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FEATURES

- Global Cement Trades
- Cement Handling
- Scandinavian Focus
- Bagging
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MAY 2012 issue

featuring...

Favourable steam coal imports trend

Imports of dry bulk commodities into numerous countries around the world are still on an upwards trend. Positive signs are clearly visible among industrial commodity movements, while stronger agricultural products trade is also a noticeable feature. Restraining influences are prominent, but solid overall growth continues.

Recession or near-recession in Europe, and a slowdown in China, persist. Yet the global economic outlook is not completely negative. The USA appears to be picking up modestly, while Japan may benefit from a bounce-back after last year's severe disruptions. A recent (mid-April) IMF report suggested that global GDP growth, after slowing further to 3.5% in 2012, from 3.9% in the previous twelve months, could slightly accelerate to 4.1% in 2013.

Coal

Prospects for seaborne coal trade point to expansion this year and further ahead. Steam coal imports into Asia are a particular focus of attention, because of clear indications that several large buyers will need extra quantities for new and existing powers stations. Table 1 below shows estimated higher volumes in China, India, and other countries during 2012.

A very positive forecast was published recently by Australia's Bureau of Resources and Energy Economics. The calculations suggest that global coal trade (steam and coking coal, including land movements, but mostly seaborne) could increase by 6% this year. From 1,107mt (million tonnes) in 2011, the total is expected to rise to 1,169mt, mainly reflecting higher Asian imports.

Iron ore

Contrasting steel industry performances among the main importers of raw materials have been evident in the past few months. Pig iron production figures for the 2012 first quarter showed China's output rising by 5% compared with the same period of last year, to 165.2mt. More significantly, this volume was also 14% higher than seen in last year's depressed final quarter.

South Korea has maintained a very strong 11mt quarterly pig iron production volume. But in other key iron ore importing areas, output has weakened. In the European Union, January–March 2012 production was 4% below the same quarter a year ago, at 23.3mt. Japan's volume, similarly, was 4% down at 20.0mt. These outcomes have been reflected in iron ore import demand.

Grain

The outlook for grain trade from mid-2012 onwards is still hazy. Summer harvests in northern hemisphere importing countries will have a big impact on seaborne trade movements. Predictions for these harvests are not yet reliable, because unpredictable weather through the remainder of the crop growing season and during harvesting will determine the final result.

Estimates of global wheat and coarse grains trade, in the current crop year ending June, show a notable increase of 7%, the largest rise for several years. According to the International Grains Council's latest (end-April) update, after marginal 1% growth in 2010/11, the total could expand from 243mt, to 260mt in 2011/12. Higher imports into China, the Middle East area, sub-Saharan Africa and Mexico are key influences, accompanied by growth elsewhere.

Minor bulks

Agricultural products and related commodities form a large part of the minor bulks trade sector. Seaborne movements of oilseeds (excluding soyabeans) and meal, rice, sugar and fertilizers are estimated at about 300mt last year, a 4% increase. Tentative signs point to slower overall growth in 2012, partly reflecting weaker sugar import demand.

Bulk carrier fleet

Fleet expansion in the Capesize (100,000dwt and over) bulk carrier sector is expected to slacken this year, but probably will remain very rapid. As shown in table 2, newbuilding deliveries are likely to decrease, while scrapping could be higher. After three years when an average 20% annual fleet enlargement was seen, including 18% growth in 2011, the current year's advance may decelerate to about 12%.

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

	2007	2008	2009	2010	2011	2012*
Japan	106.2	111.0	96.2	107.9	106.6	112.0
South Korea	71.0	80.0	87.0	95.2	103.2	105.0
Taiwan	55.7	54.7	49.2	53.2	56.0	58.0
China	44.8	34.0	92.1	119.0	138.4	150.0
India	29.0	35.0	46.0	70.0	90.0	95.0
Total of above	**306.7**	**314.7**	**370.5**	**445.3**	**494.2**	**520.0**

source: various & BSA estimates **forecast*

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

	2007	2008	2009	2010	2011	2012*
Newbuilding deliveries	10.4	8.6	21.0	38.4	45.7	42.0
Scrapping (sales)	0.0	2.2	1.4	2.7	10.5	14.0
Losses	0.0	0.0	0.0	0.2	0.0	0.0
Plus/minus adjustments	0.0	5.5	6.9	3.6	3.2	1.0
Fleet at end of year	**131.6**	**143.5**	**170.0**	**209.1**	**247.5**	**276.5**
% change from previous year-end	+8.5	+9.0	+18.5	+23.0	+18.3	+11.7

source: Clarksons (historical data) & BSA 2012 forecasts **forecast*

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South America's grain and

Reduced exports of grain and soya from South America are predicted in 2012. After increasing again to a record 125mt (million tonnes) last year, two-thirds higher than the volume seen a decade earlier, this year's total could be lower, reflecting the severe impact on crops of drought and excessive heat during the growing period.

Calculations prepared in April are still provisional. Forecasts based on harvests under way in Brazil and Argentina are likely to change, as results become clearer. Currently, overall 2012 grain and soya exports are expected to be over 5mt or 4% below the previous year's volume, and there seems to be potential for this estimate to be revised downwards.

Global import demand for soyabeans and meal remains buoyant, while corn and wheat import demand is expanding. But other key export suppliers are competing strongly for markets, and South America's export availability is reduced. Consequently, activity in Brazil's and Argentina's loading ports could slacken through the main export season, which has already begun, and some disadvantages for bulk carrier employment could ensue.

Exports overview

During 2012 exports of wheat, corn and other coarse grains, plus soyabeans and meal, from Argentina and Brazil, are expected to total 119.4mt, as shown in the table. This estimate is 5.3mt or 4% below the 2011 total. Most of the predicted weakness is concentrated in the soya component.

Several separate US Dept of Agriculture forecasts published in mid-April have been incorporated in this overview of prospects. Slightly differing marketing year periods are used for the various cereals and oilseeds exports in the two main South American supplying countries. These marketing period variations mainly reflect differences in the timing of harvests.

There are two particularly notable changes envisaged in 2012, compared with last year. Firstly, lower corn exports from Argentina. Secondly, much larger reductions in soyabeans and meal shipments from both Argentina and Brazil.

Prospects for wheat and corn

South America's annual cereals and oilseeds production cycle starts with wheat in Argentina. The Argentine wheat harvest completed in early 2012 was about 10% lower than the preceding crop, at 14.5mt despite a larger area cultivated. Persistent early-season dry weather adversely affected yields. But exports in the marketing year ending November 2012 could be maintained at the previous year's 9.5mt.

Corn and sorghum production in Argentina's harvests this year is estimated at 25.5mt, about 9% lower. Benefits from a marginally larger crop area were more than offset by the sharply negative effect of inadequate rainfall. In the marketing year ending February 2013, exports are forecast at 15.8mt (mostly

SOUTH AMERICAN GRAIN AND SOYA EXPORTS (MILLION TONNES)

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

	2007	2008	2009	2010	2011	2012
Wheat	10.7	12.0	7.2	6.3	12.0	11.5
Corn and sorghum	27.2	23.8	18.5	29.9	26.2	26.3
Soyabeans	35.9	36.3	31.5	42.9	44.2	38.2
Soyameal	40.5	37.1	33.5	42.5	42.3	43.4
Total	**114.3**	**109.2**	**90.7**	**121.6**	**124.7**	**119.4**
% change from previous year	+22.2	–4.5	–16.9	+34.0	+2.5	–4.2

source: US Dept of Agriculture (11 April 2012) & Bulk Shipping Analysis **forecast*

soya exports weaken

consisting of 14.0mt corn), a 2m or 13% reduction.

In the past few years, wheat and corn sales from Brazil became a more visible part of the picture. Production of wheat is relatively small, at just under 5–6mt annually, of which exports could be steady at 2mt in 2012. The much larger corn output (derived from two separate crops) is likely to increase by 8% to an estimated 62mt this year. In the marketing period ending March 2013, corn exports could be 2.1mt (25%) higher, at 10.5mt.

Soyabeans and meal outlook

Last year, South America's soyabeans and meals sales to markets around the world edged upwards, by 1mt, to a record high 86.5mt volume. Growth over an entire decade was 72%, a remarkable achievement, amid expanding output, strong competitiveness, and growing global requirements, especially in China. This trend has greatly benefited bulk carrier employment. The 2012 soya export quantity is currently forecast at 81.6mt, a 6% decline.

Although the soyabeans crop area in Brazil is still rising, adverse weather has been a factor during the recent growing season. A *La Niña*-induced drought in the southern states has reduced production by an estimated 13%, to 66mt. Beans and meal exports in the 2012/13 marketing period ending January 2013 could fall by 3.3mt (7%), to 44.9mt according to USDA's calculations.

Argentina's soyabeans harvest also seems set to decline quite sharply by about 8%, to an estimated 45mt, because of excessive heat and abnormally dry weather which affected the crop in the early stages of development. In the marketing year ending March 2013, beans and meal exports could be reduced by 4%, to 36.7mt.

Buoyant global import demand

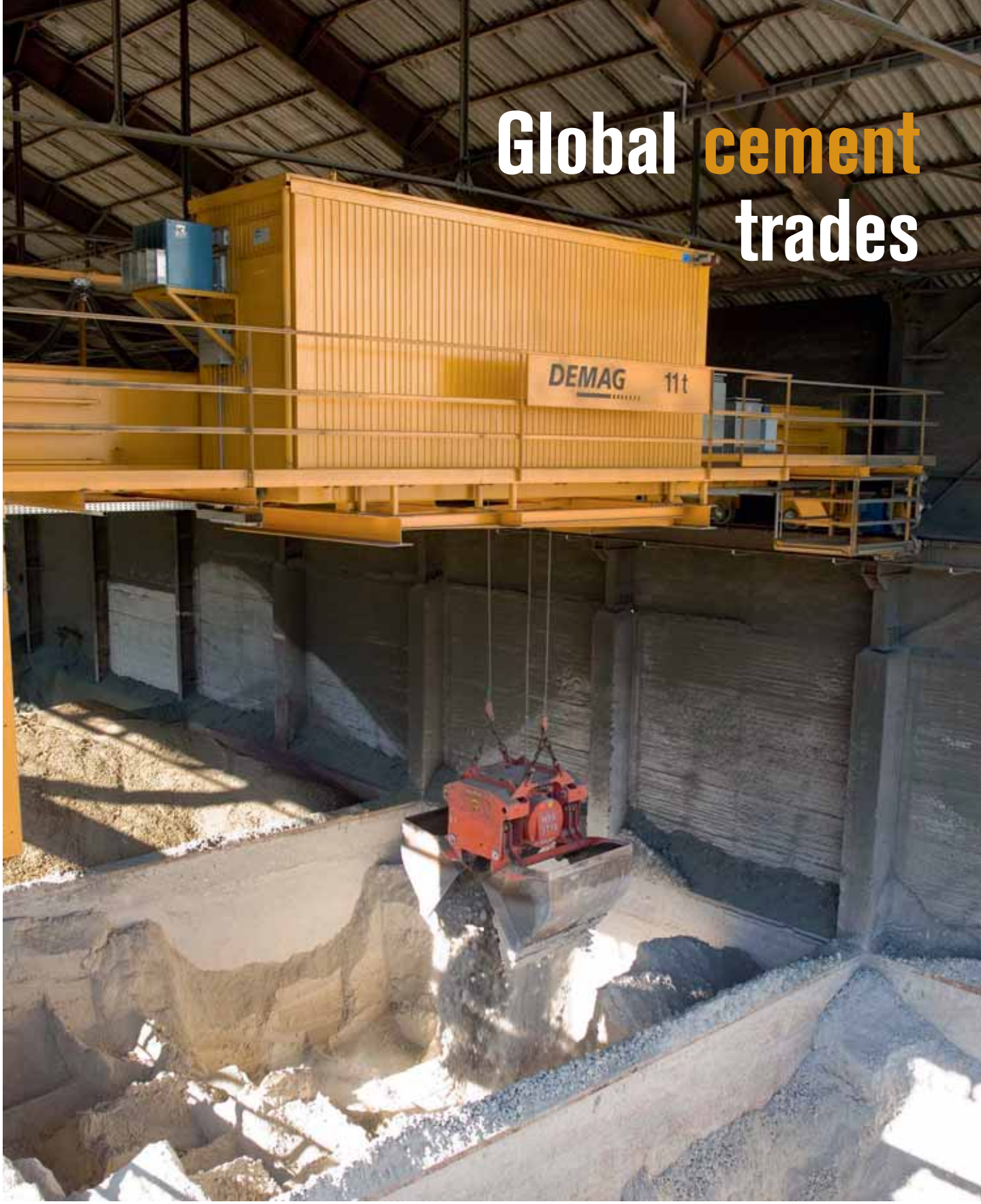
As well as export availability, South America's grain and soya sales to foreign markets this year will be determined by the evolution of global import demand and by competition from other suppliers. Brazil and Argentina usually compete strongly with other countries. Expanding import requirements for wheat, corn and soya in many areas currently provides a favourable market outlook.

Further ahead there are uncertainties, of course, for both wheat and coarse grains, and soyabeans and meal trade. Beyond the 2012 third quarter prospects are less clear. Summer northern hemisphere importing countries' domestic grain harvests, which are not yet accurately predictable, will affect their foreign purchases of both grain and soya.

One especially significant element is China's requirements. The latest signs point to a continued upwards trend in imports of soyabeans into China, which now comprise over one-third of global soya trade. Chinese purchases could reach 55mt this marketing year, and corn purchases, although on a much smaller scale at an estimated 6mt, seem poised for further growth.

Richard Scott

Global cement trades



World cement and steel makers look at India as the next major centre for capacity creation with growth moderating in China under official direction, *writes Kunal Bose*. But before turning to India, a close look at China is called for. The hyper capacity growth of the two construction materials in China for most of the past two decades got much to do with Beijing giving a thrust to building a strong infrastructure that will make the country a 'factory for the world.' Remember the demand made on cement and steel industries while the country was getting ready to host the 2008 Olympics and completing The Three Gorges Dam spanning the Yangtze River. But so compelling was the demand for cement and steel then that makers of the two materials in many cases overlooked their responsibility to restrict carbon dioxide emissions within prescribed limits, did not pay attention to employing environment friendly and state-of-the-art technologies and put product quality at a discount. But China has now started behaving like a responsible global citizen.

The proof is there in the recent pronouncement by the Chinese Ministry of Industry and Information Technology that

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The construction of the Three Gorges Dam in China necessitated huge volumes of cement.

the way forward for the world's largest cement industry will be shutting down "outdated production facilities" responsible for pollution and a stumbling block to technology advancement in a large capacity block. Following a review of technology status of and propensity to cause pollution by individual operating units in the Chinese cement industry, the Ministry has mandated the elimination of 250mt (million tonne) of capacity by 2015. Alongside, CO_2 emissions per unit of industrial value of the commodity will have to be brought down by 17%. China industry watchers are all full of praise for the Ministry move. At the same time, they remain doubtful if the edict could be implemented in full. Such is the corruption level at the province level where politicians and bureaucrats have mastered the art of asserting their independence without offending Beijing that many cement manufacturers guilty of environment pollution will manage to escape the official dragnet. In fact, it is because of the liberty that industry can take at provincial level by greasing the palms of politicians and bureaucrats that China's progress in dismantling polluting and energy inefficient archaic steel mills falls way short of the target. The same can happen with cement.

In yet another respect, China is trying to do with cement some years after it saw the merits in consolidating steel capacity. According to the twelfth five-year plan for the building materials industry, the largest ten Chinese cement companies should take actions for them to account for 35% of the national output by 2015 compared with about the present 25%. As for steel, Beijing wants the first ten to own 70% of the industry's capacity from less than 50% now. Capacity consolidation leads to economies of scale as it creates ideal condition to cut costs and growth through the organic route. With China rationing power supply and simultaneously charging more for electricity to energy intensive industries like cement, steel and aluminium, manufacturing units are desperate to cut costs. Capacity consolidation facilitating introduction of power saving manufacturing processes will be of major help to cement mills which in less than a year have seen costs spiralling to record highs. Retail cement prices have risen to over 400 yuan ($64) a tonne in less than a year.

Interestingly, while Chinese cement output grew 11.7% to 2.09 billion tonnes in 2011, investment in new capacity building dropped 8.3% year-on-year to 143.9 billion yuan for the first time in five years. Investment slide comes in the wake of government policy reorientation to curb speculative investment in real estate. Where then is the Chinese cement industry heading? Official papers show that domestic demand for the building material will be growing annually from here at a much slower pace of 3–4% to reach 2.2bn tonnes by 2015. It is noticeable that China, as it goes forward, will be making its economy less reliant on fixed asset investment and more on technologies, services and consumption. Some rapid fall in property prices will confirm the success of speculation discouraging steps like barring individuals from buying a third dwelling unit and obliging them to make much higher down payments for property purchases. At the same time, cement makers will be deriving some solace that China is settling down to single digit growth sparing itself the much feared hard-landing and development commitment of the country's interiors and western region remains intact. When growth slows down, expect the country's cement equipment makers to scout for orders in emerging and developing countries for building plants.

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For example, the state owned China National Materials Group Corporation (also known as Sinoma) has recently built a 6mt cement plant at an investment of over $1 billion for a Nigerian group at Ibese in southwest Nigeria's Ogun state. The biggest cement factory in sub-Saharan Africa will make Nigeria an exporter of the building material. The Nigerian work that Sinoma has done is more than a business deal. This and also many of its other ventures in Africa, including the continent's most disturbed regions are part of the Chinese strategy to spread its spheres of influence.

Euro zone difficulties

In the meantime, the continuing economic difficulties in Euro zone and US failures to gain any significant growth traction has led research group IHS to say that global construction spending this year will grow at a somewhat tepid pace of 4.9%. No one is ruling out the possibility of revival of sovereign debt problem in some parts of Euro zone leading to a mild recession. Hasn't investment guru George Soros said that the "Euro crisis is getting worse. It's not over yet, and it is going in the wrong direction." That will prove to be hurtful for the construction industry and therefore, for cement demand. IHS says in its *Global Construction Outlook* report that construction spending will grow at a compound annual rate of 4.7% till 2015 to return to moderately strong growth thereafter. But expect some large use of cement as the Panama Canal is expanded, Japan and New Zealand get along with reconstruction called for by earthquake damage, China remains committed to building a nationwide strong infrastructure and countries in the Middle East, Europe and the US create new large sports venues.

The common wisdom in the world cement industry is that future capacity and demand growth will come from emerging countries like India, Russia and Brazil and developing countries in Africa and South America. In all such places, governments are putting emphasis on infrastructure development as urbanization gains in pace and *per capita* income rises. All this translates into incremental demand for cement and other construction materials. A Delhi-based official of Cement Manufacturers Association (CMA) says, "India is the world's second largest cement manufacturer in terms of capacity and production. But the capacity difference between the world leader China and India is so huge that we could only aspire to bridge the gap to some extent." The unbridgeable capacity gap in cement and also in steel has occurred mainly due to China stepping out early to build a strong infrastructure to offer logistical support to the manufacturing industry. The chairman of the Steel Authority of India Limited Chandra Sekhar Verma is, however, hopeful about the future. He says, "the proposed $1 trillion investment in strengthening infrastructure during the 12th plan (2012-17), launched this month will generate massive demand for steel and other construction materials, including cement. The challenge now is to create capacity, which is cost effective and incorporates frontier technology, at a rapid pace without getting unsettled by occasional surplus situations."

Indian strides

Take the case of cement. According to 11th plan, India was to have capacity of 298mt by March 2012. However, the attained capacity was 323mt leaving the industry to nurse much idle capacity. In the five-year plan period ended March, the Indian cement industry invested around Rs500bn ($10bn) to create new capacity of 150mt. A Planning Commission official says the country's cement capacity will be ramped up to 479mt by March 2017, the terminal point of the current twelfth five year plan. The basis of projecting such cement capacity growth is the assumption of 9% annual GDP growth — incidentally, India fared this well and better in the recent pre-recession time — and cement and steel demand rise is generally a couple of percentage points ahead of GDP growth rate.

Bharathi Cement, India.

At the same time, there have been periods when cement demand growth sputtered. Like demand rise fell to 4.9% in 2010/11 and further to 3% in 2011/12 after recording an encouraging annual improvement of 10.5% during 2004–10. But as it happens with any commodity, specially the globally traded ones, cement has its cyclical ups and downs. The immediate past president of CMA Vinita Singhania says, "the cement industry is in the midst of a cyclical downturn. While there has been significant capacity expansion, demand growth has slowed." Dark clouds have now, however, started disappearing from the cement industry's horizons. Cement producers are seeing demand improvement, albeit moderately, since February. Capacity use has crossed 80%. The remarkable thing about the Indian cement industry, which still offers much scope for consolidation with a good number of groups owning 2mt to 10mt capacity, is the exercise of production discipline allowing it to pass on incremental costs on account of coal and power mainly but also for other inputs to consumers.

Upward revision of local excise duty also added to the cost of building material in the hands of consumers. Production discipline should continue to be the watchword for the industry in India and also in many other places, including China as consumer demand will take time to catch up with capacity. Take the case of India where capacity by March 2013 will be ahead of demand by close to 100mt. The industry in India has come to a stage where entry barriers for aspiring new players have become high and therefore, capacity expansion has come to rest with the existing groups.

But excess capacity staying with the industry for quite some time is not found to be a deterrent for world cement majors to continue to hunt for mills that may be on sale in India. Of all the foreign cement groups in operation here by way of acquisitions, Holcim has done the best. In quick succession, it acquired ACC

and Ambuja Cements, among the Indian industry leaders and got them seamlessly integrated with Holcim industrial practices. LaFarge, Italcementi and Heidelberg continue to grow their profile in India. Answering a question as to why all of them are still keen to acquire cements assets here in the prevailing situation of overcapacity, industry analyst Rajeev Talwar says, "the World Bank has in a study has put housing shortages at up to 70m residential units. Remember housing in India accounts for 67% of cement demand. Demand from this segment will become stronger in the event of deficiencies in our financial systems are eliminated to create long-term funding opportunities for property developers." Infrastructure has a 13% share in cement use, commercial construction 11% and industrial sector 9%. Foreign cement companies could take the short-term overcapacity blues in their stride and wait for demand surge as large numbers of cement intensive housing and infrastructure projects get launched at regular intervals during the current plan period. Moreover, there are signs of the economy in general looking up with many of the supply side issues getting sorted out. Freight is a major issue with a bulk item like cement and therefore, it is essential in a big country like India that cement capacity is more evenly distributed than now. In fact in the eastern part of the country where many steel mills are located, there is ample scope to make cement using fly ash and slag. Some progress has been made in this direction but a lot more needs to be done.

As cement producer India is several times bigger than Pakistan which has nameplate capacity of 44mt. The fact, however, is Pakistani domestic demand at this point could take care of 70% of the industry's production and the rest must be exported. And what could be a better market for the commodity than the contiguous India. The point remains even while Pakistan is enjoying 'Most favoured Nation' status *vis-à-vis* India since 1996, it has not made much headway in exporting cement to its neighbour. This is despite Pakistani cement enjoying cost advantage over India. Until such time, Pakistani cement could find its way into India through the land route, exports will perforce remain limited. Indian producers burdened with surplus capacity remain wary of Pakistani cement crossing border by land.

Brazilian cement consumption to rise this year due to infrastructure boom

After a relatively poor year in 2011, when 4mt (million tonnes) more cement was used in Brazil than the 64mt of 2010, an increase of 7%, the 28 groups which own 78 plants dotted around the country anticipate making more than 9% more this year, an extra 6mt, *writes Patrick Knight*.

While the Brazilian economy grew by less than 3% last year, when priority was given to getting inflation under control and government spending was cut back, growth is expected to exceed 4% this year.

Priority is to be given to improving Brazil's creaking infrastructure, which is adding to the cost of exporting, particularly of bulk products such as grains and oilseeds, sugar, iron ore and steel.

Hundreds of kilometres of new railway track are to be built, as are dozens of new tunnels and bridges, while much of the existing track is being upgraded to allow trains to run faster.

Thousands of kilometres of highway are to be upgraded with bridges and viaducts being repaired or re-built, more than a dozen airports will be expanded, including building new runways, patios and terminal buildings. Several ports are to be upgraded, and a start is to be made in building several very large new ones, most of them to cut the cost of exporting bulk goods.

A start will soon be made on building Brazil's first high speed line, to link Rio de Janeiro and Sao Paulo. A total of 130km of the 450km of track will either be in tunnels, or on viaducts, so large quantities of cement will be needed.

More than a million low cost houses are to be built this year, while the growth of the economy means thousands of new apartment blocks, as well as offices, will be needed.

With the next World Cup competition to be held in Brazil in just over two years time, and with the Olympic games to follow two years later, demand for cement will grow fast. Each Brazilian now uses 500kg a year, much more than the 300kg of five years ago, but still well below the international average.

Flush with $1.4 billion of cash from the sale of its share in the Usiminas sheet steel mill to the Italo–Argentine Techint, market leader Votorantim, which can make more than 20mt of cement at the 22 mills it operates in 15 of Brazil's 27 states, aims to add more than 12mt to capacity in the next few years.

It is to make a start on building four brand new mills this year and output will be increased at several others. Two million tonnes of extra capacity are to be added at a mill near Curitiba, capital of Parana state, already the largest cement plant in Latin America and which, when completed, will be one of the world's largest.

Cement was responsible for 45% of the $14 billion sales of the Votorantim group last year, ahead of metals, pulp and the 'long' steel products, such as the re-enforcing rods used mainly by the construction industry.

As well as its plants in Brazil, Votorantim owns cement mills in the United States, and has a share in plants in Argentina, Uruguay, Chile, Peru, Bolivia and Paraguay, with plans to increase production at many of them. A completely new mill is to be built in neighbouring Uruguay, where Votorantim says costs, both of labour and energy, are lower than in Brazil.

Two years ago, Votorantim and the Camargo Correa construction company, industry leader in Argentine, where it has a 50% share of the market, bid jointly for 50% of the shares of the Portuguese Cimpor company, which now makes 4.5mt at the six mills it owns in Brazil.

One of the big attractions of Cimpor is that it has plants in numerous fast growing countries in Africa and the Middle East, as well as in Europe. Camargo Correa is now bidding for full control of the company, although this may attract the attention of the monopolies commission.

Weak demand in the developed world has prejudiced the two other large international companies with a major presence in Brazil, the Swiss-owned Holcim company, able to make 3.7mt in 2009 at the five plants it owns in four states and the French owned Lafarge, with capacity to make 2.5mt at the nine plants it owns in six states. Both companies plan expansions which will allow them to maintain their present share of the market.

CEMENT CONSUMPTION IN BRAZIL

Year	million tonnes
2012	70.0 (est)
2011	64.0
2010	59.8
2009	51.9
2008	51.6
2007	45.1
2006	41.0
2005	37.7
2004	35.9
2003	34.9
2002	38.9
2001	38.8
2000	39.7
1999	40.0

Source: Union of Cement Industries.

Five of the leading companies, Votorantim, Camargo Correa, Cimpor, Holcim and Itambe, in which Votorantim also has an interest are between them responsible for 80% of the cement made in Brazil last year.

The Brazilian equivalent of the Monopolies Commission, Cade, has alleged that agreements between most of these companies not to compete on price in markets where the others were strong, which may have led to purchasers paying up to 9% more than they needed for their cement, indicate that the companies have been operating a cartel.

Cade worries that the largest groups have more than 20% of the market in most of the states where they operate, so competition is limited.

The giants are also accused, together with various trade associations, of buying up fast growing smaller companies when they threaten to lower prices and increase competition.

Brazil's second largest manufacturer of sheet steel, the CSN group, which also bid for the Usiminas sheet steel company last year, has itself started making cement.

It is making use of some of the millions of tonnes of clinker surplus at its mills to make 2.8mt.

CSN bid $5 billions for Cimpor two years ago, but was outbid by Votorantim and Camargo Correa.

CSN also bid for the Usiminas steel company, but Votorantim and Camargo Correa decided to sell their shares to Techint instead of to CSN, the main reason being apparently being to prevent CSN expanding in the cement industry and becoming a threat to them.

As well as building plants and investing in neighbouring countries, the Camargo

Correa group, now the world's 35th cement company by sales, is building a 1.5mt plant in oil-rich Angola, an important trade partner of Brazil. Camargo Correa says it aims to be the world's 20th largest in the near future and that to allow this to come about, it plans to bid for another large company, possibly Cimpor.

In recent times, Votorantim, has sold its interests in sheet steel, but has also disposed of assets in the frozen orange juice sector and some other chemicals, having decided to concentrate on cement, cellulose, metals such as aluminium and the bauxite and alumina used to make it, as well as zinc.

KPI project passes 1,000 vessel milestone

The Shipping Key Performance Indicator Project, initiated by InterManager but now administered by the independent KPI Association Ltd, has passed an important milestone.

Performance statistics from more than 1,000 vessels are now being input into the project's website — enabling the KPI system to produce informative and meaningful performance measurements for the industry.

Captain Kuba Szymanski, on behalf of the KPI Association, said: "This is excellent progress for the project and indicates a great deal of industry involvement and support. By collating performance data from a wide range of shipping companies we are able to calculate key performance indicators to enable benchmarking against industry averages. The more information we have the more accurate these indicators are which will help to ensure the standards within our industry are kept high."


Captain Kuba Szymanski.

Started by InterManager, together with The Norwegian Research Council, Marintek and Wilhelmsen ASA, the Shipping KPI Project developed standard tools for measuring companies' and vessels' performance. Now established as the independent, not-for-profit KPI Association Ltd, the project is working with a wide range of industry stakeholders and aims to develop a standard for ships' performance measurement that is common to the industry.

The data which each company inputs is completely confidential and cannot be accessed by any other user of the service. However, the combined data enables the KPI Project to calculate industry averages to enable companies to benchmark their vessels' performance.

The KPI Project is a voluntary industry initiative which:

- provides user-friendly tools that can more effectively identify areas to focus on for internal performance improvements in companies engaged in ship operation activities;
- provides a more effective communication platform of ship operation performance to internal and external stakeholders;
- increases transparency on quality, safety and environmental performance in ship operation; and
- enhances governance in ship operation.

The KPI Project is now aiming to include 2,000 vessels in its database by the end of 2012.

C. Steinweg to acquire majority in Bridge Shipping Group

The privately-owned global logistics and warehousing company C. Steinweg – Handelsveem B.V. (C. Steinweg) has entered into an agreement to acquire a majority interest in South African logistics company Bridge Shipping (Pty) Ltd. The transaction is subject to statutory and Competition Commission approvals.

Experience, expertise, capacity and flexibility form the cornerstones of Bridge Shipping's operations. Established 32 years ago, the company has evolved into the largest exporter of containerized cargo by rail in southern Africa.

"Sustainability and forward-planning are elements upon which Bridge Shipping places high value. This acquisition will enable Bridge Shipping to offer our clients a global solution to their shipping requirements using C. Steinweg's 77 locations in 32 different countries," says Colin Emanuel, CEO of Bridge Shipping.

"Our focus is customer-centric service, so the opportunity to align ourselves with a reputable company like C. Steinweg presents us with a number of benefits that we can share with our valued clients. This includes increased market penetration for southern African exporters and importers alike, focusing on our core competencies of warehousing, shipping, and logistics" adds Emanuel.

C. Steinweg is headquartered in Rotterdam, the Netherlands, and has been a major player in the logistics and warehousing industry for the past 165 years, including its warehousing accreditations for global commodity exchanges like the London Metal Exchange, LIFFE, and NYBOT. "The synergies between the two companies are clear and our approach to customer service is unparalleled. By leveraging Bridge Shipping's experience with its clients, developed over many years, and complementing it with the global reach that C. Steinweg can provide, we are able to offer our clients a truly superior logistics offering," adds Emanuel.

"The Bridge Shipping brand will remain unchanged and we are certain that our clients will experience the positive effects of C.Steinweg's best practice and the sharing of knowledge through their global operations." Emanuel concludes.

About Bridge Shipping Group

The Bridge Shipping Group has over 30 years' solid experience as a logistics company, with a well-established footprint of blue chip clients in areas including agriculture, mining and minerals, project cargo, bulk containerized commodities and raw materials.

As the largest exporter of containerised cargo by rail in Southern Africa, the group is able, through its skilled staff complement of over 500 people in five countries, to provide premier, tailored logistics solutions to its growing client base.

As such, the group provides a one-stop logistics resource, with synergistic divisions handling freight services; warehousing; ocean freight; and a clearing and forwarding service for ocean, air and project cargo.

Furthermore, a network of company-owned warehouse facilities throughout Southern Africa is linked by a dedicated railway line infrastructure, allowing the Bridge Shipping Group to service client requirements quickly and effectively.

Bureau Veritas and Securymind anti-piracy initiative

Leading international classification society Bureau Veritas has joined forces with French maritime security consultants Securymind to provide an auditing and verification service for companies providing armed guards to protect ships against piracy. Security companies offering services to shipping will be audited against the requirements set down by the 'Scheme for Quality Management Systems of Private Maritime Security Companies' established by Bureau Veritas and Securymind. The scheme is based on IMO guidance set out in MSC1405 'Revised Interim Guidance To Shipowners, Ship Operators, and Shipmasters on the Use of Privately Contracted Armed Security Personnel on Board Ships in The High Risk Area'.

Security companies which meet these standards will be issued with an attestation by Bureau Veritas and will be listed in the BV Register of Private Maritime Security Companies.

Roberto Nahon, Head of Systems Certification and Training Department, Bureau Veritas, says, "Shipowners have experienced that armed guards are an effective deterrent to pirate attack. However there are very many international security companies offering these guards, and not all of them can be relied on to meet the right internationally agreed standards. That is why Bureau Veritas has put its auditing and maritime experience together with the security experience of Securymind to provide a service which will help owners to identify and choose from reliable and bona-fide security firms when selecting who will guard their ships."

Securymind is a consultancy company specialized in security engineering, dedicated to the protection of people, assets and projects. Founded by Luc Alloin, former superior officer of the Marine Special Forces, Securymind also employs a former chief of the Special Command Forces, the Admiral (2S) Pierre Martinez. Specialized in big projects in security, in particular those in the maritime domain, Securymind is one of the very few security organizations (RSO) recognized by the French Administration.

Bureau Veritas is a renowned specialist in conformity assessment and certification services. Created in 1828, the group has close to 50,000 employees in 930 offices and 330 laboratories located in 140 countries. Bureau Veritas helps its clients to improve their performances by offering services and innovative solutions in order to ensure that their assets, products, infrastructure and processes meet standards and regulations in terms of quality, health and safety, environmental protection and social responsibility.

ClassNK 2012 edition of Class Rules

In mid-April, ClassNK announced today that it had released the 2012 edition of the Rules and Guidance for the Survey and Construction of Steel Ships.

ClassNK continuously reviews, updates, and amends its technical rules and guidance as part of its ongoing efforts to improve the safety of life and property at sea, and to protect the marine environment. This year's edition of the rules and guidance contains a number of amendments made in 2011, reflecting its latest research results, damage investigations and analysis of actual cases, amendments to statutory rules and regulations, and requests from the maritime industry. These amendments are listed in the table on the right:

Both printed and CD-ROM versions of the 2012 edition of the rules and guidance are available for purchase online, and a PDF version is available free of charge on the ClassNK website.

AMENDMENTS

Amendment	Source
New requirements for container ships	Result of R&D
New rules for methods to fix attachments to the corners of cargo hatches	Result of damage investigations and analysis
New requirements for Bridge Navigational Watch Alarm Systems (BNWAS)	Amendments to statutory rules
New requirements for work-ships	Request from industry

Thomas Gunn Navigation Services and Transas Marine Ltd unite

In mid-April this year, Thomas Gunn Navigation Services and Transas Marine Ltd announce today a new industry leading partnership which will bring significant benefits to customers of both organizations. Thomas Gunn will now offer Transas Navi-Sailor 4000 ECDIS as part of its total navigation solution, whilst Transas will offer Thomas Gunn's paper chart management service — which includes Admiralty and International HO's paper charts and paper publications — as a part of its ECDIS package.

This partnership sees two industry experts in the emerging ECDIS market teaming up to offer complete solutions for ECDIS implementation in accordance with the IMO Carriage Requirement. That will not only support both Thomas Gunn and Transas customers throughout the whole life cycle of purchased products but will also service those needs to the same high standard of quality, in whatever country their customers operate.

"We are really pleased to be working with Transas," says Thomas Gunn, founder and managing director of Thomas Gunn. "Our key priority has always been to offer our customers the best products with the best global service engineering in the industry. The advance of digital navigation has meant that we must continually evaluate our product offering — and of course good products demand good back-up. Our relationship with Transas will ensure that we maintain our reputation for service excellence".

When it comes to ECDIS implementation, in addition to Transas Navi-Sailor ECDIS, Thomas Gunn customers will now benefit from a service network strategically spread worldwide through all major ports.

"Transas Marine and Thomas Gunn share a common philosophy — we are both focused on building the best user experience with a truly worldwide service and solve advanced business needs," states Peter Mantel, business development director, Transas Marine Limited. "By working together, we are taking our commitment to the next level by making it even easier for our customers to go through the ECDIS implementation phase, manage all information and get access to complete solutions in one place. We are very excited about this partnership that will bring a new level of business agility and usability to our systems."

Thomas Gunn Navigation Services

Thomas Gunn Navigation Services Ltd is a strong and successful company with a sound asset and financial base, large international client base and recognition as the world's largest paper chart and digital supplier. It has just opened its sixth office in Singapore, complementing offices in Aberdeen, Canada, Greece, London and Turkey.

About Transas Marine

Transas Marine is a major developer and supplier of a wide range of software, integrated solutions and hardware technologies for the marine industry, including both on-board and shore-based applications. Transas Marine provides full range of services for ECDIS carriage requirement compliance, including type-approved ECDIS, Transas Admiralty Data Service TADS (official ENC, SENC, AVCS, ADP, T&P Notices to Mariners), voyage planning tools Navi-Planner 4000, weather service, Global ECDIS Training Network GET-Net and consultancy service.

New leadership for ABS Europe–Africa operations

ABS President and CEO Christopher J. Wiernicki has announced that ABS Vice President and current Chief Engineer Dr. Kirsi Tikka will transfer to London to assume the role of President and COO of the ABS Europe Division. The division is responsible for the day-to-day operations of the society throughout Scandinavia, Northern and Southern Europe, the British Isles, the wider Mediterranean region and Africa. Tikka, a native of Finland, takes over from John McDonald who is transferring to Houston as Vice President and Chief of Staff of the organization.

Dr. Kirsi Tikka.

"Kirsi Tikka brings an unmatched combination of technical knowledge, client focus and operational understanding to this position," says Wiernicki. "She is very well known throughout the region, with very strong client contacts. Her appointment allows us to further strengthen the delivery of the growing range of our classification products and services to the European market, including energy efficiency and environmental solutions for regulatory requirements."

Tikka has previously served as the society's Vice President of Global Technology and Business Development, Vice President of Technology and as Vice President of Engineering within the ABS Europe Division. Prior to joining ABS she gained direct operational experience with Chevron Shipping. Tikka holds a Doctorate in Naval Architecture and Offshore Engineering from the University of California, Berkeley.

McDonald brings a similar broad range of operational and client service experience to his new role as Chief of Staff at the society's global headquarters. He has been with ABS for more than 15 years and has held several leadership positions prior to his European tenure including District Manager for the US Central District and Assistant Chief Surveyor for Naval Programs.

"John McDonald brings direct operational knowledge and a strong client-oriented perspective to the challenge of constantly improving ABS service delivery," said Wiernicki. "We are a global organization and it is important that we have wide-ranging experience in our senior management team. McDonald's experience in Europe will be extremely important as he evaluates and recommends new approaches that will further accentuate the superiority of ABS' services in the rapidly evolving and demanding marine and offshore classification sectors."

The above management changes will be effective from the beginning of this month (May).

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MANAGING RISK

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Risk focus booklets aims to improve shipboard safety

Following the launch of its Bow Tie loss prevention initiative in January 2012, the UK P&I Club is now embarking on the publication of a series of 'Risk Focus' booklets which highlight specific areas of risk. In April, *Risk Focus: Slips, trips and falls* was published..

The Bow Tie loss prevention initiative involves surveyors visiting ships and, together with the managers and crew, producing Bow Tie charts specific to individual vessels that identify areas of risk and suggest how such risks might be mitigated.

As was stated at the time of the launch, extensive analysis of previous incidents over a period of 23 years has enabled the Club to identify 'threats', 'consequences' and 'controls', the foundations of developing reports on specific vessels. In total, the Club's Risk Prevention Director Karl Lumbers estimates that it has identified seven primary risk hazards, 76 common threats, which if not contained could cause an incident and 450 controls which need to be in place and effective if the threats are to be contained.

Risk Focus: Slips, trips and falls is in effect the first in a series of new Risk Focus publications although in October 2010, the Club published *Risk Focus: Moorings* as a one-off publication that reflected concerns about the increasing numbers of serious incidents occurring during mooring activities.

Lumbers states that slips, trips and falls represent nearly one in three of the large personal injury claims submitted to the UK Club and have amounted to a staggering $155 m over the past ten years:

"They are constant too with very little variation in numbers of claims from year to year. They are important because they represent genuine pain and suffering from people who have been injured or even killed because they have slipped, tripped or fallen aboard ship. It is not simply a matter of money, squashed metal or damaged ships as encountered in other sorts of claim."

Inevitably many of these claims are caused by a moment of carelessness, thoughtlessness or complacency as people have moved around a ship, possibly doing their jobs, or even just because the ship is not only their place of work but where they live. It is easy to dismiss these unpleasant accidents as 'human error' or even 'crew negligence' but to examine the detail of so many of them is to reveal other contributors to the chain of causation.

Training could have been deficient or even completely missing as there is often an assumption that people 'can look after themselves' and must take responsibility for their own actions.

As Lumbers says, "The environment, which is mostly a function of design, may well have been a contributor: if there was inadequate lighting, if the dangers were not obvious, or the particular design of the ship required people to put themselves in hazardous situations just to get the job done. Visitors to the ship unfamiliar with the layout of the vessel are especially vulnerable.

"Because of the huge costs of these claims and because of the human suffering represented by each of them, we strongly believe that a concerted attack must be made on the incidence of slips, trip and falls. We need to understand better the reasons behind the existence of these hazards so that we can put in place controls that will hopefully prevent accidents occurring, but will also mitigate their consequences when they do."

As the Bow Tie project has already proven, a proactive and precautionary approach can be very useful and in this case should enable the Club to reduce the incidence of slips, trips and falls, firstly by identifying hazards which have the potential to harm. Lumbers states that very often accidents occur because nobody has considered that what they are doing might be hazardous. He explains:

"Just walking around the ship with a sharp eye and an open mind can help to identify features which might, in an unguarded moment, hurt people. It is often not the obvious like working at height or with machinery that will cause the accidents because an experienced seafarer will probably be taking the proper precautions and will be adequately clad, with procedural controls in place. Rather, just moving around the ship, going up and down companionways and ladders, carrying weights or neglecting to keep 'one hand for the ship and one for yourself' are frequently behind very nasty accidents."

Concluding, *Risk Focus: Slips, trips and falls* discusses some simple actions that will hopefully reduce incidents and so prevent distress and pain being imposed on so many seafarers, ship visitors and their dependents.

UK P&I Club

The United Kingdom Mutual Steam Ship Assurance Association (Bermuda) Limited is generally known as the UK P&I Club. As a mutual association, the UK Club has no outside shareholders and no financial links with other organizations. Since its establishment in 1869, the Club has existed solely for the benefit of its members. Its structure as a mutual insurance association enables it to respond to the changing needs of its assureds and allows it to provide superior service, attention and coverage.

The UK P&I Club is directed by the members. Overall control lies with the directors, elected by the members from amongst themselves. The directors normally meet four times a year to formulate policy on calls, the scope of cover, finance, underwriting and claims matters, reinsurance and issues affecting the P&I world. They resolve specific claims which may not fall clearly within the cover.

Thomas Miller, the Club's managers, is organized to respond promptly to requests for assistance and to provide informed advice and help with members' claims. Individual support goes far beyond that normally provided by a commercial insurer.

The UK Club's size and the scale of the managers' operations has enabled the latter to develop specialist skills and expertise seldom seen in marine P&I.

In 350 ports around the world, on-the-spot help and local expertise is always available to members and the masters of their ships from the Club's 460 correspondents and claims handling services and advice from the network of offices and branches in London, Piraeus, New Jersey, San Francisco, Hong Kong, Singapore, Tokyo, Beijing and Shanghai.

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Liberia the main beneficiary as Greek controlled fleet hits record deadweight levels

The Greek Shipping Co-operation Committee (GSCC) has confirmed that Liberia is the leading independent ship register of choice for Greek-controlled shipping companies, second only to the Greek flag itself.

Figures just released by the GSCC show that, in the year ended 31 March 2012, Liberia experienced a net increase of 38 Greek-controlled ships aggregating 4.63m dwt — comfortably more than twice the number of vessels secured by any other ship registry. In the same twelve-month period, Panama and Cyprus, respectively, lost 33 and 25 Greek-controlled ships. In deadweight terms, 17% of Greek-controlled ships are now registered with Liberia, compared to 22% flying the Greek flag.

Although the Greek-controlled fleet decreased in terms of ship numbers in the year under review from 3,848 to 3,760 vessels, the GSCC says that gross tonnage rose from 153.13m gt to 155.90m gt, while, in deadweight terms, the increase was from 261.68m dwt to 264.05m dwt, a new record in the 25 years since the GSCC first published statistics. The latest figures include 437 newbuildings, aggregating more than 25m dwt, on order with shipyards around the world.

Scott Bergeron, CEO of the Liberian International Ship & Corporate Registry (LISCR), the US-based manager of the Liberian Registry, says, "Greece is one of a number of countries in which Liberia is now the fastest-growing fleet. Liberia and Greece share a strong maritime history of co-operation and success dating back to the birth of the Liberian Registry. It is very gratifying to know that, more than 60 years on, Greek owners still value the efficiency, safety and responsiveness of the Liberian flag so highly."

The Liberian Registry is one of the world's largest and most active shipping registers, with a long-established track record of combining the highest standards for vessels and crews with the highest standards of responsive service to owners.

The latest annual Shipping Industry Flag State Performance Table published by the International Chamber of Shipping and the International Shipping Federation awarded Liberia positive performance indicators in every category covered by the report — port state control, ratification of major international maritime treaties, use of compliant recognized organizations, age of fleet, reporting requirements, and attendance at IMO meetings. Liberia features on the White List of all Port State Control Memorandums of Understanding, worldwide, and is included in the US Coast Guard's QUALSHIP (Quality Shipping for the 21st Century) programme, to which only a small percentage of foreign-flag ships calling at US ports are admitted, based on the excellence of their port state control record.

ITIC says shipbrokers must protect commission entitlement

International Transport Intermediaries Club (ITIC) says the current global economic downturn means that shipbrokers will have to be particularly careful to ensure that their entitlement to commission is properly protected.

In the latest issue of its *Claims Review*, ITIC cites the case of a Norwegian broker which made a claim against its principal for the commission on two newbuildings. The broker, which was appointed by the principal on an 'exclusive' basis, introduced the principal to a shipyard. The principal, however, completed the contract directly. The principal refused to pay commission and the broker sued. The broker's claim was rejected by the trial court but the claim was successful on appeal.

The member obtained almost $690,000 from the principal. Furthermore, the payment appeared to be just in time because, shortly thereafter, the principal went into liquidation. Some time later, the broker received an approach from the liquidators demanding repayment of the money. The relevant provisions of Norwegian law stipulate that a payment rendered by an insolvent company may be voided if made within a three-month period of the company going into liquidation. But the rule is not absolute, because payments will only be reclaimable if they have materially worsened the company's payment capacity and are not 'ordinary' commercial transactions.

The broker rejected the demand and the liquidators issued proceedings to recover the money. Faced by a strong legal defence, the liquidator eventually dropped the case. The result was that the broker, having first sued for its commission and then sued again for its return, was finally able to keep the money.

Elsewhere in its *Claims Review*, ITIC highlights the case of a shipbroker which fixed a bulk carrier for a time charter of 90 days. The first voyage was via a port in Thailand, where cargo was loaded for discharge in Africa. Unfortunately, during the outward passage, the ship collided with a tanker. Although there was no serious damage, the bulk carrier was arrested by the local authorities — and was not released until two months later — because the tanker hit and damaged a dolphin which formed part of the port structure.

The charterers elected to exercise their charter party option to cancel if the ship had been off hire for 30 consecutive days, and cancelled the remainder of the charter party. The shipbroker looked to recover from ITIC under its loss of commission cover, and was fully reimbursed in respect of almost 47 days of hire, in addition to a consideration reflecting the vessel's nomination, prior to arrest, to perform a further voyage with another cargo.

Major expansion announced for Oman's Port of Salalah

Panoramic view of the Port of Salalah.

A major expansion at the Port of Salalah will mean that dry bulk and liquid cargo handling capacities will be increased to a combined 20mt (million tonnes) per year.

Oman's Ministry of Transport and Communications has awarded a commercial bid representing investment of OMR 55 million (US$143 million) to more than double the Port of Salalah's general cargo handling capacity. The project will increase dry bulk cargo handling capacity to 20mt and liquid cargo to over 6mt annually. The current annual general cargo handling capacity is 5.5mt.

"The general cargo business has been growing rapidly here, and this new expansion will play a significant role in serving the continued development of businesses in Oman and the surrounding region" stated Port of Salalah's CEO, Peter Ford.

The Port of Salalah, astride the major global shipping lane between Europe and Asia on the Gulf of Oman in the Arabian Sea, holds a strategic position for transit cargoes to the upper Arabian Gulf, Indian sub-continent, Red Sea and East African markets. Salalah was the second-largest container port in the

The Port of Salalah handles its 30 millionth TEU.

Middle East Region in 2011 with volume of 3.2 million TEUs. In its 14th year of operation, the Port of Salalah recently handled its 30 millionth TEU, with the first eastbound call of the G6 Far East/Europe string.

"We are very grateful to the government of Oman and particularly the Ministry of Transport and Communication for their vision, insight and support in helping the Port of Salalah achieve this tremendous milestone of 30 million TEUs," said APM Terminals Africa-Middle East Regional CEO Peder Sondergaard.

The Port of Salalah is part of the APM Terminals Global Port, Terminal and Inland Services Network, with APM Terminals holding a 30% share in the Port, 20% held by the Government of Oman, and the remaining 50% held by institutional and private investors.

The planned expansion of the general cargo terminal includes the construction of an additional 1,200 metres of multi-purpose

An artist's impression of the future expansion for the General Cargo Terminal

berth with 18-metre draught and liquid commodity loading facilities. The new liquids terminal will significantly expand Salalah's role in handling such key industrial commodities as fuel, methanol, Monoethylene glycol, and caustic soda. Major dry bulk commodities handled at Salalah include limestone, gypsum and cement as well as plastics.

"We are committed to making the resources available to enable Salalah to assume a major role as a regional hub for liquid and general bulk cargoes, in addition to containers, as we meet the growing demands for increased economic activity in the Dhofar region and the growing international investment projects in Oman" said Ford.

About the Port of Salalah:

The Port of Salalah (also Salalah Port Services Company SAOG) is Oman's largest port. The port is partly owned and managed by APM Terminals, one of the largest container terminal operators in the world. The Port of Salalah is a made up of a container terminal with seven berths of up to 18m draught and a general cargo terminal of twelve berths of up to 16m draught. Strategically located at the major East-West Shipping Lane, the Port of Salalah is viewed as the region's best located port in order to access the Middle East, Indian Subcontinent and East Africa.

CDP to launch $546 million tender for bulk terminal project in Outeiro Port

Brazil's Pará state dock company (CDP) is set to launch a US$546 million tender in May (this month) for a dry bulk terminal project in Outeiro Port.

The tender for Outeiro Ilha de Caratateua port terminal, or Outeiro, will be launched in four parts, $136 million a piece, and will entail the development and management of a 200,000m^2 space, CDP managing director Socorro Pirâmides Soares has said.

"The concessions will be set for 25 years and may be extended for another 25," said Soares.

The project will include the build of several warehouses and silos, and will also require the build of barge terminals to enable the call of vessels from interlinking waterways at the facility.

Soares added that the bulk terminal will boast an initial capacity of 4,400 tonnes per hour and will primarily serve Brazil's Midwestern agricultural region.

The terminal will be developed in conjunction with national agribusiness confederation Faepa, Brazil's agriculture ministry and local agricultural producers.

Duluth-Superior welcomes season's first 'saltie'

The Dutch-flagged *Arubaborg* arrived early in the afternoon of Friday 6 April at the Port of Duluth-Superior, the port's first call from an oceangoing vessel ('saltie') in the 2012 commercial navigation season. After sailing beneath the Duluth Aerial Bridge, the 469-foot vessel sat 'at anchor' in the harbour for the holiday weekend before loading at CHS in Superior on the following Monday.

The *Arubaborg* began her voyage in Europe and stopped in Sault Ste. Marie, Ontario, to discharge steel pipe en route to the Twin Ports. At the CHS grain terminal, she loaded just over 11,350 short tonnes (10,300 metric tonnes) of durum wheat bound for Belgium. Local vessel agent for the *Arubaborg* is Guthrie-Hubner. The vessel is under the command of Romanian Captain Mihail Garaiman.

Just as excited for the ship's arrival were the 1,300+ entrants in this year's First Ship Contest who tried to guess the exact day, hour, minute and second that the ship would pass beneath the Lift Bridge. The annual competition is co-sponsored by Visit Duluth and the Duluth Seaway Port Authority.

The Port Authority hosted a First Ship Ceremony on Monday 9 April to welcome the 14-member crew to the Port of Duluth-Superior. Community leaders and stakeholders from the maritime industry invited to participate included, among others: Duluth Mayor Don Ness, Superior Mayor Bruce Hagen, Superior Port Director Jason Serck, Duluth Seaway Port Authority Executive Director Adolph Ojard, Twin Ports Ministry to Seafarers Director Tom Anderson, and Gene Shaw, Visit Duluth director of public relations, who announced the winner of the 2012 First Ship Contest. Due to homeland security regulations, the ceremony was an invitation-only event.

"Having the Port of Duluth-Superior situated strategically at the far western tip of the Great Lakes St. Lawrence Seaway provides a direct link between the heartland of North America and markets in Europe and other Mediterranean countries," said Adolph Ojard, Duluth Seaway Port Authority Executive Director. "Utilizing this inland marine highway keeps transportation costs competitive and enables North Dakota farmers — as well as providers of other bulk commodities like coal and iron ore pellets — to compete in a global marketplace."

The *Arubaborg* arrived nearly a week earlier than last year's first ship (*Federal Leda,* on 11 April 2011); the port's earliest recorded arrival of an oceangoing vessel was the Indian-flagged *LT Argosy* on 1 April 1995.

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The Port of Hamburg on a growth curve in the first quarter of 2012

In the first three months of 2012 the Port of Hamburg achieved total throughput of 32.6mt (+ 3.8%). At 2.2 million TEU throughput on the container handling was 5.2% higher than in the first quarter of 2011. Compared to the main ports further West, Hamburg thus gained additional market share and strengthened its position as the Northern European hub for container traffic; Rotterdam's throughput was down by 3.9%, while Antwerp's increase was comparatively minimal at 0.7%.

In the first quarter of 2012 total seaborne cargo throughput in Germany's largest universal port reached a volume of 32.6mt (+ 3.8%). The Port of Hamburg performed especially strongly on general cargo throughput and managed a positive result on overall throughput despite some downturns in the bulk goods area.

By comparison with the first quarter of 2011, on general cargo throughput the Port of Hamburg achieved a 7.9% advance to 23.1mt. Growth here was primarily powered by the strong trend in exports of containerized general cargoes. Here the Port of Hamburg handled export volume of 11.4mt in the first three months of the year, representing an increase of 11.1mt. Europe's second largest container port also performed well on imports of containerized general cargoes, with volume of 11.2mt representing 5.5% growth.

"We are delighted that with a 5.2% rise in container throughput in the first quarter, the Port of Hamburg is markedly ahead of the 2.4% average growth for the four major ports in the North Range," comments Claudia Roller, CEO of Port of Hamburg Marketing: "The excellent result in this segment is what triggered the Port of Hamburg's overall growth in the first quarter of 2012. For the remainder of the year we are reckoning on a further increase in total throughput."

"We are headed in the right direction and have gained notable market shares. This is indicative for competitiveness of the Port of Hamburg", stresses Jens Meier, HPA managing director. "Considering container handling figures and the market shares in the northern European Ports range the Port of Hamburg even surpasses forecasts of the 2010 ISL potential analysis."

Bulk cargo throughput in the first quarter of 2012 at 9.5mt (–4.8%) was below the previous year's. Whereas grab cargo throughput in the first three months of 2012 at 4.8mt was 5% up on 2011, throughput of both liquid and suction cargoes was down. Among grab cargoes, the Port of Hamburg performed especially strongly on ore imports, which were 27% higher at 2.3mt. First-quarter throughput of liquid cargoes at 3.1mt was down by 14.8% on the previous year. Downturns in crude oil imports and in both exports and imports of oil products could not be offset by an 11.9% advance in throughput of other liquid cargoes on the import side. In the first quarter of 2012 suction cargo throughput at 1.5mt remained 9.7% below the comparable figure in the previous year. The main reason for this was the lower volume of grain and oil fruit imports, which caused a 10.4% downturn in the total quantity imported to 877,000 tonnes. The remaining suction goods products, mainly feedstuffs, although producing an excellent result with 33% growth, did not suffice with total throughput of 60,000 tonnes to offset the reduced imports of grain and oil fruits. At 637,000 tonnes, exports of grain and all other suction cargoes were down by 8.7% in the first three months.

At 528,000 tonnes, throughput of non-containerized general cargoes was 6.1% lower than in the previous year. One cause of this was the downturn in imports of conventionally stowed citrus fruits (–39.7%) to 74,000 tonnes. Progressive containerization of general cargo throughput in the Port of Hamburg is the reason for this trend: nowadays a high proportion of the citrus fruit handled here reaches the port in reefer containers. It was primarily vehicle exports that ensured a positive trend in the general cargo area. At 133,000 tonnes, throughput of these climbed by an impressive 21%.

With heavy cargoes and project shipments, in the first quarter of 2012 the Port of Hamburg remains on a growth curve, with exports up by 21.8% at 142,000 tonnes and imports 13.6% higher at 38,000 tonnes.

Public consultation on Dudgeon Point Coal Terminals

In mid-April, Australia's Deputy Premier and Minister for State Development, Infrastructure and Planning Jeff Seeney invited the public to comment on the draft terms of reference for the proposed $10 billion Dudgeon Point Coal Terminals project in North Queensland.

The North Queensland Bulk Ports Corporation and a consortium including Adani Mining and Dudgeon Point Project Management are proposing to build the terminals near the Port of Hay Point, 25km south of Mackay.

Seeney said the Dudgeon Point Coal Terminals could provide an enormous economic surge to Queensland.

"If approval is granted, Dudgeon Point will become one of the largest ports in the world. It will open-up Mackay to an international coal export market, hauling in billions of dollars for Queensland's economy," he said.

"When operating at full capacity, the terminals will more than double the existing scale of the adjacent Hay Point and Dalrymple Bay coal export facilities.

"An increase in coal export capacity will attract significant investment to the area, which means a shot in the arm for the local economy, and significant growth for the Queensland coal export industry.

"If approved, the Dudgeon Point Coal Terminals will provide a boost to local employment, creating up to 1,800 jobs over six to eight years during construction and approximately 640 jobs during operation.

"The terminals could play a vital role in the long-term viability of Queensland's resources sector, and help to cement our standing as one of the world's largest exporters of coal."

Coordinator-General Barry Broe said the project was declared a significant project in late 2011 meaning it could potentially impact on a number of environmental values, and would require local, state and federal approval.

"This project has been recognised as a large-scale and complex development which requires an environmental impact statement (EIS) to be prepared," Broe said.

"The draft terms of reference form the basis of the project's EIS which will consider the environmental, social, and economic implications of the proposed terminals.

"We are providing an opportunity for the public to comment on whether the draft terms of reference adequately covers all of the matters that must be included in the EIS.

"This phase of the process does not indicate approval or support for the proposal. It means the project will be subject to a rigorous evaluation process that determines whether the environmental impacts are acceptable."

If approved, the project will involve:

- building two separate terminals, with a combined coal export capacity of up to 180 million tonnes per annum, and associated infrastructure;
- constructing six rail loops and train unloading facilities, and a rail connection to the Goonyella rail system with a rail overpass at Hay Point Road;
- developing off-shore wharf facilities for up to ten ship berths, with two connecting jetties;
- dredging approximately 15 million cubic metres to create berth pockets and a departure apron for ships; and
- expanding tug facilities to accommodate up to ten more tug and service berths. Broe stressed the importance of community consultation in the environmental assessment process.

"Public consultation is a valued aspect of the assessment process and we strongly encourage the community to view the draft terms of reference on-line or access at local libraries and councils," Broe said.

First project cargo for Liverpool – Manchester Ship Canal 'Green Highway' barge service

The first project cargo has been transported on Peel Ports' barge service on the Manchester Ship Canal.

Until now the Liverpool to Manchester service has carried only an increasing level of containers, but transporting of a giant chemicals tank to the Ineos facility at Runcorn saw the start of non-containerized traffic.

The 30-metre-high 20-tonne tank arrived at the Port of Liverpool from Holland on the ACL vessel *Atlantic Concert*, and made the onward journey on the Ship Canal to Runcorn by barge.

The journey from Liverpool to Runcorn took just over three hours.

Stephen Carr, Peel Ports Mersey's head of business development for the Port of Liverpool and Manchester Ship Canal, said: "This is the latest development in our objective to increase usage of the Ship Canal as a logistics hub that drives down cost and CO_2 emissions.

"The Port of Liverpool has seen a significant increase in container volumes over the last few months, much of which has continued the journey via our barge service to end-users — driven by supply chains looking for a lower cost solution to serve Northern and Central Britain.

"Delivery of this project cargo from the Port of Liverpool to Runcorn is a departure in that is the first non-container cargo to use our barge service, and we are keen to expand and further develop that side of the business.

"This further increase in the use of the Ship Canal demonstrates the desire of many companies to use water to get their product as close to their customer as possible."

Andrew Wormald, senior sales and operations manager at Abnormal Load Services Ltd, Peel Ports' customer on this project, said: "The sheer size of this cargo made the use of road transport problematic, and the use of Peel's barge service was the perfect solution. It also saved us on costs and carbon emissions for this leg of the journey from Holland."

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Tegram concessions awarded

Four companies have been awarded individual concessions at the new Terminal de Grãos do Maranhão (Tegram), which is in the Brazilian port of Itaquí. Projections suggest that the terminal will move 10,000,000 tonnes of agribulk by the end of 2019, which is when a second phase development of the terminal will be completed, involving construction of four warehouses able to hold 125,000 tonnes of grain.

The new site is linked by both road and rail and should go some way towards providing a major new outlet for producers in the Centre-North region of the country.

Those awarded the 25-year concessions are CGG, NovaAgri, Glencore and a consortium put together by Louis Dreyfus and Amaggi.

Barry Cross

Vale invests heavily in Santos

Vale Fertilizantes is trying to establish itself as a major integrated logistics operator in the dry bulk market in the port of Santos. It has so far invested $1.91 billion in the Central Atlantic Railway (FCA) and also in the Terminal Marítimo Ultrafertil (TUF), both of which it operates as concessions. This will allow it to handle soya and sugar, while at the moment it simply looks after imported raw material for making fertilizer.

Expansion of TUF is scheduled for completion by 2015, when it will have static capacity of 518,500 tonnes of either sugar or soya, which is equivalent to 37% of the current capacity of the existing eight terminals that handle these commodities in the port. The largest specialist terminal only has storage for 280,000 tonnes of grain.

Sugar and soya are the two main dry bulks exported by Santos, which account for 27% of the 97,000,000 tonnes moved by the port in 2011.

As for the railway, the company has so far acquired 2,700 wagons and 148 locomotives, with rail to move around 100% of consignments at the expanded TUF.

BC

Santander agribulk terminal opens

The new agribulk terminal in the northern Spanish Port of Santander is now complete, having cost around €38 million. It was built by the Tasa stevedoring group, which is part of the GOF holding that specializes in port logistics services. The putting into service is several years later than originally planned as a result of contractual problems.

In the first year, it is expected that at least 400,000 tonnes will be handled by the terminal, although this is expected to increase to 2,000,000 tonnes of grain, flower and derivatives in the medium-term. This will effectively double the current agribulk traffic in the port of Santander.

The terminal covers an area of 33,500m² on the Espigón Norte of Raos Quay. There is warehouse specifically for handling flour, with a capacity of 60,200 tonnes, as well as two parallel silos for handling grain with a combined capacity of 42,000 tonnes. An option on the third silo is also under consideration.

The entire terminal is automated, with the concomitant boost in discharge capacity from 6,000 tonnes daily to 28,000 tonnes. There are two conveyor belt systems used in discharging cargo, which feed a pre-cleaning and transfer tower. There is also a road haulage reception centre and two rail sidings, each 360m long. The idea will be to receive trains 450m long and divide these in the terminal for loading and discharge.

BC

Danish port operator partners with energy firm

Denmark's largest port operator, APM Terminals Cargo Service has announced a partnership with DONG Energy, a leading energy provider, to reduce the port operator's energy consumption and CO_2 emissions.

An expected reduction in energy consumption through improved lighting and electricity usage will cut APM Terminals CO2 emissions by 10% annually.

Equally important, APM Terminals Cargo Service will purchase green energy produced from offshore wind farms to drive operations in the busy port on the waterfront of the city of Aarhus. Managing director Johan Pedersson Uggla of APM Terminals Cargo Service describes the new partnership as a natural extension of ongoing activities: "This partnership reflects our sustainability plan to reduce energy consumption and drive CO_2 reductions." Other initiatives include fuel efficiency improvements in straddle carriers and reach stacker equipment.

DONG Energy's Executive Vice President, Lars Clausen added "Competition is very tough when it comes to being the preferred energy supplier for a large and renowned company such as APM Terminals. So we are proud that we succeeded in establishing a strategically important relationship by offering an attractive customer value proposition and strong competencies".

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Overview of Scandinavian ports

The Port of Aarhus, Denmark.

Bulk handling at Danish ports and terminals

Associated Danish Ports

ADP's total cargo turnover in 2011 exceeded expectations. This can be attributed, among other things, to increasing awareness of the central location of the ADP ports. The upcoming inauguration of yet another container area, and a new business strategy to take us up to 2015, should maintain and further increase turnover in the years to come.

With 13mt (million tonnes) in 2011, the cargo turnover of ADP, which runs the Danish ports in Fredericia, Nyborg and Middelfart, was described by management as satisfactory.

"In our industry, the state of the market really makes itself felt, which is also true of the market in general. The fact that we have experienced growth is therefore indicative of the advantages of our ports," says managing director Jens Peter Peters. "The central location of the ports with their easy access to further distribution along the motorway network and a water depth of 15 metres are highlighted when, in collaboration with our customers and business partners, we look ahead to future opportunities. That is why we have planned the expansion of our ports, based on the needs of our business partners."

The expansions will be inaugurated this. The Port Director stresses that it is a privilege to be able to talk about growth at a time marked by uncertainty, and also that a record turnover at the Port of Nyborg and a crude oil turnover, which fell considerably less than expected, are contributing to the growth.

"Our unique location puts us under obligation. And that is why we prioritize a close dialogue with our business partners, so that we can prepare our ports according to the wishes of our customers," emphasizes Peters. "It is all about optimization at every link of the logistics chain. With their close proximity to the motorway network, the Ports of Nyborg and Fredericia are well placed for distribution to and from the Region of Southern Denmark and thus to the rest of the country.

Aabenraa Port

Aabenraa Port is an efficient deep-water port in Denmark, by the Baltic, close to the European motorway network. It serves the entire Baltic area and offers excellent hinterland connections, with land transport to and from the rest of Europe.

The navigation conditions in Aabenraa Port are excellent. Water depth varies between 4 and 11 metres, and vessels up to a length of 250 metres may call at the port. Aabenraa Port has modern ro-ro facilities and the quays extend for more than 2km altogether.

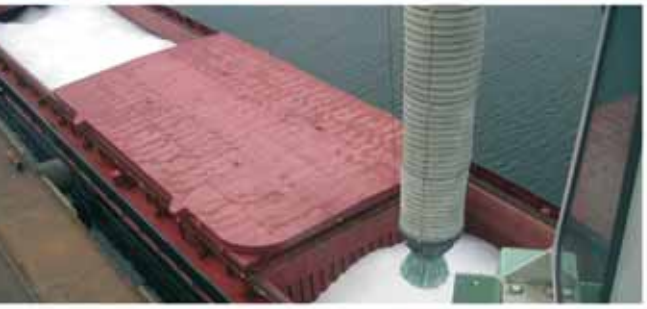
Aabenraa Port boasts efficient handling equipment and three mobile harbour cranes. The largest of the harbour cranes can handle loads with a dead weight of up to 100 tonnes.

The port has a strong network, with a wide selection of competent transport-related businesses represented today in the port area in the town. Aabenraa Port can also offer logistics solutions in co-operation with Padborg Transport Centre, located at motorway E45 on the Danish-German border.

Major bulk port in Finland

Port of Pori

The port of all size vessels



The strengths of the Port of Pori

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

Reachability (by truck)

- Within 3 hrs. of Pori
- Within 6 hrs. of Pori

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The transport centre has broad experience of combined sea and overland transport, and businesses have daily access to the whole of Europe with all types of goods. This co-operation forms an ideal foundation for dynamic transport concepts by virtue of local know-how and international contacts.

Aabenraa Port is a member of GateDenmark, which is Northern Europe's largest transport centre and the entrance to efficient and complete logistics solutions.

Aabenraa Port is managed on behalf of the city council by a harbour board consisting of seven members. The harbour board consists of four representatives from the city council, two representatives from the business community, and one representative elected from and by the employees of the port. The harbour board is in charge of the management of the port in accordance with the regulations of the 'Law on Ports'.

The port manager manages the port and is responsible for the day-to-day management of the port vis-à-vis customers, users and employees.

The administration consists of the port manager, a harbour assistant, a chief financial officer and an accounts clerk, whereas the operations and maintenance department includes four crane operators and five specialist workers/skilled workmen.

Port of Aarhus

The Port of Aarhus is an all-purpose port, and also Denmark's largest container port with a current market share of more than 50% of the containers handled in Danish ports.

Ships calling at the port can use the port's own pilot, mooring and towage services. These services are optional and if the need arises, the services are available 24/7/365 — at very short notice. The port has two tug boats *Aros* and *Hermes* as well as a pilot boat *Thrym* and a security boat *Ara*.

Externally, the Port of Aarhus benefits greatly from daily competition with the ports in countries such as Germany and the Netherlands. This strengthens the port's efforts to remain competitive within the market. The Port of Aarhus is Denmark's largest public bulk port, with grain, feedstuff and oil as the types of goods most frequently passing over the quays in bulk and multi terminals. The Port of Aarhus is also the largest ferry port in Western Denmark.

The Port of Aarhus has highly developed infrastructure, so that its customers do not have problems with heavy traffic, queues or congestion.

Recently, the port was rewarded with a political decision to spend €200 million on a completely new tunnel, a tunnel carrying the goods directly to and from the port – onto the European motorway network. The tunnel is expected to be completed in 2015. The Port of Aarhus is not only strategically well located in respect of the increasing volumes of goods expected in the Baltic Sea region. The port also has a favourable location in respect of the domestic market — almost in the middle of the 'centre of gravity' for both consumption and production.

In addition, the Port of Aarhus has a number of natural advantages, including a natural water depth, making it ideal for accommodating large, ocean-going vessels. On the other hand, the water is not so deep that it results in extraordinary costs when constructing new port areas. And there are no natural hindrances that can hamper vessels calling at the port — for example large waves and winter ice.

On one hand, the natural advantages imply high efficiency and free competition between more terminal operators, and on the other hand, they contribute to making the Port of Aarhus one of the most competitive in the market — also in terms of price. Naturally, the price level is the result of the competition described above, but also of the synergies created when more terminal operators use the same equipment, such as the port's cranes, which are owned and operated by the Port of Aarhus.

The Port of Aarhus is a municipal self-governing port, led by a Board of Directors of seven members with the Mayor of Aarhus as chairman. The daily management of the port is carried out by the harbour director.

Financially, the Port of Aarhus functions as an independent entity without public subsidies. Profits are invested in the maintenance of the port infrastructure and the development of harbour facilities. The Port of Aarhus has 123 employees while approximately 150 private companies at the port employ thousands of people.

News from Finnish ports

The Port of Pori

Located over 20km from the city of Pori on the west coast of Finland and with a history of over 230 years, the Port of Pori is one of the most well-established and comprehensive port facilities in Finland. Port of Pori's deep passage, docks and effective services are of high international quality, while its speciality lies in the handling of all kinds of dry, liquid and general bulk cargo, especially coal, concentrates and fertilizers. The port is a full service entity consisting of the harbour Mäntyluoto and the deep-water harbour of Tahkoluoto, which has one of the deepest passage in Finland reaching 15.3 metres. Such a facility enables the handling of all kinds of ships travelling through the Baltic Sea, even Capesize vessels and the safe navigation of such as there is no archipelago at the port's entrance.

The chemical dock, built in 2008 in the Tahkoluoto facility, offers an additional service to the organization's already flourishing arsenal, enabling the separation of combustibles and non-combustibles to different docks at the oil and chemical harbour. Railway, as well

HaminaKotka: well connected

Finland's Port of HaminaKotka Ltd is the biggest universal, export and transshipment port in Finland. As a full service centre for logistics and other port-related industries, it provides excellent connections to the Baltic Sea region as well as other European, Asian and Russian markets.

The port's 1,100 hectares of land area is not only a home for 10 port operators but also 170 other businesses. HaminaKotka's location, 35km from the Russian border, makes it the most Eastern port in Finland. This is why it specializes in transshipments to CIS countries. Its 15m draught enables a smooth connection not only to Europe but to the other parts of the world as well.

Hamina harbour in the Port of HaminaKotka.

The port handles a range of bulk commodities: fertilizers, cement, chalk and kaolin clay. A range of equipment is available, including several types of cranes and conveyor systems. Both open and covered storage facilities are available. With some notice, the port can arrange for major covered storage.

Mussalo harbour in the Port of HaminaKotka.

BULK/BREAKBULK STATISTICS

	Jan–Dec 2011	Jan–Dec 2010	Change %
Export			
Dry bulk	220,182	190,480	15.6
Sawn goods	1,185,950	1,006,273	17.9
Wood pulp	1,006,367	795,368	26.5
Paper	3,084,332	3,043,424	1.3
Imports			
Dry bulk	656,969	760,357	–13.6
Ran wood	1,004,141	1,225,567	–18.1

as pipeline, connections to the oil and chemical harbour bring additional efficiencies to oil and gas customers and as a result of this investment the port's handling capacity is now over a million tonnes.

Jaakko Nirhamo, director of the Port of Pori, highlights some of its most notable assets: "Our location on the coast of Finland brings numerous benefits both on the marine and land side of the business. Our navigation conditions in winter are one of the best in the whole of Finland as we have no island formations at the entrance to collect ice and cause additional challenges for vessels entering the port. We are extremely accessible by sea and are also able to offer clients swift connections to road and rail travel. We are also able to boast the rarity of having ample space to expand and have over 200 hectares of land in immediate proximity to both Mäntyluoto and Tahkoluoto. These areas are ideal for industrial, logistical or value added use and there are numerous possibilities for new business here in Pori.

As part of its ambitious expansion strategy the Port of Pori is currently investing over €20m in the development of its deepwater dock facilities. The port is also investing in new complementary port equipment to furnish the new facilities.

"This development is vital for attracting new customers, especially as vessel designs are getting bigger all the time and it is crucial to have ports with enough space and water to meet their needs.

"The Finnish market is living its own life at the moment and there are both positive and negative aspects of the industry, though we are starting to reach an encouraging stage of business. Throughout the economic crisis we have managed to retain our lucrative position in the Finnish port industry and have even started to witness some growth in our key areas. Though we are in the middle of negotiations, there is a great deal of opportunity for success in the coming years and I think we will start to prosper with additional businesses taking advantage of our unlimited expansion potential," Nirhamo concludes.

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The Port of Rauma

The Port of Rauma in Finland has:

- 115 hectares (1,150,000m²) of field space;
- 275,000m² of covered facilities for general cargo;
- 30,000m² of heated warehouse space;
- 230,000m³ warehouse space for bulk cargoes;
- 175,000 tonnes of silo capacity; and
- 560,600m³ of chemical and oil tank space.

The Petäjäs part of the Port of Rauma is reserved for the handling of dry bulk cargoes. The grain silos and conveyors operated by Suomen Viljava as well as the china clay import warehouses of Rauma Stevedoring Ltd and the pigment slurry plants of BASF CC Finland Oy and Chemec Oy are all located in Petäjäs, where customers are offered:

- four berths;
- two fixed knuckle boom cranes;
- bulk warehouses;
- grain silos; and
- grain unloader/loader with conveyor.

In his most recent annual report, port director Hannu Asumalahti said:

"Highly positive development was seen in traffic volumes in the early part of 2011, particularly in terms of the product and raw material shipments of the chemical wood processing industry. The situation stabilized in the summer with the rest of the year showing figures equal to or even lower than in 2010... Economic prospects for the year 2012 are extremely difficult to predict due to the financing and economic problems threatening Europe. On the other hand, the customers foresee quite a positive near future, but the situation could change very rapidly."

Total traffic in the Port of Rauma amounted in 2011 to 6.1mt (million tonnes), showing an increase of 9.8% over 2010. The increase was primarily based on significantly higher pulp, bulk and grain export volumes and round wood, liquid and bulk import volumes. The number of containers shipped through Rauma in 2011 grew 35.2% compared with 2010. A total of 1,464 vessels (+13.0 %) with a total net tonnage of 5.2mt (+9.3 %) called at the port in 2011. Exports accounted for 3.97mt (+4.7 %) of traffic, imports for 2.05mt (+13.6 %) and domestic shipments for 0.14mt (+727%). The reason for the huge change in domestic shipments was pulp transported to Rauma from Pietarsaari for further shipment. The most important export articles included paper and cardboard, pulp, grain, sawn goods and miscellaneous bulk goods.

Import was dominated by round wood, china clay, bulk goods and chemicals. According to the statistics of the Finnish Maritime Administration, international traffic through Finnish ports increased in 2011 by 5.6 % over the previous year. Container volumes grew by ca. 14.7 %.

Rauma was one of the ports where total traffic increased more than on average. In container traffic, in particular, the growth figures were considerably higher than on average (35.9%), which meant that the Port of Rauma increased its market share in container traffic.

The Port of Rauma has a range of stevedoring companies. Notable amongst these is Oy Rauma Stevedoring Ltd. The company offers a wide range of shipping services, including cargo handling; warehouse facilities; forwarding; shipowners' services; international shipments; and customs terminal.

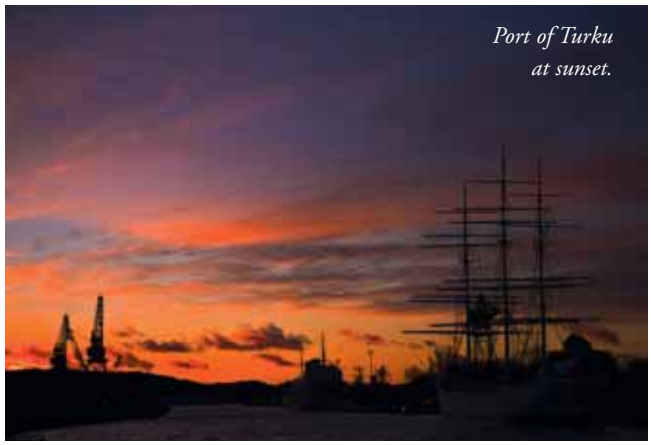
Oy Rauma Stevedoring Ltd handles an average annual throughput of 700,000 tonnes of china clay, a figure that remains relatively stable year-on-year. The company's major customers include UPM-Kymmene Co., Imerys Minerals Ltd, Basf Minerals Ltd, and Omya Ltd.

Oy Rauma Stevedoring Ltd can handle vessels of up to 14,000dwt, and offers a draught of 10m in the fairway, and 14m alongside the berth. It has cranes with grabs and closed elevator system, owned by stevedores Oy Rauma Stevedoring Ltd. Total warehousing available is over 200,000m², with ca. 30,000m² of heated space.

Port of Turku

Finland's Port of Turku is mainly a passenger and ro-ro port and handles only small amounts of dry bulk. However, bulk cargo of soya is imported once or twice a week for local foodstuff and feed industry (yearly about 25,000 tonnes) as well as salt (in winter time about 20,000 tonnes). In addition to this grain is exported from the silo, with an annual total of about 15,000 tonnes.

Bulk cargo is handled by shore cranes or mobile cranes with a grab. A new mobile crane is under construction in Finland by the Mantsinen company. There is a silo and other bulk storage in door-terminals in the port area. The maximum ship size that can be handled is 230m LOA, 33m beam and draught of 10m, due to the restrictions of the archipelago fairway.



Port of Turku at sunset.

Swedish ports and terminals

The Port of Luleå

Port of Luleå is a public port in Sweden. Despite its northerly position, and thanks to modern state-run and locally operated ice-breakers, the port is open for shipping year-round.

The port has a close relationship with its stevedoring company, and they both strive to offer the best service to customers.

Within the port area there are four harbour sections: the Victoria Harbour for dry bulk; Uddebo for liquid bulk; and the industrialized quays of LKAB and Cementation, respectively. The old quay for loading iron ore is now used by governmental ice-breakers and as a cruise port.

Modern equipment at the port makes it possible to handle all types of bulk product, as well as general cargo.

The Harbour's modern installation make it Possible to handle all kinds of bulk goods, as well as general cargo.

Around 570 Vessels call at Port of Luleå every year, a substantial number of which are more than 70,000dwt.

Annual throughput at the port exceeds 7mt (million tonnes), and is mostly bulk products, confirming Luleå as the largest bulk goods port in Sweden, and one of the five largest ports in the country.

The Ports of Stockholm Group

The geographical location of The Ports of Stockholm Group's ports makes them environmentally friendly transport alternatives to and from Stockholm and the Mälar Valley. A third of the population of Sweden lives here and is supplied daily with goods transported via these ports.

The Ports of Stockholm Group includes ports in Stockholm, Kapellskär and Nynäshamn. Our ports in Stockholm (Stadsgården, Frihamnen and Värtahamnen) are central ports for goods and passengers travelling to and from Finland, Russia and the Baltic countries. The ports of Kapellskär, 90 km north of Stockholm, and Nynäshamn, 60km south of Stockholm, are outports that with their short entrance fairways provide excellent complements to our more centrally located ports.

The Port of Kapellskär plays a major role in the rapid transport of freight to and from Finland and Estonia. The Port of Nynäshamn is a mainland port for traffic to and from the island of Gotland and is advantageously situated to serve ferry traffic operating on routes to ports in the central and southern Baltic Sea areas. The Ports of Stockholm comprise a number of port areas, of which Värtahamnen, Frihamnen and Loudden, as well as Stadsgården and Skeppsbron are the most prominent commercially.

Frihamnen has one of the most important container terminals on the east coast and grain is exported from here to all four corners of the world. Within the port areas of Stockholm there are also facilities for loading and unloading sand, cement and fuel pellets.

The Port of Oxelösund

With a depth of 16.5m, the Port of Oxelösund is one of the few ports in the Baltic Sea which can accommodate the largest of vessels. The short entry time of one hour increases navigational safety, saves time and money by reducing costs for pilotage, fuel, and charter hire.

The Port of Oxelösund is situated 100km south of Stockholm with direct 24 hour access to the quayside from road and rail networks.

The Port of Oxelösund is situated at the centre of an area of huge economic growth. The Baltic region is expanding. Central Sweden, and especially the Stockholm-Mälardalen region, is expanding. Nearly 3 million people, a third of the Swedish population, live within a 150km radius. The port is close to the customer, and its proximity to markets in Finland, the Baltic States, Russia, Poland and Germany makes its position even stronger.

The Port of Oxelösund is connected directly to the motorway system. It has rail links right to the dockside and it is within easy reach of Stockholm-Skavsta airport. Oxelösund is a port of national importance and has been selected by the EU to form part of the Transeuropean Transport Network (TEN-T).

The port handles a great deal of dry bulk (coal, coke, mineral ore, grain, scrap metal), as well as coasters (scrap metal, salt, biofuels), liquid bulk (oil, chemicals) and steel products (coils, sheet metal, compounds). It also handles ro-ro cargoes and containers, and offers a full logistics service.

A port with state-of-the-art machinery, ideal infrastructure, an optimum geographical location and excellent port facilities would be nothing without its people. The Port of Oxelösund therefore works hard to constantly improve the skills and competence of its staff. The Port of Oxelösund, with a staff of nearly 200, is in good health. Staff are professionally well qualified and have the customer in focus, always.

In terms of facilities, the Port of Oxelösund offers:

- seven cranes with up to 48-tonne capacity;
- one container crane with 45-tonne hook lift;
- 25-tonne grab lift capacity;
- one bulk goods crane;
- one dry bulk loading crane;

Two inland ports: one company, a clear vision

In inland Sweden, there are two inland ports in the Mälaren lake in the industrial hub of Sweden: the ports of Kõping and Västeras, which are both managed by the company Mälarhamnar AB.

The Västerås facility is the main port of Mälarhamnar with five quays; the biggest is a deepwater quay of 900 metres in length, making it ideal for handling all types of goods. A supplementary quay of 120 metres receives the majority of the petroleum products coming into the company. Its five port cranes are able to handle 33 tonnes each, while three mobile cranes manage up to 100 tonnes a lift. The company plants to invest in a further three cranes, two in Västerås and one in Kõping; these investments will make it possible to handle up to 250 tonnes in one lift with the two new cranes in Västerås.

The harbour of Kõping biggest deep-water quay is 600 metres long and has two rail cranes with a capacity of 33 tonnes each. And a effective mobile crane manages up to 11 tonnes. The organization's inland location, substantial quays, stationary and mobile cranes with lifting capacities from six to 210 tonnes, arsenal of loading machines, Bobcats, fork-lifts and tugboats, as well as storage and warehousing facilities ensures it enjoys lucrative relationships with an extremely broad customer base.

Managing the two ports of Kõping and Västerås strategically located by the Mälaren lake in the industrial hub of Sweden, Mälarhamnar AB offers a comprehensive portfolio of harbour services including goods handling, warehousing, container stuffing/stripping, customs management etc..

The two port entities have both existed since 1000 AD as important individual centres of trade for the country until 2001 when they joined forces as a single company and continued to successfully meet the needs of the international shipping industry.

The company is able to name global ship brokers such as Transatlantic and J.A. Shipping among its regular customers with Transatlantic's container ships visiting the Västerås container port three times a week from various locations in Europe. Other big companies in the field of chemical production, steel manufacturers and importers of mineral and alloys, also utilize the port's facilities, while all types of goods from sawn timber and food stuffs to petroleum products and biofuel arrive on a regular basis.

Magnus Johansson, manager in marketing and sales at Mälarhamnar, highlights its key selling points to the market:

"Our geographical situation in being an inland port is by far our greatest advantage. Instead of delivering goods to cities on the Swedish west or east coast such as Gothenburg, Gävle or Norrkõping and transporting them by truck for the remainder of the journey, ships are able to sail into the central countryside of Sweden and distribute from there. This is not only a more efficient way to transport goods, but it also has an additional environmental benefit, reducing up to 700 road transports in the region every day. The strategic location of our ports to the north-west of Stockholm also means that we are able to reach 30% of the Swedish population, with three million people being within a 100km radius of our base. Customers further benefit from our wide

range of storage possibilities that include over 50,000 square metres of undercover storage and 290,000 square metres outdoors, while biofuel customers profit from being very close to the main cities of Sweden where their products are put to use."

A CLEAR VISION

In spring 2010, the Swedish Government and Maritime Administration (Sjöfartsverket) marked the sea of Mälaren for a period of substantial investment and expansion. With over €150 million being placed in increasing access to the ports and its internal facilities, the organization will be able to receive ships with double capacity, in term of tonnage, compared to today. This is also a huge opportunity for both Västerås and Kõping to become more operationally efficient. Once the locks into the sea of Mälaren have been opened out to their full width and depth, and the fairways into the ports have been deepened, the cost of transporting goods into the area could be reduced by up to 20% making it an even more vital facility for those operating in the Swedish logistics chain.

"There are so many opportunities for us at present and our current focus is on how we can invest and expand to handle the increase in volume and greater number of enquiries coming into our ports," Johansson explains. He outlines his goals for Mälarhamnar AB moving forward: "We have altered our business plans in light of the changes taking place in our facilities and are on the offensive with regards to gaining new business. We are preparing to take care of much larger ships, setting our organization to manage over 4mt (million tonnes) a year. Our strategy is to show the market that we are here and have the capability to beat competition on efficiency, cost and value, strengthen our customer's competitiveness."

- two loading arms for liquid bulk;
- one ro-ro berth; and
- forklift and container trucks, loaders up to 42-tonne capacity.

The Port of Oxelösund covers a surface area of 750,000m² and has 345,000m² of storage area. There is an unused area locally of 100,000m², which with relatively modest investment could be developed to keep pace with a growing business. The Port of Oxelösund owns the entire port infrastructure and is also planning in the future to make available an industrial area of between 40,000m² and 50,000m².

Border crossing: Copenhagen Malmö leads the way

Serving the Øresund Region by being part of its infrastructure and exploiting business possibilities in the Baltic Sea Region are central to Copenhagen Malmö Port's (CMP's) business profile.

CMP is located in the heart of the Øresund Region with almost four million consumers. The region is experiencing increasing integration between the Danish and Swedish areas. At the same time, the region is the gateway to the entire Baltic Sea Region with more than 100 million consumers.

CMP provides access to an infrastructure that ensures goods are processed quickly and safely. The company is the major port operator in the Øresund Region, and meets demands for the transport of consumer goods, new cars, aviation fuel, building materials, passengers, etc.

Furthermore, CMP is one of the biggest port and terminal operators in the whole Nordic Region; one of the largest Northern European cruise ship ports; and occupies a key position in the Baltic Sea Region.

CMP has the largest dry bulk terminals in Western Sweden and Eastern Denmark. Import and export of bulk products are mainly oriented towards the regional market, but some products are also handled for transit. For details on the handover of a new cement import terminal at the Malmö Northern Harbour Business Park, please see p58 of this issue ('IBAU HAMBURG hands over cement terminal').

In 2011, the bulk area at Prøvestenen was extended by 18 hectares and 650 metres of quay. CMP's new areas at Prøvestenen had their first call in February 2012. The new facilities will be leased by companies that process dry bulk on the quayside.

There has already been great interest in the new areas, and CMP expects all of them to be subject to leasing once the roads and other infrastructure are in place.

The 5–10 companies that set up here will be a combination of existing companies from Prøvestenen who wish to expand, and other companies who currently operate elsewhere in Copenhagen or the Øresund Region.

CMP is investing SEK 130 million in the new areas, which have been created from landfill over the last decade. The landfill has been carried out by a joint company set up specifically for the purpose by CPH City & Port Development and the City of Copenhagen.

CMP's market position is based on:

- central location in the Øresund Region with almost four million consumers;
- good possibilities to handle bulk for transit;
- quays, terminals and available storage areas;
- easy access by road or rail to hinterland;
- modern facilities with water depth for large bulk carriers;
- investment in the new infrastructure and equipment;
- close co-operation with partners and sub-suppliers; and
- well-trained and committed staff.

CMP's business philosophy is to provide the best facilities for its customers, and to meet their high demands for fast, effective and flexible operation. CMP has a number of different terminals.

Each terminal has its own profile and specialization.

CMP is a Danish-Swedish joint venture. The shareholders in the holding companies reflects public and private interests.

CMP is a Swedish-registered limited liability company. The company is port- and terminal operator in Copenhagen (Denmark) and Malmö (Sweden). The company is owned by City & Port Development I/S (50%), City of Malmö (27%) and various private owners with 23% of the shares in total. The board consists of 12 members. The eight shareholder-elected members are composed according to the number of shares. The four employees representatives are elected, two from the Danish employees and two from the Swedish organizations.

CMP leases fixed plants such as quays, warehouses, buildings and so forth from City & Port Development and City of Malmö. The annual lease is based upon the cost of existing facilities and the cost of investment in new plants.

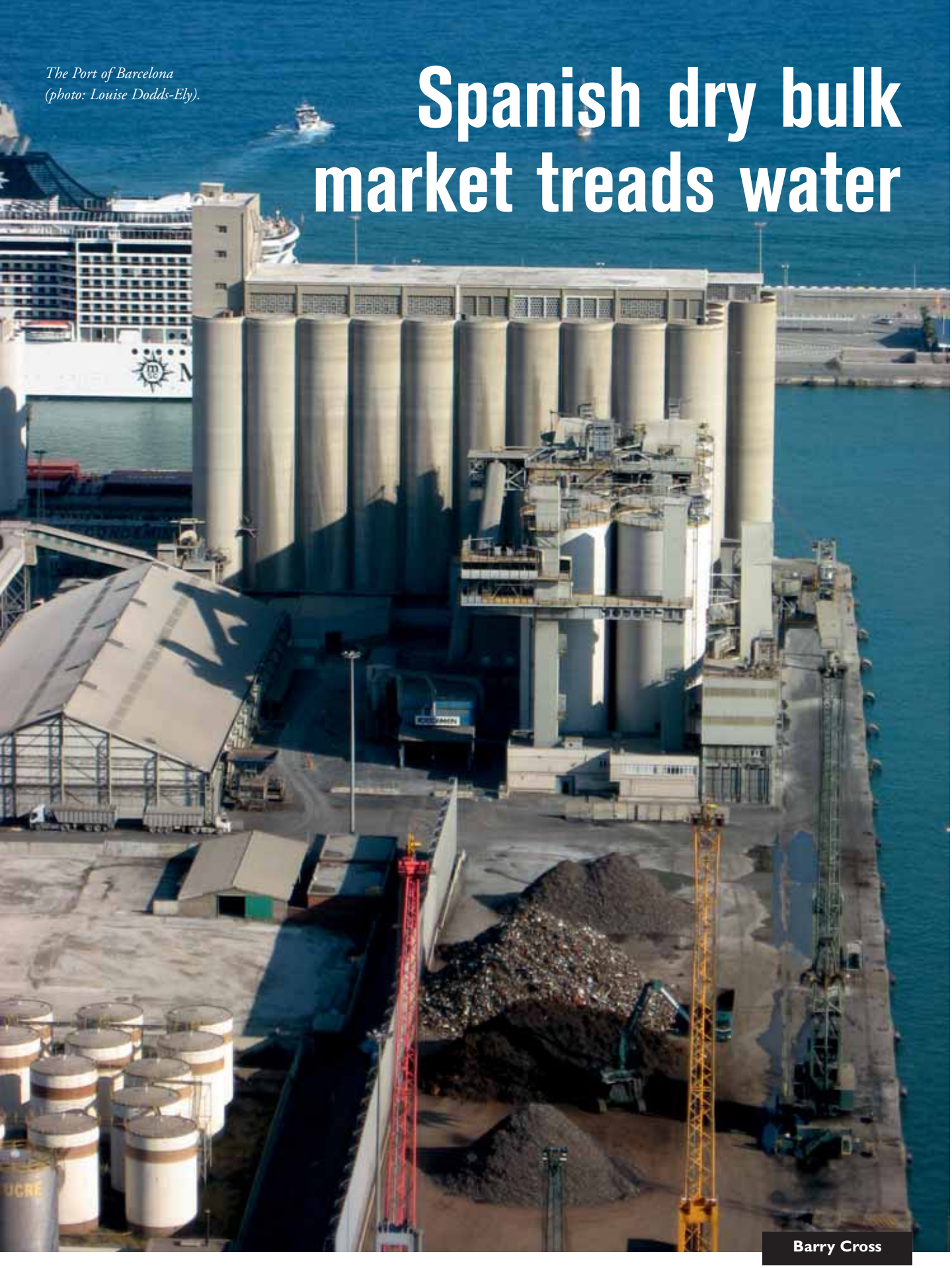
The history of CMP is a story about a unique cross-border alliance. For the first time in history, two ports in two different countries have joined all their port operations into one company, one organization and one legal entity. CMP was founded 2001, following the merger of port and terminal activities in Copenhagen and Malmö.

The merger was a consequence of discussions in 1997 on the opening of the bridge between Copenhagen and Malmö. The bridge meant an end to traditional border traffic and an immediate decrease in the two ports' cargo turnover and passenger traffic.

But at the same time the Øresund Bridge opened new important possibilities for transport and logistics. From the summer of 2000 the Danish, Swedish and Norwegian markets could be reached by one call. A combination ship/train/lorry greatly simplifies Nordic distribution and saves time and money. The Øresund Region consists of almost four million consumers and the Baltic Sea Region of 100 million consumers.

Since 2001, CMP has increased net sales by 70%. Annual profit has multiplied many times over, while staff numbers have only grown by 8%. But the economical climate changed in 2008 and CMP faces a new economic situation.

Spanish dry bulk market treads water



The Port of Barcelona (photo: Louise Dodds-Ely).

Barry Cross

In 2011, the 28 ports administered by Spain's National Ports Authority handled a combined 79.25mt (million tonnes) of dry bulk, equivalent to growth of just 0.77%. The biggest increase came at Motril, up 27% to 601,974 tonnes, while Las Palmas in the Canary Islands reported the biggest drop, down 30% to 521,664 tonnes.

Of the top five leading ports, all but one reported declining traffic. The exception was El Ferrol, which handled 8.68mt last year, an increase of nearly 17%. The other four — Gijon, Tarragona, Huelva and Bilbao — all saw downturns, of 6%, 2%, 15% and 10% respectively.

Gijon remained the leading dry bulk port, with traffic of


The Port of Cartagena.

12.57mt, followed by Tarragona (9.28mt), Ferrol (8.68mt), Huelva (4.5mt) and Bilbao (3.9mt).

These were followed by Almería (3.9mt), Cartagena (3.6mt), Barcelona (3.5mt), La Coruña (3.4mt) and Avilés (3.2mt), all of which saw increasing trade, respectively up 22%, 17%, 0.1%, 9% and 20% over the previous year.

The northern Spanish port of Gijón has lost more than 6mt of dry bulk traffic over the past few years at its European Bulk Handling Installation (EBHI), where linked operator Oligasa has run up debts in excess of €10 million. The port authority, the major shareholder in EBHI, has therefore initiated a process withdrawing the right of Oligasa to undertake operations at Aboño Quay. The operator has been unable to finance its debt with creditors, one of who is the port authority itself, and has not paid fees owed since the end of 2010. Nor have agreed traffic guarantees been met.

Oligasa (the integrated dry bulk logistics operator) was set up in 2002 when dry bulk operations at the port had reached saturation levels, with throughput of around 17mt. At that time, the port authority wanted to set up an entirely separate dry bulk operation, involving storage, handling and distribution of bulks not linked to the steel industry. This was essentially thermal coal, which has been one of the most affected products in the current downturn, with decreases of 38% in overall tonnage. However, EBHI, which handled 10.2mt last year — the record of 16.8mt having been set in 2005 — can now easily accommodate all dry bulk traffic in the port.

Oligasa is owned by Suardíaz (26%), Alvargonzález (22%), Globália Infraestructuras (20%), Dura Felguera (6%) and EBHI (26%) itself. The latter company also owes €3.6 million in port fees and €2.1 million to financial institutions. Indeed, so bad is the situation that the port authority has had to provide EBHI with short term loans needed to maintain cash flow.

According to Armando Fombella, director of EBHI, there is little possibility that the traffic situation there will recover before 2014 at the earliest, putting into doubt an intended move to a new outer harbour location.

In 2011, the Mediterranean port of Cartagena handled a total of 3.6mt of dry bulk, compared with 3mt the previous year. Driving this growth was an increase in agribulk traffic and also the opening a new Repsol refinery, which makes pet coke, a product entirely new to the port.

A spokesperson for the port points out that start of the economic crisis in Spain some four years ago prompted a dramatic reduction in traffic levels of commodities linked to the construction industry, of which cement suffered particularly. However, thanks to a rise in imported cereals and animal feed, plus the start of exported petcoke, overall traffic has once again begun to rise.

"Forecasts for this year are for traffic growth to continue in spite of the state of the national economy," said the spokesperson.

In terms of investment, the port authority is financing the construction of a new multi-purpose terminal at Escombreras, which is Cartagena's industrial harbour. This will have draught of more than 20 metres, a 600-metre long quay and 180,000 square metres of back up land.

Nowadays, around 75% of Cartagena's dry bulk volume is accounted for by agribulk. The port authority aims to grow this further, as well as securing traffic in new dry bulks, such as petcoke, sulphur and iron and steel products.

"We have been successful in securing new commodities in the last few years. I have already mentioned petcoke, but we have also picked up some minerals traffic as well," says the spokesperson.

However, Cartagena will remain principally a net importer of dry bulk, receiving consignments from countries such as Brazil, Argentina and the US. Currently, bulk carriers calling at Cartagena are between 100 and 200 metres long, carrying cargo of anything between 3,000 tonnes and 30,000 tonnes.

Although the port is aware that there is competition for its existing traffic, Cartagena is known as a specialist centre for dry bulk and already has the two largest Spanish stevedoring companies in this sector — Ership and Bergé — already present in the port.

"They are highly experienced, reliable and offer better prices than the competition," notes the spokesperson.

Curiously, rail plays no role in the movement of dry bulk to and from the port, although in the past trains hauled cement to and from the interior. As for added value services, these are undertaken by nearby factories and distribution centres.

In 2011, the Port of Barcelona handled a total of 3.5mt of dry bulk, broadly similar to the previous year. Within the overall portfolio of products handled, there were few major changes. Soya imports fell slightly as a result of less demand from animal feed suppliers, although this was offset by a rise in cereals, where tonnage in 2010 had been depressed because of that year's poor harvest.

"The cereals imported via Barcelona are used mainly to make non-animal food products, such as flour and pasta, and don't therefore vary that much from one year to another. However, soya, which is used in animal feedstuffs, is impacted more by the vagaries of the economy, although the presence of mills within the actual port guarantees a certain stability," notes Lluís París, commercial manager of the Port of Barcelona.

In the last decade, dry bulk traffic passing through Barcelona has actually varied very little, hovering between 3.4mt and 4mt. There were increases of between 9% and 16%, as in 2003, 2005 and 2009, but overall the port has more than held its own in this market.

The importance of the soya mills should not be understated. Plans exists to invest in a whole raft of activities connected with them that should consolidate their position within the port. The fertilizer terminal is also to be modernized and expanded. This upgrade is being led by the port authority, which is looking at improving rail access (not just in Iberian broad gauge track, but also possibly to achieve a standard gauge link) and also dredging various berths associated with this traffic to boost operating capacity.

In terms of major products handled, soya beans head the list with 1.5mt, followed by potash (561,000 tonnes); cereals and flour (399,000 tonnes); cement and clinker (283,000 tonnes); foodstuffs and forage (39,000 tonnes); scrap (401,300 tonnes); coal (119,000 tonnes); common salt (104,000 tonnes) and chemical products (23,000 tonnes).

"We are seeking to increase volumes that can make use of existing installations which, for the most parts, we are planning to modernize," says París.

Imports are mostly sourced from the Americas, with soya beans brought in from Argentina and Brazil, along with cereals, which are also acquired in the US and Eastern Europe.

Scrap, which is related to the production of steel, is also inbound and is used to make end products for the construction industry, while outbound traffic consists of fertilizer and salt, demand for which can increase very rapidly in a short space of time.

"Barcelona faces strong competition from the Port of Tarragona, situated some 90km to the south. Several important companies linked to the dry bulk sector are located there. Some cereals traffic, however, is routed via Barcelona based purely on our higher quality installations and for the fact that we are focussed on providing non-animal foodstuffs. Soya, clearly, has to go where milling facilities exist, while scrap is invariably linked to steel plants. Coal traffic that we handle also goes to cement production plants, where it is used to heat furnaces," notes París in response to a question about competition.

Quizzed as to the role of rail within the port, the spokesperson points out that, in the case of potash and common salt, rail is fundamental, linked as it is to the actual production. In 2011, for example, rail handled 375,700 tons of potash, up 52% over the preceding year. The previous year, growth had been even more spectacular, reaching a whopping 106%.

Cereals traffic by rail has also grown, thanks to the creation of modern sidings at new flour mills built within the immediate hinterland of the port.

As for adding value to consignments, several terminals provide bagging, labelling and capillary distribution for the products they handle, as well as storing material in facilities that are certified to international levels, which allows goods that have been stored there to be traded in the markets offering full guarantees.

Finally, vessel sizes conveying dry bulk can vary enormously. These, however, divide between very small vessels, of 3,000–5,000dwt, which are normally chartered by the end users or loading company, and larger, Panamax vessels, which come from the Americas, invariably chartered by traders, although sometimes they are hired by end users, too.

Valencia Port Authority (APV) and Bunge Ibérica, which manages storage facilities in the port at Nazaret under the Moyresa branding, have reached an agreement regarding the future of this area. The owners of the silos located there have agreed that they can be demolished, thereby allowing this area to be redeveloped. This will especially help in making it possible to upgrade the port's extensive internal road network.

By vacating the area, some 60,000 square metres of land will be freed up.

Henceforth, Bunge Ibérica will use third-party installations at Valencia to handle its current traffic, which has decreased notably in recent years.

In 2011, Almeria handled 3.93mt of dry bulk, according to commercial manager Jose Cuesta. However, looking back to 2007, this represents quite a dramatic loss of traffic, since the port registered dry bulk traffic in that year of 6mt. Most of this is due to the loss of coal traffic at the Carboneras harbour, which in part was down to a switch to domestic coal and also to reduced demand for electricity. In addition, cement traffic has decreased, while export gypsum has also gone down.

"Forecasts for 2012 are similar to those of last year, although perhaps a little better. The situation regarding cement has not changed, although gypsum exports are picking up," says Cuesta.

Coal at Almeria comes from South Africa and Colombia, with

The Port of Barcelona.

Handling bulk at the Port of Castellón.

cement imported from Ukraine and Turkey. Gypsum is only exported, mainly to the US.

Almeria port authority actually administers two ports, some 65km apart. Capacity across the two is significantly greater than existing traffic levels. Given that highs of 6mt have been reached in the past, Cuesta says that a lot of spare capacity can still be found at both Almeria and Carboneras (where both Holcim and Endesa operate).

In terms of handling equipment, Endesa discharges coal using two portal cranes onto a network of underground conveyors, which moves the coal to stockpile areas. For Holcim's export cement trade, a second network of conveyors is in place, with cement thereafter loaded directly into vessels. Gypsum exports at Almeria are also loaded using conveyors.

Cuesta notes that some minor bulks, such as peat, bentonite, fertilizer, are also handled at Almeria.

As for vessel size, the largest calling at Almeria is in the region of 36,670dwt, with maximum draft of 13 metres. In contrast, Carboneras accepts vessels of around 90,000dwt, with available draught of 18 metres.

"Vessel sizes have grown somewhat since 2007, reflecting economies of scale," says Cuesta.

Last year, the Spanish Mediterranean port of Castellón de la Plana registered a 10.3% rise in dry bulk traffic. Overall, volume reached 3,244,831 tonnes. According to the port's press officer, Jesús Postigo, the local ceramics sector experienced something of a recovery, driven by the export of finished products, which in turn drew in more raw materials, such as clay and feldspar.

The Port of Castellón.

Two years ago, the port authority completed work on a dedicated dry bulk terminal, which is situated in the new Dársena Sur. This is home to the main dry bulk handling company, PortSur, which Postigo explains mainly handles inbound clay and feldspar.

"From what the ceramics sectors has said, there is an expectation that traffic will increase this year, with new lines going to call. We are also expecting to handle new products, such as clinker, petcoke, bio-diesel and grain. These form part of a diversification programme launched by the port authority," he says.

The coke comes from the BP Oil refinery, while clinker is imported to make cement, whereby Castellón port already has two production plants. Grain is used to make cereals, while the local bio-diesel plant is the biggest in Europe.

Clay is imported from Ukraine and feldspar from Turkery, being the second and third most important origins respectively in the port, with combined traffic of nearly one million tonnes. Asked whether the port faces realistic competition from any other ports, Postigo says that for ceramics there isn't.

"We can say that Castellón is Spain's leading port for ceramics bar none, given that nearly 100% of the raw materials are imported here and the export of tiles has doubled in the last two years. 95% of the Spanish ceramics industry is based here and virtually all the production facilities are located in the so-called "ceramics triangle" at a radius of just 15 minutes from the port," he says.

Given that the entire industry is no more than 30km from the port, rail plays no part in moving raw materials. The entire traffic therefore goes by road.

Castellón also offers a whole raft of added value services. Behind the ceramics quays where raw materials are off-loaded and also at PortSur there are established logistics zones used by mills, where blending and bagging activities also take place.

In terms of vessel size, the average is of 25,000dwt, although PortSur can handle Panamax vessels of up to 80,000dwt. DCi

Cargotec K50 crane raises expectations

The K50 crane offers a capacity of 50-tonnes in grab operation and an outreach of 32m.

Offering a long service life and higher capacities for the bulk handling and transloading market is Cargotec's new MacGregor K5032-4HD four-wire crane, and the first unit has been delivered to Indonesian owner, PT J&Y Transhipment

The first 50-tonne SWL four-wire MacGregor K5032-4HD crane has been delivered to its new owner, PT J&Y Transhipment. It will be operated exclusively by PT Armada Rock Karunia Transshipment on the Indonesian islands of Bunyu and Tarakan, in the East Kalimantan province.

The K5032-4HD was introduced in 2010 and now forms an important part of Cargotec's MacGregor four-wire rope (K4) crane portfolio.

"We have high expectations for this new crane model," says Anders Berencsy, sales manager for MacGregor cargo cranes. "The market is looking for this type of high-performance heavy-duty grab crane.

"Our first unit is being delivered for operations in Indonesia. The whole of southeast Asia is a very important market for these kinds of cranes and we have received recent orders for both K50 and K30 cranes from Thailand, India and Indonesia, demonstrating this large market for our K4 cranes," he says.

The continued demand for coal-powered energy production and the increased coal production in Indonesia makes the country a major market for these kinds of cranes. To strengthen its position there, Cargotec is preparing to open up a service station in the Kalimantan region. "It is important to show our customers that Cargotec is a serious supplier for this types of equipment and likes to stay close to its customers as well.

"There is also increasing interest in our K4 cranes in India, for use in both its bulk import and export markets, mainly handling iron ore and coal. We have K4 cranes for all types of bulk handling and transloading operations," highlights Berencsy.

"With a capacity of 50 tonnes in grab operation and an outreach of 32m, the K50 crane is at the upper performance level in this segment and offers a very high capacity to load both Capesize and Panamax bulk carriers.

"Different outreaches give the customer the opportunity to optimize load cycles for specific operations," Berencsy says. "If you want to load or unload Panamax or Capesize bulk carriers, outreaches from 32m to 36m are perfect. And our model with a 28m outreach is ideal for use on transfer terminals and unloading barges discharging to hoppers.

"All our K4 cranes are designed to have a long service life, with an estimated usage of around 5,000 hours per year. And they all fulfil FEM U7-Q3-A8 classification standards. We believe that this is vitally important when selecting a crane and its manufacturer for these types of tough operations.

"Our crane designs, with all components located inside the crane housing, are also good for extending the service life of our products, as winches and all drive systems are well-protected from dust, sunlight and the weather in general. This protection is particularly important for bulk operations, which are naturally quite dusty."

K50 and its smaller predecessor, K30, heavy-duty four-wire rope cranes are designed to operate in open sea conditions with a dynamic hoisting factor of 2.1.

The K50 can also be delivered with an eccentric platform. "A combination of a K5036-4HD and 9.0m eccentric platform provides a high capacity solution with a 45m-long outreach that will cover the biggest bulk carriers on the market," notes Berencsy.

Cat® 950K and 962K loaders: high performance, low emissions

Two new wheel loaders from Caterpillar, the 950K and 962K feature engines certified as meeting European Union Stage IIIB emissions standards while delivering high performance, long life, excellent fuel efficiency and low operating costs. Each loader features many improvements including a new operator station, optimized Z-bar linkage, Performance Series Buckets and high-efficiency drive train.

The 950K and 962K share the new Cat® C7.1 ACERT™ engine. At 1,900rpm, the engine provides peak net power of 211 horsepower in the 950K and 221 horsepower in the 962K. The loaders use buckets ranging in size from 2.50m³ to 9.20m³. Both machines can be equipped with a Cat Fusion™ coupler and a variety of work tools. The new K Series™ loaders replace their H Series predecessors.

Powered by a new Cat C7.1 ACERT engine, the 950K and 962K is certified as meeting new emissions standards while improving performance and fuel efficiency. The engine incorporates an upgraded ADEM™ 4 control module and a new high-pressure common rail fuel system to improve combustion efficiency and reduce emissions. The rugged Cat Clean Emissions Module is securely mounted on its own platform above the engine and contains a diesel oxidation catalyst, diesel particulate filter and Cat regeneration system. Regeneration, the process by which soot is removed from the diesel particulate filter, can be set to take place automatically so that it does not interrupt the machine work cycle, and it can be initiated manually.

Tenova acquires Bateman Engineering and expands further

On 16 April, after having obtained approval from all the required Antitrust Authorities, Tenova closed the acquisition of Bateman Engineering N.V. (which includes Delkor Group), a leading equipment supplier and engineering house for the mining industry.

As a further step into the mining and minerals market, in addition to the Batman Engineering N.V. acquisition, Tenova also expands itself through the integration of the Bateman business related to solvent extraction, electrowinning and chemical technologies. Tenova Mining and Minerals product portfolio now includes also hydrometallurgical equipment and solutions for minerals, fertilizers and phosphates.

Solvent extraction, electrowinning and chemical technologies processes span from the preliminary stages of defining the customer's needs and conducting research and feasibility studies to plant modification, expansion and new facility construction.

Tenova Mining & Minerals division, which also includes Tenova TAKRAF and Tenova Pyromet, now covers the mining industry value chain thus being an all-round supplier of innovative technological products with full process and commodity knowledge.

Tenova Mining & Minerals becomes a group generating annual revenues in excess of US$1.1 billion, employing 2.400 personnel and operating in 19 countries across five continents.

Tenova is a worldwide supplier of advanced technologies, products, and engineering services for the iron & steel and mining industries providing innovative, integrated solutions for complete process areas.

SMB Shiploading

SMB Group
best solution

Highlight of the month

The north German company, SMB International GmbH, has a niche specialty: combined shiploading.
SMB designs and manufactures combined ship loaders for bag and bulk loading.
Incorporating the characteristics of the material handle, suitable conveying technology is applied to achieve efficient loading.
The mechanical conveying is achieved by separate conveyor belts for each form of material.
SMB engineers have recently designed a combined shiploader for the loading of bagged and bulk cement for Russia.
The system operates at extreme conditions and temperatures up to -40°Celsius.

Ships all over the world are being loaded with know-how from SMB

Furthermore **SMB International GmbH** is specialised in shiploading systems for the coal industry, port terminals and Stevedoring Companies alike. Depending on customer requirements we engineer stationary and mobile bulk shiploaders with suitable loading chutes. This is necessary to optimize the flow rate of the bulk material such that dust emission and material degradation is minimized.
SMB Shiploading offers the best solution for every task. We rely on more than 30 years of experience in this field – the list of worldwide references of more than 100 sites for shiploading systems speaks for itself.
Regardless of a stationary or a mobile loading system running on rails, **SMB Shiploading** provides the best solution for each loading situation.
As always we pride ourselves that all major components and modules of each installation is manufactured by us in Germany.

- Robust construction
- Secure and fast embarkation of bags and bulk-materials
- Capacity-increase of existing systems
- Spiral chute for loading of bags is known world-wide
- Cascade chute avoids damages to the product
- Cascade chute reduces dust emissions

Save costs by

- Shorten demurrage
- Minimize manpower involved
- Lower transportation costs
- Reduces losses due to degradation of product

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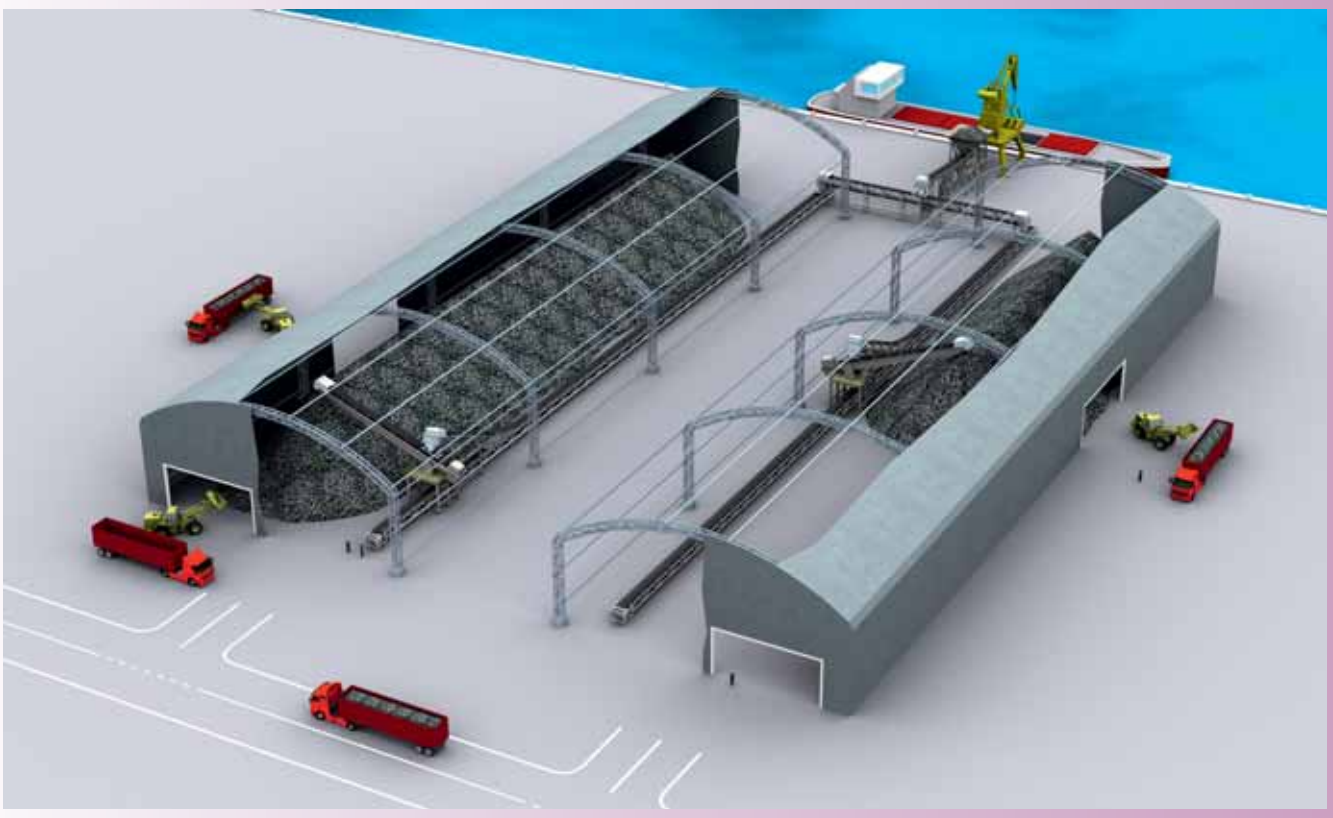
Bulk handling expertise from Italy's LB Officine Meccaniche



Today LB Officine Meccaniche S.p.A. is an important company in terms of Italian technology. Established in 1973, the company designs and builds complete systems for treating and handling raw and powder materials.

The company has gained considerable expertise and experience over the years, which enables it to offer top quality service for the supply of turnkey systems for harbour terminals capable of handling all stages of the process: unloading of bulk materials from vessels, transport, storage, weighing, batching, packaging and loading of bulk product. Materials used in the construction of LB systems are all subject to regular and stringent quality tests. The design stage is entrusted to the engineering department, which works to fulfil the client's requirements and to enable rapid and accurate installation and testing. The LB quality system is UNI EN ISO 9001:2000 certified.

LB pays particular attention to customer service, and takes full ownership of projects throughout all stages of development. The company has a modern industrial laboratory, which is equipped with the latest technology for research and development in the field of raw material handling and which can provide invaluable information for perfecting each project. Within the LB Technology Center, training courses are also held for technicians in charge of running and servicing the systems.

An effective after-sales service provides timely assistance all over the world with qualified technical personnel. LB has long-standing partnerships with many renowned industrial groups, which enable it to offer exceptional expertise and remarkable technological expertise in the handling of raw materials, cement and materials for the building trade.

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Getting a grip on cement

handling, storing and transporting of cement and limestone

Belt conveying systems enable a rapid and efficient transport of bulk material from the quarry to the destination also through rough terrain.

Louise Dodds-Ely

Sustainability is the key: belt conveyor or truck – which is most efficient?

Modern mining technologies require systems that are capable of transporting bulk materials quickly and efficiently from the quarry to the destination, and through rough terrain as well. Often trucks are used for this. Depending on the nature of the terrain, however, trucks rapidly reach their limits as they need, for example, well-developed roads. The costs arising for construction, maintenance and possible extension are not insignificant. In addition, all of this implies serious landscape changes.

The emissions caused by truck traffic are undoubtedly high, both with regard to toxic substances and to noise and dust. BEUMER develops and installs curved belt conveying systems, which ensure efficient and environmentally safe transport also in rough territories. A comparison follows.

Belt conveyor or truck?

This question was raised at Asia Cement Group, a large building material manufacturer with its headquarters in Taipeh (Taiwan): approximately 30km separate the quarry from the newly constructed plant. The requirements were clearly defined: the limestone has to be transported rapidly to the plant, which is provided with three kiln lines each having a daily output of 4,200 tonnes. For this, Asia Cement Group needs daily 21,000 tonnes of raw material. The cement producer had the option of choosing between transport by truck or belt conveying system.

Due to the fact that the terrain consists of mountains and bamboo woodland, the trucks would have had to drive mostly via public roads. This would have caused detours, slowed down transport times and raised costs. Asia Cement chose the troughed belt conveyor of the intralogistics expert BEUMER as the cost-efficient solution.

Considering ecological, economic and social aspects

Several companies have to take this decision if they intend to transport large quantities of bulk material such as ore, coal, gravel or sand from the quarry, the mine or the sand pit to the plant or to the harbour as cost-efficiently and quickly as possible. In this regard, trucks present many disadvantages. To build roads is expensive and implies considerable landscape changes. This is especially the case as roads dimensioned for dump trucks require a width of up to 30 metres. Moreover, roads must be maintained. Operational costs and emissions caused by trucks are to be added as well — including fuel consumption and personnel costs, as well as noise and dust. The more raw materials have to be transported from the quarry to the plant, the more truck loads have to be undertaken.

Belt conveyors — an efficient alternative

Therefore in practice companies must take a closer look at the alternatives. With its belt conveyors, BEUMER provides an economical and environmentally protective solution for bulk material. The belt conveyors are able to navigate long distances, high angles of inclination and tight curve radii, and can be adapted individually to the respective application and topography. The landscape changes are minimal and meet even the highest environmental protection requirements. Modern conveyor belts guarantee durable belt strength. BEUMER makes use of different dimensioning programmes to determine the ideal belt strength. In this way, tractive forces or loads arising during starting and stopping also can be calculated — and this always considering the different loading conditions (empty, fully loaded, unequal loaded). Possible horizontal and vertical curve radii are also calculated with this programme. BEUMER provides preliminary

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In difficult terrains the transport of bulk material by truck would cause considerable detours, slow down transport times and raise costs.

feasibility studies in this regard. Furthermore, the belt position in the corresponding curve radius is pre-calculated for empty and loaded belts thus enabling the optimal adaptation of the belt conveyors to the local environment. Due to their slight routing, the belt conveying systems can handle rugged terrain and other obstacles, such as rivers, streets, buildings or train tracks. Horizontal and vertical curves can even overlap. Except for support columns and steel structure that need to be constructed, the landscape is not subject to changes. Companies save significant costs, including those typically arising for example in connection with earthwork, and even in difficult environments the construction work for these systems is minimal. In addition, belt conveyors represent an environmentally friendly solution, which can therefore be adopted also in nature reserves.

The direct routing enables a considerably faster material transport than by truck. In addition, fewer personnel is required for operating the belt conveyors. A further advantage related to the use of belt conveyors instead of trucks and implying additional cost saving is the minor energy consumption that at the same time reduces the CO_2-emissions. Depending on the project, belt conveying systems require up to 90% less primary energy than comparable truck transports. A concrete project-related comparison discloses that, merely due to the consumption of diesel fuel, trucks require a specific primary energy of 11.4kW/h for each tonne of transported material. In contrast, the belt conveying system that was constructed later requires only 1.44kW/h. If, as in this case, 7.5mt (million tonnes) of raw material are transported annually, the use of belt conveyors means a total saving of 74 million kW/h per year. This corresponds to an energy consumption of more than 20,000 single-family houses. Solely by saving diesel fuel, the operational costs of the company are reduced by more than €5.5 million per year.

The advantages of the pipe conveyor are, for example, the protection of the material from the elements and protection of the environment by means of dust-free transportation.

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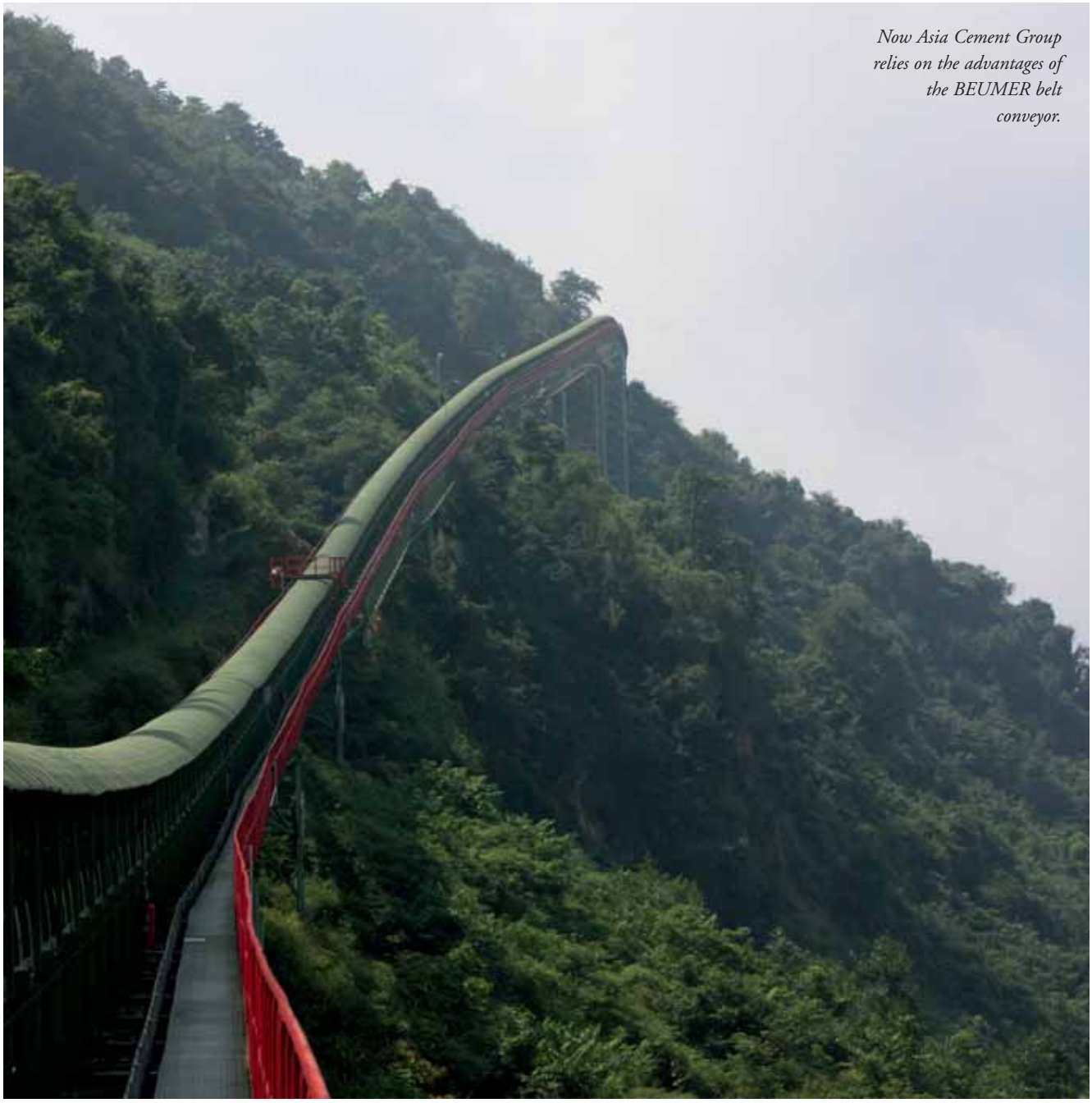

Now Asia Cement Group relies on the advantages of the BEUMER belt conveyor.

Environmentally friendly transport

Depending on the requirement, BEUMER provides open troughed belt conveyors for higher throughput, larger mass flows as well as larger curve radii, and closed pipe conveyor for products that need to be protected against environmental stress. Preferably, they are used also in topographically challenging terrain that requires small curve radii and large angles of inclination. In order to minimize dust formation during transport, the open troughed belt conveyors can be covered or encased. This sealing ensures dust-free transport.

However, things are completely different for trucks: considerable dust quantities arise during transport. The dust is dispersed on the loading space and causes substantial environmental pollution.

In order to minimize this, roads are for example sprinkled with water. This represents not only an immense expenditure, but in regions suffering water shortages this process is simply impossible. In addition this water — mixed with oil, tyre abrasion or bound contaminants — flows back into the ground water.

Belt conveyors are additionally provided with environmentally safe electric drives and low-energy belts. Therefore, especially in times of climate change and increasing greenhouse gas emissions they are considered a 'preferred option'. The motors — which, depending on the topography are run in motor-driven and regeneration mode — are always speed controlled. This permits an optimum load distribution on the drive unit in different operating conditions. If the belt conveying system conveys downhill, the system works in generative operation. The generated electric energy is fed to the local grid by a regenerative feedback unit. By this operational mode, the operating costs of the complete system can be further reduced.

A further advantage of the belt conveying system is the low noise emission. They operate quietly and meet also strict environmental regulations. Specific idlers, noise-reduced bearings and low-noise electric drives make sure that belt conveyors are so quiet that they are often the only alternative to material transport in nature reserves or in inhabited areas. Dump trucks, on the other hand, can generate very high noise levels of more than 100dB (A).

Multipurpose Surface Feeder

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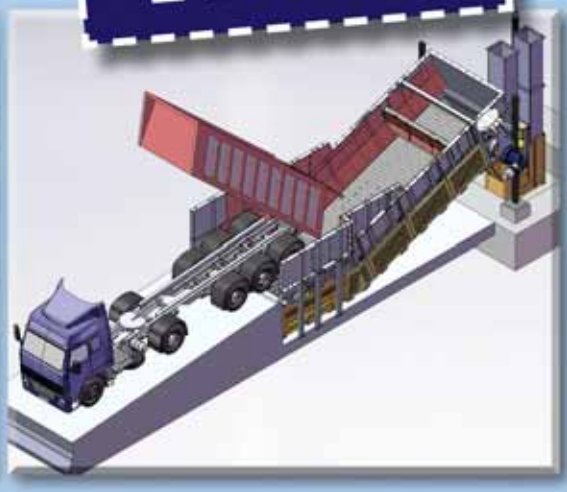

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Standard Industrie helps solve classic cement handling problems

Standard Industrie International designs and manufactures equipment that facilitates the storage, flow and conveying of powder and bulk products, including cement. The company strives for continuous innovation, and always offers competitive equipment at the leading edge of technology. Founded in 1978 by Hervé Simoens, the company is now present all around the world thanks to a large network of subsidiaries and agents.

The company offers a wide range of products divided into four specialities:

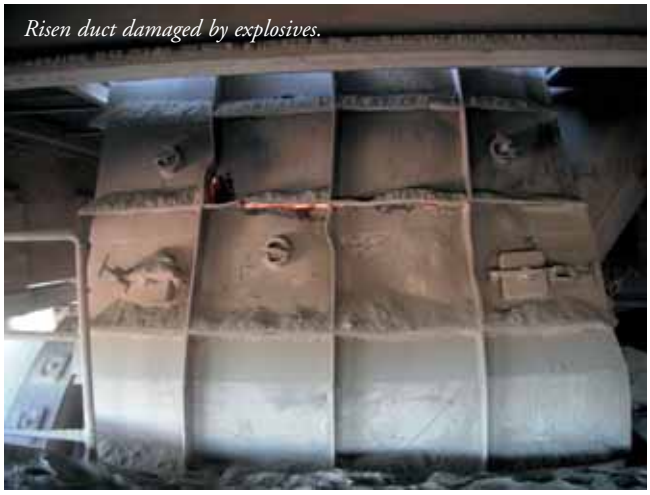
- **Airchoc** air cannons;
- vacuum units;
- **Liftube** optimization system for conveyor belts;
- **Gironet** cleaning of silos and hoppers.

The mission of Standard Industrie International is as follows:

- to bring innovative and tailor made solutions to customers in order to generate added value;
- to optimize the manufacturing process;
- to ensure a clean and secure work environment;
- to reduce the costs related to maintenance and production.

The company is notable in its field due to:

- designer and manufacturer;
- analysis and recommendation for every customer's problem;
- installation and maintenance of the equipment (maintenance contracts, inspection contracts...);
- on site products demonstrations;
- training provided on how to use the equipment.



Risen duct damaged by explosives.

Concretion in the cement making process

Build-ups are a major obstacle at the different stages of the cement-making process. They disrupt the functioning of the installations and, in order to limit their occurrence, the cement plant looks after different parameters:

- the regular control of the chemical components and of the particle size;
- the regulation of the combustibles according to their sulphide and chloride level;
- the optimization of the combustion at the tail pipe level;
- the regulation of the temperature of the kiln.

Unfortunately these actions cannot, alone, completely avoid the concretion phenomenon in certain areas such as:

- the preheater tower with the kiln entry, the gas outlet pipe, the cyclones, the raw mill chute and the fume box;
- the bypass;
- the cooler;
- the tail pipe.

Reduction of operational risks

Some build-ups can be partially eliminated without stopping production. Unfortunately, this operation can be a real danger for the operators and involves a decrease in the production capacity.

For some areas in the process, the operators can intervene in a curative way (after the problem occurs) by using methods like manual poker or high-pressure lance.

During such operations, the air goes into the process and generates chemical reactions that contribute to the formation of other build-ups. A vicious circle that creates more reduction of the production capacity…

These interventions do not necessarily require the stopping of the installation but the operators take considerable risks (burning products projection/high pressure use/large blocks falling…) and a lot of incidents are reported every year.

The implementation of an appropriate device like the AIRCHOC makes it possible to limit these risks.

The Airchoc:power and precision for the customer

The AIRCHOC is a pneumatic declogging device especially developed to break bridges and rat-holings in storage silos and hoppers. Its application has been broadened over the last 30 years to the cleaning of build ups in technical processes such as cement plants, lime works, steelworks, incineration plants, power plants, coke works, glassworks, chemical plants, …

The principle of the air cannon AIRCHOC consists of using a compressed air capacity, varying between 1–400 litres according to the type of AIRCHOC. This capacity is released instantly through a large outlet that is directly connected to the storage unit. The obtained effect corresponds to a deflagration due to the brutal release of compressed air.

The power given out for each firing depends on the three following parameters:

- the compressed air pressure;
- the reservoir capacity;
- the diameter of the AIRCHOC outlet (blowpipe)

Standard Industrie International has the largest range of air cannons, which enables it to satisfy its customers' requirements exactly.

The Airchoc solution

The AIRCHOC offers multiple advantages, which are behind its success:

- preventative action;
- efficient on all types of products;
- eliminates all types of build ups and blockages;
- adapts on all types of installations (high temperature, explosive environments);
- use without stopping the process;
- accessible from outside;
- simple maintenance;
- does not damage the structure;
- easy installation and starting up;
- safety of the operators.

The customers quickly realized the importance of all these advantages. The AIRCHOC is popular in a large number of industries, and especially in the cement industry.

New installation of airchoc 5 at Cemex (Alcanar)

CARDOX explosives are still being used in cement plants. Tubes filled with carbon dioxide are installed by qualified staff on the area to declog. When the activator is electrically actioned, a chemical reaction occurs releasing a huge force at pressures reaching 3000 Bar. The declogging of the area is completed, but the method presents a number of inconvenient such as:

- dangerous to use;
- intervention requiring qualified staff;
- results which are not totally well controlled;
- the refractory and the structure get damaged.

These unpredictable factors sometimes lead to the complete shutdown of the installation.

To find a better alternative to those CARDOX releases, CEMEX Alcanar chose the air cannon solution, and 74 AIRCHOC 5s have been installed on the preheater tower's critical areas.

At the forefront of the range, the AIRCHOC 5 benefits from many advantages. It is more powerful thanks to its aerodynamic head which releases air more rapidly; less noise thanks to silencers installed on the release device; more compact thanks to its new generation head. This device has been specially developed for high temperature applications. It offers total safety, and helps to save on compressed air.

It is no surprise that the AIRCHOC 5 is recognized as an ideal solution for all build-ups. Build ups are destroyed by the AIRCHOCs before they can even negatively affect the process. The operations are automated and the safety of the operators is insured. The process reliability is increased therefore, the installation performance result is guaranteed. The AIRCHOC is now available in a wireless option.

Each AIRCHOC is activated by a sequence and automatically fires thanks to the control panel. In some part of the process, the AIRCHOC is equipped with a deflector that can be straight, inclined or elbowed.

Remote solenoid valves

The control panel is programmable and collects the different firing sequences. Each AIRCHOC is associated with a solenoid

Think wireless!

valve. These solenoid valves are electrically connected to the control panel via a terminal and enable the automatic firing.

To give an optimum solution adapted to all customers' requirements, Standard Industrie International offers different firing devices:

- the electric control
- the pneumatic control
- the Wireless receiver
- the remote solenoid valves.

In order to simplify the access, to optimize the maintenance and keep the solenoid valves away form any source of heat, CEMEX Alcanar chose the remote solenoid valve solution.

Installation instructions

For the installation to work in an efficient manner, a good technical study must be completed. In collaboration with the R&D department and thanks to the information gathered by the technical sales manager on the customer's site, the technical department carries out a precise analysis to locate the build-ups issues. Different methods are used, photography or pyrometry that enables to measure the temperature in each area without direct contact.

The experience gained by Standard Industry International since 1978 is available to each customer. All the information related to installations is saved into a database and latest generation software systems helps to extract and use this database. Once the measurement and the technical study is completed, a detailed installation drawing is sent to the customer.

Details of the installation by area and explanation of the build-ups phenomenons

Customers often ask how many AIRCHOCs must be installed on their installation. Contrary to popular belief, the number of air cannons cannot be calculated with a simple mathematic formula. The cement making industry is a complex process and lots of parameters must be taken into account. There is no identical installation in the world.

8 remote solenoid valves box.

- **Area:** gas inlet cyclone 4
  Problem: chemical reactions generating material agglomerations and bonding of the concretions. Decrease in the gas flow resulting in acceleration and a poor heat exchange (lower production)
  Solution: Installation of 10 AIRCHOCs

- **Area:** gas outlet cyclone 4
  Problem: chemical reactions generating concretions that stick on the ceiling. In case of fall of these concretions, there is a risk of clogging in the cyclone.
  Solution: Installation of 8 AIRCHOCs

- **Area:** high cyclone
  Problem: chemical reactions generating strangulation of the cone. Provokes an increase of the speed of the material that can create concretions and a risk of clogging in the cyclone.
  Solution: installation of 3 AIRCHOCs

- **Area:** the raw mill chute
  Problem: The important flow of material passing through the pipes causes concretions. The heat exchange is also a result of these product build-ups (condensation during passage through cooler areas). Clogging of the flour chute that causes the clogging of the cyclone.
  Solution: installation of 5 AIRCHOCs

- **Area:** the gas outlet pipe
  Problem: the heat exchange is a result of these accumulations of materials (condensation during passage through cooler areas). The sulphur, chlorine and other impurities cause agglomerations of material on the walls, reducing the section of passage of gases. This cause the acceleration of the gas flows upward (poor heat transfer), resulting in a lower productivity.
  Solution: installation of 38 AIRCHOCs

- **Area:** kiln inlet
  Problem: the accumulation of materials is exacerbated by the condensation when the temperature changes. In addition to reducing the section of the gas flow, the blockage is further strengthened by the passage of material down the raw mill chute. This causes a 'springboard-dumper' helping the suspension of dust and sealing the entrance of the kiln.
  Solution: installation of 10 AIRCHOCs

An excellent return on investment

In the cement industry, the installation of AIRCHOC contributes to:

- increased ability to burn alternative fuels (cheaper);
- reduction of manufacturing costs;
- improved capacity of the kiln;
- increase in the quality of the clinker;
- strengthening the safety of employees.

Evaluating the return on investment of spending related to safety is not easy, as it is difficult to quantify the gains that could be made by a company.

However the savings made on production costs are easily calculable and the payback period is less than two years.

IBAU HAMBURG hands over cement terminal

On 15 March this year, IBAU HAMBURG officially handed over the new cement import terminal in the Malmö Northern Harbour in Sweden to Cementa AB, part of the HeidelbergCement Group. This handover took place during an inauguration ceremony.

The EPC-contract, including piling works, civil works, steel structure supply and erection as well as electrical and mechanical supply and erection, was successfully commissioned in November 2011 without any delays. IBAU HAMBURG successfully completed the 18-month construction and commissioning phase without one single lost-time-accident.

The Cementa-owned ships can discharge at the terminal at rates of up to 1,000tph (tonnes per hour). The cement is fed to the multi-compartment storage silo which has a height of 90 metres, a diameter of 26 metres, with six chambers and a capacity of 30,000 tonnes. The distribution takes place via three combined truck/wagon loading lanes, each with a capacity of 250tph. The whole terminal can be operated 365 days a year, 24 hours a day, fully automatically.

According to the Mayor of the City of Malmö, the new Cement Import Terminal with its unique design has now become a new landmark in the Öresund Region.

BEUMER upgrades Lafarge belt bucket elevator, greatly increasing service life

A Lafarge Group cement plant. As an energy-efficient and environmentally sound production is quite important for Lafarge, the systems have been completely modernized.

Spectacular residential and office buildings, tunnels and other infrastructure facilities — nothing can be built without cement. To produce cement for various applications in an economic way, Lafarge modernized the production facilities at its plant in the town of Wössingen, in the Baden region, Germany. The modernization included the existing belt bucket elevator to the raw mill. The intralogistics specialist BEUMER offered its innovative heavy-duty bucket elevators, permitting higher conveying capacity and longer service life. Thanks to this new technology, the existing bucket elevator could be easily altered.

In the scope of the modernization, the belt bucket elevator has been upgraded with the BEUMER heavy-duty technology. The new bucket shape ensures smoother running and thus less generation of noise.

There is no longer any gap between belt and bucket. The result is that material no longer gets caught during the scooping and filling process.

The preheater tower of Lafarge Group's cement plant looms just a few hundred metres before the sign Wössingen, near Karlsruhe. In the 1970s, the plant was taken over by the international producer of cement. "We have almost 78,000 employees in 78 countries," says Stephan Schenk, the head of servicing and development at Lafarge Zement Wössingen GmbH. Worldwide, Lafarge is a major presence in many countries, such as France, England, Poland, Greece and Austria. In Germany, Lafarge is among the six leading producers. "Thanks to the state-of-the-art technology and a high sense of responsibility, we produce approximately 800,000 tonnes cement per day for various applications and requirements at our Wössingen site," explains Schenk. Lafarge places particular value on production methods that are both energy-efficient and environmentally sound. For this reason, the systems have been modernized for more than €60 million in 2008 and 2009. Now, the cement plant has a five-stage heat exchanger and a new clinker cooler.

"We changed from the Lepol process to the energy-saving dry process with heat exchanger and precalciner with no interruption to the operation. To make the production more cost-effective and environmentally sound, we changed from the two-kiln operation to a single rotary kiln," explains Schenk. "The kiln line has now a considerably higher capacity. The system is fed with approximate 150 tonnes of raw material per hour. Accordingly, the complete production has changed," the engineers says. Due to the increase in performance and modernization of the kiln line, the flow rate of the bucket elevator for the raw mill had to be increased considerably. The bucket elevator transports limestone to the mill bunker.

High wear of the belt

"Due to the higher flow rates we had to face more problems with the coarse-grained material," remembers Schenk. Larger particles became repeatedly jammed between belt and bucket, causing substantial wear. Conventional belt bucket elevators are limited by the maximum grain size of the material to be conveyed as the conventional bucket mounting results in a gap of about 25mm between bucket and belt. Larger particles may get stuck in this gap. This quickly results in belt damage when the belt runs around the return pulleys. "The belt became porous already after two years," explains Schenk. A new solution needs to be found both to avoid belt cracks and to meet the growing requirements. Nevertheless, long-term thinking was called for. "Because a new belt is very expensive," adds Schenk.

New heavy-duty technology gets the job done

At first, the engineers from the Wössingen plant wanted to replace the existing belt bucket elevator with a central chain bucket elevator. "We would have solved the problem with the transport of coarse-grained material," says Schenk, "but a new central chain bucket elevator would have become quite expensive." In search of a suitable solution, the cement producer contacted some manufacturers of vertical conveyors — among others, the BEUMER Group, headquartered in Beckum, Germany. The co-operation between BEUMER Group and the cement plant in Wössingen has a long tradition. For decades, the market leader has established itself successfully in this sector and could impress the customer with its solution. "When specifying our conditions, BEUMER recommended the newly developed technology," remembers Schenk. "Central chain bucket elevators which transport limestone are subject to high wear as the raw material contains abrasive particles which act as sandpaper," says Schenk. Though identical with that of belt bucket elevators if used for materials that have little abrasive action, the service life of chain bucket elevators is much shorter in the case of strongly abrasive materials. After thorough consultation with the BEUMER specialists only the belt and the buckets were renewed applying the new heavy-duty technology.

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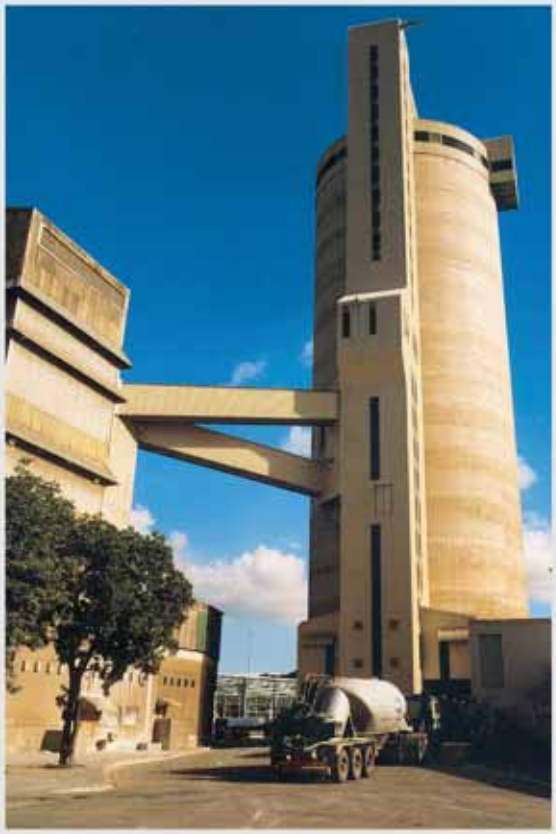

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This technology is used to feed material with particle sizes up to 120mm and up to 6% moisture into the raw mill. "The capacity is now 800tph [tonnes per hour]," enthuses Schenk.

This is possible thanks to the new bucket geometry. There is no more gap between belt and bucket. Coarse-grained material do not jam during scooping and filling process. The buckets are mounted firmly to the back of the belt by segments and bolts. Belts with wire-free zones are used for the new heavy-duty bucket elevators just as with all BEUMER belt bucket elevators. The buckets can be fastened to the belt without damaging the steel wires or even cutting them. The traction forces of the bucket elevator belt are maintained to full extent. The new bucket shape also ensures smoother running and thus less noise. Depending on the material to be conveyed, BEUMER offers buckets which are adapted to the material or mounts a dynamic bottom into the bucket elevator boot. This prevents wet and sticky material in the bucket elevator boot. And if explosive material is to be conveyed, all components are available in ATEX version.

To convince the employees of Lafarge by the new technology, BEUMER invited Stephan Schenk and two of his colleagues to Beckum. "The new technology was demonstrated with a miniature bucket elevator. This hits the nail on the head," he says with a smile. Demands that neither conventional belt bucket elevators nor central chain bucket elevators can meet. "BEUMER adapted the buckets to our specific requirements by using test material."

A BELT THAT RESISTS HIGH LOADS

While developing the heavy-duty bucket elevator, the tensile strength of belts with wire-free zones was strengthened. The current belt has a tensile load of 2,500N/mm, the new belt with wire-free zones has a tensile load of 3,300N/mm. The conveyor belts are more resistant against mechanical wear, and they are able to transport coarse-grained material and have high tensile load, all this makes the new heavy-duty bucket elevator the favourite conveying system for strongly abrasive material with high capacity and large centre distance. "This belt has twice the service life of a chain. Bucket elevators fitted with this belt are a clear improvement over central chain bucket elevators when used for strongly abrasive material, such as clinker, ore or blast-furnace slag," Schenk learned in Beckum.

The timeline was tight, just two months to plan and realize the modification. "We've got the ball rolling in October. The date of delivery was at the beginning of January and the bucket elevator was operated at the end of February," Schenk says. Employees of Lafarge carried out the assembly under the watchful eye of the BEUMER specialists. It was less for an undertaking for the cement plant. "BEUMER handled all the planning, we only had to mount the buckets and the belt."

"This solution saved us a lot of money," says Schenk. "The complete modification cost about €80,000. In comparison, a new conventional belt would have cost €60,000. If we assume that the BEUMER solution lasts twice as long, the modification would amortize after a short period of time," stresses Schenk. "Even after six months of operation there are no signs of wear. This was quite different with the old belt."

The BEUMER Group is a major international manufacturer of intralogistics for conveying, loading, palletizing, packaging, sortation and distribution technology. Together with Crisplant a/s and Enexco Teknologies India Limited, the BEUMER Group employs about 3,000 people and achieves an annual turnover of about €450 million. With its subsidiaries and sales agencies, the BEUMER Group is present in many industries the world over.

The new heavy-duty belts for heavy-duty bucket elevators can be designed with a tensile load of up to 3,300N/mm.

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PEBCO®: supplying equipment to the cement industry for 25 years

PEBCO® is recognized world-wide as a manufacturer of powder and bulk solids handling equipment. Products produced range from truck, train, and shiploading equipment to gates, valves, diverters, mass flow feeders, dustless loading spouts, and telescopic chutes.

PEBCO® has worked diligently over the past 25 years to become an outstanding supplier to the cement industry. The solution to loading cement clinker and other abrasive materials is the Cleveland Cascade® chute. Special features such as abrasion resistant steel cones with Triten liners are necessary to maximum chute life.

Most recently, PEBCO® developed a cement clinker loading system based on the Cleveland Cascade® chute principle of the soft handling of material. This allows the loading of cement clinker without dust and also loads the material softly enough to prevent critical breakage of the clinker.

Two clinker handling Cleveland Cascade® chutes are in operation at cement plants in Pennsylvania and Kansas. PEBCO®'s equipment at these plants has surpassed the expectations of the purchaser.

Cleveland Cascade® chute in operation at Lafarge/Whitehall, PA facility.

PEBCO® has solved the loading of open barges with finished cement using the Cleveland Cascade® chute. There are now four Cascade® chutes loading finished cement in Iowa; Illinois; and Kentucky.

The system at the Illinois facility features a dual Cascade® arrangement (see picture below) for loading cement into open top barges. Each chute handles 300 tonnes per hour loading 600 tonnes per hour into the barge. This chute features dual material probes, load cell system, pneumatic and electric hose reels, and a special cement adapter skirt. The cones and shroud are suspended from a steel carrier by three cables and are raised and lowered as necessary by a 5 horsepower electric motor and brake assembly. The loading chute is PLC-operated and radio-controlled.

Managers at this facility discovered the Cascade® system eliminated the problem of free fall and induced air movement. This system introduces mass flow at low velocity, thus maintaining the bulk particles tightly packed together and minimizing the release of small dust particles. No air escapes from the discharge point; therefore, no dust escapes. This chute provides excellent dust control without the need for fan-assisted dust extraction systems.

PEBCO® was selected for the design and manufacture of a Mark III design Cleveland Cascade® chute with a moveable trolley system for Cemex/Kosmosdale Cement facility in Louisville, Kentucky. This chute was designed for loading 1,000 tonnes per hour of cement into barges. This chute features lightweight fibreglass cones with abrasion resistant steel liners, a heavy duty shroud, a cement adapter with material probes and a special dust enclosure attached to the bottom.

The Cleveland Cascade® chute requires minimum maintenance and operates free of product spillage and dust leakage. The truncated, oppositely-inclined cones, supported by straps and covered by a wind shroud, enable material to be loaded in mass flow at low velocity. In this way, the bulk particles remain tightly packed together; thereby minimizing the release of small dust particles. Operating on the principle of mass flow at low velocity, dust emission is minimized without recourse to secondary extraction systems, while degradation and segregation are considerably reduced. This patented chute has applications in ship, barge, truck, railcar, and silo loading as well as conveyor-to-conveyor transfer.

Two of the most difficult products to handle are alumina and finished cement. The solution to loading these products is the Cleveland Cascade® chute. This design chute has successfully handled a diverse range of dry bulk solids from finished cement and alumina to calcined petroleum coke, calcined lime, wheat, soda ash, potash, phosphate, lead oxide, etc.

PEBCO® is also a pioneer in manufacturing gates and diverters that seal against finished cement in all kinds of tough gravity flow applications. PEBCO® expanded its product line to include dustless loading spouts for the loading of trucks and railcars, along with fluidized conveyors for the transport of cement. PEBCO® also manufactures dust collectors for the collection of the dust in the loading application.

PEBCO®'s rugged and reliable gates have routinely handled cement clinker. PEBCO® was one of the first companies to utilize Triten welding overlay to handle tough cement clinker applications. Efforts have paid off handsomely since cement is now rated as PEBCO®'s highest penetration of sales.

PEBCO®'s products are used in various applications such as cement, mining, chemical, power generation, waste incineration, lime, fertilizer, sand and gravel, alumina, bauxite, clay, and dewatered sludge.

PEBCO®'s engineering team treats each application individually and custom tailors 80% of products to exact customer specifications. As a result, PEBCO® has patented products that demonstrate the innovation of the company in the field of moving, storing, and weighing bulk solids. PEBCO® patents include: ROLLING BLADE® Gate, Mass Flow Feeder control technology, Uni-Load® Chute and the Dust Free Cleveland Cascade® Chute.

PEBCO®'s capabilities range from application engineering, CAD design, manufacturing, start-up services, and a complete customer support programme.

Most important is the value that long-term employees offer the company. Experience can only be gained through time. PEBCO® is proud that many of its original employees are in key positions in sales, engineering, design, and management.

Cleveland Cascade® chute in operation at Cemex/Kosmosdale facility.

It all comes down to innovation, advanced engineering tools, and experience. PEBCO® can provide the equipment and service to solve your bulk material handling problems.

PEBCO is an industry leader in dry bulk solids handling equipment and load control systems for a variety of transportation modals including ship, barge, truck and rail.

PEBCO® also has an additional 40,000ft² manufacturing facility. This facility is strategically located near PEBCO® Corporate Headquarters in Paducah, Kentucky. The plant manufactures several of the company's products including: Mass Flow Feeders – Rolling Slide Gates – ROLLING BLADE® Gates – Diverters – Telescopic Chutes – Dustless Loading Spouts – Cleveland Cascade® Chutes – and truck, railcar, barge, and shiploading equipment.

Euromec's grabs serve the cement market

Euromec is a notable supplier of electrohydraulic equipment for the handling of all different kinds of bulk materials.

The company is highly specialized and offers a high level of flexibility, so it is able to satisfy the requirements of its clients. It supplies grabs to some of world's renowned cement companies, such as Italcementi, Buzzi Unicem, Lafarge, Cementir and many others.

The company's equipment, which is manufactured with the expertise gained over 50 years, are made with the best materials available on the market, using high-quality sheet metals. The grabs are fitted with a range of automating systems, which enables them to work 24 hours a day. They are suitable for use in extremely hot environments, such as clinker production plants.

Euromec takes care to meet the requirements of its customers, and it has considerable expertise in material handling processes. Its technological expertise means that it is always able to supply equipment of a very high quality, which has resulted in its grabs being present in the world's largest ports and in handling plants worldwide.

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Primasonics® offers 'sound solution' to flow problems in silos and hoppers

Primasonics® acoustic cleaners are widely employed wherever ash, dust and powders are generated, processed, stored or transported. This range of acoustic cleaners has been of tremendous benefit in both preventing material hang-up and ensuring maximum, continuous material flow in silos and hoppers. Indeed some of Primasonics most challenging but successful applications have been within silos which contained dry materials such as cement. Primasonics has solved cement storage silo problems in over 40 countries worldwide. The two main problem areas within hoppers and silos are:

❖ ratholing — where the material builds up on the sidewalls causing severely reduced 'funnel flow', which also restricts the silo being used to its full storage capacity; and

❖ bridging — where the material bridges over the outlet area either severely restricting flow or stopping it completely.

Irrespective as to whether the cement bulk storage facility is under 500kg or over 30,000kg capacity, Primasonics Audiosonic™ acoustic cleaners have eliminated both of these problems. Typical examples range from small 20-tonne-capacity internal pre-packing hoppers right up to 30,000-tonne-capacity cement silos. Where the problem is ratholing with the material building up on the sidewalls, a low-frequency, larger Primasonics acoustic cleaner is mounted on top of each silo to dislodge and thereafter, eliminate the build up. These units can be located at any position on top of the silo, as sound waves travel at over 344 metres per second and in a 360° radius. Generally speaking they are mounted on top of an existing inspection hatch, thus installation is simple and inexpensive.

Moving on to silo and hopper discharge, in such applications one of the smaller Primasonics Audiosonic™ acoustic cleaners with higher frequencies is employed. The higher the frequency the shorter the wavelength and so all the acoustic power created by the wave generator is concentrated over a much shorter range — say between 1m and 5m. Therefore a higher-frequency Primasonics Audiosonic™ acoustic cleaner mounted just above the discharge will prevent material bridging and ensure even material flow at maximum rates.

It is important to note and understand several main advantages that acoustic cleaners have over alternative methods, which have been employed to try and aid material flow. Primasonics acoustic cleaners operate at frequencies very much higher than the resonance frequency of steel, ceramic lining, concrete etc. Therefore Primasonics acoustic cleaners are guaranteed not to cause vibrational damage to any vessel or structure. This is quite unlike vibrators, which by their very nature and method of installation, cause vibration and stress weaknesses within the vessel or structure to which they are attached. The vibration resonances first have to pass through the vessel wall before reaching the material. With the acoustic cleaner, the higher frequencies are directly absorbed into material giving 100% efficiency.

Air cannons/blasters seek to effect a very localized cure for a blockage problem, which has already occurred. In many cases the air cannon simply 'blows' a localized hole through the blockage, necessitating the installation of many air cannons within the general problem area. It is generally true to say that one very rarely finds a single air cannon in effective operation. This is totally the opposite with Primasonics acoustic cleaners but then the company approaches the problem with a totally different philosophy — by preventing the build up from occurring in the first place.

How do Primasonics acoustic cleaners work?

Acoustic cleaners are extremely simple in their operation, requiring only normal plant compressed air for their initial energy source. Compressed air enters the wave generator and forces the only moving part, the ultra-high-grade titanium diaphragm to oscillate very rapidly within its specially designed housing. These rapid oscillations create the base tone and the various different bell sections convert, amplify and distribute this base tone into a range of different key fundamental frequencies. Primasonics has selected seven such key fundamental frequencies for its Audiosonic™ acoustic cleaner range from 60Hz to 420Hz. The acoustic cleaners only require activating for a few seconds at periodical intervals.

Primasonics audiosonic acoustic cleaners are aiding material flow from hoppers and silos in such diverse industries as cement, gypsum, flour, MDF wood products, ceramics, chemicals, petrochemicals and power plant. They are also employed in a range of ancillary plant such as filters, cyclones, fans, ductwork and steam/power generation plants.

Total flow solution for bulk materials: air cannons and sonic horns

A major bulk material handling technology equipment manufacturer has announced a dual solution to material flow problems, combining acoustic cleaning technology with industry-proven air cannon designs. Martin Engineering is using the technologies to help maintain system efficiency and profitability in cement producing operations, power generation plants, pulp and paper manufacturing, and other industries that employ boilers. The company is believed to be the only supplier capable of delivering the combined solution of sonic horns and air cannons to dislodge build-ups and enhance material flow.

Air cannons.

"We've chosen to supply both of these cleaning technologies, because of the wide range of conditions and processes in which they might be used," explained global business development manager Jeff Shelton. "Sonic horns can clean a larger area than air cannons when we're dealing with accumulations of dry material," he said. "But high sulphur and chloride content often lead to a sticky build-up that resists acoustic cleaning. In those areas, air cannons deliver the kind of burst cleaning that can dislodge blockages and send the accumulated material back into the process stream."

In the past, some operations have adopted expensive blowers as a cleaning option, with qualified success. Steam blowers have been effective in some applications, but the process tends to be destructive. It can damage boiler tubes and typically carries high costs for operation and maintenance.

"The combined solution provides a wide range of options to match specific process conditions and operating environments," Shelton continued. "Sonic horns are well suited to selective catalytic reduction (SCR) units and process vessels, and in applications in which the bulk material is fairly dry. But in a situation where cleaning is needed in tight spaces or with moist materials, air cannons can be the better choice," he said.

"In some processes, both technologies are used in strategic locations to prevent blockages and maintain the process flow," Shelton added. "We're using the dual technologies in SCRs, with potential applications in silos, boilers and ductwork." He explained that sonic horns require gas flow or gravity to move loosened material, while air cannons will physically blast the material away. "In many ductwork applications, poor flow is a contributor to the blockage problems, and in those cases, the combined technologies offer an effective solution."

Martin Engineering has been an innovator of air cannon technology since the 1970s, and today offers a full line of field-proven traditional designs, as well as breakthrough engineering in valve design, hybrid models, multiple-port and multiple-valve technologies. The company offers both positive- and negative-pressure firing valve designs to accommodate a broad range of applications and materials.

The cannons deliver a powerful blast to dislodge accumulated material and prevent blockages, and the only component that needs to be inside the vessel is the nozzle. Air cannons also offer a variety of nozzle shapes and styles to suit specific conditions.

Martin® sonic horns work by producing a low-frequency, high-pressure sound wave, which is created when compressed air flexes a titanium diaphragm in the sound generator. This sound wave is then magnified as it is emitted through the bell. The sound pressure causes dry particulate deposits to resonate and become fluidized, allowing them to be removed by constant gas flow or gravity. Especially effective around pipes and behind obstacles, sonic energy de-bonds particulates with a 360° sweep, cleaning inaccessible components. Sonic horns have a long history of performance in boilers, heat exchangers, economizers, bag houses, SCRs, ID fans, electrostatic precipitators (ESP), silos, hoppers, cyclones and air pre-heaters.

Sonic horns.

Both technologies contribute to lower operating costs and improved safety, helping facilities avoid the need for personnel to access the process and manually clean out accumulation. Reducing the need for high-pressure washing or air lancing also helps avoid unnecessary wear and tear on refractory walls and process vessels. By preventing material build-up, the systems helps reduce downtime, equipment wear and maintenance time. Backed by the company's exclusive three-year guarantee, air cannons and sonic horns are available in all regions in which Martin Engineering does business, and can be custom-engineered to suit specific operating conditions.

Founded in 1944, Martin Engineering is a renowned company, making bulk materials handling cleaner, safer and more productive. The firm is headquartered in Neponset, IL, offering manufacturing, sales and service from factory-owned business units in Brazil, China, France, Germany, Indonesia, Mexico, South Africa, Turkey, India and the UK.

Conveyor owners see big ROI benefits from self-cleaning return rolls

Standard Urathon return roll: available from Superior in roll diameters of 5" to 7" and belt widths up to 96".

Applying the latest technology on the return side of conveyor belts can help alleviate some very sticky situations. Conveyor owners are learning that self-cleaning, abrasion-resistant, urethane return rolls are delivering healthy returns on investments in numerous applications where the use of traditional rolls resulted in material build-up, tracking challenges, belt damage and premature idler failure.

Comprised of a specially-formulated polyurethane material, Superior Industries' Urathon® Return Rolls offer greater wear life and abrasion resistance. The new-age idlers are engineered with 90-durometer discs that create a self-cleaning flat surface, preventing any material buildup between the discs or on the belt.

Typically, material buildup is the leading cause of premature belt damage, says Superior, a manufacturer of conveyor systems and conveyor components in Minnesota, USA. Replacing these sticky material magnets with Urathon return rolls essentially extends the life of the entire conveying system while reducing maintenance and operating costs.

Steel rolls double in size at Arizona, USA cement production plant

A division of Phoenix Cement Company, Salt River Materials Group (SRMG) is a major manufacturer of portland cement, sand and gravel, fly ash and pozzolans throughout the Southwestern United States.

Plant manager Gary Mackey oversees daily material processing. As to his prior use of steel return rolls, Mackey says, "Clay sticks to steel like a magnet, causing build-up that makes the steel rolls almost double in size. This leads to all kinds of problems," he says.

Mackey explains that if the clay would build up on one side only, it would often push the belt over, making it run up against the frame.

"Some of the steel rolls got so heavy that they would stop rolling. Then the belt would simply slide across the top of them, and potentially end up ripping if you didn't catch it in time," he says.

Mackey experienced similar drawbacks with rubber disc-type return rolls. "We didn't find them to be a high grade rubber at all, and they wore out very quickly. The rubber disc itself would just disappear in two to three months," he says.

Finally, Mackey says that his problems were solved after a visit from Superior Industries.

"They set me up with the Urathon return rolls and I am just amazed with them. Even after eight months or so, we can't detect any wear and there is zero build-up," he says, adding that he will apply the new rolls on each of his conveyors regardless of whether the material handled is wet or dry.

"If these rolls can save me time and money, and eliminate all the downtime we used to have in change-outs, then there is no reason to look any further," he says.

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Spiral Urathon return roll: the spiral version helps to clean the bottom side of the belt as it spins.

Fast-wearing rubber-disc return rolls not missed at aggregate production plant

Headquartered in North Dakota, U.S.A., Knife River is one of the top ten US aggregate producers with more than 1.2 billion tonnes of aggregate reserves in 14 states. Its product lines also include asphalt, concrete, building materials and construction services.

Knife River superintendent Mike House has installed Superior's Urathon return rolls into each of the three locations he manages, the first being a sand and gravel facility where he says the rolls are a welcome replacement over 'fast-wearing' rubber-disc return rolls which had to be changed out every three to four months.

"I have had nothing but good luck with them," he says, and as a result he next installed them at his barge loading operation, an off-load system which according to House, "contained some components that sailed over with Columbus." He explains that this old system had a lot of belt tracking issues.

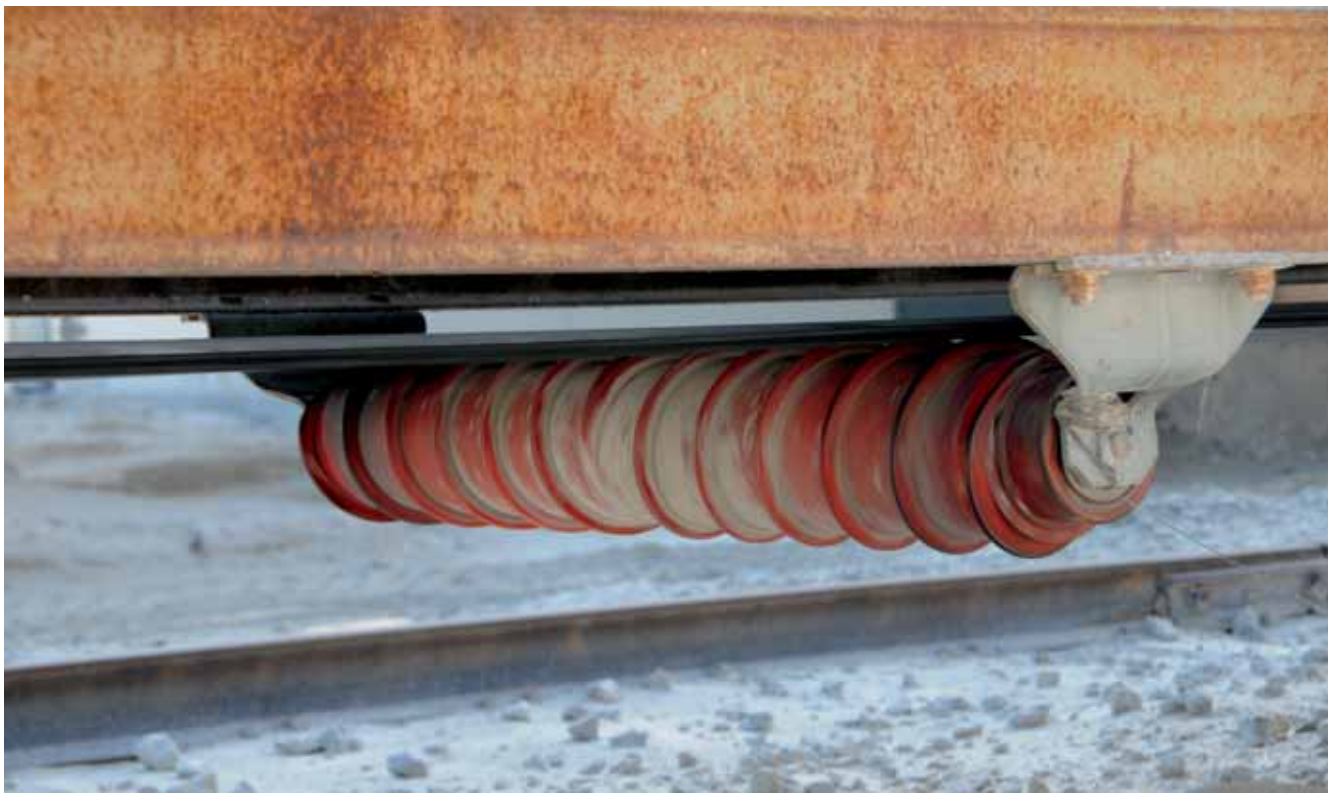
"The belt would run at an angle and would eat up a rubber disc roll, until they would flatten and stop. So we put in the Urathon return rolls and even after almost a year, we didn't notice any significant wear whatsoever," he says, adding that soon after the new return rolls were removed from the older system and were integrated into a new system erected at the site.

Lastly, House recently decided to install Urathon rolls at his third location, a shot rock pit where the rubber-disc return rolls had also been developing 'flat spots' which led to frequent changeouts. He says he particularly likes the wider disc profile of the Urathon return rolls, which he feels is a big factor in wear resistance. "The urethane material is wider where it mounts to the shaft and also where it meets the conveyor belt at the ends. This also aids in better belt tracking even through the changing seasons and weather conditions," he says.

Finally, House says that beyond the components themselves, Superior Industries offers the benefit of looking closely at any operational challenges and providing a variety of solutions. "I don't want to listen to sales people who just want to tell me how great their product is. It is much better when the vendor is willing to dig into a problem and do some thinking for you," he says.

About Superior Industries

Established in 1972, Superior Industries has a reputation for engineering and manufacturing groundbreaking, bulk material handling conveyors and cutting-edge components. From its headquarters in Morris, Minnesota, the American manufacturer serves a diverse group of industries with portable stackers, transfers and feed systems; material processing plants; plus idlers, pulleys and accessories to lower operating costs and increase material production.



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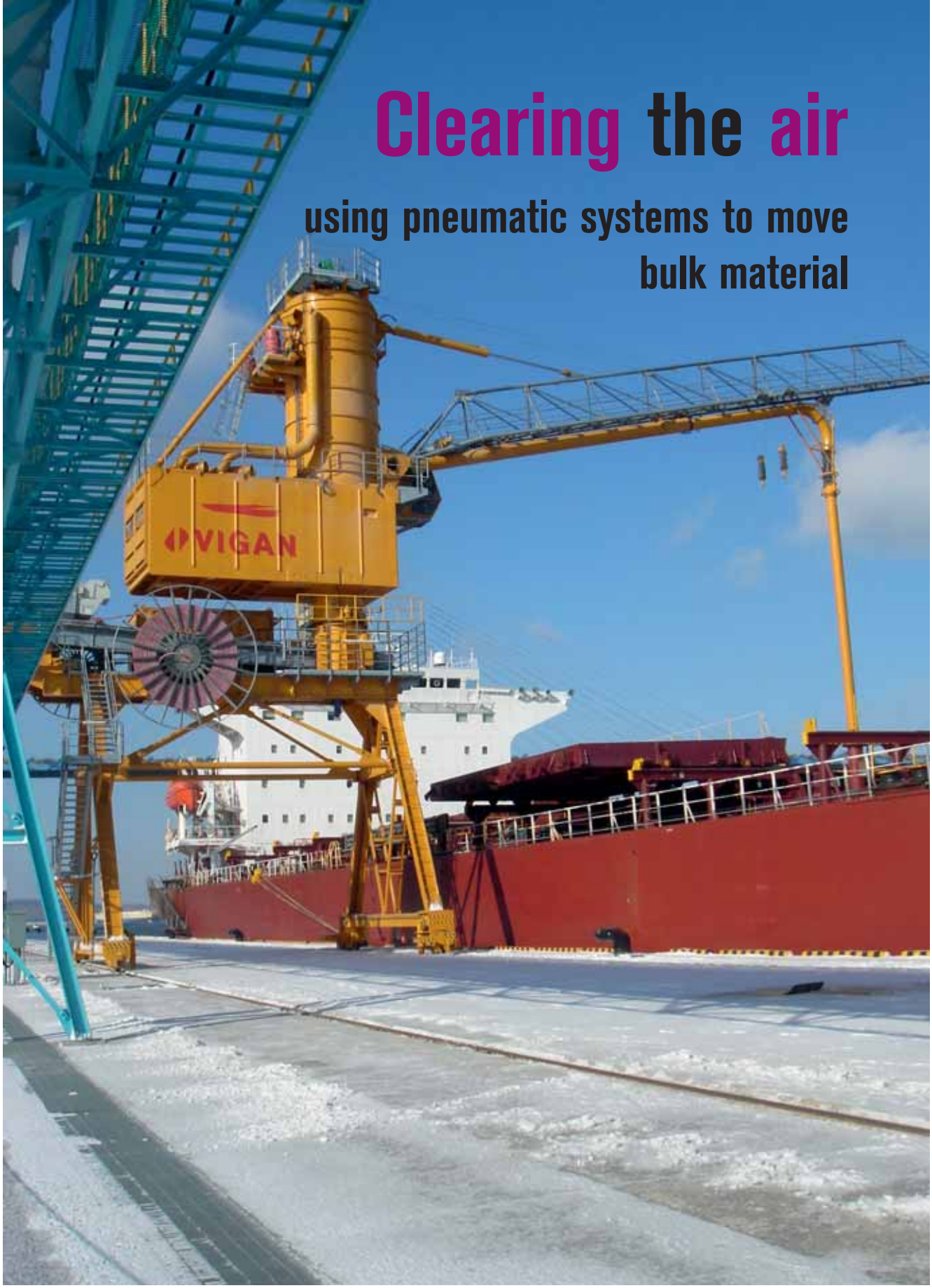

VIGAN pneumatic bulk handling systems

VIGAN Engineering S.A. is a Belgian company located in Nivelles industrial area, about 30km south of Brussels, at the heart of the European Union. The company designs and manufactures port equipment for dry bulk handling, and is a noted expert in pneumatic bulk handling technology.

The main products handled by VIGAN equipment are all types of cereals and oilseeds, raw materials for animal feeding, but also other free-flowing products such as wood pellets (which are an emerging and dynamic market), fertilizers, soda ash and alumina for instance. VIGAN's expertise also includes the handling of delicate products such as malt for breweries and cocoa beans.

Dust Free Pneumatic Ship & Barge Unloading

- *Grain*
- *Soybeans*
- *Small Seeds*
- *Corn*
- *Wheat*
- *Palm Kernel*
- *Barley*
- *Meal*
- *Urea*

Ship and Barge Unloading

150-600 MTPH

Christianson Systems offers flexible solutions for a wide range of material handling applications. State-of-the-art technology backed by over 50 years of experience assure that each machine is built with superior quality, construction, and design. Equipment recommendations are based on the customer's product, vessel size, capacity requirements, and power sources. By making the right choice, the customer will make the most of his money!

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The special VIGAN pneumatic technology preserves all the physical and chemical characteristics of the products during transport.

Since its foundation in 1968, VIGAN Engineering has been continuously improving its own expertise with state-of-the-art design of major components such as:

- VIGAN's multi-stage centrifugal **TURBO BLOWER** sucks the products by generating a depressurized air flow. Its operational principles are the same as those employed in turbo jet engines or turbines for power plants.
- VIGAN's **CYCLONE** separates the mixture air-product by centrifugal action so that only the air is sucked into the turbine. The products are then extracted by the airlock. Some air is sucked at the bottom of the cyclone to ease the downstream of the products into the airlock.
- VIGAN's **AIRLOCK** is one of the main parts of the machine. Its main goal is to evacuate the product while keeping the vacuum in the filter. Since any leak of pressure in the system would result in losses of efficiency, its design and characteristics are crucial. Thanks to its dimensions, it can handle high quantities of products with a relatively low rotational speed.
- VIGAN's **telescopic piping system**, which moves horizontally under the boom, and vertically from the boom into the ship holds. VIGAN has a constant focus on innovations, especially with regard to the wear-resistance of its piping, particularly on the Ni-Hard (nickel-chrome alloy) elbow which does not require any maintenance before 5mt (million tonnes) has been handled.

Wide range of equipment:

VIGAN offers a wide range of equipment so that customers can select the most convenient solution. Equipment includes:

- **portable pneumatic conveyors** also called 'grain pumps'. In 'suck only', 'suck & blow' or 'blow only' mode, their capacity range is 100–250tph (tonnes per hour). On quay or on a ship's deck, with required accessories, they are very adaptable and can handle products in many different configurations: from vessel to truck, from silo to train, transshipment between vessels, and so forth.
- **pneumatic continuous barge and ship unloaders** are designed for a range of 160–800tph for all sizes of vessels. With stationary or self-propelled gantry on tyres or rails, with electrical or diesel engine and adapted boom length. Many options are available (operator's control cabin, radio remote control, winch for bulldozer, special fire and explosion protection panels, etc.).

VIGAN also manufactures mechanical handling machines:

- **SIMPORTER** mechanical continuous ship unloaders 'SIMPORTER' able discharge up to 1,500tph from big vessels (Panamax, Capesize);
- **shiploaders**: which are designed according to the required loading capacity up to 1,200tph.

All VIGAN equipment is individually customized to meet any specific requirements. It is also suitable for a variety of applications, depending on ship size, the cargo, points of discharge and destination of cargo, and so on.

Thanks to highly professional relationships with its business partners specializing in complementary equipment, VIGAN is able to manage complete turnkey projects such as grain terminals providing pneumatic and/or mechanical ship unloaders, cranes, conveyors, weighing and bagging stations, storage silos and portable machines, as well as a proven experience to supervise engineering and civil works.

Recently commissioned and ordered VIGAN equipment

- one NIV 400tph for South Korea (see picture on p75);
- two NIV 600 for Tilbury/UK (see picture, top);
- one rail-mounted NIV 400tph in Taiwan (see picture, below);
- one ship unloader and one loader in the south of France.

Recently awarded contracts which are, at various development stages, under realization:

- six machines in Egypt;
- one grain loader in the Balkans;
- two mechanical unloaders in China; and
- several grain pumps over the five continents.

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Pneumatic transport – an ideal space-saving solution for busy harbours

Busy/crowded harbours need flexible solutions to be able to handle a wide range of products. They need to use their limited space on the jetty(s) in the optimum way.

Pneumatic transport can offer this flexible solution by using the space under the jetty.

Karachi Port, Pakistan

The harbour of Karachi does not allow the installation of silos close to the water side, as these silos can obstruct other movements on the jetty. Nevertheless, Lucky Cement wanted to export cement out of this busy harbour. The silos (Van Aalst

Bulk Handling flat bottom design type) were built in a few hundred metres from the water side on a location where they would not interfere with the other harbour operations. Trucks from the cement production factory can drive freely to these silos and fill these up to a total of 20,000 tonnes.

The installation of a belt conveyor from the silos to the water side to load cement into ships was not possible as such an installation would also obstruct the movement of other cargo in the harbour.

Instead of the belt conveyor, pneumatic transport has been chosen to transport the cement from the silos to the water side. A pneumatic conveying unit sucks the cement out of the storage silos and blows this through a pipeline towards the water side (see picture above) at 500tph (tonnes per hour).

The great advantage of this solution is that the pipeline can be installed under the surface slab in the ground. No traffic at all is obstructed by this pipeline.

At the waterside, the (Van Aalst Bulk Handling) loading unit can be connected to this pipeline (see photo bottom, left) and ships can be loaded, dust free! After the ship has been loaded, the shiploader can be disconnected and moved out of the harbour by its self propelled wheel sets. The connection pipe is disconnected and the jetty is closed and smooth again, ready to handle any other commodity.

Sacramento Port, USA

Here the system works the other way around. Ships with cement have to be unloaded and the unloaded cement has to be transported to a storage building.

Also in this harbour, belt conveyors would obstruct movements in the harbour, and also here underground pipelines brought the solution.

In this harbour the client could not get approval from the harbour authorities that the supply ships with cement could always use the same jetty. So underground pipelines are installed to pier 1 as well as to pier 4 — imagine the amount of belt conveyors if this pneumatic system had not been chosen.

The distance however from pier 1 and pier 4 towards the storage is different. So the Van Aalst Bulk Handling shipunloaders are equipped with two conveying air compressors. One compressor is used for the short distance, the second compressor is added for the long transport distance.

This is a highly flexible solution in a cramped and restricted area.

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T. Ruff, Director of Operations and Engineering at Kinder Morgan, Columbus USA

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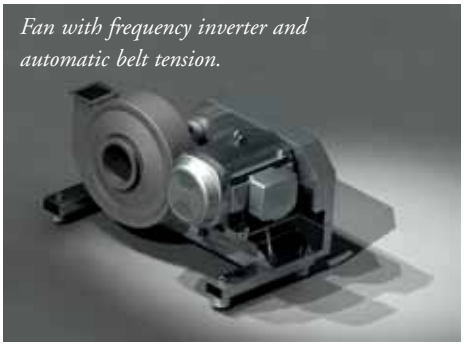
NEUERO's pneumatic bulk handling equipment: Turbo Power (r)evolution

The first pneumatic ship-unloaders used piston compressors for vacuum generation before 1900. The next step was the use of roots blowers, patented in 1860.

Fan with air flow regulator.

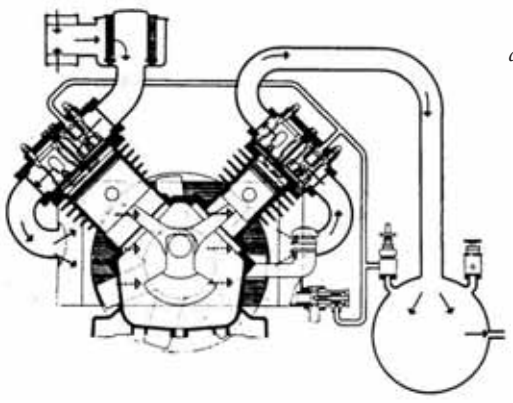
Equipment manufacturer NEUERO has continuously developed a high-pressure single-stage fan with air regulator. In the 1960s, the standard design had the fan mounted on a bearing block, driven by v-belts, with the engine mounted on the rail span. The next step was the tension and alignment to be done using the motor weight via the pivoting motor base. The use of frequency inverters also began in 2000, using standard motors with bearing insulation.



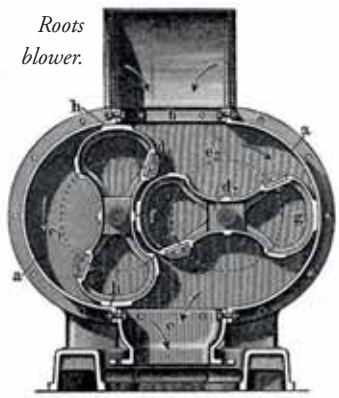
Fan with frequency inverter and automatic belt tension.

The development and popularity of the frequency inverters is behind the concept of direct drive — the simplicity of using no immediate connections, such as v-belts, Cardan joints or reducers between the motor and turbo drive. The motor shaft and bearings are part of the Turbo Power. The consequence of the single use was the development of a double stage to achieve the necessary pressure for the unloading work.

The Turbo Power's development has relied on its simplicity of design, compared with other systems such as roots blowers and multi-stage fans. Reducing the components between the motor and Turbo Power has increased the efficiency (no losses) and also brought a simple way to check the remaining parts. Not only is the motor winding temperature monitored, but the temperature and vibration sensors are also located at the bearings — this are the same for blower and motor. All information is displayed on the operator panel. Temperature and vibration limits are set so that an alarm is triggered if abnormal ranges are reached. This helps for preventative maintenance, avoiding stoppages during ship unloading, for example.



Piston compressor.



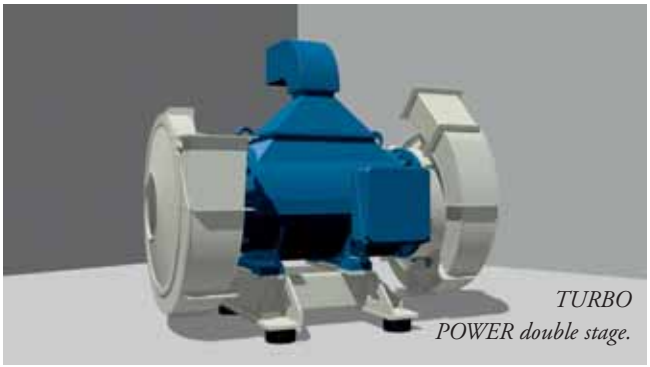
Roots blower.

Advantages of Turbo Power

- **reliability:** fewer parts to fail, monitoring of bearing temperature and vibration. Easy maintenance and inspection by single stage.
- **efficiency:** compared with other, efficiency is greater because of the high capacity at clean-up. In Panamax ships, it is normal to achieve an average of 75–80% of nominal capacity;
- **lower power consumption:** consumption is reduced in two ways. First with no mechanical losses between motor and TURBO impeller. Second the speed is adjusted for each operation need even in partial load. The first Turbo Power measurements showed consumption of 195kW for 300 tonnes per hour (0.65kW/tonne).

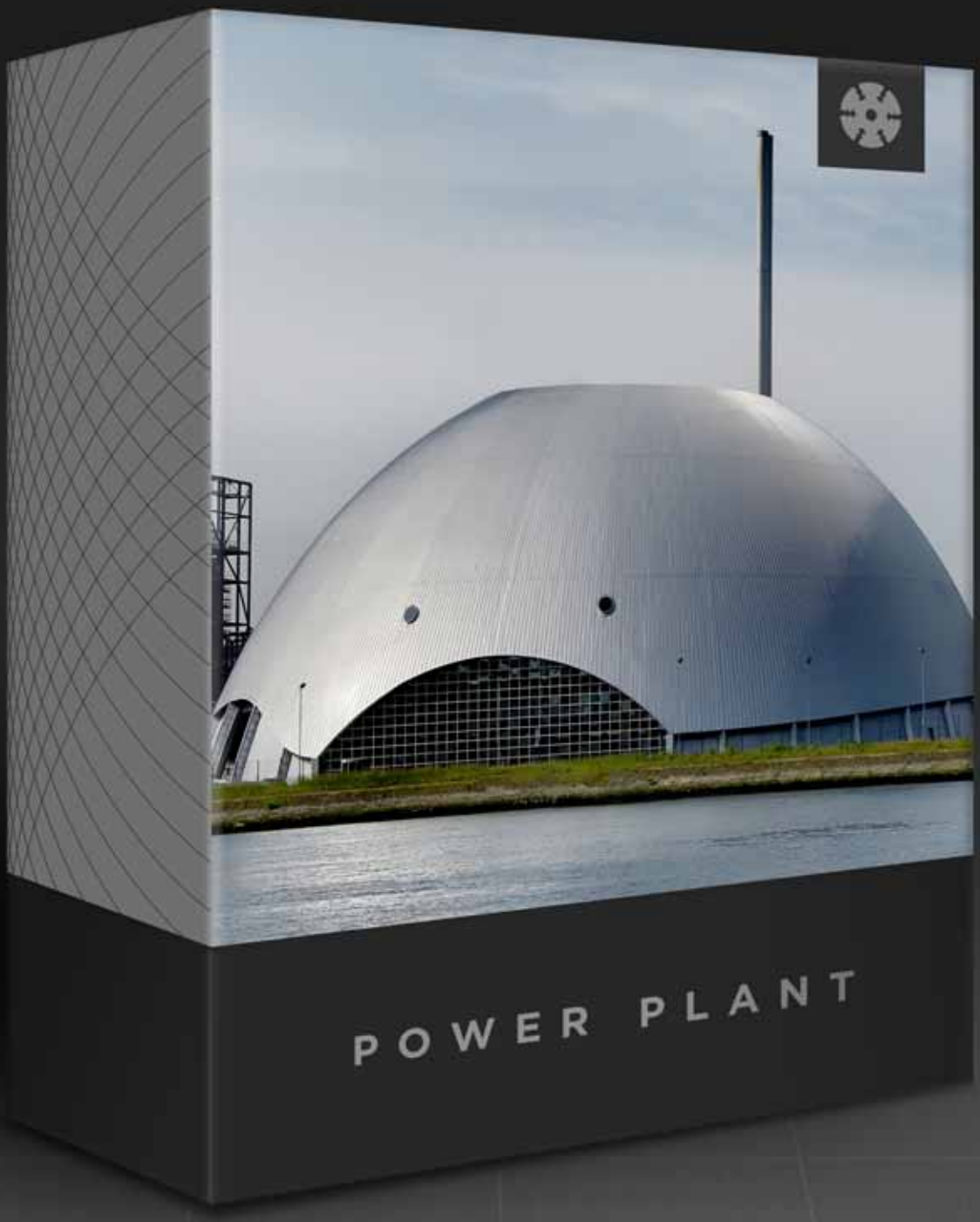
Turbo Power single stage.

DCi



TURBO POWER double stage.

M600 – ship unloader with Turbo Power.



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Biomass handling equipment

meeting the challenges created by increasing biomass traffic

Demag Cranes reports on recent biomass handling contracts

The Demag Cranes Group is a major global manufacturer of industrial cranes and crane components, harbour cranes and terminal automation technology. The company has given *Dry Cargo International* details of some of its recent work in the biomass market.

Demag Cranes for biomass cogeneration facility

Demag Cranes has installed an automatic materials handling system at a wood fired cogeneration power station at Hamburg, Germany. The state-of-the-art facility was developed under the auspices of Schuler Consulting Engineers, to meet the increased demand for sustainable energy solutions.

The biomass cogeneration facility burns woodchip by-products from local forestry and landscaping activities, generating heat and electricity, whilst reducing the depletion of fossil fuel resources. The Hamburg power station processes 32,000 tonnes of woodchip annually, generating over 13,000MWh of electricity per year and some 60,000MWh of heat, which warms 8,000 households in the district. Additional heat is also reclaimed from the exhaust gas created during incineration. The biomass burning process is inherently clean and efficient, with a usage ration in excess of 85% and CO_2 emissions reduced by 23,000 tonnes per year.

To meet the specific materials handling requirements of the Hamburg operation, Demag Cranes installed a 16.4 m span, 11-tonne SWL (safe working load), automatic double girder overhead travelling crane, mounted with a specially developed 8m³ multi-jaw grab. The process crane features frequency regulated speeds, in three directions for optimum travel and lifting characteristics. Controlled by warehouse management software, the system is designed for high volume handling. Long travel speeds of up to 50m/minute, cross travel of up to 40m/min and hoisting rates of up to 50m/min facilitate the movement of 140m³ of woodchip per hour. A load sway damping system provides smooth lifting and movement, avoiding the possibility of damage caused by collision of the grab and the pit walls.

Raw biomass is delivered to the plant by trucks and deposited in a 300m³ tipping pit, where it is automatically monitored for moisture content and fuel grade. Once the vehicle has cleared the tipping area, the crane system moves the woodchip to three pre-determined zones, within the 900m³

Demag Cranes in operation at a wood-fired cogeneration power station at Hamburg, Germany.

intermediate bunker, according to fuel grade. The system is programmed to maintain a fixed fill level within the silo, which feeds the furnace. When fixed sensors indicate that the minimum fill level is reached, the crane system automatically transports biomass material from the storage bunker to replenish the silo.

In addition to the movement of biomass, the crane also handles the blending of woodchip to ensure optimum combustibility. Should the system detect that raw material is too moist, or of insufficient fuel grade, the warehouse management software determines the required blending ratio. The crane then picks up biomass from the various zones of the buffer store, to achieve the required blend ratio for efficient heat generation.

The Demag automatic crane system offers a number of advantages over alternative materials handling systems, such as wheel loaders. Increased productivity, lower noise emissions, less manpower and reduced operating costs are amongst the benefits.

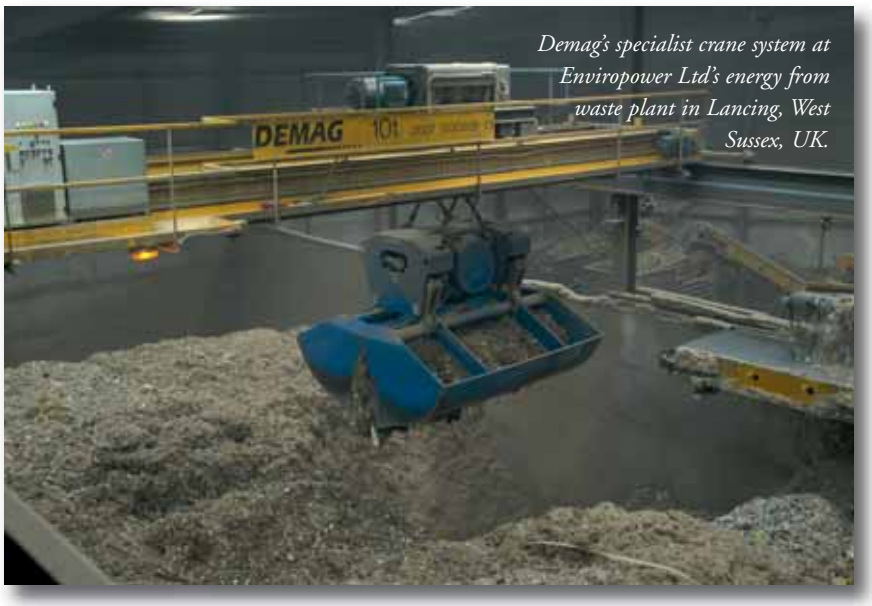
Lifting energy from waste: Enviropower Ltd

Demag Cranes & Components has installed a specialist crane system at Enviropower Ltd's energy from waste plant in Lancing, West Sussex, UK. The £12.5 million renewable energy facility processes biomass, typically timber and cardboard waste, from the construction and demolition industries, for the generation of electricity.

To meet the specific materials handling operations at Enviropower's plant, Demag installed a 10t SWL, 13.25m span, double girder grabbing crane. Mounted on the crane is a wire rope hoist with a 10m³ bucket grab on a 12.4m hook path. The system has cross travel speeds of 3–30m/min, long travel speeds of 4–70m/min and hoisting speeds of 1–16m/min.

The crane system is fully automated to permit 24 hour unmanned and uninterrupted operation, with radio remote control also available for manual operation. The 'intelligent' system is programmed to lift biomass from the highest pile of material in the fuel store and deposit it into each of two input feeds, when sensors indicate that the combustors require replenishment.

A number of features were incorporated, within the system design, to meet the extremely arduous operating environment. Motors are inverter driven for smooth control of movement and accurate positioning accuracy, reducing the amount of airborne dust in the workplace. The crane also has thermal protection in



Demag's specialist crane system at Enviropower Ltd's energy from waste plant in Lancing, West Sussex, UK.

all motions, together with IP55 rated enclosures on all motors and panels. Safety features include overload protection, anti derailment and slack rope detection.

The Lancing facility processes up to 150 tonnes of biomass per day, with an output capacity of over 5MW. Electricity generated at the plant is used to power all operations at the site. The surplus energy, which represents some 85% of electricity generated by the facility, is exported to the grid. The state-of-the-art plant incorporates a number of environmentally friendly initiatives, including high efficiency flue filters, which minimize air pollution from the combustion process.

Enviropower's plant manager, Mick Adams, stated, "Our decision to work with Demag on this project was based on the company's reputation for quality and reliability, as well as an industry recommendation, highlighting Demag's proven expertise in the energy from waste industry."

Sky believes in a better environment

Demag Cranes has installed a fully automated crane system at television company's Sky's combined cooling, heating and power (CCHP) plant, as part of Sky's new studio complex in Osterley, West London, UK. Sky's state-of-the-art development, Sky Studios, provides 23,000m^2 of floor space for studios, offices, post production and technical facilities, housing the broadcaster's flagship entertainment and sports' channels. The building incorporates a range of initiatives to minimize environmental impact, making it the most sustainable broadcasting facility in Europe.

Combined cooling, heating and power is provided by a renewable energy plant, designed and built by industrial and commercial bioenergy specialist, Clearpower. The CCHP plant uses woodchip biomass, from broken down wooden pallets, generating electricity and heat for Sky Studios. The plant processes 10,000 tonnes of woodchip per year, generating 1MW of electricity and 5MW of heat.

Woodchip is delivered to the CCHP plant by vehicles and tipped into a sunken input area. When sensors indicate that biomass levels require replenishment, the Demag Cranes' system automatically lifts biomass from the input area and deposits it into the silo store. The woodchip is then fed into the furnace, by a conveyor system, according to demand.

To meet the requirements of the CCHP application, Demag Cranes installed a 7.8 m span overhead travelling crane, incorporating a DR-Pro electric wire rope hoist, rated at 6.3 tonne SWL. Suspended from the hoist is a specialist 4.5m^3-capacity clam shell grab, with teeth and side knives, for optimum handling of the woodchip.

The crane has long travel speeds of 1.5–40m/min, cross travel speeds of 1.5–20m/min and hoisting speeds of 1–16m/min for fast and efficient load handling. It features frequency inverter controlled drives, which ensure precision load positioning and minimize load sway, reducing the possibility of contact between the bucket grab and the walls of the storage area. The system also includes long travel and cross travel limits. The wire rope hoist features include a special heavy duty rope guide, specifically designed to counteract side pull, fail safe bottom block operated hoist limit, slack rope detection and electronic overload protection, whilst the crab is fitted with anti-derailment protection. All motors incorporate IP55 rated enclosures to eliminate the ingress of dust in the arduous environment. Radio remote control is also available for use during maintenance.

Clearpower's CEO, John Heffernan, stated that the automatic nature of the crane system offers several advantages over alternative materials handling equipment, not least 24 unmanned and uninterrupted operation. He added: "Demag Cranes has engineered the most appropriate and competitively priced solution for this application. The crane system has also helped us overcome the difficulties associated with the limited space available for the development of the CCHP facility."

Drax harvests benefits from Demag equipment

Demag Cranes & Components has installed a specialist bale handling crane system at Drax Power Limited's new biomass processing facility at Goole, East Riding of Yorkshire in the UK. The prototype plant has been established to process wheat, barley and rape straw, which are by products from arable farming

Demag Cranes' fully automated crane system at Sky's CCHP plant.

in the region. The plant processes straw, which is a recognized biomass material, into fuel pellets for co-firing with coal, as part of Drax's carbon emissions reduction programme, at the company's power station, located just three miles from the biomass processing facility.

To meet the specific materials handling requirements of the pellet production process, Demag installed a 29m span, double girder, automatic crane system, rated at 22 tonne SWL. Mounted on the crane is a specialist 12-tonne bale handling grab unit.

The 24 hour production process involves the receipt of up to 400 tonnes of raw straw delivered to the plant each day. Bales are unloaded from delivery lorries by the Demag crane, with operator control via a user friendly, remote controlled joystick. The system unloads twelve straw bales, with a total weight of eight tonnes, per lift. Once unloaded, sensors check the bales to ensure moisture levels are within pre-set tolerances and, if accepted, the crane switches to automatic mode and deposits the bales within the 1,700m^2 storage area to a positioning accuracy of 15mm. The crane system also automatically lifts and moves straw bales from the storage area to the pellet production conveyor, when sensors indicate replenishment is necessary.

Drax's decision to specify the Demag system followed a visit, by Drax personnel, to a similar Demag installation at a biomass processing facility in Denmark.

The nearby Drax Power Station is the largest, newest, cleanest and most efficient coal fired facility in the UK. With an output of 4,000 megawatts, the station meets approximately 7% of the UK's demand for electricity. The planned annual production of 100,000 tonnes of straw pellets, at the Goole plant, will replace around 60,000 tonnes of coal used in the power generation process and reduce annual carbon dioxide emissions by some 120,000 tonnes.

Drax already has plans to develop further pellet plants, increasing its capacity for the production of locally sourced biomass pellets. The company has set an overall target of producing 12.5% of its output from renewable and sustainable products by mid 2010, reducing carbon dioxide emissions by over 2.5 million tonnes annually.

About Demag Cranes

The Demag Cranes Group is one of the world's leading suppliers of industrial cranes and crane components, harbour cranes and terminal automation technology. Services, in particular maintenance and refurbishment, are another key element of the group's business activities. The group is divided into the business segments Industrial Cranes, Port Technology and Services and has strong and well-established Demag and Gottwald brands. Demag Cranes sees its core competence in the development and construction of technically sophisticated cranes and hoists as well as automated transport and logistics systems in ports and terminals, the provision of services for these products and the manufacture of high-quality components.

As a global supplier, Demag Cranes manufactures in 16 countries on five continents and operates a worldwide sales and service network that is present in over 60 countries through its subsidiaries such as Demag Cranes & Components GmbH and Gottwald Port Technology GmbH, agencies and a joint venture. In financial year 2010/2011, the group, with its 6,115 employees, generated revenue of €1,062.3 million. Since August 2011, the Terex Group in the United States has held a majority share in the company.

NEUERO's Turbo Power makes its mark

Due to the requirements of the Kyoto protocol relating to the reduction of CO_2 emissions, the use of biomass in the energy mix is gaining in popularity.

NEUERO is a pioneer in biomass-handling equipment, supplying its first continuous biomass unloader in 2002. This unit, a Flexiport, was delivered to Essent in Geerteuidenberg in The Netherlands.

The idea was to unload a wide range of biomass products, from woodchips, wood pellets, palm kernels, ONF and so on. For this purpose, a machine was developed to handle all of these products, especially the dusty ones.

Today, biomass is mainly wood pellets, which offer many advantages. They are free-flowing, but do not have a high dust content. When unloading large vessels, a normal pneumatic system can be used without feeder. This is because the hatch is deep and the free flowing properties of wood pellets will make inverse cones reach to the bottom of the hold. Few movements are needed to empty the ship, getting a good average capacity.

However, the situation is different unloading smaller ships, of 3,000dwt for example. The hatch height does not allow for high-volume unloading, and constant position changes reduce average capacity. Fitting an unloader with a 'feeder' means that the feeder 'cuts' a layer of material, until the clean-up part of the operation.

NEUERO has recently developed the heart of its equipment, with its new Turbo Power a prime example. The new TURBO does not have V-belts, or other connections, rather a direct Motor-Turbo. The same bearings are used for the Motor and the Turbo. These bearings are now equipped with a vibration and temperature sensor and also winding temperature monitoring.

Moving biomass with grabs from Euromec

Italian company Euromec was formed by the merger of the two companies Eurohydromec and Isomec. It has 50 years of experience in the material handling market, and is one of Europe's top companies in the field.

Euromec is based in the Brescia province, a district known for its traditions in ancient metal and steel.

Euromec's large and sophisticated grabs are supplied to major Italian and overseas companies, and are used to handle materials in a range of industries, including: harbours, iron and steel, metallurgical, cement works, woodworks and in the ecological field in the biggest and most modern plants for the burning and recycling of all kinds of waste. The company's expertise serves as a guarantee that its products are of a high quality, over the whole range.

Biomass is among the products handled by Euromec's grabs, as shown in the pictures.

Euromec is known for its electro-hydraulic grabs, with built in power supply and electro-hydraulic control. They are equipped with a set of radial jaws for material handling, each one operated by one double action hydraulic cylinder.

The independent movement of each jaw, the particular design of their shape and the high power offered by the operating cylinders allow these grabs a powerful and well distributed handling action on every type of material.

Euromec's series 65–70 are suitable to feed all incinerators, from small to large, with municipal waste, and to handle assimilated materials with specific weights up to 1.7 tonnes.

Biomass logistics and deep sea shipment

Port of Frederica Stormajor™ importing material from Baltic bulk carrier via hydraulic grab crane and mobile hopper. Material is discharged to an existing on-port handling system.

During recent years, power utilities and combined steam and electricity users, by way of combined heat and power plant (CHP), have addressed sustainability obligations by introducing carbon-neutral fuels either as part of the solid fuel mix for coal fired plant or exclusively for new or existing boiler plant conversions.

The OECD (Organisation for Economic Cooperation and Development) expects biomass usage for energy production in power plant to more than triple within the next two decades. Depending on local availability biomass already has an important share in electricity production especially in countries with a large timber industry as for example Austria (20%), Norway (40%) or Sweden (70%). However, the majority of recent large scale biomass power plant projects are planned for the United Kingdom as part of the UK government's published Renewable Energy Strategy target of 30% of electricity generation from renewable resources by 2020 including both centralized and small-scale power plants, compared to less than 7% as of end 2011.

Biomass fuels (solid biofuels) are defined as originating in living or recently living organisms and in general are considered carbon neutral, as the carbon released when they are burnt to generate steam is offset by the carbon absorbed by the organism during its lifetime. Consequently when biomass fuels are added to the solid fossil fuel mix at a coal burning power plant, the addition of the biomass offsets a similar volume of coal equivalent thus reducing the plant carbon footprint whilst maintaining the same electrical output level.

Depending upon the data source, the volume of woodchips required for the alternative energy schemes in progress or under planning within the European Union far exceeds the capacity to produce locally and it is inevitable substantial volumes of forest sourced biomass will be imported from locations far removed from the user.

As the market matures it seems the likely smaller CHP and cement users will source renewable fuels locally and adjust or tailor their facilities around the available materials. However, for larger power utilities, considering the volume and fuel quality repeatability demands, this is unlikely to be a viable solution and in these cases thus far it seems wood pellets offer the best solution. Pellets are twice the density of woodchips, with higher calorific value and therefore much more economical to transport in standard bulk carriers. Furthermore, pellet quality may be measurable, graded and consistent and as a result common international standards will be developed allowing the material to be traded as a commodity in the same manner as coal for example.

However, wood pellets have issues and for storage in silo there are several well-known examples of catastrophic fires and subsequent explosions caused most likely by auto ignition within the mass of material. This can be better controlled in flat stores, for example, of the type traditionally used for cereals and as constructed at the recent Port of Tyne dedicated wood pellet import facility in the UK.

Biomass exports

Woodchips are exported from many countries including the USA, Canada, Australia, South Africa, Chile and Vietnam which this year will ship out over 5mt (million tonnes) principally to China, Korea and Japan making Vietnam now the largest exporter of loose chips. All of the existing woodchip facilities are targeted almost 100% to the pulp and paper industry and use external stockpiles with a variety of reclaim and shiploading systems on dedicated wharfs.

Fredericia Port (Denmark) Stormajor universal mobile ship, barge and store loader commissioned in 2010 and shown here with dust cover removed, handling wood pellets.

These existing facilities need considerable adaptation for the export of wood pellets which may not be stored outside (wet pellets turn to mush and become useless) and are very dusty, requiring enclosed storage and handling facilities with dust control down to the vessel hold.

Typically, a wood pellet originates from a pellet plant located relatively close to the raw material source and the dry pellets hauled to the port storage facility using either road or rail freight, or, where inland waterways are available, by enclosed barge. At the port sufficient storage must be provided ideally to load at least one vessel without relying on new deliveries and for economies of scale typically Handymax, Panamax or even Post-Panamax vessels may be employed with capacities of over 80,000dwt.

Wood pellet storage

With suitable fire precautions, wood pellet may be stored in conventional silos using a first-in and first-out storage regime and making due allowance for the material flow characteristics and for the outgassing of carbon monoxide, a lethal, clear and odour free gas that has already claimed at least one victim in such a facility.

However, where no existing silos are available or the safety issues surrounding silo storage are considered insurmountable, then flat storage using existing warehousing or even new light weight flexible skin buildings offers fast track availability with maximum flexibility in that the open building may be used for other purposes when not required for bulk storage.

Fredericia Port (Denmark) Stormajor universal mobile ship, barge and store loader commissioned in 2010 and shown here with dust cover removed, handling wood pellets.

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Fredericia Ocean Terminal Stormajor™ commissioned in 1992 loading cereals and oil seeds into open flat storage; an identical system could be applied to wood pellets.

With flat storage, ventilation is simple and tubes may be incorporated into the stockpile combined with exhaust fans to ensure there is no gas build-up.

Loading bulk material to such buildings, the B&W Stormajor™ offers unique benefits allowing direct intake from truck to storage without double handling.

As featured in the March issue of *DCI* (see p117 onwards) at the Port of Fredericia in Denmark, this new Stormajor unit was supplied recently doubling as a shiploader and store-loader handling a variety of materials including cereals and wood pellets plus other materials such as fishmeal.

Pictured above, an existing Stormajor supplied to Fredericia Ocean Terminal back in 1992 handling cereals and oil seeds into open flat storage on the port delivered from remote farm stores direct by tipping truck.

Wood pellet shiploading

To ship wood pellets requires terminal facilities including shiploaders such as the mobile equipment offered by B&W Mechanical Handling Limited of the UK (Aumund Group since 2002) based on its standard range of cambered boom machines with integrated trimming and powered travel facilities. In the project illustrated below at the Port of Panama in Florida, the shiploader is linked to the on-port storage facility by a radial and telescopic conveyor supplied in the shiploader package and integrated to the overall control system. In this first example the scheme enjoys the benefit of local storage but no fixed equipment could be installed on the actual berth. By using the radial and telescopic link conveyor concept to join the fixed storage to the mobile shiploader, the entire vessel could be trimmed, avoiding expensive vessel movement during the loading

Port of Panama City (Florida) with mobile shiploader and telescopic link conveyor loading wood pellets from local on-port storage facility.

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Mobile shiploader with twin Samson™ integrated feeders to receive direct from tipping trucks for discharge to ships including full dust control features.

operation. The radial and telescopic functions allow easy alignment between the units avoiding spillage and ensuring proper functioning of the dust control systems. Using the shiploader powered travel system allows the unit to be easily moved off the berth, under its own power, leaving the area free of any obstruction for the import or export of other cargoes or container traffic.

A second similar set of equipment is currently under construction for the port of Eastport in Maine USA comprising a mobile shiploader with multiple mobile link conveyors to move woodchip from a new 40,000-tonne-capacity storage facility, adjacent to the berth, out to the shiploader. For hold trimming and rapid movement along the berth between holds, the shiploader is equipped with the latest B&W In-Line, Parallel and

Mobile Shiploader with 'Cascade' dust-controlled trimming chute and powered travel allowing movement parallel to the vessel for rapid positioning and effective hold trimming.

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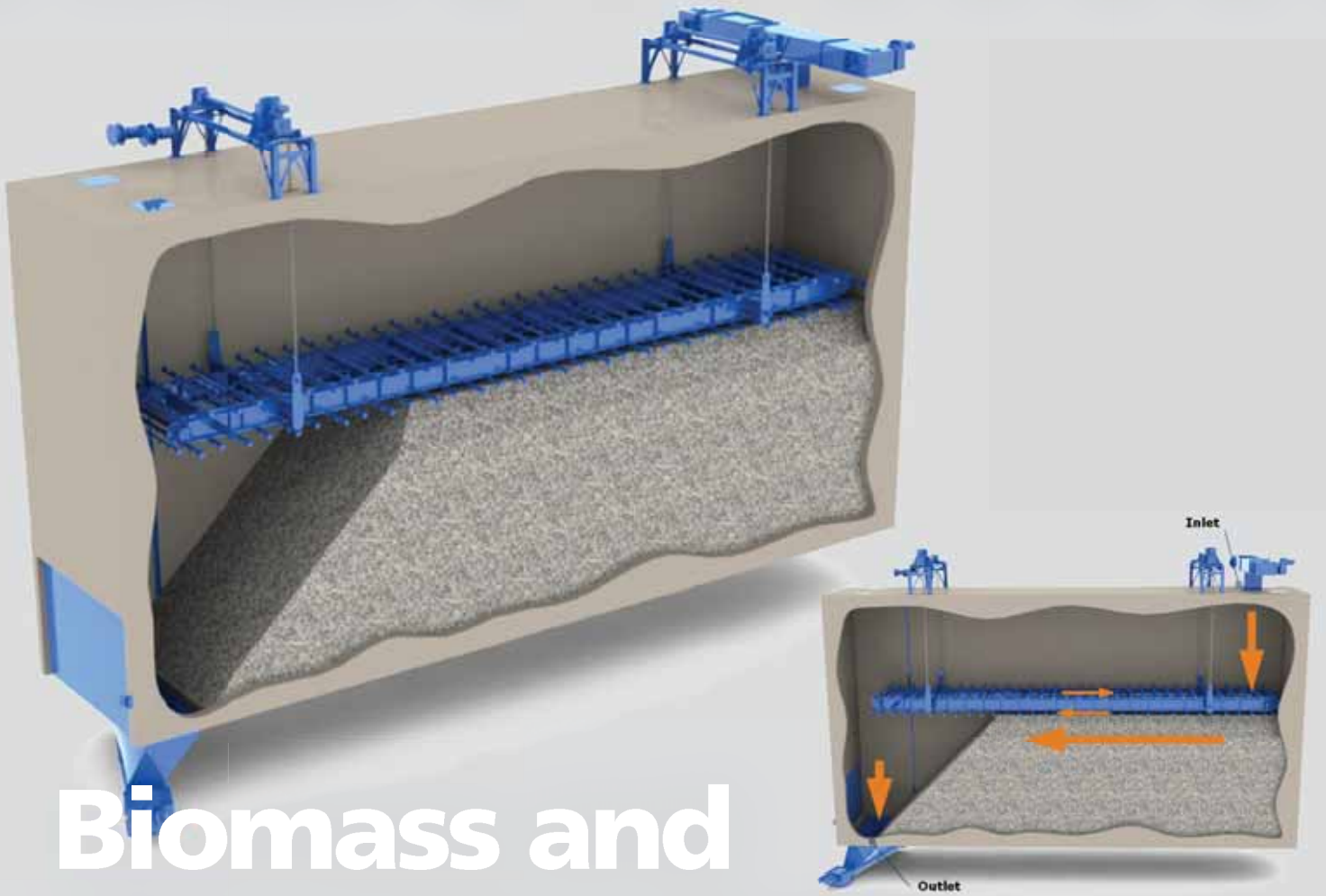

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Eco-Hopper for direct import by mobile harbour crane from deep sea vessels, discharging to a fleet of tipping trucks for inland movement to storage.

Radial powered travel system. As with the Port of Panama, this shiploader is fully autonomous and may be moved off the berth when not required for pellet export.

Mobile shiploaders are extremely flexible offering the shipper high handling rates and environmental performance but avoiding the need for expensive and permanent civil works and dedicated port infrastructure and, very often, much simplifying the required permits. Mobile equipment may be fast-tracked and the facility put into operation in a period of between six to nine months from the placing of the order. The mobile shiploader is not necessarily dedicated to a single bulk cargo and the same equipment may be used for a wide range of bulk materials with minimum or no modification whatsoever.

Similarly the equipment may be easily moved between berths in a large port or even from one port complex to another perhaps even in a different country if trading patterns change. This flexibility in application and operation is very attractive for investors, particularly for short term contracts or in regions of political instability as, in the event the export contract is terminated for any reason, the equipment retains intrinsic value and may be moved on for another purpose altogether.

Of course in most projects there is not the luxury of on-port storage and in this situation the B&W mobile shiploader is supplied with integrated Samson™ feeders, allowing material delivery by tipping truck which is also an option for woodchips and pellets, providing direct export from truck to ship without double handling. Generally two Samson™ units are supplied, one each side of the shiploader boom, allowing two trucks to discharge simultaneously for maximum performance. In this manner, spot or peak loading rates of up to 1,500m^3 per hour and an average 'through the ship' rate of 1,000m^3 per hour can be comfortably achieved with good vehicle management (see picture on the top of p95).

This level of performance can only be achieved by integrating the core features required of a high-performance shiploader into a single autonomous machine able to move quickly, as an integrated unit, along the vessel and within each hold for effective ship trimming. In the included illustrations (see picture on the bottom of p95), the shiploader is shown with a Cascade trimming chute including radial distributor plus full enclosures for the feeder units and conveyor boom with reverse jet dust filters at the transfer points to minimize this risk of fugitive dust causing local environmental pollution.

Where dust generation is not an issue, handling clean woodchips for example, the 'Jet-Slinger' manufactured by B&W is an interesting option since it provides for easy hold trimming from a single machine position. The Jet-Slinger has a trajectory of 15 to 20 metres, allowing the cargo to be delivered to any point in the hold and under the decks to maximize the stowage of this very light material. Of course the same equipment may be used in a fixed installation for stockpiling, combined with a stacking conveyor the Jet-Slinger will generate a huge radial stockpile at rates to 3,000m^3 per hour or 1,000tph (tonnes per hour).

By incorporating all of these facilities into a single mobile unit the exporter may enjoy the performance and environmental benefits of a dedicated fixed installation but with the flexibility and economy of a fully portable machine operating independent of any fixed port infrastructure.

Biomass import by ship or barge

Import from deep sea vessels requires substantial handling facilities at the port of entry, which would generally include grab cranes discharging to hoppers before transfer to storage either

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by conveyor or trucks operating on a merry-go-round basis. To control the dust generated from such operations B&W has developed a range of Eco-Hoppers with integrated dust control and feeder equipment. Particularly for woodchips, the combination of Eco-Hopper and Samson™ feeder provides for steep hopper sides to prevent bridging and blockage plus reduced free fall to limit the velocity of displaced air thereby minimizing the size of dust filters necessary to control any local pollution.

Regardless of the location of the storage it is very likely the final leg of the logistics chain from source to power plant will involve the use of road trucks. With any type of truck the Samson™ provides an effective solution for the intake of woodchips at the power plant as it does at the shiploader.

Typically the Samson™ provides a surface-mounted intake facility incorporating a buffer storage and fast intake rate to release the truck quickly combined with a controlled discharge rate to match the on-going conveyor systems.

For dedicated biomass power plants, the fuel may be conveyed from the Samson™ to storage but for existing coal-fired plant the biomass fuel may be bled onto the coal intake belts directly.

About the AUMUND Group

The AUMUND Group is long established and well respected in continuous process industries delivering world class materials handling and storage solutions at every stage in the raw material and fuel logistics chain and within the process plant. B&W Mechanical Handling Ltd of the UK was established back in 1966 to serve the shipping and storage sectors with a focus on mobile and surface mounted highly flexible solutions that cross many industry sectors. AUMUND Fördertechnik GmbH, SCHADE Lagertechnik GmbH and B&W Mechanical Handling Ltd are consolidated under the umbrella of the AUMUND Group along with AUMUND Logistik GmbH. In conjunction with the headquarters of the manufacturing companies, the global business is supported in eight locations in Asia, Europe, North and South America by own subsidiaries plus worldwide by an extensive network of agents covering four continents with equipment operating in over 100 countries.

Biomass represents significant growth area for Blug grabs

Over the last few years, there has been a significant increase in the use of Blug grabs for the handling of biomass products, so the company's presence in the port and power generation sectors is ever-growing. The company expects a growth in biomass of 210% in the EU over the next 20 years, and it represents an important bulk commodity today.

Blug offers a range of biomass handling solutions, depending on the requirements, and considers itself a specialist in this market. Its products range from closed design orange peel grabs to CV2, C4 or C2 type clamshell grabs — these different solutions could be used to handle a material density value of 0.15–0.2t/m³ which can present variations depending on moisture, size and compaction factors.

Another issue that has to be considered for this application is the ecologically friendly range. Credeblug has continuously adapted and developed its rope-operated and electro-hydraulic product range in such a way as to ensure contant improvements in loading capacity and environmental impact. One of the company's focuses over recent years has been its ecologically friendly grab range. Bulk material handling can cause significant dust emissions, so Blug's products include dust proof closed valves structure.

The technology in the electro hydraulic range has developed to achieve high return on investment, including variable flow piston pump operated hydraulic units. This kind of system continuously adapts and optimizes the developed power of Blug's grabs during opening and closing operations, and reduces electrical consumption by more than 40% compared with fixed flow hydraulic systems. Electrical efficiency is therefore very important in reducing customers' operating costs and the environmental impact of the grabs.

Some biomass applications require special certification requirements. Due to the dusty environment, some of the projects have to be certified as Atex standard. Depending on

the category and zone conditions, these are certification possibilities:

- Zone 0 or 20 – 1G or 1D category;
- Zone 1 or 21 – 2G or 2D category; and
- Zone 2 or 22 – 3G or 3D category.

Over the last few months, Credeblug's biomass-related activities have included the supply of two 8m³ and three 12m³ grabs for the European market. Some important orders related to biofuel and biomass handling grabs for the African port market will be manufactured in the next few months.

Credeblug has been chosen as 2012 Best Small and Medium-size Enterprise – Best SMEs – in the 20th Chamber of Commerce of Gipuzkoa's award ceremony. The distinguished panel of judges valued principally the company's innovation and development strategy, international presence and Blug products' prestige.

The award ceremony was presided by Basque country's president, Patxi Lopez, and took place in the Chamber of Commerce of Gipuzkoa. It brought together major Basque and Spanish companies and authorities.

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VIGAN expertise for wood pellet unloading

Newsflash

In 2011, VIGAN commissioned two NIV 600 for wood pellet unloading at RWE co-firing power plant in Tilbury, UK.

A co-firing power plant produces more ecological energy with wood pellets

Alternative and renewable sources of energy are a major concern, not only due to limited resources of fossil origin but also within the context of worldwide efforts against gas emissions.

New power plants, as well as some existing energy producers, are upgrading their existing technologies with the latest innovations in order to fulfill their legal obligations of protecting the environment while containing costs.

The French group SUEZ is a major player in Europe and at worldwide level with about 200,000 workers and an annual turnover of more than US$110 billions. SUEZ has integrated this approach for many years with very significant investment in engineering developments and state-of-the art industrial installations.

ELECTRABEL, the electricity division of the group developed a special project during the last few years for its power plant in Gelderland (city of Nijmegen in The Netherlands) with a capacity of about 600MW.

TRACTEBEL, its Belgian engineering affiliate, was in charge of developing this co-firing project (biomass + coal) by increasing by a factor of around ten (from 8tph [tonnes per hour] to 75tph) the incorporation of wood pellets up to a rate of 20% of the total energy produced by this upgraded plant. Since its operational start in 2010, this ELECTRABEL power plant has become one of the world largest co-firing plants with wood pellets.

Wood pellets are transported to ELECTRABEL plant by barges from various origins, thanks to the excellent hinterland river and canal system in the Netherlands for bulk transport. Nevertheless the discharge of such volume for a key sector requesting 24 hours per day reliability requires the highest quality and the most efficient operational performances.

VIGAN Engineering S.A., also a Belgian company specializing in pneumatic and mechanical ship-unloaders mainly for agribulk cargoes, with 40 years of experience and more than 1,150 items of equipment around the world, was selected to manufacture and install the pneumatic unloader for the barges of wood pellets.

Pneumatic unloading of wood pellets

The transport of any wood residue involves the challenge presented by the low density of those materials. Therefore, the most common process is pelletizing in order to condense them into granules (usually about 10–15mm in length and a diameter around 5–6 mm).

Thanks to this process and with a reasonable content of humidity, the wood pellets are quite free flowing and therefore easy conveying is possible from the production facility up to its use as an input in the power co-firing with coal.

During transport to the plant, those pellets can easily break and cause dust emissions: the use of grabs is not effective, due to major quay structural requirements, dust emissions, possible

spillages than can be difficult and costly to clean up and, of course, low 'through-the-ship' efficiency when unloading small barges.

Pneumatic unloaders are known to be a more convenient solution for unloading barges, compared with grabs or mechanical unloaders. They offer:

- **higher unloading rate** mainly during the cleaning of the hold with the intake nozzle being able to suck down to the latest product particle on the hold floor but also to reach the hidden corners;
- **safety:** one operator is able to manage the whole unloading not only thanks to a remote control for all major displacements of the suction nozzle into the hold, but also by driving an auxiliary skid steer loader for even faster final clean-up;
- **environment:** no dust as the whole unloading system is under negative pressure and/or totally enclosed;
- **no spillage** and need to clean the surrounding quay;
- **minimum breakage** by optimizing the air and product speed in the pipes;
- **low weight equipment** with far less mechanical efforts on the quay structure.

The first pneumatic unloaders were manufactured at the end of the 19th century but continuous technological improvements have been introduced for higher reliability, better safety and optimum running costs.

VIGAN NIV 600 PNEUMATIC SHIP UNLOADER

To achieve those objectives, a VIGAN NIV 600 model in Gelderland has all the latest technologies available, such as the following as a few examples:

- **three turbo blower groups** (each four stages) with direct drive and controlled by latest speed variators (frequency inverters) by Schneider Electric.

  The direct drive is a major improvement because it reduces not only the numbers of bearings which are existing on traditional drive with belts but also the mechanical efforts on the turbine shaft.

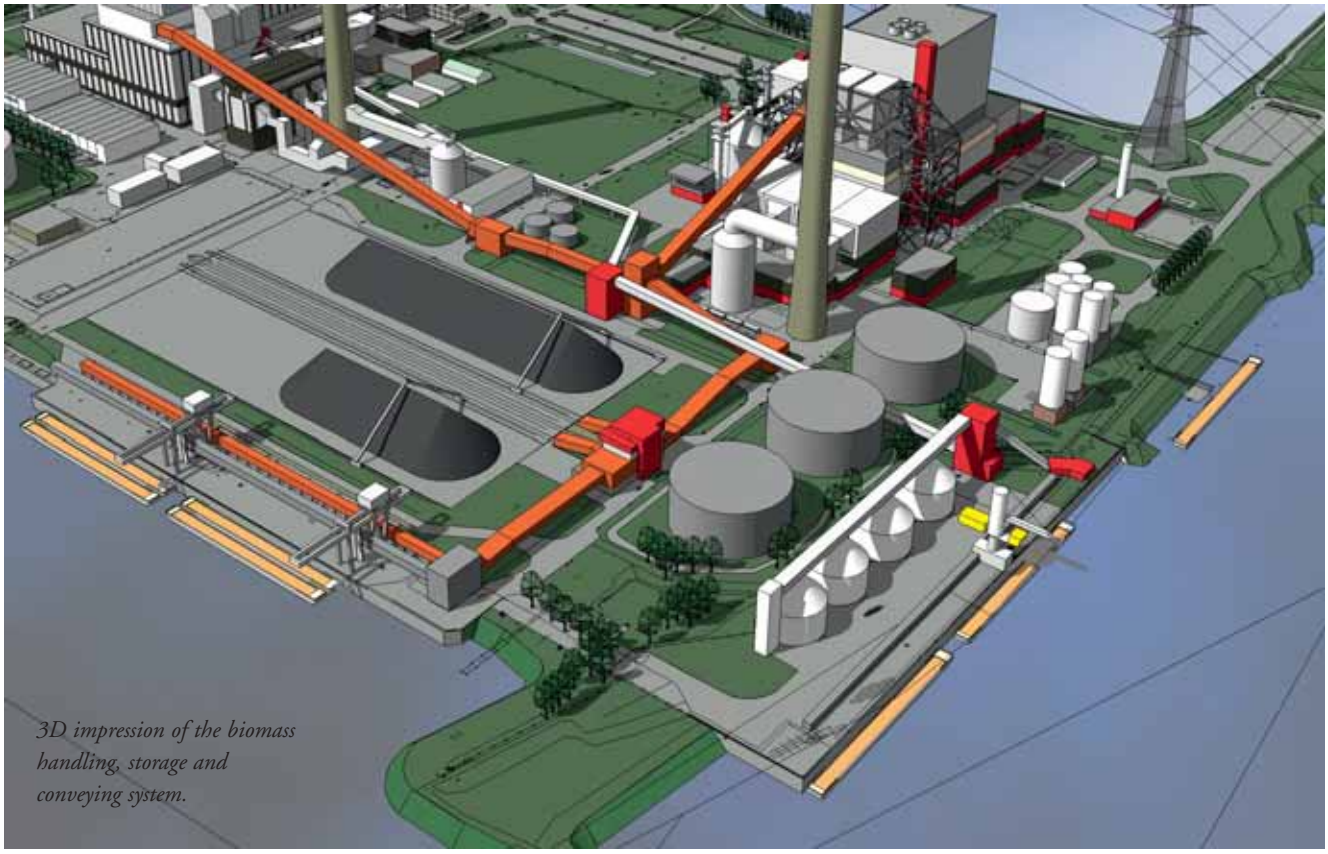
  The multi-stage turbo blowers are maximizing the suction capabilities for a larger range of product characteristics to be handled with no need of any special feeding device and in combination with the speed control system, it make feasible to precisely optimize the energy consumption.

  Some VIGAN customers reported figures as low as 0.6 to 0.7kWh/tonne thanks to those technology developments and also chosen by ELECTRABEL.

  As also observed in this project, those three turbo blower groups are giving to the customer a convenient extra capacity of suction power reserve to face any unexpected event and to guarantee his daily unloading target.
- **air jet pulse system** for automatic cleaning of the filter. Widely recognized among the food and feed industry sectors for the global best performances and reliability, this system offers also a major ad-vantage about safety: no running mechanical parts are in contact with the air flow which could be eventually contaminated with dust and therefore could be the origin of explosion.
- **major reliability and safety** of this equipment are also due to special alloys against wear used for instance in the elbow between the vertical and horizontal suction pipes, in the airlock components and generally speaking by integrating most compulsive rules concerning latest European norms about engineering design, equipment manufacture and human resource protection.

The use of alternative sources of energy such as biomass will certainly increase during the coming years and all the logistic aspects of these inputs require very careful approach. Electrabel receives full credit for this landmark project in green electricity production. It also receives the credit for having understood the benefits of the pneumatic technology for a reliable and efficient unloader.

Royal Haskoning's services cover all stages of biomass project development



3D impression of the biomass handling, storage and conveying system.

Royal Haskoning is one of Europe's leading project management, engineering and consultancy providers. With a strategic global presence, it provides an extensive range of multi-disciplinary services that relate to planning and transport, maritime and waterways, industry and energy, buildings and water. With a worldwide network of professionals and strong industry relationships established over 130 years, its extensive expertise and experience provides a fully integrated one-company approach to projects.

The company's services cover all stages of project development from strategic plan to completion of implementation. Typical services are pre-investment studies and consultancy, conceptual design and feasibility studies, logistic studies, detailed tender design, preparation of tender documents and contracting, construction management and commissioning, start-up assistance and training.

Within Royal Haskoning, the advisory group Heavy Industry & Logistics has a long history in the handling and storage of grains, biomass, minerals and coal. The team has its roots in the consultancy department of the largest agribulk stevedore in the port of Rotterdam, the Netherlands. It has been involved in the design and implementation of numerous agribulk terminals all over the world including the Netherlands, Tanzania, Indonesia, Mozambique, Ireland, China, Egypt, Cyprus, Cape Verde and the UK. Through this experience, Royal Haskoning has gained extensive knowledge in the area of dust suppression and dust explosion prevention (ATEX).

Depending on specific project requirements, multidisciplinary project teams are formed to provide a full range of professional services. Royal Haskoning's experts are dedicated to finding solutions aimed at improving and optimizing their clients' business activities in the field of handling, processing and storage of different types of dry bulk materials.

Royal Haskoning is actively involved in projects related to the bio-based economy; i.e. projects aimed at biological production processes that use natural inputs, require minimum amounts of energy and produce only re-useable 'waste'.

Typical production processes are the conversion of biomass to e.g. bio-heat and bio-electricity, bio-diesel and bio-ethanol, or bio-pharmaceuticals and bio-plastics. Services related to biomass conversion range from strategic advice on policy-making to economical and technical feasibility studies, and from conceptual, basic and detailed process engineering design to design of corresponding handling and storage systems. Important considerations in the development of biomass handling and storage projects are the diverse characteristics of biomass with regards to flow ability, density, moisture content, dustiness, abrasiveness, etc. This affects all aspects of materials handling and storage design.

Biomass handling: co-firing projects at existing power plants

Royal Haskoning has built a track record of project related to biomass handling and storage at existing power plants. Both the materials logistics inside the production facilities and the outside plant logistics are within the company's expertise. In order to fulfil the requirements of the 'Kolen convenant' (Dutch joint agreement, concerning the reduction of CO_2 emissions), Dutch operators of power plants started to develop and implement the co-firing of biomass in power plants.

Some of Royal Haskoning's recent projects in this field include feasibility studies for large scale storage facilities for biomass at various power stations in the Netherlands, including intake and outtake conveying systems, storage facilities, barge loading/unloading and intake in the existing coal firing system.

For Nuon, it was involved in the design of the unloading and

Dry bulk handling, processing & storage

Royal Haskoning is an independent world-wide operating consultancy firm with a staff of 3,900 professionals. With its world-wide network of offices, Royal Haskoning offers its multidisciplinary and integrated services locally, based on experience acquired globally.

Royal Haskoning harbours the knowledge and experience that is indispensable in the development of modern ports and (un) loading, transport and storage systems. Our experts are dedicated to finding solutions aimed at improving and optimising their clients' business activities in the field of dry bulk handling, processing and storage.

Our services cover all stages of project development such as:

- pre-investment studies and consultancy;
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Photo of the new biomass berth with pneumatic unloader and storage silos.

storage system for the ultramodern Magnum Multifuel Power Plant in Eemshaven in the north of Groningen, the Netherlands. It also carried out a feasibility study for the handling and storage of either wood pellets or woodchips for the power plant of Nuon in Amsterdam, the Netherlands. The advantages and disadvantages were determined with respect to the costs of unloading, storage, conveying and the extra handling (drying, sizing) in case of woodchips to enable co-firing in the existing power plant.

For Essent, Royal Haskoning was involved in the design and implementation of the handling and storage facilities for co-firing of wood pellets in the two existing power plants Amer 8 and 9 in Geertruidenberg, the Netherlands. The project comprised a new berth with a pneumatic unloader, a conveying system with belt conveyors and bucket elevators, four flat bottom silos with reclaim augers for outtake and a conveying system towards both power plants.

Extensive measures were taken with respect to dust control and explosion protection. The illustrations shown provide both a 3D impression of the unloading, storage and conveying system and a photo of the new biomass berth with rail mounted pneumatic unloader and storage silos.

Currently, Royal Haskoning is involved in a number of biomass projects in England and the Netherlands which are all related to handling and storage of wood pellets with intake from Panamax vessels by grab cranes, storage in bulk flatstores and outtake to either the power plant, train loading facilities or loaders for barges and coasters for onwards transportation to the hinterland.

Biomass handling: logistic studies

Royal Haskoning carried out a logistic study to the supply chain of biomass for a new biomass-energy plant to be realized at AVR's waste processing location at Rozenburg, Rotterdam. The biomass would consist of wood material in bulk from various waste collection points. Various transportation modes were examined for the transportation to the location in Rozenburg (e.g. road, barges) as well as on site (e.g. belt conveyor system, road). For the international trading company Nidera, Royal Haskoning has investigated the feasibility of establishing a new pelletizing plant for wood pellets in North America with the objective to achieve a reliable flow of wood pellets to power plants in the Netherlands.

For a new combined heat and power facility located in the UK, a study was carried out to identify feasible options for the delivery of biomass to the site. The primary source of fuel for this power facility was biomass in the form of woodchips or wood pellets to be sourced by sea from various locations including North America, Scandinavia, South Africa and Brazil. Research has been done for the woodchip supply to identify the characteristics for a range of vessels (geared, gearless, self-unloading and dedicated woodchip carriers) in combination with the required berthing and unloading requirements for different throughput scenarios.

Improved design increases serviceability and flexibility and boosts collection

Fugitive material can arise from a number of areas in biomass handling systems, including dumping zones, transfer points and conveyor systems. Virtually any time biomass material is moved, especially in large quantities or at high speeds, the potential exists to create and release dust. New equipment designs and containment techniques are in production to facilitate better dust control, with others continually being developed.

To overcome the maintenance problems and operating costs of centralized dust control systems, Martin Engineering recommends the use of insertable air cleaners on conveyor transfer points and recently introduced an updated version of its insertable air cleaner. The Martin® Air Cleaner is very effective in applications which create significant dust, like biomass.

Rather than carry dust-laden air to a central collector, insertable systems filter the air inside the transfer point where they can easily return material to the conveying system.

Dust collectors have been around for decades. However, the name dust collector is misleading. The unit does not collect airborne dust; rather it solves the problem of airborne dust by keeping fine particles in the load, by returning them to the main material body, essentially cleaning the air of dust.

An integral fan pulls dust-laden air through the filter elements. The air passes through the filter, leaving the particles on the filter element. Each filter element is then regularly cleaned by a 'reverse jet' of compressed air, which is injected into the filter element. This causes a momentary reversal of the air flow dislodging the dust cake back into the main material body.

The Martin® Air Cleaner is the next generation of the insertable air cleaners. It features a side access door, making the units easier to service and more readily available for regular maintenance. Its rectangular design allows for more flexibility for expansion and it is available in four different configurations to control airborne dust at belt conveyor loading points and other bulk material handling operations.

The Martin® Air Cleaner features mesh-like material in its filters which cleans better while consuming less energy than conventional filter bags. The filters allow a reduction of the size of the fans used to move air through the filter elements and therefore reduce the power consumption of the collection system.

The improved Martin® Air Cleaner features the same small filter elements that were included in the previous insertable air cleaner. However, the system offers more flexibility to customers and is offered with two filters, three filters, four filters and even six filters. The two filter version cycles 1,000CFM, while the six filter version can cycle up to 3,000 CPM. Martin Engineering offers a range of system sizes and filter materials to match the application environments of its customers.

The small filter elements allow a significant reduction in the air cleaner's 'footprint', allowing the Air Cleaner to be installed in locations where tight quarters complicate the installation of the other systems.

In addition, the system is now available with a side access door which will allow the unit to be serviced quickly and more safely. Because of this side access door, headroom is no longer an issue and allows access from a conveyor walkway.

The Martin® Air Cleaner feature a pulse cleaning system where a short pulse of air is sent back through the filter to dislodge accumulated material. Changing the filter is now a one-hand, no-tool procedure utilizing the side access door of the air cleaner.

Installation of insertable air cleaners will eliminate many of the problems seen with central 'baghouse' collection systems, including long runs of ducting, large enclosures, maintenance difficulties and high power consumption. There is no large fan, no ductwork and no central bag house. Insertable filters are integrated into the transfer point enclosure, where they can easily return material

to the conveying system.

Rather than carry dust-laden air to a central dust collector, the Martin® Air Cleaner filters the air inside the transfer point and can effectively handle the heavy concentration of dust and high volumes of air arising at belt conveyor transfer points.

The new line of insertable air cleaners was developed to handle the heavy dust concentrations and air volumes arising from material transfer points. They are designed to remove 99.9% by weight of all dry particulates 0.5 micron and larger (based on a time-weighted average of a properly-installed, operated and maintained unit.)

The automated 'reverse jet' cleaning sequence facilitates continuous operation, keeping filters working effectively with a minimum of compressed air. The small integrated fan runs only when the conveyor is operational, further improving energy efficiency. An insertable unit eliminates the need for installing or maintaining ductwork, and there's no haulage or cleanup costs for waste disposal, since fugitive material is returned to the process.

The Martin® Air Cleaner is automatic, self-cleaning and was designed to remove dust from the air in conveyor loading and transfer points, silo vents, bucket elevators and screens and thereby minimizing the negative consequences of airborne dust and spillage, including the potential risk to worker health, explosive hazards and the potential for injury from slips, trips and falls. Another objective is to prevent waste, avoid unnecessary maintenance and enhance efficiency, allowing bulk handlers to contain fugitive dust within the material stream.

Founded in 1944, Martin Engineering is the world leader in making bulk materials handling cleaner, safer and more productive. The firm is headquartered in Neponset, IL, offering manufacturing, sales and service from factory owned business units in Brazil, China, France, Germany, Indonesia, Mexico, South Africa, Turkey, India and the UK.

Engineering solutions for biomass storage and handling

Biomass is a general term used to describe a variety of materials including wood chips, pellets, saw dust, milled switch grass and corn stover, etc. From a material storage and handling perspective, these materials can exhibit various handling challenges. Materials such as milled corn stover are very light and may experience discharge issues, whereas materials such as woodchips exhibit strong interlocking tendencies. Pellets may undergo attrition and generate dust, which can pose an explosion hazard. Whether it is gravity-reclaim stockpiles, silos or feed hoppers, unless properly designed, it can experience flow problems such as flow stoppages, limited live storage capacity, feed rate limitation, etc. Similarly, if the feeder and transfer chutes are not designed properly, they can result in flow problems. These problems can be avoided by properly designing or retrofitting the storage and handling systems.

Established in 1966, Jenike & Johanson is a renowned technology company which provides solutions for reliable storage and handling of bulk solids.

Problems Jenike & Johanson solves/avoids:

- flow stoppages or erratic flow due to arching and ratholing in silos and feed hoppers;
- limited live storage capacity in silos and gravity reclaim stockpiles;
- feeder discharge issues;
- chute pluggages;
- attrition and dust generation during pellet handling; and
- solids handling equipment failure investigations.

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

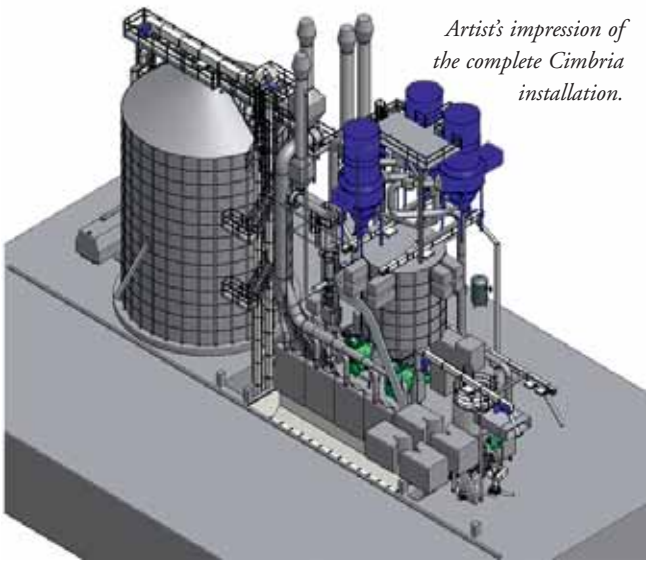
To address these costly problems, Jenike & Johanson has developed proven ways to design handling equipment that will promote reliable, smooth and unrestricted flow of bulk solids. Bulk solids handling equipment design should not be a trial-and-error approach; Jenike & Johanson doesn't guess at material properties, it measures them! It has one of the world's largest and most complete laboratories for characterizing the flow properties of bulk solids under representative environmental conditions. For over 40 years, Jenike & Johanson has focused on developing first principle theories on bulk solids flow and conveying behaviour.

Jenike & Johanson's services include:

- biomass flowability study;
- silo, hopper and stockpile gravity-reclaim system design;
- feeder design;
- transfer chute design;
- calculation of material flow induced loads on silo and hopper walls; and
- training on solids flow and pneumatic transport.

Jenike & Johanson combines test results and real world project experience, which yields the best solution in terms of reliability and cost-effectiveness. Its skilled and experienced engineers provide detailed structural and mechanical design of solids handling equipment, and routinely design silos, hoppers, feeders and transfer chutes.

Cimbria supplies installations for handling biomass



Artist's impression of the complete Cimbria installation.

Cimbria A/S is one of the world's leading suppliers of high quality processing technology primarily within grain and seeds, but also within other industries such as biomass treatment, animal feed, and systems for fertilizer storage. The company has in-depth knowledge of the design and construction of turnkey projects and special installations for handling and conveying bulk cargoes. The vast experience is constantly being put to use in developing new solutions which meet the demands of authorities and users for functionality, quality and environment friendly operation. The delivered solutions have been developed on the basis of core technologies such as belt conveyors, screw conveyors, bucket elevators, chain conveyors, loading chutes etc.

The solutions from Cimbria are always individual solutions developed in close co-operation with the company's 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 handling biomass installations, Cimbria can refer to a wide selection of solutions for different applications, including the installation of intake and silo systems, conveying equipment and dust extraction.

Recently, the company has been involved in a number of interesting projects involving various kinds of biomass installations.

Conveyor system for biofuels

Customer: Vattenfall A/S, Amagerværket, Denmark

In connection with the conversion of an existing gypsum plant in order to enable it to run on biofuels, Cimbria has delivered equipment for reception of wood pellets and briquettes from ships, trucks and internal transport. In addition, Cimbria has converted the existing gypsum plant so that ATEX provisions can be complied with following implementation of the new type of operation.

Equipment for reception from ships includes a hopper with a 5m x 6m inlet opening and a volume of 35m^3 under the grating to the extraction system. Extraction is carried out by means of a blower filter with 125m^2 filter area and a fan. A belt conveyor with a capacity of 500m^3/h has been installed between the

hopper and the existing conveying system.

A 12.5m-long slatted conveyor with a capacity of 300m³/h designed for rearward tipping has been installed for reception of biofuels from trucks to the boilers' pre-silos. In order to minimize dust emission, the slatted conveyor has been supplied with a pre-fitted extraction hood which has an extraction capacity of 14,000m³/h. The transport of biofuels from the slatted conveyor to the existing plant takes place by means of a chain conveyor.

Internal handling takes place by means of a new hopper with extraction. The hopper feeds an existing belt conveyor on which a special version of a Moduflex S650 loading chute has been installed.

The existing plant for gypsum, which Cimbria delivered in 1999, has been converted so that, as with the new plant, it now complies with all ATEX provisions. Conversion work has included new motors, switches and signal transmitters.

The slatted conveyor has been supplied with a pre-fitted extraction hood which has an extraction capacity of 14,000m³/h.

New plant for handling pellets and briquettes to Vattenfall A/S, Amagerværket, Denmark

Biomass/wood pellet plant

Customer: Hafslund Energi in Oslo, Sweden

Excellent collaboration with engineering firm J. MARED AB in Sweden has recently led to Cimbria delivering a major project order to MARED AB. The plant is currently being constructed at Hafslund Energi in Oslo.

The order comprises:

- hopper for sideways and backwards tipping from trucks;
- conveying equipment;
- silo delivery with temperature measuring equipment;
- complete extraction/filter and dust aspiration system;
- platforms and walkways; and
- compressed air system.

Besides, the orders comprises project management of sub-project, installation, training of users and a three-month inspection following commissioning.

The plant is built in connection with the establishment of a new boiler plant at Hafslund Energi in Oslo. The wood pellets are received by truck where they are transported to the buffer silo via the hopper. From the buffer silo, the wood pellets are transported to the grinding section, after which the pulverized wood is transported to the dosing silo situated in front of the boiler.

Collaboration with engineering firm J. MARED AB in Husqvarna has given Cimbria an additional point of contact to biomass and wood pellet users in Sweden and Norway. MARED is today a major player on the Swedish market in terms of equipment for processing, refining and handling waste and solid biofuels (shredded timber, wood pellets and woodchips, etc.).

The above installations illustrate the variety of different solutions provided by Cimbria A/S. Whether it is transporting agricultural or industrial products, or loading barges, ships or wagons, Cimbria A/S develops unique and individual solutions.

The building under construction.

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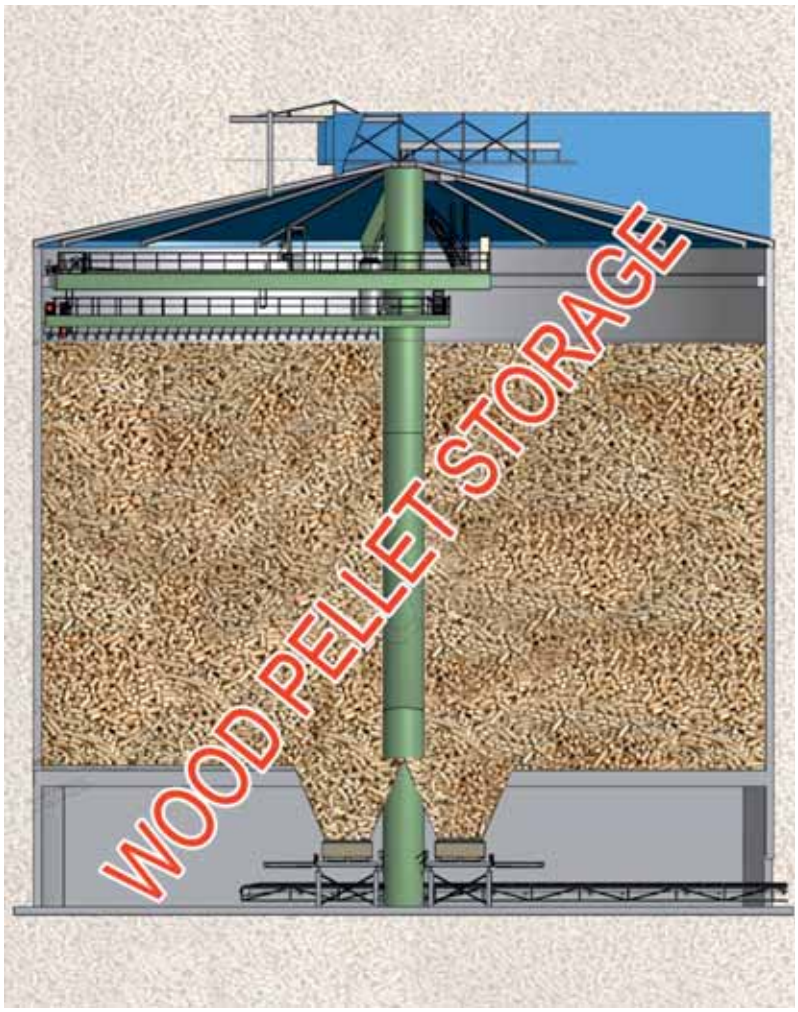
Silo storage – an ideal solution for wood pellets

ESI Eurosilo is an independent Dutch company that specializes in the turnkey delivery of silo-systems for non free-flowing bulk solids. As well as biomass, a wide range of bulk solids can be handled and stored within the Eurosilos, such as coal, FGD-gypsum, limestone, fly-ash and others.

Since 1967 more than 125 Eurosilos have been built all over the world. The storage capacity ranges from 1,000m³ up to 100,000m³.

ESI Eurosilo manufactures silos that are ideal for the storage of wood pellets. Among the main advantages of a Eurosilo system are:

- **space and capacity considerations: minimal footprint for large scale storage.** Particularly for restricted areas, the volume-to area storage factor is of major importance. Silos are the most compact form compared with covered storage piles, whether circular or rectangular.
- **environmental considerations: no dust emissions.** Dust emission, water percolation etc. have become decisive factors in obtaining permits.
- **safety and fire considerations: meeting ATEX & NFPA regulations.** Silo storage, by its configuration, minimizes the intrusion of oxygen in the stored coal mass; the tight packing reduces the potential for possible fires. In a situation where self-heating is discovered by CO-detection at an early stage, effective measures can be taken; if necessary, it is even possible to make the silo fully inert by nitrogen purging. In this way the rulings of the fire protection agencies can be met.
- **high degree of automation: fully automatic operation.** Storage silos with a mechanical filling and reclaim system can be remotely controlled. An online blending facility can also be included by controlled reclaiming from two or more silos simultaneously; and
- **investment considerations: relatively quick return on investment.** Recent studies of the technical university of Delft have underlined that the Eurosilo is a feasible concept with a relatively quick return on investment. These studies are based on the environmental management accounting method which not only considers the initial investment cost but also the running costs such as labour, the costs due to environmental impact and the costs at the end of the life time.



To keep the environmental impact of the transport and storage of wood pellets to a minimum, these system should be fully enclosed. The Eurosilo system not only meets the strictest environmental and safety regulations worldwide, but it is also a practical and economically efficient way of storing most bulk solids.

The technical university of Delft has made some studies to the handling and storage of wood pellets. In comparison to coal they have concluded the following:

- flowability of wood pellets is better than coal.
- moisture content of wood pellets is similar to high ranked coal (e.g. anthracite).
- time consolidation effect is no issue for torrefied (roasted) wood pellets and a minor issue for dry wood pellets.
- attrition of wood pellets is low.

Because of these facts and the years of experience ESI has gained with its silo technology, it is clear that wood pellet storage in a Eurosilo system is a safe and environmental friendly solution. DCi

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Scandinavian Engineering Expertise

Jay Venter

Planning the port's future – in 3D – Merius Oy

Efficiency to investments with 3D design

Merius Oy and the Port of Kokkola (Finland) signed 3+2 year consulting agreement in February 2012. The agreement includes equipment related to the material handling system and mechanical design services, as well as conceptual design and investment studies, budgeting and project management services. Merius Oy is a Finland-based engineering and consultancy company founded in 2003. The company offers a wide range of services to ensure that customers can find solutions to their challenges from one provider.

Merius Oy has strong expertise in dry bulk and breakbulk handling systems, including machinery, conveyors, demanding steel structures and lifting tools. Long-term co-operation with various industrial partners, e.g. technology and machinery suppliers has proven to be advantageous to all parties in industry investment projects.

Clients for Merius Oy consist of a variety of industries including chemistry, mining, bio-energy and product manufacturing companies. Although Merius's main clients are in Finland, the company is designing an increasing number of its systems for installations outside the country.

"Knowledge from different branches of industry and our wide network of collaboration partners provides a great foundation to create cost efficient and sustainable solutions," said Merius Oy's managing director, Hannu Sarja.

Merius Oy not only creates sustainable solutions, but shows potential results visually. Its design procedures lean heavily on using easy-to-understand 3D formats presenting isometric views and details in drawing and separate animations. For example, case results for the Port of Kokkola are presented in different development phases clearly demonstrating how the port area can expand in the coming years, giving decision makers the advantage of being able to speed up the process and find the right solution if different designs solutions need to be compared.

The Port of Kokkola has become one of Merius's major customers.

The Port of Kokkola, Finland's largest dry bulk port and one of the deepest in country, is on course to handle up to 12 million tonnes of cargo a year and become the country's third largest port by 2016. Underpinning the port's business success are significant levels of investment. Between 1990–2011, Kokkola has invested €108,3 million on port development and expansion projects — €44,1 million since 2006 alone — including building northern Europe's first all-weather terminal, Finland's first rotary rail wagon tippler terminal, acquiring an additional harbour, reclaiming land to further extend existing facilities, constructing new warehouses and office accommodation, and purchasing new state-of-the-art equipment to help the port run more efficiently. Kokkola has become Finland's most versatile port in the handling of dry bulk commodities.

Merius has been focusing on the port's future vision by creating large-scale conceptual designs with the aim of improving bulk material handling for next ten years. The port's development project includes designing logistics, warehouses and other buildings on the port estate. "Material flow analysis is essential when future port activities are planned," said Sarja. "Careful analysis is needed to ensure that efficient conveyor systems and bulk material handling systems are installed to efficiently carry material from storage areas to shiploaders. Designing investments and budgeting are also taken into account during the development phase."

Building Information Model (BIM), more out of results

New designs are usually installed in an environment where

existing machinery and buildings constrain design. Merius's approach is to create a 3D model from surroundings, in order to ease collision detection and avoid costly design changes that might otherwise have been needed during implementation. These 3D models, drawings and other documentation lay the foundation of the building information model, and can be used after the investment project in various ways.

Up-to-date building information model gives a real advantage in asset and lifecycle management or, for example, in maintenance. Merius has a strong vision of how to continue developing its services to get even more out of results. To provide even more accurate information Merius aims to use laser scanners to create efficiently precise as-built 3D models. These can be combined with 3D models from new designs to create coherent building information model where old and new are bound together to meet future challenges.

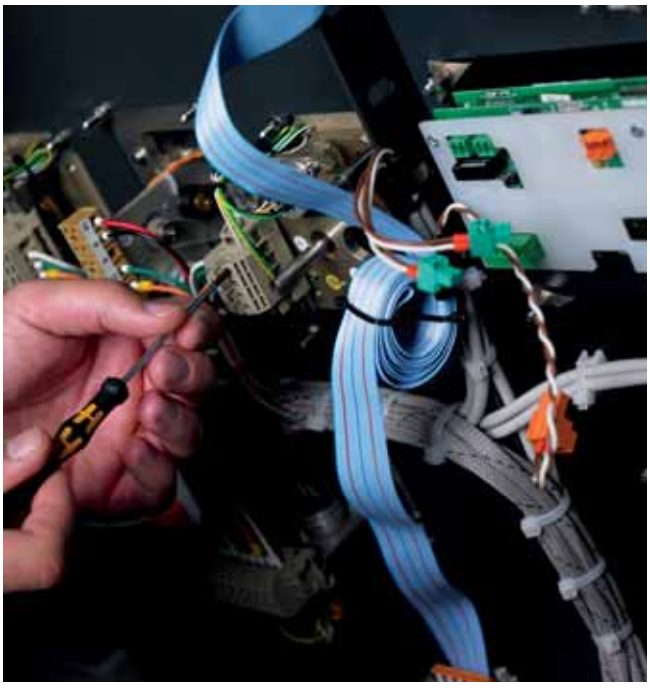
Transas eases transition to ECDIS

The shipping industry is preparing for ECDIS (Electronic Chart Display and Information System) implementation and Transas has recently introduced a number of new developments which will make the transition to ECDIS smooth and efficient.

Earlier this year, Transas Marine launched its 4-level ECDIS concept designed to provide an IMO compliant solution for the shipping companies.

The new range of product packages Standard, Standard+, Premium and Premium+, features Transas well renowned Navi-Sailor software with the best technology applied through all systems. From the entry-level Standard ECDIS to the Premium+ advanced ECDIS Multifunction Display, they all include carefully selected standard features with an extensive range of additional options.

Transas 24" ECDIS Panel PC Solution.



This concept is truly unique. Transas's objective is to provide a solution to the market where a 'standard' system features the best available quality and at the same time is user-friendly and cost-efficient. On the other hand, there are shipping companies which want to utilize a comprehensive technology going beyond IMO (International Maritime Organization) requirements. With Transas' new four-level concept all market requirements are covered.

Transas Marine has also introduced its 'Pay As You Sail' chart solution for (S)ENC. Transas received approval for the 'Pay As You Sail' service by PRIMAR and IC-ENC after successful sea trials and verification by Det Norske Veritas (DNV).

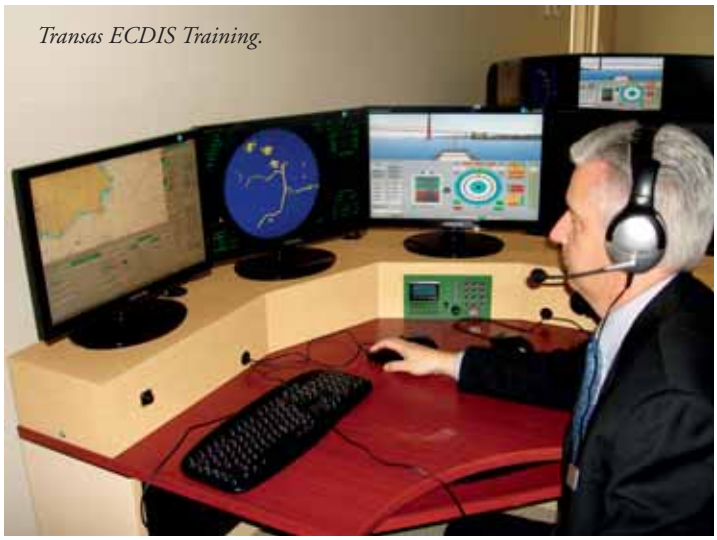
Traditionally the navigator has to select and purchase charts prior to each voyage using what is commonly called pre-licensing method. With Transas PAYS solution the vessel will have a license and access to install, view and pre-plan using official (S)ENC's where the necessary PAYS permissions have been obtained without additional cost.

What's unique with Transas 'Pay As You Sail' solution is that recording and reporting of charts used is done with extraction from Transas Navi-Sailor 4000 ECDIS logbook. Vessels only pay for charts actually used for navigation monitoring. In other

words, only charts that have been displayed on the screen together with ships position or generated navigational alarms. In principle, this is 'best scale charts only', not all charts and scale bands under the keel.

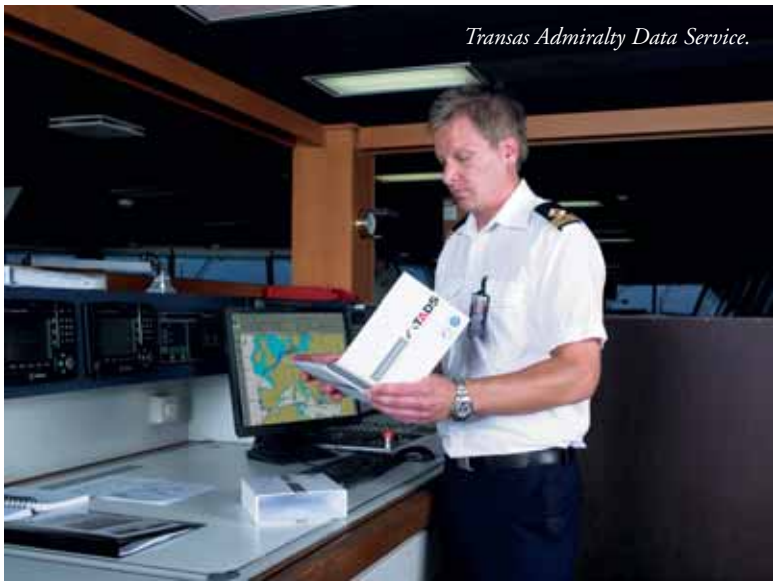
Transas PAYS is a service for accessing chart licenses and corrections online together with the ECDIS. 'Pay As You Sail' communicates via Transas Gateway firewall for licensing, corrections and sending chart reports. Transas Gateway works via a secure online internet connection from the vessel's Navi-Sailor 4000 ECDIS to the Transas Chart Server. It also allows remote support and maintenance on the Transas ECDIS which increases safety onboard.

Anders Rydlinger, Transas Marine Navigation Product Development Director comments: "With the official Transas Admiralty Data Service (TADS) SENC-service developed in co-operation with the UKHO, Transas 'Pay As You Sail' gives the vessel access to the most cost and time efficient (S)ENC service on the market and the best (S)ENC coverage available for navigation and planning. Transas 'Pay As You Sail' service complies with UKHO requirements. Besides the vessel's internet connection, no extra communication equipment or tracking service is needed."



Transas ECDIS Training.

Transas Marine has also developed a solution for saving fuel and reducing environmental impact which is fuel efficiency monitoring system Transas Wave.



Transas Admiralty Data Service.

Transas Wave is designed to give the officer an easy tool for monitoring and recording of ship's fuel consumption. Wave is a standalone application that fits on every ship. Integration with ECDIS for route optimization will be available later this year together with the ECO module. ECO module is designed to comply with new MARPOL requirements allowing recording and monitoring of vessels emission.

Wave connects to navigation sensors, flow meter, engine data and emission sensors to collect data which is then used to optimize the operation of a vessel. With proper control and management it is possible to improve engine efficiency, delivering fuel savings and reducing emissions.

Wave provides online decision support where instantaneous as well as consumption per-sailed-distance is presented in a clear and easy way. Just making a small change to speed, trim and planned route, can lead to significant fuel savings. Wave includes these, plus a range of additional parameters that can lead to fuel savings of more than 5%. These savings in fuel provide a swift return on investment for a shipping company.

Konecranes receives important industrial crane order from India

During the first quarter of 2012 Konecranes received an approximately €9 million order for 21 heavy duty industrial cranes from steel manufacturer JSW Steel Ltd in India. This order is one of the biggest single orders in terms of number of cranes and value to be supplied by Konecranes to the Indian crane industry. The cranes will be delivered to JSW Steel's Torranagallu plant by the end of 2012.

JSW Steel is the largest private sector steel manufacturer in terms of installed capacity and is the flagship company of Indian JSW Group. The JSW Group is present in several sectors: steel, energy, minerals, port & infrastructure, cement and aluminium. Konecranes' Indian company WMI Konecranes India Ltd has been JSW Steel's preferred crane supplier right from the inception of its plant.

"JSW Steel is one of our biggest and most prestigious customers," says Saeesh Nevrekar, vice president of WMI Konecranes India Ltd. "This recent order is a positive acknowledgement to our quality products and a proof of a satisfied customer."

The ordered cranes will be used in coil handling in the cold rolling mill in JSW Steel's plant at Torranagallu, Karnataka. The fully automated cranes will be integrated into the plant's state-of-the-art, automated coil yard management system. The lifting capacity of the cranes ranges from 15–60 tonnes.

WMI Konecranes has supplied more than 4,000 cranes to date and is the crane market leader in the Indian steel industry.

Konecranes is a noted group of Lifting Businesses™, serving a broad range of customers, including manufacturing and process industries, shipyards, ports and terminals. Konecranes provides productivity-enhancing lifting solutions as well as services for lifting equipment and machine tools of all makes. In 2011, group sales totaled €1,896 million. The group has 11,700 employees, at 609 locations in 47 countries. Konecranes is listed on NASDAQ OMX Helsinki.

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LITTLE [FLEXIBLE INTERMEDIATE] BOXES ...ON THE BULK SIDE

Bagging Equipment & FIBCs

Jay Venter

LANEX Packaging – a big bag specialist

LANEX Packaging is a renowned European manufacturer of flexible intermediate bulk containers (big bags — FIBCs) that are designed for especially arduous applications in the field of packaging of bulk materials in chemical, food and pharmaceutical industries, extraction of minerals, and other industries. The company develops, produces and sells four-point flexible intermediate bulk containers, container liners, bags for liquids, sewing threads and woven webbings. It makes approximately 1,260,000 flexible containers annually.

Since as early as 1987, the production facilities have been situated in the Czech Republic, where 330 employees are employed in two plants today.

With the help of its development personnel, LANEX Packaging is ready to find a specific solution for every single customer and the company therefore focuses its efforts on specialization, alcove markets, flexibility, prompt deliveries to measure and in due time. The company prides itself on the high quality of its big bags.

LANEX Packaging operates on a worldwide scale: 86% of its sales are exported to more than 20 countries. Thanks to its geographical position in the heart of Europe, its main export territories are the markets of Russian-speaking countries, Poland and other European countries.

The total sales achieved by LANEX Packaging in 2011

were €14 million, of which 82% were big bags and 18% were sewing threads, webbings and flexitanks.

As a specialist with personal approach, the company can boast of many innovations in this product group which have arisen from requirements of its customers as well as in-house invention, development and improvements.

One of the major innovations is the development and production of bags with inner liners with barrier properties. These are liners with EVOH (ethylene vinyl alcohol polymer), polyamide or aluminium layer which lends barrier properties as moisture, oxygen and gas 'proofness' to the bag. These multifunctional barrier properties of the sheets are achieved by co-extrusion of combinations of special polymers used in the sheets. Thanks to them, the sheets are resistant, do not let oxygen, gas and moisture through, and have good mechanical properties: strength, flexibility, formability. The sheets are carefully selected, purchased, formed and designed for LANEX Packaging products. Bags with such sewn-in, inserted or glued-in liners are suitable for the packaging of products with a requirement for resistance to the environment, especially packaging of food additives and feed, or hygroscopic granulates and other chemical products.

FIBCs with a high load capacity (SWL up to 4,000kg, SF 5:1) is another unique product developed by LANEX Packaging. Manufacturers of bags usually produce FIBCs with load capacities of 250kg to 2,000kg. LANEX Packaging offers bags with capacities 2,100kg to 4,000kg thanks to the special construction of bags with the use of standard polypropylene fabrics, webbings and threads. This bag type is tested in conformity with EN 21898.

Another important product is the filtering bag used for the separation of solid substances from a liquid in which they occur. The principle is based on separation of solid particles after filling the polluted liquid into the bag: the liquid runs off and solid particles remain in the bag. The advantage is easy installation; the bag filled in this way may be handled immediately after filling according to the customer's needs.

For hard to access places, for the sea, mountains or forests, there is LANEX' special bag – helibag – available. As its name suggests, it is a special bag for the transport of materials while suspended under a helicopter. It has many applications: its customers use it, for example, for the transportation of personal belongings of refinery workers or transportation of supplies to mountain huts.

LANEX Packaging, with its team, is ready to supplement the range of flexible containers it offers with additional products that will be manufactured in conformity with requirements that need a specialized approach, invention and involvement and thanks to which the company remains an important player in the industry of technical textiles.

MBA Instruments

SMB Group
best solution

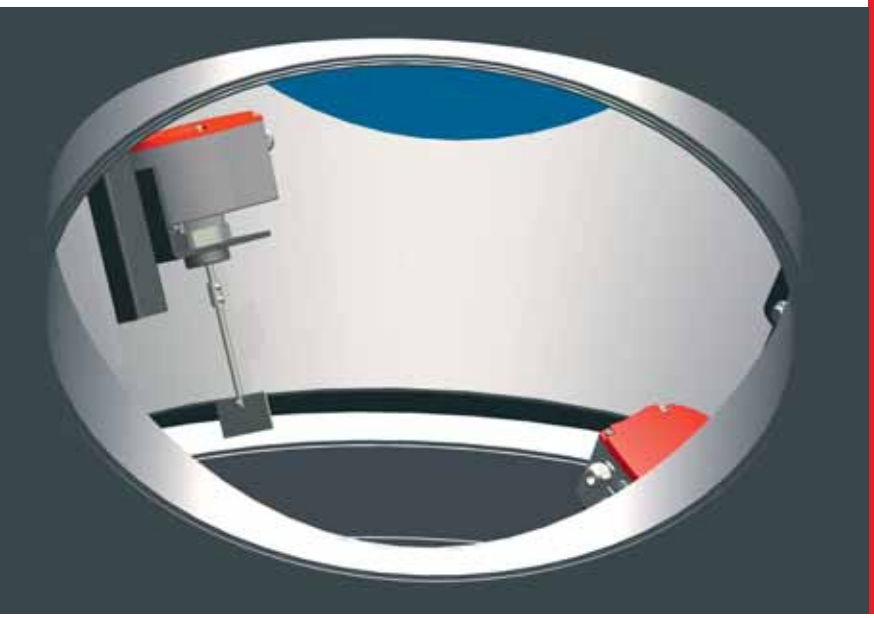
Highlight of the month

Flexible filling tube and material transfer points are all equipped with the MBA level switch (see picture) – this is the most reliable and robust way to avoid overfilling and spillage of material. MBA level switches control the distance of the loading spout to the material in the ship.

MBA is specialist for level measurement know-how

SMB International GmbH is a specialist, not only in shiploading. Its sister company **MBA Instruments GmbH** offers level measurement devices for loading equipment of any kind of bulk material.
Whether it's salt or cement, fertilizer or stones the level measuring instruments of MBA are used all over the world in different kind of applications.

Furthermore **SMB International GmbH** is specialised in shiploading systems for the coal industry, port terminals and Stevedoring Companies alike. Depending on customer requirements we engineer stationary and mobile bulk shiploaders with suitable loading chutes. This is necessary to optimize the flow rate of the bulk material such that dust emission and material degradation is minimized.



SMB Filling

Line Filling System
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Single Place Filling System

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Perpendicular MBA 369
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Conductivity MLA 900

SMB Logistics

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Palletising Systems
Transportation Systems

SMB Shiploading

SMB Shiploading
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CorrPak Bulk Packaging Systems, LLC – various big bags globally

CorrpakBPS' 20' (6.1m) woven sewn coated liners with bars inside 20' export container.

CorrPak Bulk Packaging Systems, LLC (CorrPakBPS) is located in Monroe, Louisiana USA and is a global manufacturer of 20ft and 40ft sea bulk container liners, bulk bags and woven poly bags.

Bulk container liners

CorrPakBPS container liners are essentially giant bags that line the inside of intermodal containers. These bulk liners can hold up to 59,000 pounds (26,762kg) of dry, free-flowing product loaded via ports and emptied through discharge chutes. Four basic types are: end fill, wide access, open top, and top fill. They can be made out of film or woven polyolefin fabrics.

CorrPakBPS bulk liners are manufactured in India and China. Easy to install, easy to fill, and easy to unload, CorrPakBPS sea bulk container liners offer its clients the lowest packaging cost per pound as compared to 25–50kg bags, bulk corrugated boxes, drums, and bulk bags. Its primary markets are chemicals, minerals, and the agricultural market.

Bulk bags (flexible intermediate bulk containers)

Bulk bags, also known as FIBCs, semi-bulk bags, totes, or jumbo bags can be manufactured from flat woven or circular woven fabrics and can be uncoated or coated depending on the application.

CorrPakBPS offers many styles of bulk bags that will hold non-hazardous dry, free-flowing products weighing up to 4,400 pounds (1,995.8kg) or hazardous dry products weighing up to 2,204 pounds (1,000kg). These FIBCs can be fitted with liners that prevent moisture from reaching the product. These liners also reduce the possibility of contamination. CorrPakBPS's FIBCs are used in many industries to store and transport chemicals, petrochemicals, pharmaceuticals, minerals, crumb rubber, agricultural products, seeds and food products. For customers capable of purchasing large quantities of bulk bags the company can ship full container loads from its many global suppliers directly to customers' plant facilities.

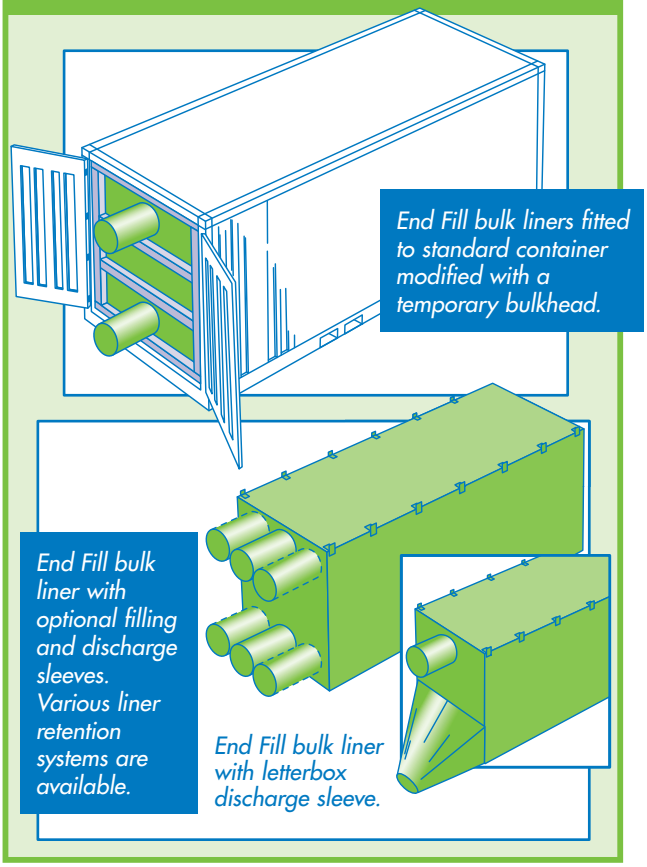
Woven PE & PP Bags

CorrPakBPS' 25kg and 50kg woven PE and PP bags come with open tops and is available with or without gussets. CorrPakBPS manufacturing facilities produce these bags in massive quantities, and the company offers very competitive pricing.

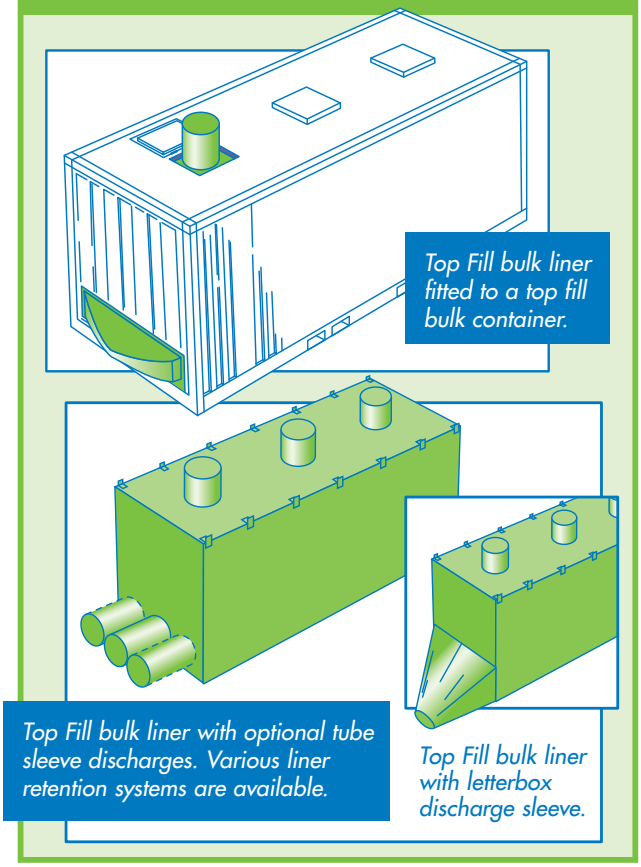
Woven polyethylene or polypropylene bags designed to ship divided large quantities of dry product in a cost-effective manner. Woven PP bags are the most common bags in packing industry due to their wide variety of usage, flexibility and strength. These are commonly used in packing fertilizers, feeds, grains, flours, salt, sugar, cement, seeds or any other palletized and powdered materials. Bags can be made according to customers' desired specification as mesh, denier, tape width, colour and sizes depending on the required capacity.

CorrPakBPS offers a complete range of sea bulk container liners designed to transport your dry bulk products safely, efficiently and cost-effectively.

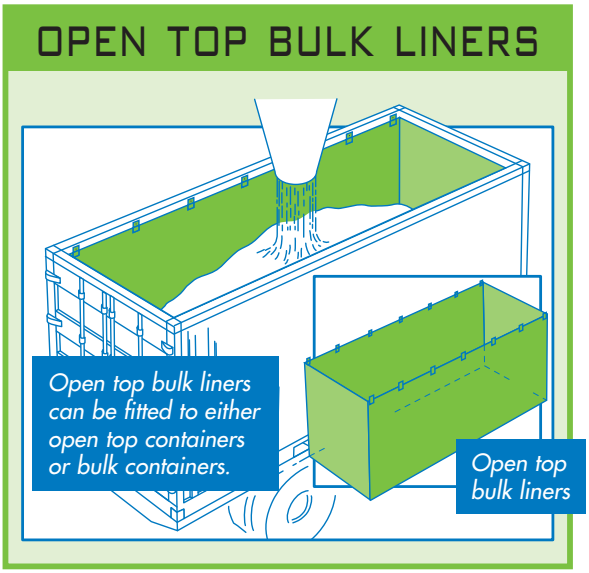
END FILL BULK LINERS



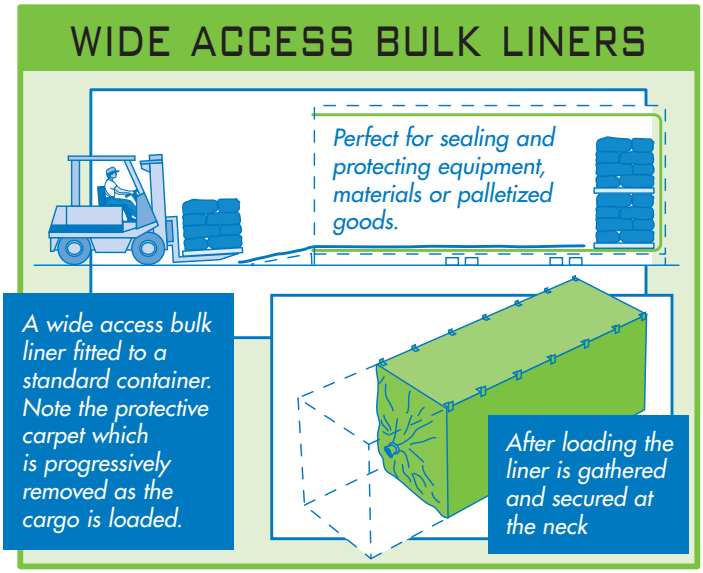
TOP FILL BULK LINERS



OPEN TOP BULK LINERS



WIDE ACCESS BULK LINERS



Bulk Liners are the perfect solution for shipment of dry, free flowable goods such as: PE, PVC, PET, PTA resins, sugar, minerals, grains, malt, and other products in flake, granule, powder or pellet form

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Nectar – tonnes of reasons to make the switch

Nectar Group Ltd. is best known for providing mobile bagging services. Traditionally, the demand has primarily been for the Compac M140 which is capable of bagging commodities from 10kg up to 90kg subject to properties and stowage factor of the commodity. The flexibility provided by the Compac M140 in directly delivering bagged commodities straight from the vessel means that the majority of commodities that have traditionally been handled in 50kg or 25kg bags can be shipped or transported in bulk before being bagged at location. The continual development and improvement has impressed many clients in such a way that the advantages of the machines have resulted in increased sales and service contracts around the world. However, a new area of the market which is discovering the benefits of a totally mobile bagging unit is coming into vogue. With the advantage of 40 years of experience in the dry cargo industry, Nectar has adapted its standard machines to cater for this particular niche. The needs of the client were made very clear — fast, accurate, mobile bagging into one-tonne FIBC (flexible intermediate bulk container) bags. As a result of this demand, Nectar has developed the Compac XL120 to cater for specific needs of the clients.

The Compac XL120 has been designed to be simple to use, and can be fully operated with just two operatives and a forklift for take away.

Maintaining Nectar's high standards was a key factor in the design and build of the machine and following on from the M140, the machine benefits from the highest quality workmanship with all surfaces which come into contact with the commodity are fabricated from high-grade stainless steel.

As with the Compac M140, the machine is housed in a standard 20ft ISO container and has the ability to handle up to 120 tonnes of dry, free-flowing cargo every hour at optimum efficiency. The technology that is utilized in the newly developed Compac XL120 is designed with durability, reliability and accuracy in mind with a simple but extremely effective system that augments the basic function of the machine. The Compac XL120 includes two independent bagging lines allowing two bags to be filled and weighed simultaneously, speeding up a previously laborious process. A retractable roller system is then utilized to automatically deliver the filled bags to the forklift or other conveyance. Among other benefits of the machine, one of the most favoured aspects is the ability for it to be packed up and moved from one location to another with minimal time and effort. The inherent strength of the structure enables the unit to be utilized at the quayside which can be a challenging operation. The Compac XL120 can also be used inside a warehouse or used to bag straight from the silo.

In the continuing uncertainty of the freight and dry cargo markets, customers are continuously looking into developing ways to cut down costs when it comes to bulk delivery and storage. FIBCs are providing many companies with an alternative where delivery of the product may not require processing into smaller bags or due to shipment size or restrictions to inland transport, it may be beneficial to handle and move the product in big bags.

To complement the already extensive range of Nectar bagging units is the addition of a single line one-tonne bagging machine known as the 'Impac XL60'. Built inside a 10ft steel container it operates with a design capacity of up to 60 tonnes per hour. It boasts the same advanced technology that can be found in the Compac XL120 but provides even greater flexibility in movement and utilization. Due to its compact size, it is perfectly suited to warehouse operations where the convenient size of the machine's footprint is of importance.

Nectar Group's entire product range is built around quality, manoeuvrability and versatility and it is these principles that have been the driving force behind the development of new equipment. The innovative approach has allowed many clients to bag cargo in previously challenging conditions and locations with the ability to fill a variety of bag sizes to suit the customer's needs or particular market trends.

JEM International designs unique FIBC spout assembly

JEM International/Express Scale Parts has been manufacturing equipment for the bag filling industry for 35 years. The company has been a very minor player in the FIBC part of this industry and is now more aggressively interested in this market.

The design utilized is significantly different than all other US manufacturers. JEM has basically designed a FIBC spout assembly that consists of three separate rings.

The inner 8" (203.2mm) diameter ring is where the product will flow through. The product is controlled by a gate above the entrance to this ring. The second ring is typically 12" (304.8mm) in diameter. The distance between these two rings is where the negative air will be drawn from the system during the filling cycle. The outer ring is 18" (457.2mm) in diameter and contains a bladder that inflates from outward in against the 12" inner ring.

The system is extremely easy to operate. The operator will place the fill spout of the FIBC against the 12" diameter ring. Once in place a push button is activated which will inflate the bladder from the 18" diameter ring inward, creating a 100% dust-tight seal during the filling cycle. A timer then will activate a blower which will inflate the FIBC and when the blow cycle is completed the filling will begin through the 8" inner ring and the displaced air will then be extracted between the 8" and 12" rings through a separate valve.

JEM's FIBC spout assembly consists of three separate rings.

The advantage of this system is that by inflating from outward inward we are not limited to exactly one size of fill spout in the FIBC and the inflation eliminates the need for hanging the four corners of the bag on a separate rack assembly. It is far quicker for the inflation system to work than for an operator to manually hang the four corners and release the four corners.

This spout assembly can be supplied with a net weigh scale or a platform gross weigh type scale.

NBE's sanitary-specific bag dump station protects product from contamination, improves cleaning and inspection performance

Material loss reduction, once an issue primarily for upstream processing operations, is now reaching into the downstream functions of packaging and logistics to find additional gains in material savings.

Dry reclaim.

Scrutiny of the costs and causes of material loss, together with sustainability initiatives, have identified as a priority, the efficient reclamation of packaged material and packaging that may be off-spec, mis-labelled, or for other reasons, unsaleable. National Bulk Equipment, Inc. (NBE)'s ProductSaver® packaged material reclamation systems reduce material loss, improve labour efficiency, and aid sustainability initiatives.

NBE ProductSaver® packaged material reclamation systems ensure the controlled removal from packaging of free-flowing, or flow-resistant, wet contents, and complete separation of contents from the packaging. Contents are reclaimed for proper handling, packaging is recovered for recycling, labour remains on-task, product safety is protected, and process sustainability values are increased.

The performance of downstream process operations, to the final end-of-line function, are dependent upon efficient, reliable material in-feed for their successful execution. If emptying a few

Bag emptying.

Wet reclaim.

bags per hour, or emptying 1,200 bags per hour, NBE ProductSaver® automated bag emptying systems provide total process efficiency; ensuring optimal material in-feed volume, improving safety, and protecting product from contaminants.

Material introduction, processing & packaging

Accurate, dependable, automated

Every NBE dry bulk material handling system installation begins with forward thinking: looking upstream and downstream, evaluating every process influence and its possible effect on the application; from the equipment, to the material, to the operator, and the surrounding facility.

Integrated automation

Total process control, total process optimization

Plant safety, competitive pressures, compliance issues, customer requirements, process complexities, equipment effectiveness; each of these factors make automated process operations a necessity.

Work centre safety

Protecting people, product & productivity

There are common priorities in workplace safety-but not common boundaries. NBE work centre safety goes beyond the common, beyond the ordinary, to ensure NBE bulk material handling systems protect the people, product, and productivity of its customers.

Precision production. Exceptional performance

Every dry bulk material handling unit and automated material processing system produced by NBE represents decades of engineering expertise and is the outcome of a technologically advanced manufacturing operation.

Total accountability: from concept to completion. No best-guess design plans. No outsourced fabrication. No contract installers. No third-party service support.

The performance-proven construction of NBE equipment is fully leveraged when integrated with UL listed controls and automation designed and built by NBE. DCi

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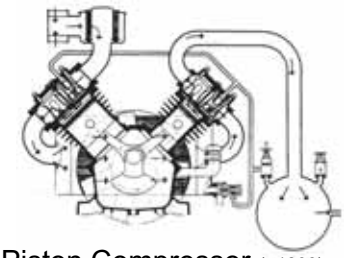

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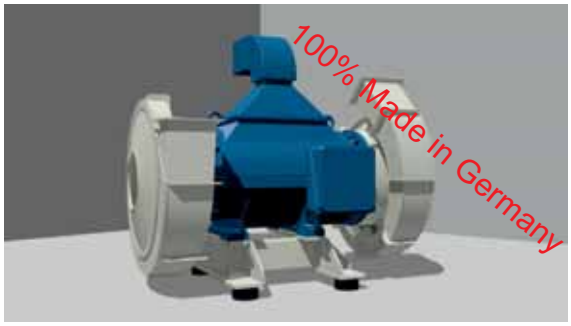

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