerized output and others for more traditional break bulk shipments will now be able to concentrate all their output through one port, which Sunmark stresses makes sense, given that Gothenburg has unparalleled connectivity in the region, offering deep sea services to global destinations and daily ro/ro sailings to the UK, Belgium, Germany and Denmark.

"No other port is even close to being able to offer that type of service," he says.

Some extra investment will be required, but the port authority is already working with its existing terminal operators to secure this. However, the financial outlay will probably be limited to the reinforcing of certain quays to allow the operation of mobile harbour cranes, which will have to be purchased to handle the new traffic. All the road, rail, yard infrastructure, stresses Sundmark, is already there.

"Although we don't currently have all the necessary expertise to handle these new products, putting it in place won't be a problem either," he says.

As for last year, Gothenburg handled just 204 tonnes of dry bulk, compared to 118 tonnes in 2013. According to Sundmark, there are just two companies currently handling dry bulk in the port: NCC and Vikans Kross.

"Volumes handled last year very much reflected their business activity," he says. "In reality, they concentrate on just a couple of commodities: sand and gravel, both of which are essentially 'captive' to Gothenburg."

Because the end users of both materials are located close to the port installations, there is no need to deploy either rail or inland waterway connections; everything is shipped by road.

However, sometimes, those ports that do specialize in certain areas can be hard hit once the source of that traffic dries up.

Hargs Hamn, for example, handled almost 1.5mt (million tonnes) in 2014, of which iron ore from the Dannemora mines accounted for 78%. This compares to 1.3mt in 2013, where iron ore traffic amounted to 937,000 tonnes.

According to Port Administrator Peter Zoné, the Dannemora iron ore mine opened in 2012, increasing its production throughout both 2012 and 2013, only for it to be declared bankrupt in March 2014.

"We do not know what the future will be for the mine," he says.

Other than iron ore, other commodities handled included various types of fuel, such as wood chips, wood pellets, and de-icing road salt, all of which depend heavily on prevailing weather conditions as to the volumes being shipped. Indeed, the 2013/2014 winter proved to be relatively mild, therefore volumes of dry fuels decreased.

"We also handle scrap metal, but this market can move extremely quickly, with sharp up turns and down turns. It is not a sector that is easy to forecast, but at 58,000 tonnes in 2014 it remains an important commodity for us," says Zoné.

Both iron ore and scrap metal are exported, with other imports amounting to just 300,000 tonnes in 2014, around 20% of the total.

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He notes that certain products are, essentially, captive to Hargs Hamn, since iron ore and fuels, such as woodchip, need special indoor storage and handling equipment, the latter involving the unloading of iron ore from railway wagons.

In terms of added value, some products, such as crushed volcanic lavastone from Iceland — a new, but small volume product Hargs Hamn started handling in the summer 2014 — and cobble stones from Portugal are packed into big bags. Peat briquettes are unloaded from conventional dry cargo ships at the port and then stuffed into 20 ft dry cargo containers.

Rail features heavily in the landside movement of dry bulk. Almost all the iron ore was moved by train, while the containers into which the peat briquettes are loaded are then shipped inland by rail. A few trains are also rostered to move sawn timber stocks.

"All in all, 1.2mt out of a total of 1.5mt was transported to or from the port by rail in 2014," says Zoné. "The port actively markets the use of rail and has developed close contacts with the National Infrastructure Rail Company in respect of maintenance and track upgrades."

The largest ships regularly calling at Hargs Hamn to take on dry bulk consignments are 'R' class vessels operated by Wagenborgs. These are approximately 23,000dwt and can load around 18,000 tonnes, based on fairway draught restrictions of 8.5 metres.

"Since March 2015, these ships have operated under a special permit that allows them to load about 21,000 tonnes, using an old, but narrow part of the fairway, which has draught of 9.5 metres," he explains.

As for the future, there have now been two crushed lavastone consignments handled inbound from Iceland. The first arrived in the summer of 2014 and the second in early April 2015. Hargs Hamn is believed to be the only Swedish port apart from Malmö which handles this product.

"We are also working hard on trying to attract new business from building companies, or suppliers of building materials, involving steel rods, pipes, modules, and building equipment made of steel or cement, and so on," says Zoné. "In addition, and as of November 2014, we have offered the loading of grains using a new 10m x 4.5m steel box. Trucks tip their cargo into this, with the grain then loaded into the ship by crane. Clearly, we are expecting to generate an increase in grain volumes."

Handling bales at Hargs Hamn.

Örnsköldsvik, which is an island municipality, owns Örnsköldsvik Port and Logistics AB, which undertakes port operations at Örnsköldsvik public port, which includes the newly renovated port of Köpmanholmen. Harbours where the company has a presence tend to be located in areas dominated by engineering, forestry, pulp and paper, which have become its speciality.

In 2014, the terminal operator handled 944,217 tonnes of dry bulk, which was an increase of 50 % compared with 2013. Mikael Johansson, the company's managing director, notes that local forestry products generated higher volumes last year, while the port also saw more break bulk traffic in the form of wind turbines.

"In terms of dry cargo, about 70% of our traffic is in the form of long-term export contracts, while the remaining 30% is mostly long-term imports," he says.

Significantly, the local cellulose mill is served almost exclusively by the company, while the local sawn timber industry directs around half of its output through Örnsköldsvik Port, while the rest uses either other ports or is driven by road to end users.

"The majority of our imported volume comes in the form of logs for wood pulp, which are sourced in the Baltic and processed locally into cellulose," says Johansson.

The port does not have an inland waterway connection, so other than road, just a few consignments of logs bound for pulping are moved by rail, he adds.

Unloading operations at Uddevalla.

In terms of vessels, restrictions imposed by the Swedish authorities mean that no vessel longer than 160 metres can access the port, while maximum draught is 10 metres, prompting Johansson to point out that vessels calling tend to be around 6,300dwt.

"Our portfolio of dry bulk commodities is fairly stable at the moment, and we are not actively pursuing any new ones," he says.

The Port of Kalmar handled 608,005 tonnes of dry bulk last year, which was an increase of 24.5%. This trend has continued into the first quarter of this year, with the port registering a further 19% increase.

Asked what had produced such positive figures, production manager Jonas Petersson attributes the upsurge in traffic to, "Strong economic development in the regional forestry industry, as well as a growing UK market."

Forestry products, particularly wood chips, are the main drivers of Kalmar's burgeoning traffic, with around 30% of dry bulk traffic being imported and the remaining 70% outbound, much of which is shipped domestically.

Quizzed as to how much of the existing traffic is "captive" to Kalmar, Petersson says that, as in all business, this is up to the customer. However, there is an agricultural plant located in the port that sucks in imports, amounting to 120,000 tonnes annually.

"At the moment, all of the dry bulk traffic that we handle has to move by road, since our rail link is no longer operational. This is a temporary measure, although its reopening is down entirely to the railway company's policy," he says.

As for the type of vessel currently calling at Kalmar, those transporting dry bulk tend to be no larger than 6,000dwt, although Petersson says this very much depends on the receiving or despatching port. Draught is currently restricted to 7.3 metres in the Sound of Kalmar, although the port authority has started a process to increase this to around 11 metres, mainly due to a request from the oil terminal.

Finally, in terms of investment to attract new commodities, he says that there are no plans to do this at the moment. Nevertheless, he stresses that stevedores in the port have become highly specialized in the handling of bulk cargo and all of them are aware of the low value of the goods.

"We therefore seek to minimize any extra costs for the customer, drawing upon our handling experience and customer care," he says.

The west coast port of Uddevalla reported dry bulk volume amounting to approximately 650,000 tonnes last year, which customer service manager Dag Paulsson says is equivalent to growth of around 20%.

"A lot of that is due to the dollar/kronor exchange rate, while one of our main customers increased the amount of volume they were importing," he says, adding that 2014 also saw growth in the amount of grain handled.

As for the current year, Paulsson says the port authority has budgeted for a similar volume as last year, although this pretty much depends on the strength of grain exports during the harvest season.

Indeed, Uddevalla handles around 200,000 tonnes of grain annually, with little variation from one year to the next. Ore, though, is growing, reaching 250,000 tonnes in 2014. Salt traffic was negatively impacted by last year's mild winter, although stone consignments are on the increase.

"Around 95% of existing traffic is very much dedicated to Uddevalla," says Paulsson, noting that no value added services are provided within the confines of the port, with all consignments handled by road.

The largest dry bulk vessels to call at the port are in the 45,000 gross weight tonnage range, something which is dictated by both air draught and water depth.

In respect of new dry bulk commodities, Paulsson says the port authority is interested in attracting energy commodities, such as wood chips and olive stones.

In 2014, the Port of Halland handled approximately 400,000 tonnes of dry bulk, equivalent to growth of 4%. According to port spokesperson Jonas Paulson, the main dry bulk activity in the port is accounted for by sawn timber, pulp and recycling materials.

"Glass producer Pilkington moved its operations from Halland in 2013, although glass and metal producer Ardagh increased its production last year," Paulson explains.

Around 40% of existing traffic — that generated by Viking Malt is thought to be captive to the port.

Landside movement of dry bulk is mainly by road, although 25% is transported by rail, with the port stressing it wants to improve this.

"The largest ships we receive are of around 29,000 tonnes. This is dictated by the draught. However, we are trying to attract more types of dry bulk to the port," said Paulson.

The Port of Trelleborg is Sweden's most southerly maritime facility. Communication manager, Agneta Nilsson, explains that dry bulk does not figure much in its portfolio of goods, with ro/ro dominating and only very few conventional bulk carriers handled.

"However, what dry bulk we have is generated by local farmers and consists of both grain and fertilizer," she says.

Grain traffic in 2013 amounted to just 22,843 tonnes, falling to 12, 499 tonnes. For 2015, 12,499 tonnes has so far been handled. As for fertilizer, this had a good 2014, with traffic amounting to 4,200 tonnes, up from the 3,025 tonnes registered the previous year.

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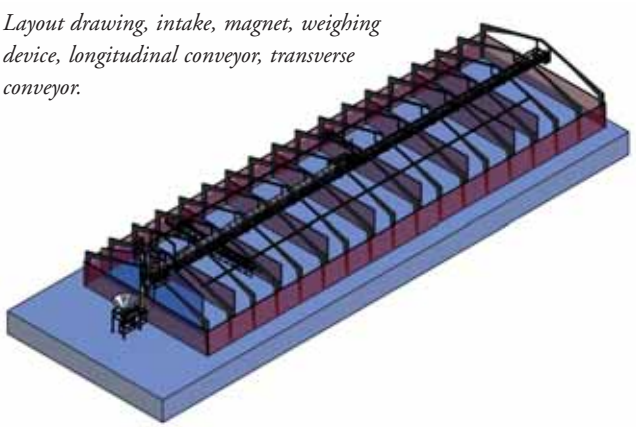
Cimbria continues supplying installations for Scandinavia's bulk industry



Layout drawing, intake, magnet, weighing device, longitudinal conveyor, transverse conveyor.

Chain conveyor 300tph from the ship hopper to the storage facility.

Longitudinal belt conveyor 300tph with spot filter.

Cimbria is a supplier of high-quality bulk handling equipment, primarily within grain and seeds, but also within other industries such as foodstuff, animal feed, biomass and a large variety of industrial products. The company has in-depth knowledge within the design and construction of projects and special installations for storage and conveying bulk cargoes. This vast experience is constantly being put to use in developing new solutions which meet the demands of authorities and users for functionality, quality and environmentally friendly operation.

The solutions from Cimbria are always individual solutions developed in close co-operation with the clients. Their needs and demands define the overall parameters and Cimbria makes the ends come together in simple, practical and operational solutions based on in-depth experience with the business area.

When looking at solutions for the Scandinavian market, Cimbria can refer to a wide selection of installations for different applications, including the supply of storage systems and various conveying equipment.

Teamwork in Sweden

Through a business partner of many years, Falkenberg Silo Montage (FSM) in Sweden, Cimbria Unigrain received an enquiry at the beginning of 2014 for the establishment of a raw product storage facility for Svenska Foder AB in Åhus, Sweden.

Svenska Foder wanted a proposal for the most efficient way of filling the different types of raw product that are regularly received from ships into the raw product hall for animal feed production. The capacity had to be 300tph (tonnes per hour) — 450m^{3}ph (cubic metres per hour). Following a number of meetings with Svenska Foder, Cimbria received a signed delivery agreement in March.

Cimbria delivery:

- detailed design, project management and documentation;
- delivery of equipment and control unit;
- erection management (erection carried out by FSM); and
- running-in and hand-over.

Design of the plant:

According to a requirement from the port authorities, the feed hopper on the quay must be able to be moved by a forklift truck when ships were not unloading product to the raw product hall.

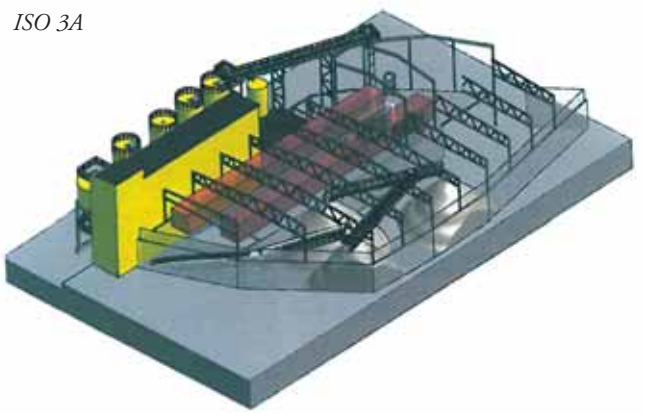
The product is led from the feed hopper to a chain conveyor and a screw conveyor that feeds the intake elevator, which in turn delivers the product down to a weighing device, a cascade magnet and onwards to the fixed longitudinal conveyor belt. The fixed longitudinal conveyor belt delivers the product in the middle of the hall to the mobile conveyor belt. The ends of the mobile conveyor belt can thus fill the hall in the longitudinal direction. In order to fill the hall in the optimum manner in the transverse direction, the product is delivered to a mobile transverse conveyor belt.

This facility in Åhus can be added to the numerous other plants that Cimbria Unigrain has previously delivered to Svenska Foder.

Conveying insulation material at installation in Norway

Cimbria has supplied conveying equipment to Syklus, Fredrikstad, Norway. This equipment was designed to convey the crushed glass to the processing furnaces, where the crushed, ground glass is transformed at high temperature to Glasopor foam glass. Glasopor is a heat-insulating and sound-insulating material that can be used in various insulation tasks.

There has been great demand for this product, which means



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that the current finished goods stock facility is to be freed up for expansion of the production facilities. As a result thereof, a large outdoor stock facility will be established in 2014/2015.

In connection with the expansion of production facilities, Cimbria has also been charged with delivering conveying equipment, steel structures, electrical systems, motor cabinets and control systems. The conveying equipment consists of approximately 200m of various types of belt conveyors, of which the distribution belts are fitted in a 115m-long lattice structure at a height of 20m.

Preferred supplier for Danish hammer mill

The hammer mill in Køge, Denmark, grinds grain 365 days a year, 24 hours a day, which means that good, reliable machinery is required.

As a result, Cimbria has delivered and installed a new plant for reception of grain.

The new plant includes chain conveyors, bucket elevators, baffle plate weigher, sampler, magnetic separator, Delta cleaner and new pipework with a capacity of 100tph.

The plant in Køge grinds wheat and rye in particular, but also other types of grain and species such as white wheat and spelt are processed.

In connection with the installation of the new equipment for grain reception, the company has taken the opportunity to replace three existing loading chutes with newer models, i.e. three Moduflex type S300TSMJ loading chutes replacing a number of Moduflex loading chutes from 1992.

The Moduflex loading chutes are manufactured in accordance with EU regulation no. 1935/04, and thus meet all requirements concerning contact with foodstuffs.

Cimbria was established in 1947 and is today an international organization with 800 employees in 15 companies throughout the world. Cimbria offers equipment and processing plants for the grain and seed industry and transport and conveying equipment for bulk handling.

No more high fuel bills – Mantsinen 70 ER

Ege Celik steel mill in Aliağa, Turkey has been using three electrically powered Mantsinen 70 ER material handlers since 2013. Two of the machines work in the port, unloading steel scrap from incoming ships, and one at the Ege Celik steel mill.

Ege Celik also has three older diesel powered Mantsinen material handlers. When Ege Celik was acquiring new machines in 2012 and 2013, a strong emphasis was on energy costs. Mantsinen responded with the 70 ER, an 85 tonne crawler type machine with electric motor and a side-mounted power cable.

The machines have substantially more lifting capacity than the older diesel-powered machines, but they save approximately 70% of energy cost and have zero emissions. "Other important advantages are a remarkable reduction in maintenance costs as the electric motor needs practically no service, and the total absence of fuel refilling," says the steel mill purchasing supervisor Mesut Cebeci.

All three machines have the Mantsinen Diesel Power Pack to enable the machine to move from one electric outlet to another.

Mobility of the machines with this configuration, especially in the port application, is no problem at all. The machine at the steel mill has a longer power cable, and the cable is protected against falling objects by a special cover.

All machines are equipped with Mantsinen orange peel grabs. DCi

Lower Mississippi

The Port of St. Bernard.

Associated Terminals: a force to be reckoned with

Associated Terminals (AT) is a major cargo handling and logistical solutions company, which operates terminal facilities on the Lower Mississippi River. The company offers dry bulk and breakbulk cargo shippers an extensive range of services, including the total co-ordination of movements to provide customers with a comprehensive transportation and stevedoring package.

AT is the only provider in the Lower Mississippi area that is able to offer mid-stream as well as land-based cargo handling, as well as all modes of transportation. It can handle all types of cargo — general, bulk, and breakbulk — at all of its facilities.

Founded in 1990, AT's operational bases include Myrtle Grove, Chalmette, Reserve, Convent and Port Allen, Louisiana. Over the years, it has continually expanded its capabilities, assets and geographical locations to meet the growing needs of its customers.

AT acquires St. James Stevedoring Company

On 11 March this year, AT completed the strategic acquisition of St. James Stevedoring Company (see 'Associated Terminals acquires St. James Stevedoring Company,' on p53 of the January issue of *Dry Cargo International*). Under the terms of the agreement, AT has purchased the assets of St. James Stevedoring (SJS), with transaction highlights including:

- combined fleet of 14 high-capacity Gottwald crane barges;
- 20 deep draught berths capable of facilitating ocean vessel transloading;
- operating locations from mile 55 AHP to mile 228 AHP on the Lower Mississippi River;
- multiple dockside and in-plant service locations along the Gulf Coast in Louisiana;
- SJS senior management have joined the AT team;
- SJS proprietary technology deployed throughout AT's operating footprint; and
- strategic alliance established between AT and St. James Technologies.

Technological assets boost AT's 'firepower'

Todd Fuller, the President of Associated Terminals, has taken the time to give *Dry Cargo International* details of what this acquisition really means to the company.

Fuller explained that AT was particularly attracted by the technology aspect of the transaction. The company now boasts a massive fleet of 14 floating cranes and 20 deep draught berths;

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ASSOCIATED TERMINALS

coupled with the land-based storage facilities that AT already held before the acquisition, together with its ability to load railroads and to use any means of transport, this means that AT is a real force to be reckoned with on the Lower Mississippi.

St. James Technologies remains an entity in its own right, but now AT will be an operational testing ground for St. James Technologies' innovations. One of the major innovations that SJ Tech introduced is its Harbor Telematics Crane Data System. This cloud-based information service specializes in the logistics needs of mobile harbour crane users. Data is collected in real time, and relayed live to the operators' computers. This means that instant feedback is available on what each crane achieves, from hour to hour, including details on its swing cycles, tonnages handled and more.

The Harbor Telematics system also provides vital information relating to any operational problems, and can even predict failures and other issues with parts and equipment. This means that it is possible to schedule maintenance and/or repairs at times that are operationally convenient, and prevent costly failures. AT always carries a wide range of spare parts, to allow it to respond swiftly and efficiently to any issues that arise.

Operational advantages

AT's presence in the Lower Mississippi has been greatly enhanced by the SJS acquisition. AT has 20 deep draught berths, from the first point on the Lower Mississippi all the way up to Mile 158, and each berth offers operational advantages for loading and unloading. Berths of particular note include:

- AT's floating grain elevator at Mile 56. This independent unit handles significant quantities of third-party grains for customers who do not then need to go to a grain elevator. This floating grain elevator is positioned at the first point on the Lower Mississippi River that can handle cargo;
- Additional midstream systems are located between Mile 56 and 58;
- Further up-river, from Miles 86–90, AT has four midstream facilities and one mooring dolphin, as well as a slack water slip which is ideal for handling project cargoes. AT also offers hundreds of thousands of feet of warehousing space for bulk, breakbulk and project cargoes, as well as several acres of improved and unimproved open storage for breakbulk and bulk. AT has reciprocal switching arrangements with all Class 1 railroads. Other equipment such as truck scales are available;
- Further up-river to the Reserve area between miles 136–141, there are four midstream berths and three dockside facilities which AT owns or leases. The three facilities can also go to ground, and load to railcars. Here, there are a few hundred thousand square feet of warehousing space, and just under 100 acres of improved/unimproved acreage for outside storage. There are conveyor systems to two domes to store cement. One of the facilities has two gantry cranes which can also load direct to barge, further strengthening AT's crane power;
- Three berths at Mile 158; and
- Associated Terminals owns and operates an intermodal terminal in the Greater Baton Rouge area. Located on the Intracoastal Canal in Port Allen at mile post 229 A.H.P., this facility is focused on the efficient transfer of cargo between barge, truck and warehouse storage. The site has more than 45,000 square feet of warehouse storage and 130,000 square feet of outside storage.

Each location offers its own cost advantage. Ocean freight, for example, is better served lower on the river because of the proximity of the ocean; further up-river, there are opportunities with barge lines. Up-river locations offer major hubs and turning areas for barges, so shippers can benefit from great freight advantages when arranging inland transportation.

Customer satisfaction

Fuller explained that AT has a strong focus on customer satisfaction. The company takes great pride in having assembled a team of hardworking professionals who are truly dedicated to helping its customers succeed. As such, AT is focused on handling each job, each tonne and each business opportunity in a manner that exceeds the expectations of customers. AT's success in this is evidenced by its stable customer base.

The SJS acquisition — though only of assets — has also opened up opportunities to increase AT's customer base, and the company is taking full advantage of this and has already brought in some new clients.

AT has been very pleased to bring in many of SJS's most-accomplished employees, and has welcomed nearly 70 of its employees, including SJS former senior staff. This brings its staffing total to close to 600 employees.

Floating flexibility

On occasion, AT is called on to assist customers who have a sudden need — for example, those dealing with equipment breakdowns on the Gulf Coast. Here, because it has such a large fleet of (14) floating cranes, it is often able to send one or more of its cranes to carry out work at short notice.

Due to the in-built flexibility of its Gottwald floating cranes, and because its facilities are not particularly cargo-specific, AT is able to do everything in terms of cargo handling. It can change quickly from carbon-based cargoes, to fertilizers, to alloys and pig iron and more.

AT is even able to handle containers when the need arises, and is also able to feed bulk products into containers, though demand for this service is not high right now.

Myrtle Grove Midstream Terminal.

Looking to the future

AT is currently working on growing its business, and is starting to integrate further inland than just the Mississippi River. It seeks to meet the needs of customers who need expertise in technology and material handling, and to find opportunities to handle cargo at the customer's own facilities. If this ties in to the Lower Mississippi, AT will work to bring those opportunities together. So while its focus remains on the Lower Mississippi River, it is also looking at other opportunities.

AT expects the SJS acquisition to help it to grow its brand and customer base. The company already handles a staggering amount of cargo every year. In 2011, it handled 21mt (million tonnes); 2012 was a record year with 24mt; in 2013 the total was nearly 20mt; and in 2014 it was 20mt. Fuller says that, further to the SJS agreement, AT should exceed 25mt in 2015 handling all types of cargo.

AT is always eyeing opportunities on the market, and has several prospects on the horizon. If these should all come to fruition, the company will happily expand its already large fleet of floating cranes.

Port of South Louisiana.

Port Corpus Christi: an energized port

Port Corpus Christi, located on the Texas Gulf, is the fifth-largest port in the United States in total tonnage, and offers shippers a profitable alternative to the crowded roads of trade.

With Eagle Ford Shale activity a short 50 miles from the port, many of today's projects stem from low natural gas prices. A record $32 billion in investments is taking place at the port, and much of that is dedicated to dock and rail improvements.

The Nueces River Rail Yard project recently opened Phase I, a $17.8 million construction, utilizing $10 million from a Texas Department of Transportation TIGER Grant. The new rail interchange consists of four parallel ladder tracks for a total yard capacity of 15,300 feet and 253 rail cars, greatly improving the efficiency of existing cargo movement, such as grain, petcoke, and heavy project cargo such as wind components.

Wind continues to blow in the right direction for Port Corpus Christi making it the #1 port of choice for import/export wind energy cargo in the Gulf. In 2006, the first major wind manufacturer discovered Port Corpus Christi's infrastructure and capabilities to handle wind components: from the well-equipped general cargo docks to the proximity of highway transportation and rail access, the elements of the logistics chain were in place and ready to serve. Since then, the Port's wind customer portfolio has grown to include all top worldwide wind manufacturers.

The future of wind cargo through Port Corpus Christi is foreseen as quite promising in spite of uncertainties due to the Production Tax Credit (PTC), which allows for a 2.2 cent per kilowatt-hour tax incentive for renewable energy for ten years. A U.S. Department of Energy report shows wind energy can double within the next five years to supply 10% of electricity by 2020, 20% by 2030 and 35% by 2050. Another positive variable for Corpus Christi is the Texas 'wind rush', currently at its height, with 7,500MW of wind projects currently under construction — more than all other states combined. Each MW of power can sustain an average of 200 typical homes at peak time. Proximity to job sites; adequate yard space to position the large components for import/export operations; a high level of cargo security; direct access to different modes of transportation for timely deliveries; competitive rates and a skilled workforce are all components that logistics providers take into consideration during port nomination.

Adjacent to the new Nueces River Rail Yard is the location for the future M&G Chemicals PTA/PET plant; the largest vertically integrated single line plant in the world. The plant is under construction and jumbo components have begun arriving

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at Port Corpus Christi. Direct vessel-to-rail discharge and the close proximity of the Nueces River Rail Yard to the construction site make the transfer of these massive components as efficient as possible and allow M&G to ship assembled components to the site.

A new project on the Port's La Quinta Terminal, voestalpine, and another adjacent to the property, TPCO, are both well under construction and the Port continues to receive oversized components, such as boilers and assembled structures, for completion on site.

As times change, so do the types and dimensions of project cargo. The port's forefathers could not have envisioned the need for the public docks to be equipped for components such as wind turbine generators or jumbo construction projects. However, the vision existed to create an internationally acclaimed Gulf port and, by all accounts, they were successful. Port Corpus Christi continues to target, solicit and accommodate all types of project cargo, from an array of different industries, and position itself for growth.

Impala Terminals Burnside handles first million tonnes

A vessel being loaded at Impala Terminals' Burnside Terminal in Louisiana, USA.

A coal barge heading to Impala Terminal Group's Burnside Terminal, Louisiana.

Impala Terminals Burnside LLC has announced that it has unloaded its one millionth tonne of product just under nine months after commencing operations.

Impala Terminals Burnside, located in Ascension Parish on the Lower Mississippi River, Louisiana, is a state-of-the-art bulk facility. Totally rebuilt and reopened by Impala Terminals in 2014 with over USD300 million invested to date, the facility is now receiving regular shipments of petroleum coke and coal. The terminal is well on its way to becoming one of the leading bulk logistics facilities in the US and following a proposed second phase of construction, will be the only terminal on the Mississippi River able to offer both rail-to-vessel and barge-to-vessel capability.

On Saturday 7 March 2015, Impala Terminals Burnside unloaded its one millionth tonne of product to the facility from river barge number CBX2096, operated by Canal Barge Company, Inc. Marking the event, Jonathon Shull, Commercial Manager at Impala Terminals Burnside said: "This is a significant milestone and we would like to thank our customers and service providers, along with the team at Impala Terminals Burnside who have helped to make this happen. We are now looking ahead to completing our second million tonnes."

Impala Terminal's investment in the facility is set to continue; with a plan already in place to incorporate the latest rail unloading features such as bottom dump cars into the existing infrastructure to minimize the unloading time for all rail cargoes. This follows investment in equipment such as a Continuous Barge Unloader, which can discharge up to 5,000tph (tonnes per hour) and a Ship Loader capable of loading up to 8,000tph.

Impala has demonstrated a commitment to the local community, for example, in the form of job creation, with 87 percent of new hires coming from Ascension Parish and wider Louisiana.

Impala Terminals, a wholly owned subsidiary of global commodity trading firm Trafigura, currently employs over 2,100 people worldwide and has world-class experience that extends through non-ferrous concentrates, refined metals, iron ore, coal sectors, oil and oil products, general cargo and container business. Impala has over 25 terminal sites worldwide and operates in over 20 countries across China, Europe, Middle East, Africa, the US and Latin America, with over 1.3 million m^2 of storage capacity. In addition, Impala Terminals owns and operates a number of key ports - including a coal terminal located in Burnside, Louisiana, USA. Impala Terminals is also completing the implementation of a multimodal logistics system along the Magdalena River, Colombia.

Kongsberg Maritime expands Louisiana office and training facility

International technology company, Kongsberg Maritime announced that it has made a major investment in Louisiana with the purchase of approximately 5.2 acres for new construction on an 82,980ft² office and training facility. Construction on the James Business Park property located on James Drive East in St. Rose, Louisiana is scheduled to begin this spring.

Celebrating 200 years in business in 2014, Norwegian conglomerate Kongsberg Gruppen, parent company of Kongsberg Maritime, has manufacturing facilities and offices in more than 25 countries. Kongsberg Maritime is a supplier of dynamic positioning systems, marine automation and control systems, subsea navigation systems and surveillance systems for all vessels and offshore facilities.

Kongsberg Maritime moved its service department from Houston to Louisiana in 2003 establishing a small office in James Business Park with nine full-time employees. Growing together with local customers, the Louisiana office now has 110 employees occupying 35,000ft² of leased office space. Kongsberg will still have its HQ for the US in Houston, TX. The company determined a need to expand its space to accommodate future growth of the service department as well as a new training facility to better serve its growing number of regional customers travelling to Houston for technical training and licensing.

"Despite a low oil price and a downturn in the offshore markets, we believe the market will bounce back as it always does. We believe in the future of the GOM offshore market, which is why we are now investing in a large Louisiana technical support centre and a new training facility," stated Kongsberg Maritime Inc. President, Jon Holvik. "Our regional customer base has grown significantly and it is important to continue to offer them the world's best service facilities, close to their operation."

Kongsberg closed on the property for an undisclosed amount in mid-December 2014. The three-story Class A building will be built on approximately three acres; the remaining acreage will be reserved for future expansion. The facility will include a 3,800ft² state-of-the-art training centre, expansive office space to accommodate the company's growing staff to service vessels and offshore facilities in the region, a project department including a lab for factory acceptance testing and a large laboratory area for internal training of Kongsberg service personnel.

"Kongsberg has a history of investing and innovating during hard times," stated Holvik. "This building demonstrates our long-term dedication to providing convenient, world-class products and services to our customers in the region."

St. Charles Parish President V.J. St. Pierre, Jr. added, "I am extremely excited with Kongsberg 's decision to continue to be a member of our business community. The company is the perfect example of the type of business we aspire to attract to St. Charles Parish. It was my top priority to retain them (Kongsberg) in order to ensure that our residents have the opportunity to gain access to high-paying jobs that add to the diversification of our local economy."

About Kongsberg Maritime

Kongsberg Maritime is a global marine technology company providing innovative and reliable technology solutions for all marine industry sectors including merchant, offshore, subsea and naval. Headquartered in Kongsberg, Norway, the company has manufacturing, sales and service facilities in 20 countries.

Kongsberg Maritime develops systems for vessels covering all aspects of automation, control, navigation, safety and dynamic positioning. Subsea solutions include single and multibeam echo sounders, AUV/underwater navigation, communication, and camera systems.

Marine and offshore training simulators, LNG solutions, information management, position reference systems and technology for seismic and drilling operations are also part of the company's diverse technology portfolio.

Kongsberg Maritime delivers solutions that cover all aspects of technology underwater and on the water, aboard new build and retrofit vessels, and on offshore platforms and rigs, often under a single supplier strategy called The Full Picture.

Kongsberg Maritime is part of Kongsberg Gruppen (Kongsberg), an international, knowledge-based group that celebrated 200 years in business during 2014. Kongsberg supplies high-technology systems and solutions to customers in the oil and gas industry, the merchant marine, and the defence and aerospace industries.

Port of New Orleans: 2014 cargo total hits 14-year high

Cargo worked at the Pot of New Orleans' public docks in 2014 totalled 8.37mt (million tonnes), the highest total since 2000 and up 28% compared with the prior 12-month period.

Imported steel and container cargo led the growth, as imported iron and steel rose 101.6% in the 12-month period to 3.54mt. Overall breakbulk tonnes totalled 3.76mt, up 51.7% and container tonnes topped 4.61mt, up 13.5% compared to the prior year. "It was a busy year for the port and these numbers reflect the success we've realized from the combined efforts of the entire port community," said Gary LaGrange, Port President and CEO.

"This is great news and creates momentum for our terminal operators and customers. The challenge now is to build upon these successes and continue to grow."

Total port-wide cargo, which includes midstream operations, export grain and private tonnage within the port's three-parish (county) jurisdiction also rose 27.68% to 31.05mt.

Many of the port's top commodities realized healthy gains, as well. Export poultry grew by 5.5% to 331,523 tonnes and imported bananas grew by 251% to 72,165 tonnes despite only seven weeks of cargo delivered by Chiquita Brands LLC.

New shippers such as Chiquita, which returned to the port after a 40-year hiatus, and project cargo generated by the growing chemical industry, will bolster future cargo figures. "New weekly services, such as CMA CGM's Victory Bridge Service to Europe, the return of Maersk Line's vessels, Chiquita cargo and our new Mississippi River Intermodal Terminal will position the port for future growth," LaGrange said.

The Port of New Orleans is a deep-draught multipurpose port at the centre of the world's busiest port system — Louisiana's Lower Mississippi River. Connected to major inland markets and Canada via 14,500 miles of waterways, six class-1 railroads and the interstate highway system, the port is the ideal gateway for steel, project cargo, containers, coffee, natural rubber, chemicals, forest products, manufactured goods and cruising.

Cascades shiploader successfully commissioned on site in Ukraine

Cleveland Cascades has announced that the shiploader that it supplied to Telestack Ltd has now been successfully commissioned on site in Ukraine.

The 1100S Cascade system was ordered in December 2013 and dispatched to Telestack premises in February 2014. It was then cold-commissioned in Northern Ireland in July 2014, before being hot commissioned and placed into operation recently in November 2014.

At 16.5m in extended length retracting to 6.2m, the chute loads grain and other agricultural products at rates of up to 650 tonnes per hour. The chute is mounted to Telestack's TS-550 Rail Mounted Loader, and has a luffing range of 14° to 27° to allow clearance for loading Panamax vessels when necessary.

The chute also utilizes a trimmer outlet, which allows for detailed loading into hard-to-reach areas under the combings of the ship's hatches, as shown in the photograph, left.

CEMA 576 — classification for conveyor belt cleaners:

The Conveyor Equipment Manufacturers' Association (CEMA) has issued a new standard for the ranking of conveyor belt cleaners, a long-awaited publication that provides performance-based guidelines for specifying belt cleaners by establishing a specific formula for determining the level of difficulty in a given application. The goal of rating the application difficulty is to assist in appropriate cleaner selection, facilitating a suitable choice so both end user and supplier can be satisfied with the result. The new standard is included in the 7th edition of the CEMA book, *Belt Conveyors for Bulk Materials*, in the section on belt cleaning.

According to the organization's web site, 'The Classification of Applications for Bulk Material Conveyor Belt Cleaning' has been

established to provide a uniform method for determining the application class of any individual belt conveyor. "For end users, the standard is an objective means of determining a cleaner's suitability for the plant's material and operating conditions, allowing them to specify a cleaner most likely to meet their needs," explained product engineer Daniel Marshall from Martin Engineering. "It also provides a means to check a sales rep's recommendations against the application requirements, allowing users to compare 'apples and apples' in terms of duty rating, performance and pricing." Manufacturers voluntarily specify into which class their particular designs fall.

Conveyor engineers are also expected to benefit from the new standard, as they can now specify a belt cleaner rating without relying on a manufacturer's proprietary technical information. "An objective method to determine cleaner suitability helps designers by allowing them to specify a cleaner based on its performance and durability," Marshall continued. "Now subjectivity can essentially be removed from the cleaner purchasing decision to concentrate on system performance."

For belt cleaner manufacturers, CEMA 576 is a way to confirm that a cleaner matches the application requirements, and thereby assure customer satisfaction. "Suppliers can now include a clear ranking on data sheets and other literature, allowing customers to review and compare products," Marshall observed.

How it works: an overview

The standard uses belt features and

what this means for designers, manufacturers and users

material characteristics to develop its ratings, using CEMA Standard 550 to assign values for the material categories. The factors include the conveyor speed, belt width and splices, as well as the material's abrasiveness and moisture content. Each is scored individually and then totalled to arrive at the class rating for the application. The final score is divided into five application ('class') levels and should be specified when cleaners are being selected. Appropriate cleaners should have a rating that meets or exceeds the calculated application class score.

"Specifiers of a belt cleaner need to consider the environment in which it operates," Marshall continued. "Several factors will play significant roles in deciding the appropriate selection, and this standard provides a way to condense a complex operating environment into a single classification number."

Martin Engineering participated in development of the new standard, contributing expertise gained from 75 years solving problems in bulk materials handling. The company has collaborated with CEMA in many capacities, with personnel serving in roles such as president, vice president, secretary and treasurer, as well as officers and chairs of numerous standards-writing committees. Retired CEO and chief technical officer Todd Swinderman (currently a consultant to Martin Engineering) also served as chair and editor of the sixth edition of the *CEMA Belt Book"* – *Belt Conveyors for Bulk Materials*, in addition to editing the seventh edition.

CEMA has been the voice of the conveyor industry since 1933, a trade association serving North American designers, manufacturers and users of conveyors and components. The organization is focused on voluntary adherence to design standards, safety, manufacturing and applications to promote the growth of the conveyor industry and the advancement of material handling technology. Membership is comprised of leading manufacturers of conveying systems who design, produce and install all types of conveying machinery, including belt, chain, screw and roller conveyors, as well as bucket elevators. CEMA provides the industry with standards, technical information, safety labels and safety information from meetings where members develop and discuss industry standards, technical publications and new developments in conveyor design, technology, application and safety.

Founded in 1944, Martin Engineering makes bulk materials handling cleaner, safer and more productive. The company supplies conveyor products and flow aids around the world for a wide variety of bulk material applications, including coal, cement/clinker, rock/aggregate, biomass, grain, pharmaceuticals, food and other materials. Headquartered in Neponset, IL, the firm offers 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.

Compact AUMUND conveyors for sintering plant in The Netherlands

AUMUND conveyor.
(©AUMUND Fördertechnik)

Follow-up order for the Division Metallurgy of AUMUND Fördertechnik GmbH at Rheinberg/ Germany

After consistently positive experiences with machines already delivered, a third sintering line at a Dutch steel mill will also be equipped with an AUMUND special conveyor for the conveying of hot sinter material. For this line an AUMUND conveyor type KZB-S 2400 type (pan width = 2,400mm) with a length of 13.5m will be installed. The conveying capacity has been designed for 250tph (tonnes per hour) of hot sinter at a material temperature of 500–1,000°C.

Two years ago, the AUMUND-engineers gained first experiences in working with the Dutch iron and steel industry client: initially there was the challenge to renew the conveying system at the end of a sintering machine within an installation that had been producing for decades. Due to a high amount of maintenance work and frequent downtimes, the oscillating conveyors had to be replaced.

AUMUND specialists initially suggested replacing the vibrating conveyors with metallic plate conveyors. Since with a vibrating conveyor the highly abrasive sintering material is wearing constantly by vibration on the fixed bottom plates, a metallic pan conveyor whose plates are moving constantly with the material is clearly the better technical solution for the present case.

Due to the different construction and measurements of a vibrating conveyor compared to the installation dimensions of a metallic plate conveyor, a specialized solution had to be found. Besides, the conveyor has to meet very high demands on temperature, wear and static as well as dynamic loads. On the other hand it has to be integrated into the space available. An additional demand was to keep the assembly time for the conversion as short as possible.

Finally, instead of an installation on the usual stanchions, the conveyor was mounted in a torsion-resistant frame. The drive head, the tensioning station and the railway support were integrated into the compact frame also.

The conveying element combines the AUMUND deep-drawn pan conveyor with supplemental wear caps. Experiences from operations of an already existing line have demonstrated that with the pan conveyor the service life of the troughs could be expanded from a few months to approximately 2.5 years at this time. At the same time the effort needed to replace the conveying element is significantly less. "With further improvements to the conveying element and the wear caps, an additional increase of the service life can be expected," says AUMUND project manager Frank Reddemann.

The conveyors were delivered in December 2014 and were mounted and brought on line during a scheduled downtime.

The delivery of the current order — by now the third conveyor — for the Dutch sintering plant is planned for September 2015. The start-up will be presumably at the end of the year 2015 after completion of the conversion process. Transport will be in a fully assembled state by truck. Thus the usual time for mounting and alignment of the various assemblies can be extremely reduced.

AUMUND conveyor.
(©AUMUND Fördertechnik)

About the AUMUND Group

The AUMUND Group is active worldwide. The conveying and storage specialist has special expertise at its disposal when dealing with bulk materials. With their high degree of individuality, both its technically sophisticated as well as innovative products have contributed to the AUMUND Group today being renowned 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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ITALGRU: serving the bulk market since 1954

Italian company ITALGRU S.r.l. started operations in 1954 and, since that time, has become a major manufacturer of equipment for the cargo handling industry. In the last 20 years, ITALGRU has become a specialist in the construction of mobile harbour cranes for ports, off-shore cranes for oil rigs, FPSOs (floating production storage and offloading units) and FSOs (floating, storage and offloading units), cranes for shipyards, special cranes for the steel sector and other industries that require high lifting capaciies and special design features.

ITALGRU S.r.l. — a Bonfanti family-owned company — has proven experience in providing specific operational solutions in the cargo handling industry. The company's operational team is made up of highly qualified individuals who are capable of analysing and planning projects based on top productivity and managerial strategies that result in efficient and effective solutions. Customers can be assured of the highest levels of quality and safety. Competence and innovation are the pillars behind the ITALGRU brand, designs and developments.

Since 1995, ITALGRU has played a vital role in both the local Italian and international markets in the heavy-duty lifting, cargo handling and industrial automation sectors.

The ITALGRU mobile harbour crane range starts with the IMHC320 with a maximum capacity of 25 tonnes and extends to the IMHC3160 with a maximum capacity of 160 tonnes. The company's offshore cranes can be installed on offshore oil or hydrocarbon drilling rigs, cargo vessels, FPSOs, and FSO barges with lifting capacities ranging from a a minimum of 2 tonnes to a maximum of 350 tonnes and beyond. Cranes designed for other sectors come equipped with lifting capacities that range from 7 tonnes to 350 tonnes.

ITALGRU has a strong market position in:

- mobile harbour cranes;
- oil rigs, cargo vessels, FPSO, FSO and barge cranes;
- special, heavy-duty hoists and systems; and
- refurbishment and upgrading of existing cranes.

ITALGRU has learned from experience that success should never be an end in itself and this is the reason why the company is constantly geared towards the future. To maintain its strong position in the market leaders requires a constant commitment towards the research of new solutions, improved production, and first class service and technologies to ensure greater customer satisfaction.

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The SBDX diverter from Pebco® has been developed with exceptional sealing performance and easy seal replacement.

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The SBDX diverter is built with long-wearing, polymer seals that provide edge of blade sealing. The seals are pressure loaded to compensate for wear throughout the life of the seal.

Blade tip sealing is accomplished using an elastomer body seal that is easily replaceable.

A removable access cover allows full access to the blade and all seals used in the SBDX diverter.

The SBDX design is ideal for virtually all material sizes. Powders, grains, and large product sizes are all within the range of materials that can be diverted without leakage.

- methods of actuation: manual, pneumatic, electric, and hydraulic;
- materials of construction: carbon steel, abrasion resistant steels, stainless steels, and aluminium; and
- flow surfaces: polymers, stainless steels, AR steels, chrome carbides, and ceramic.

The diverter blade is supported by antifriction bearings. Shafts seals are provided to prevent exposure of the bearings to the product handled.

Hitachi ZW180-5 proves a perfect fit for the stockyard

The road construction, drainage, sewage and groundworks contractor, A Molenaar, has bought an ideal machine for its new material-handling site in the form of the Hitachi ZW180-5. It has already made a significant impact loading a steady stream of trucks and trailers at sister company Molenaar Zand en Grond BV's stockyard at Bergambacht, east of Rotterdam.

The new wheel loader was delivered in November 2014 by HCME Domestic, the domestic dealer of Hitachi Construction Machinery (Europe) NV (HCME). The company's latest acquisition will help to supply its own road projects (50% of the output), and meet the needs of other contractors and private customers in the region.

The site is located beside the Lek river and the incoming materials are delivered by boat, with all of the outgoing sand and soil loaded on to trucks. "The emphasis is on sustainability with 80% of the distance covered by the materials on water and only 20% by road," says owner André Molenaar. "This is a difficult area to access for deliveries by truck and so this is also a fuel-efficient system."

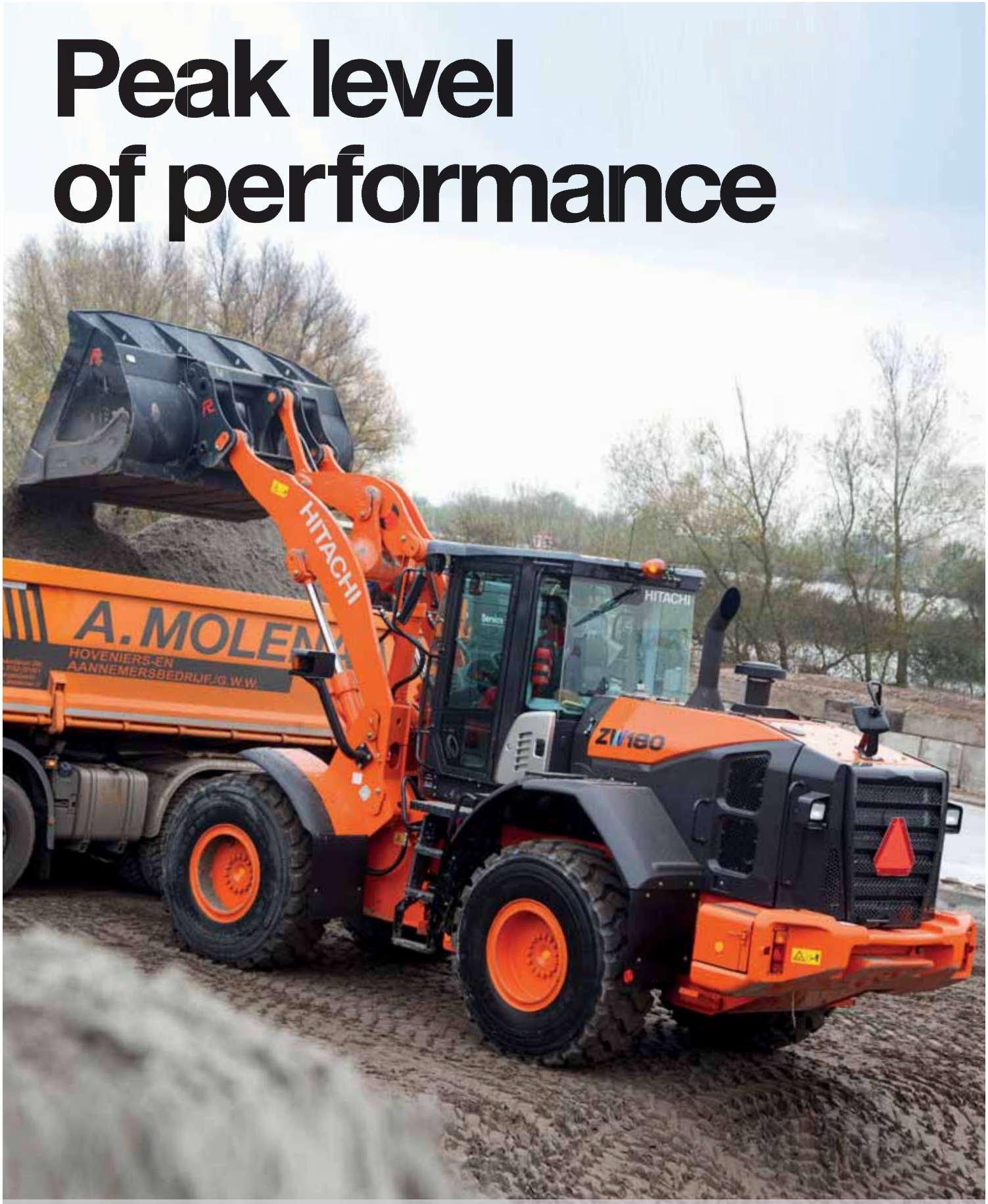
A Molenaar was founded in 1941 by André's grandfather, and his three sons are the fourth generation of the family to work in the company. The firm's first Hitachi excavator was an EX150LC and, after 25 years of being a loyal customer, it has purchased a total of 28 machines from HCME Domestic. The ZW180-5 is the first medium wheel loader in the fleet — and the first example of this model working in The Netherlands — as this is the only application that has required a product of this category and size.

"No other equipment works as well as Hitachi construction machinery," adds André, who also used to be an operator. "These are the best machines and I have no reason to buy another brand. Hitachi is the complete package. HCME Domestic also stands behind its products through excellent service, a favourable total cost of ownership and the emphasis placed on creating solutions should any issues arise.

"Hitachi machines are well designed and look stunning. We work with our machines for around six years and keep them in excellent condition, so they retain high resale values. Our customers also like to see immaculate equipment on their job sites.

"The operators are happy with the Hitachi machines and that's the only brand they want to use. The excellent handling, and spacious and comfortable working environment are all important factors. We estimate that the outstanding fuel consumption of the –5 range is 17–18% lower than its predecessor. The auto shutdown is also vital in this respect, for example when operators are frequently climbing in and out of the cab." Molenaar Zand en Grond uses the ZW180-5 with a 3m³ bucket and pallet forks. "We rented a ZW250 for three months before deciding to buy," says André. "This gave us added confidence in our first Hitachi ZW-5 model, which we chose due to its size, loading capacity and ability to drive on the road. This is the perfect machine for the site, as it has the ability to load everything from trailers to trucks, and is easy to maintain."

Peak level of performance



The power of advanced technology has developed a new high-quality range of Hitachi construction machinery. ZW-5 wheel loaders offer a peak level of performance, reinforcing their leading reputation for reliability and durability. Designed for the most challenging material handling environments in ports and harbours, the Hitachi ZW180-5 delivers increased productivity at a lower cost of ownership.

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Economical handling specialist at the port with SENNEBOGEN

Logistics service provider Heavy Movement unloads steel by the tonne in Santander, Spain, with a new SENNEBOGEN 875 port crane. The Green Hybrid energy recovery system saves up to 30% on fuel with each stroke.

SENNEBOGEN 875 WITH ENERGY RECOVERY SYSTEM

The SENNEBOGEN 875 port crane that Heavy Movement has been using at the Port of Santander in Spain for a short time is now proving itself with state-of-the-art technology and low consumption. The handling machine is tasked with continuously supplying the nearby steelworks with scrap delivered by ship.

Sales and service partner MYCSA in Spain delivered a new 2014 E-Series SENNEBOGEN 875 to the Port of Santander. The green machines have long since become indispensable among the extensive machinery belonging to customer Heavy Movement. Around 20 material handlers around the globe are showing their stuff without fail. It is not rare to reach up to 20,000 hours of operation. Nothing less is expected from the new 875.

The new port crane is equipped with an economical 391kW diesel engine and a 27-metre-long attachment. Built on a crawler gantry undercarriage, the handling machine can traverse the length of the wharf with ease. Every day, ships come to Santander filled with mixed scrap for the nearby steelworks which is unloaded by the 875 handling machine.

SAVING ENERGY WITH EVERY STROKE — GREEN HYBRID SYSTEM PROVES ITSELF

For the first time, an effective energy recovery system is being used in the latest E-Series of the SENNEBOGEN 875. The Green Hybrid technology consists of an additional hydraulic cylinder located between the two hoist cylinders, and multiple compressed gas cylinders in the rear. Every time the boom is lowered, the energy recovered is temporarily stored. This energy is then available for the next stroke. This system saves considerably on fuel. The Green Hybrid system saves up to 30% more than conventional drives. Measurements reveal this impressive success. Compared to the competition's forerunner, the 875 requires up to 12 litres less fuel per hour for the same performance — a one-of-a-kind achievement for this machine class.

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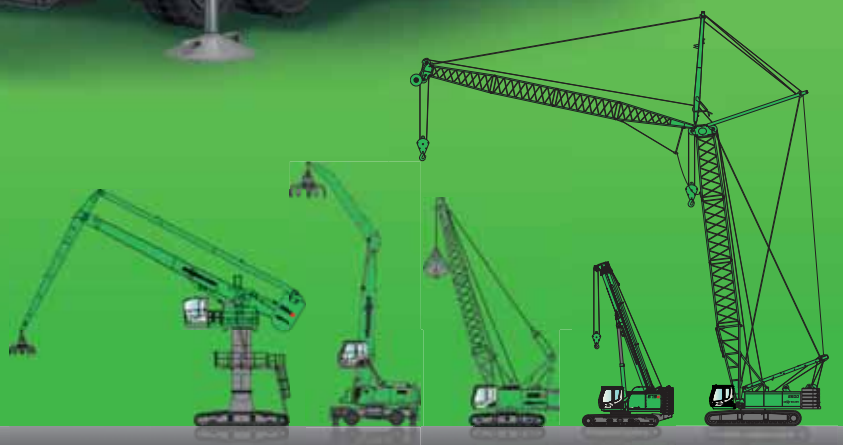

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Getting to grips with cement

handling and storage

Fig 6: Truck loading operation (photo: IBAU HAMBURG)

Louise Dodds-Ely

Gdischarge: energy efficiency for cement silos from IBAU HAMBURG

Mario Rämmele and Juha Schirmer of IBAU HAMBURG, Germany, describe the new Gdischarge system, which is up to 25% more energy efficient than other systems for large capacity central cone silos.

Introduction

Energy efficiency has become a major focus of the cement industry and IBAU HAMBURG has been looking at ways to reduce the energy demand of large central cone cement silos, which use compressed air for fluidizing the cement material in the discharge process.

IBAU HAMBURG has equipped more cement silos with extraction systems than any other company and has always set the standards for this technology. In the last few years large-scale tests have been made at the silo plants of several clients to identify how to significantly reduce the energy requirements of silo extraction.

The results are better than expected. Not only can up to 25% of energy consumption be reduced, but wear in the downstream equipment is less and bulk loading times improved. Additionally, silo wall stresses were lower.

The central cone discharge technology

The central cone silo was introduced to the market in 1975 and is used for silos with diameters from 10m to 30m and more with storage capacities of up to 40,000 tonnes (see Fig 1 on p58). Such large-capacity silos for the storage of cement require an efficient and trouble-free discharge system.

The central cone has a displacement function for the material in the silo, which allows the material to flow freely during discharge. The central cone forms a ring area on the silo bottom, which is divided into individual aeration sections that are inclined slightly downwards towards the discharge openings in the cone. The silo bottom (Fig. 2 on p58) is equipped with open fluidslides (aeration pad type) that have an air-permeable fabric on the upper side. The aeration air is blown under the fabric in order to fluidize the cement on the fabric. Each aeration section has its own discharge outlet with a flow control gate (Fig. 3 on 61) that provides a controlled discharge from the silo to the downstream collecting bin.

For silo discharge, one silo section is active at a time. This means that only the fluidslides of one section are aerated and the relevant flow control gate is opened for discharge. The silo

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Fig. 1: IBAU central cone silo.

bottom is aerated section by section, so that all sections are aerated in a complete cycle. Each outlet has a right-hand and a left-hand aeration sector that can be actuated individually, one after the other, to generate small discharge flow funnels as required by the aeration scheme. So, for discharge only the bulk material above the activated section is in motion and with the uniformity of this procedure large uncontrolled material movements and load peaks on the silo walls are avoided. The result is a controlled silo discharge with a controlled mass flow in the silos according to the 'Safety First" principle[1,2].

The advantages of the IBAU discharge system are:

- 100% safe operation;
- complete usage of the storage volume;
- no uncontrolled material movements within the silo;
- almost uniform discharge during an aeration cycle; and
- no interruption during silo operation.

The quantities of material that can be discharged with such a system vary between 100tph (tonnes per hour) and 1,000tph, depending on the size of the silo and loading requirements. Only very small quantities of air are needed for the material discharge, and the aeration air is removed along with the discharged cement. Typically the energy requirement for such silos with extraction rates of 250tph is in the range of 0.10 to 0.12kWh/t

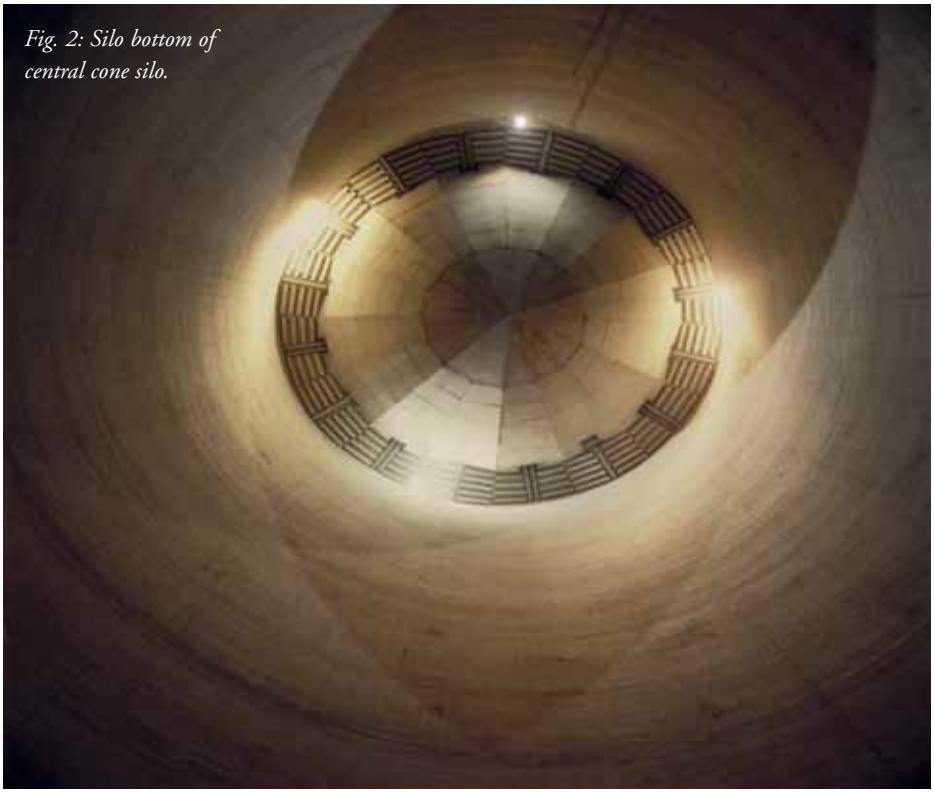

Fig. 2: Silo bottom of central cone silo.

1. Buschmann: "Safety first" for Large Silos in the Cement Industry. Cement International, *2/2008, pp. 66-75.*

2. H. Buschmann: Safety Practise for Large Cement Silos. World Cement, *November 2008, pp. 97-102.*

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of extracted cement.

About 75% of the power consumption is for the material extraction from the silo, while 25% is for the material transport to the bulk loading, where the biggest consumers are vibrating screens for sieving foreign bodies and the winches of the bulk loading devices. The silo aeration requires about 40–50% of the power consumption in the material extraction from the silo and the rest is required for filter fans, venting system and the control air for the devices.

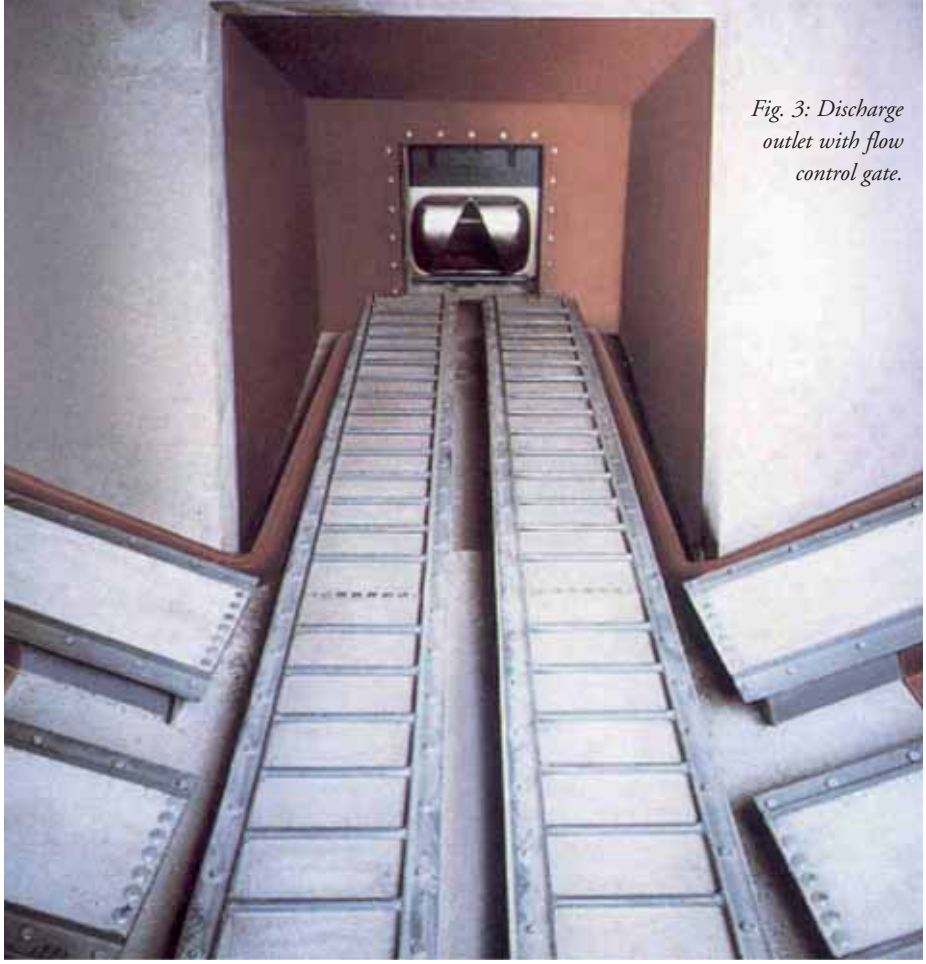

Fig. 3: Discharge outlet with flow control gate.

The Gdischarge concept

The idea behind the Gdischarge was to optimize the energy requirement for large cement silos with an advanced discharge control system using the latest blower and compressor technology. With an effective limitation of the differential pressure for the silo bottom aeration, the power used for the generation of the compressed air can be significantly reduced. Furthermore, due to less pressure loss and other energy saving operations, the energy consumption and energy costs are significantly reduced. Regarding this invention, IBAU HAMBURG has filed a European Patent Application (EP2698328).

No compromises have been made to the IBAU central cone concept which is characterized by a number of separate discharge outlets (Fig. 4 below). All system components such as fans and metering devices are designed for maximum discharge capacity and optimized by the Gdischarge system for the required discharge situation. This means that during operation the air volume flow of the blower is automatically adjusted via a

Fig. 4: Discharges in an IBAU central cone silo.

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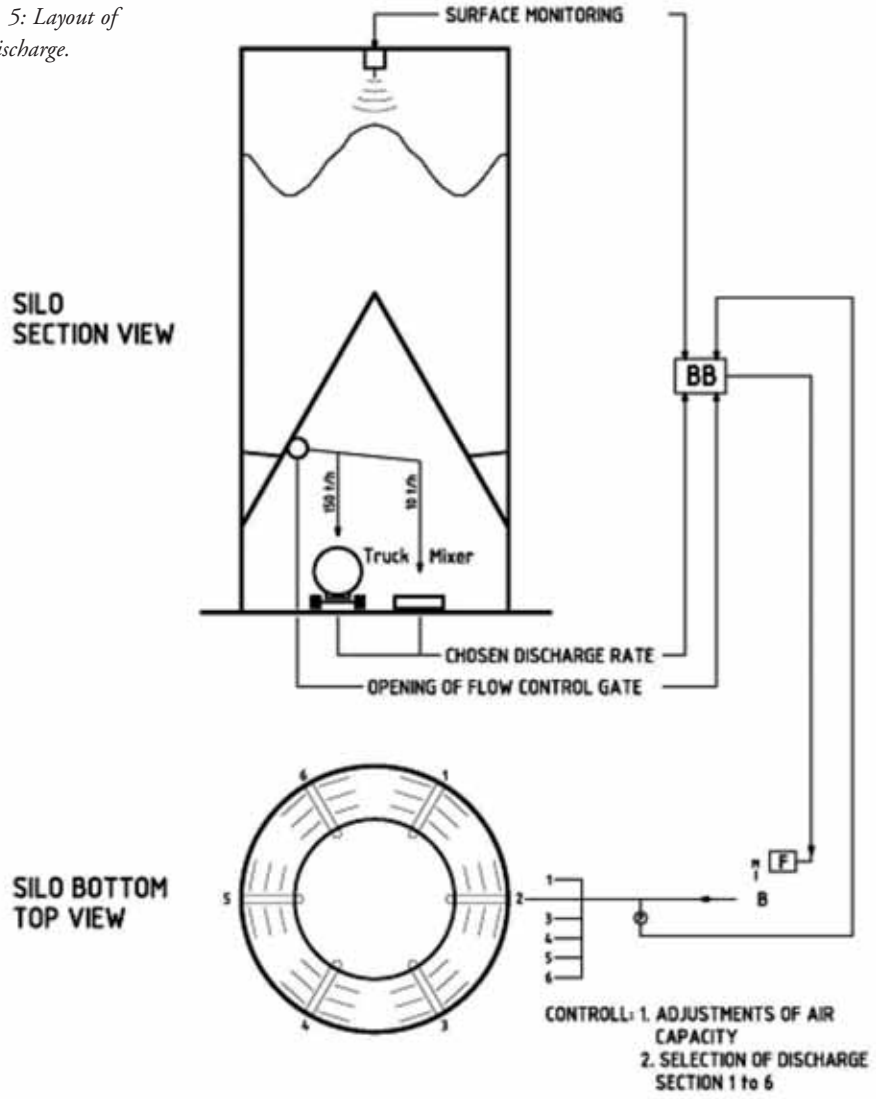
controller. In the control procedure alternative discharge requirements for downstream conveying to varying numbers of trucks, railcars, mixer and packing plants can be integrated.

Fig. 5 (right) illustrates how the aeration air can be adjusted for the loading of a truck and the feeding of a mixer with 150tph and 10tph, respectively, from a silo with six discharge outlets. Beside truck loading and mixing other downstream equipment can be incorporated. A converter for the blower and a sensor at the blower form a control unit, which is linked to an intelligent controller (BB). This controller regulates the opening and closing of the flow control gates for the silo discharge to achieve the necessary discharge rate and adjusts the motor speed of the blower depending on the pressure in the flow line.

Target and actual pressure in the flow line regulate the air quantity of the blower. The blowers that are used by IBAU allow a very wide control range from 25% to 100%. It goes without saying that these blowers are robust and durable, very easy to service and maintain and provide complete oil-free aeration air.

Fig. 5: Layout of Gdischarge.



There are two further configuration levels for the Gdischarge: the additional control of the filter installation by means of the monitoring of the negative pressure as well as through the integration of a measuring system which additionally controls the flow rate at the silo discharge (weighing system).

All this leads to a further optimization of the whole discharging process.

Table 1

250 t/h silo extraction	Standard	Gdischarge	Delta
Silo discharge	74.8	57.2	-23.5
- aeration	35.1	17.5	-50.0
Material transport	25.2	25.2	0.0
Total	100.0	82.5	-17.5

500 t/h silo extraction	Standard	Gdischarge	Delta
Silo discharge	37.5	28.8	-23.4
- aeration	17.5	8.8	-50.0
Material transport	20.4	20.4	0.0
Total	58.0	49.2	-15.1

Test results and Gdischarge advantages

The new silo discharge system has been tested by IBAU HAMBURG at different clients in Western Europe

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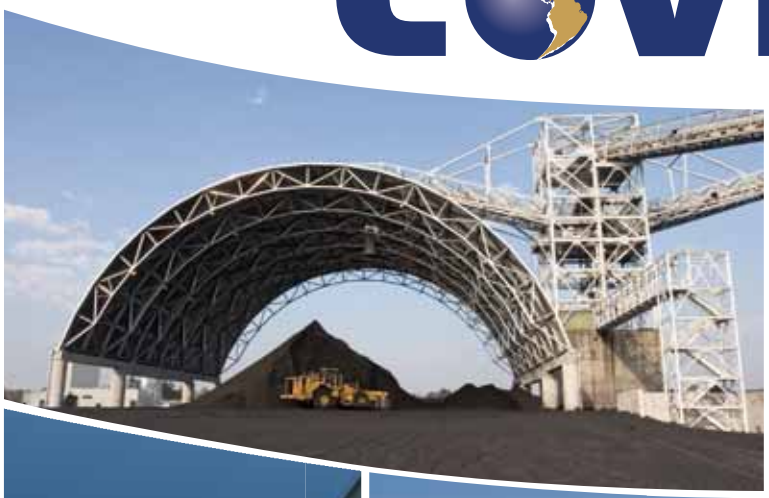

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under real operating conditions. The results with the Gdischarge are very impressive. In the tests, the power consumption of the existing silo systems was analysed and attempts were made to minimize it.

Table 1 on p63 contains the results of the new installation in Germany. At this client, tests were made with 1 and 2 bulk loading systems of 250tph each. Data for the specific energy consumption in the different sections such as the silo discharge and material transport to the truck loading as well as for the silo aeration, which is part of the silo discharge, are given.

The total specific energy demand has been set at 100% for the discharge of 250tph with the conventional standard discharge system. With the new Gdischarge system and 250tph about 17.5% of energy was saved for the total system. While for the transport system no savings were possible the energy consumption for the silo discharge was reduced by 23.5% and for the silo aeration by as much as 50%.

Economy of scale also has an impact. When in the standard case extraction rates of 250tph and 500tph are compared, it becomes clear that the larger extraction rate reduces the specific energy consumption by 42%. For the silo aeration instead of 35.1% of energy used only 17.5% are used. So, the largest savings in specific energy consumption are by the Gdischarge system at a 500tph extraction rate. Instead of 35.1% for standard silo aeration and 250tph extraction only 8.8% of the energy is required for the Gdischarge and 500tph. Instead of 100% specific energy requirement for the total system only 49.2% is needed.

The new Gdischarge system for 500tph will require about 51,670kWh per year, compared to about 67,540kWh for the standard system before the modification. With an electricity price of €0.1/kWh the annual savings are in a range of €1,575 to €1,600 Euro. When comparing the price of blowers and converters, amortization rates of less than three to five years can be achieved by the new system.

It is important to know that the new system offers even more benefits. One such aspect is the reduced wear within the system of flow control gates and valves due to a reduction in the air quantities and velocities used resulting in a reduction of the maintenance costs of the system. Furthermore the filter loads are also reduced due to the lower air quantities in the system. Another positive effect is that faster loading operations for trucks and railcars can be achieved due to less aeration air in the cement.

Last but not least a very positive effect is achieved on the formation of flow funnels in the silo. Because of the reduced silo aeration pressure and aeration air quantities, the flow funnels in the silo are smaller in diameter and the core funnels do not touch the silo walls so that the horizontal pressures on the silo walls are more homogenous within the silo and peak loads are reduced.

Outlook

The new Gdischarge system has already been tested successfully and is already planned for new installations. Because of its modular design existing silos can also be modified and equipped with the system. The amortization time of silo modifications will depend mainly on the silo diameter and extraction rates and how much of the new blower technology will be needed. To illustrate the 'Safety concept' and reduced formation of flow funnels in the silo, measurements by 3D-laser scanning are envisaged.

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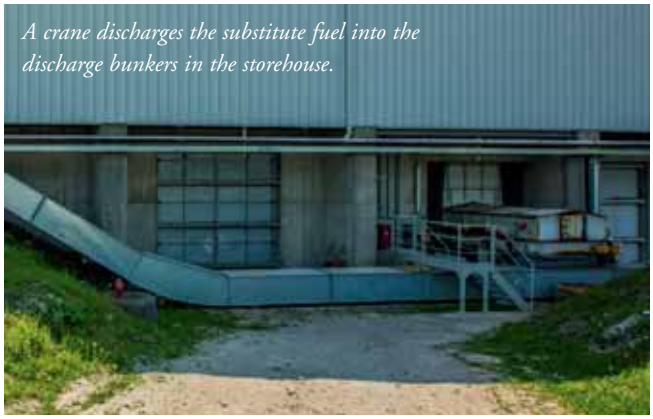
SCHWENK Zement KG relies on BEUMER Group pipe conveyors

Operational gains with minimal disruption and without any material loss

Schwenk Zement KG is replacing its old drag chain conveyor line with a modern pipe conveyor from BEUMER Group. Schwenk Zement required a solution that would transport alternative fuels such as crushed plastic material, textiles and paper from the warehouse to the feeding system of the oven in its cement plant in Bernburg, Germany; this fully closed conveying system makes transporting bulk material more environmentally friendly and energy efficient. Maintenance costs are also considerably lower.

Pipe conveyors are able to navigate long distances and tight curve radii. Due to their ability to negotiate curves, considerably fewer transfer towers are required compared to other belt



A crane discharges the substitute fuel into the discharge bunkers in the storehouse.

conveyors. This results in substantial cost savings for the customer and delivery of a system customized for individual routing. BEUMER Group supplied and installed a system with a diameter of 200 millimetres and a length of 230 metres. It conveys up to 15 tonnes of material per hour. BEUMER was also responsible for the design of the system and the entire steel structure.

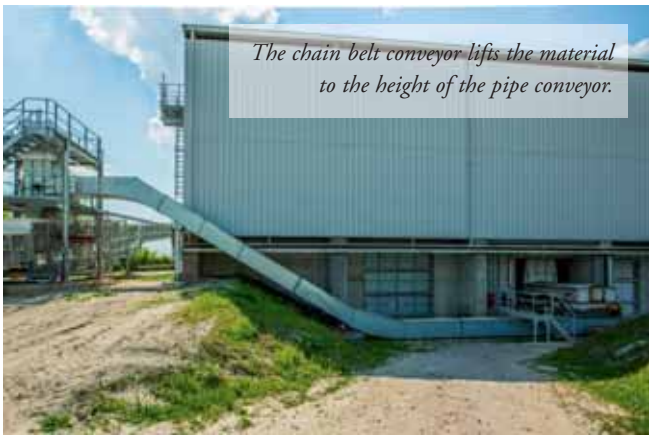
Another system advantage is the reduced noise emission of the pipe conveyors. Special idlers as well as low-noise bearings and electric motors work very quietly. This improves the quality of the employees' day-to-day work environment and ensures the

The first support is mounted directly to the storehouse.

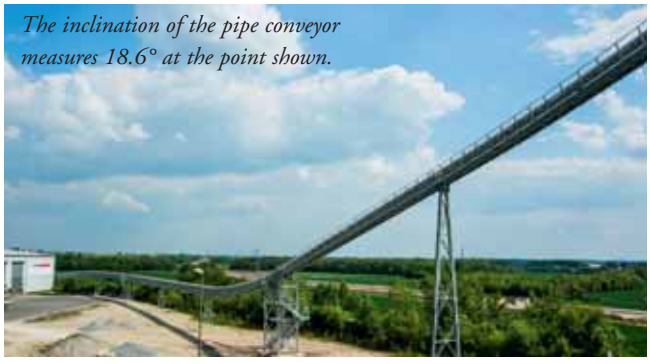
The pipe conveyor is customized to fit perfectly into the local features of the environment. (all photos: ©BEUMER Group GmbH & Co. KG)

people living near the plant are not disturbed. It took only eight months from the time the contract was awarded until commissioning of the new system in February 2014.

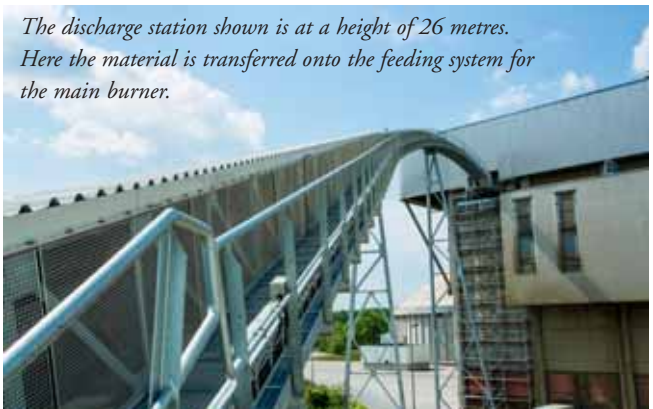
BEUMER Group is an international manufacturing leader in intralogistics in the fields of conveying, loading, palletizing, packaging, sortation and distribution technology. Together with Crisplant a/s and Enexco Teknologies India Limited, the BEUMER Group employed some 4,000 people in 2014. The group generated an annual turnover of approximately €680 million. With its subsidiaries and sales agencies, BEUMER Group is present in many industries worldwide.



The chain belt conveyor lifts the material to the height of the pipe conveyor.



The inclination of the pipe conveyor measures 18.6° at the point shown.



The discharge station shown is at a height of 26 metres. Here the material is transferred onto the feeding system for the main burner.

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Siwertell wins prestigious order for road mobile cement unloader in Saudi Arabia

Siwertell, part of Cargotec, has received an order to supply a road mobile unloader to the cement division of the Rashed Al-Rashed & Sons Group in Saudi Arabia. The unloader has already been built at Siwertell AB's premises in Bjuv, Sweden, and delivery was carried out in March, just over two months after the order was placed.

The Siwertell diesel powered 5 000 S road mobile unloader is equipped with a dust filter and double bellows system to allow seamless, uninterrupted bulk material transfer to trucks or wagons. It will operate in the Port of Dammam, Kingdom of Saudi Arabia, unloading white cement at 250tph (tonnes per hour).

Jörgen Ojeda, director of Siwertell mobile unloaders, said the customer selected a screw-type road mobile unloader because it best suited the company's needs and chose a Siwertell unit because it is ranked the best among similar products.

"Siwertell's range of mobile unloaders has a number of advantages in addition to the obvious one of mobility," says Ojeda. "They offer high capacity from a small footprint. Extremely clean operations result in an excellent working environment and no loss of material. Maintenance costs are low, while the continuous nature of screw-type unloading coupled with the double bellows system ensures excellent through-the-ship performance.

"Siwertell is very proud to have secured this order and started our co-operation with the well-known and distinguished company of Rashed Al-Rashed & Sons."

Siwertell has recently also secured an order for a 10 000 S road-mobile unloader to an undisclosed customer, which will be delivered to India at the end of April 2015.

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

Siwertell is part of Cargotec. Cargotec's sales totalled €3.4 billion in 2014 and it employs approximately 11,000 people. Cargotec's class B shares are quoted on NASDAQ OMX Helsinki Ltd under symbol CGCBV.

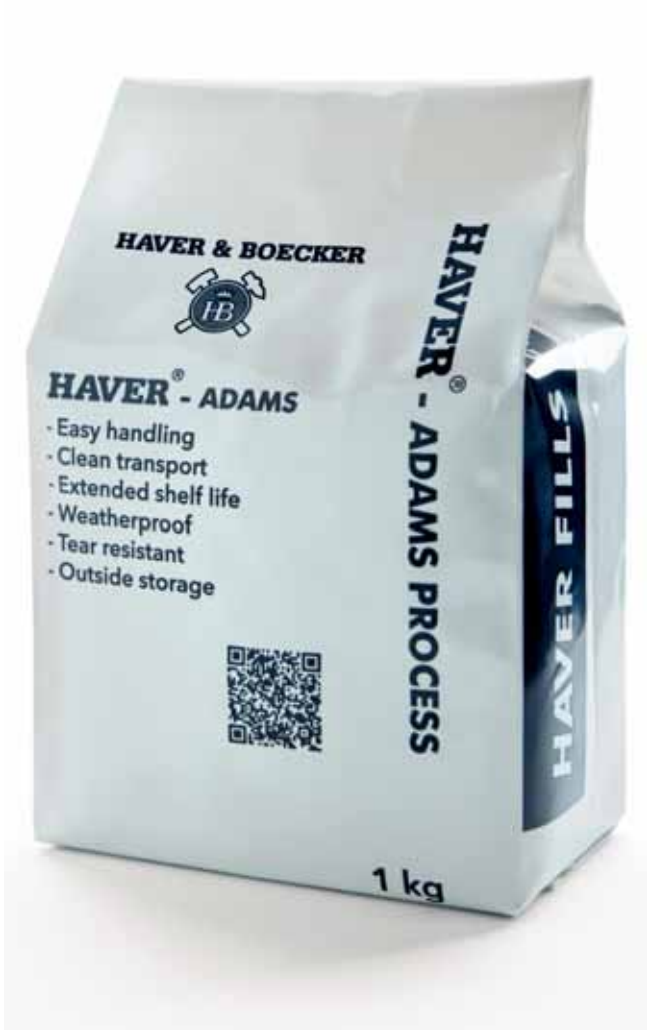
HAVER ADAMS® – water-tight cement bagging that is clean and efficient

"HAVER ADAMS® – clean, efficient … and excellent in every sense of the word!" This praise comes from experts who know what they are talking about: as part of a Lafarge supplier competition covering the cement sector, the HAVER & BOECKER ADAMS® technology for filling powder-type products into water-tight PE bags received the prize in the category of sustainability. "With the ADAMS® we have developed a filling machine for PE bags that offers a series of advantages," explained Robert Brüggemann, Business Unit General Manager HAVER Chemicals. "The PE bags used are characterized by enormous water-tightness and resistance to tearing. Bag damage and ruptures during filling can be reduced by an average of 80% to 90% percent," added Heinz-Werner Bunse, Sales Manager of the Cement business unit at HAVER & BOECKER.

Packing into PE bags enables customers to benefit from a series of advantages. During filling and transport there is a comparably lower level of product loss. Cost savings in transport are the result of reduced freight volume and the elimination of additional protective packaging. "Less bag breakage, high levels of weight accuracy, improved health protection from a dust-free solution and CO_2 savings with 100% recyclable material lead to significantly higher customer satisfaction," says Brüggemann, who is convinced of the new technology.

Bunse experienced the development of the bags first hand: approximately 49 years ago the technician began his apprenticeship at HAVER & BOECKER. Back then, he was familiar with the use of jute sacks. "During the 1920s, when the technology was developed, there was a huge technical development in this segment," Bunse said while summarizing his impressions of the decades-long innovation management. They were customized to suit the individual needs of various industrial branches, and increasingly more efficient solutions were brought to the market. "The filling of PE bags expands the opportunities in the global cement market and creates options that improve and simplify the weather-proof storage of goods," says Bunse. Brüggemann adds: "Currently some 10% of all bags do not reach their point of destination — mainly because of inadequate shelf life and bag breakage. This error rate can be profoundly reduced

by using PE bags." He proudly points to more than 70 references in 18 countries where the ADAMS® technology has been in use since 2005. Here the scrap amount has been reduced to almost zero. These machines were designed to handle 5–50kg bags. Now a current reference project is opening up totally new perspectives for one building material producer who wishes to pack products into PE bags within a weight range of one to ten



kilograms. "The packing possibilities increase, and accuracy in filling is improved, transport and handling are simplified. This altogether has positive effects on sales and customer use," says Brüggemann.

All these advantages result in large part also from the innovative vibration technology and the dust-tightness of the process, which in the end assures a clean final product. "With the ADAMS® we have succeeded in developing a technology that fulfills all the market requirements when it comes to improving storage capacity and product cleanliness," elaborated Brüggemann. Once the filling of powder-type products into PE bags had gained acceptance on the market, a Innovation Management team went to work on a HAVER & BOECKER ROTO-PACKER ADAMS® MINI over a period of two years. The team used past experience with the technology and developed new, detailed solutions for small bags which are to be on display in the standing position on store shelves.


Robert Brüggemann.

The new machine forms a tube from a flat film by welding the side seams and bottom seam and then cutting off the produced bag from the plastic film tube. The bags are then placed in open cassettes arranged in a circle on a rotating unit. The product is filled step-by-step, precisely dosed and compacted. By siphoning off the air just above the product and welding the top seam, a hermetically sealed package that provides optimum protection against moisture is the final result.


Heinz-Werner Bunse.

"The ADAMS® technology is foremost suitable for countries where processes such as loading and unloading are mostly done manually. At the same time the technology is suitable for climatic conditions where the material has to be protected from the weather elements," says Bunse. But this does not only make the ADAMS® technology a leading export for Africa, Asia and South America: "We are convinced that this technology will replace the older, classic HAVER & BOECKER ROTO-PACKER® all across Europe." For plant operators, using ADAMS® technology also means the opportunity to free up personnel and to allow them to take on new duties and to improve plant productivity. "The high level of automation requires an operator skill profile that is more than what we were used to seeing in the past," admits Brüggemann. However with the right training it is absolutely possible to rely on a single person for the operations and monitoring of various machines. For this case the HAVER specialists have created a training programme that includes the aspects of material flow and bag handling.

Aspects such as recycling and re-use of PE material are especially important factors in countries where manual handling was common in transport and storage. "Filling powder products into PE bags will define a new industrial standard," Brüggemann is convinced. The resilience with which HAVER & BOECKER wishes to develop new technology is best illustrated by a machine of an earlier generation, one that is now currently operating at Lake Baikal in Siberia: here HAVER & BOECKER technology has been in operation for 78 years.

Protecting environment by keeping dust emission to a minimum

Example of Moduflex loading chute at a cement factory.

Controlling dust emission is an ongoing challenge when handling dry bulk materials — including cement — as dust pollution is both an environmental threat and constitutes a severe health hazard. An increased focus on dust emission, combined with stricter legislation, demands better technological solutions and high-performance equipment.

Cimbria Moduflex has a long history of supplying dust-free loading chutes to the cement industry to improve the general environment and working conditions as well as assist the manufacturers in reducing the running costs for their outloading stations. The company's success is based on the ability to differentiate on a market characterized by increased demands for flexible and environmentally compatible equipment. A wide high-quality product programme consisting of standard parts makes it possible to customize loading chutes to match specific customer applications. This, combined with short and reliable time of delivery, makes Cimbria Moduflex a preferred supplier of loading solutions. Furthermore, the company is an acknowledged problem solvers with the ability to create innovative solutions that take particular customer requirements into account.

Supplying recently developed model for the cement industry

In co-operation with Cimbria Moduflex's Belgian partner, TBMA Belgium, Cimbria Bulk Equipment has delivered a Moduflex loading chute for the Holcim site in Obourg, Belgium.

The loading station is situated along the quay site and the company needed equipment for open and closed outloading of cement into various types of ships and barges from the same installation taking specific requirement as flexibility, dust elimination and installation height into account. In 2011, the company TBMA Belgium ordered a type N300 Moduflex loading chute with interchangeable outlets for the Holcim site in Obourg. The same customer recently ordered a loading chute similar to the earlier supplied chute. The loading chute is delivered with flatbed outlet, but prepared for the earlier supplied interchangeable outlets.

Example of Moduflex loading chute at a cement factory.

This specific model was chosen as it contains an integrated filter and has a low built-in height. For years, Cimbria Bulk

Equipment has supplied loading chutes with integral filter, where the filter module is part of the inlet construction. This is a well-proven solution when it comes to functionality; nevertheless, it requires a certain built-in height for installation. The N300 model is a recently developed model with a side-mounted filter which makes the built-in height virtually the same as a non-filter loading chute. The model also contains an integral filter and therefore the costly installation of the duct work into a central filter bag installation is avoided. The filter is mounted on a rectangular flange built out on a transition piece from the inlet part of the chute and it is externally supplied with 5–6 bar pressurized air; it is managed by the PLC in the control box of the loading chute. The side-mounted filter is characterized by being very service friendly as it provides easy access to replacement of the filter cartridges from the 'clean side'. At the same time, it has been possible to increase the filter surface area that, in some cases, is needed to handle particular products.

For increased outloading flexibility the loading chute is prepared for interchangeable outlets for loading into both tanker ships and open barges from the same installation. For easy change-over the chute outlets are equipped with a special snap lock system.

Due to the abrasive character of the product, the chute inlet is supplied with an inlet liner in Hardox 400. The chute is equipped with 27 PVC chute modules which give the chute an extended length of more than 9,000mm. The modular construction ensures an quick and easy replacement in case of modification or repairs. The replacement can be carried out with limited downtime as it can be done out without dismantling the loading chute.

The chute is equipped with internal overlapping cones in steel for optimum separation of product and exhaust air.

High-capacity N300 Moduflex loading chutes with integrated filter modules on the chute outlet.

Supplying the cement industry in port terminals

The Spanish Moduflex partner, Masanes Suministros Industriales S.A, recently supplied a loading chute for loading cement clinker into flatbed trucks. The temperature and the abrasive character of the material demanded high temperature execution and abrasion-resistant equipment.

Moduflex N300 folded indicates the low installation height.

The supplied loading chute is a Moduflex D300, a heavy duty model supplied as a complete solution independent of external filters as it equipped with a fully self-contained built-in filter with its own fan, pressure tank and nine filter cartridges. For high durability the chute inlet is supplied with replaceable 4mm Hardox 400 in-liner.

The chute is equipped with 10 chute modules manufactured in heavy duty NPG material that has high resistance against the heat radiating from the material (working range up to 130°C). The modular construction ensures an easy and quick replacement in case of maintenance or repairs. The replacement can be carried out with minimal downtime without dismantling the loading chute.

For optimum separation of product and exhaust air, the chute is equipped with internal overlapping cones in Hardox 400. Furthermore, the chute is equipped with an outlet for flatbed trucks, with a high temperature rubber skirt for encapsulating the dust arising from the material pile during the loading process. A high temperature capacitive indicator is placed in the chute outlet where it acts as a control of the automatic raising of the chute during loading. When the material reaches the indicator, the chute will raise a pre-determined distance, until the indicator is free of the material, and then stop in order to keep the skirt in contact with the material pile. This action will continue during the loading process until the flow of the material is stopped by the control system.

With almost 14,000 units produced, Cimbria Moduflex dust-free loading chutes for bulk materials loading are in operation world wide. Inherent functional efficiency is enhanced by the modular nature of their design, an innovation that contributes significant savings in overall lifecycle costs. Cimbria Bulk Equipment supplies dust-free chute systems through a network of agents in more than 30 countries around the world.

Mondi launches rain-resistant Splash Bag

In response to lively customer interest for rain-repellent paper bags, Mondi has developed the Splash Bag. This new bag resists rain for up to two hours and withstands humidity better than a standard paper bag.

Standard paper bags for packaging cement and other powdery products are generally vulnerable to rain. To tackle the issue, Mondi, working in collaboration with major cement producer Lafarge, has developed an innovative rain-repellent bag particularly suitable for cement. The new wet-strengthened, machine-finished Splash Bag is designed to absorb less moisture than conventional bags. Its outer ply of Mondi Advantage Protect sack kraft paper has a water-repellent surface and is formulated to keep high tensile strength even in a wet environment. It also helps prevent moisture ingress if conditions are damp or humid during storage. Advantage Protect sack kraft papers have a water-repellent surface and are formulated to have high tensile strength, to help prevent rupture. For example, the wet tensile strength of Advantage Protect in a grammage of 80g/m^2 is three times higher than that of standard sack kraft paper — an impressive figure.

Splash Bag's water-resistive properties are immediately apparent in side-by-side visual testing versus standard paper cement bags (test conditions simulating direct exposure to rain). "Water gathers on the bag's surface without being absorbed, then evaporates over a period of several minutes, leaving the bag essentially dry," explains Claudio Fedalto, deputy COO Mondi Industrial Bags. "By contrast, the standard bag absorbs the water, weakens as a result and may potentially rupture if exposed to extremely wet conditions," he adds. Results of Cobb tests, which measure the amount of water absorbed into the surface by sized paper over a set period of time, indicate that Splash Bags are resistant to rain for two hours. If inadvertently left in damp (rather than wet) conditions, e.g. on damp sand, Splash Bag resists moisture ingress for up to 12 hours.

Even after two hours of direct exposure to rain, Splash Bags can be moved, handled and emptied without any difficulties. Bag breakage rates are significantly reduced, leading to genuine cost savings: fewer broken bags translate to lower vehicle and site clean-up costs, fewer trips from warehouse to site, as well as time savings for logistics and site managers. Excellent moisture resistance can also mean better protection of the filling good if conditions are damp or humid at the warehouse.

Importantly, none of these advantages comes at the expense

of filling speeds or de-aeration rates, which match those of standard bags (in tests performed on Mega Gurley equipment at Mondi's Bag Application Centre in Austria).

According to interviews carried out at construction sites, Splash Bag has already won generous plaudits from construction workers for its ability to resist rain and moisture when used to package cement. The construction workers surveyed were particularly impressed that the bag shrugs off rain and remains strong and easy to handle even under damp conditions.

About Mondi Industrial Bags

Mondi Industrial Bags, a business segment of Mondi's Europe & International Division, is a major international producer of industrial paper bags, selling around 5 billion bags per year. Thanks to its broad range of bag specifications, Mondi Industrial Bags serves major industries including cement and building materials, chemicals, food, feed and seed. The business segment operates a dense sales and service network, the specialized filling equipment department Natro Tech, as well as its Bag Application Centre, where researchers develop and test innovative packaging solutions.

About Mondi

Mondi is an international packaging and paper group, employing around 24,000 people in production facilities across 30 countries. In 2013, Mondi had revenues of €6.5 billion and a return on capital employed of 15.3%. The group's key operations are located in central Europe, Russia, the Americas and South Africa. The Mondi Group is fully integrated across the packaging and paper value chain - from the management of its own forests and the production of pulp and paper (packaging paper and uncoated fine paper), to the conversion of packaging paper into corrugated packaging, industrial bags, extrusion coatings and release liner.

Bulk storage and handling for the cement sector

One thing all cement manufacturers have in common is dry bulk stockpiles... and the need for storage and handling solutions, *writes Melanie Saxton, Geometrica.* The goal is to protect the chemical properties of the raw materials (especially limestone), while safeguarding the surrounding landscape from contaminates. Another goal is to cover the stockyard as efficiently as possible regardless of location, topography or climate.

Star Cement 104m limestone dome, Ras Al Khaimah, UAE.

Geometrica domes accommodate the commercial equipment necessary to produce cement within column-free domes. The no-barrier interior permits maximum use of space without the traditional restrictions of post and beam systems. Now stockpiles that have been left uncovered can contain dust and contaminated runoff without resorting to silos, which are small and expensive.

For spans of 50m and above, traditional framing systems become too complex and expensive. Geometrica offers practical, affordable and beautiful solutions with elliptical or compound domes that result in a smaller surface area and better clearance for vehicles around the perimeter. Geometrica domes provide the most efficient shape for a stockpile enclosure because they are lightweight and can span up to 300m without intermediate supports. The goal is to have the dome 'hug' the clearance line of the stacker-reclaimer.

Ring-shaped stockpiles

The shape and size of the stockyard determines the dimension and span of the dome. Ring-shaped stockpiles are normally stored inside a covered dome to address environmental concerns. A slewing stacker at the centre stacks the material and creates the pile, while a bridge or a portal rake reclaims the material from a face of the pile. Limestone, clay, marl, coal, and many other materials are stored in automated ring piles.

Typically, a dome for this application will need to cover an additional 3m to 6m width area around the base circumference of the pile for reclaimer clearance and circulation of maintenance personnel or small vehicles. Thus, the diameter of a dome for this application is usually 6m to 12m more than the pile's diameter. The dome's height is normally set at about 1/3 of the diameter for efficiency, but may be substantially lower or higher if desired.

Geodesic domes for ring piles also need to clear the reclaimer at its highest point near the perimeter of the stockpile, as well as provide a minimum height for the vehicles in the free area around the material. Instead of using an expensive vertical wall to achieve this, Geometrica can supply domes with elliptical or compound parabolic profiles that have a steep slope near the perimeter. Such geometries provide the necessary clearance and achieve additional savings compared to conventional framed buildings or domes with plain circular cross section.

The twin Lafarge domes, each storing 60,000t of limestone, South Africa.

One of two 113m Lichtenburg limestone domes under construction.

accidental lateral overloading. Geometrica domes are designed to withstand the specified or requested loading for each installation. With Geometrica's unique perimeter-in construction technology, geodesic domes for conical piles may be installed over operating stockpiles, minimizing or eliminating downtime.

Conical piles

Clinker is often stored in conical piles and reclaimed through underground extraction hoppers and tunnel conveyors. Dead loads may be handled with front-end loaders. Because of larger drops when stacking a conical pile as compared with a slewing stacker, conical stockpiles produce blinding amounts of dust when left uncovered. For these piles it is possible to use domes with a profile that closely follows the shape of the pile, such as a parabola. This form results in a most economical enclosure. The dome may also be set on a concrete wall, increasing capacity while realizing substantial savings as compared with a concrete dome solution.

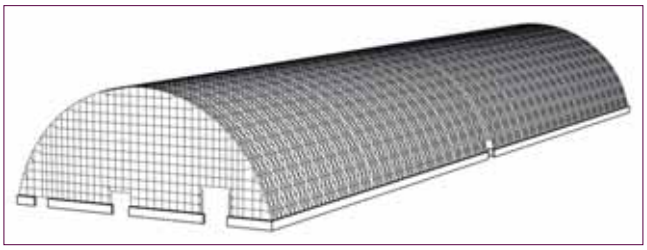
If the dome sits on the ground, it is important to consider the effect of accumulating fines around the perimeter, at the base of the pile. The dust is aerated when settling, which gives it a very small angle of repose. Because of this, the pile grows over time. It is advisable to mount the dome on a short (1.5m- to 2.5m-high) concrete wall, or leave a gap around the pile where a small front-end loader may circulate to remove accumulated dust.

Ideally the reclaim tunnel(s) will extend all the way across the pile area to the opposite side, so that the dead-load fines may also be easily pushed to the reclaim chute and removed from the dome with the use of the front-end loader. Geometrica also offers replaceable breakaway panels that may be installed on the bottom module of the dome to prevent damage in case of

Longitudinal storage

Another common way to store large volume bulk materials is by stacking them in long, prismatic piles. The material is loaded with a side stacker, or with a tripper car from above. Reclaiming is done with a bridge or side scrapper reclaimer or with front end loaders. Geometrica offers efficient longitudinal structures in cross sections that suit the project's conditions.

Parabolic or acute geometries are best for large crest loads, such as tripper cars, which these domes can easily support. Circular cross sections are ideal for large wind loading sites. Bents start vertically to minimize the footprint of the building. The ends of any enclosure may be left open, or closed with semi-domes or flat space frame walls.

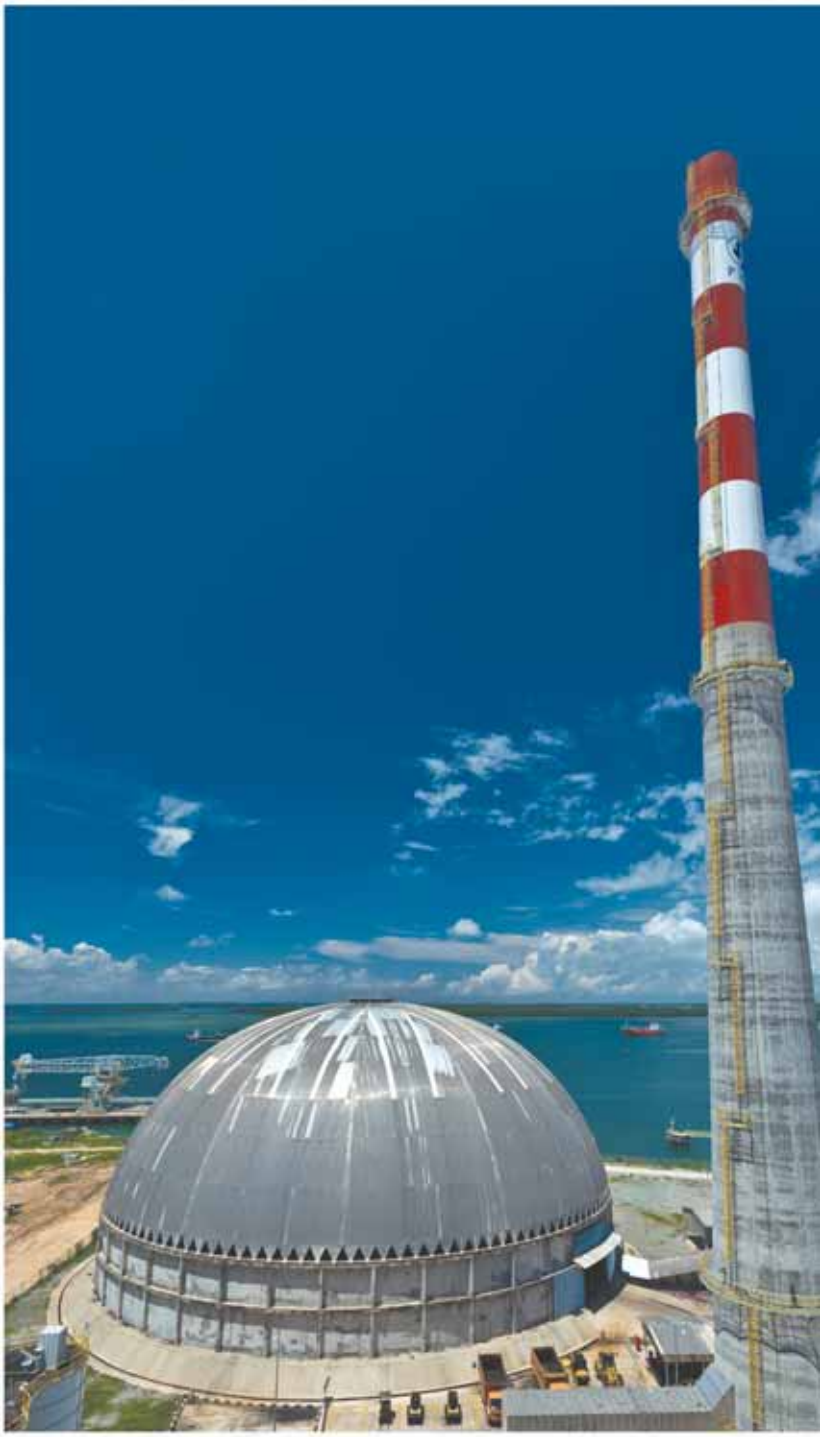


Geometrica longitudinal structures are particularly suited for highly corrosive environments. The structural tubes may be galvanized steel or aluminium, and either of these materials may be finished with a highly resistant thermoset epoxy or polyester coating. Cladding may be steel, aluminium, fibre-reinforced plastic (FRP), polycarbonate, or a combination of these. For aggressive interior environments, FRP cladding may be applied internal to the structure.

Carthage Cement longitudinal domes: the additives and coal longitudinal storage buildings are 300m and 200m long, Tunisia.

Economical and efficient

Dozens of Geometrica's stockpile storage and materials handling domes have been built around the world to safely enclose stockyard machinery, personnel, and raw materials. Parts are packaged, bar coded and shipped in small crates that can be easily handled in remote locations. The parts are assembled by local labour without special equipment over a stockpile, even while the pile remains in operation — no downtime. The light, prefabricated domes offer overall lower lifetime maintenance cost when compared to traditional structures.



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Specialist technologies overcome cement materials handling challenges

"Many players in the industry are justifiably asking whether the cement industry is the next 'hot' industry in Africa, given that this continent needs to expand and build its infrastructure if its full economic potential is to be unlocked", says Paul van de Vyver, General Manager of materials handling and niche process plant specialist, DemcoTECH Engineering.

There is increased buoyancy in the cement industry with producers looking to increase capacity, but cautious because of the general world economic climate," he adds.

DemcoTECH completed a contract for a new 40,000-tonne capacity, multi-discharge clinker silo working in joint venture with Kantey & Templer Engineers of South Africa. DemcoTECH was contracted as part of an expansion drive by NPC-Cimpor, a leading manufacturer and distributor of cement, concrete and aggregate products to the hardware retail, ready-mix, concrete product and construction industries.

The expansion included a new, second cement kiln, for its Simuma Plant in Port Shepstone in South Africa's KwaZulu-Natal Province. Cement kilns are used to manufacture an intermediate cement product known as clinker, the primary ingredient in cement. The second cement kiln required an additional silo for storage of the increased clinker production.

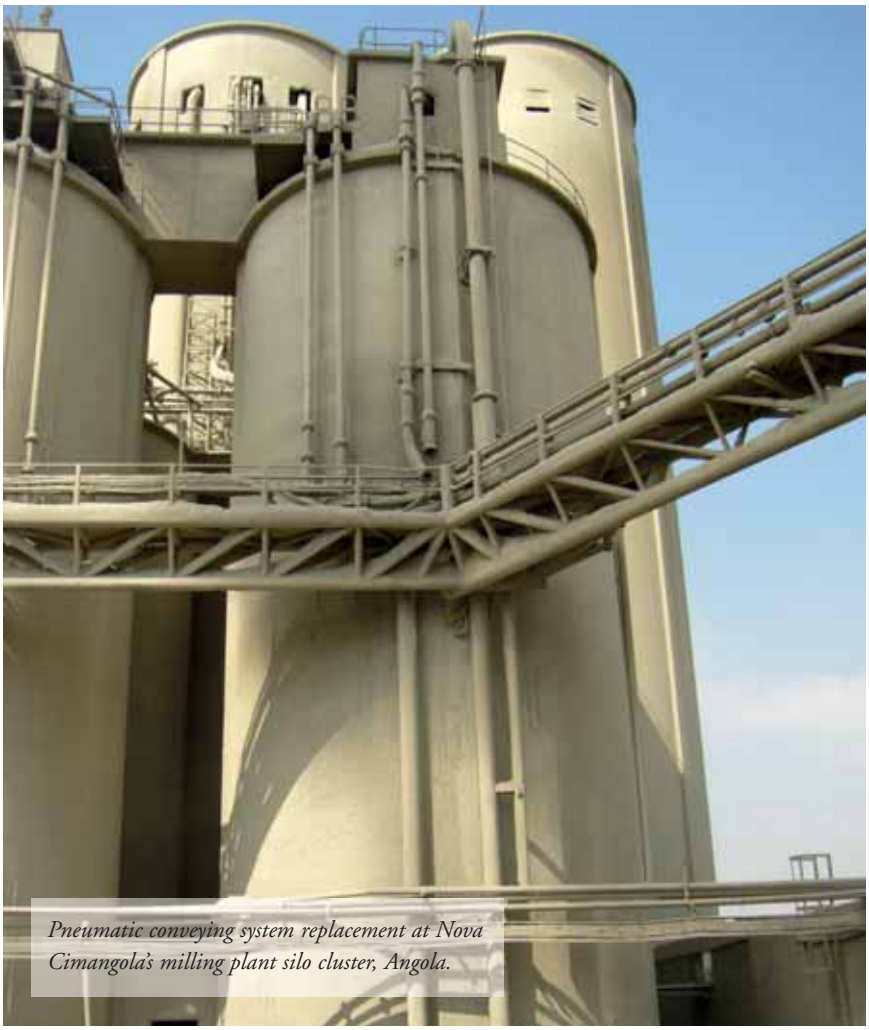
"The contract had a number of design and construction challenges, including the need to complete it within 15 months, the ability to handle hot clinker up to 205°C and to feed clinker to either the new or existing silo, alongside which it is positioned.

"In addition, the Simuma Cement Plant is located adjacent to the limestone source in the mountainous, environmentally sensitive Oribi Gorge area of KwaZulu-Natal and ensuring control of dust emissions from the plant are controlled well below regulatory requirements was an absolute priority," says van de Vyver. "Dust extraction filters were included on the silo and at all the transfer points to ensure the dust emissions comply with the safety and health regulatory limits."

Kantey & Templer was responsible for the civil and structural design, engineering and project execution of the silo — a 40,000-tonne free capacity, reinforced, pre-stressed structure with a 30m internal diameter and 55m height. The clinker silo was designed with two reclaiming tunnels and a precast concrete conical roof.

The silo is founded on a full raft foundation, 36m in diameter and 1.3m thick, which, in turn, is founded on an engineered fill layer, extending 4m below the natural ground level.

"DemcoTECH provided the materials handling expertise for the project, which included the mechanical and electrical design, engineering and project execution of the system," notes van de Vyver.



Pneumatic conveying system replacement at Nova Cimangola's milling plant silo cluster, Angola.

NPC pipe conveyor, South Africa.

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Astec Bulk Handling Solutions – A Complete Resource for Your Material Handling Needs

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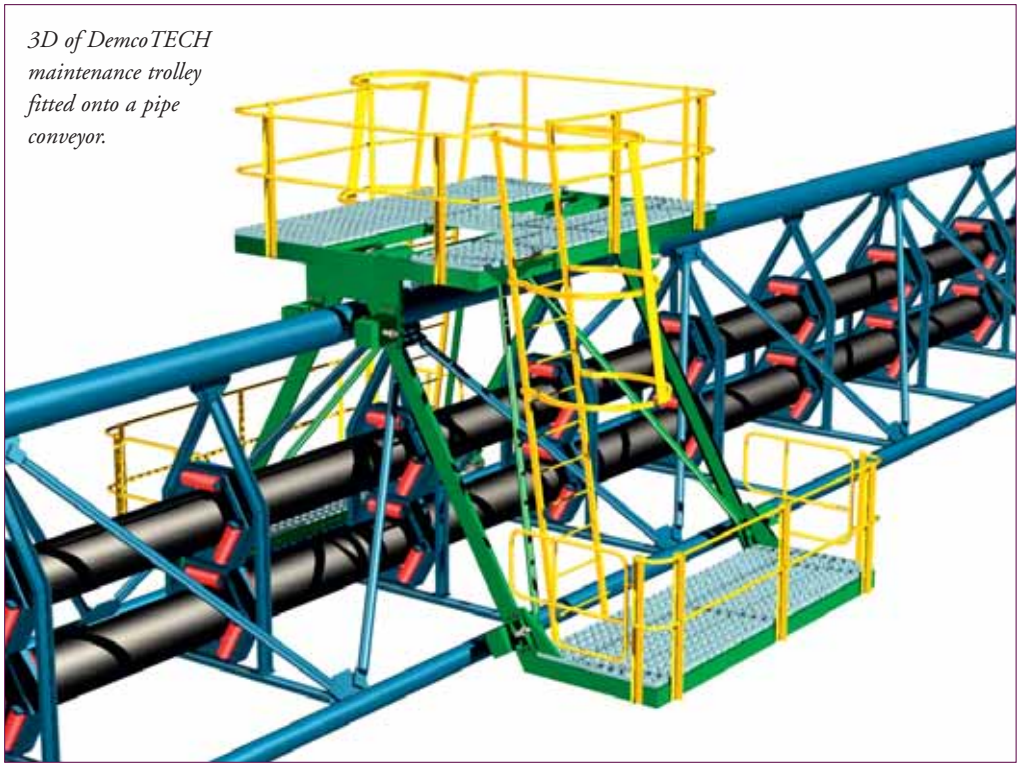
The silo receives clinker from the kiln, via a silo feed steel pan conveyor. DemcoTECH then supplied and installed an additional Aumund Pan conveyor feeding from the existing pan conveyor to the new silo. This modification included the design and replacement of the transfer chute. Two DemcoTECH-designed reclaim belts with heat resistant belting are in turn used to feed the existing plant or rail loading system. The silo discharges at 250tph (tonnes per hour) onto each of the two reclaim conveyor belts.



3D of DemcoTECH maintenance trolley fitted onto a pipe conveyor.

"The award of the contract for the Simuma plant was part of a good working relationship we have enjoyed over past years with NPC-Cimpor, which has ranged from project execution to studies such as a concept study for a new limestone handling and processing project."

Advanced technologies

With the poor flow characteristics of the raw materials handled at a cement plant, producers are always looking for new improved technologies that can cope with dusty, very abrasive materials that are also prone to build up in chutes and on conveyor belts, explains van de Vyver.

"Our range of specialist conveying technologies, which includes AeroConveyors™, pipe conveyors and pneumatic conveying systems fully satisfy this requirement. And, as maintaining a clean environment is a priority, all equipment we design and install complies with international environmental and safety standards."

DemcoTECH Engineering supplied, in conjunction with Claudius Peters, a 150tph pneumatic transport system to convey cement from the kiln to multiple storage silos at a new milling plant at Nova Cimangola's cement plant in Luanda, Angola.

The system has a conveying distance of 300m and, as a brownfield project, had to be designed to follow a tortuous route to fit into the existing plant and include a number of discharge points into the multiple silos. As an operating plant, the downtime needed to be minimized during tie-in so as not to negatively impact on production.

DemcoTECH was subcontracted for the upgrade to the plant and also to provide four travelling maintenance trolleys to NOVA Cimangola for the pipe conveyor at its Luanda plant. The trolleys were fully equipped with maintenance tools and maintenance power sockets and designed to negotiate an incline of up to 15°, which presented a number of challenges.

A DemcoTECH design, the trolleys were manufactured and pretested in South Africa at a 15° inclination, before being containerized for transport to site. The trolleys are self-propelled by an on-board generator and include hydraulically driven travel mechanisms for a high level of control. The trolleys feature a number of safety features, including being fully enclosed and equipped with emergency brake facilities and heavy duty traction control.

Specializing in pipe conveyors, DemcoTECH has supplied this technology to a number of cement producers, both in Africa and in India, as well as for other commodities.

The pipe conveyors comprise both fabric and steel cord belting, have up to 2,250tph conveying capacity and are up to 500mm in diameter. They can be engineered as two-way, multiple curve and distributed drive pipe conveyors. In addition, DemcoTECH pipe conveyors can be designed using a triangular tubular gantry fitted with a mobile maintenance trolley.

"Pipe conveyors are ideally suited to the cement industry as the material transported by a pipe conveyor is enclosed by the conveyor belt for most of its travel length. This obviates problems of material spillage on the carrying and return sides, belt training, limitations to the angle of incline and horizontal curves and the need for multiple transfer points, often associated with conventional conveyors," says van de Vyver.

About DemcoTECH

DemcoTECH is a leading specialist in the bulk materials handling field, offering its clients a range of services from conveyor design to turnkey niche process plants, from concept to full, turnkey project completion. DemcoTECH has carried out the design and engineering for large import/export port facilities, gold plants, diamond tailings disposal systems, manganese storage and export facilities, sampling plants and a wide range of other projects.

"Our services include concept design, feasibility studies, detail design, engineering, procurement, expediting, construction and commissioning. In addition to the cement sector, our clients come from a wide range of industries, including the power generation, mining, metallurgy and manufacturing industries, as well as port facilities," states van de Vyver.

Materials handling products offered by DemcoTECH include troughed conveyors, pipe conveyors, air-assisted AeroConveyors™, rail-mounted slewing stackers, pivot-boom conveyors and mobile conveyors. These systems include all structural, mechanical, electrical and control systems.

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Siwertell receives a repeat order for road-mobile unloader in Kuwait

Siwertell, part of Cargotec, will supply a second road-mobile unloader to Acico Construction Co in Kuwait. The company took delivery of its first mobile unit from Siwertell in July 2014, following earlier very positive experiences when operating Siwertell mobile unloaders.

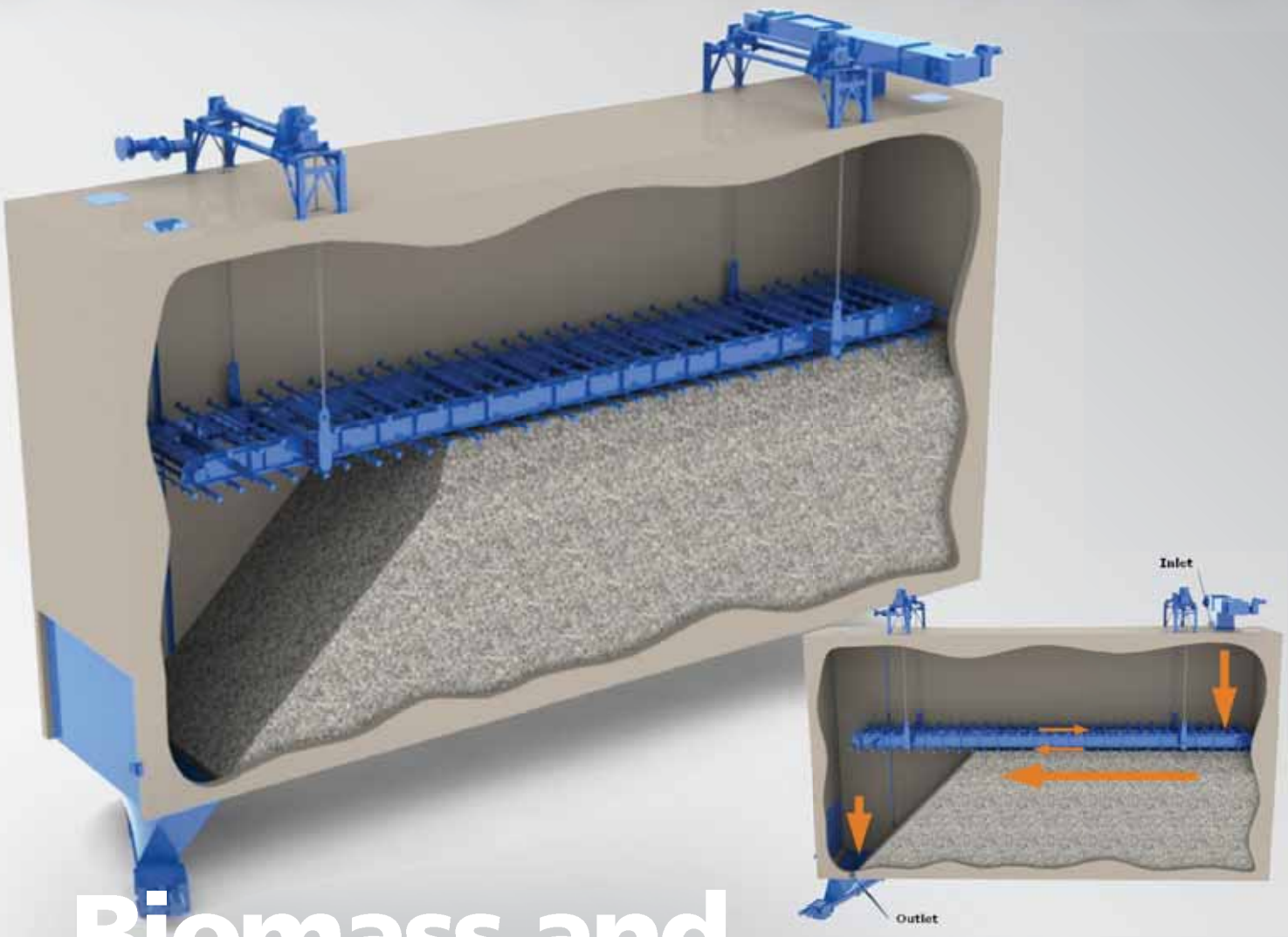
"The growing numbers of satisfied customers placing repeat orders is a great confirmation of the high quality and efficiency of our unloading solutions," says Jörgen Ojeda, Director, Mobile Unloaders, Siwertell. "With its growing experience of operating and owning our mobile unloaders, Acico fully appreciates their flexibility and high capacity. Combined with their low operational and maintenance costs, these factors had a major impact on Acico's decision to buy a second unloader."

The trailer-based, diesel-powered, Siwertell 10000 S road mobile unloader will be used at Shuaiba Port in Kuwait to discharge cement at 300 tonnes per hour. It will be equipped with a double bellows system to allow continuous unloading operations, and a dust filter to minimize dust creation. Scheduled for delivery by the end of May 2015, the unit is under construction at Siwertell's manufacturing premises in Bjuv, Sweden.

Siwertell mobile unloaders were originally designed for handling cement, and their reliable, eco-friendly and durable qualities make them the natural first choice for the job. As they do not need any local civil engineering works, they feature immediate availability on delivery. Furthermore, Siwertell can offer short lead times, so the period between placing an order and going operational can be remarkably short.

Acico Construction, part of Acico Industries Company, was founded in 1990. In 2012, it won the *Arabian Business Magazine* award for 'Green Building Company of the Year', highlighting the company's aim for good environmental credentials.

One Source



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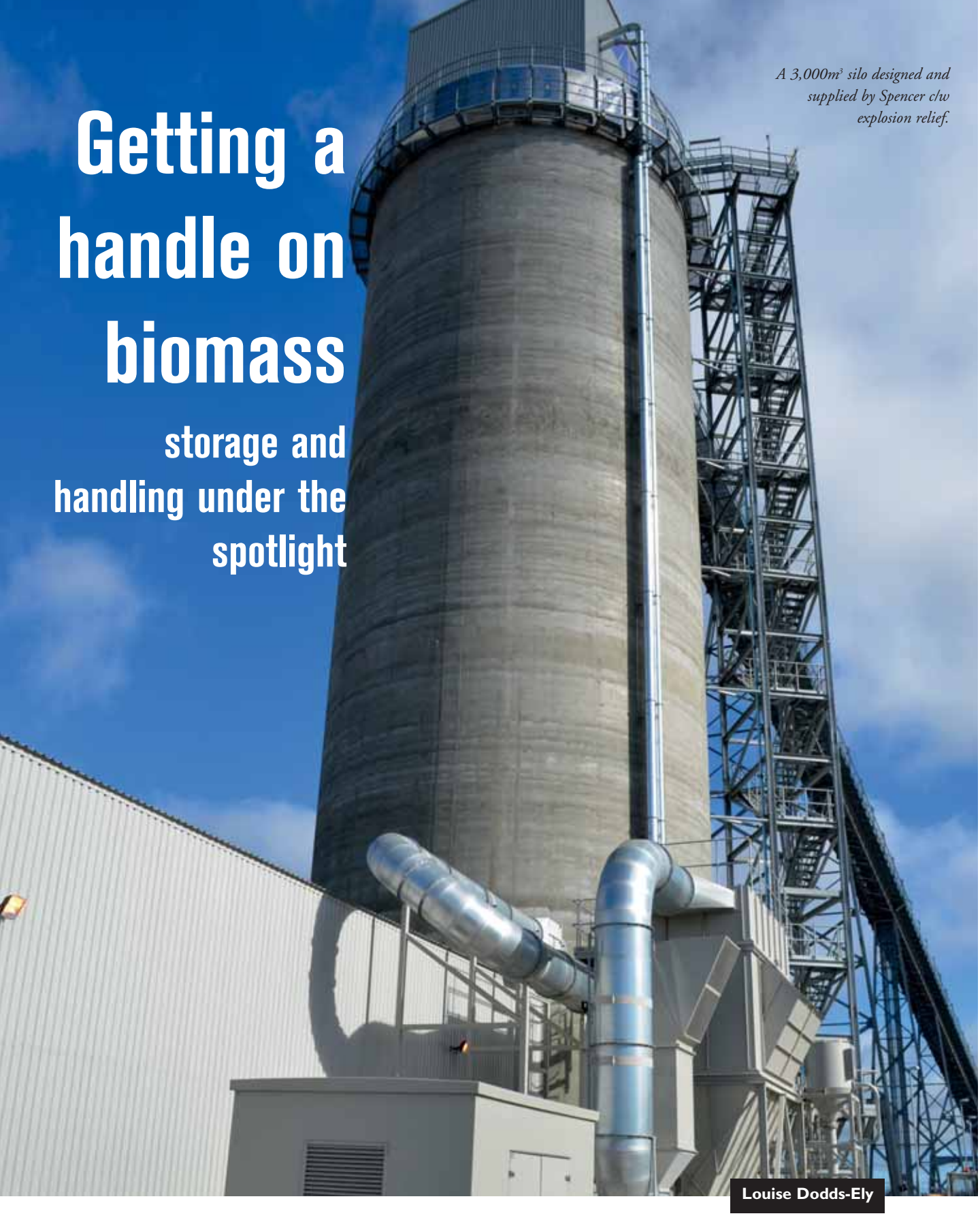
Getting a handle on biomass

storage and handling under the spotlight



A 3,000m³ silo designed and supplied by Spencer c/w explosion relief.

Louise Dodds-Ely

Rail loading of wood pellets at UK ports

Large-scale imports into the UK of wood pellets are primarily driven by those generators who have converted power station units to burn wood.

UK legislation requires the fuel to come from a sustainable source; sustainable generally means from 'farmed or managed forests' with an audited regime of re-planting and a harvesting cycle of 60 to 80 years.

To date, RWE, E.ON and more notably Drax have converted, or are in the process of converting, generating units to operate on biomass, predominantly wood pellets with Lynemouth Power looking like being the next to do so.

One of the quirks of the mathematics is that in round numbers 1m³/h of wood pellets will produce heat to raise enough steam to generate 1MWh of electricity.

A 500MW unit will consume approximately 500m³/h or 300tph (tonnes per hour) of pellets; operating for 8,000 hours

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per year, a unit will consume approximately 2.4mt (million tonnes) of wood pellets.

If all conversion plans come to fruition, a market for some 19.5mt per year of wood pellets will have been created. In reality, this is more likely to be 12mt to 13mt per year.

Currently tonnages imported into the UK are rising. Imported wood fuel in 2012 totalled 3.5mt, conservatively, by 2016 the demand looks like growing to four times this number.

To illustrate the logistical challenges using the lower figure of 12mtph (million tonnes per annum), this equates to the bulk carrying capacity of some 207 Panamax vessels a year delivering the fuel to UK ports for offloading, storage and forward shipment to the power stations. This means 7,500 train loads (or 400,000 lorry loads) per year from ports to power stations

Existing port infrastructure is geared up for these tonnages of coal, but biomass — and particularly wood pellets — pose their own set of unique challenges.

To comply with legislation, the pellet producers are prohibited from using any form of artificial binder. Pellets are formed at such a pressure that friction heating melts the lignin in the cell walls to form a natural binder. This bond is not particularly strong, so from the moment the pellet is formed it starts to degrade.

By the time pellets reach the UK up to 10% of the cargo may have reverted to sawdust. Pellets also swell and revert back to sawdust if they get wet.

Wood dust is not harmless and in the correct concentrations in air is explosive. The lower explosive limit (LEL) is generally agreed to be 30g of dust in a cubic metre of air.

Pellets can arrive in the UK 'hot' (generally up to 50°C); they are also prone to self-heating especially if they get wet prior to long term storage.

Hull case study: silo under construction


A hull landmark.

The risk of combustion is ever present, be it from self-heating or 'sparked' by an ignition source.

The material, being organic, is technically rotting all the time and steadily gives off carbon monoxide. In ship holds and in silo or shed storage systems, this leads to oxygen depletion in the atmosphere; over longer periods of time, the risk of methane off gassing increases.

The handling and storage challenges can therefore be summarized as:-

- keep it dry
- control fugitive dust emissions (EH40 – 5mg/m³ 8hr TWA limit before PPE required);
- design to comply with ATEX regulations;
- monitor product temperature and moisture;
- check for high CO and CH4 concentrations in enclosed spaces; and
- be prepared for a fire (detection and suppression).

Focusing on the rail loading system design

The driving design parameters are:

- the time available to load the train;
- the length of the train;
- the number of rail cars making up the train; and
- the percentage fill required.

The time available to load the train is often the starting point of the design; typically, this is specified as the total turnaround time of site (90 minutes is common).

To allow time for shunting, re-fuelling, driver change etc, Spencer settled on loading a train in better than one hour in order to guarantee the 90 minute turnaround.

The technology Spencer had in mind to perform the loading function was already in existence in the USA. Having a 40-year track record of loading bulk materials into rail wagons, particularly coal and iron ore, Spencer saw the potential in the Pebco® rail loading technology to load biomass trains quickly and efficiently.

The total length of the train is important. Biomass has a relatively low bulk density, typically 600 to 650kg/m³ so haulage volume takes precedence over haulage weight up to a maximum weight the locomotive can haul.

Nowadays, 30 wagon trains up to 600m long are being considered, coal trains are often less than 400m long.

In many cases, the existing site infrastructure is designed to suit coal train lengths it follows that most existing infrastructure usually requires extending.

Train length also directly influences the time to load; in-motion loading systems operate at a fixed speed, so the longer the train, the longer the time to load.

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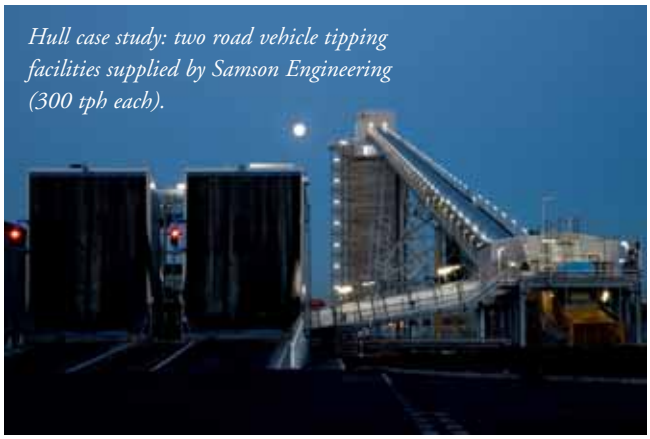
The number of rail cars making up the train dictates the maximum load each train transports and the percentage fill (often 97% or better) is a function of train speed and the instantaneous fill rate.

By way of example: a 30-wagon 600m long train travelling at 0.5mph will take 46 minutes to pass a point on the track. During this time, each wagon should be loaded with better than 65 tonnes (108m³) of wood pellets.

Allowing for the gaps between the wagons when no material can be discharged, the calculated instantaneous loading rate to achieve the fill is in excess of 3,000tph (5,000m³/h). These material reclaim and conveying rates are achievable but at high cost. Spencer concluded that having a train load of material in a



Hull case study: two road vehicle tipping facilities supplied by Samson Engineering (300 tph each).

silo above the loading point ready to discharge into the rail wagons would be the lower-risk, more cost-effective method of ensuring material was available at the point of loading when it was needed.

Hull case study: 24/7 loading.

Hull case study: 2km of rail track, 600m of road way and piled foundations.

As train lengths have got longer and wagon capacities have increased, so silo volumes have increased from 2,000m³ (at Tyne) to 3,000m³ (at Hull).

To control the fill rate of an individual rail wagon, the Spencer/Pebco® system employs a 'flood loading' philosophy.

Flood loading is achieved when the instantaneous loading rate is so large that the material floods into the receiving rail car, backs up and chokes the discharge chute.

Once the chute is choked, material can only flow from the chute at a rate dictated by the movement of the train under the chute. Providing the choke is maintained, then control of the

Hull case study: design details included double skinned buildings to minimize dust ledges.

loading operation is straightforward.

In simple terms, on detection of the front of a rail car, the chute is lowered to the loading height and the discharge gate opened.

An instantaneous flow rate of 10,000m³/h ensures that the choked state is achieved in approximately eight seconds (during which time the rail car has moved 1.8m).

The balance of the rail car is filled as it moves under the chute presenting a void into which material floods into to maintain the choke.

The end of the car is detected and the discharge gate closed allowing sufficient time for the material in the chute (the in-flight material) to fill the back of the car without over-spilling the back and the chute retracted until the next rail car presents.

The control system monitors train speed, wagon position and, in the case of biomass wagons, verifies the top doors of the wagon are open before allowing loading to proceed.

Whilst in this instance wagons are volumetrically loaded, an independent track weighing system completes the loading system providing tare and gross weight information for each axel of each wagon to an accuracy approved by trading standards.

Hull rail loading of biomass – case study

Designed and built by The Spencer Group in 12 months from date of order, commissioned and taken-over 2 months later.

The scope included:

- 2km of rail track, 600m of road way and piled foundations;
- two road vehicle tipping facilities supplied by Samson Engineering (300tph each);
- one chain conveyor supplied by Tramco (600tph);
- one troughed belt conveyor supplied by Spencer (600tph);
- one overband magnet supplied by Master Magnets;
- 3,000m³ silo complete with explosion relief designed and supplied by Spencer;
- one Spencer/Pebco® rail loading system including PLC and hydraulic system;
- site-wide vacuum cleaning supplied by BVC, and site-wide reverse jet filters at material transfers and at the rail loading point supplied by Heaton Green Ltd.
- design details included double skinned buildings to minimize dust ledges;

Hull case study: troughed belt conveyor supplied by Spencer (600tph).

Hull case study: Spencer/Pebco® rail loading system including PLC and hydraulic system.

- a full Spencer Group EC&I package

Performance achieved

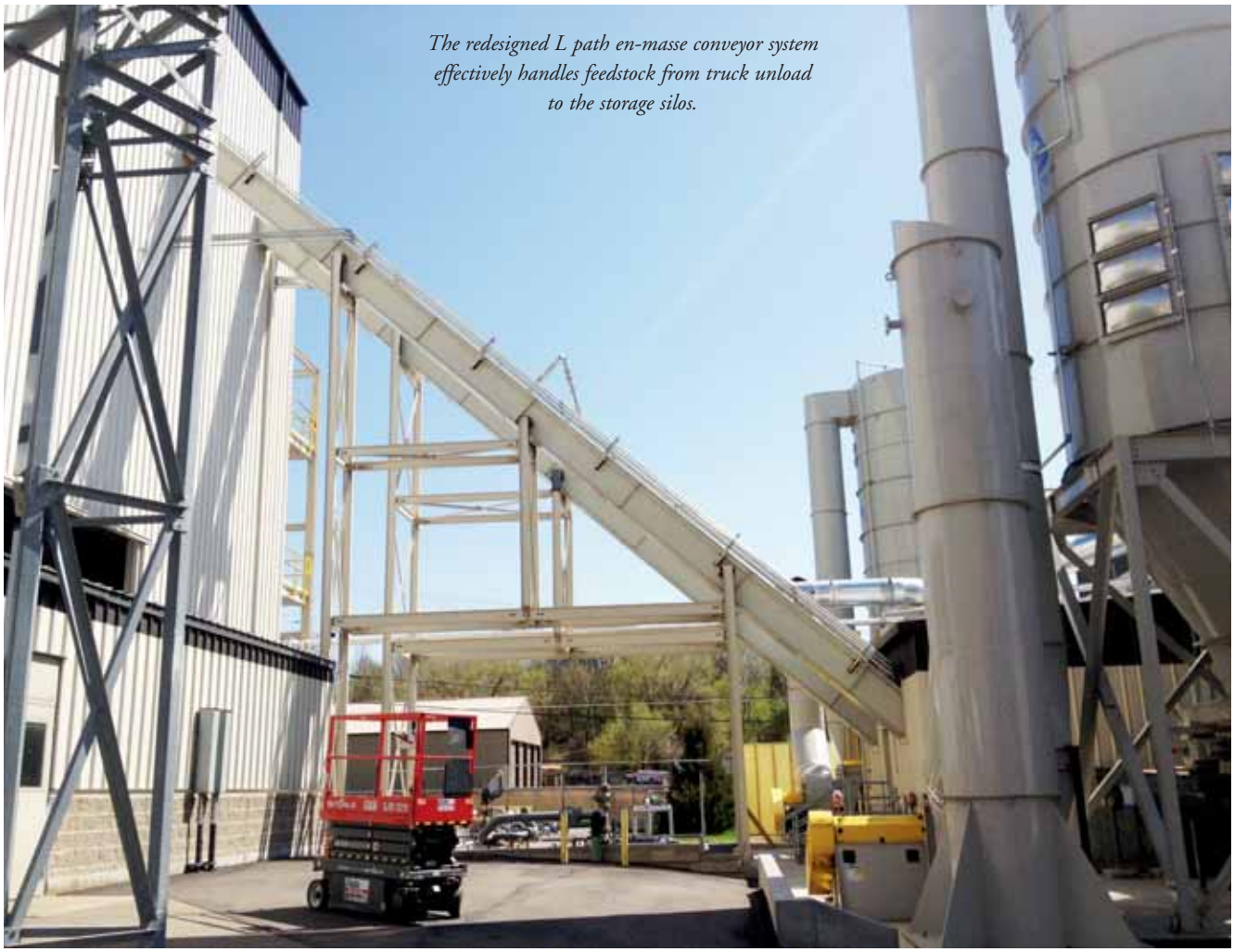
- better than an average weight of 65 tonnes per wagon loaded; trains loaded in 40 minutes;
- fugitive dust emissions — 0.6mg/m³ (8 hr time weighted average); and
- all design mechanical handling rates.

Other applications

Any relatively free flowing bulk material, including:

- coal;
- limestone;
- iron ore;
- gypsum;
- fertilizer; and
- grain.

CDM Systems meets the challenge – an end to inefficient feedstock handling



The redesigned L path en-masse conveyor system effectively handles feedstock from truck unload to the storage silos.

Biomass power generation: power plant improves reliability and uptime with improved feedstock conveying

A small power producer had a contract to supply a nearby malting facility with its electricity and heating needs. The plant produced approximately 20 Megawatts of power. Any excess was sold to the area utility grid. The power producer struggled to fulfill its obligations at times due to unexpected downtime of conveyors and poor material distribution.

The material flow issues began at the truck receiving system to the storage facility. The power producer received a mixture of woodchips, hulls, and hog fuel by truck which was unloaded into a pit hopper either by truck dumper or live bottom trailer. The conveyor under the hopper was expected to meter the material, elevate material out of the pit, and transfer it to a bucket elevator; however due to shortcomings with the original layout and plant design, the result was a pit, hopper and conveyor which was less than desirable. The inaccurate layout created an instantaneous load on the conveyor which caused excessive stress on the drive, chain and housing of the conveyor. In addition, the short horizontal section and a steep +60° incline made the loads on the chain flights excessive. This created premature wear, damage and unexpected downtime.

L Path conveyor design minimizes chain pull and maximizes conveyor life.

The inefficient unloading process added labour costs, maintenance cost, and production costs while creating unexpected downtime and reduced output.

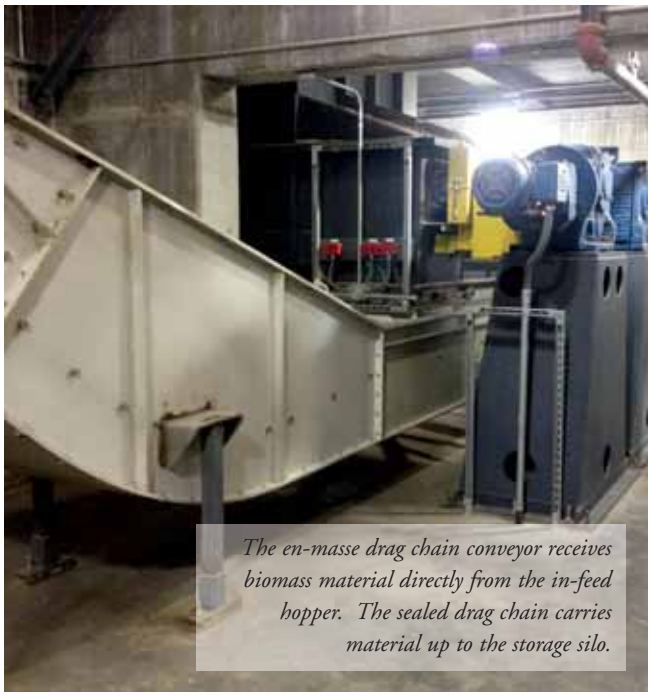
The right conveyor layout — the critical factor in effective material handling

The power producer needed a better way to move feedstock from unload and storage to the boiler. The goals of a redesigned material handling system were a reduction of equipment, streamlined material flow, built in redundancy, and improved safety and reliability. CDM, a major designer and manufacturer of drag chain conveyors, was contracted to supply two en-masse drag chain conveyors with a capacity of 60,000 lbs/hr per conveyor. The two conveyors allowed the facility to have built in redundancy and ensure a continuous supply of fuel to the boilers.

The new conveyors would be designed in an L-Path configuration. This design allowed for a short horizontal section, ±20 ft., and relatively long incline section, ±120 ft., at roughly a 40° incline to provide 80' of lift. This enhanced layout and design, along with proper selection of a chain and flight assembly, would allow the power producer to effectively unload and evenly distribute the feedstock. The exclusive dropped forged case hardened chain resists wear and provides a long service life, even in harsh service environments.

The power producer had a tight capital budget and short window to get the conveyors installed; the malting company was running six days/week and could not afford a loss of power or a blackout. CDM worked with the manufacturer to re-use some of the existing conveyor components that still met safety and performance specifications. CDM also instructed the power producer's maintenance crew on how to properly install and maintain the conveyors. These ancillary project management offerings by CDM not only saved the power producer on up-front capital costs, but also saved on long-term maintenance and provided optimum conveyor performance.

The CDM en-masse drag chain conveyors have been operating for years without downtime. The fuel handling system redesign enabled the power producer to reduce unloading time of the trucks and minimize maintenance and downtime. This facility has improved safety, reliability, and feedstock flow, while removing countless pieces of equipment from operation.



The en-masse drag chain conveyor receives biomass material directly from the in-feed hopper. The sealed drag chain carries material up to the storage silo.

About CDM Systems

For more than 40 years, CDM Systems has provided high-quality en-masse conveyors and conveying systems that offer guaranteed quality, dependability, and operational efficiency. CDM Systems uses its material handling experience and industry knowledge to solve the most difficult bulk transportation challenges. Its conveying systems are specifically designed for reliable 24/7 operation in aggressive and high-temperature applications. Whether unloading trucks, railcars, or vessels, or moving commodities within a process facility, CDM Systems provides the technical support and the right equipment designed specifically for its customers' needs.

Siwertell breaks new ground with first UK multi fuel unloader delivery

photo: courtesy of Siwertell.

Following an order placed in March 2013, Siwertell, part of Cargotec, has delivered, installed and commissioned two Siwertell ship unloaders at ABP's (Associated British Ports) port of Immingham, UK.

Manufactured and assembled in Italy, the type ST790-D screw type unloaders are equipped with slewable gantry tail conveyors. They will be used to discharge wood pellets and coal to supply the Drax power station. Both types of fuel will be unloaded at a rate of 1,200tph (tonnes per hour).

The customer, ABP, chose the Siwertell unloaders after observing a similar Siwertell unit in operation at Mersey Docks in Liverpool, as well as reviewing a number of machines on the market and paying visits to various facilities across Europe.

"Our customer was impressed by the conveyor's continuous high capacity, dust-free function and simple operation, even in wind speeds of up to 25m/s," says Lars-Eric Lundgren, Siwertell's Regional Sales Manager for Europe. "One of ABP's main stipulations was that the level of cargo degradation should not exceed accepted limits. We were able to offer firm assurances on this matter, supported by numerous successful tests carried out by independent surveyors, along with testimonials from satisfied customers."

This is the first Siwertell unloader delivery to the UK for combined coal/biomass handling. It may well be the first of many similar orders as the government seeks to reduce the level of coal used in UK power plants. "Pressure is building on UK companies to source more of their energy from renewable, low-carbon sources, and we anticipate a much greater demand for biomass used in combination with coal," said Lundgren.

"Biomass in bulk handling has the potential for fire and explosion, so companies will be seeking to minimize those risks when selecting machinery to handle this mix of fuels. To ensure safe multi-fuel handling, Siwertell unloaders incorporate safety systems that were originally developed for sulphur handling. Furthermore, the economic benefits of investing in an unloader that can handle both coal and biomass without adjustment should not be underestimated."

In 2012, Drax announced plans to convert three of its six generating units to burn biomass. The first unit was converted in April 2013 and the second in October 2014.

Planet-friendly power with help from Geometrica storage solutions

When waste becomes a power source, planet earth has a greener and more promising future, *writes Melanie Saxton, Geometrica*. Geometrica is pleased to play a part in the overall picture as a dome provider for waste-to-energy facilities.

The biomass sector is continuously evolving. According to Francisco Castano, president of Geometrica, "Design, vision, environmental impact are all elements necessary to develop modern waste management facilities that also recover energy and supply electricity to communities." Biomass is ideally processed, stored and distributed beneath long spans of thoughtfully designed waste management infrastructure. The barrier-free interior of a Geometrica dome — or Freedome® — allows for the free flow of traffic, equipment, assorted waste and personnel.

Interestingly, a 'clean' initiative may blossom anywhere in the world, as exemplified by two iconic domes. The Marchwood facility in the UK is a prime example of biomass processing and

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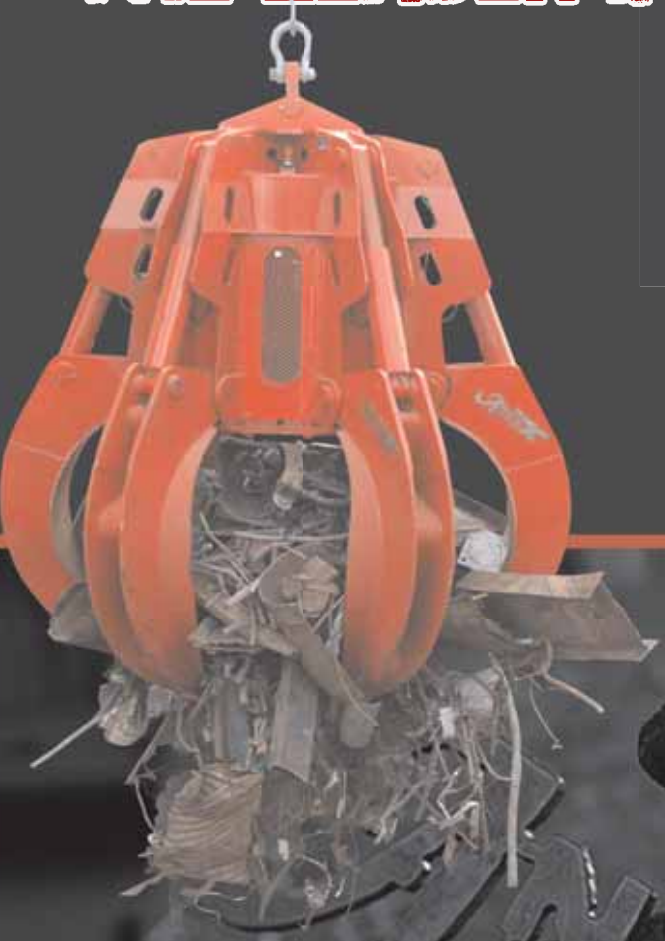

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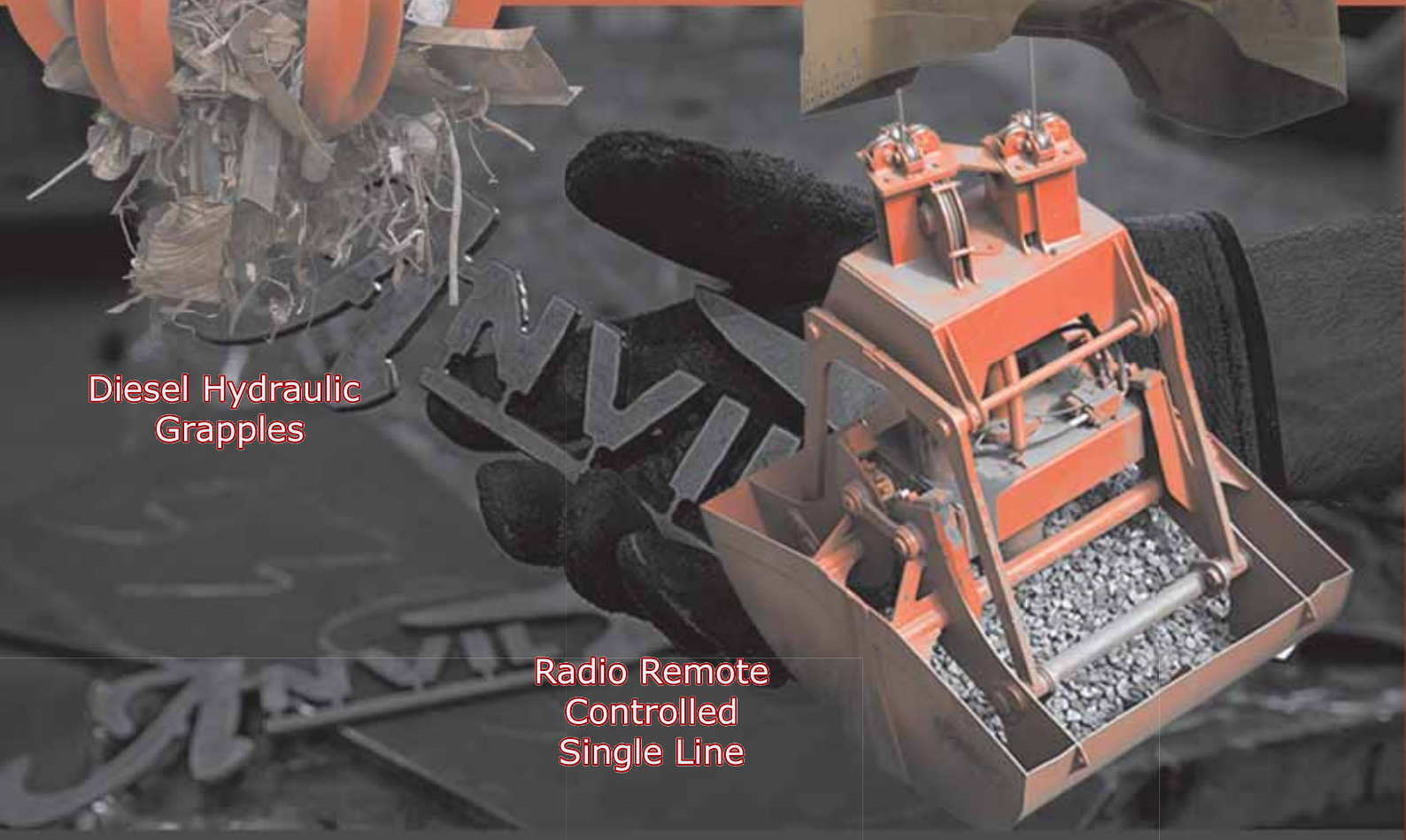
Diesel Hydraulic Buckets



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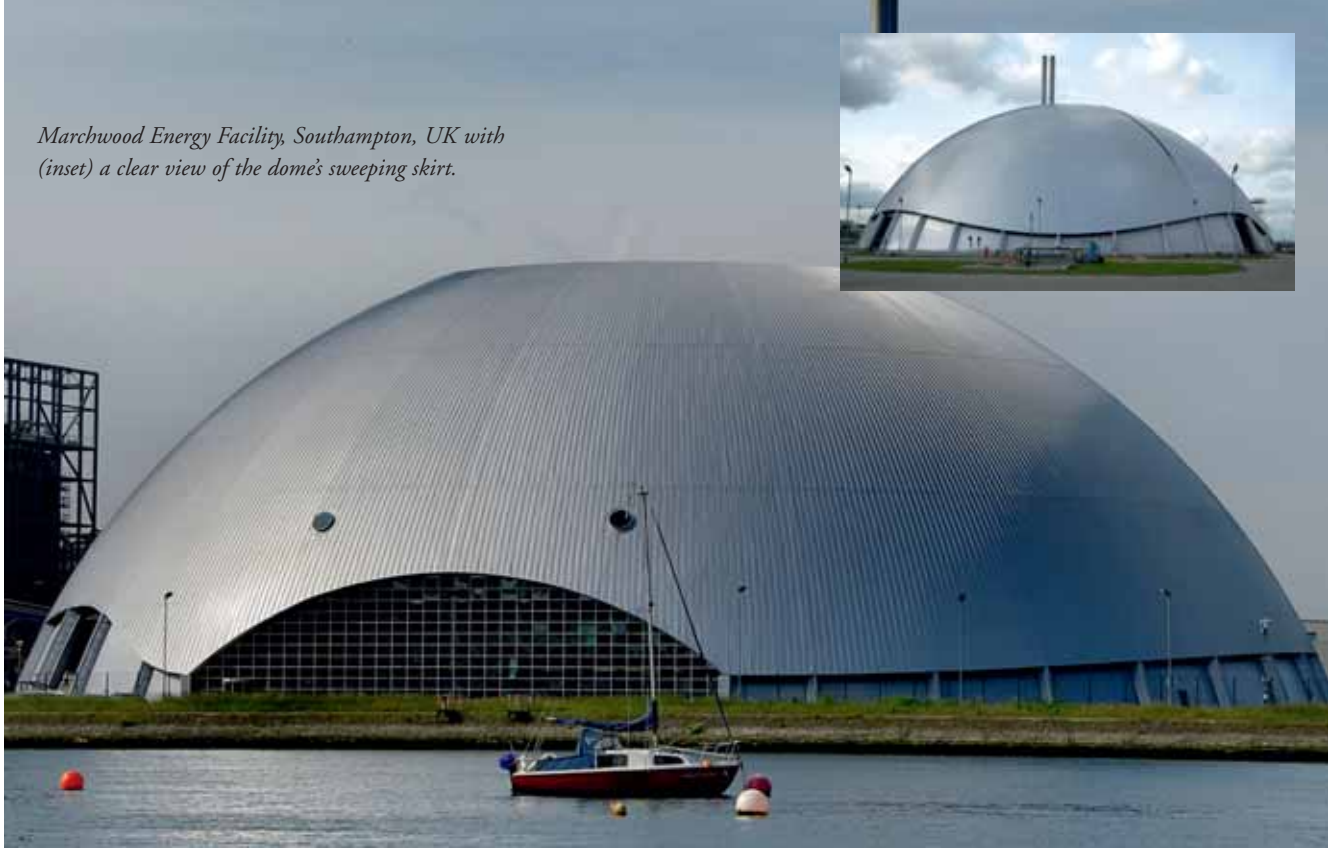


Marchwood Energy Facility, Southampton, UK with (inset) a clear view of the dome's sweeping skirt.

storage, while the Domestic Solid Waste Management Center (DSWMC) is the first of it's kind in Qatar to service the national grid.

Whimsical and WID-compliant

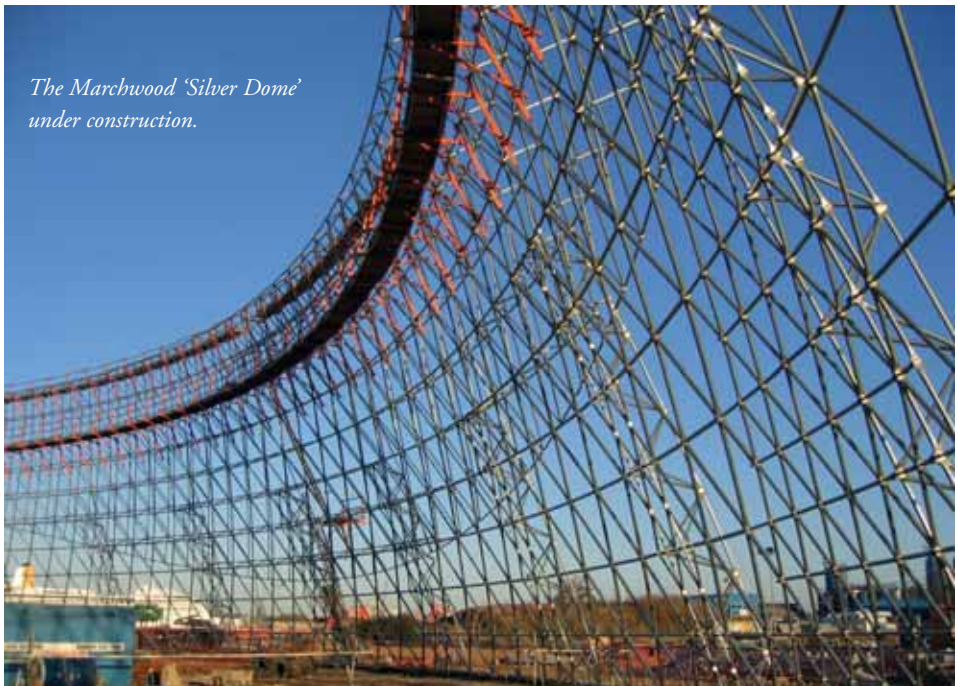
The Marchwood 'Silver Dome' is a stunning shoreside icon designed by renowned French Architect Jeanrobert Mazaud in consultation with local residents and councils. It seems to hover like a spaceship, with fanciful skirting wrapped around the exterior. At 110m wide with chimneys measuring 65m tall, it is one of the most beautiful — yet practical — applications for the processing of waste to energy.

Integra South West (Marchwood) processes 165,000 tonnes of non-recyclable waste and supplies up to 16MW of electricity to the national grid. This energy recovery dome helps supply electricity to more than 22,600 homes in the United Kingdom community of Southampton, Hampshire, which also plays host to the two great ocean liners, the *Queen Elizabeth 2* and the *Queen Mary*. Importantly, the dome under which it operates is Waste Incinerator Directive (WID) compliant and contains particulates — one of the eight substances for which the British government has established an air quality standard as part of its national Air Quality Strategy.

The facility comprises 100km of cables — enough to wrap Wembley Stadium 100 times. Approximately one million hours were spent on site during construction, largely devoted to the following:

- 150,000 hours spent building the envelope;
- 150,000 hours on assembling the boilers and piping;
- 70,000 hours on cabling and electrical installation;
- 400,000 hours on structural work and finishing;
- 40,000 hours on process erection; and
- 100,000 hours on project management.

The veolia.co.uk website shares a Marchwood installation video, demonstrating the tremendous installation effort. Overall, 700 tonnes of structural steelwork (the weight of 100 double decker buses) support the operations. Of this, the Geometrica dome, using galvanized structural tubing joined with high-strength aluminium hubs, weighs less than 300 tonnes. The original concept, if built with conventional hot-rolled steel, called for more than 1,000 tonnes of superstructure. In addition, 15,000m^3 of concrete was involved (the weight of approximately 36,000 cars). A total of 12,000m^2 of aluminium cladding covers the dome, and this installation was the first time that a waste-to-energy dome of such immense proportion was built directly over the process equipment inside.



The Marchwood 'Silver Dome' under construction.

The facility is a leading example of environmental practice and quality handling of biomass, and won the 2009 Best Designed Project Award by Partnerships Bulletin (formerly Public:Private Awards). But the real prize is that nearby families are now warmed by newly generated power as an industrial jewel graces Southampton water.

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The first of its kind in the Middle East

Word of mouth brought Geometrica another waste-to-energy challenge. Marchwood Silver Dome contractors, who had worked side by side with Geometrica, shared news of a project in the Middle East — the Qatar Domestic Solid Waste Management Center (DSWMC). The challenge was to find a firm that could accommodate the developer's distinct architectural vision. Because Geometrica designs some of the world's largest free span domes, Freedome technology became an ideal solution.

The plans included installation of state-of-the-art systems for separation and recovery of resources and energy from waste, including sorting, mechanical and organic recycling, and waste-to-energy composting. The goal was to have these processes work together in synergy, complementing and feeding off one another to support increased energy and material recovery from households, commercial establishments and the construction industry. The side benefit included a surplus of multiple dozens of megawatts to the national grid.

Early in the construction process, Keppels Seghers, a Singaporean engineering firm, was contracted to design, build and operate the DSWMC's Green Waste Storage Composting Plant. They sought a roof structure which processes yard and garden waste, tree cuttings, as well as food and kitchen products such as expired vegetables or peels. The material is subsequently shredded, screened and stored inside the Green Waste Storage facility. Grab-cranes then feed the material into anaerobic digesters which further break down the waste and produce biogas, which is eventually translated into a form of power generation.

The waste material is broken down through biochemical conversions, much like it is broken down in nature. To house the green waste breakdown process, Keppels Seghers required a structure that could span the large, open space of the building without internal support columns to interrupt the flow of materials and waste. Initially, Keppels Seghers designed the structure as a large steel framed roof with trusses. However, after considering the advantages of the Geometrica system, Keppels Segher opted for a Freedome.

"We were already aware of Geometrica's systems," said Geoffrey Piggott, the Keppels Seghers director of the Qatar facility. "But they visited us, and gave us an impressive proposal that was aesthetically attractive, cost competitive and had schedule advantages to us, as well."

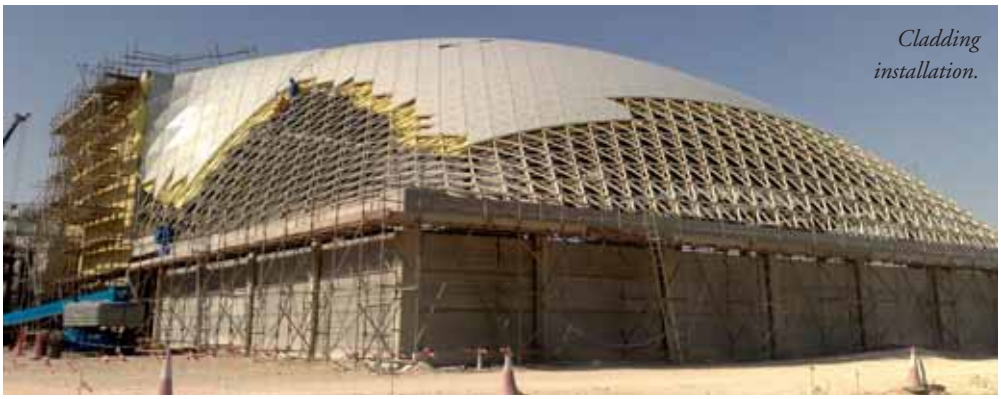
The Qatar Freedome is rectangular in shape and sits on a concrete perimeter that varies in elevation. The dome is almost 20 metres tall above its support wall, is clad in with 3,384 panels of painted steel, and covers 1,923m^2 of area required to house the Green Waste storage and its various sorting and shredding machinery. According to the Qatar Green Building Council Solid Waste Interest Group, the DSWMC is the largest composting plant in the world, and Geometrica's unique structural system of offered the ideal cover.

Today, the facility treats and processes domestic solid waste for the whole of Qatar, recycling select materials and using organic waste and biomass to generate various forms of energy. More than 95% of the waste is reclaimed or converted into energy, with less than 5% of the materials entering the facility diverted to a landfill. The facility is capable of treating up to 2,300 tonnes of domestic solid waste per day, and incinerates approximately 1,000 tonnes of other waste.

Collaboration and custom solutions

Geometrica designs and prefabricates domes that may be single-layer, double-layer vierendeel, double-layer truss, or ribbed. Lighter or heaver structural density may be achieved by varying the section of the tubes, or the length of the members. Regardless of geography, terrain, weather conditions or corrosive factors, Geometrica can design a waste management dome that helps improve the carbon footprint of any facility.

DSWMC, Qatar — under construction.



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Under cover compost

Lee County solid waste division expands compost facility with Legacy fabric buildings.

Good planning goes a long way. It's what elevates a good idea on paper and gives it the best opportunity to succeed in reality. It's what sets clear, achievable goals while still anticipating changes that may be necessary down the road.

The Lee County Solid Waste Division set out on a clear mission in 2007 when it developed the concept for the Lee County Composting Facility (LCCF) in Felda, Florida, a facility that was initially completed in February 2009. By recycling approximately 30,000 wet tons of biosolids and yard waste annually from seven different feedstock plants representing four

municipalities, the site would not only divert these materials from landfills, but also help eliminate odours and possible contamination resulting from various land application operations in the area.

While environmental objectives were the impetus for the project, it was also important that the LCCF would be a cost-effective investment for the county. It was determined that windrow composting could be used to produce Class AA compost, which could either be used by the county or sold to residents. Today, orange producers and other agricultural interests account for 85% of compost sales, and demand for additional material has continued to grow.

Construction of the original facilities also had cost-effectiveness in mind. Six fabric-covered buildings were erected to assist with primary composting. Featuring a metal frame with a tension fabric roof, the structures were deemed compatible with the application for a variety of reasons. One key advantage is that the translucent fabric allows light to enter the building through the roof, saving energy costs by eliminating the need for artificial lighting during daylight hours.

Engineers planning the site liked that the buildings were lightweight in comparison to metal building options, even though the foundations were built oversized to meet applicable hurricane wind load codes. The structures were left open on the sidewalls (clearance height of 15 feet) and end walls (18-foot clearance) to allow various machines to enter and exit, as well as to allow air movement throughout. Two 12-foot-diameter fans were also included in each building to assist with circulation.

As a critical first stage in the composting operation, the fabric buildings provide shelter from the sun and rain so that the initial composting process can proceed consistently without adverse weather effects. Materials spend roughly 30 days under cover, protected from precipitation during the wet season and from excessive sunlight during the dry season.

The project was able to adapt to some early challenges both during and after construction. The initial equipment considered to make windrows could only produce piles four feet high and 10 feet wide, which would have given each building a capacity of 500 cubic yards of compost. A larger windrow turner was procured instead, making piles eight feet high and 16 feet wide, increasing the capacity to 1,700 cubic yards per building. Additionally, it was quickly discovered that, to ensure quality control, the finished product should also be stored under cover, and one of the six buildings was later converted to a storage structure.

A much larger adjustment came to fruition in 2014, when the LCCF began an expansion project that would allow the site to process almost 100% of the biosolids it receives. The expansion plans called for the construction of three additional fabric buildings and added a further 10 acres for compost curing. With the arrival of the new buildings and other site improvements that relieved two previous buildings from non-production uses, the overall production capacity would just about double. Legacy Building Solutions won the award for the new fabric structures.

"The new buildings are nearly identical in size to the original structures," said Jerry Pinder, project manager and engineer for Thalle Construction, the general contractor on the expansion

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job. "The biggest challenge was with the site itself. The county didn't want to change an existing parking lot that slopes at 1%. And they wanted to place footers for the new building in an existing clay backfill area, which is under the water table. Unsuitable material needed to be removed, and a dewatering system and about a foot of gravel had to be added."

The poor soil conditions and the need for a total redesign of the foundations had contributed to the original six fabric buildings taking about four months to get through the engineering submittal process. According to Pinder, Legacy was one of only two bidders for the three new buildings at the unfriendly construction site.

Under the terms of the project, Legacy was responsible for not only the design of the buildings, but also the foundations. After studying the site and using lasers to ensure precise specifications, Legacy's engineering team delivered a design that ensured the buildings would be perfectly level by adjusting the heights of the cast-in-place concrete pier foundations at every single column. "The design was flawless," said Pinder. "It was an engineer's dream as far as getting through the submittal process, which took less than a month. Legacy's response time was basically immediate. It was about as good as it gets."

The three new fabric buildings each measure 162 by 120 feet, though it's readily apparent from both outside and inside that the metal frame differs from the original structures. Unlike the web truss frame design that's traditionally been used for fabric building construction, the Legacy buildings utilize a rigid-frame engineering concept where the fabric exterior is applied to steel I-beams, which can be customized for specific building sizes, uses and added features much more easily than typical tension fabric structures.

Among the advantages of this building design are straight sidewalls, rather than a curved truss that inadvertently creates some unusable space along the walls. "There is better clearance with the Legacy buildings," said Pinder. "You can drive a loader pretty much right up against the walls and still have room to manoeuvre. The other structures aren't built that way. There's probably about six to eight feet of space on the sides that are not accessible with a loader because the trusses are in the way."

Legacy's method for attaching fabric panels was another benefit toward faster project completion. LCCF's original six buildings each had just one large fabric sheet for the roof, which required several strap-like connections to attach to the web truss frame. The sheer size of the single piece of fabric made it difficult to secure properly, and work simply couldn't be performed when the roof was moving during windy days.

According to Pinder, installing those original roofs took four- to five-times longer than it did for the in-house installation crew at Legacy, which always applies its roofs in 20-foot-wide sections. These individual, kedered fabric panels are far more manageable in any conditions, helping to ensure proper tensioning of the 28-ounce PVC-PVDF fire-rated fabric.

The stronger, solid frame design of the new buildings provides greater wind resistance than the original buildings, allowing them to withstand ultimate wind speeds of 150 miles per hour. They also meet seismic 'A' and standard hazard design codes. All steel members were hot dip galvanized for added protection from corrosive elements inside the structures. The steel trusses support 380 pounds of ceiling fans, and ventilation was aided by the inclusion of four Schaefer RV-3000 ridge vents.

"Legacy's crew was extremely professional," said Pinder. "They met all our safety requirements and did an excellent job. They even provided an extensive final completion checklist with pictures of each item. That was very impressive, and it really demonstrated the level of workmanship they expected of themselves."

The three new fabric structures were completed in October 2014, beating the initially scheduled completion date by a few weeks and giving Thalle Construction ample time to pave the ground surface inside the buildings before they became operational in December.

Lee County has already achieved many of the initial goals for the LCCF due to proper planning and execution. Enlisting Legacy to tackle the challenge of planning and constructing new buildings as part of its expansion project turned out to be another wise decision on the path to continued success for the facility.

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A tall order for Rubb

Rubb Buildings Ltd has designed, manufactured and constructed an innovative biomass fuel processing and storage facility for energy giant E.ON UK.

Rubb Buildings Ltd provides custom-engineered fabric structures for the renewable energy and biomass power sectors. Rubb biomass facilities provide an ideal building solution for material processing, bulk handling and storage.

The 31.5m span × 137.5m long fuel storage building at Ironbridge Power Station has an apex height of 21m, making it Rubb UK's tallest building to date. The roof provides rigidity with minimal deflection, providing stability and support for a 200-tonne roof-mounted conveyor system used for the dispersal of biomass fuel products. The complex helped facilitate the coal to biomass conversion at the power station in Shropshire, UK.

The handling and storage structure features a roof pitch of 35° which was designed around the angle of repose of the biomass materials. The UK-based Rubb team was readily available to provide advice, support, recommendations, site visits and ongoing solutions regarding the challenges that arose during the project. These included structure height, weight loadings, access and custom door designs.

Rubb successfully met with E.ON's requirements that all elements of the structure were to be designed and manufactured in the UK. The steel framework of the building is protected from corrosion by hot dip galvanizing. Galvanizing is the process of metallurgically bonding a tough coating of zinc in to the steel surface. The frame is clad with polyester woven base cloth covered on both sides by PVC (polyvinyl chloride) and coated by a PVDF (polyvinylidene difluoride) finish.

Rubb sales manager Andy Knox said: "The biomass facility at Ironbridge demonstrates our diversity and versatility when it

comes to the flexibility of design and manufacture to meet changing requirements and the added challenge of attaching a 200-tonne conveyor system to the roof elements, all within strict time constraints. We are looking forward to introducing our building systems to new clients in the world biomass and renewable energy sectors."

About Rubb Buildings Ltd

Rubb Buildings Ltd is a renowned designer and manufacturer of custom-made relocatable engineered fabric structures.

Highlights include ground-breaking military buildings (aircraft hangars, shelters, storage facilities), specialist sports buildings and structures for a variety of sectors including aviation, ports, construction, bulk storage and environmental (waste and recycling). All products are designed and manufactured at Rubb's UK plant at the Team Valley Trading Estate in Gateshead, Tyne and Wear. The company was founded in 1977 and has a proud history of delivering innovative and quality structures to a wide range of clients.

The Rubb Group also has plants in the USA and Norway.

Custom design: the biomass facility for E.ON at Ironbridge, Shropshire, UK.

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Liebherr launches giant mobile harbour crane LHM 800

Liebherr Maritime Cranes has introduced its new flagship mobile harbour crane to the market, the LHM 800. This new giant model is a mobile solution for ever-growing vessel sizes and heavy industrial goods, taking container, bulk and general cargo handling to the next level. The model is ideal for the handling of biomass commodities.

The new LHM 800 represents a forward-looking extension at the head of Liebherr's mobile harbour crane range. The dimensions and capabilities of the LHM 800 are unique, outperforming all existing mobile harbour crane models in the market. Liebherr's newest addition to the portfolio meets growing customer requirements for larger cargo handling solutions in order to efficiently complete new and future tasks.

"The LHM 800 is a breakthrough for the mobile harbour crane sector, outperforming the existing maximum lifting capacity by nearly 50%. Also in terms of container and bulk handling, the LHM 800 is the new benchmark. We are optimistic that this new model will strengthen our market leading position," says Matthias Mungenast, sales director for Liebherr mobile harbour cranes.

The LHM 800 is the new mobile cargo handling solution for challenging tasks, including the handling of biomass commodities.

Performance meets mobility and flexibility

Like the complete Liebherr mobile harbour crane (LHM) range, the LHM 800 relies on the highly successful x-shaped undercarriage. The cruciform supporting system is unrivalled in terms of stability and operational safety. The wheelsets have been slightly adapted to ensure optimum load distribution of this new giant, which weighs approximately 745 tonnes. Thanks to its rubber tyred undercarriage the crane is mobile and can be moved to where it is needed most. Due to the modular LHM concept, customers may alternatively opt for a space-saving rail mounted portal, a fixed pedestal or a barge mounted solution.

In addition to the undercarriage, the worldwide-proven functional LHM design ensures that the LHM 800 is a valuable addition to the portfolio.

Supreme lifting capacity of 308 tonnes

The new giant LHM provides a lifting capacity of 308 tonnes, exceeding the maximum capacity of the so far strongest mobile harbour crane, type LHM 600, by not less than 100 tonnes. Thus, the LHM 800 really raises the bar and opens up new fields of application. As industrial goods are getting bigger and heavier, the new crane is a forward-looking solution for ports worldwide.

In addition to single lifts, the new LHM 800 is also designed for tandem lifts. With Liebherr's tandem operation tool Sycratronic® activated, synchronized movement is guaranteed and one crane driver can simultaneously operate both cranes for improved speed, capacity and safety. In tandem operation with a second LHM 800 the maximum lifting capacity is 616 tonnes.

Unrivalled bulk handling capacity

Bulk handling is an easy task for the LHM 800. Equipped with Pactronic® hybrid drive the giant masters up to 2,300 tonnes per hour which is an absolute record in the mobile harbour crane world. The new crane can also be fitted with SmartGrip®, Liebherr's self-learning technology for optimized grab filling rates, which was introduced to the market in 2014.

Setting high standards

The development of the LHM 800 is another important step in developing new fields of application for mobile harbour cranes and underlines the position of Liebherr Maritime Cranes in this sector. This giant represents a new opportunity for many ports in the world to add a mobile and versatile solution to their cargo handling fleet, allowing for more flexibility and more capacity. After last year's introduction of the SmartGrip® technology, Liebherr again drives the mobile harbour crane sector forward with the LHM 800.

Guaranteed soft landing? Handling biomass with Cleveland Cascades' chutes

In recent years Cleveland Cascades Limited, global manufacturer of loading chutes, has seen an upturn in demand for biomass handling systems.

Since 1992 the company has been involved in the design and manufacture of loading chutes, with its unique 'Cascade' system being at the forefront of the industry. Loading material through oppositely-inclined cones at low velocity yet high volume results in minimized dust emissions and removes the requirement of expensive dust-extraction systems. This philosophy has proven to be extremely successful in handling biomass at large volume in applications for ship-, storage- and vehicle-loading in particular.

Cascade vehicle loaders in operation at the Port of Tyne, UK.

Since becoming private in 2005, the company has experienced rapid growth and has expanded its product range to include the Cascade technology in vehicle loading and conveyor transfer point applications. The company also designs and manufactures conventional loading systems, where dust emissions and product degradation and segregation are not of such high importance.

With over 600 systems operating worldwide with applications in ship, silo, road, rail and tanker loading, the company's key to success is its proven ability to provide a well-engineered solution with professional and committed support.

Cleveland Cascades Ltd approaches every project with the same attention to detail, thorough engineering process and high standards of quality, believing that every system produced is a direct reflection of the company and the best possible form of advertisement to potential new customers.

The first systems supplied to handle biomass by Cleveland were in 2011, to the Port of Tyne in the UK. Four Cascade systems were provided to load trucks at rates of 500tph (tonnes per hour). The chutes are suspended at the outlet points of

Cascade shiploader in operation at Prince Rupert, Canada.

mobile hopper units which are fed by grabs taking the material directly from ships and into the hopper areas at the top. Slide valves then control the material feed from the hopper into the chutes to be loaded dust-free into the trucks.

As the demand increased at the port, the number of Cascade systems did also, and to date there are six in operation.

To date, Cleveland has supplied 12 systems to handle biomass, and levels of interest would suggest that this figure will increase significantly over the next five years as biomass consumption grows and grows.

Cleveland Cascades is experienced in handling biomass in a variety of applications, and at throughputs as little as 375tph through to 2,000tph. This system is the largest volumetric throughput of biomass that the company has provided. Delivered in 2013, the 25-metre-long Cascade system is used to load ships in Prince Rupert, Canada.

The most recent biomass-handling application for the company is for a Cascade System, a project for Bruks Rockwood for use in Baton Rouge, Louisiana. The system was dispatched and commissioned on site at the end of 2014. The chute is 29.6m in extended length, and also features a trimmer spout for detailed loading of hard-to-reach areas of the hatches. This system loads biomass at 1,200tph.

Due to the fragile make-up of biomass, and its ability to crumble and degrade easily, the Cascade philosophy is extremely beneficial when loading at large volumes and from significant heights. The manner in which the product is loaded, through oppositely inclined cones at mass flow allows the material to load softly, therefore causing no damage to the product and minimizing dust emissions which in the case of biomass can also be damaging to the health of operators.

Cleveland Cascades Ltd hopes to remain at the forefront of innovative design within the bulk industry, taking its technology and experience and applying it where possible to solve dust and material degradation issues.

With this ethos of continual improvement and expansion, CCL hopes to further develop itself into and continue to be a well-established figure within the bulk industry.

Biomass: the DOCKSOLID design for managing wood pellet dust and self-heating

The growing use of biomass as a form of power generation fuel has significantly increased biomass handling requirements globally — with growth in the UK and Europe particularly strong. Biomass is a very diverse and often difficult type of product to handle; it is more useful to think of it as a subcategory of dry bulk cargo than a specific product type. Nonetheless, handling difficulties such as product degradation, self-heating, substantial compaction as well as large volumes of emitted dust — and the well-known health and explosion risks that come with high dust levels — are characteristics common to a lot of biomass products. Knowing how to handle them is crucial to shippers, stevedores and terminals alike.

Two DOCKSOLID environmental hoppers operate at the Port of Hull, in England, as part of the expanding biomass handling capabilities there. The hoppers handle compressed wood-fibre pellets that are being imported to fuel the nearby Drax biomass power station. The wood pellets are an extremely dusty product, liable to self-heat when they become damp or compacted and pose a potential fire and health risk. The port's handling system for the product must therefore actively mitigate these characteristics to ensure an effective, safe and responsible ship unloading and forwarding of the bulk material to the biomass power station. In order to handle the product efficiently and safely ABP (Associated British Ports) is using two crane-and-grab systems to unload vessels into the pair of DOCKSOLID hoppers — which load into trucks at a rate between 400tph (tonnes per hour) and 500tph, per hopper, on average.

The DOCKSOLID hoppers have a range of safety, anti-explosion and fire prevention features for the safe handling of the wood-pellet biomass. The hoppers also incorporate a number of state-of-the-art dust prevention and suppression techniques, which minimize the health hazards and explosion risk from dust emitted by the product during the loading process. These range from the simple, such as a steel wind-block thimble around where the grab opens, to the complex, such as the reverse-jet dust extraction filter fan system. The air extraction and filtering system creates a negative pressure inside the hopper, subduing rising product dust; it also works with the rubber non-return-valve 'flex-flap' system to contain all product in the hopper as the grab is opened. In contrast, a positive air pressure is maintained in the hopper's plant room

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to prevent the incursion of dust or dirt into the hopper's motor, hydraulic or mechanical equipment, reducing wear and tear, thus reducing the need for excessive maintenance and extending the equipment's longevity. The hoppers discharge the product — through pneumatic slide doors — via special aspirated chutes (or bellows); these are self-retractable or operated, and ensure that the product is not exposed to through-winds, or falling from a substantial height as it is loaded into the truck beneath the hopper. These aspirated discharge chutes are fitted with heavy duty curtain and air extraction system to greatly reduce the dust emitted as the product is out-loaded.

Wood pellets are prone to self-heating, particularly if the moisture content of the product rises. The biomass material has been known to self-ignite; coupled with the high levels of dust present in the material, this poses a substantial fire and explosion risk. The DOCKSOLID hoppers at the Port of Hull have rigorously specified ATEX zones and a number of safety features to mitigate self-heating, explosion and fire hazards; these include a sophisticated automatic gas deluge system which is triggered by a quick rise in temperature within the product. The gas deluge expels much of the oxygen around the product preventing or suppressing a fire. The safety features and risks were assessed for the port by an external consultant ensuring full compliance with 'Dangerous Substances and Explosive Atmospheres Regulations' (DSEAR 2002, as defined by the UK Health & Safety Executive), and conducting a detailed HAZOP (Hazard and Operability) study.

Biomass product handling requires particular attention to health and safety. The DOCKSOLID environmental hoppers at the Port of Hull represent the cutting edge of dust control, environmental protection and safety standards for grab unloading of vessels. The units combine these specialist biomass handling features with extreme self-driving mobility and flexibility of use. The hoppers can drive themselves to and from the quay wall and are easily relocated should the need arise. The challenge for bulk terminals that provide fuel and bulk product for the Power Generation sector is to combine a rigorous standard in best practice health and safety protocols, as well as building-in the flexibility to adapt in a sector that is increasingly volatile due to world commodity prices, trade flows, environmental legislation, state investment and a drive towards diverse forms of renewable energy.

BRUKS Rockwood shiploader for Drax biomass facility

BRUKS Rockwood was selected to provide complete engineering and equipment for the shiploader at the Drax export facility in Port of Baton Rouge, LA, USA. This travelling, luffing, shuttling shiploader is designed to load wood pellets at a rate of 1,200 metric tonnes per hour.

With the ability to extend its boom 40ft, via the shuttling feature, this machine accommodates Panamax vessels that hold up to 74,000 metric tonnes.

The telescopic chute at the end of the boom contains a special chute which helps with filling the four corners of the ship's hold, as well as dust control. This machine is currently loading pellets that are being received from the two Drax pellet plants in LA & MS.

The installation of the shiploader was completed in November last year.

High-powered suppression system clobbers wood dust during shiploading

The Panama City Port Authority has adopted a high-efficiency dust suppression system for its wood pellet loading operations, effectively knocking down large quantities of airborne particles before they can migrate to residential areas or nearby businesses. Port officials report that the equipment has been very efficient, helping to protect ambient air quality and prevent negative effects on workers, as well as local residents and manufacturing operations.

"We maintain an 80,000ft^2 warehouse used exclusively for storing wood pellets, which are a widely used biomass fuel in Europe," explained John Ramer, Director of Terminal Services. "The facility receives about 30,000 metric tonnes of pellets each month by rail car, creating stockpiles more than 100 feet wide at the base, with an enormous potential for dust," he said.

To control the inevitable dust from three front loaders with 10-yard buckets feeding a 600-foot conveyor and then dumping such a huge volume of pellets into a ship's hold, Ramer knew that he'd need specialized equipment designed specifically for that purpose. While researching potential dust management solutions, he happened to visit a large grain handler on the Mississippi River and saw a brand new DustBoss® on-site. Although he had looked at dust suppression units that appeared similar, this design seemed larger, more powerful and ruggedly built.

After some investigation on the Internet, Ramer learned that the machine he'd seen at the grain handler had the kind of range he would need for his own ship loading application. He decided that the next time a vessel came into port, he would rent a DustBoss DB-60, the heavyweight of the product family from Dust Control Technology.

"We placed the DustBoss downwind when we began loading a ship," Ramer continued. "This cargo is very sensitive to moisture. If the pellets get wet, they tend to crumble, so we had to avoid spraying any water down into the hold. Once we started working, we aimed the plume of water mist into the dust cloud, and it made an immediate difference." He estimated that dock workers can load about 1,000 metric tonnes of material per hour.

As it happened, shortly after taking delivery of the rental machine, the port facility got a visit from the Department of Environmental Protection. The agency representative appeared to be impressed with the particle control methods at the site, and departed without issuing any notices or warnings about dust. Ramer's crew has rented the equipment several times since, and the results have convinced officials to purchase a unit.

In addition to its dust suppression efficiency, port representatives cite the versatility and mobility of the unit as added benefits, allowing workers to position the DustBoss wherever it's needed most on a given day, depending on wind and weather conditions. The broad coverage of the oscillating design allows them to effectively control dust over an area nearly half a football field in size from a single location.

"Under these circumstances, there is no single solution that's

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going to completely solve the dust problem," Ramer concluded. "But wind screens and other physical barriers just weren't enough. I think the DEP was pleased to see us making every reasonable effort and using the best of current technology to keep the dust contained."

Asked about payback, Ramer responded, "Saving money wasn't our primary goal in this application. The benefit is less tangible than that. It's really about protecting health and the environment, and preventing dust from becoming a nuisance for our neighbours. It's just the right thing to do."

Port Panama City operates in Bay County in the Florida panhandle, the northernmost port in the Gulf of Mexico. Established in 1967, the 125-acre facility has grown to six deep-water berths consisting of 3,240 linear feet, with 32-foot draught, 600 linear feet of barge facilities, and 470,000 square feet of warehousing space. The port is equipped with modem loading and unloading facilities for truck, rail, barge, container, ro/ro vessel and deep-water vessel traffic. Important import/export commodities include wood and paper products, steel, copper and bulk aggregate. Projected annual throughput is approximately two million tonnes of cargo.

Dust Control Technology is a major provider of effective dust and odour control solutions for construction and demolition, mining operations, recycling and scrap industries. The company's DustBoss® product line helps reduce labor costs vs. manual sprays, freeing up manpower for more important tasks. The automated units typically use less water than hoses and sprinklers, with some customers realizing payback in less than six months and netting an annual cost savings of more than $50,000. DC

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FLSmidth

Blown away?

the advantages of pneumatic bulk handling

Safeguarding the environment, and gaining acceptance from the local community, have become increasingly important in evaluating new projects and selecting the right technology from the start. Pneumatic conveying technologies correctly implemented into a plant or terminal respond to these needs with dust-free, economical, low maintenance and low manpower requirement conveying systems.

As a world leader in materials handling solutions, RTA Alesa goes beyond conveying materials. Serving the industry from its engineering offices in Switzerland, Canada, France and Australia, RTA Alesa delivers fully integrated materials handling solutions that optimize processes and performance.

Specializing in a broad range of technologies for handling bulk material, RTA Alesa works diligently to understand the client's requirements, systems, processes and products. Striving to implement cost-effective solutions as well as minimizing the operation cost (OPEX) for the end user, RTA Alesa's team of experienced specialists completely covers all aspects of any scale of project.

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RTA Alesa offers technologies and services in many industries:

- materials handling/process plants;
- technical assistance (system audits);
- material testing;
- feasibility studies;
- general contracting (turnkey project management);
- after-sales service; and
- training.

Innovative conveying technology

Whether transporting directly from point A to B, or using a more complex route with multiple entry points and destinations, RTA Alesa has a solution.

RTA Alesa conveying systems cover a wide range of bulk materials, including but not limited to:

- alumina (primary and secondary);
- fluoride;
- phosphate/potash/urea;
- carbon products;
- crushed bath;
- fly ash, bottom ash;
- copper concentrate;
- metal powders;
- sand;
- cement; and
- limestone.

Dense phase conveying system

RTA Alesa provides customized dense phase conveying solutions for greenfield and existing plants in various industries worldwide. Its innovative, fully enclosed systems use less air and power, delivering unbeatable economic performance and reliability. More than 600km of dense phase piping have been installed around the world.

Solid phase conveying system

RTA Alesa's solid phase system consists of specially developed pressure vessels, conveying piping and diverters. This breakthrough technology reduces air consumption by up to 50% when compared to a standard dense phase system. Due to its extremely low conveying speed (similar to an air gravity conveying system), the system gently conveys the product thus preventing attrition and wear.

Pneumatic elevators

Typical applications for pneumatic elevators are silo filling or process equipment feed, and in most applications they use low pressure air or high vacuum generated by blowers. With capacities of up to 1,800tph (tonnes per hour), pneumatic elevators provide a low maintenance alternative to bucket elevators and they achieve higher feeding elevations than inclined belt conveyors. RTA Alesa has developed pneumatic elevator

Developments from Neuero Industrietechnik

Neuero Industrietechnik für Förderanlagen GmbH, which is headquartered in Melle, Germany, is a global provider of turnkey solutions to the bulk industry, and offers significant expertise in pneumatic equipment.

Neuero follows the tradition of 'Made in Germany', and manufactures and delivers high quality, environmentally friendly and durable loading and unloading equipment for industrial plants, silo terminals, power plants, aluminium smelters, malting plants, feed mills, and more.

Currently, Neuero has several projects in the pipeline relating to the loading and unloading of grain, alumina and non-free-flowing materials.

Neuero supplied an unloader to handle non-free-flowing materials — such as fish meal and other meals — to Marine Harvest, a large fish-farming company in Norway. This model is also used as a shiploader to load the vessels with fish feed. The Flexiport delivered to Norway was completely assembled in Germany and shipped in one piece. Fishmeal is not often unloaded; Neuero therefore decided to invest in a new feeder drive that has been proven effective in achieving required unloading rates.

ATEX — DUST EXPLOSION PROBLEMS WITH MECHANICAL UNLOADERS

Neuero has just commissioned in Austria an M300 combined unloader/loader. This model had to meet the stringent dust explosion specifications set by the local TÜV inspection agency. If all suppliers have to meet these regulations, this could lead to interesting developments for Neuero. For example, the screw and chain unloading system that runs steel on steel at speeds of over 1m/s are not safe, because they may cause a spark.

Another M300 has started operating in Santos, Brazil, in co-operation with Maquinas Condor.

technologies to handle fluidizable materials as well as coarser-grained products such as pet coke, crushed bath and potash.

Air gravity conveyors (AGCs)

AGCs are a well proven conveying system for fluidizable materials for short distances as well as distances covering several hundred metres. RTA Alesa also uses these types of conveyors as a self-supporting structure to cover large spans.

The AGC functions on the principle of fluidization and gravity. This technology allows for the material to behave like a fluid and flow freely on a downward slope. Due to the elimination of moving parts in the material and the use of gravity to promote the material flow, RTA Alesa AGCs typically operate for decades without replacement of the material handling parts, and with no more than routine maintenance to the blowers.

RTA Alesa goes beyond conveying materials and delivers fully integrated materials handling solutions that optimize processes and performance.

Storage facilities

For any bulk materials, RTA Alesa professionals develop leading edge storage solutions providing both cylindrical concrete or steel shell silos as well as dome silos.

RTA Alesa supplies storage facilities with up to 100,000 tonnes capacity, state-of-the-art feeding and reclaiming systems, anti-segregation and blending equipment as well as fluidized and mechanical extraction systems.

Whether the scope is for supply only or lump sum turnkey (LSTK) projects, RTA Alesa delivers the best and most economic solution.

Shiploader/unloader

RTA Alesa provides the highest capacity pneumatic ship unloaders for the aluminium industry (up to 1,500tph), serving major smelters around the globe. Shiploaders as well as combined shiploader/unloaders are available for a wide variety of bulk materials. Each shiploader/unloader is custom built to meet the client's exact needs and specifications.

The RTA Alesa ship unloader can be designed to unload alumina only or various products such as alumina, fluoride and coke with a single machine.

The quay's load distribution requirements determine the portal frame's design. Vessel size and tide conditions dictate the boom and/or telescope's length.

RTA Alesa delivers its shiploader/unloader fully assembled and pre-commissioned therefore avoiding any disturbance to client port's operations during installation.

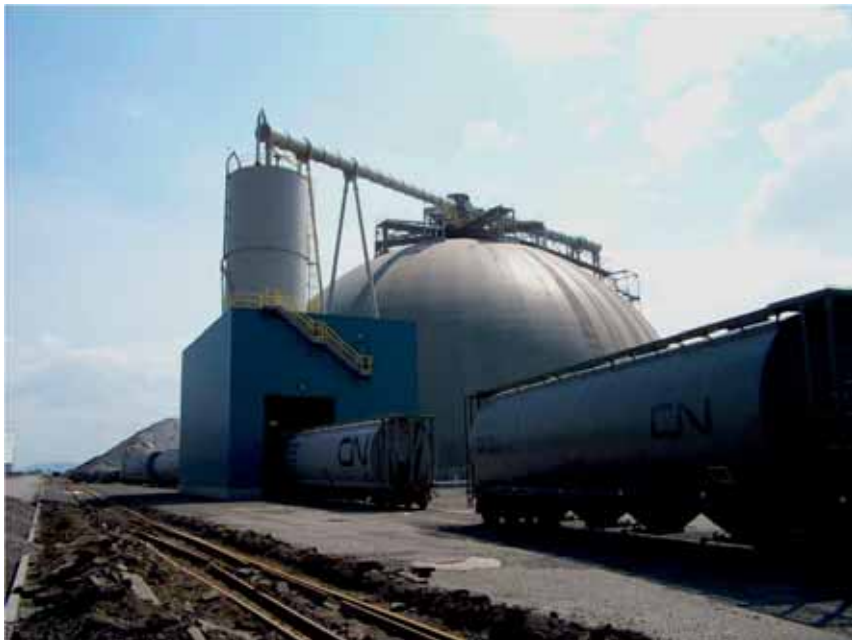
Railcar and truck loading / unloading

RTA Alesa provides high-capacity dust-free loading/unloading stations for various products. These facilities have been proven in industrial applications over many years. Railcar or truck loading/unloading characteristically involves a short cycle time with high environmental standards in terms of dust prevention. RTA Alesa's equipment and controls have been developed to meet these specific customer challenges.

Centrifugal blowers

The heart of any pneumatic handling system is the air producer. The simplicity and reliability of RTA Alesa centrifugal blowers, combined with their flow control technology, provides end users with the most economical air supply and distribution solution. With high efficiency and low maintenance requirements, each machine is designed and built to meet the customer's exact specifications and applications.

RTA Alesa is a true material handling specialist forever seeking niche applications and challenges.



VIGAN

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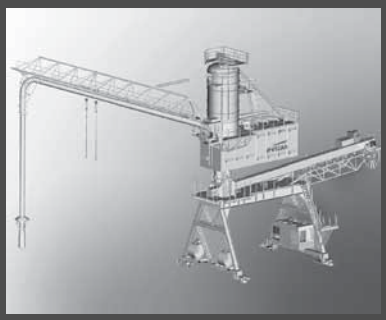

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Repeat orders strengthen VIGAN success

A 400tph/ 320kW barge unloader installed in Rouen (France).

The sale of VIGAN pneumatic ship unloaders hit a historic record in 2014 with a double-digit growth for the second year in a row. Growth was present in all ranges of ship unloaders:

- high-capacity unloaders on gantry for large sea-going vessels mainly in North Africa and Middle East;
- medium-size unloaders for river barges in Europe; and
- small-size flexible grain pumps all over Africa and Asia.

VIGAN is very proud to have a few repeat orders from existing customers after many years of operation.

The request for reliability and long-term servicing is key for buyers. VIGAN has designed and manufactured everything from its Belgian headquarters since 1968 and is still being requested to supply spare parts for unloaders that are 25–30 years old. VIGAN greatly enjoys maintaining such long-term relationships and contracts with its customers. This long-term reliability is a pre-requisite in the bulk industry.

For the last three to four years, the majority of VIGAN sales have been of large 600tph (tonnes per hour) unloaders, mainly in the Middle East and North Africa.

To a lesser extent, VIGAN has also sold smaller equipment, namely designed for barge unloading.

In 2014, VIGAN installed a pneumatic barge unloader with a capacity of 400tph at Socomac (Soufflet Group) in France, to discharge grain and malt from barges.

The unloader is built on a fixed structure. It is equipped with two turbo groups, each composed of a main electrical motor of 160kW/400V and a three stages turbo blower, with direct drive, controlled by a frequency inverter.

The 17.5-metre boom is completely hot-dipped galvanized and is equipped with a gangway all along it for easier maintenance.

VIGAN already supplied several machines to Soufflet group:

The old and new VIGAN unloaders installed in Batangas (Philippines).

Malteries d'Alsace in Strasbourg, Grands Moulins de Corbeil, Grands Moulins de Pantin, Ceres in Brussels, Socomac.

The same year, VIGAN also installed a pneumatic unloader with a capacity of 200tph (160kW) at Mouterij Albert (Heineken Group) in Belgium, with a boom of 15 metres to discharge malt from barges. VIGAN already supplied several machines to Heineken group, namely in The Netherlands and Belgium.

In 2015, VIGAN installed a new pneumatic unloader for barges in Batangas (Philippines). This machine has a capacity of 250tph and is equipped with a motor of 130kW (0.52kWh/t).

The former VIGAN gantry that was installed on the same site in 1997 is still in operation. VIGAN also equipped it recently with a frequency inverter that will allow a power consumption saving of ±20%.

Continuous R&D and innovation

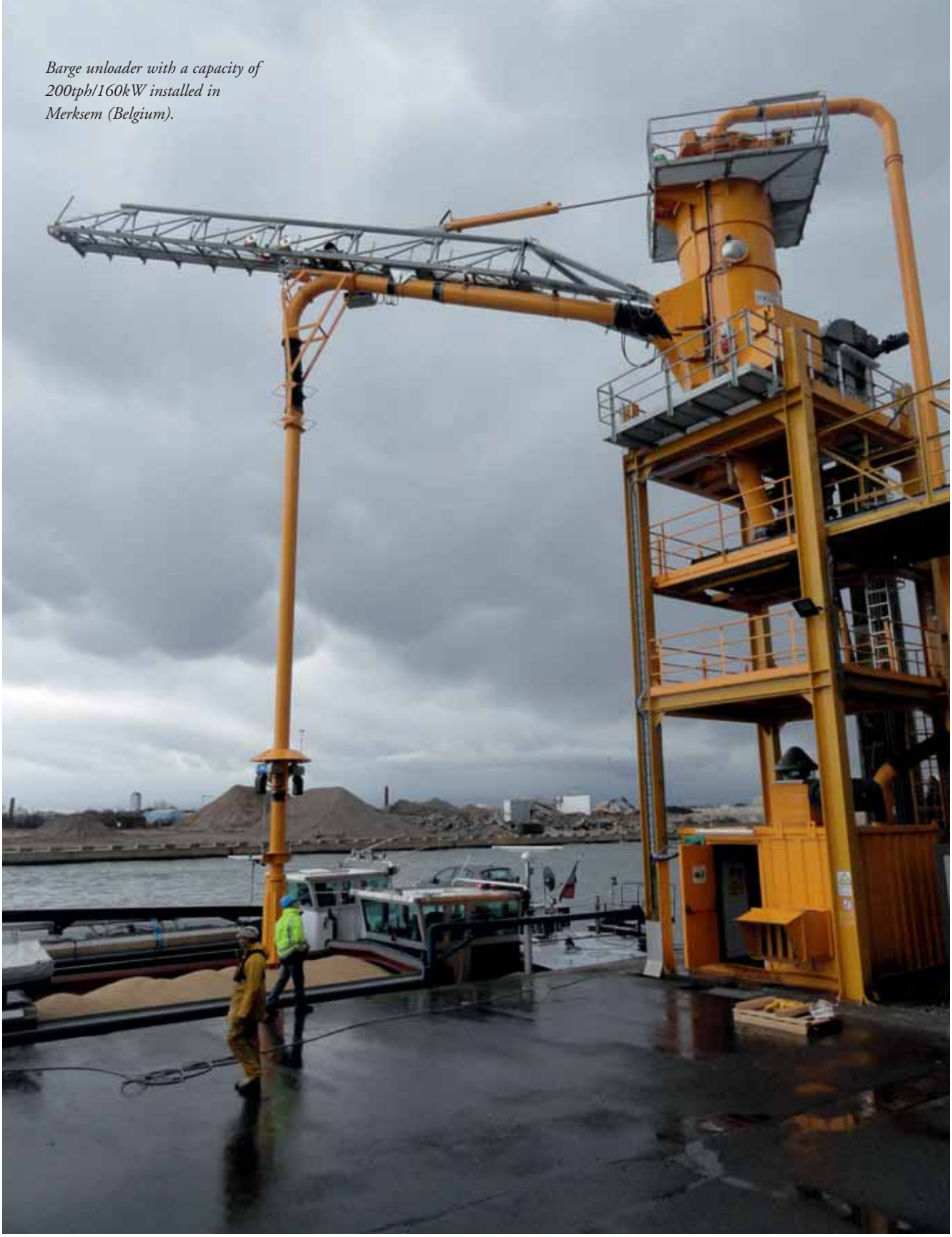
Every year changes are minor but VIGAN constantly innovates in order to:

- reduce the operational costs of the equipment, such as power consumption for instance;
- increase the shelf life of the components;
- favour environment, safety and operator working conditions; and
- improve its technological know-how and productivity in engineering and manufacturing.

Several technological changes have been made during the last years to remain competitive.

VIGAN is using the latest technologies for low energy consumption (recent figures down to less than 0.6kWh/t): for instance, the turbo blower, with direct drive, is controlled by a frequency inverter (also called speed variator) that reduces power consumption by around 25% in comparison with traditional systems.

Other technical improvements include the reinforcement of the piping, made from hard materials like TRITEN (hardness over 700 HB) and HARDOX 450 (hardness of 450 HB). Also, the



Barge unloader with a capacity of 200tph/160kW installed in Merksem (Belgium).

elbow is in wear-resistant Ni-Hard cast iron (customers have reported the unloading of more than 7 million tonnes of cargo with the original elbow without any maintenance!).

Environmentally friendly

Moreover, pneumatic CSUs (continuous ship unloaders) are environmentally friendly because the cargo is handled in totally enclosed system from the ship hold to the delivery in trucks, quay side conveyors, wagons, and more.

At the transfer point where some dust could escape into the environment, such as the loading spouts into trucks, special devices are mounted to suck the air/dust and filter it before blowing out into the atmosphere.

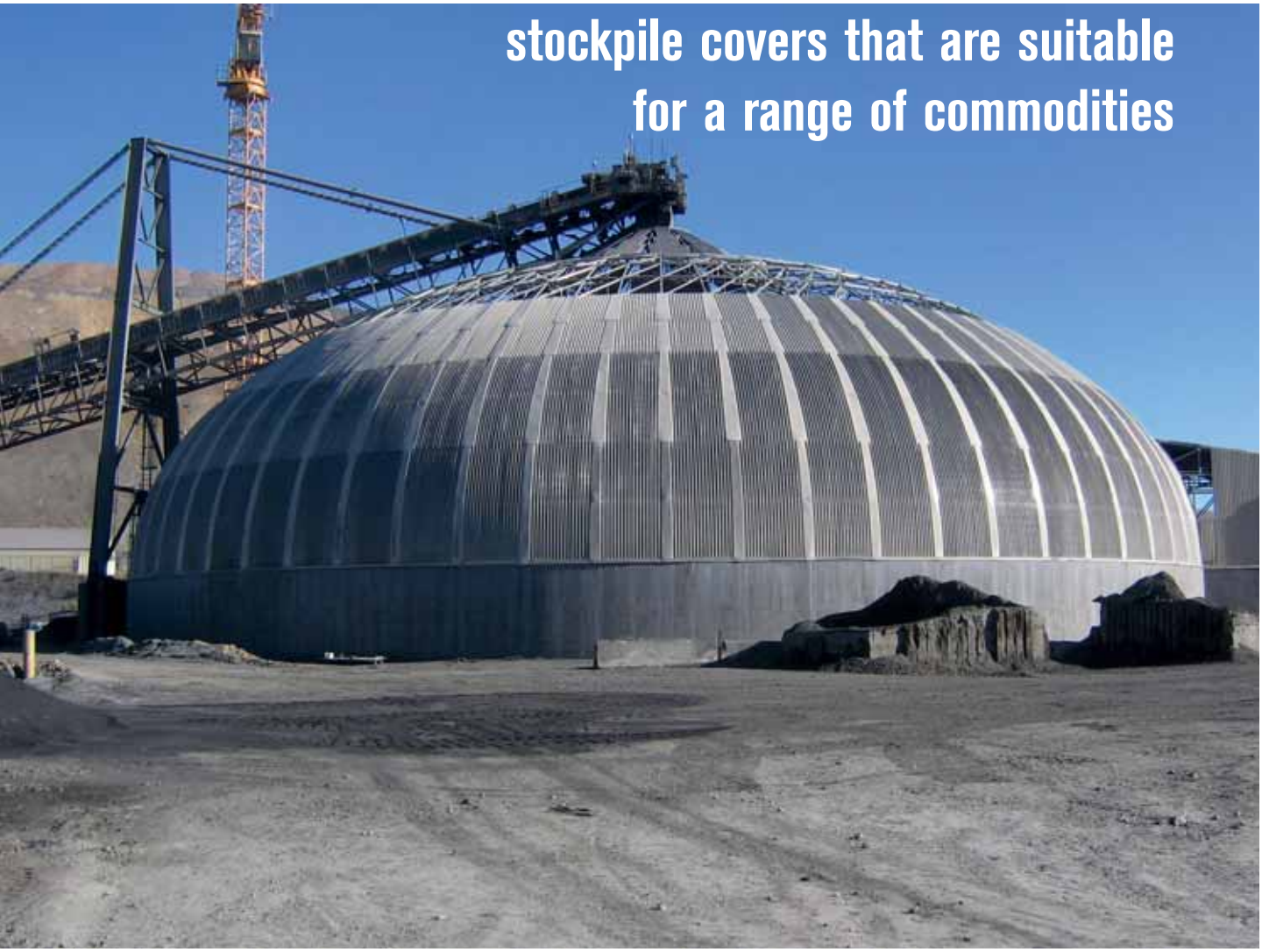
This is one of the reasons why, along the rivers where frequently ecological and neighbour associations are very attentive to the protection of the environment, the pneumatic CSUs continue to have success for discharging barges.

Noise reduction being also a major concern, special techniques have been developed by VIGAN to comply with the most strict regulations.

VIGAN has always been very aware of the need to protect the environment. DCi

Triodetic domes

stockpile covers that are suitable for a range of commodities



Triodetic, based in Arnprior, Ontario, in Canada, designs, manufactures and builds:

- architectural building roofs, walls and entrances;
- ore stockpile enclosures and tank roofs;
- interior and exterior displays and features;
- special applications: waterslides, tensile fabric;
- structures, golf bridges, foundations, towers, solar; and
- frames radar platforms etc.

In 2015, the company is celebrating an astonishing 50th year in business. It owes its success to an innovative jointing system and advanced engineering for tubular structures that allow:

- any structure, shape, span and loading;
- optimized minimum mass design;
- durable materials and finishes (galvanized and stainless steel, aluminium, composites, and factory-applied finishes); and
- fast delivery and construction in any location.

Throughout its 50 years, Triodetic has been recognized internationally for its expertise in design and construction of space-frames, domes, shell and free-form structures with all products compliant with sustainable building requirements. Triodetic is credited with numerous industry awards and many landmark projects throughout North America, Caribbean, South America, Europe, Africa, Australia & the Pacific, China and the Middle East.

Company profile

Since the 1960s, Triodetic has been an internationally recognized supplier of space frames, geodesic domes, shells, and free-form structures. Triodetic hold numerous patents and trademarks for its technology and all products are supplied in compliance with sustainable building initiatives.

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

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

Biomass storage

Triodetic is proudly involved with biomass domes. When it comes to biomass, it is not an easy material to handle. It comes in many different forms and sizes, it knits together, consolidates

and packs easily, doesn't flow well; it can have a wide range of moisture contents, basic and bulk densities and calorific values. It will freeze; it can contain all manner of contaminants. It is also very dusty, catches fire easily and is self-combustible. With all these factors to think about, Triodetic domes supply a beneficial safe structure for biomass to be stored, according to Paul Janze – Advanced Biomass Consulting Inc.

Concrete storage

Triodetic provides dome structures to store limestone and other cement elements like aggregate; sand, gravel, crushed stone, and slag. In order for the elements to maintain dependable properties, they must be kept in a structure that will contain their chemical composition. Triodetic domes are efficient shapes that provide enough space for the concrete elements to have air ventilation, and keep moisture build up from happening.

Benefits of Triodetic Structures

Reduced structure mass and reduced foundation. Adoption of curvature in structures is a growing trend in building design, not only for visual appeal, but because the design advantaged often

effectively reduces structure mass, material and construction costs. Lightweight frames and structural shells can be more economical than traditional beam-column arrangements. A dome roof, for instance, may require only one third of the steel mass of conventional members. Curvature in structural members and cladding materials has become very economical. Lower mass structures require smaller foundations. The tangible outcome is lower cost and faster construction.

Environmental protection

Control of emission (e.g. dust, odours, seepage) is becoming mandatory in many countries as more stringent environmental

legislation is imposed on many industries. Triodetic provides enclosures to minimize dust, odour and other emissions from granular stockpiles, (e.g. conical, longitudinal, and concentric) and processing facilities (e.g. thickeners, water and waste water tanks and basins).

Functional and affordable

Triodetic assists in evaluation structural arrangements for enclosures, buildings and roofs to best address all physical, financial and time constraints. The company aims to provide cost-effective and state-of-the-art solutions that not only perform as desired for the service life specified, but also are safe to construct and are completed on time and within budget. Triodetic has extensive structural design and construction experience which is available to its customers at all stages of project evaluation and final operation.

Durable materials and protective finishes

Triodetic frames are manufactured in materials appropriate for the desired service life in most industrial environments. Framing

can be fabricated from galvanized steel and aluminium and other non-metallic materials, and a range of protective coating solutions is available.

Environmental benefits

Triodetic recognizes the value and importance of sustainable building design. Its commitment to the company where it operates and those where its structures are built and used is demonstrated in its design, fabrication processes, products supplied and installation techniques employed.

The following summary identifies the environmental advantages offered by Triodetic technology:

- 60–90% recycled raw materials and 100% recycling of scrap and waste;
- up to 60% less material consumption through advanced structural design;
- reduced energy consumption in fabrication;
- non-polluting fabrication;
- up to 50% reduction in freight;
- reduced project duration;
- minimal disruption to building site;
- work provided for local unemployed;
- reduce site hazards;
- no site painting; and
- 100% product re-use.

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DF has a proven track record in delivering innovative turnkey projects for mineral processing and bulk material handling.

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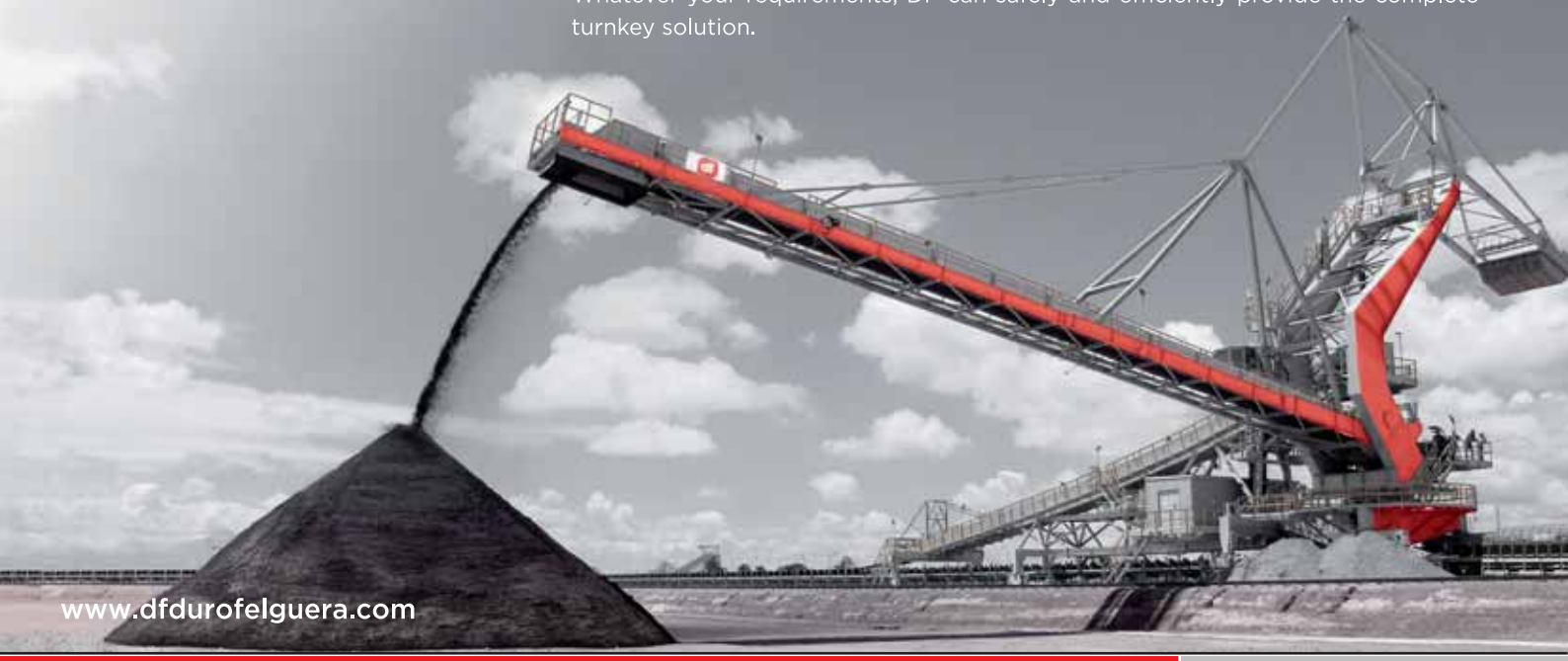

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Duro Felguera's successful work at Roy Hill nears completion

Main car dumper module being lowered onto the heavy lift vessel.

Duro Felguera (DF) specializes in delivering high quality turnkey projects in the fields of mineral processing and material handling. With over 150 years' experience and an extensive list of global references, DF is capable of developing all stages of a project, from feasibility and engineering studies to start-up and operation of the EPC installations DF delivers.

DF is headquartered in Northern Spain and has been listed on the Madrid stock exchange since 1905. In recent years, DF has focused on the international market, taking advantage of its worldwide presence while maintaining its competitive price level. Three new subsidiaries have recently been opened in key areas of the world to take care of new clients and markets: the Middle East, Indonesia and Australia.

Duro Felguera Australia Pty Ltd is DF's Australian registered entity. The company was initially established in 2013 to deliver the Roy Hill project, which is now in the final stages of execution. The Australian entity is now also focused on supplying mineral processing and material handling solutions to mining companies on a turnkey basis. In addition, the Australian DF entity has an important role in assisting DF projects in other parts of the world with an Australian interest.

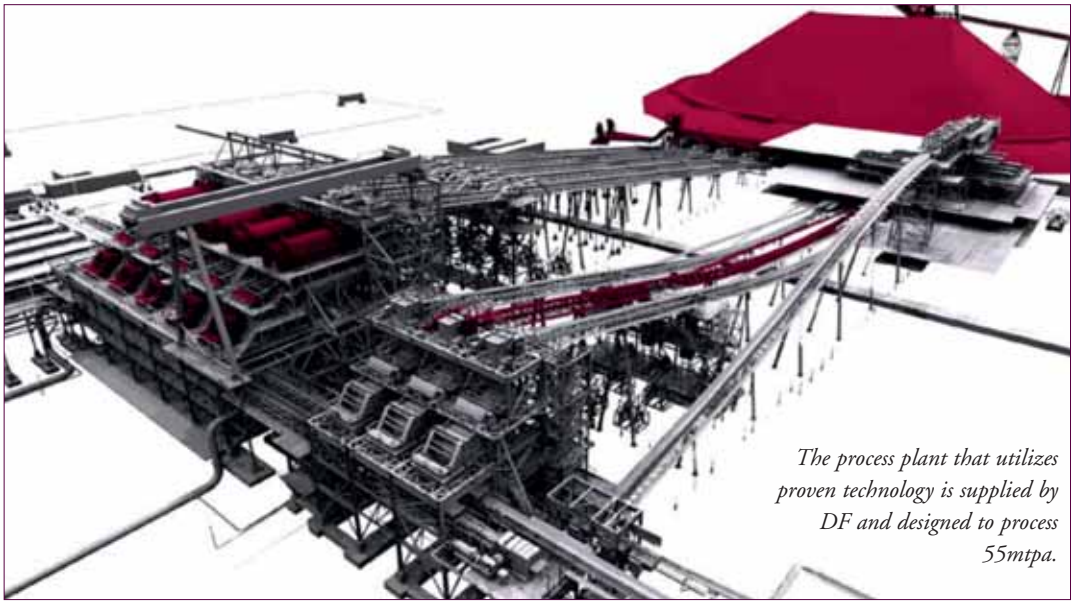
It was based on these merits that in August 2013 DF was awarded a $1.47 billion EPC (engineering, procurement and construction) contract for the process plant and stockyards (mine and port) for the Roy Hill iron ore project. Since then DF has been instrumental in the delivery and execution of the project.

The purpose-built process plant for Roy Hill, located 115km north of Newman in Western Australia, is world class and will utilize low risk, proven technology to process 55mtpa (million

tonnes per annum) of iron ore.

The process plant uses a wet processing and beneficiating model, since approximately 70% of the ore is below the water table, which would be difficult to handle in a dry crushing and screening process.

At the mine stockyard, two stackers will stack lump and fines ore at a rate of 5,600tph (tonnes per hour).



The process plant that utilizes proven technology is supplied by DF and designed to process 55mtpa.

A bucketwheel reclaimer capable of handling 16,700tph will transfer ore to the train load out facility that can load a 232 ore wagon train in 160 minutes.

The train load out uses state-of-the-art technology and is controlled from the Roy Hill Remote Operations Centre (ROC) in Perth.

Once at the port stockyard in Port Hedland, 344km away, the trains are unloaded using a 12,900tph rotary car dumper, which tips two ore cars at a time in 88-second cycles.

Ore is then distributed via four conveyors, which can directly feed either of the two 14,500tph ROC controlled rail mounted stackers, or a lump re-screening plant and out-loading conveyor, bypassing the stockpiles to be directly loaded onto a ship.

If not fed direct to a ship, ore will be reclaimed by a 16,700tph bucketwheel reclaimer before being conveyed 3.6km to an 800m-long berth and a 12,700tph shiploader.

The mine and port stockyards have been carefully designed and modelled to deliver the required capacity and maintain product quality to ensure that Roy Hill is able to achieve its 55mtpa capacity with a high level of confidence. Both at the mine and port, regular sampling of the ore is conducted in fully automated laboratories to ensure strict quality consistency is maintained.

All major equipment has been engineered, procured and supplied. All nine material handling machines were fully pre-assembled and test run prior to being shipped using heavy lift vessels. The focus is thus now on the construction and final stages of the project.

The Roy Hill project has proved once again that experience, talent, quality and the capacity to adapt to market changes and fluctuations is what has made DF a company of international repute in the highly regarded field of turnkey projects. DCi

Main car dumper module, weighing 400 tonnes, being lifted onto the heavy lift vessel.

Jay Venter

Big bags repacking to bulk: quick, clean and ergonomic installation by TBMA

One of the recent developments in the bulk market is that more and more clients are in need of special and custom-built solutions for a reasonable price. TBMA Europe can rely on 50 years of experience and a wide range of components which can be combined into a custom-built solution such as a repacking installation for big bags to bulk.

The installation, developed by TBMA, had to meet requirements such as a high capacity, suitable for different products and high ergonomic and hygienic requirements. The developed big bag installation can handle a large variety of big bags with or without outlet spout. Almost all known big bag sizes and 'single use' bags can be processed as well.

TBMA's discharge station can handle two big bags at the same time. It consists of two discharge hoppers, two small transverse screws which move the product into the central screw conveyor, and a dust extraction unit which brings back the extracted product into the screw. In this way all the product is processed neatly and there is hardly any waste stream.

This installation offers very efficient discharge hoppers to unload big bags filled with difficult products. The hoppers are engineered with steep walls and a vibration motor to ensure that even the most difficult products can easily be unloaded.

A flexible membrane with a smaller opening than the diameter of the big bag is mounted at the upper side of the discharge hopper, joining this membrane seamlessly around the big bag when it is being placed in the hopper. Then the bags can securely be opened through the trapdoor in the hopper. 'Single-use' bags or bags without outlet spout are opened with a special three-sided knife which cuts a large incision in the bottom.

Both hoppers are connected to an integrated filter system. The installation is also equipped with a Moduflex loading chute. Together they ensure that the amount of dust escaping during the opening and emptying of the big bags is being reduced to a minimum.

The entire installation is assembled on a framework, according to the 'plug-and-play' concept. In this way a forklift can easily move the frame and make room for other handling operations, if needed. Depending on the type of product, this installation can discharge well over 20 big bags per hour.

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BULK-FLOW develops mega bulk bag: Mega-Sack

BULK-FLOW was founded by bulk packaging experts, most of them patent holders, that together represent dozens of years of expertise in the bulk packaging field, combined with the market experience to drive specific bulk packaging solutions needed by the industry.

The company manufactures container liners, big bags and palletizing adhesive systems.

Recently, the company has developed a Mega-FIBC, capable of loading four to eight metric tonnes, depending on the bulk density of the product.

BULK-FLOW's Mega-Sack is ideal for large shipping operations that require a lot of bagging or operations that need significant storage capability without silos.

Mega-Sack

Reduces packaging and handling costs in high volume operations

BULK-FLOW's Mega-Sack is ideal for large shipping operations that require a lot of bagging or operations that need significant storage capability without silos.

Reduces packaging costs in terms of cost per metric tonne

- Reduces handling costs by eliminating handling intensive smaller bagging operations.
- Increases productivity in terms of ability to bag more product per hour.
- Reduces warehousing costs by decreasing the amount of handling per metric tonne.
- Easy and economic way to storage large amounts of product.

UV resistant fabric allows for long-term outside storage

- Made of UV-resistant fabric that allows long-term outside storage.
- Special fabric strength minimizes bulging.
- Can be fitted with inner liners for humidity and water protection.

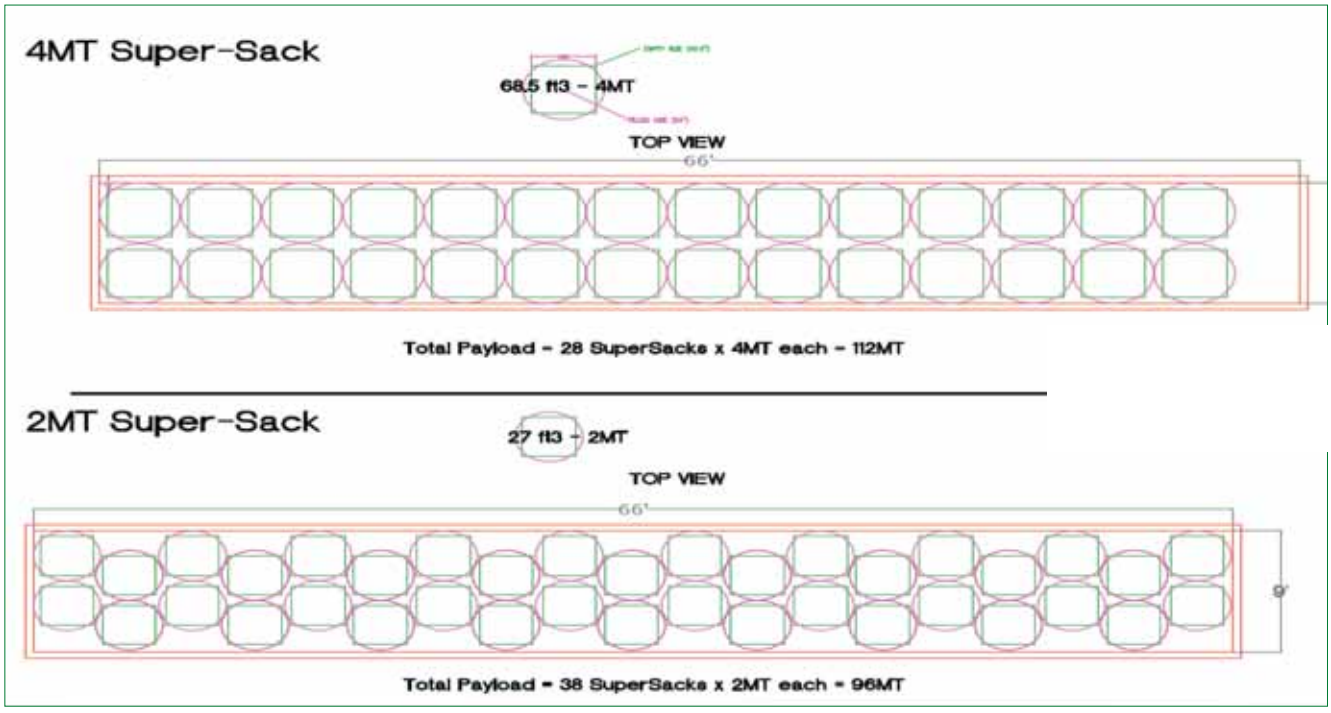
Rail gondola Mega-Sacks

BULK-FLOW is also developing a new product that is still in the internal testing phase. Mega-Sacks, with size-specific applications, have been developed as well to fit into alternative means of transportation. This is the case of the 4MT Mega-Sack, custom sized and engineered to be transported in rail gondolas.

Rail gondolas can be a cost-effective alternative to rail hopper cards that at times become unavailable due to seasonal high demand.

Additional benefits of the 4MT Mega-Sack

- Opens new alternative logistics channels for moving bagged bulk.
- Custom sized to optimize payload in a rail gondola.
- 4MT size is within most forklifts' handling capabilities (10,000 Lbs)



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Portopac: new mobile packaging solution from Statec Binder

Assembled Portopac bag filling system at Statec Binder workshop.

Bag filling spout with transport conveyor and sewing machine.

STATEC BINDER GmbH, a specialist in packaging and palletizing equipment, is a globally successful and respected partner for flexible solutions in packaging and palletizing of bulk goods of all types, and boasts a long tradition.

For more than 35 years the company, with headquarters in Gleisdorf, Austria, near Graz, has successfully implemented its experience in packaging technology worldwide.

STATEC BINDER develops, designs and manufactures all of its machinery in its ISO 9001-certified plant in Gleisdorf, Austria. Today, some 1,000 packaging machines have been shipped and successfully installed around the world and to the complete satisfaction of clients.

Despite its location inland, STATEC BINDER has always built and shipped packaging machines for all the major ports around the world. And the company used this approach in designing its latest packaging system: a stand-alone mobile packaging unit consisting of two 20-foot containers placed on top of each other.

In many of the world's ports, companies often need a temporary packaging unit when a ship docks in order to package products being unloaded. As a result, the packaging units must function entirely autonomously to ensure that they are available on-call at ports and can be put into operation. For this reason, the packaging unit comprises two 20-foot containers placed one on top of the other. The upper part contains the intake hopper and the two automatic net weighing scales to weigh the product. The lower part contains the filling clamp as well as the outfeed conveyor belt with the bag closing machine. This is typically a sewing machine. In addition, the electrical cabinet and touch panel to operate the system is located here.

Additionally, in a separate part of the lower container there is a diesel generator for power supply and a compressor for supplying compressed air. This allows the packaging line to run independently of an existing electrical and compressed air supply. STATEC BINDER has thus created for clients a stand-alone packaging solution that is fast and can be used in any place and at any time without the infrastructure otherwise required.

All parts that come into contact with the product are made of stainless steel. All the other steel parts are sandblasted and coated with a primer coating and a top coating suitable for use at ports.

The Portopac packaging unit can be equipped with an automatic net weighing scale with gravity dosing, belt dosing or screw dosing and is therefore suitable for all kinds of powder, crystalline and granulated products.

After use, the containers can be closed at any time, transported and stored until they are needed again.

In addition, the packaging system does not need to be packed specially for transport on land or on the high seas, because it is already made of two containers that are part of the packaging system.

Bag filling line with operator panel in bottom container.

Bottom container with diesel generator and compressor for instrument air.

Top container with infeed chute and automatic duplex net weigher.

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UV resistance of FIBC – challenges and responses


Image © NNZ bv

Big bags are most commonly made of woven polypropylene. This is a polymer that, like other materials, is damaged by exposure to sunlight over time. This degradation process can ultimately cause the fabric to tear when exposed to strain and put both content and personnel at risk. Through the use of UV stabilizers in the polymer and the proper handling of FIBCs, the risk of photochemical damage can luckily be reduced to a minimum. It is however vital that FIBCs are covered or stored away from the sunlight during usage, transport and storage.

Standardized tests to demonstrate the UV resistance of FIBC have been in existence since 1989. The UV resistance test according to Annex A of ISO 21898:2004 is currently the prevailing standard. However, standardized test conditions inevitably vary from the real-life conditions that FIBCs are exposed to during use. Not only does the spectrum and intensity of UV radiation vary in different climate zones, but also other weather impacts like temperature, humidity or frost play a role. Furthermore, substances in contact with the polymer, like pigments and even the goods filled into the FIBC, may also have an influence on the UV stability of the bag.

The combination of these factors will altogether influence the speed of photochemical degradation of the polymer fabric of FIBCs in real life. Consequently, voices from the industry are beginning to question how well the laboratory tests set out in ISO 21898:2004 correlate to real-life conditions and can predict the life-time of FIBCs used in different climate zones around the world.

Ultraviolet light is harmful to plastics because it attacks the carbon bonds in the chemical structure, releasing free radicals which in turn react with oxygen in the air, destabilizing the plastics' chemical structure and degrading it.

The most obvious mitigator of degradation of FIBCs due to UV radiation and other weather impacts is to physically protect the big bags from the elements. Although FIBC handling instructions routinely advise against outdoor exposure, this is not always practical for users and certainly not controllable by FIBC producers and traders.

Chemical alternatives are available and widely used to help polymers like polypropylene maintain their properties longer against degradation through environmental influences. To counter the harmful effects of UV light on FIBC, two main methods are used: UV light absorbers, e.g. Triazine or Benzotriaole, and light stabilizers, i.e. HALS (Hindered Amine Light Stabilizers). These additives, which absorb or stabilize UV light respectively, are often introduced to the base formula for the polypropylene material out of which the FIBC are woven. Both methods can retard the damaging effects of UV light but cannot stop it altogether.

Either way, photochemical degradation remains a reality that must be taken into consideration. The question becomes how well we can predict the lifespan of the FIBC given that it will be exposed to environmental stress. This is the job of the testing system.

The aim of testing is to recreate environmental strains in a controlled laboratory environment and examine the durability of samples against a battery of tests. In this way, accelerated laboratory UV tests allow quality control on FIBC without performing extended outdoor tests. Ideally, the results confirm the load-bearing capacity of the FIBC upon which decisions on usage of the FIBC are based.

Specific mention of UV resistance requirements emerged in European regulations for polypropylene sacks used for transporting food aid already in 1989. Since then, the governing international regulation is the UV resistance Annex to ISO 21898:2004. The regulation lays down rules for laboratory tests using UV B lamps (based on ASTM – G154-98). In a cycle that alternatively subjects samples to eight hours of UV light at 60°C at a time and then four hours of condensation at 50°C at a time for at least 200 hours, the weathering strain on FIBC is simulated. Once the exposure is complete, the samples are to be tested for their breaking force and the elongation of the fibre at the breaking point. The results are then compared to a control sample.

The UV resistance tests under ISO 21898:2004 give a common set of accelerated laboratory testing procedures that

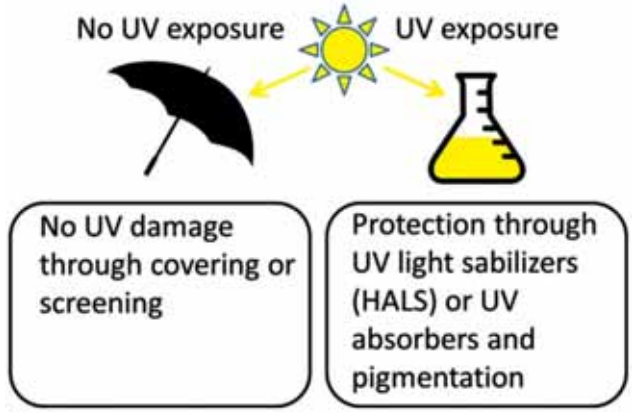

Figure a: Protection against photochemical degradation.

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Figure b: Laboratory testing equipment used to simulate weathering exposure. Image © IBE-BVI Group

are repeatable and require the results of the tests to be expressed in terms that are comparable. Still, the International Standards Organization concedes that "a number of factors of uncertainty are inherent in the procedure, so comparisons should be available between the method used and exposures in the environment in which the product is to be used."

This caveat in the preamble of Annex A of ISO 21898:2004 hits at a central shortcoming of the accelerated UV resistance test with UV-B lamps at 60° – it does not adequately represent the real outdoor conditions. Therefore we cannot predict how well that correlates to real life exposure to light, temperature and other environmental influences in different climates form the arctic to the tropics where FIBCs are being used.

Committed to providing a forum to discuss and inform about known and emerging topics affecting the FIBC community, EFIBCA (European Flexible Intermediate Bulk Container Association) hosted a UV Workshop in October 2014 for its members. A panel of experts spoke to the assembly about the technical, legal and practical aspects of photochemical degradation and weathering. EFIBCA UV Workshop delegates reached consensus that improved life-time estimations of FIBCs are of vital interest for the industry. That would not only help mitigate UV-related risks, but also allow cost savings through better adapted polymer formulations and more specific handling advice.

"We debated a wide range of UV-related issues, from the influence of various factors on UV stability to the shortcomings of the UV testing standards, but the group decided that understanding the correlation between different test standards and outdoor weathering is central to progress in other areas," says Dr Amir Samadijavan, EFIBCA Vice President for Technical Matters. EFIBCA has therefore formed a UV experts group that will further investigate on the correlation between accelerated laboratory tests and real-life weathering of FIBCs.

EFIBCA has been dedicated to promoting end-user safety and the correct handling and use of FIBC since the beginning. Initiatives for the education of end users like the EFIBCA Question and Answers brochure promote the safe and correct use of FIBC. Further, the EFIBCA-Q Quality Pledge puts forward all regulation and quality standards pertinent for FIBC to which subscribers adhere. Quality and Safety Management will be a central theme at the upcoming EFIBCA Open Meeting on 30 September 2015 in Barcelona, Spain.

'Force majeure' declarations trigger raw material shortage and send price shocks down the supply chain

The strong demand for FIBC over the last year as evidenced by the increasing volumes of FIBC imports into the EU, is a trend echoed for many other packaging products across the plastics packaging industry and which many industry experts expect to continue.

This positive development on the demand side is under threat, however, due to a raw materials shortage. The industry is currently observing a spate of major raw material suppliers reneging on their contractual obligations towards plastics packaging manufacturers, reports The German Association for Plastics Packaging and films 'IK' and many other trade associations in the plastics processing industries.

In some cases, confirmed deliveries have to be cancelled by the supplier altogether. When deliveries are made, they are coupled with significant price rises. As internal reserves deplete, this combination of steady demand with an acute and abrupt drop of supply sets the stage for near-term price shocks.

The reason for the sudden shortage is a string of force majeure declarations by some of the primary polymer suppliers to the European market. This further aggravates the already stiff regional competition for raw material supplies between Europe, Asia, Africa or Central and South America, putting upward Pressure on prices.

Force majeure is a standard yet restrictive clause found in supply contracts which exempts companies from fulfilling their contractual obligations due to irresistible external forces such as an act of God or act of parliament. The *force majeure* cases registered by raw materials produces in Europe lack detailed information and leave many open questions. The IK association points out that merely claiming the occurrence of 'incident' or 'technical problems' is generally not sufficient for a *force majeure* claim. Such causes lie solely within the area of risk of the raw material supplier.

Irrespective of the causes for the current volatility of the raw material market, the shortages and sky-rocketing prices put FIBC manufacturers and suppliers under considerable strain. Raw materials can account for 60–70% of costs for these often small and medium-sized businesses. The impact of the unexpected, upward-spiralling price is potentially existence threatening for many companies and will be felt throughout the supply chain. Plastics converters will be left little choice but to pass shortage-driven costs down the customer chain.

About EFIBCA

Founded in 1983, the European Flexible Intermediate Bulk Container Association (EFIBCA) represents the interests of FIBC manufacturers, distributors and material suppliers towards authorities, regulatory bodies, the public and other institutions connected with the FIBC business.

EFIBCA offers members a platform for exchange and cooperation on quality, safety and regulatory issues and provides guidance for the FIBC user.

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