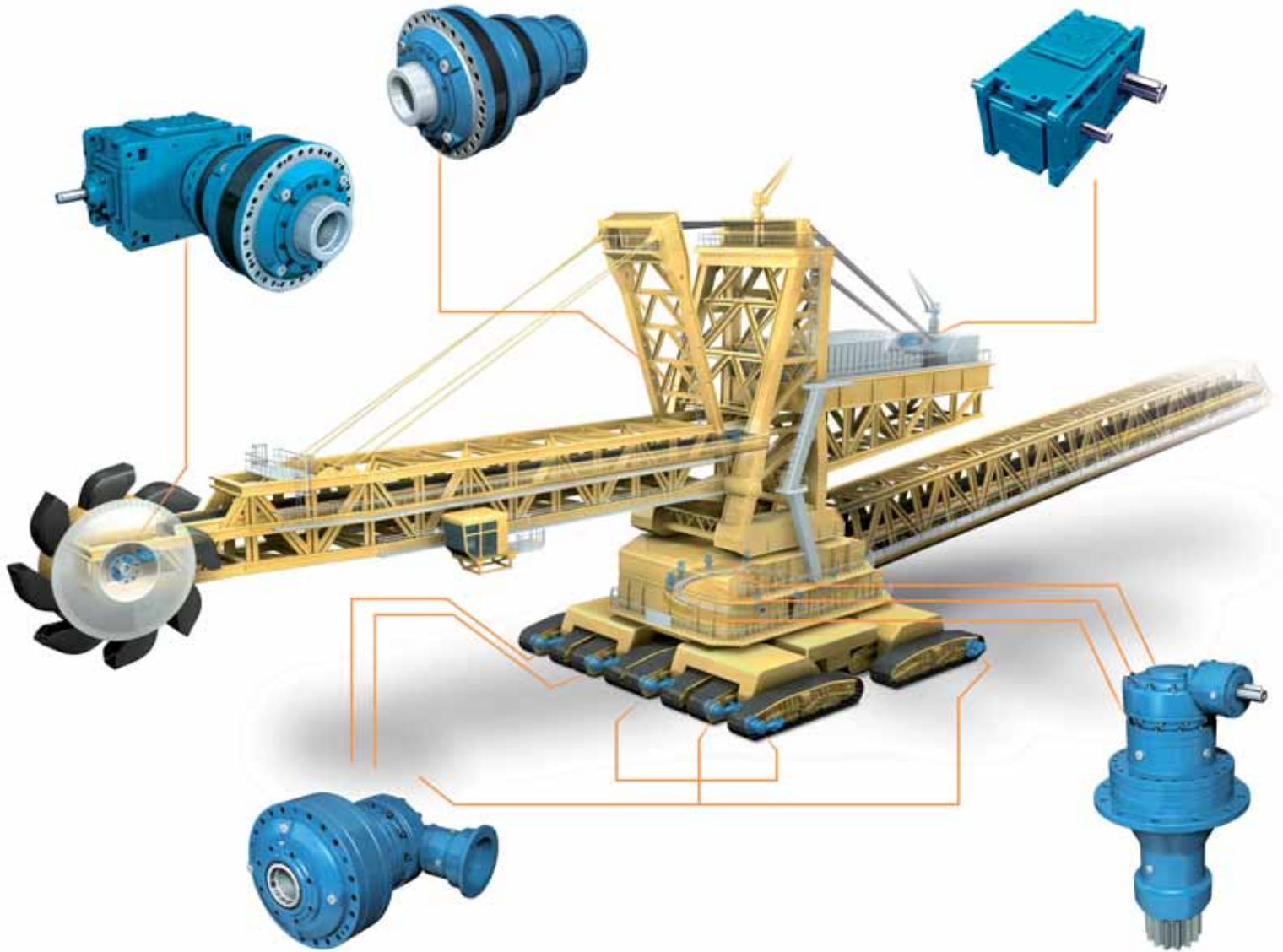




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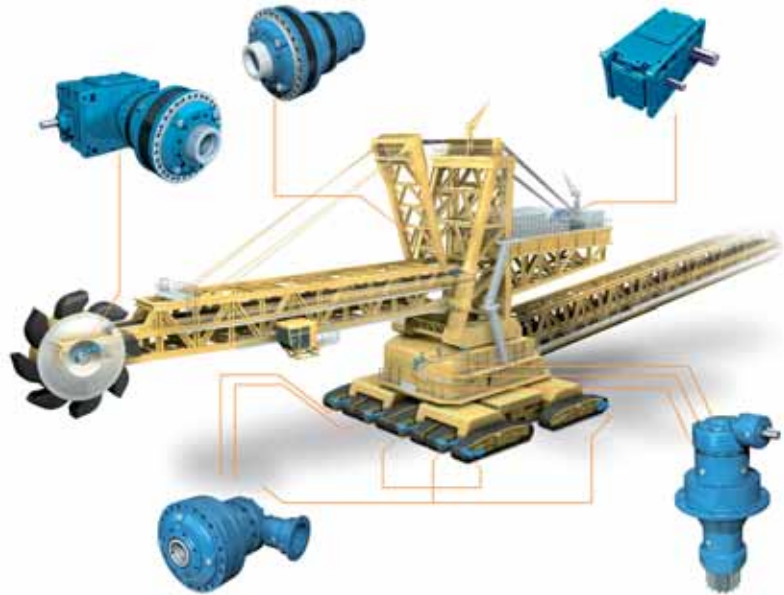
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Verstegen Grippers B.V. • P.O. Box 1014 • 3430 BA Nieuwegein • The Netherlands
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www.piv-drives.com www.brevini.de



PUBLISHERS

Jason Chinnock
jason@dc-int.com
Andrew Hucker-Brown
andrew@dc-int.com

EDITORIAL

Louise Dodds-Ely Editor
louise@dc-int.com
Jay Venter Deputy Editor
editorial@dc-int.com
Samantha Smith Directories
directories@dc-int.com
Stephanie Hodgkins Office Manager
accounts@dc-int.com

SALES

Lourens van Emmenis Sales Director
sales@dc-int.com
Matthew Currin Senior Sales Executive
sales2@dc-int.com
Carmen Bester Project Sales Executive
carmen@dc-int.com

CORRESPONDENTS

Brazil **Patrick Knight**
Canada **Ray Dykes**
India **Kunal Bose**
Asia **David Hayes**
Europe **Barry Cross**
Malaysia **Wira Sulaiman**
Philippines **Fred Pundol**
South Africa **Iain McIntosh**
Thailand **David Turner**
UK **Maria Cappuccio**
UK **Michael King**
UK **Richard Scott**
USA **Colby Haines**
USA **Walter Mitchell**

ADMINISTRATIVE OFFICE
Business Publishing International
Corporate House, 11 Sinemb Crescent
La Lucia Ridge, South Africa, 4051
Tel: +27 31 583 4360
Fax: +27 31 566 4502
Email: info@dc-int.com

HEAD OFFICE
Trade Publishing International Limited
Clover House, 24 Drury Road,
Colchester, Essex CO2 7UX, UK
Tel: +44 (0)1206 562560
Fax: +44 (0)1206 562566
Email: info@dc-int.com
Website: www.dc-int.com
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JULY 2012 issue

featuring...



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Grain import demand could flatten

Negative factors affecting some key elements of global dry bulk commodity trade have been prominent recently. But, elsewhere, trade volumes are clearly increasing and the overall picture is one of growth. Uncertainty about China's import demand in the months ahead is still a feature, although currently a strong trend continues.

During the early months of this year, world economic activity seemed to be regaining momentum solidly. However, progress remains fragile and the World Bank's latest outlook comments that "since the beginning of May, much of this progress has been called into question by a re-igniting of Euro Area jitters." Much now depends on how the European debt and banking crisis evolves.

GRAIN

After expanding rapidly in the past twelve months, grain trade is expected to flatten in the year ahead. Recent International Grains Council calculations (table 1) show world wheat and coarse grains trade growing by 21.5mt (million tonnes), or 9%, in crop year 2011/12 which has just ended, reaching 264.2mt. An almost unchanged 264.9mt is forecast in the current 2012/13 year.

This forecast will remain highly tentative, however, until harvests in northern hemisphere importing countries have been completed. The size and quality of crops to be harvested over the summer period, in Europe and China, will be a large influence on import requirements. These crops are dependent on unpredictable weather in the final weeks of the growing season and during the harvesting operation.

IRON ORE

Further growth in the steel industry raw materials trades is predicted in 2012, continuing into next year. Iron ore trade could see a sizeable increase, although it probably will largely reflect additional imports by China. Other importers are likely to contribute only a limited extra volume and, in the European Union, an actual reduction may be seen.

The latest forecast by Australia's Bureau of Resources and Energy Economics suggests that global iron ore trade could

grow by 58mt (5%) in 2012, reaching 1,133mt. This estimate includes a marginal increase in the EU's imports, which now seems unlikely to occur. Higher imports into Japan and South Korea are envisaged, as well as an 8% increase in China's volume.

COAL

Prospects for global seaborne coal trade still appear positive, with estimates for a range of importing countries in Asia showing higher volumes this year. Despite intensifying competition from other energy sources, especially natural gas and renewables (mostly wind power), an upwards trend in coal trade looks sustainable.

Potential for rising imports into China is clear, but predicting year-to-year changes is difficult. Although large as a part of world trade, these amounts are only a small proportion of China's coal market, which is mainly supplied by domestic mines. In the first five months of 2012 a strong imports expansion was seen, apparently raising the total by 26% to almost 72mt.

MINOR BULKS

Phosphate rock trade was previously classified as one of the major dry bulk trades, but this label is no longer accurate. It has not been on a rising trend, and annual volumes are currently lower than seen during the mid-2000s and relatively minor. Nevertheless, it remains a significant element of the fertilizer trades. Last year seaborne movements reportedly totalled just over 25mt, a 10% increase, which extended the rebound from a large fall two years earlier.

BULK CARRIER FLEET

The Handysize (10-39,999dwt) fleet is likely to grow much less rapidly than other bulk carrier size groups during 2012. Both newbuilding deliveries and scrapping this year may be similar to volumes seen in the previous twelve months (as shown in table 2), based on tentative indications. Consequently the Handysize fleet may grow by about 4%, from an 84m dwt total at the end of 2011.

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

	2007/08	2008/09	2009/10	2010/11	2011/12*	2012/13*
Asia (excluding Japan)	44.3	45.2	50.1	55.8	57.8	61.0
Japan	23.4	23.8	25.4	24.7	23.6	24.9
Middle East	32.3	50.1	42.5	35.1	42.8	41.0
Africa	46.2	55.0	52.4	53.0	57.9	58.1
Others	93.2	75.4	69.6	74.1	82.1	79.9
World total	239.4	249.5	240.0	242.7	264.2	264.9

source: International Grains Council, 24 May 2012 *forecast July/June crop years

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

	2007	2008	2009	2010	2011	2012*
Newbuilding deliveries	2.3	3.0	5.0	8.4	9.2	9.0
Scrapping (sales)	0.3	1.7	5.6	2.7	5.2	5.5
Losses	0.1	0.0	0.2	0.0	0.1	0.0
Plus/minus adjustments		-0.1	0.0	0.0	-1.0	0.0
World fleet at end of year	75.0	76.2	75.4	81.1	84.0	87.5
% change from previous year-end	+2.4	+1.6	-1.0	+7.6	+3.5	+4.2

source: Clarksons (historical data) & Bulk Shipping Analysis 2012 forecast *forecast

by Richard Scott, Bulk Shipping Analysis, Tel: +44 (0)12 7722 5784; Fax: +44 (0)12 7722 5784; e-mail: bulkshipan@aol.com

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Hazy outlook for steel raw



Mining iron ore.

A slowing economy in China, and recession or near-recession in the European Union, trends which may persist for some time, have created a subdued backdrop for the steel industry and its raw material trades recently. Japan's recovery from last year's natural disasters, and positive progress in South Korea, are giving some support, however.

Yet despite only sluggish growth in steel production during the first half of this year, China's iron ore and coking coal imports increased strongly. Over the remainder of 2012, a continuation of this pattern probably will be crucial for the global raw materials trades and the bulk carriers extensively employed. Other importing countries may not offer much additional impetus.

RECENT STEEL INDUSTRY TRENDS

Figures for steel output in the January–May 2012 period, compiled by the World Steel Association, underline the mediocre performance evolving. In Europe a deteriorating picture is quite clear. Across the entire European Union, crude steel production, at 74.2mt (million tonnes), was 3.4mt or over 4% lower than seen in last year's same period.

In Japan a marginal reduction of just under 1% to 44.9mt was seen in this year's first five months. Taiwan, a smaller producer,

saw a 9% fall to 8.9mt. But the picture among raw materials importers was not completely negative because China's vast crude steel production rose by 6.4mt (2%), to reach 296.3mt. Also, there was a 0.9mt (3%) increase in South Korea, raising output to 29.3mt.

Based on these results, coupled with cautious expectations for the period ahead, forecasts for 2012 as a whole (summarized in the table below) show only very limited growth in steel output for the group of countries which account for about 95% of global seaborne iron ore trade and over 80% of seaborne coking coal trade.

Another significant country, because of its role as a major coking coal (but not iron ore) importer is India. Steel production at Indian mills developed positively in the first five months of 2012, but growth was only just over 1%, raising the total to 30.2mt.

IMPORTS INTO CHINA

In China, the decelerating economy casts a shadow over all industrial activity and steel production is reflecting these circumstances. However the Chinese government recently has taken steps to stimulate economic activity, which improves the outlook. During the second half of this year signs of a pickup in

CRUDE STEEL PRODUCTION (MILLION TONNES)

	Key raw materials importing countries					
	2008	2009	2010	2011	2012*	% change**
China	512.3	577.1	638.7	683.9	705.0	+3.1
Japan	118.7	87.5	109.6	107.6	110.0	+2.2
EU -27 group	198.2	139.4	172.6	177.4	170.0	-4.2
South Korea	53.6	48.6	58.9	68.5	70.0	+2.2
Taiwan	19.9	15.9	19.8	22.7	21.0	-7.5
Total	902.7	868.5	999.6	1,060.1	1,076.0	+1.5

source: World Steel Association, and Bulk Shipping Analysis 2012 forecasts * forecast ** % change 2012, compared with 2011

materials trade

momentum may begin to emerge, with benefits for steel demand in construction and manufacturing.

Although steel production in China has been increasing only modestly, iron ore imports have continued to expand vigorously. In the January–May 2012 period, Chinese importers received ore volumes totalling 308.7mt, a 25.5mt or 9% rise compared with the same period a year earlier.

Domestic iron ore mines within China supply a large proportion of the country's requirements, and output of this mainly inferior-quality material still appears to be on an upwards trend. It seems obvious, however, that foreign supplies from Australia, Brazil, India and a variety of other sources were highly competitive over the past few months. Steel mills favoured the mostly much higher-specification ore available from these suppliers.

Prospects in the months immediately ahead are always difficult to assess, because temporary, often unforeseen, influences can have a big impact on the outcome. What seems fairly clear is that underlying support for iron ore imports into China is still firm, and that a substantially increased volume, compared with last year's 687mt, could be seen over the entire year. Higher coking coal imports (45mt in 2011) also are foreseeable.

EUROPE, JAPAN AND KOREA

The European Union's economic weakness and ongoing sovereign debt and banking crisis does not suggest an encouraging outlook for the steel industry. At the beginning of this year it seemed

possible that regional steel production would be flat, or only marginally lower, in 2012 but now a sizeable reduction is becoming a more plausible expectation.

Until fairly recently forecasters have been indicating a gradual strengthening of the EU economy over the next six months, which would be beneficial, if only on a limited scale, for steel demand and production. That expectation now seems to be fading amid the uncertainty about eurozone events.

Japan's circumstances are more favourable. After the severe setback caused by the earthquake and tsunami over a year ago, and negative effects from later floods in Thailand, which disrupted supply chains, Japanese economic activity is rebounding. Together with rebuilding work in the damaged Tohoku region, advantages for steel production are emerging.

Recent calculations by Japan's ministry of economy, trade and industry pointed to the country's crude steel production rising to 27.5mt in the current April–June 2012 quarter, well above the level seen in the past four quarterly periods. Both domestic and export demand could contribute positively. Iron ore imports are already showing some signs of a pick up, increasing by 6% in this year's first five months, to reach 54.8mt.

Last year South Korea saw a remarkably rapid expansion of steel production, which surged by 16%, facilitated by new steelmaking capacity which had been introduced. Another increase looks achievable in 2012, but it probably will be much smaller. Domestic demand and exports are proving supportive.

Richard Scott



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Alumina refineries and smelters making the white metal across the continents are increasingly feeling the need for new sources of bauxite, writes Kunal Bose. This is because recovery from many operating mines of high quality bauxite lending itself to easy, energy efficient digestion in alumina refineries is slowing down. To add to the concern of refineries and smelters worldwide, particularly in China, Indonesia is putting a ban on exports of 14 minerals, including bauxite, with an exception for miners who will create local processing facilities. Earlier this year, the Indonesian Mining Association estimated that the restriction — to take effect from 2014 — might lead to contraction of bauxite and nickel ore exports by as much as 75%. Indonesia's bauxite exports in 2011 were about 40mt (million tonnes) and most of that were destined for China.

The fear among bauxite importing countries is that the Indonesian move may have a domino effect with some other exporting nations striking an identical stance. Future supplies of bauxite will also be constrained by inadequate new investments in exploration, prospecting and opening of new mines. This, however, is of little surprise since aluminium is trading below the psychologically important level of \$2,000 a tonne. In sympathy, the prices of alumina and bauxite — derived finally from rates at which the metal is traded — too are down. According to industry officials, over 30% of the aluminium smelters are today in the red, calling for production cuts.

Environment protection and guarding the interest of indigenous and tribal populations in places where bauxite deposits are generally found enjoy top priorities of governments, thanks largely to sustained campaigns by civil societies and international organizations, including UN offshoots. Consider the case of India where from identification of bauxite deposits to winning leasehold over areas to be mined and finally getting a host of environment and forest clearances are so frustratingly

time-consuming that bidders run the risk of being worn out of patience. This precisely has happened with Raykal Aluminium, a special purpose vehicle of India's engineering major Larsen & Toubro and Dubai Aluminium Company (Dubal), which following the grant of prospecting licences for two bauxite mines in Orissa in 1992 has not made any progress in opening the mines and therefore, its proposed 3mt refinery and a likely smelter further downstream remain a non-starter.

Whatever the reasons for a bauxite mining-cum-refinery project of Raykal's kind of magnitude, to claim an investment of well over \$1bn getting stalled for nearly two decades is a commentary on the state of the mining sector in India *per se*, says analyst Dilip Satapathy. "Have you seen the opening of a major bauxite or iron ore mine in our country in recent years? Delays in giving access to promised iron ore mines to some world leaders in steel, including the largest of them all (ArcelorMittal) and also difficulties in land acquisition for steel plants are standing in the way of the creation of massive greenfield capacity. Or take the case of Vedanta Aluminium, which, in the hope of being able to mine bauxite in Orissa's Niyamgiri hills, went ahead and built a 5mt refinery in phases at close by Lanjigarh and a 1mt smelter plus a captive coal-fired power complex at Jharsuguda. It was then stopped in its tracks to open a mine there," he says. Vedanta as a result is required to source bauxite from different places to run its present 1mt refinery. But in the process, the bauxite procurement cost has spiralled to an extent that Vedanta instead of becoming part of the lowest cost quartile of the world aluminium industry finds itself as a high-cost producer of the metal.

A reprieve has now come Vedanta's way with it acquiring 24.5% Dubal ownership of Raykal with prospecting licences for bauxite mines at Sijumali and Kurumali of Rayagad and Kalahandi districts, respectively of Orissa. According to the Orissa

Directorate of Geology, the licence areas are holding bauxite deposits ranging from 250mt to 280mt. The resource at Sijumali and Kurumali is rich in alumina content with low traces of silica allowing easy digestion in refinery. In a filing with the US regulator SEC, Vedanta says it retains the right to acquire the entire 100% of Raykal over a period of time "subject to certain milestones being achieved." An official of Orissa government mines department told *DCI* that if "things move well with Vedanta replacing Dubal in Raykal JV and now that an end-use plant in Vedanta's Lanjigarh refinery is in place, we should be able to upgrade prospecting licences into a mining licences. Ideally, bauxite mining at Sijumali and Kurumali should start in a couple of years, provided Raykal gets forest clearances from the central government." The breakthrough, which is coming at some major financial cost does not mean that Vedanta will stop pursuing the Orissa government for compensating it with bauxite mines for the virtual loss of Niyamgiri hills deposit.

Any group, government owned or private trying to open a bauxite mine in India will have its patience tested almost to the limit. For instance, after a long 20-year wait, the largely government owned National Aluminium Company Limited is finally likely to gain access to a 75mt bauxite deposit at Pottangi in Orissa but subject to it agreeing to develop areas peripheral to mining sites and payment of a water cess, which miners are not ready to cough up. If finally on resolution of all issues relating to environment and forest clearances and rehabilitation of people to be displaced, NALCO is able to open a mine at Pottangi, then it will become easy for it to go ahead with implementation of the third phase of its expansion programme covering raising of alumina capacity to 2.9mt from 1,575mt and smelter capacity to 570,000 tonnes from 460,000 tonnes.

Analyst Kirti Pujara says "seeing the travails of Vedanta which in the belief that opening of mines at Niyamgiri hills would not be a major issue went ahead with building a refinery and a smelter, future investments in aluminium will materialize only when investors are left in no doubt about their being able to open and run bauxite mines." That is why the commitment by Gujarat Mineral Development Corporation, a state government owned mining group, that it would make annual supply of 3mt of bauxite from Gadshisa and surrounding mines is encouraging NALCO to plan an investment of around \$2.5bn to build a 1mt refinery (first phase) and a 500,000-tonne smelter in Gujarat. GMDC managing director VS Gadhvi says, "till now bauxite mined in Gujarat is sold to buyers outside the state. But henceforward, the mineral will be locally processed for Gujarat to benefit from value addition. And then there is local job creation." Incidentally, for this integrated aluminium venture, GMDC preference fell on NALCO over Aluchem of the US, Russian Rusal, Dubai Aluminium and some Indian groups.

Besides the increasingly strict conditions that miners are required to fulfil before they could open a bauxite mine in India, they now have to contend with threats from Maoist bands roaming the mineral rich zones. To give one example, NALCO was awarded prospecting rights in Guden and KR Konda blocks with over 80mt of bauxite reserves so that it could build a 1.4mt refinery, but in the face of Maoist threats and disturbances, the project is to be kept on hold. To add to the distress of

aluminium industry, an Indian government minister has given a call for a "ban" on opening of new bauxite mines in Orissa, which alone holds some 55% of the country's total bauxite reserves and Andhra Pradesh. All this is sad. In spite of India owning bauxite reserves of 3.5bn tonnes making it the fifth largest owner of the mineral in the world, no new major bauxite

mine has been opened in recent years. In fact sensing the hunger for bauxite that the new smelting capacity in the pipeline will have, Alcoa of the US has started talking with Indian aluminium companies to sell a portion of its surplus alumina. The US company produces around 16mt of alumina, which is a lot more than feedstock requirements of its smelters. Therefore, it is a net seller of alumina. Alcoa India CEO Vishal Seth says, "there is a renewed focus on India. We sell about half of our production of alumina to various companies around the world on annual contract basis. We plan to bring some of our Australian alumina production here." Alcoa is reportedly discussing imports of alumina with Vedanta Aluminium and Hindalco, the two leading producers of the white metal in India and with large smelting capacities under construction. If Alcoa could make a breakthrough with alumina sales in India, then other producers of the intermediate chemical with mines and refineries in Australia will target India as a future market.

Some consultancies have forecast that the world demand for bauxite will continue to grow 6.9% a year from 220mt in 2011 to 750mt in 2030. No doubt Guinea — sitting at the top of the table of countries endowed with bauxite — will have to be the source of major part of incremental supply. The hunger for foreign origin bauxite will continue to be felt most in China, which, according to its Nonferrous Metals Industry Association, was 47% dependent on imports of the mineral in 2011. This is because in spite of it fast exhausting its own bauxite resource, China remains relentless in stepping up production of alumina. Chinese alumina production was up from 23.42mt in 2009 to 29.36mt in 2010 and to over 37mt in 2011. No wonder then that the China Power Investment Company is involved in the development of a bauxite mine, an alumina refinery and a power complex in the Boffa region of Guinea at an initial cost estimate of over \$6bn. The project is to be built in two stages, each consisting of 4mt capacity.

Notwithstanding some major bauxite *cum* alumina projects in the pipeline in Guinea the fact remains total investments in new mines do not match the country's high bauxite endowment. New projects include Guinea Alumina Corporation's 10mt mine and a 3.3mt refinery and Guernsey incorporated Alufer Mining having received access to deposits of 10bn tonnes is targeting bauxite production of 10mt by 2015-16. Alliance Mining Commodities is engaged in development of its flagship Koumbia project in the Guinea's Boke belt. The Koumbia project has leasehold right over 1.5bn tonnes of bauxite deposit. The 10mt of highly cost effective mineral to be mined here annually starting 2015 will be sold primarily to refineries in Europe and new refineries in the Gulf and North America. That Guinea is abundantly rich in bauxite is common knowledge. But the dark horse is Vietnam whose prime minister in November 2010 claimed that his country was sitting on 11bn tonnes or more of bauxite deposits. The world is waiting for a formal confirmation of the riches of Vietnam.



Brazil's aluminium consumption outstrips production for the first time in 30 years

For the first time for 30 years, less primary aluminium is being produced in Brazil than is being consumed there, writes *Patrick Knight*. As a result, more than 100,000 tonnes of primary aluminium had to be imported last year, at a cost of \$283 million, compared with the 17,000 tonnes which arrived in 2010.

A total of 1.44mt (million tonnes) of primary aluminium were produced in Brazil last year, 220,000 tonnes less than four years previously, while 1.5mt of primary was consumed in 2011, 375,000 tonnes more than in 2008.

The 486,827 tonnes of primary aluminium exported last year, most under long-term contracts to other mills belonging to manufacturers Norsk Hydro, BHP and Alcoa, was 60,000 tonnes less than had been shipped in 2008.

About 140,000 tonnes of aluminium products were also imported last year, including 27,000 tonnes of cable for the transmission of electricity, compared with only 7,000 tonnes of cables in the previous year. At least 60,000km of new long-distance transmission line are to be built in Brazil in the next few years, some of it by the Chinese-owned 'State Grid' which will almost certainly aim to use imported aluminium in the lines it builds.

Already, large quantities of window frames and other fittings are imported from China which, although a major importer of bauxite as well as alumina, exports as many higher-value finished products as it can.

It is still not clear whether Alcoa, one of the four large smelters in Brazil, the others being Norsk Hydro, BHP and Votorantim Metals, previously CBA, will go ahead with its threat to close down one of its two plants in Brazil. One is at Pocos

de Caldas, in Minas Gerais state, the other the Alumar mill in Maranhao, a joint venture between Alcoa and BHP.

Alcoa claims that, because electricity costs far more in Brazil than anywhere else, it is not economical to keep plants going, let alone build the new smelter which Alcoa has been considering for several years now.

No new smelter has been built in Brazil for 20 years, despite the country's huge reserves of high-quality bauxite and large unused hydro power potential in the Amazon region, where most reserves of bauxite are.

Under pressure from Alcoa, the government had promised to publish a plan for the aluminium industry in March this year. This was then postponed until June, and there is still no sign of it. The government has promised to take steps to cut the cost of electricity, which Alcoa claims costs \$80 per MW hour in Brazil, although the other smelters say it is less than \$60 per MWh.

Alcoa, like all the other smelters in Brazil, is largely self-sufficient in electricity, having spent more than US\$2 billion on building power stations of its own in the past few years. So the threat to abandon Brazil — one of the few large aluminium-producing countries in the world which is politically stable and predictable — is probably only a bluff.

Whatever happens to aluminium, Alcoa and the other companies, continue to develop their reserves of bauxite and more importantly, to make and export more alumina.

The export of 7.28mt of alumina earned Brazil US\$2.2 billion last year, almost \$500 million more than in 2010. Exports of alumina earned \$500 million more last year than exports of primary aluminium did.



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PRODUCTION, EXPORT & CONSUMPTION OF ALUMINIUM COMPLEX

Year	product primary alumin '000 t	domestic cons. primary '000 t	export primary alumin tonnes	export alum prods. tonnes	prod bauxite '000 t	export bauxite '000 t	prod alumina '000 t	export alumina '000 t
2011	1,440	1,500	486,827	711,391	32,000	6,887	10,600	7,276
2010	1,534	1,296	524,000	693,542	30,500	6,789	9,300	6,400
2009	1,536	1,008	649,396	447,963	25,630	3,037	8,700	5,535
2008	1,661	1,127	547,230	372,814	28,115	6,221	7,900	4,611
2007	1,655	994	581,489	437,777	25,871	5,784	7,135	3,840
2006	1,605	893	613,887	412,882	23,300	5,310	6,350	3,465
2005	1,500	833	561,399	326,055	22,150	7,509	5,300	2,396
2004	1,458	754	582,943	380,314	20,985	7,291	5,135	2,091

Source: Association of Brazilian Aluminium Industries, Abal. & Ministry of Trade.

Being such a low value product, exporting bauxite is far less attractive and most of the 6mt Alcoa produced from its new Juriti mine alongside the Amazon River was used to make alumina in Brazil, or for export to its mills elsewhere.

The large companies which make aluminium and alumina in Brazil, or mine bauxite for that matter, all have their eyes on China's long-term needs.

China, which is the world's leading producer of aluminium, now makes 20mt of the product each year. Very little primary product is exported, however, as the government encourages manufacturers to export only high-value products.

Analysts anticipate that China will need about 30mt of aluminium in five or six years' time.

Because the industry is dependent on high-cost and heavily polluting energy, notably coal, it is anticipated that many uneconomic plants will be forced to close in the next few years. China may then become a net importer of aluminium and alumina, as well as of bauxite, 40% of which is already imported.

Unlike BHP, which is a very diversified company, Alcoa makes almost exclusively aluminium, so it has to get things right.

With China soon expected to become a major importer of aluminium and alumina, it is not surprising that Alcoa is reluctant to cut production in Brazil, and the government there is probably well aware of this.

Apart from the very positive prospects for cables, the motor industry continues to grow fast, with three million cars sold in each of the past three years. At the moment, less than 50kg of aluminium are contained in the average car made in Brazil, less than half that used in cars made in the United States.

However, as pressure to make cars more fuel efficient increases, it is expected that incentives aimed at cutting the weight of vehicles will be introduced, which can only aid aluminium.

The demand for aluminium cans, which usually grows considerably faster than the increase in GDP, seems insatiable as well. After having to import more than a billion cans in 2010, which as the industry says, is like importing air, output is to be raised to 25 billion in a year or two's time. A staggering 98% of all the cans sold in Brazil are recovered for re-cycling by an army of collectors estimated to total more than a million, so most of the 400,000 tonnes used each year to make cans is already in circulation.

Brazil is a world leader in all types of re-cycling as well, with 34% of the total used recovered. This also means demand for fresh metal is subdued. But with living standards rising steadily, and unemployment now at an all-time low, whether this comfortable state of affairs for the industry will last much longer, is questionable.

DC

Depleted bauxite mine.



Stewart Group sees rise in bunker surveys



Stewart Group Inspection & Analysis, the global inspection and precision analysis arm of ALS Minerals, provides accredited solutions to the metals, minerals, ores and solid fuels industry and continues to offer tailored services to a variety of customer needs in the ever-changing market. Few companies are experiencing more change than the Stewart Group's Inspection & Analysis laboratory based in Rotterdam, as it sees a sharp increase in bunker surveys.

Increasing fuel prices are a major concern for the majority of operations based in and around the Port of Rotterdam. Vessel owners coming into the port are increasingly conscious of managing their rising fuel costs and ensuring they pay a fair price for the quantity and quality they receive. Stewart Group's Rotterdam facility provides bunker surveys for crucial piece of mind and effective turnarounds for vessels as they re-fuel.

Vessels coming in to the port require efficient, reliable solutions with fast turnarounds. Stewart Group Inspection &

Analysis operates to ensure that it is contactable 24 hours a day to provide that extra support for vessels.

The bunker surveys are provided by an experienced team of surveyors. As the fuel is transferred from bunker barge to vessel, the team collect homogeneous samples and assess the quality at a state-of-the-art laboratory based close to the port.

A detailed analysis report can be presented within 48 working hours enabling crucial piece of mind with a minimum turnaround time. The extensive report can result in a saving of up to US\$1,600 for the vessel owner.

Joep Straathof, commercial manager at Rotterdam, commented on the recent developments, "Requests for bunker surveys have risen considerably in recent months as vessel owners are hit with rising fuel costs. If a final report shows even a small variation of one metric tonne, it can be a crucial saving for the vessel owner and improves overall performance."

Lubmarine expands global network with new Copenhagen facility

Major international marine lubricant supplier Total Lubmarine has extended its global network of service and supply centres with the opening of a dedicated commercial and supply hub in Copenhagen, Denmark.

Already a significant player in the Nordic region, especially in Norway and Denmark, Lubmarine is now able to offer ship owners and operators an international-class local sales and logistical service in the Danish capital.

Serge Dal-Farra, head of marketing at Lubmarine, says, "We believe in having a presence wherever in the world our

customers need us. Our new operation in Copenhagen forms the latest link in our worldwide chain, and we look forward to welcoming customers, old and new, to our dedicated facility there."

Lubmarine is the worldwide marine lubricants network of oil major Total, benefiting from the Total group supply chain facilities and connections. As a key industry player, Total is committed to achieving improved market share and a level of excellence which meets its customers' needs by providing the right product, in the right place, at the right time, backed by first-class support and expertise.

Bellerophon Maritime & Logistics Edition – a new enterprise TOS

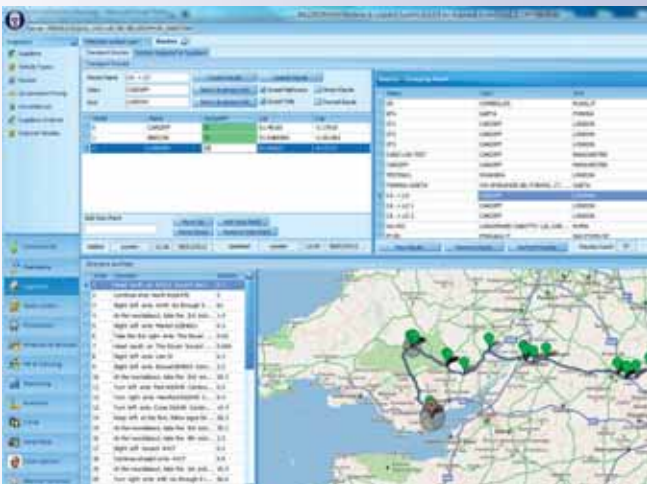
When Jolconsultancy was looking for software for one of its Italian clients (Intergroup — two sea terminals and five inland terminals involved in terminal operations, warehousing, packaging, transport to final delivery), it could not find one integrated system which satisfied all the requirements. Jolconsultancy therefore decided to team up with Argonaut Systems Ltd to create a new software package that would fit the bill. The new software, 'Bellerophon Maritime & Logistics Edition', is based on Argonaut Systems' highly successful 'Bellerophon 2.0 Enterprise Management System'.

Bellerophon Maritime & Logistics Edition is Argonaut Systems' enterprise management system for general cargo, bulk,



warehousing, ports & terminals, vessel planning, logistics services and invoicing. It is the first completely integrated software package developed for the Microsoft.NET (dot net) Framework, which offers new and exciting possibilities through the use of the latest emerging technologies.

The program is unique in the marketplace and fully integrated as a one-stop solution — a truly single instance application. It gives live data on demand, super-fast response times, fastest pick-up of commodities, distribution and cost control, trucking and general operations like storage etc., up to each single cost involved in the full operation. Other benefits of a single integrated system are that, if one item is updated, the whole system is updated. Users can also create and customize their



own reports before printing.

The system consists of the following options:



- ❖ port operations (vessel, yard, gate moves) , all in true live 3-D;
- ❖ warehousing (storage, volumes lifted and remaining in bulk and general cargo, pallets cargo);
- ❖ packing/unpacking of cargoes (bag loading or truck loading/unloading, packaging management);
- ❖ transport (rail/truck/barge) any kind of multi-stop, connections Google roadmaps etc.;
- ❖ external and internal fleet management;
- ❖ commercial (marketing, sales, rates, contracts, and all statistics on all issues);
- ❖ analysis & forecasting;
- ❖ equipment management;
- ❖ berth scheduling;
- ❖ vehicle management;



- ❖ personnel scheduling;
- ❖ 3-D visual monitoring;
- ❖ weighbridge integration;
- ❖ live stock levels;
- ❖ multi layered bill of materials;
- ❖ invoicing (fully customizable); and
- ❖ EDI (full SMDG or any other available)

Because of its wide-ranging abilities, the software package was called Bellerophon, named after the powerful hero from Greek mythology who was best known for slaying the monster Chimera. The Bellerophon software package is a truly 100% state-of-the-art enterprise solution.

Although the product itself is comparatively new to the market, the brains behind the system have more than 30 years' experience in the shipping industry and bring their knowledge and skills not only from the container market, but also from manufacturing and retailing companies. All of these factors set

software package from Jolconsultancy and Argonaut Systems

the package apart from the normal TOS for containers.

Bellerophon operates on simple servers and any database can be connected. The system is tested and proven, having been operating for over six years. The system has recently been implemented in Gaeta and Rome for a company called Intergroup. Intergroup is 99% general cargo, bulk, RoRo, warehousing packing of chemicals products and food in bags (any size) and the company carries out all the logistic services for its customers.

From terminal operations to the final delivery point, the system handles just-in-time operations for coal deliveries, cement factories and the sugar for Coca Cola, amongst others.

Intergroup requested that the installation should begin with the logistics side. Next to go live is warehousing, and port operations will follow that a few weeks later, as this can be done simply and rapidly for this kind of cargo. Clients have access to the system for real-time tracking, views and monitoring.

The system can, of course, handle containers as the vessel planning module has already been sold to several large international companies. The yard module can be adjusted to handle containers in the most efficient way. The next stage is to combine the general cargo and container processing in the yard, which will be a simple process given Argonaut's years of experience in the container industry.

ARGONAUT SYSTEMS LTD

The company is located in the UK and its directors Steve Coleman, Nick Goss and Mike Close have many years of experience developing computer systems for the maritime industry. Mr Coleman has also developed systems in the manufacturing and commercial industry in conjunction with the fourth director Tim Larcombe. They have teamed up with Jolconsultancy to drive further sales of the system.

JOLCONSULTANCY

Jolconsultancy located in the Netherlands is the world wide marketing and commercial partners of the system.

Using his extensive experience, Frans Jol, through his consultancy business Jolconsultancy, serves a varied group of customers. Other than Argonaut and Intergroup, Jolconsultancy also represents Esoware, Copas, RTE, ARI, Plantask, Neptune, ISL Applications, Phaeros, John Evans, Globalsim, RTE, Solacem, Lorenzini & C. Srl, Camorani, Burke Shipping Group, ICTSI, Sisam Group, Morandi Group, Mafi Transport systems, and Houcon cargo systems, Dried, Liftcom, Mariner and many more.



Frans Jol.

Bankers take over ships to protect their loans

With the slump in the shipping market now in its fourth year, bankers are putting to sea and seizing ships to protect the value of their loans to struggling shipowners.

Lenders to the shipping trade, themselves lashed by the eurozone crisis, are recruiting management companies to take over and operate defaulting owners' ships rather than sell them at a heavy loss or take a write-down on their loan books.

Earlier this month, Credit Suisse and a group of Chinese banks seized seven tankers from Singapore's Dongfang Shipbuilding to pay outstanding debts of around \$250 million (R2.1 billion) after the Singapore Supreme Court ruled in favour of the creditors.

"The banks have so many problem loans today — at a time of extreme political, social and regulatory pressure — that they don't know which way to turn," said Nigel Prentis, the head of research, consulting and advisory at HSBC Shipping Services.

Bibby Ship Management is among companies aiming to capitalize on the slump by offering to run vessels for a fee, including chartering out a ship on behalf of a bank. The UK-based group said it was in talks with a number of European banks.

"What we do is come in and provide technical management of the vessel and provide a full crew to run the vessel and get it to a standard where it is fit for resale by the bank or whatever they want to do," Bibby's business development manager, Brian Williams, said.

Bibby has teamed up with asset recovery specialist Marine Risk Management (MRM), whose staff include former special forces personnel, which can arrest a vessel from its owner on behalf of a bank and sail it to another jurisdiction with a letter of authority from an admiralty court.

"The biggest difference to the last major crisis in the 1980s is the value of the assets could be up to 10 times higher, which is why banks have been reluctant up to now to force anything in the hope that the market was going to recover. Clearly that's not going to happen, and banks are looking at taking other action now," MRM chief executive John Dalby said. "We provide them with an option to technically and commercially manage a vessel and then sell it as a going concern subsequently. The alternative is writing off massive loans."

Global syndicated lending to the shipping sector slumped to \$245m in the second quarter of this year from over \$3.9bn in the second quarter of 2011, Thomson Reuters data showed.

Surplus capacity due to brisk ordering during the boom years has pushed the nominal resale value of a supertanker, used to transport crude oil, down to around the \$90m level from \$162m in 2008.

"Many banks are thought to have contingency plans to take over ships and run them through the cycle rather than further undermine values with an auction process," Prentis said.

Built to deliver more: Rocktree Logistics

Rocktree Logistics, a dry bulk commodities transshipment specialist, makes it a mission to address clients' problems head on and find a solution no matter the obstacles. The result has been business expansion for Rocktree, driven by client demand.

In an economy where quality service is often the only differentiator, Rocktree Logistics Pte Ltd (Rocktree) is committed to delivering solutions to its clients that go beyond that extra mile. Its speciality is customizing solutions for clients based on case-by-case incidences. No task is too big or too small to handle.

With its 'can do' attitude, Rocktree Logistics Pte Ltd, a new rising player in the industry, is making waves in the Asia Pacific region. Supported by its two offshore floating terminals (OFT) *Mara* and *Zeus*, the company provides transshipment, storage, blending and sampling solutions to leading dry bulk commodity producers, end users and international trading companies.

Whilst only in operation since August 2009, Rocktree has quickly become the one transshipment service provider that the majority of its clients turn to as their sole solution for transshipment and offshore storage and blending. The main reason Rocktree has become the supplier of choice, according to founder and CEO Daniele Pratolongo, is its no-nonsense attitude in the way it does business. "Clients don't like to hear it can't be done, and they don't much care how it's done, they just want it done," explains Pratolongo. "And we understand that, because it's how we operate. So we take the problem, and we look at it from all angles until we find a solution." As Pratolongo explains, that solution may not be a part of the company's current arsenal, but in solving the problem for a loyal client, it makes it so.

"We continually seek out new opportunities, identify inefficiencies in the existing supply chain and innovate solutions

ROCKTREE FLEET

OFT — Mara

- ❖ high-speed loading (average net loading rate over 60,000 metric tonnes a day)
- ❖ blending capability with ability to adjust to desired ratio
- ❖ significant storage capacity – up to 60,000 mt
- ❖ advanced safety and environmental protection systems
- ❖ capable of handling over 10 million metric tonnes a year

OFT — Zeus

- ❖ high-speed loading (average net loading rate over 40,000 metric tonnes a day)
- ❖ blending capability with ability to adjust for desired ratio
- ❖ buffer storage — up to 9,000 metric tonnes for return cargo or pre-loading and continuous operations
- ❖ automatic sampling equipment
- ❖ advanced safety and environmental protection systems
- ❖ capable of handling over 7 million metric tonnes a year

to meet the demands of clients serving today's rapidly growing global markets," adds Pratolongo. The company's end goal is to get its clients' dry bulk cargo moving on schedule, at minimum cost and time. Its services and solutions are all geared to this simple goal.

HIGH-SPEED LOADING TO SAVE TIME AND COSTS

Rocktree understands that getting its vessels loaded and unloaded on schedule means its clients spend less time at sea or in port and reduce demurrage claims significantly. Rocktree's

OFT Mara from Rocktree Logistics Pte Ltd. (photo: www.d-imijis.com)



makes waves in the Asia Pacific Region

*OFT Zeus from Rocktree Logistics
Pte Ltd. (photo: www.d-imijis.com)*



fleet was designed to handle today's higher load volumes. Its Zeus vessel handles over 40,000 metric tonnes per day. Mara matches onshore terminal speeds at over 60,000 metric tonnes per day and can handle up to four barges simultaneously and fully load a Panamax vessel in 36 hours. Rocktree's OFTs are built to be a convenient, moveable offshore terminal for its clients.

HIGH-CAPACITY FLOATING STORAGE TO SOLVE COMPLEX BARGE LOGISTICS

Rocktree established its OFTs off the shores of Indonesia to service primarily the Indonesian mining industry. Having Mara and Zeus stationed offshore as an integral part of the supply chain solves the common problem faced by barge companies: long barging distances, excess barge fleet and late arrivals. With a combined floating storage capacity of 60,000 metric tonnes, one of the largest in the region, Rocktree clients can make multiple barge trips, offloading their barges into Rocktree's OFTs for their return journey, thereby reducing the need for a large barge fleet and maximizing cargo readiness for loading onto the ocean-going vessel when it arrives.

ADDED VALUE OFFSHORE SERVICES FOR CLIENTS' CONVENIENCE

When Rocktree started noticing that clients were blending different qualities of cargo in a non-homogeneous way, resulting in cargo quality issues, the company proactively devised a solution by installing a special blending conveyor system that allows for adjustment of blend ratios to give clients the flexibility to blend any coal mix to exact, specified qualities. Rocktree identified another shortfall in the supply chain while listening to clients'

concerns. When the message of the need to establish the quality of cargo at the loading point kept cropping up, Rocktree decided to install automatic sampler systems on its OFTs. These take a sample of the cargo as it is being transferred for loading onto the ocean-going vessel. For many of Rocktree's clients, this add-on service reduces instances of disputes on cargo quality at destination.

Rocktree's concern is also to reduce impact on the environment and, to this end, it ensures that both OFTs are equipped with world-class systems aimed at minimizing coal and dust pollution, reducing cargo loss and preventing cargo spillage.

ALL BACKED BY EFFICIENT LOGISTICS MANAGEMENT

For some of its client's, cherry-picking from the above services suffices, whereas for others, handing the whole supply chain operation over to Rocktree makes greater economic sense. Rocktree takes control of the entire operation, scheduling deliveries to maximise barging capacity and reduce waiting times and subsequent demurrage claims for its clients.

EXPERIENCED PERSONNEL IS ROCKTREE'S GREATEST ASSET

Having state-of-the-art equipment and technology as well as innovative ideas mean nothing without the knowledgeable and experienced staff to drive the solutions. Some companies are built around the equipment they possess. Rocktree is built around a core group of experienced personnel with years of industry experience. Though Rocktree is a 'young' company, its experienced staff and the company's 'can do' mind-set makes it a real threat to its competitors.



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using barge and rail to transport dry bulk cargo



Louise Dodds-Ely

AEP River Operations: focusing on reducing its environmental impact

Headquartered in St. Louis, Missouri, AEP River Operations is a barge company offering high-quality service in the transportation of dry bulk commodities throughout the inland river system. This includes the movement of grain, project cargo, coal, steel, ores and other bulk products.

As a major presence in the river transportation business for nearly 40 years, AEP River Operations has earned a reputation for excellence. Its services include:

- ❖ barge transportation and 24-hour on-call dispatch;
- ❖ shipyard services;
- ❖ barge cleaning and repair;
- ❖ assistance in identifying the best combination of stevedores and terminals to meet its customers' cost and quality objectives; and
- ❖ project cargo logistics coordination.

AEP River Operations is a wholly-owned subsidiary of American Electric Power (AEP). AEP is one of the largest electric utilities in the United States.

AEP River Operations is a fully-integrated barge line delivering over 75mt (million tonnes) of dry cargo each year. Its fleet of boats (90) and barges (3,250) operates along the Gulf Coast to as far north as Minneapolis, Chicago, and Pittsburgh and

to as far south and west as Brownsville and Catoosa and points in between. The company's headquarters is in St. Louis, Missouri with its regional operations in Pittsburgh, New Orleans, and Mobile. Its boat and barge operations are in Lakin, WV and Paducah, KY with Gulf operations — including a full-service shipyard, barge cleaning and repair, fleet and shifting, and midstream transfers.

AEP River Operations is moving with the times. Today's growing emphasis on 'green' operations, and reducing the 'carbon footprint' of goods transported is behind the company's decision to improve the efficiency of its water vessels with new technology to reduce its environmental impacts and operating costs. AEP captured the industry's attention with the transformation of the *Donna Rushing* by adding/enhancing systems that have the least environmental impact of any towboat on the river. This vessel utilizes many first in kind technologies used in the river industry. A team effort integrated the suggestions of both AEP employees and outside agencies to achieve the final result. The boat includes many other environmentally friendly features and has influenced the choices AEP makes with all future building projects.

AEP transports a wide range of bulk and breakbulk goods,

AEP River Operations wins environmental award

AEP River Operations has been recognized by the United States Coast Guard with the 2012 William M. Benkert Gold Award for Environmental Excellence, in recognition of its success in marine environmental protection, its safety record and training, and more specifically, 'Project Go Green' on the *Donna Rushing*.

The William M. Benkert Award Program awards those who go above and beyond mere compliance with industrial and regulatory standards and have outstanding achievements in marine environmental protection. The award is meant to benefit everyone in the industry by allowing for the exchange of creative ideas and innovations.

Originally built in 1973, the *Donna Rushing* received a complete top-to-bottom renovation in 2011 and was equipped with the most fuel-efficient, low-emission, energy-saving equipment available.



Left to right, Joe Brantley and Jeff Keifer of AEP River Operations accept the 2012 William M. Benkert Gold Award for Environmental Excellence from US Coast Guard Commandant Adm. Robert Papp. This is the third time AEP River Operations has won an environmental award due in large part to Project Go Green on the *Donna Rushing*. In November 2011, AEP River Operations received the Environmental Initiative Award from the industry journal, *Workboat*. In April 2012, AEP River Operations was awarded a Growing Green Award for Innovation from the US Green Building Council (USGBC), Missouri Gateway Chapter.

including steel, grain and grain products, sugar, fertilizer, cement, lime, limestone, alumina and aluminium, gypsum, coal, pet coke, ores, steel raw materials, scrap metals, sand, and gravel. It also transports project cargo.

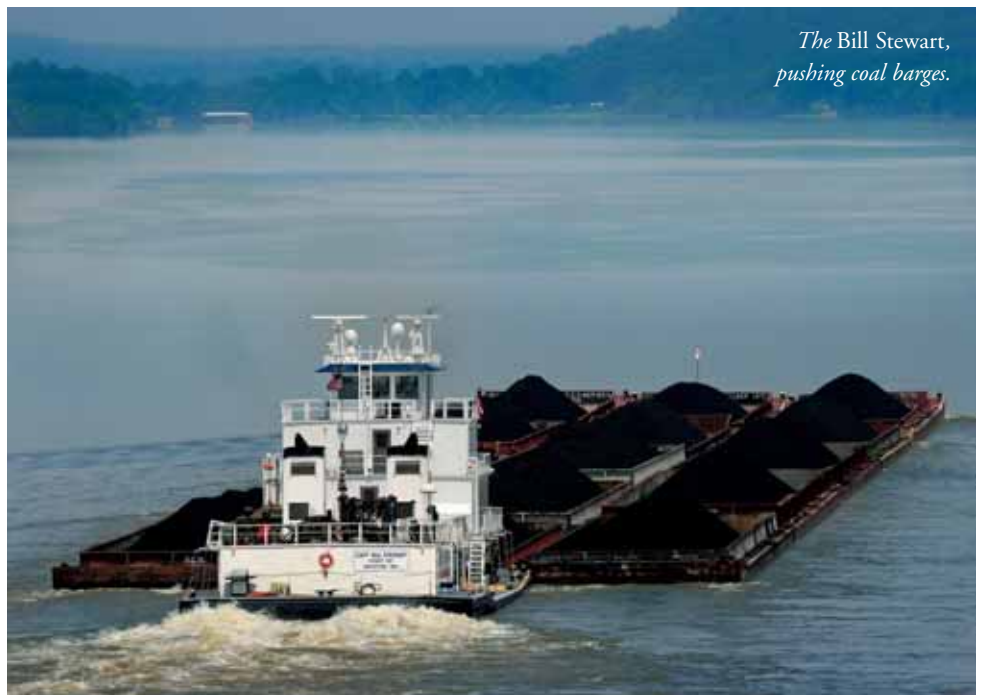
STAYING COMPETITIVE

One way in which AEP River Operations is able to remain competitive in a market where there are five or six fully integrated competitors is to emphasize customer service and performance. In a business where service disruptions are a common occurrence due to water and weather conditions, AEP River Operations makes significant efforts and expends resources to educate and train its employees to help it achieve success. The company highly values the safety, health and well-being of its employees and the river vendors who provide it with port services.

TAKING UP THE SLACK IN THE COAL MARKET

Although much of the world's economy is struggling, export of steam coal through the Gulf experienced significant growth in 2012. Coal export capability is located in a small number of coal exporting countries around the

world. Because of this, any considerable disruption at any of the major coal producers typically results in helping the US and specifically the lower Mississippi compete with steam coal exports in the global market. The lower Mississippi also benefits when the East Coast terminal capacity becomes overloaded. As India and China consume more steam coal for their energy needs and absorb production from other exporting countries, the European steam coal consumers have turned to the US to provide for their needs.



The Bill Stewart, pushing coal barges.

Ingram Barge Company: making a splash on US inland waterways since 1946



(photo: Bill Carrier, API Photographers.)

Ingram Barge Company (IBCO) has been a quality marine transporter on America's inland waterways since 1946, and has grown to become a leading carrier on America's inland waterways. IBCO owns more than 4,500 barges; those barges are powered by the industry's best towboat fleet, which includes approximately 150 towboats that are maintained at the highest level of standards. They transport a high volume of dry bulk commodities, including coal, aggregates, grain, fertilizer, ores, alloys, and steel products, as well as liquid bulk cargoes on over 4,500 miles of America's inland waterways system.

Ingram Barge Company is a subsidiary of Ingram Marine Group, which also includes Custom Fuel Services, which operates 11 floating fuelling stations on the Mississippi and Ohio River Systems and provides marine fuels, lubricants, and other miscellaneous services to towboats, barges, stevedoring rigs, and ships; a ship anchorage in Louisiana; and bulk commodities terminals in Florida and Kentucky.

Ingram Marine Group is part of Ingram Industries Inc., which was formed by E. Bronson Ingram from a reorganization of the family business in the late 1970s, although the Ingram's involvement in river transportation actually dates back to the 1800s. By the time of Bronson's death in 1995, Ingram Industries Inc. was one of the largest privately held companies in the United States and had cultivated an international reputation for excellence.

In May of 2012, Ingram Barge Company completed its acquisition of U.S. United Barge Line, LLC ('UBL'), a barge transportation company headquartered in Tampa, Florida. Approximately 300 UBL associates joined Ingram, and 17

towboats and some 650 barges were added to the Ingram fleet.

Orrin H. Ingram, chairman of the board of Ingram Barge Company, said the combined businesses will enable Ingram to continue its leadership role in the inland marine industry. Craig E. Philip, CEO of Ingram Barge Company, said the transaction underscores Ingram's commitment to its customers and to the robust future of inland transportation.

Remaining an industry leader in environmental stewardship is a commitment Ingram Barge Company takes seriously. The company recognizes that in the coming decades, business will be conducted in a world with greater transparency, higher energy and water costs, and increasingly strained natural resources. IBCO is devoted to being part of the solution, through modal efficiency, and actively pursuing methods to reduce consumption of natural resources throughout business operations. For its customers, this means moving more cargo over greater distances, using less energy and water and creating less waste.

As a waterways transportation business, IBCO bases its livelihood directly on natural resources, vigorously engaging in sustainable practices that help protect the natural resources that allow them to do their business now and in the future.

IBCO feels its responsibility as the largest carrier on the inland waterway system is to lead in environmental sustainability. One example of this is the EPA SmartWay Program — in February 2010, Ingram Barge Company was named as one of the first marine transportation companies to be accepted as a partner in the US Environmental Protection Agency's SmartWay Program. The programme requires measuring the environmental performance of a fleet, identifying goals for improving

environmental performance within three years, submitting an action plan to the EPA within six months of agreement to participate, and reporting progress to the EPA annually.

CEO Craig Philip is very pleased with the progress the company is making towards becoming known for its sustainable practice. "It gives me great pleasure and pride to know that Ingram has been recognized and accepted into the EPA's SmartWay Program as one of the first marine transportation companies," Philip said. "Ingram is proud to be on the cutting edge of developing new policies and procedures for marine transportation companies as they relate to the environmental issues at hand. Barge transport is already the greenest mode of bulk freight transport, and we will continue to do all that we can to take care of our environment and our associates."

IBCO also continues as a leading partner in the Responsible Care initiative, which enables the industry to operate safely, profitably and with care for future generations. In addition, IBCO has partnered with several other agencies committed to the environment, such as The Nature Conservancy and the Mississippi River Corridor.

Through its partnership with the Mississippi River Corridor-Tennessee (MRCT), Ingram participated in an air emissions reduction programme for towboats operating on the Mississippi River. Funding for the effort was awarded to MRCT, a non-profit organization that works on economic development and land and wildlife preservation in the six west Tennessee counties that border the Mississippi River, by the US Environmental Protection Agency as part of the Clean Diesel Emerging Technologies Program.

Ingram participated in the programme by retrofitting six towboats in its inland marine fleet with a unique diesel oxidation

catalyst (DOC) unit and closed crank case emission control system. The device fits inside the exhaust system of a towboat engine and reduces the amount of pollution resulting from burning diesel fuel. The DOC units were manufactured by Environmental Solutions Worldwide Inc., a retrofit technology provider. Testing of the units was performed by Emisstar, an energy and emissions consultancy.

Results of the programme included significant reductions in particulates, carbon monoxide, and hydrocarbons from exhaust emissions from the retrofitted vessels. Emissions testing has shown that the new DOC systems exhibited average particulate matter reductions of more than 40% and carbon monoxide and hydrocarbon reductions of more than 60%.

Through a partnership with The Nature Conservancy, a leading conservation organization that works around the world to protect ecologically important lands and waters, Ingram Barge has made a financial commitment to support conservation efforts on lands located where Obion Creek and Bayou Du Chien flow into the Mississippi River in Fulton County, Kentucky. The Nature Conservancy will create a platform project with the potential to restore and reconnect over 18,000 acres of bottomland hardwood forests and wetlands to the Mississippi River alluvial floodplain within the next five years.

Ingram strives to set the standard and demonstrate new ways to further reduce the pollution associated with river transportation, which is already the most environmentally friendly mode of bulk freight transportation, as well as contribute to the restoration of the waterways on which they live and serve. A commitment to continuous improvement is a fundamental principle for Ingram Barge Company, and provides excellent service and value for the transportation dollar.

GB Railfreight – modern British rail freight haulier

GB Railfreight (GBRf) has, since its start in 1999, earned praise for its innovative approach, flexibility, reliability and competitiveness as well as its customer service.

GBRf's wide ranging business portfolio includes intermodal services; bulk traffic, including coal; steel, infrastructure materials; rail industry services; construction materials; petrochemicals and metals.

GBRf has won the acclaim of colleagues and competitors alike winning a raft of rail industry awards in the decade since its founding.

COAL AND BIOMASS

GBRf is a significant contender in the UK's biggest bulk freight market — coal — and is pioneering the movement of biomass materials on the rail network.

GBRf's current coal operations include services run for Drax Power delivering imported coal from Port of Tyne to the company's Yorkshire power plant and the operation of daily trains transporting coal for EDF Energy from collieries in the Midlands to the electricity generator's West Burton and Cottam power stations in Nottinghamshire.

As well as providing customers with dedicated resources at the highest level of reliability and performance GBRf is able to respond to shorter-term enquiries for

either spot or campaign coal movements.

Major investment in new locomotives and efficient modern wagons specifically designed for transporting coal means GBRf is well placed to further expand its services within the rail coal transport sector.

GBRf will be the first freight operator to regularly move renewable biomass material on the rail network, following a multi-million pound contract with Drax Power Limited.

Under the deal GBRf operates biomass services from the Port of Tyne to Drax Power Station near Selby, North Yorkshire.

GBRf servicing Drax Power Station.





In order to transport the fuel, GBRf has introduced a number of specially modified coal hopper wagons, which will have covers to ensure that the biomass is kept dry while moving on the rail network.

OTHER BULK COMMODITIES

GBRf's considerable investment in wagons together with its policy of innovation and recruiting the 'right people for the right job' has built the company into a major contender in the bulk market.

GBRf's current bulk haulage operations include the movement of dry goods for the construction industry or those requiring tank wagons.

Key to GBRf's success has been its unique management approach, which has swept away decades of outdated working practices.

Its drivers are known as 'train managers' to reflect their responsibility and importance. They work flexible hours enabling services to run non-stop, utilize train sets on a 24-hour basis through to their destination and avoid disruption during engineering works and other risks to customers' business.

INFRASTRUCTURE

GBRf's extensive and flexible infrastructure services have made

Freightliner Heavy Haul moves over 20mt of bulk a year in the UK

As a major UK bulk rail freight company, Freightliner Heavy Haul has set new standards of reliability, flexibility and customer service in the bulk rail freight sector whilst continuing to invest in innovative solutions to meet its customers' business needs.

The company moves over 20mt (million tonnes) of bulk freight annually, and operates 1,200 trains per week on its extensive network. The network provides services across the whole of the UK.

Freightliner Heavy Haul's dedicated control offices operate

the company a key player in the maintenance and renewal of Britain's rail network.

Operating an extensive infrastructure wagon fleet in many parts of the country, GBRf has developed a reputation for consistently delivering a top quality service.

GBRf delivers reliably for Network Rail, operating infrastructure trains moving ballast, sleepers, rails and other materials.

It has a ten-year contract to supply engineering trains to deliver replacement rails, sleepers and ballast to possessions extensively across London Underground's sub-surface railway including the Metropolitan and District lines.

On behalf of Network Rail GBRf also manages all operations at the infrastructure owner's Whitemoor Yard in Cambridgeshire, where performance is among the best in the country. GBRf has worked on new railways — the Channel Tunnel Rail Link — and also runs de-icing and leaf fall services around the rail network.

The company also offers a comprehensive range of project resources for new infrastructure projects or for the refurbishment of terminals and sidings.

With an unrivalled reputation for reliability and quality of service GBRf ensures the nation's railway infrastructure owners get the service they need.

24/7 from two UK locations, and strategically placed train crew depots ensure high levels of reliability are achieved.

EQUIPMENT

Freightliner Heavy Haul is involved in continual investment in rolling stock with a fleet of over 80 locomotives. Its brand-new PowerHaul locomotives bring greater efficiencies, and it has over 1,400 purpose-built specialized wagons that can cater for a range of market sectors.



Loading coal.

SERVICES

In terms of bulk cargo, Freightliner Heavy Haul currently moves aggregates, cement, coal, infrastructure, minerals and waste.

FREIGHTLINER HEAVY HAUL SIGNS DEAL WITH EDF ENERGY

Earlier this year, Freightliner Heavy Haul Ltd and EDF Energy have confirmed that they have entered into a new rail haulage agreement for coal deliveries into EDF Energy's power stations at Cottam and West Burton.

The revised, long-term deal gives EDF Energy increased capacity to meet its future requirements and builds upon the excellent service performance record and relationship that has developed over the last ten years.

Jim Beynon, Head of upstream commercial management at EDF Energy commented: "We have worked to develop this innovatively structured deal that gives us the flexibility, reliability and security that we need to meet our future coal haulage needs. Our rail requirements become increasingly challenging in the coming years and we are pleased that this deal gives us a sound basis to meet those challenges."

Martin Wilks, director of coal and deputy managing director of Freightliner Heavy Haul Ltd added: "Our relationship with EDF Energy is longstanding and we have worked well together over the years. We have always worked very closely with customers and industry partners and this new deal represents the continuation of the strong relationship that we share with EDF Energy,

supplying haulage from UK mines and also imported coal from a number of ports."

FREIGHTLINER LAUNCHES NEW IMPROVED BIOMASS WAGON TO MEET THE REQUIREMENTS FOR THE POWER INDUSTRY

At the end of last year, Freightliner Heavy Haul unveiled its new prototype covered hopper wagon that has been developed for the biomass market.

The wagon is a modified HHA coal hopper wagon which has covers fitted to ensure that the product is kept dry whilst being conveyed from loading site to destination.

The wagon modification was manufactured at the WH Davies workshops at Shirebrook and offers the most advanced design covered hopper wagon in the UK biomass market. The wagon was moved from Shirebrook to the Freightliner workshops at York earlier this week and has already had viewings from several generating companies who are examining the potential for the generation of renewable power from sustainable biomass.

Michael Leadbetter, Freightliner's general manager of coal and biomass, added "Visits by other customers are already lined up to examine the wagon. The wagon and concept has been extremely well received so far by everyone. We have worked well with the designers and

manufacturers to develop this wagon. Having developed its design following consultation with the generation industry, I am now confident to inject it into the market and we will be undertaking trials with it in the near future."



Moving cement.

News from Canadian National Railway Company

CN SIGNS TEN-YEAR AGREEMENT TO HAUL CANPOTEX POTASH

Early this year, Canadian National Railway Company (CN) signed a 10-year agreement, effective 1 July 2012, to transport potash volumes that Canpotex ships to export markets.

CN will haul via its southern British Columbia (BC) line a portion of what Canpotex exports through CN-served Neptune Terminals in North Vancouver.

CN and Canpotex will also continue work on the feasibility of a potential new potash export gateway terminal in Prince Rupert, BC, which would be served by CN over its northern BC line. In both cases, train design will be highly efficient, utilizing distributed power locomotives pulling 170-car trains.

Jean-Jacques Ruest, CN executive vice-president and chief marketing officer, said: "We are very excited to partner with a customer like Canpotex that has such a world-class distribution system."

Steven Dechka, president and chief executive officer of Canpotex, said: "Canpotex is focused on growth, efficiency and strategic investments. We are pleased again to be partnering with CN, a company that shares the same values and will help us achieve these objectives."

CN TO ACQUIRE 161 LOCOMOTIVES TO HANDLE EXPECTED TRAFFIC INCREASES AND IMPROVE OPERATIONAL EFFICIENCY

In March, CN announced a major locomotive acquisition programme to accommodate anticipated traffic growth and to improve operational efficiency, enabling the railway to better serve its customers.

CN will acquire 65 new high-horsepower locomotives as well as 96 second-hand high-horsepower locomotives that will be upgraded.

Keith Creel, executive vice-president and chief operating officer, said: "CN's locomotive acquisition program represents a balanced, capital-effective approach to handle expected volume growth over the next two to five years and to meet the locomotive requirements resulting from customer-focused service plans.

"The new and used motive power will enhance operational efficiency and reduce fuel consumption by permitting the

retirement of older, high-maintenance locomotives and the cascading of less fuel-efficient main-line units into less-demanding yard and local switching operations, while providing additional locomotives to accommodate increased traffic."

CN will take delivery in 2013/14 of 35 new ES44AC locomotives from GE Transportation (GE), and 30 new SD70ACe locomotives from Electro-Motive Diesel (EMD). The GE units have 4,400 and the SD70ACe units 4,300 horsepower.

Creel added: "The programme includes the acquisition of alternating-current locomotives (AC), which will represent a first for CN. Our current fleet of approximately 1,900 locomotives employs direct-current (DC) traction technology, which has served us well because of the overall favourable grades of our network.

"We will harness the key advantage of AC traction — much higher adhesion or train-pulling ability at low speeds — in assigning the new AC units to heavy-haul coal service in northern British Columbia and Alberta, where steep grades and sharp rail curvature make heavy demands on our locomotives."

CN will purchase this year 42 second-hand GE Dash 8-40C locomotives, 11 leased GE Dash 8-40C locomotives, and 43 second-hand EMD SD60 locomotives. The Dash 8 units have 4,000 and the SD60s 3,800 horsepower. These direct-current technology locomotives will be upgraded to CN specifications.

The new locomotives CN is purchasing are equipped with distributed power technology (DP), a GE product, which improves train handling and fuel efficiency. The company expects that 50% of its high-horsepower locomotive fleet will have DP by the end of 2013.

DP technology permits remote control of a locomotive or locomotives throughout a train from the lead control unit. DP provides faster, smoother train starts, improved braking and lower pulling forces at the head-end and within a train, contributing significantly to improved safety. With more optimum matching of motive power to train weight, DP locomotives also allow CN to reduce fuel consumption and reduce emissions.

Creel said: "A robust, fuel-efficient locomotive fleet is critical to CN's plan to take advantage of the traffic growth we expect

in the years ahead and to ensure we have the motive-power assets to improve the supply chains of our customers and enhance their competitiveness in domestic and global markets."

ABOUT CN

CN — Canadian National Railway Company and its operating railway subsidiaries — spans Canada and mid-America, from the Atlantic and Pacific oceans to the Gulf of Mexico, serving the ports of Vancouver, Prince Rupert, BC, Montreal, Halifax, New Orleans, and Mobile, Ala., and the key metropolitan areas of Toronto, Buffalo, Chicago, Detroit, Duluth, Minn./Superior, Wis., Green Bay, Wis., Minneapolis/St. Paul, Memphis, St. Louis, and Jackson, Miss., with connections to all points in North America.



For all your inland barging



DAP Barging BV
Willemskade 15a
3016 DK Rotterdam
T +31 (0)10 282 77 88
info@dap-barging.nl
www.dap-barging.nl

www.dap-barging.nl

DAP Barging: dependable, expert service over Europe's waterways

DAP Barging, headquartered in Rotterdam in the Netherlands, is a major company involved in barging activities in Europe.

The company concentrates its activities on the following European (river) waterways:

- ❖ Rhine;
- ❖ Mosel/Saar;
- ❖ Neckar;
- ❖ Main; and
- ❖ Ruhr and German canals

DAP Barging offers a comprehensive service, and takes care of all aspects in the transport cycle, from making an offer until the final delivery of the raw materials to customers.

The company transports several million tonnes of cargo for its customers each year. All sorts of products are shipped throughout Europe, including: coal; ore; cellulose; corn; containers and so forth. In order to satisfy the demands of its customers, DAP Barging constantly strives to keep up to date with the latest developments in the logistics trade. It studies new innovative transport methods. Where necessary, it works with other companies to enable it to offer integrated solutions that can be delivered at any time.

DAP Barging can offer customized service to its clients, guaranteeing an efficient and professional supervision of all cargoes. The company is closely involved with all its customers and forwarders, and maintains many long-term relationships with its clients. It knows that alliances based on mutual trust and the desire to achieve together are the most successful.

BULK

DAP Barging specializes in the transport of bulk cargo, and can deliver from one company's doorstep to another, all over Europe's waterways.

Every year, it ships some 8mt (million tonnes) of cargo for its customers, in several lines of business. Doing so has given it an extensive knowledge base for the transportation of a variety of materials including coal, ore, phosphate, cattlefeed, steel, sunflowerseeds and soyabeans.

BREAKBULK AND GENERAL CARGO

DAP Barging is especially equipped for the transport of breakbulk and general cargo. For years, it has acted as partner to its customers in the shipping of steel, timber, paper and other general cargo. DAP Barging uses modern, optimal equipped shipping space.

PROJECT CARGO

DAP Barging offers dependable, expert shipping of project cargoes. The handling of heavy loads, extreme dimensions and vulnerable parts is done expertly and efficiently. It is particularly important to select the appropriate waterways for such shipments.

CONTAINERS

Several times a week DAP Barging transports containers to and from all major terminals within its working area. It is also able to transport containers to other harbour locations, with its usual high-quality service and flexibility.

Grant for Long Beach rail improvements

In mid-June, the Long Beach Board of Harbor Commissioners voted to accept \$17 million in grants from a federal transportation programme to help fund the 'Green Port Gateway', which will improve rail flow and the environment at the Port of Long Beach in California, USA.

The Green Port Gateway Project, which includes an Ocean Boulevard track realignment and construction of a Pier F rail support yard, will go out for bid this summer, with construction expected to begin in early 2013.

The project will add a third rail line, helping to remove bottlenecks on the existing mainline track to allow port terminals to shift cargo from trucks to trains, which decreases local traffic congestion and air pollution. The improvements will minimize derailments and optimize rail traffic flow to the waterfront terminals. The project will cost an estimated \$60 million and take 19 months to construct.

The federal funds come from the U.S Department of Transportation's TIGER (Transportation Investment Generating Economic Recovery) programme. The project is expected to create about 340 jobs during construction.

The Green Port Gateway Project, the first of four rail projects expected to begin in the next year to promote more on-dock rail shipments, is also part of the larger San Pedro



Bay Ports Rail Enhancement Program, which involves several projects by the Port of Long Beach, the Port of Los Angeles and the Alameda Corridor Transportation Authority.

The port has more than \$4.4 billion in capital improvement projects planned for the next 10 years. For the Green Port Gateway project, \$27 million has been secured from the state's Proposition 1B Trade Corridor Improvement Fund. The \$17 million in TIGER funds helps bring state and federal contributions to \$44 million, allowing the port to move ahead more quickly on this project.

Transnet Freight Rail: moving freight reliably

Transnet Freight Rail (TFR) under the leadership of Chief Executive Siyabonga Gama is the largest operating division of Transnet Limited, a State Owned Enterprise (SOE) under the auspices of The Department of Public Enterprise in South Africa.

TFR owns and maintains a network of 20,500 route kilometres (22,000 track kilometres) connected to ports and the rail networks of neighbouring countries. The company services a wide range of industries including, but not limited to; mining, coal, iron ore, manganese, steel, chrome, cement, granite manufacturing, agriculture, automotive, petroleum and chemicals.

In spite of the company facing a number of operational challenges such as, ageing rolling stock, derailments and productivity related inefficiencies, TFR is rising above these challenges through various capital investment plans and employee engagement processes which cover amongst other things, productivity, employee training and safety.

Capital programme implementation capability from spending of R2 billion per annum in 2005 to R14 billion per annum in 2011.

For this financial year 2012/13 top implementation initiatives include:

- ❖ preparation and approval of business cases for 66 key projects per schedule;
- ❖ TFR Capital Plan aligned with TRE budget and capability (TRE capacity agreed in budget alignment sign off);
- ❖ responsive and effective capital procurement and localization strategy;
- ❖ execution of 2012/13 capital programme projects per rollout philosophy; and
- ❖ development of lean construction excellence and sophisticated supplier contractor management (also addressing counter party risks)

The expected contribution to the economy is:

- ❖ 6,200 truck reduction per annum;



- ❖ 3.9mt less CO₂ emissions per annum or 28 million tonnes over the seven-year period
- ❖ reducing the total logistics costs by between 4% and 7% and by 0.5% as a % of GDP (from 13.5% to 13%)

Transnet Freight Rail will continue to invest heavily in order to meet the growing demand of South and Southern African industries.

In November 2011 TRANSNET Freight Rail launched the implementation of its scheduled railway services. The schedule specifies the path that each train takes and the arrival and departure times of each train on every node of the specified rail path. This initiative will build on the efficiency improvements that have been brought about by deploying the new EMD and GE Diesel locomotives, working in partnership with key customers and supply chain partners. A scheduled railway means that all the activities on the supply chain must be optimized. TFR will thus rely heavily on customers loading and offloading according to agreed time norms and cargo handling terminals doing the same so that appropriate benchmarks of wagon turnaround times and locomotive efficiency can be achieved. Through the supply chain optimization process, collaboration on stockpile management, shipping schedules and loading rates will continue to be key.

In April this year Transnet Freight Rail changed its operations structure from the previous three regions to at least six smaller units. This will enable a much more detailed focus on operations. The six business units are confirmed as:

- ❖ Agriculture and Bulk Liquids
- ❖ Coal business
- ❖ Container and Automotive
- ❖ Iron Ore and Manganese
- ❖ Mineral Mining and Chrome business, and
- ❖ Steel and Cement

These new 'business units' will be accountable for specific customer groupings and control allocated geographical areas for operational purposes. Allocations of these areas will be based on activity levels related to the customer groupings the units are accountable for.

Operations will still be centrally controlled and the central operational structures are being re-aligned to optimize operations across the newly established business units.



Bulker classification



Jay Venter

New fuel-efficient Handysize bulk carrier concept design using existing technologies

Athens: A new Handysize bulk carrier concept design — the Green Dolphin, created by the Shanghai Merchant Ship Design & Research Institute (SDARI) and development partners DNV and Wärtsilä — uses existing technologies to meet owners' needs for fuel efficiency and operational flexibility while also being ready for future environmental regulations.

"The focus has been on reducing the fuel consumption while giving owners different options to meet the future expected environmental regulations. The concept design is ready for the owners' preferred choice, whether that it is to run on heavy fuel oil using emission treatment systems or to switch to low-sulphur fuels or LNG," says Hu Jin-Tao, the president of SDARI.

The *Green Dolphin* concept design is a five-cargo-hold CSR double-hull bulk carrier that meets current and future expected air and water emissions regulations. The design aims to be fuel-efficient and maintenance-friendly, with high operational flexibility.

"Recognizing that there is more to profitable shipping than just compliance, we have consulted widely with owners and yards to ensure that *Green Dolphin* can be tailored to suit individual operational needs," continues Hu Jin-Tao.

Green Dolphin's main dimensions also suit the majority of the world's ports which receive Handysize bulk carriers.

The hull design has been a combined effort by SDARI and DNV. The hull is designed to provide improved overall performance at different loading conditions, speeds and sea states.

The propulsion efficiency is increased through the fitting of a wake equalizing duct in front of a large-diameter, slow-rotating propeller. A rudder transition bulb and rudder fins reduce the hub vortex and recover rotational losses.

The Wärtsilä two-stroke low-speed RT-flex50 main engine is Tier II compliant and can easily be retrofitted to dual-fuel engine

in the near future. Multiple fuel tanks allow for strategic purchasing of heavy fuel oil, low sulphur fuel and distillates. "Design variants are available for fuel switching systems, installation of selective catalytic reduction and exhaust gas scrubbing systems and, in the near future, the use of LNG as fuel" says Giulio Tirelli, business development director of Wärtsilä – Ship Power. "The concept design also includes shaft torque and exhaust gas monitoring equipment to maximize the fuel consumption optimization possibilities while constantly monitoring emissions," he adds.

A heavy ballast condition is achieved without using a cargo hold for ballast water and the cargo holds are equipped with compressed air, power and wash water supply. Wash water holding tanks are also included. Wide hatch openings and fully electrical deck equipment improve the loading, discharge and cleaning efficiency so port turnaround time can be minimized. A ballast water treatment system is included as well as holding tanks and treatment systems for sewage and bilge water.

"We have achieved a concept design that is not only fuel efficient, safe and robust today, but is also prepared for the future, with the various design alternatives that an owner can select to comply with environmental regulations," says Michael Aasland, DNV's business director for bulk carriers.

MAIN PARTICULARS:

- ❖ length overall: 180m;
- ❖ length between perpendiculars: 177m;
- ❖ beam: 32m;
- ❖ depth: 15m;
- ❖ draught, design: 9.5m;
- ❖ draught, scantling: 10.5m;
- ❖ deadweight, scantling: 38,800dwt; and
- ❖ speed at design draught: 14.0kn.



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Classification • Strategy and change • People, competence and the environment • Verification • Technology and innovation • Operational excellence • Petroleum services



ABOUT SDARI

Established in 1964, Shanghai Merchant Ship Design & Research Institute (SDARI) is a ship design consultant owned by China State Shipbuilding Corporation (CSSC). SDARI has extensive experience in designing various types of ships, e.g. bulkers, container ships, tankers, multi-purpose vessels, RoRo vessels, offshore engineering vessels, etc, and has accumulated more than 800 as-built designs in the past four decades. SDARI provides the entire range of services from conceptual development to workshop drawings, and is the market leader in ship design and development in China.

ABOUT DNV

DNV is an independent organization with dedicated risk professionals in more than 100 countries. Its purpose is to safeguard life, property and the environment.

DNV serves a range of industries, with a special focus on the

maritime and energy sectors. Since 1864, DNV has balanced the needs of business and society based on independence and integrity.

Today, DNV has a global presence with a network of more than 10,000 professionals in 300 offices in 100 countries. The company's headquarters are in Oslo, Norway.

ABOUT WÄRTSILÄ

Wärtsilä is a global leader in complete lifecycle power solutions for the marine and energy markets. By emphasising technological innovation and total efficiency, Wärtsilä maximizes the environmental and economic performance of its customers' vessels and power plants. In 2011, Wärtsilä had total net sales of EUR 4.2 billion and approximately 18,000 employees. The company has operations in nearly 170 locations in 70 countries around the world. Wärtsilä is listed on the NASDAQ OMX in Helsinki, Finland.

RINA updates GREEN PLUS notation to cover transshipment terminals

International classification society RINA has updated its industry-leading GREEN PLUS notation to include new potential sources of pollution involving seagoing ships and ships operating at fixed locations.

GREEN PLUS is awarded to new vessels that make a significant investment in design solutions, onboard equipment and operational procedures which contribute to an improvement in environmental performance beyond the minimum levels required by regulation. Now GREEN PLUS includes, for the first time, specific reference to dispersion of cargo dusts from solid bulk cargo storage, spillage/leakage of substances from areas on weather decks, hot water discharge, dirty water from areas on weather decks, noise, visual impact, and light pollution assessment and mitigation. Special consideration is given to barges without machinery spaces.

The importance of monitoring the impact on the local environment of ships mainly operated at fixed offshore locations has also been included in GREEN PLUS through the introduction of environmental risk assessment, and through the periodic monitoring of air and seawater quality and of terrestrial and marine flora, including migrant animals.

The new GREEN PLUS rules, together with other important new rules and amendments, were approved by RINA's Technical Committee at its June meeting today.

Nicola Coccia, the current Chairman of Gestioni Armatoriali SpA and of Terminal Napoli SpA, has been appointed Chairman of RINA's Technical Committee.

Committee members are:

- ❖ Prof. Ing. Antonio Campanile, Professor of Offshore Structures, University of Napoli Federico II;
- ❖ Dr.ssa Annamaria Cruciani, Division 4 Internal Maritime Safety, Ministry of Infrastructure and Transport;

- ❖ Ing. Andrea Frabetti, Product development Director - Ferretti Group;
- ❖ Ing. Domenico Impagliazzo, Division 4 Internal Maritime Safety, Ministry of Infrastructure and Transport;
- ❖ Ing. Giorgio La Valle, CEO Marine Engineering Services (MES);
- ❖ Ing. Luigi Matarazzo, Deputy Chief Operating Officer - FINCANTIERI ;
- ❖ Ing. Roberto Martinoli, CEO Grandi Navi Veloci;
- ❖ CF Sergio Simone, Head of the Ship Design Office - Italian Navy General Staff;
- ❖ Cap. Antonio Talarico, Director General P.L. Ferrari & Co. S.R.L.;
- ❖ Ing. Tiziano Zarbo, Managing Director E&C vessel management, maintenance and upgrading Vice President – SAIPEM.

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cargoes, including coal, iron ore, grain and cement, as well as a range of dangerous cargoes. Its GHG (Green House Gas) performance when measured in accordance with IMO's Energy Efficiency Design Index is twenty per cent better than the requirement under MARPOL Annex VI and already reaches the Phase II requirement set for the years 2020/2024. Its deadweight was achieved as a result of an advanced design fully compliant with the Common Structural Rules. The vessel can carry 5.2% more cargo than other bulk carriers of comparable size.

Says Anne, "This vessel marks the start of a new series of ships which will be exemplary contributors to a greener and cleaner world, shaping the image of shipping for the future. It also represents a celebration of the achievement of outstanding new design concepts and the reinforcement of strong and successful, long-established levels of co-operation.

Bureau Veritas, Sinopacific Shipbuilding

Group and bulk carrier expert Setaf-Saget have been working together for many years in the best kind of partnership — one built on trust and a long-term commitment to shipbuilding quality and innovation. BV has been delighted to work with Greenseas, the in-house design office of the Sinopacific Group, which has a proven ability to deliver high-quality designs for energy-efficient ships.

Forward-looking shipyards need to gear up for the implementation of IMO's Energy Efficiency Design Index. The Index is intended to improve energy efficiency of ships at the design stage and will be mandatory for new ships contracted for construction or major modifications after 1 January 2013 or delivered after 1 July 2015. That is not far away, and yards building bulk carriers need to have designs ready which maximize the energy saving benefits of EEDI while also delivering high cargo capacity and safe speed and power.

"We want to help yards and owners prepare for the next generation of vessels," explains Bernard Anne, managing director of Bureau Veritas' Marine Division, "The new vessel designs will be defined by two issues, the implementation of the Harmonized Common Structural Rules and energy saving. That is why we are investing a lot of time and money in being a part of all the changes that harmonizing the common structural rules will bring in. We can update our rules and tools and give the yards good solid advice quickly. We also have to advise yards now on the EEDI of new designs. Our attestation of the EEDI performance of new designs will help give yards and owners confidence in ordering new tonnage."

The interim guidelines for voluntary certification of the EEDI (MEPC I. Circ. 682) allow new designs of ships contracted before the due date to be verified against the EEDI, provided that all rules and criteria of MARPOL Annex VI are strictly and fully verified. These include model tank test, sea trial measurements and results, light weight and displacement checks and the correct calculation methodology.

Earlier this year Bureau Veritas issued its first attestation of compliance with EEDI to the ultramax geared bulk carrier *JS Amazon*, the lead ship in a new generation of CROWN63 vessels developed by China's Sinopacific Shipbuilding Group with the bulk carrier expert Setaf-Saget.

The 63,300dwt vessel is designed for the carriage of bulk

Group and bulk carrier expert Setaf-Saget have been working together for many years in the best kind of partnership — one built on trust and a long-term commitment to shipbuilding quality and innovation. BV has been delighted to work with Greenseas, the in-house design office of the Sinopacific Group, which has a proven ability to deliver high-quality designs for energy-efficient ships.

"EEDI is aimed at producing ships which are ahead of industry standards, with optimized fuel consumption and the highest standards of quality and safety to meet the demanding criteria for bulk carriers engaged in worldwide service today. The CROWN63 series demonstrates to the shipping industry, and to the world, that the shipping and shipbuilding industries can bring to the market an exemplary generation of new ships which are safeguarding the future of our planet."

Energy saving in the Crown 63 design was achieved by introducing an enhanced hull form, fitting an electronically controlled main engine driving a larger and slower running propeller and the fitting a rudder with an advanced profile. A rudder bulb is also fitted, studied together with a propeller cap to produce the most effective aft water flow.

The MAN B & W 5S60ME-C8.1 Tier II x I set ME electronically controlled engine was selected because it delivers lower specific fuel consumption over a wider range of operating parameters and improved emission characteristics with lower NOx and smokeless operation. The NCR (normal continuous running) is fixed at 80% MCR, which gives the master an important power reserve available to face deteriorating weather conditions.

Compared to typical similar size ultramax designs the combination of increased deadweight and increased fuel efficiency reduces the loaded fuel consumption per tonne mile per day by almost 20%. The power reserve ensures that the energy savings do not compromise safety.

Quality of 'ship safety assurance'

The problem of 'ship safety assurance' arises in various situations, and the issue is mainly with the maintenance of ship structure. In case of large ships, the core factor lies with ship construction safety criteria, resultant safety standards, and ship design. Shortcomings in the standards may result in ships being launched with inherent flaws with the resulting problems in ship operations usually assigned to poor ship maintenance.

The IMO-discussed concept of GBS-Safety Level Approach assumes that IMO (International Maritime Organization) instruments will be defined by goals/objectives and functional requirements, most likely in the quantitative form, and that the safety level will be transposed to ships by other IMO Codes, class rules and industry standards. Such an approach in developing safety standards should improve ship safety assurance at sea. The question of ship maintenance, though on the lower level of safety assurance than design, is the obvious second element affecting ship safety.

The maintenance of the ship structure is, among others, influenced by class periodical surveys comprising: surveyors' decisions, processing of information gathered during the survey by the classification society, and final decisions regarding renewal or confirmation of the ship class. The surveyor and the organization are involved in the process of the ship survey and there is interaction between them.

Commonly used reporting system rely on check-lists filled in by surveyors confirming the inspection of the given item leaving the society with an abridged picture of the actual ship condition as check lists do not carry detailed information.

Polish Register of Shipping (PRS) adopted the following goals in developing the SURVEY system to change the situation and provide the society with a better picture of the ship condition:

- ❖ tailor the list of survey items to the type of ship, type of survey, age of the ship etc.;
- ❖ compel surveyors to regularly feed the system with surveyor's comments/notes/with descriptions, illustrated by pictures and films, of the technical condition of each surveyed item and repair specification, if applicable;
- ❖ conclude with the assessment of technical condition of each item;
- ❖ compel surveyors to be aware of both the particular (on each survey item) and general (on the condition of the hull, machinery etc.) decisions/conclusions;
- ❖ retain in the PRS database the detailed information on the ship's technical condition (that in the previously used checklist system often remained in the memory of particular surveyors performing the given survey); and
- ❖ monitor and verify the survey performance of the surveyor in progress and on completion.

Implementation of the SURVEY system brought radical

changes in PRS ship supervision. It met with a certain state of 'mental inertia' of surveyors who failed to feed the system with all the expected information about the technical condition of the surveyed ship. Both the changed procedures and the large number of survey items generated initial resistance at the pilot stage.

The system underwent modification, a user-friendly hierarchy in the list of survey items was introduced indicating the desired detail description on the one hand and proposing, where possible, records for the items on the other. Easy access to survey items from other documents, such as a list of non-compliance, recommendations, or certificates, and ongoing evolution of the system as a single source and record database are now starting to generate acceptance among surveyors, who found it helpful in their work.

The SURVEY system is today the sole system used in Polish Register of Shipping to monitor and verify ship survey performance in progress and on completion, and to report on the survey. The system — thanks to feedback from field and head office surveyors — will continue to evolve and provide added value to the quality of ship safety assurance. **DCi**



PRS surveyors on board a bulk carrier.



Focus on Australia



Iron ore stockpiles at Port Hedland.

spectre of 'world's biggest carbon tax' looms large

Michael King

Australia's miners are pushing ahead with multiple new projects, but proposed new taxes continue to cast a long, dark shadow

Dr Nikki Williams, Chief Executive Officer of the Australian Coal Association, believes Australian coal producers' international competitiveness will be hugely impeded when "the world's biggest carbon tax" of \$23 per tonne is introduced on 1 July.

The tax is intended to raise \$20 billion for government coffers over 2012–2020, of which Australia's coal industry will contribute \$18 billion, according to a study by ACIL-Tasman. It concluded that the tax would put over 4,000 jobs at risk within the first three years of its introduction with some 18 existing mines expected to be forced to close.

Miners in Australia are also unhappy about the new Minerals Resource Rent Tax (MRRT) which will also be introduced on 1 July. This is a tax on profits generated from the exploitation of non-renewable resources in Australia and will replace the previously proposed Resource Super Profit Tax (RSPT). The tax will be levied at 30% of the 'super profits' from the mining of iron ore and coal in Australia by companies whose annual profits reach \$75 million.

Faced with this new taxation burden, miners are pinning their hopes on a change of government. The opposition Coalition, led by Tony Abbott, is committed to repealing the laws introduced by the administration of current Prime Minister Julia Gillard which enable the MRRT and carbon pricing.

Abbott claims they will damage the mining industry and the economy overall. "No ifs, no buts, it will be gone under a coalition government," he said about the MRRT.

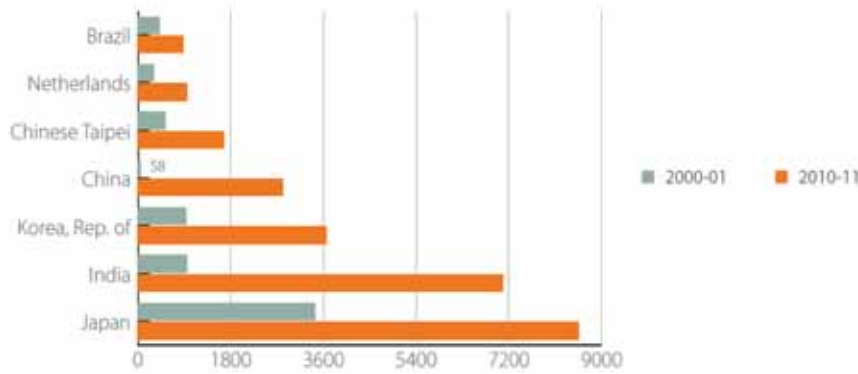
But with coal and other commodity prices slumping in recent months, and declining freight rates reducing Australia's ocean freight advantage into Asia's burgeoning markets in comparison with more far-flung suppliers of coal and iron ore such as Colombia, the US and Brazil, leading executives in the mining industry claim many companies are already scaling back investment programmes because the increased taxation burden will render them uncompetitive in international markets.

"The ultra-competitiveness of world coal markets is a reality which is sometimes not understood by policymakers in Australia," said Williams. "Every day the focus of my work is to help Australian policy makers avoid caving in to the anti-coal, anti-growth agenda and to help them to understand that it is not in our customers' interests to burden prices to the point where sales are unattractive and in the end make it impossible to attract the investment necessary to fulfil our customers' needs."

Simon Bennison, chief executive of the Association of Mining and Exploration, said that one recent report from ABS detailed declining investment in mining which he said was a sure sign of the alarm being caused by the MRRT and carbon tax.

"What the ABS data shows is that the carbon tax is undermining mining investment in Australia," he said. "The carbon tax is an unnecessary cost that no other country has to pay in order to produce commodities."

Principal markets for Australian metallurgical coal exports (in millions of 2010–11 \$A)



Source: Australian Bureau of Resources and Energy Economics

Williams, speaking at Coaltrans Asia in Bali in June, said the coal industry supported emissions reduction but called for the Australian government to rethink its carbon tax to enable it to achieve its objectives without harming investment. She called for the adoption of a phased approach to the auctioning of emissions permits for trade-exposed industries as well as the greater use of coal mine fugitive abatement technologies “in step with Australia’s coal export competitors.”

She added: “In this way we could achieve the aims of Government and maintain the cost competitiveness of the Australian coal industry.”

Apart from rising taxes, Australia’s miners also face inflationary production costs, according to Port Jackson Partners. A study earlier this year by the consultants found that in 2007 Australia’s average capital spend to build a tonne of new coal capacity was roughly in line with the rest of the world. Yet by 2011/12 capital spend to build a tonne of new-capacity cost \$176 in Australia compared with \$106 for the rest of the world.

“If left unchecked, this evolution in capital and operating costs will jeopardize investment and prevent us from meeting our customers’ needs,” said Williams, who added that national and state governments should understand that a higher cost environment would see “our competitors move aggressively to eat into our market share.”

“There is an urgent need for them to restore Australia’s reputation as a low sovereign risk

investment destination, with a predictable and sensible policy making regime premised on an understanding of Australia’s competitive exposure. The next steps are to address multi-factor productivity, review the cumulative tax burden on the industry and implement necessary regulatory reforms.”

Whether or not competitiveness issues are the cause or not, one port which is scaling back its export expansion plans is Abbot Point, located 25 kilometres from Bowen on Central Queensland’s coastline. As reported in *DCI*, late last year the Queensland government announced the successful ‘Preferred Respondents’ selected to build six new coal terminals at the port, the outcome of a call for expressions of interest by North Queensland Bulk Ports Corporation (NQBP) instigated in mid-2011.

The plan was that each of the respondents would build a 30mtpa (million tonnes per annum) capacity terminal — an expansion called the T4-9 Project. Construction was expected to start in 2014 and, along with other planned expansions, the new facilities were expected to take port capacity from 50mtpa currently to almost 400mtpa in five years.

However, Rio Tinto, one of the preferred respondents, pulled out in April citing uncertain global economic markets, cost pressures and long time frames for regulatory approvals. Initially NQBP said the facility would still be built with the other five respondents — Anglo American Metallurgical Coal, Macmines Austasia, North



Dr Nikki Williams, Chief Executive Officer of the Australian Coal Association.

Australia’s metallurgical coal exports (1996–97 to 2016–17)



Source: Australian Bureau of Resources and Energy Economics, Australian Bureau of Statistics

Queensland Coal Terminal, Rio Tinto Coal, Vale, and Waratah Coal. But in late June a spokesperson for NQBP told DCI the T4-9 project had now been shelved along with plans for a massive new Multi Cargo Facility (MCF).

"The newly elected state government has asked NQBP to focus on the delivery of T0 – T3 at Abbot Point and the delivery of two new coal terminals at Dudgeon Point situated within the Port of Hay Point," she said.

"We are not currently progressing the original T4-T9 terminal proposal. However, we are working with the state government on the expansion of Abbot Point.

"Also the original proposal of an MCF will not progress but NQBP is working closely with government to consider other off-shore terminal options."

One mining company that is not scaling back investment is Fortescue Metals Group. Speaking at Coaltrans Asia in early June prior to the company's launch of a legal battle against the MRRT late in the month, owner Andrew Forrest said Australia's various new 'unfair' taxes would largely impact junior miners who would be forced to scale back investment.

He said with the opposition ahead in the polls, the new taxes would not last. "Politicians shouldn't just look to polls, they should look to what's best for voters' children," he said. "The best explorers are the juniors, not the biggest miners. These



Iron ore train at Port Hedland.

policies are impairing the economy and the future of Australia."

Forrest opened a third berth at FMG's Port Hedland terminal in late May. Despite lower iron ore prices, he said the company would also then open a fourth berth in the first quarter of next year. The port upgrade is just one aspect of the company's huge expansion of its Western Australian mine, rail and port network which will increase exports to 155mtpa by June 2013 compared with 55mtpa

now. The investment will see two more mines opened along with additional train unloader systems and two more stacker-reclaimers.

"We can build railways, ports and mines at a speed never seen before in world," he told Coaltrans delegates. "This is a new approach to project management. We bring in vendors of major equipment, shiploaders and other equipment and ask them how would you do this to optimize efficiency? We don't tell them what they can't do; we do make them do it quicker.

"With iron ore, it's like coal, you need infrastructure, you need port access. We have an exceptional port at Port Hedland, we have room to grow. We can expand the port to 200mtpa so we're telling customers we can expand when we need us to.

"We can expand to 300mtpa if needed."

Forrest said lower prices would see more industry consolidation but expects demand, driven by Asian consumption,

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to continue to grow.

"We're not raging bulls; we're just realistic," he said. "We've got a China and an Asia which has said we will match Western living over a period of a generation. Let's support them to do it."

Despite the grey taxation clouds over Australia's mining industry, new projects are also moving forward elsewhere, according to Australia's Bureau of Resources and Energy Economics' Mining Industry Major Projects report published earlier this year. Bree found that four coal mining and two iron ore projects were completed in the six months to April this year adding 8.3mt (million tonnes) and 7mt of production capacity, respectively.

Over the same period a number of infrastructure upgrades were also completed. The Kooragang Island Coal Terminal at Newcastle was finished at a capital cost of \$670 million adding around 20mt of annual capacity to give the terminal a total capacity of 133mt. A further 12mt expansion is ongoing and when complete at the end of this year will give the terminal a total capacity of 145mt, the limit of its government approval.

In Western Australia, at a capital cost of US\$284 million, Rio Tinto has completed a 5mt expansion to its Dampier port to give it a capacity of 150mt.

Bree said another 15 iron ore projects and 21 coal mine projects were at an 'advanced' stage and due for completion over the next three to four years. A further 11 coal and five iron ore infrastructure projects are also at an advanced stage.

Of the iron ore infrastructure projects at an advanced stage of development, apart from FMG's plans BHP Billiton is also expanding its inner harbour port capacity at Port Hedland and Rio Tinto is undertaking a US\$3.1 billion expansion at Cape Lambert, which will increase annual capacity by 53mt to 133mt by 2013.

Of the coal-related infrastructure projects, six are rail expansions and five port expansions under construction. The largest project, in terms of capital expenditure, is the third phase of BHP Billiton's Hay Point coal terminal in Mackay, Queensland. This is scheduled for completion in 2014 and will increase the port's capacity by 11mt annually to 55mt a year, at a capital cost of US\$2.5 billion.

At the port of Gladstone, the Wiggins Island Coal Terminal is now under construction and will add capacity of 27mtpa.

Two expansion projects taking place at the Newcastle Coal Infrastructure Group (NCIG) terminal will increase capacity from 30mtpa to 53mtpa at a cost of \$900 million. The third stage of the NCIG terminal will cost around \$1 billion and add 13mt of coal export capacity. "When complete, the NCIG terminal will have a total capacity of 66mt, which is the maximum capacity under its New South Wales government planning approval," said Bree.

Williams was upbeat

about Australia's coal prospects despite the increasing taxation threats to Australian competitiveness. She said long-term forecasts from the International Energy Agency showed that as world energy demand increased, driven by growth in Asia, by 2035 global use of coal was projected to be one-third higher than in 2009 and coal would remain the backbone of electricity generation.

"The IEA has demonstrated that irrespective of any future decisions by governments around the world to alter their domestic energy mixes, the share of world coal demand from non-OECD economies will rise from 70% in 2009 to approximately 80% by 2035," she said. "No matter what the policy scenario, China, India and Indonesia account for over 80% of this projected increase in coal demand — with China and India accounting for one-third each."

Australia, she said, would need to play a leading role in meeting this demand. Australia's exports of metallurgical coal are forecast to increase at an average annual rate of 8%, reaching 218mt in 2017.

Driven by China and India demand, world thermal coal seaborne trade will increase at an average of 4% annually to reach 1.04 billion tonnes by 2017. In 2011, Australia's thermal coal exports grew by 4%, relative to 2010, to total 148mt. "Projections for 2012 see an increase of 10% in 2012 to 162mt, then growing at an average annual rate of 11% between 2013 and 2017, to total 271mt by the end of the period," said Williams.

She said that while over \$70 billion was currently earmarked for investment in boosting Australian's coal mining and infrastructure capacity, she warned that not all of this was definite and discrepancy spending could be lost if Australia did not improve the regulatory environment for investors.

"What we are seeing is a healthy commercial contest to meet global demand but given the current world economic situation, where finance is hard to obtain, investment decisions are not taken lightly," she said. "Most large companies have more projects than dollars available, so choices will be made.

"So how Australia's domestic policy settings are managed will be a factor in determining the proportion of our great project pipeline that will turn into shovels in the ground."

DCi

The third phase of BHP Billiton's Hay Point coal terminal in Mackay, Queensland is scheduled for completion in 2014 and will increase the port's capacity to 55mt a year.





Online Coal Analysis

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COALSCAN 2100: Ash Analyser

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Conditions stabilize on Madeira River

Strong tides on the Madeira River in Brazil have abated allowing floating docks to once again be used. Prior to this, the Porto Velho dock on the River, which specializes in grain shipments, had to be closed for two days. The unsafe conditions were caused by the opening of floodgates further upstream due to a technical problem. *BC*

Chinese to expand Palúa

The government of Venezuela has signed an agreement with China Railway Engineering Group to undertake a capacity expansion project at the Port of Palúa, which is operated by state iron ore producer Ferrominera Orincoc. The contract, which is worth \$112 million, involves expansion of the loading area. At the moment, capacity is limited to 3.5mt (million tonnes) annually, but this is expected to increase to 6.2mt within the next 18 months. *BC*

Port of Long Beach named best North American seaport

The Port of Long Beach was named the best seaport in North America by *Cargonews Asia* at the 2012 Asian Freight and Supply Chain Awards in Shanghai.

It is the 15th time in the past 17 years that the Port of Long Beach has been recognized as the best on the continent by importers, exporters, logistics and supply chain professionals.

"We are honoured to be recognized by the maritime industry," said Port of Long Beach Executive Director J. Christopher Lytle. "We strive to offer the best facilities and

customer service in the world, and we thank you for your recognition. We continue to aim high and invest in our future."

The annual Asian Freight and Supply Chain Awards, known informally as the "Shippers' Choice" awards, is based on an annual poll of thousands of professionals in freight transportation services. It is a highly regarded distinction in the industry, and awards also are given in other categories, including best shipping lines, container terminals, air cargo terminals, airports and rail haulers.

Banner year for Odessa dry bulk so far

Odessa Commercial Seaport handled 5.9mt (million tonnes) of dry bulk in the first four months of this year, a 23.3% increase. The additional cargo was mainly in the form of grain exports, which went up from 1.5mt to 2.03mt, although the volume of ferrous metal shot up from 223,700 tonnes to 1.5mt. *BC*

Abbot Point expansion project cut back

The new government of the Australian state of Queensland has decided to block the plan to expand the port of Abbot Point, which handles export coal traffic.

The project would have seen the existing network of three terminals expanded by a further six, requiring investment of \$9 billion. Instead, the existing three terminals will be strengthened.

Explaining the reasons for the changes, the government said that it believed expansion of Abbot point should be gradual, pointing out that the previous project had been unrealistic and impossible to implement.

However, construction of a new coal port at Gladstone is to go ahead. Here, Yarwun Coal Terminal wants to invest \$2.2 billion, which would enable the facility to export around 50 million tonnes of coal a year. *BC*



Abbot Point Coal Terminal.

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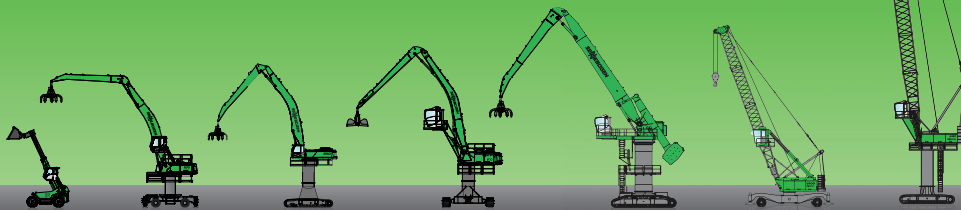
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Port Corpus Christi wins \$10m grant from USDOT 2012 TIGER grant

In late June this year, the United States Department of Transportation announced the recipients of the 2012 Transportation Investment Generating Economic Recovery (TIGER) Grant. The TIGER 2012 Discretionary Grants Program provided \$500 million for infrastructure investments; of that, Port Corpus Christi received \$10 million for its Nueces River Rail Yard project. "The TIGER grant funding for Port Corpus Christi will make it possible to improve rail operations and overall efficiency. The port is an important multimodal hub for the region and the US military. This upgrade will significantly expand capacity and represents needed economic development. I supported this effort from the beginning and I want to congratulate everyone involved in making a strong case for this project," said US Senator Kay Bailey Hutchison.



Eagle Ford Shale and expansion of the Panama Canal."

The Nueces River Rail Yard is the most important project in the port's Rail Master Plan. The New Main Interchange Yard will consist of one 7,800-foot track capable of storing a 110-car unit train and four parallel storage tracks containing 15,100 feet of track and capable of storing an additional 252 railcars. A 16ft wide service road will run the full length of the yard and a 750ft service track will be constructed

for locomotives awaiting outbound trains. "Countless industries rely on Port Corpus Christi to provide for the efficient transportation of commodities and goods, and the new rail capacity made possible by this TIGER grant will support the port's continued importance and create jobs today and long into the future. I am grateful to US Department of Transportation Secretary Ray LaHood for recognizing the unique needs and opportunities of Corpus Christi, and I look forward to seeing how the Port will leverage this federal funding to promote the area's economic growth, create jobs and keep Texas' economy strong," said US Congressman Henry Cuellar.

The need for a new Main Interchange Rail Yard is paramount to the port's growth and will greatly improve the efficiency of existing cargo movements at the port's multimodal facilities, including the grain elevators that support the country's agricultural community, the wind turbine equipment industry that support the country's goal towards energy independence, and the dry and liquid bulk material trade that is so vital to the region's petrochemical industry. The port is also designated as a strategic military deployment port and frequently moves shipments of military equipment by rail to and from the forts and overseas installations. "We are very excited about the news. It is providing us with the green light to move forward with another important infrastructure project for the port. With this new rail infrastructure, the port can expand into new growth markets such as export of metallurgical and thermal coals, increase the supply of FracSand for Eagle Ford Shale as well as crude shipments into the region," said Mike Carrell, chairman of the Port Commission.

The need for this new Main Interchange Rail Yard became increasingly important with the substantial growth in rail traffic at the port over the last five years. Historically, the port received between 10,000 and 15,000 railcars every year. Since 2007, with the privatization of the port's grain elevator, completion of the Fulton Corridor, and the Eagle Ford shale discovery, the port has seen its railcar volume dramatically increase to 32,000 railcars in 2011. New projects are expected to increase this volume even more. "This critical piece of supply chain infrastructure will benefit not just the Port and South Texas, but agriculture, energy, and industrial producers and consumers along BNSF's MidCon Corridor from Texas to the Canadian border," said Matthew K. Rose, BNSF's chairman and chief executive officer. "The billions in capital investments private freight railroads such as BNSF are already making in US rail infrastructure combined with public investments such as these will expand capacity to move more freight, more efficiently by rail to keep American businesses competitive in world markets."

US Congressman Blake Farenthold said "Ports are critical links to our nation's trading partners and their infrastructure investment needs should be a primary focus within our nation's transportation plan. Expansion of the rail yard at Port Corpus Christi brings jobs and economic growth to South Texas. Our port, serviced by multiple rail lines and good highway infrastructure, is poised to capitalize on increased trade from the

ABOUT PORT CORPUS CHRISTI

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Antwerp holds exhibition of Chinese junks in Shanghai

Part of the collection of Chinese junks held by the MAS museum in Antwerp is being in the China Maritime Museum in Shanghai from 4 June onwards. To further promote the good trade relations with China that go back for centuries, the Port of Antwerp was keen to mount a temporary exhibition in that country, showing part of its collection with immense cultural and historical significance.

CHINESE JUNKS, A PRICELESS HERITAGE

The collection of Chinese junks in Antwerp's MAS museum comprises a large proportion of the more than 100 models built at the beginning of the 20th century on the orders of the Chinese emperor for the World Fair in the American city of Saint Louis. It is the most valuable collection of Chinese junks in the world, giving a very good impression of Chinese regional shipbuilding over the years. There are few places where the junks could be displayed to better effect than the MAS museum, which presents the long history of commercial and cultural exchange between the city of Antwerp, its port and the rest of the world. But now some of the junks in this unique collection are venturing out for the first time, to be exhibited in the China Maritime Museum. "Our warm and friendly relations with China go back a very long way. Thanks to our major international ports and our rich cultural past we are able to appreciate one another fully, both in economic and in cultural and historic terms," says port alderman Marc Van Peel, explaining the idea behind the exhibition.

To mount the exhibition in Shanghai various parties have collaborated over the past few years under the unceasing guidance of the Friends of the National Shipping Museum, a non-

profit organization. The Cosco shipping company provided the sea transport, Ahlers co-ordinated the forwarding, Van Breda contributed transport, and Voka Antwerp (Chamber of Commerce) helped to cover the customs costs. The City of Antwerp and the Antwerp Museums & Heritage association for their part helped to make the exhibits ready for shipment, while the China Maritime Museum is curating the exhibition.

ANTWERP, MAJOR INTERNATIONAL PORT AND GATEWAY TO EUROPE

The port of Antwerp handles an annual Chinese freight volume of 10mt (million tonnes). In 2011 the total amount of shipping trade between China and Antwerp expanded by 42%, reaching an all-time high. The increase was mainly due to metals, oil products and containerized freight. The advantages of Antwerp as a major international port and gateway to Europe were showcased at a roadshow held by Antwerp Port Authority in the port cities of Shanghai and Ningbo from 4 to 8 June.

In addition to the two Port Days in Shanghai and Ningbo, the port of Antwerp was present at the Transport Logistics exhibition in Shanghai and the Investment & Trade exhibition in Ningbo.

RAISING ANTWERP'S NAME RECOGNITION

In recent years the port of Antwerp has placed great emphasis on building up name recognition and market share in China. Treaties of friendship have already been signed with the ports of Shanghai, Dalian, Ningbo and Shenzhen, and the port community also sends delegations twice per year to other port cities in order to further promote good relations.

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Long Beach honours shipping lines for environmental leadership

In early June, the Port of Long Beach in the USA honoured 14 top ocean carriers as the “best of the best” in the Port’s Green Flag environmental programme.

The port’s Green Flag vessel speed reduction programme gives financial incentives to ship operators to slow down near the harbour and reduce air pollution. More than 95% of the nearly 5,000 ships that call to the port every year now participate in the voluntary programme. Since it began seven years ago, more than 200 vessel operators have been awarded Green Flags and qualified for reductions on dockage fees.

The programme has been instrumental in helping the port decrease vessel diesel pollution by half and from all port-related operations by 72% since 2005.

“Because of your voluntary efforts, the air throughout our region is more breathable,” Port of Long Beach executive director J. Christopher Lytle told the fleet operators gathered for a luncheon hosted by the Law Offices of Keesal, Young & Logan in downtown Long Beach. “We continue to be grateful that so many of you have joined us in improving air quality and the quality of life in this community.”



Handling breakbulk cargoes at the Port of Long Beach.

Vessels that slow down within a 20 nautical mile zone around the port are rewarded with reductions on dockage fees, with greater reductions to ships that slow down within 40 nautical miles. The 40-mile programme began in 2009.

In 2011, the programme achieved its highest rate of participation to date with close to 96% of all ships slowing down to the speed limit of 12 knots within the 20 nautical mile radius. And more than 80% of ships calling at the port slowed within the 40 nautical miles radius. Slower ships burn less diesel, therefore producing less pollution.

The 14 companies honoured represented a select group of ocean carriers whose ships achieved well above the 90% participation requirement, in some cases 100%.

“This is a voluntary programme that gets remarkable participation,” said Long Beach Mayor Bob Foster who attended the luncheon with other city and port officials, including Vice Mayor Suja Lowenthal, Board of Harbor Commissioners President Susan E. Anderson Wise, and Commissioners Rich Dines and Doug Drummond.

“This programme has removed thousands of tonnes of pollution from the air,” Wise said. “And that’s all thanks to you, the shipping community, for embracing the Green Flag program and improving our air quality.”

The ‘Green Flag Top 14’ are:

- ❖ Mediterranean Shipping Co. (MSC);
- ❖ Kawasaki Kisen Kaisha (“K” Line);
- ❖ Nippon Yusen Kaisha (NYK Line);
- ❖ P O Shipping;
- ❖ Orient Overseas Container Line (OOCL);
- ❖ ZIM Integrated Shipping;
- ❖ Pacific International Lines;
- ❖ Hanjin Shipping Co Ltd.;
- ❖ Matson Navigation;
- ❖ Hamburg Sud;
- ❖ China Ocean Shipping Co. (COSCON);
- ❖ CSAV;
- ❖ Alaska Tanker; and
- ❖ CMA CGM.

Last year, the port awarded \$2.1 million in dockage fee discounts to carriers participating in the programme.

Boost for Rouen grain exports

The Port of Rouen in France, which claims to be the biggest cereals shipping hub in Europe, has doubled shipments of wheat to Algeria in the last few weeks. Between 10 May and end of 16 May, the port exported 128,998 metric tonnes, compared with just 59,852 tonnes a week earlier. In 2010/11, Rouen had a 41% share of French maritime grain exports, followed by La Pallice (17%) and Dunkirk (11%).

BC

Santander minerals terminal exceeds productivity

The recently opened minerals terminal at the Spanish Port of Santander has already reached its average productivity of 1,500tph (tonnes per hour). It did so whilst discharging coal on behalf of Solvay, whereby productivity was 5% above what had originally been forecast for 2012. The vessel involved had come from Murmansk in Russia, from which 66,000 tonnes of coal had been discharged in 42 hours, equivalent to an hourly average of 1,571 tonnes. The maximum productivity had been in the region of 2,275tph per hour, which is the absolute maximum the terminal was designed to handle.

BC

North American West Coast ports



gearing up for battle

Ray Dykes

North American West Coast ports continue to rebound cautiously after the global recession and its lingering departure and some are gearing up for the next big battle.

The advent of an expanded Panama Canal in 2014 or early 2015, depending on construction progress, has two of the major United States West Coast ports preparing up for a major scrap with East Coast ports keen on getting a bigger piece of the action as larger vessels are attracted to their facilities.

The battle lines have been drawn on the West Coast at least. Some estimates have put potential losses for West Coast ports as high as 25% for southern Californian ports, which now handle 40% of United States import traffic from Asia.

“We have stepped up our game and have re-emphasized the advantages of coming to the Port of Los Angeles through infrastructure improvements,” says Marcel van Dijk, the Port of Los Angeles marketing manager.

“We expect it will be a small diversion, perhaps a loss of only 1% or 2%,” says van Dijk.

He also notes that the major railways serving the West Coast ports — Burlington Northern-Santa Fe and Union Pacific — won’t give up cargo traffic without a fight and are pouring billions of dollars into rail corridor improvements including double tracking.

The neighbouring Port of Long Beach, Director of Trade Development, Don Snyder, says: “We feel market share is ours to keep or not to keep. As a landlord, we are making of lot of infrastructure improvements and will be spending US\$4.4 billion

over the next ten years.”

Projects at both major Californian ports range from bridge replacements to allow larger ships further up the shipping channel to significant dredging opening the way for even larger container vessels, plus several terminal expansions.

The urgency of the battle preparation decreases the further north you get from the Panama Canal and the \$5.2 billion expansion that will add a third lane to the waterway and allow Post Panamax vessels up to 120,000dwt access for the first time.

For the Port of Tacoma, less than a two-hour drive from the Canadian border, the impact of the expanded Panama Canal depends on several factors including fuel and rail rates, canal toll levels, and the capability of East Coast ports to handle the larger ships. But, the port has expanded its major Washington United Terminals container facility and finalized a ten-year strategic plan, which includes expanding the port’s general central peninsula to “efficiently handle the largest ships in the world, develop a bulk facility, and expand our rail capacity,” says Tara Mattina, Tacoma’s communications director.

For the Port of Seattle, there’s more concern over the rapid rise of the Port of Prince Rupert in British Columbia than to possible impacts of the expanded Panama Canal.

At the other end of the anxiety spectrum are the Canadian West Coast ports — Port Metro Vancouver and the Port of Prince Rupert — which are not expecting to lose any business to the expanded canal. Instead, there could be greater opportunity to put larger bulk vessels through the canal heading

2011 TOP WEST COAST PORTS

By total tonnes

Rank	Port	Million tonnes	%
1	Port Metro Vancouver	122.5	3.5
2	Long Beach	74.6	-3.7
3	Los Angeles	54.2	3.6
4	Seattle	22.8	0.4
5	Prince Rupert	19.3	17.6
6	Tacoma	15.7	4.6
7	Portland	12.1	1.6
8	Vancouver USA	5.6	-1.8

to Brazil and other buyers of coal, potash and agricultural products.

Port Metro Vancouver president & CEO, Robin Silvester, expects the canal expansions to have “minimal impact on the Vancouver Gateway” but he says the canal will continue to attract containers that could transit southern US West Coast ports. “It is not anticipated that the containers transiting Vancouver would relocate to US East Coast or Gulf Coast ports via the Panama Canal,” says Silvester.

Here's *Dry Cargo International's* annual review of how North America's West Coast ports fared in 2011 and at the half-way point of 2012.

PORT OF LONG BEACH, CA

The slower US economy put the brakes on growth in 2011 for the Port of Long Beach — ‘North America's Best Seaport’ — a title won in 15 of the past 17 years as decided by importers, exporters, logistics and supply chain professionals in Asia.

Total volume reached 74.6mt (million tonnes) in 2011, compared with 76.6mt in 2010. The slow economy continued to soften performance as containers at 6,061,085 TEUs continued to slide by just over 6% compared with the same period in 2010. The best recent year was before the recession when the port handled 7,312,465 TEUs.

No surprise that the port's director of trade, Don Snyder predicts container movements to remain flat for the rest of the year.

Bright spots include the recovery in auto shipments, which dropped 30% in 2011 to 140,000 units, but soared back year to date (YTD) through May to 105,283 units, a jump of 123%. Other gains have come through dry bulk (petcoke, coal, sulphur and soda ash) which were up 3.1% overall through May, while liquid bulk dropped 4.1% in the first five months.

The weak US dollar has boosted Asian demand for agricultural products such as grains, fruit, cotton and other food products and recycled waste paper and scrap metal are also doing well. A recently signed US free trade agreement with South Korea will also help boost agricultural shipments, says Snyder. China leads the way in imported containers bringing in mainly consumer goods to North American consumers.

However, the big news for the Port of Long Beach is the \$4.4 billion being spent on infrastructure improvements over the next decade.

The Middle Harbour Redevelopment Project fills in the water slip between two existing terminals and expands their footprint by about 100 acres creating a container terminal by 2020 that will have enhanced on-dock rail capacity, shore power hook ups and the ability to move twice the cargo while producing half the

air pollution.

The replacement of the Gerald Desmond Bridge will be completed by 2017 giving ships a higher vertical clearance in the main shipping channel and allowing larger ships into the port's back channel terminals.

There is landfill expansion work and other improvements at Pier T operated by Total Terminals International; Pier G run by ITS is upgrading and filling in half of a slipway, upgrading its on-dock rail, reconfiguring its yard and providing more modern buildings; and the port is also seeking approval to build a new cargo terminal on Pier S, a 160-acre parcel of vacant land.

All container terminals in the Port of Long Beach will have shore-side power by 2014. And dirty trucks have been banned from the port site which is only open to vehicles 2007 or newer. Also, the port makes cash rewards under its Green Ship Incentive for Tier 2 or 3 engined vessels.

PORT OF LOS ANGELES, CA

The worst seems to be over for the busiest container port in all of North America as Los Angeles' performance of 7.9 million TEUs in 2011 eclipsed 2010 slightly and was the best performance since 2007 before the global recession.

The good news is continuing into 2012 and YTD through May container traffic was up 6%. Not that the port is getting too excited as it struck a US\$954 million budget for the new fiscal year from 1 July, which was less than it used in 2011 by 2.3% or \$22.5 million.

Exports are leading the recovery, says Marcel van Dijk, POLA marketing manager, with a 15% surge overall and strong gains in agricultural products (there were big gains in grains, soya meal and soya beans), waste paper, and scrap metal.

As the port heads into the traditional ‘peak season’ for container traffic through late July, August and September, there are signs that retail spending will be at a more normal level despite the weaker economy and the distraction of an upcoming federal election in November.

China is still gobbling up 35% of all export containers passing



Handling potash at the Port of Portland.



WE DO ORE

and other dry & breakbulk cargoes

The Port of Stockton is located in Foreign Trade Zone #231, close to I-5 and I-80, the port is an international 35-foot deep-water port with more than 2000 acres for import/export cargo. The Port is also an overweight corridor connection for rail-bound heavy cargoes to and from Asia/U.S.

The Port is served by both the Union Pacific and Burlington Northern Santa Fe railroads. The Central California Traction Company (a wholly owned subsidiary of both railroads) provides industry switching and track maintenance services. The Port is expanding the rail intermodal section to have four 800-meter tracks of a half-mile each available for component storage and staging.

New rail extensions will allow the Port to begin receiving three more bulk unit trains per week for export. This increases the capacity at the Port of Stockton and Metro Ports' ship loader to six unit trains, from the current three trains per week, of export iron ore or coal. This new track allows a loop, upon which inbound and outbound trains can move without interfering with operation of the Port's east complex class yard. The tracks will improve interchange between Union Pacific, BNSF Railway and the Central California Traction Company, as well as reduce equipment dwell time at the Port.



Port of Stockton
CALIFORNIA

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through the port, followed in ranking by Taiwan, South Korea, Japan and Hong Kong. Waste paper, plastic resin, animal feeds, and bulk agricultural products such as grain and soya meal continue to lead the way.

The Top 6 imports through POLA were furniture, auto parts, apparel, electrical goods, footwear, and toys, with auto parts up a healthy 33% in 2011 over depressed 2010 levels.

With its five-year \$1.3 billion port growth plan underway in 2010, the highlights of 2011, according to van Dijk, include the \$300 million dredging of all shipping channels to 53ft from 45ft, a move that has allowed larger container vessels more navigational comfort.

Major projects included China Shipping Container Terminal improvements with a 1,200-foot wharf extension and 38 acres of additional backlands; and the TraPac Container Terminal did a similar-sized wharf expansion and added 60 acres of backlands and next year will finally get rail onto the dock — the last in the port to bring trains straight to the ships.

The APL Pier 300 gained 40 acres of landfill and a 1,200-foot dock extension and other improvements are at the design stage for work that should begin before year's end.

In May, the POLA became the first seaport in North America and the Pacific Rim to adopt an international clean air programme that rewards ocean carriers for bringing only their newest and cleanest vessels to the port.

Similar to programmes at several European ports, the clean ship incentive programme rewards vessel operators for adopting



Improving rail links at the Port of Vancouver, USA.

voluntary engine, fuel, and technology enhancements that reduce ship emissions beyond those already set by the International Maritime Organization (IMO).

On shore, the port has also adopted a clean air truck program that enforces a 2007 and newer engine standard for the huge truck fleet servicing POLA.

With its capital projects, green initiatives, and a new port police building and security upgrades including fibre optics, the port is promoting itself as 'a cleaner port, a brighter future'.

PORT OF PORTLAND, OR

With its third best tonnage total ever 2011, the Port of Portland has continued to recover from the 2009 global economic

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meltdown with a stronger performance so far through April 2012.

Last year, the port handled 12.1mt compared with 11.9mt in 2010 and 12.8mt back in 2008 before the recession hit. Biggest customers are Japan, South Korea and China.

Getting back to those pre-recession figures seems an achievable target for the port where growth is primarily driven by container movements, which were up 9% in 2011 to nearly 200,000 TEUs. Portland signed a 25-year lease with container terminal operator ICTSI Oregon Inc. in February 2011 and has seen container volumes grow.

Export containers shipped went up by 27% last year and imports by 5% as the TEU total reached 198,179. To the end of April 2012, total container numbers are up 10.7% overall with loaded containers up 14.6% as the recovery continues.

Grain exports remained flat in 2011 at 4.3mt; mineral bulks were also steady at 4.7mt but YTD through April had dipped by 21%; breakbulk through the port, which reached 853,769 tonnes in 2011, was showing signs of recovery, up 3% YTD; and auto shipments, which dropped 11.5% in 2011 to 234,048 units, were up by a surprising 64% through YTD April as the American driving public revived its love affair with Asian imports.

The port recently amended the lease of the Kinder Morgan soda ash facility, which has led to a \$9.5 million investment by the terminal operator to replace the existing shiploader by early 2013.

Other recent highlights include the first exports of Ford vehicles to South Korea; the first raw log exports through Portland since 1997; an expanded weekly container service by Hapag-Lloyd and Hamburg Sud; a new Subaru parts distribution centre, regional offices, and training facility now importing auto parts through Terminal 6; and the port's industrial park receiving the top national Phoenix Award for brownfield redevelopment.

However, the real downer on the year so far is a lingering jurisdictional labour dispute now into weeks, which sees the employers Pacific Maritime Association and the International Longshore and Warehouse Union up against the International Brotherhood of Electrical Workers, involving handling reefer containers at the terminal operated by Manila-based ICTSI. A court-ordered 'discussion phase' was under way late in June, but until there is resolution the main two shipping lines serving the port — Hanjin and Hapag-Lloyd — have diverted their vessels to the Port of Seattle.

PORT VANCOUVER USA, WA

This southern most of Washington State ports is celebrating its 100th anniversary in 2012 and believes it has much to be happy about in adopting a theme of 'A century of possibilities'.

While cargo volumes were down slightly in 2011 at 5.4mt — a drop of 1.8% on the 2010 performance — but operating income was still up \$5.7 million. Overall cargo trends were steady with wind energy (up 321% at 106,182 tonnes), pulp, scrap metal (up 19% at 554,507 tonnes) and heavy lift project cargoes leading the growth while autos, wheat (down 2.7% at 3.6mt), and bulk minerals headed the decline thanks to the recession and global events.

The Columbia River port has received two federal competitive transportation grants totalling \$25 million and will use much of that to improve rail links to support what new executive director, Todd Coleman, calls "a period of unprecedented growth."

The revamping of rail access means some existing facilities will be moved, others will change and some will expand. United

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Grain Corporation will complete an \$80 million soya and corn export and storage facility by the fall; Great Western Malting relocated to a new area within the port and upgraded its facilities; and mineral bulk exporter Kinder Morgan will operate new unloading facilities in order to make way for unit train rail tracks.

BHP Billiton has signed preliminary agreements with the port and has begun construction of a new potash export facility at Terminal 5, bringing a brownfield site back to productive use, complete with new loop rail track.

Environmentally, the port has tightened its practices and has been cleaning up about 3.5 billion gallons of groundwater as well as contaminated soil.

PORT OF SEATTLE, WA

Steady as she goes could have been the theme for the Port of Seattle in 2011 as throughput tonnage was almost identical to 2010, being up only by about 30,000 tonnes at 22.8 million

Total TEUs moved dropped slightly to 2,033,535, and that was down about 106,000 TEUs on 2010. Bulk grain, petroleum and molasses were all at similar totals in 2011 as they reached in 2010 with only grain in slight decline.

Seattle Seaport Media Officer, Peter McGraw, says 2012 is primarily flat and he expects tonnage numbers to be down slightly at year's end unless public buying habits for consumer goods pick up. Much of the blame for the drop in TEUs could be placed on the decision of the Grand Alliance container line to move camp to rival Port of Tacoma, taking with it about 20% of Seattle's box count.

McGraw says other lines such as MOL and PSX have moved in but volumes will still be down.

Among the highlights of the past 18 months, has been the arrival of three Super Post-Panamax gantry cranes last November with another three due in July as the four container terminals in the port upgrade equipment.

Seattle offers dual shore-side power hookups at its newer Smith Cove cruise facility; has an At Berth Clean fuels programme (ABC) which encourages shipping lines to use low sulphur diesel fuel while in port; and like most other West Coast ports has a clean truck campaign which has retired almost 300 trucks of 1994 vintage or earlier, removing over 500mt of sulphur dioxide from the environment so far.

Major capital improvements include the port contributing \$300 million to a \$4 billion new road tunnel replacing the Alaska Way Viaduct and other projects including \$40 million for the East Marginal Way Grade Separation designed to keep freight trucks away from commuting traffic; plus other overpass and state highway improvements.

PORT OF TACOMA, WA

A slight rise in container volumes from 1.46 to 1.49 million TEUs was the Port of Tacoma's reward for a year of effort in 2011 while other cargoes increased at higher rates. Containers continue to rule the roost in this Washington port that goes head-to-head with the neighbouring Port of Seattle, but were flat through May 2012 slightly behind the pace of 2011.

But, there was good news in March with the Grand Alliance — a consortium of OOCL, NYK Line, Hapag-Lloyd and ZIM —



Aerial view of the Port of Seattle.

announcement of a service through Tacoma instead of Seattle from late June and this is expected to be a further boost of 32,000 boxes a year. And a new Australia–New Zealand service operated by Hamburg Sud and Hapag-Lloyd in partnership with US Lines will start this summer and is expected to mean another 30,000 TEUs for the Port of Tacoma through the recently expanded Washington United Terminals.

The total volume of all cargoes in 2011 reached 15.7mt, which was up 700,000 tonnes on 2010, but still well behind the 18.4mt of 2008 before the global recession struck.

Highlights of the year to May 2012 include a dramatic 93% rise in breakbulk shipments at 94,480 tonnes, while gypsum was up 59% at 80,458 tonnes, and auto shipments reached 60,487 units, up 12%. These advances were offset by container movements being down less than 1% in the first five months of 2012, while raw log shipments, which started again in 2010 after an absence of several years, fizzled somewhat, dropping 48% through May at 135,014 tonnes.

Roll-roll-off vessel calls jumped in the first quarter of 2012 and these ships tend to be larger and carry more cargo.

However, bulk grain shipments continue to decline, reaching 5.4mt in 2011 after a recent peak of 6.2mt in 2008. Grain through May in 2012 was down a further 4.5% over the same five months of 2011.

With two-way trade with its major partner China worth US\$14.6 billion in 2011, the Port of Tacoma largely imports consumer goods such as clothing, toys, sports equipment, furniture and housewares. The major export markets are Japan, South Korea, China, Taiwan and Indonesia and all were up in 2011 over 2010 trading figures.

Like other West Coast ports, Tacoma has been providing incentives for owners of older trucks to retire them from port duties as part of a Northwest Clean Air Strategy with Seattle and Port Metro Vancouver. So far, in less than a year, more than 40 older trucks have been scrapped.

PORT METRO VANCOUVER BC

Another record year at 122.5mt in 2011 had Port Metro Vancouver (PMV) as the busiest and most diverse of all port facilities on the West Coast of North America. Since two ports on the Fraser River amalgamated with the Port of Vancouver in

2008 there has been little looking back.

Diverse cargoes from coal to wood chips, wheat to crude petroleum enabled the port to fend off the effects of the Japanese tsunami and earthquake in March 2011, a shaky global recovery, and market disruption due to the debt crisis in Europe, says PMV President & CEO Robin Silvester. At 3,024, vessel arrivals in 2011 were up 7% and gross registered tonnage climbed by 8%.

Coal continues to be the biggest single commodity shipped from the port and in 2011 reached 32.7mt, up 8% over 2010. With the decline in demand for steelmaking coal because of the tsunami and global recession hangover, energy coal exports flourished through Westshore Terminals and Neptune Bulk Terminals, both of which are amid extensive equipment upgrades in 2012 to boost capacity. A decline in steelmaking coal by 6% in 2011 was more than offset by a 45% jump in shipments of energy coal.

Container traffic at 12.9mt or 2,507,032 TEUs, was down only 1% last year over 2010, but the box count at 1,084,240 through May 2012 is 7.4% higher over the same five months of 2011 as North American import demand grows.

Grain, which was down 5% in 2011 over 2010 at 15.5mt has also bounced back in 2012 and at the end of April was 11% ahead of the same four months of 2011. Among the fertilizers handled by the port, sulphur was up 25% YTD April after slipping 8% in 2011 to 3.4mt. Potash was 8% lower than in the same YTD period of 2011, but that wasn't seen as surprising given 2011 was a record year at 7.2mt — up 30% over 2010.

Breakbulk declined in 2011 by 4%, but that followed a healthy gain of 15% in 2010. Growth so far in 2012 has been through log and lumber exports to China and increasing inbound metals volumes from South Korea and China. Moderate breakbulk growth is expected this year as forest industry activity continues to drive domestic and foreign export volumes and for the first time, China is the No. 1 importer of British Columbia's forest product exports.

Auto volumes, which plummeted by 22% to 298,113 units in 2011, rebounded strongly in 2012 with a record 44,000 units in March leading the way to a 30% jump over the same three months of 2011. Through May auto handling was still ahead of any similar period since 2009.

Cruise voyage numbers were up 15% in 2011 over 2010 but were expected to decline slightly in 2012. However, with fewer but larger vessels the passenger count of 2011 of 663,425 was expected to rise moderately giving the port two straight years of improving figures after a 'fairly dismal 2010'.

Shore power was used by over 35 cruise ships during the

year and that was the equivalent of taking well over 650 cars off the road, says the port. PMV is now looking at the feasibility of extending shore power use to its container terminals.

And in capital spending, PMV, government and industry have over \$9 billion in projects in the next few years to further develop the Vancouver Gateway to the world. The 13 projects range from upgrading existing road and rail infrastructure at Deltaport — Canada's largest container terminal — to conducting geotechnical investigations at Roberts Bank in the

Outer Harbour with an eye on creating a new container terminal.

PRINCE RUPERT, BC

With a record 19.3mt throughput in 2011 and a best on the West Coast 17% increase over 2010 performance, the Port of Prince Rupert has captured their rivals' attention and for some it's seen as a bigger threat than the Panama Canal expansion.

Coal was up 16% in 2011 over 2010 and grain jumped by 21% and "things are on a roll," says Shaun Stevenson, the port's vice president of marketing and business development. Export laden containers were up 59% in 2011 with "real significant growth" in forest products, particularly sawn lumber, he adds.

There's been no easing off in 2012 and in the YTD through May, the Prince Rupert registered an 87% boost in container traffic at its soon-to-be expanded Fairview Container Terminal and is referring to itself as the fastest

growing port in all of North America. Coal was up 15% in the same five months while grain shipments were flat.

Fairview is expected to add a further 500,000 TEUs to its capacity by 2015, but it is not alone. The coal export facility run by Ridley Terminals is also doubling capacity to 24mt by 2015 with work now well underway. Ridley shipped a record 9,638,520 tonnes of coal and petcoke in 2011 and that was 16% ahead of 2010.

No wonder Stevenson says the annual 500 deep-sea vessels calling on the port now are expected to grow to 1,000 to 1,200 in six or seven years as the value of the special gateway the port offers to the US Midwest and to Asia is more widely appreciated.

Cruise went through a rebuilding year and saw a dramatic decline in large ship calls at about five for the season. The port has pushed ahead with waterfront development around the cruise dock and is hoping for a revival in 2013.

Meanwhile, the opening up of Ridley Island to further development is underway with a \$90 million road/rail utility corridor project that could attract a new potash export terminal and maybe an LNG Terminal. The coal terminal on Ridley is expected to tie in to the development allowing it to handle longer trains in future.



Inner Harbour at Port Metro Vancouver in Canada.



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PST at work at Gray's Harbor.

Pasha Stevedoring & Terminals L.P. (PST), headquartered in the Port of Los Angeles, is also a key stevedore at two other prominent West Coast ports – the Port of Grays Harbor in Aberdeen, Washington, and the National City Marine Terminal at the Port of San Diego in California. Each location calls on the particular expertise of the PST teams, ranging from the stevedore of choice for Chrysler export vehicles and agricultural products at the Port of Grays Harbor, to import/export vehicles and over high and wide rolling stock in the Port of San Diego.

THE HOME TEAM

At its headquarters in the Port of Los Angeles, PST's strength is evident in the port's only omni breakbulk and container terminal, where the PST team brings years of experience to general breakbulk transportation, with specialties in steel, automobiles, and project cargo. The penetration of foreign steel into US markets has played a major part in Pasha's foray into the steel-handling business, leading to PST and the Port of Los Angeles achieving the number one record for steel imports on the US West Coast. The company has perfected the art of stevedoring mixed steel products arriving from all parts of the globe, achieving optimum proficiency in discharging overweight coils and steel slabs by using swift gantry cranes. PST also enlists its traveling supercargoes to aid in the loading of slab steel in several international ports to ensure safe stowage, which creates maximum productivity at the port of discharge, enables the recipient to receive a reduction in rate and damage, and guarantees on-time delivery.

PARTNER WITH THE PORT OF GRAYS HARBOR

Grays Harbor deepwater port is approximately 18 miles from ocean pilot boarding, representing measurable savings in vessel

transit, and is fast becoming a draw for Pacific Northwest cargo shippers. In partnership with the Port of Grays Harbor in Aberdeen PST has brought its expertise to AG Processing, the largest soyabean meal co-operative in the world. PST's supervisors oversee the loading of the bulk agricultural products, and in 2010 alone, over one million metric tonnes were put on board. On the heels of this record year, and with plans to triple exports of American-grown agricultural products over the next five years, AGP's multi-million dollar expansion project at the port continues on schedule and on budget. PST will continue to provide the expertise to help them meet their export goal.

ADDING VALUE TO AUTOMOTIVE EXPORTS/IMPORTS

Also in Grays Harbor, new rail expansion is taking place. The recently completed first phase rail project increases the number of railcar spots from 32 to 100. Grays Harbor is served by the only active rail system to the coast in Oregon and Washington. A unique feature is the dual access to both Union Pacific and Burlington Northern Santa Fe class one railroads. This attracts new auto accounts that rely on land-bridge capability for import and export vehicles. PST's long heritage of automotive stevedoring plays an equally important role at this deep water port. In concert with Pasha Automotive Services, whose well-trained processing personnel are in place at Grays, the vehicle stevedoring offered by PST provides a seamless operation for new vehicle manufacturers.

SERVING SAN DIEGO

In addition to its Los Angeles and Aberdeen operations, PST also provides stevedore and terminal services in the Port of San Diego, and manages vessel loading and discharging for Pasha

Hawaii, a roll-on/roll-off liner service between San Diego and the Hawaiian Islands. Pasha Hawaii's *Jean Anne* has ten decks of enclosed cargo space for vehicles, yachts, and a variety of over high and wide cargo, from construction equipment to Black Hawk helicopters. Joining the Pasha Hawaii fleet in late 2013 is the *Marjorie C*, a 'Con-Ro' vessel that provides the flexibility of carrying container cargo as well as providing roll-on/roll-off service. With the ability to carry up to 1400 TEUs on deck and below deck, the *Marjorie C* will call on PST's experience in container handling.



Supervising loading operations at Gray's Harbor.

VARIETY OF SERVICES

A wholly-owned subsidiary of The Pasha Group, founded in 1947, PST as a stevedoring group is available to provide vessel services at other facilities in addition to the terminals they already operate. Such arrangements enable PST to provide additional resources for the global maritime transportation industry, and expand their expertise to non-traditional commodities, such as bulk scrap. PST also offers ancillary services such as reefer and chassis maintenance and repair, sensitive cargo warehousing, and logistics management. Jeff Burgin, PST senior vice president, notes, "Moving forward, we continue to explore different avenues to further enhance our operations, increase the level of productivity and add value to

our customers. Today's client is also looking for fresh ideas for handling their project cargo. PST has assisted in the design of a variety of lifting applications to reduce damage and reduce costs."

Burgin adds, "We are seeing the benefits of our training, cross-training, and investment in people, particularly in the steady labour force. Our goal has always been to identify areas of common ground with our business partners, take what we believe to be good, and create a new paradigm to shift the business to even greater levels. The customer's need is for one-stop shipping and transportation solutions, and we're there to see that it happens."

Handling heavy lift cargoes at the Port of Los Angeles.



Strategic investments put Port of Vancouver USA on a path for continued growth

Since 1912, the Port of Vancouver USA has been an economic engine and job creator in Washington State. Located at the hub of the Pacific Northwest on the Columbia-Snake River system, this deep water port has five marine terminals and 13 berths that annually handle more than 500 oceangoing vessels, as well as river barges, with a total cargo volume exceeding 5mt (million metric tonnes).

Key to its success is the port's strategic investment in the land, equipment and highly skilled workforce necessary to successfully handle a diverse array of dry and liquid bulks, breakbulk and project cargoes.

Leading inbound cargos include liquid bulks such as diesel and jet fuel, wood pulp, steel, automobiles and wind energy components. With exports making up 85% of the Port of Vancouver's cargo portfolio, wheat is the port's number one export by volume with 16% of US wheat exports being handled on the port's docks. Other top exports include scrap steel and wood pulp. In addition, the Port of Vancouver USA is the only port in the Pacific Northwest and one of the few in the entire United States that handles both copper concentrate and Bentonite clay.

Access to river, rail and road from the port provides importers and exporters alike the most efficient and cost-effective options to get their goods to market, and its natural location 106 river miles from the Pacific Ocean make it the most efficient and cost-effective route to and from China/Asia Pacific to the US Midwest and parts of Canada. Moreover, long term agreements with shippers, manufacturers, and stevedores ensure that cargo shipments can be scheduled at an agreed-upon rate with little risk of disruption so that cargo reliably reaches its destination.

The port's investments in land and state-of-the-art transportation infrastructure is also attracting global companies, such as BHP Billiton, the Australian mining giant and largest exporter of potash in the world. BHP Billiton and the port are currently working toward locating a \$300 million potash export facility at the port's newest marine terminal, Terminal 5. In addition, current port tenants are leveraging the port's investments by making investments of their own. For example, United Grain Corporation is expanding the port's grain facility to handle corn and soybeans in addition to its current handling of wheat. The \$85 million private-sector investment will



increase the port's grain exports by 50%, starting this fall. Together, these two companies alone are expected to triple the port's annual cargo tonnage from 5mt to 15mt within the next ten years.

With 800 acres of currently operating facilities and 600 acres available for future development, the Port of Vancouver USA is unique among ports located in urban areas. The availability of large parcels of marine and industrial land is attracting industrial manufacturers looking to relocate and expand in the Pacific Northwest. A recent addition to the port's list of tenants is Sapa Profiles, North America's largest provider of extruded aluminium profiles. The port location is the company's first facility in Washington State and brought more than a hundred new, permanent jobs to the community.

The ability to accommodate current and future land needs also recently attracted Farwest Steel Corporation to a 20-acre parcel at the port. Farwest will soon begin operations at its new \$50 million steel fabrication facility, employing more than 200 local workers.

But there is still room to grow at the Port of Vancouver USA, both in the short and long terms. Currently available is 58 acres of shovel-ready industrial property, with an additional 50 adjoining acres that are development ready. Named the Centennial Industrial Park, these 108 acres of prime industrial land are attracting interest both regionally and globally. The port also has over 500 acres available for future development, positively positioning the port for decades to come.

Continuing its strategic efforts to increase its global competitiveness, the port is investing heavily in its rail infrastructure. Recognizing that an efficient intermodal transportation system is critical to keeping its existing tenants competitive and a necessity when it comes to attracting new tenants and customers, the port is investing \$275 million to expand its rail infrastructure. Launched in 2008, the port's West Vancouver Freight Access project is the largest capital project in the port's 100-year history and when complete in 2017 will triple the port's rail capacity to 160,000 rail cars annually and will reduce congestion on the regional rail system by as much as 40%.

As the growth strategies the port has in place continue to prove their worth, the future looks bright for this 100 year old port which is looking forward to its next century with great expectations.



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New-generation large wheel loader from Doosan

Doosan Infracore Construction Equipment has launched the DL450-3 model, the first in the company's new generation large wheel loaders. Powered by a Scania SCR diesel engine meeting the Stage IIIB EU emissions regulations, the new DL450-3 large wheel loader combines high engine power output with new ZF transmissions and several other features to minimize fuel consumption and provide exceptional performance, ease of handling, serviceability, durability and significantly enhanced operator comfort.

With a bucket capacity of 4.5m³, the new DL450-3 large wheel loader is intended to meet a wide range of material-handling needs from loading and transporting granular material (such as sand and gravel) to industrial, mining and quarrying applications.

The DL450-3 model is powered by the 13-litre Scania DC13 SCR 6-cylinder diesel engine delivering 'best in class' power and engine torque, with a maximum power output of 264kW at 1,800rpm.

LOWER FUEL CONSUMPTION

Many of the features of the new generation DL450-3 wheel loader have been developed to optimize fuel efficiency. SCR technology reduces fuel consumption by about 10% compared with similar size machines with EGR technology. Resale is also better as it is easy to reset to Stage II engines for use in emerging markets.

The new DL450-3 wheel loader has three engine working modes: ECO, NORMAL and POWER, to adapt the machine to different applications, with different engine speeds and gear steps according to the working mode engaged. With the 'Power-Up' function, the operator can manually adjust to the next highest working mode by applying a full stroke of the accelerator pedal. With this function, the operator can travel in moderate NORMAL mode and switch to POWER mode when it is really needed, such as when taking material from a pile. This capability helps to reduce fuel consumption. The ECO Bar provides information about fuel consumption in relation to machine performance in real-time, allowing the operator to select the driving profile for the best fuel efficiency.

The operator can set a password for machine start. If Auto Idle is activated, engine speed goes down about 200 rpm after 10 seconds if there is no machine movement. Auto Idle is ideal for applications with long waiting times, such as truck loading. Thanks to Auto Idle, fuel consumption is reduced by up to 8%.

All new generation Doosan large wheel loaders are equipped with load-sensing controlled, variable hydraulic piston pumps, improving performance and reducing fuel consumption. With load sensing, the hydraulic pumps receive a signal from the MCV informing how much oil is needed. This helps to save on engine performance.

With the clutch cut-off system engaged, the driver is able to disconnect the transmission from the engine by operating the

brake pedal, to have 100% engine performance for the hydraulic system. As a result, movements are faster, breakout force is maximized and fuel consumption is reduced.

The DL450-3 and all other new



generation Doosan large wheel loaders are equipped with a torque-converter-cut-off (TCCO) system which, when activated, is switched on automatically. This provides a direct mechanical connection between the engine and transmission without loss of power and torque by the torque converter. Tests show that fuel consumption is up to 10% lower with increased traction compared with conventional systems. In contrast to the drive systems on other machines, the TCCO can be engaged even in 2nd to 5th gear, not just in the highest gear. This makes the TCCO more efficient.

NEW ZF 5-GEAR TRANSMISSION

The new ZF 5-gear transmission improves the transfer of power from the engine to the wheels and contributes significantly to the overall reduction in fuel consumption. The change from four to five gears provides better response and acceleration, especially on slopes. Engine speed variation is less thanks to smaller gear steps, and lower engine speed throughout the whole drive range reduces fuel consumption. Thanks to higher shift quality, noise levels are lower while driving performance and productivity have been increased. A lock-up-clutch also helps to reduce fuel consumption.

New ZF limited slip Type II differential axles provide more durability and a longer lifetime. Rolling resistance for the axles is also reduced, improving traction and decreasing fuel consumption. As an option, customers can choose ZF axles with a hydraulic differential lock. This function is engaged via the operator pedal or in automatic mode, depending on the torque resistance in first and second gear. The advantage of the hydraulic lock system is that it has less rolling resistance compared to the limited slip system.

The radiator fan is hydraulically driven and controlled by an ECU. Changing the fan direction for cleaning the radiator can be done manually from the cab, without having to switch off the engine. Fan reverse intervals (30 minutes to two hours) can be set via the menu.

Superior Industries launches new track-mounted radial stacking conveyor

Superior Industries, a leading American manufacturer of conveyor systems and components, reveals its newest conveyor design to the market on 12 June this year. Known as the Geotrek™ conveyor, the track-mounted radial stacker can be directly linked with portable crushing and screening equipment in applications that require material stockpiling.

Equipped with independent hydraulic cylinders at both the head and tail ends of the conveyor, the unit can also be used as a mobile transfer or link conveyor. Other common applications include bulk material loading to ships, barges and trucks.

For smooth and steady handling during travel, Superior engineers equipped the unit with proportional track drive controls. The technology allows for smoother, steadier travel when the tracks are engaged. Each Geotrek conveyor also features the company's patented powerfold design. During unfolding, the stacker's hydraulic cylinders retract, protecting the cylinder rods from damaging dust and debris during operation. The new track mounted stacker also comes equipped with a remote control to operate the unit's belt and tracks.

To date, Superior has engineered and manufactured a pair of 42-inch wide by 80ft-long Geotrek conveyors. The units are self-contained, each equipped with a 77HP diesel engine to supply

hydraulic power to the tracks, drive, raise and fold functions. As the only North American conveyor manufacturer with in-house components manufacturing, the units were also assembled with Superior brand idlers, Chevron® wing pulleys, Exterra® belt cleaners and take-ups.



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 manufacturer supplies the market with stackers, transfer conveyors and stationary systems plus idlers, pulleys and accessories to lower operating costs and increase production. The company manufactures from two additional plants in Arizona and Georgia. For more details on Superior Industries' equipment used in the rail transport of bulk goods, please see p67 of this issue.

Alex Stewart: sampling based on modern sampling theory

Alex Stewart International employs more than 1,200 people in over 45 countries and operates 17 laboratories, write Mr. Graham Stewart and Mr. Kozo Matsumoto, Alex Stewart International Corporation. Alex Stewart International provides its customers with independent verification of the quantity and quality of bulk commodity shipments, as well as geochemical analysis of mining samples for exploration projects. Core business services are for large international commodity trading companies within the agriculture, metals and mineral and oils and petroleum industries.

As a service company, one of Alex Stewart International's core business areas is the supervision of weighing and sampling of base-metal concentrates, where we consider it most important to rely on modern sampling theory, not on rule-of-thumb.

Total sampling variance is defined as:

- ❖ Primary variance of primary increments divided by the number of primary increments;
- ❖ + sample preparation variance + analytical variance divided by the number of replicate analyses.

In order to design any sampling scheme, first it is important to decide the target value of the total sampling variance.

Then a decision must be made on: primary variance of primary increments; sample preparation variance; and analysis variance.

Here, in fact in modern theory, there are two schools of thought;

- ❖ P. Gy's theory using the concept of variogram; and
- ❖ traditional theory stemmed from some of JIS standards.

Traditional sampling theory is based on the assumptions that each sampling point is statistically independent of all others and that analysis results at each point are subject to a normal standard distribution.

If this is not deemed to be the case, then it is better to follow Gy's theory.

Following Gy's theory, the required number of sample increments for each lot tends to be much less than the one established by traditional theory. However, at Alex Stewart International, it is believed that the truth lies in-between both theories and that considerable experience in actual shipments is vital.

Also, in actual shipments, correct determination of moisture content of any bulk cargo is extremely important. This point would seem self-evident, but in reality, contrary to expectation, it is rarely carried out at the loading point. Alex Stewart has considerable experience in this throughout the world.

Lastly, it should be emphasized that normally taking many samples will not resolve any sampling issues. Too many samples can create other serious difficulties in sample reduction. This issue will also have to be resolved based on theory and experience.



SMB Shiploading



Loading heads: the right solution for every situation

The different loading heads can be combined with various ship loading methods such as mobile and stationary loaders, or combination loaders. In addition to the above, the selection criteria include the quantity of the product or whether a product easily absorbs moisture, together with the size of the ships to be loaded and their characteristics.

Bulk goods and bagged goods systems have a long tradition at SMB. This engineering company from Quickborn produces high-performance transport and handling solutions designed for smooth, long-term operation and minimum energy requirements. Numerous projects all over the world have convinced shipping lines, port operators and industrial companies of German engineering quality. Current projects in the Middle East, South-East Asia and Europe speak for themselves. In addition to combination ship-loaders with spiral chutes and loading heads, bulk goods loaders and systems for fertilisers, the product range is rounded off by loading systems for cement in bags.



SMB | Group
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Highlight of the month

Depending on the product, for example its fragility, inflammability or dust emission and ambient conditions such as wind, cold, heat or the risk of earthquakes, engineers design ship-loaders with different loading heads. SMB International GmbH from Quickborn has developed into one of the leading suppliers of port material handling systems.

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Siwertell unloader delivers dust-free biomass and coal supply to Danish power plant

Cargotec has secured an order for a Siwertell ship unloader from Denmark's leading power company, Dong Energy; it will ensure a high-capacity unloading of wood pellets and coal for one of the most efficient power stations of its kind. The order is booked into the first quarter order intake.

Dong Energy, one of the foremost energy groups in Northern Europe, has placed an order with Cargotec for a Siwertell-type ST 790-D ship unloader. The new unloader will be used to ensure the efficient, clean unloading of wood pellets and coal to Dong Energy's combined heat and power station at Avedøre in Denmark, discharging ships of up to 10,000dwt at a rated capacity of 800 tonnes per hour.

Dong Energy, is majority owned by the Danish government, and says that the Avedøre multi-fuel power station, situated just south

of Copenhagen, is one of the world's most efficient of its kind, achieving fuel efficiencies of up to 94%.

"Our Siwertell unloader will be an extension of this highly efficient operation," says Lars-Eric Lundgren, regional sales manager for Cargotec. "It was chosen for its environmental credentials, which include high levels of efficiency and totally-enclosed bulk transfer for dust-free operations. Our long experience with bulk handling systems was also an important factor in winning this contract."

The unloader will be built and erected in Trieste, Italy and then transported by heavy lift vessel to its operational site in Avedøre. Delivery is planned for beginning of June 2013 and start up between mid-August to mid-October 2013.



A Siwertell ship unloader ensures a highly-efficient, dust-free bulk transfer operation.

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Demag Cranes supplies bulk handling hoppers to Port of Tyne, UK

Since February of this year, bulk carriers with cargoes of wood pellets have been unloaded at the Port of Tyne, Newcastle, UK, via two identical G HMH 750 DS mobile harbour hoppers supplied by Demag Cranes' subsidiary Gottwald Port Technology GmbH. The cargo-handling machinery specialist had extended its product range to include, among other equipment, hoppers of various types and specifications. With effect from the end of last year, the company has drawn together its bulk-handling activities to create the International Dry Bulk Competence Centre (IDBCC) based in Banbury, UK.

"The two Gottwald hoppers are each designed to handle 750 tonnes of wood pellets per hour," explains Brian Reeve, chief technical officer at the Port of Tyne. "Handling wood pellets is a very demanding task and we strive to lead the way in developing the best practical means of handling this material whilst fully meeting all legislative requirements. Gottwald's hoppers comply with our stringent environmental requirements whilst providing robust and reliable handling."

Handling bulk materials is a growth market for terminal

operators all over the world. Each kind of bulk cargo has its own characteristics, whether coal, fertilizers, biomass or agribulk, and these affect the way it has to be handled. "Among other enhancements, the new Gottwald hoppers are fitted with highly effective dust suppression systems as an economical response to environmental protection legislation at the location," summarizes Mark Reardon, head of the IDBCC.

GOTTWALD G HMH 750 DS HOPPER

Two mobile harbour hoppers are in use at the Port of Tyne, each with a handling capacity of up to 750tph (tonnes per hour). They are equipped with dust suppression systems, different types of which are available as options. The hoppers feature high-quality, robust steel constructions — engineered to ensure reliable operation and maximum availability.

In addition, an environmentally aware power supply and efficient drive technology are incorporated in the design. All the energy required to operate the hopper is generated on-board in an highly efficient diesel-powered generator. Alternatively, power

can be supplied without generating additional local exhaust gas emissions by hooking up to the harbour mains.

HIGHLY EFFICIENT DUST SUPPRESSION SYSTEM

The dust suppression system, tailored to suit the demands of the handling task, is not only safe and environmentally aware, it is also economical because it minimizes the amount of bulk material lost during handling. To suppress the dust, Gottwald uses a number of different measures designed to complement each other. Besides a complete enclosure and wind protection around the charging opening, which is also fitted with a flex-flap grid, air curtain and extractor systems as well as telescopic chutes for loading trucks minimize dust generation. The telescopic chutes also ensure gentle handling of the bulk material.

VERSATILE APPLICATION — FLEXIBLE UNLOADING

Gottwald hoppers can be specifically configured in a wide range of equipment variants with capacities of up to 2,000tph for practically all bulk materials. A number of different types are available: mobile on wheels, on rails or fixed. Depending on the terminal requirements, bulk materials handled by Gottwald hoppers are unloaded onto HGVs, goods trains or conveyor belts.

The Gottwald hoppers handling wood pellets at the Port of Tyne are equipped with a highly efficient dust suppression system, an environmentally aware power supply and modern drive technology.



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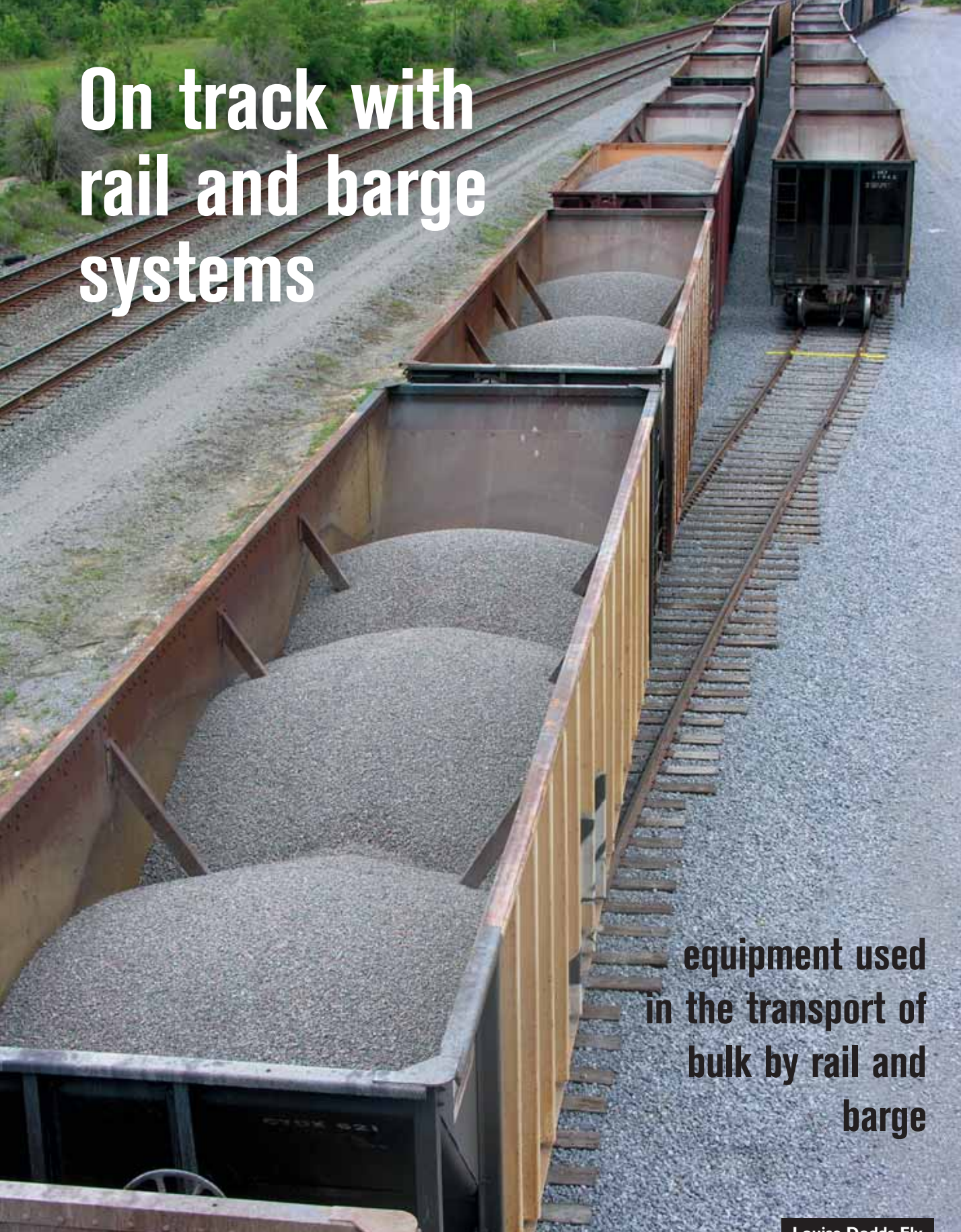


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**equipment used
in the transport of
bulk by rail and
barge**

Louise Dodds-Ely

Rail distribution network boosts material handling to meet customer demand

A recent report refers to efficient rail transport as “the linchpin” behind the rapid movement of material from mine to market in the southeast United States. The study states that Florida’s current pool of 4,000 railcars must be increased to handle the additional material coming from out-of-state rail networks and through port terminals that need redistribution by rail.

Headquartered in Daytona Beach, Florida, Conrad Yelvington Distributors, Inc. (CYDI) is the largest rail distributor of aggregates in the southeast region of the US, moving more than 10mt (million tonnes) of materials through a network of 27 rail-served distribution terminals in the states of Florida, Alabama, Mississippi and Michigan. Now owned by Oldcastle Materials,





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At this Florida, USA rail terminal, two Superior TeleStacker conveyors and a 300ft overland conveyor build up to 16 different high-volume product stockpiles.



the company currently leases more than 1,815 hopper cars, owns and operates at least two dozen locomotives and dispatches its own fleet of material delivery trucks. Most terminal sites offload one-to-two 100-car unit trains each week, with each railcar holding up to 100 tonnes of material.

Aptly put, the CYDI slogan is 'aggregates in motion', a phrase that fits its rail distribution network as well as the ongoing material handling upgrades at its terminals — the latter being an initiative toward greater stockpiling capacity and efficient unloading at lower costs per tonne. To that end, CYDI has recently installed no fewer than a dozen automated telescoping radial stacking conveyors and at least five automated truck unloaders, all manufactured by Minnesota, USA-based Superior Industries. The new material handling equipment is placed in a number of terminals and applications, with plans for even more units being added as new terminals open within the network. At certain sites, Superior Industries has also engineered the tunnel conveyors and overland conveyors for the transfer of material from the railcars to the telescoping stacking conveyors.

When a 100-car train arrives at the company's DeFuniak, Florida-based terminal, the train splits onto five different tracks. A locomotive backs in and hooks onto one of the sections at a time, and pulls each car over the tunnel conveyor where its load is conveyed to the TeleStacker conveyor, which builds up to eight different product stockpiles on the main part of site. Then the telescoping conveyor is remotely adjusted to feed its load onto a 300-foot overland conveyor which transfers material to an additional yard which accommodates another eight high-volume stockpiles. The entire 10,000-tonne shipment takes approximately ten hours to unload and stockpile, all without the use of a loader or truck.

PUMP UP THE VOLUME

CYDI distributes a variety of materials including granite, limestone, decorative stone, river gravels, and silica sands. No matter what the material, the company's goal is to maximize stockpiling capacity at each of its distribution sites to meet growing demand. After all, regional reports indicate that from the mining process to the marketplace, and on to the placement

of material at the construction site — only a week may transpire — therefore unloading, conveying and stockpiling are key links in the logistics chain.

The company's operations manager cites several major reasons for replacing conventional stackers with the 42" x 170' TeleStacker® conveyors from Superior Industries. Top among them is up to 30% more stockpile volume on the same limited footprint. "With the stinger conveyor on the TeleStacker conveyor, you can build a much larger volume pile than that built by a fixed stacker. You've got that extra length that you can run, and that makes a big difference in volume," he says, adding that an additional advantage is stockpiling without material loss due to segregation or degradation.

Minimized loader use is equally important. "With fuel and operator labour hours, we need to cut our operating costs and these conveyors allow us to do that," says the operations manager.

Then there is the issue of safety and loss prevention. "The safety in being able to adjust the telescoping stacker in bad weather is crucial. Once you retract the stinger conveyor, you bring the unit into a low profile," he says, explaining that they had lost a couple of conventional gantry-type stackers to high winds during the recent hurricanes. "That's when we decided we had to make the switch to TeleStacker conveyors. We can bring them in low to the ground and we don't have all the cables

Superior's TeleStacker conveyors stockpile up to 30% more volume on the same limited footprint.





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A locomotive backs in, hooks onto a series of railcars and pulls the car over a tunnel conveyor designed and built by Superior Industries.

to deal with, which was also a huge maintenance issue as well on the previous conveyors.”

EFFECTIVE TRUCK UNLOADING

Alabama offers over 3,000 miles of railroad track serviced by five Class I railroads, which gives shippers excellent main line connections to all major market centers. CYDI currently maintains three rail-distribution terminals in the state, with a fourth under development.

At two of its Alabama sites, CYDI stockpiles and distributes petroleum coke (petcoke), a residual product of the oil refining process, which has made significant inroads into traditional utility coal markets. Particularly along the Gulf Coast, supplies of fuel grade petcoke are growing in response to the installation of new refining capacity. Petcoke is now being blended with coal for use in fossil-fuel power plants that can accommodate higher sulphur fuels.

The company’s Calera, Alabama site is both a coal and petcoke operation. “We’ve got a system there that blends coals with varying ash and sulphur contents to meet customer specifications. Then we stockpile it and sell it to the local market,” says the operations manager.

Coal products are trucked into the site and unloaded. CYDI uses two Superior RazerTail® truck unloaders to streamline its operations. The unloading systems can quickly and easily transfer material from belly dump trucks or end dump trucks and onto a conveyor. “We installed an infrared eye on the RazerTail truck unloader. When the nose of the truck runs across the grate and dumps into the hopper, it breaks in front of that electronic eye, which automatically kicks the conveyors on,” he says,

further explaining that the system is equipped with a timer so that the belts will cut off after material transfer is finished. The system does not require a dedicated operator, nor does it require the truck driver to leave his cab to start the process.

The operations manager stresses the importance of the RazerTail truck unloader being equipped with its own low-profile ramp. “Any other type of unloader would require us to pour a concrete tunnel and then install a conveyor within it — and that is rather sticky to do. This system has everything you need — and it’s portable — so if you need to, you can move it anytime you wish,” he says, adding that he is currently in the process of combining the RazerTail with a 42” X 170” TeleStacker conveyor to gain an even greater payback in product quality control and costs-per-tonne savings.



Two Superior RazerTail truck unloaders quickly and easily transfer material from belly or end dump trucks and onto a stacking conveyor.



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Since time immemorial, ships have been used to deliver bulk goods over long distances, using the river current as a natural force to carry them downstream or yoking draft animals for

upstream transport. Although trucks and trains have taken up a large part of this task in the modern age, barges are still a viable alternative for many goods. A barge carrying one tonne of cargo can travel five times as far on five litres of diesel as a truck with the same freight — 500km, compared with the truck's 100km of range overland. A ship carrying 3,000 tonnes of goods is equivalent to 50 railcars or 100 trucks.

Another plus is the ability to use an existing network of rivers, canals, and locks, which decongests the overland highway



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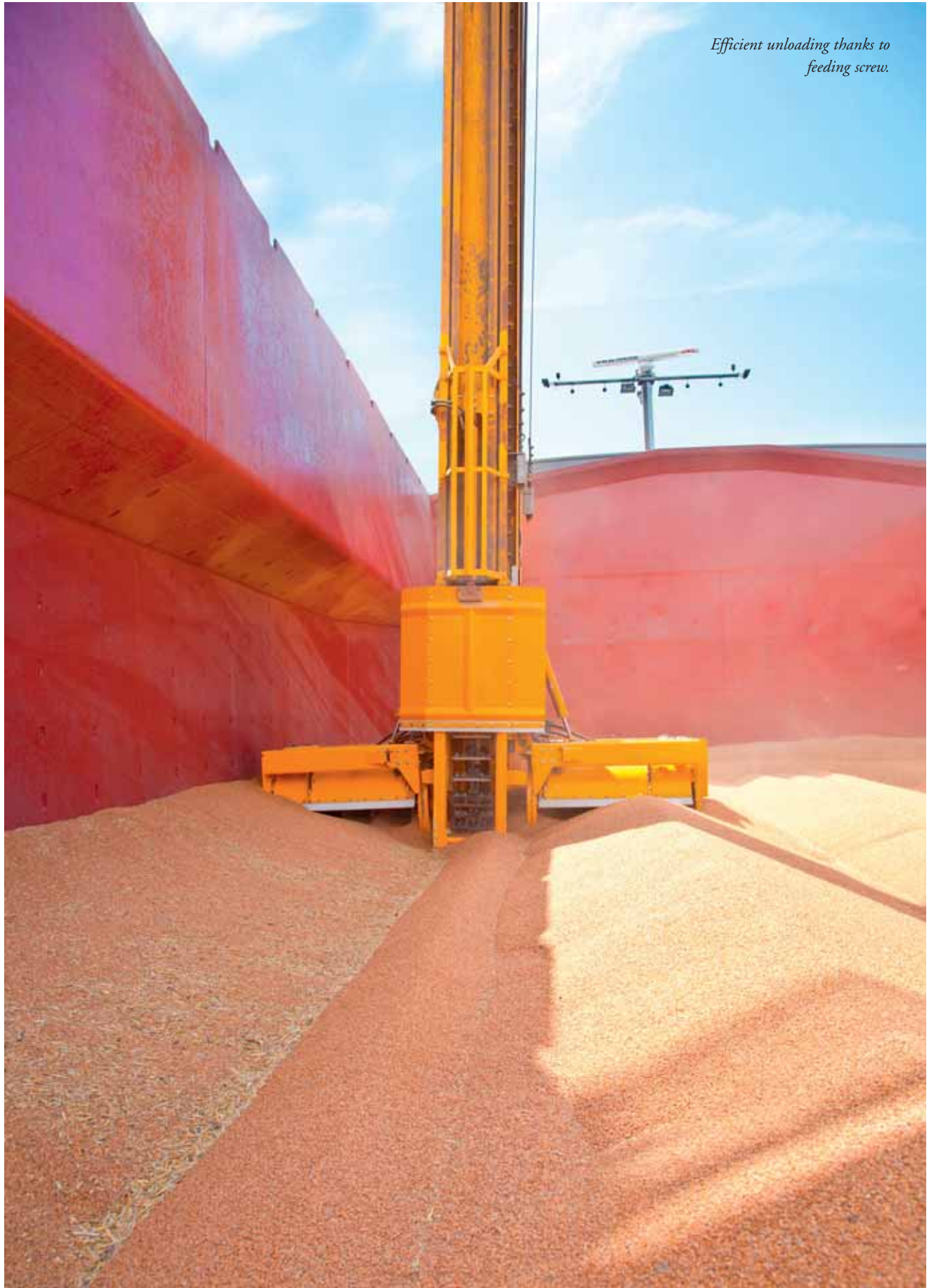
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system. Continental Europe is crisscrossed by waterways. From the gateway ports on the English Channel and along the northern Mediterranean, grain is distributed to the inland markets of Western and Central Europe by barges. The Bargolink serves the needs of customers all along this system of waterways — mainly grain handlers and processors whose business model depends on short berthing times and reliable high-volume unloading capacities.

STRADDLING DRY LAND AND WATER

Bühler has developed its Bargolink to unload barges of up to 5,000dwt at capacities of 150tph (tonnes per hour) to 300tph.

Here is how it works: a marine leg is positioned amidships in the material to be unloaded, where the marine leg moves through the product. To improve the feeding of the unloader, the marine leg is equipped with a fixed mounted feeding screw (hinged in order to equalize the inclination of the vessel) which



Efficient unloading thanks to feeding screw.

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Grain - 1,500 t/h



Grain - 2,500 t/h / wood chips



Kaolin 1,100 t/h



Grain - 1,500 t/h each tower



Dust trap - Upgrading

digs into the grain in the ship's hold and lifts it up onto a horizontal chain conveyor that carries the cargo to the port's storage units.

These state-of-the-art ship unloaders are available as mobile or stationary versions. The stationary unit is fixed on the pier and the barge is automatically towed by winches, taking the role of moving the barge for continuous unloading. The mobile version on rails is equipped with a travelling gear, so the barge can stay fixed at the pier.

As a result, the Bargolink enables customized terminal plants according to specific requirements, taking into account the available space for unloader and barge.

The mechanical process is not only easier on the wheat, causing less wastage and defects and keeping the grain in a higher grading; it is also more cost- and energy-efficient than pneumatic unloading. Furthermore, the Bargolink is less susceptible to breakdowns. A pneumatic system's fan is easily degraded by the fine particles it conveys; the Bargolink's mechanical process means longer uptime, lower operating costs, less expenses on maintenance and spares, and half the energy usage. This makes the whole unloading process more economical and environmentally sustainable, especially considering the added demurrage costs to vessels if a pneumatic system breaks down. Lastly, the Bargolink operates at lower noise levels and does not generate lower frequencies than pneumatic systems whose loud droning and changing volumes may constitute a health hazard.

Already three customers in China, Croatia and France have been convinced that they can benefit from Buhler's Bargolink. Altogether, Buhler's Bargolink offers an investment-friendly, highly flexible and efficient solution for unloading systems used for inland water transportation in the genuine Buhler manufacturing quality combined with best in class components.

ABOUT BÜHLER

Bühler is a global technology leader which specializes in the supply of equipment, systems and services for the conversion of renewable resources derived from food and synthetic substances into top quality functional products and materials. Bühler operates in over 140 countries and has some 8,800 employees worldwide. In fiscal 2011, the group generated sales revenue of CHF 2,13 billion.

Question time

THREE QUESTIONS FOR VINCENT VAN DER WIJK,
PRODUCT MANAGER BARGOLINK

DCI: *What is new about the Bargolink system?*

V.v.d.W.: The use of mechanical unloading was previously only feasible with larger ships. Bargolink's feeding screw brings the advantages of that approach — low energy use and less wear and tear to barges.

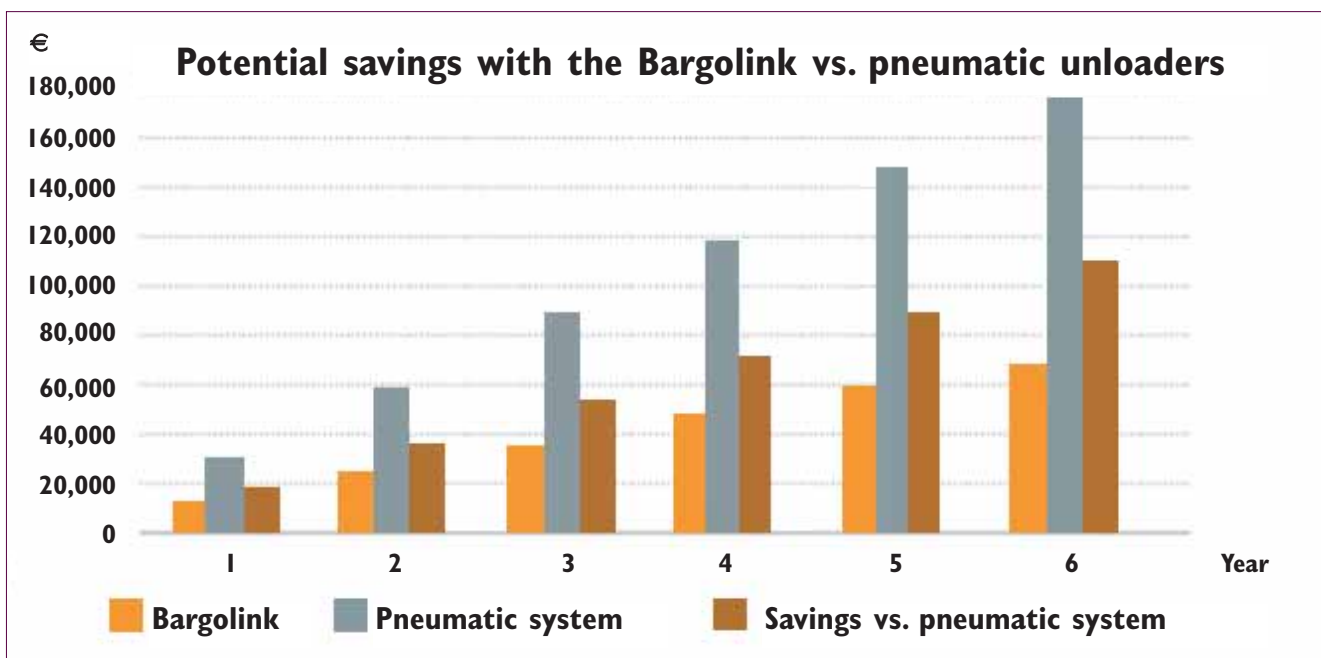
DCI: *Do you think more goods will be transported by inland barges in the future?*

V.v.d.W.: I am sure they will. In the past decade, the EU has invested enormous sums in its inland waterways, reducing bottlenecks such as sharp turns, locks, and low bridges. The infrastructure is now modern and highly competitive.

DCI: *What prospects do you see for markets outside of Europe?*

V.v.d.W.: There is huge market potential in many countries all over the world. China for instance has been expanding its shipping infrastructure. A Bargolink system will be shipped to Yihai Ltd. later this summer. In Russia like on the Mississippi in the US, river barges deliver most of the grain exports to port. The Bargolink meets four key customer requirements: low operating costs; maximum unloading efficiency; care in handling delicate cargo; and compliance with environmental and work safety regulations.

Bühler Grain Logistics delivers products and complete solutions for the entire value-added chain, from agricultural product collection points right through to food processing plants.



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Scantech's COALSCAN: simplifying coal sampling before loading into barges



TBM 210.

The largest coal companies in Indonesia, China, Taiwan, Vietnam and Thailand are all using on-line analysis of coal on a conveyor belt, first developed in Australia by Scantech. The key to the successful implementation of Scantech on-line analysis is that results are presented in real time and, if required, operators can make immediate changes to their operations to ensure product quality.

Dual Energy Transmission (DUET) is the most commonly used on-line ash measurement technique. The COALSCAN 2100 makes use of this technology. New developments in the DUET ash measurement technology permit coal depths up to 400 mm in some cases to be measured. This technology is perfectly suited to monitoring the loading of ships from barges where multiple coal sources may be blended to meet contract specifications.

For example, in Indonesia, operators have to manage up to 72 x 1.5 kg samples per barge (8,000 tonnes) and then send those samples to shore for analysis. Control over coal deliveries can instead be maintained by a COALSCAN 2100 monitoring the coal quality in real time. However, this measurement technique can have problems of inaccuracy due to changes in ash mineralogy. Fortunately, there are now methods for coping with this.

On conveyor belt elemental analysers, known as the COALSCAN 9500X, are now available to analyse the entire stream, avoiding not only the operating and capital costs of sampling, but also the sensitivity of older technologies to variation in ash mineralogy.

This technology is known as Prompt Gamma Neutron

Activation Analysis, (PGNAA). As well as measuring ash, this technology measures the ash oxides and many other parameters useful for efficient plant control. There have been four generations of this analyser, with the latest model requiring minimal maintenance, has very low levels of external radiation and drift free analysis.

The modern designed analysers, such as the COALSCAN 9500X, are now installed directly around the primary belt, and so measure all the material of interest. Direct onbelt analysis of the material of interest has numerous advantages, the most important being that all of the material of interest is 'seen' by the analyser, so that there can be no errors from sampling, both by the by-line sampling technique and that used by laboratories for analysis. A new model of this analyser has recently been released that now measures bed depths up to 530mm. Such high coal flows are often associated with ship- and barge-loading facilities.

These technologies can all be combined with the microwave moisture monitor, so that a complete analysis of the coal is available in real time. Scantech also produces stand alone moisture monitors. The TBM 210 was developed about 25 years ago. The Scantech moisture analyser measures both the changes in phase and attenuation of the microwave signal, making it the most accurate analysers on the market. It is installed at many sites to assist, for example, monitoring moisture levels in of coal shipments, optimizing washery performance and maintaining appropriate levels of dust suppression. The TBM 230 has recently been introduced. This new moisture monitor penetrates coal bed depths up to about 600mm.

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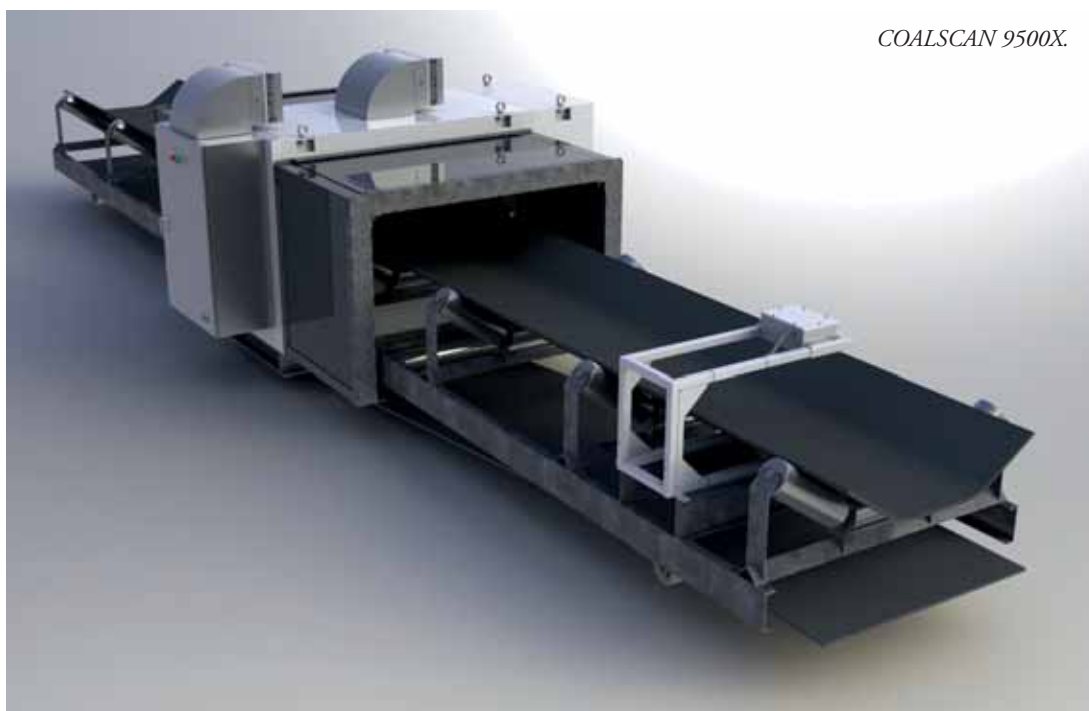
The results from on-line analysis are updated every one, two or five minutes as compared with the laboratory analyses of samples, which may be available hours or even days after the coal has been processed. This delay is even longer for samples collected in remote barge loading facilities. Further, it must also be recognized that no matter how accurate the laboratory analysis is, it is always based on a few grams of sample. There will always be errors involved with sampling, dividing, crushing and then preparing a few grams of sample to represent many thousands of tonnes of coal.

To maintain each analyser, Scantech has developed an extensive service network. The analysers are inherently very reliable and remote access via the internet to most analysers results in any problems usually being rectified very quickly. Additionally, a worldwide group of service agents and Scantech's own service engineers are available for remote and rapid on-site support.

Analysers can be used in many applications; at the mine, the preparation plant, to control train/vessel loading, to monitor received coal at the power station and to

measure the coal quality fed to the bunker. Operators can control their plants according to the coal quality they are actually processing, not what they think they are processing. This leads to more efficient plant operations and better asset management.

On-line analysis allows more efficient use of the resource, more effective process control and more cost effective methods of mining, processing and burning of coal. On-line analysis should be viewed not simply as an alternative to laboratory analysis. The most beneficial on-line analyser installations are generally those where the user has realized the advantages that real time analysis can bring to their process.



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DELACHAUX GROUP

Demag Cranes strengthens its Mississippi River foothold

Demag Cranes is continuing to expand its presence on the Mississippi River. The company has received an order for the supply of a floating crane to Impala Warehouses LLC (Impala). From September 2012, this Gottwald G HPK 8400 B, a variant of Model 8, will be used at the Burnside Terminal operated by Impala in Ascension Parish, Louisiana, in the United States, where it will predominantly handle bauxite and coal.

The crane will undertake midstream cargo handling and contribute to establishing Burnside's place among the top ten coal and bulk logistics facilities in the U.S., according to Martijn Snijder, CEO of Impala. "We acquired Burnside in June of last year with the aim of creating a state-of-the-art terminal. The acquisition of high-performance handling equipment such as the new Gottwald floating crane is instrumental in achieving that goal. Depending on the operating conditions, we assume that we will be able to handle up to 1,850 tonnes an hour with this crane," Snijder said.

SIXTEENTH GOTTWALD FLOATING CRANE ON THE MISSISSIPPI

In the opinion of Andreas Moeller, senior sales manager, the order now placed highlights the leading role of Gottwald products on the fourth longest river in the world: "From September 2012 we will be represented by 16 floating cranes on the Mississippi." In 2005, the first Gottwald floating crane based on mobile harbour crane technology was commissioned on the Mississippi River. Since then the cranes have proven their value, which is why the fleet is steadily increasing, according to Moeller, who is also pleased about a further new customer: "With Impala, the number of Gottwald customers on the Mississippi River has increased to four." They are looked after by the Gottwald Service branch in Baton Rouge, which is available to operators around the clock. When the new crane takes up commercial work, there will be no fewer than 25 Gottwald floating cranes of the harbour ponton crane type (G HPK) in use worldwide. In addition to these, one operator is using two portal harbour cranes on barge (G HSK on Barge).

HIGH-PERFORMANCE AND FLEXIBILITY

Depending on operating conditions, the G HPK 8400 B floating crane has an efficient 63-tonne grab curve and handles up to 1,850 tonnes of bulk material an hour. In



With the G HPK 8400 B for Impala Warehouses LLC a total of 16 Gottwald floating cranes will be operating on the Mississippi River from September 2012.

addition to their efficiency, Gottwald floating cranes stand out by virtue of their flexibility and mobility, which are particularly important for cargo handling midstream. A particular advantage is that, thanks to their compact design, Gottwald cranes can pass all bridges without a problem and thus save valuable time and money.

EVEN MORE COST-EFFECTIVE AND ENVIRONMENTALLY FRIENDLY OPERATION BY EXTERNAL POWER

The new floating crane for Impala is not only equipped for operation by diesel-powered generator but also by external power. If the crane works on the quay, which is also planned in addition to midstream operation, it can be supplied via a 690-V interface with energy from the local power supply. Bypassing the diesel-powered generator increases the efficiency rating of the drive system and reduces maintenance costs. In both cases, operating costs are minimized. Locally generated exhaust gases are also avoided.

ABOUT IMPALA

Impala is a wholly-owned subsidiary of Trafigura, one of the world's major international commodity traders. Impala was formed in 2010 following the consolidation of Trafigura's bulk commodity, warehousing and logistics activities. The company has world-class expertise extending across the non-ferrous concentrates, refined metals, iron ore and coal sectors. Operations include the blending of metal concentrates in Chile, China, Mexico and Peru, iron ore operations in China and India, and coal operations in the US, China and Colombia.

Now receiving regular shipments of bauxite, the Burnside terminal will reopen as one of the top ten coal and bulk logistics facilities in the US and it will be the only one on the Mississippi River able to offer both rail-to-vessel and barge-to-vessel capability.

ABOUT DEMAG CRANES

The Demag Cranes Group is a world-renowned supplier 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.

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Rail and barge loading/unloading – Telestack offers the mobile flexible solution

Telestack Limited continues to excel in providing innovative mobile bulk material handling systems to its worldwide customer base. This has been emphasized in the manufacturing and development of a fully mobile systems for loading barges and rail wagons directly from trucks. Telestack's mobile truck unloaders are designed for a range of applications, with operators greatly benefiting from eliminating the double handling of the bulk material by unloading directly from trucks to barges/rail wagons. These mobile solutions offer the performance both in loading rates and environmental qualities of a fixed installation with the added bonus of greater flexibility and mobility on existing berths, to eliminate the need for dedicated Port / Berth infrastructure or civil requirements.

TELESTACK'S RANGE OF TRUCK UNLOADERS



Mobile truck unloader (track mounted) loading barge directly from trucks and wheel loaders.

The range of Telestack truck unloaders is extensive, taking into consideration varying truck sizes, payloads, materials, cycle times, unloading rates etc.... all customized to the needs of the particular client and operation. As with all Telestack products the mobility and flexibility of the units are the key features. The advantages of mobile systems are being recognized more and more in the industry, with port operators identifying the flexible mobile system as a viable option replacing expensive fixed installation which require civil work, planning permission and (in some cases) an ineffective loading procedure for both barges and rail wagons. The advantage of moving the mobile truck unloader

of the site when it is not required is of great importance, especially when the port is not owned by the operator or it is a multi cargo berth.

Telestack's mobile truck unloaders offer a range of mobility options for each individual requirement. The tracked-mounted option gives the operator unrivalled flexibility when moving around site, as this unit is completely independent of all other systems. There is a diesel engine to drive all functions, with an optional dual power upgrade available which means the unit can be tracked into position and plug in the three-phase electrical supply to power the conveyor belts; this limits the diesel consumption of the units. There is also an option of rubber track pads available which ensures the concrete/asphalt surfaces are not damaged from the tracks. The greater mobility of these units also ensures they can be used in other applications within in stockyards, mines and quarries if required. This is important for possible re-sale value if contracts are finished. There are also wheeled options available for a more basic unit which allow the operator or shipper to tow the unit around the site into each position. Telestack can also offer a static version, depending on the specific needs of the client.

Typically, the range of truck unloaders can handle trucks up to 50 tonne payload (Tipping or Dump truck), the large hopper capacity increases cycle times which increases production rates. As there is such a wide range of trucks available in the market, Telestack can custom-design the hopper area to facilitate the most effective and efficient unloading area, including extended hopper sides, folding sides, flared design, dual access (increased cycle times), integrated fall break and many more. This ensures that the flow rate of each specific material and truck can be defined and taken into consideration during the design procedure. Also, the unloaders can be easily fed from wheel loaders and grab cranes for added flexibility. When handling dry bulk material, the dust suppression measures installed on the units ensure minimal dust emissions when unloading. As seen in the picture on the left, the dust covers and telescopic discharge chute minimize dust emissions in the unloading area and discharge point.



3-D view – mobile truck unloader loading a barge directly from trucks.



Mobile truck unloader off-loading barges from grab crane to radial telescopic stacker — multi-function units — loading/unloading.

All of the truck unloaders incorporate a heavy duty apron chain belt feeder, which ensures the surge of material discharging from the truck can be transferred and controlled onto the incline conveyor and barge/rail wagon or auxiliary equipment. Unlike other feeder conveyors that use rollers which would slip under the intense load in the hopper, the chain and sprocket driven belt, ensures there is no slippage and stalling of the feeder conveyor.

MOBILE TRUCK UNLOADERS AS PART OF MOBILE SYSTEM

Telestack's range of truck unloaders can also be used with Telestack's range of radial telescopic ship/barge loading conveyors. The combination of the mobile truck unloader and

the mobile radial telescopic shiploaders offer the 'perfect' loading operation directly from trucks to ship/barge. As seen in the picture below and on the top of p87, the radial telescopic technology offers unrivalled trimming capabilities without moving the truck unloading equipment.

RAIL WAGON LOADING — THE MOBILE OPTION

The flexibility and mobility of the range of truck unloaders and hopper feeders allow for different perspective for loading rail wagons. For loading directly from trucks, the mobile truck unloaders ensure an efficient loading method while completely filling the wagons without moving the train. The radial boom conveyor of the TU 515R mobile truck unloader allows for the



Mobile truck unloader feeding radial telescopic stacker/shiploader with urea to store in a warehouse at a port in Australia.

Static truck unloader feeding a radial telescopic conveyor loading aggregate to 5,000dwt barges at 800tph.



wagons to be loaded easily while moving the truck unloader parallel to the rail line, see figure six and seven. The radial feature enhances flexibility for the operator and allows for radial travel 60° left/right, so the unit can be used in range of applications, including barge loading, stockpiling, feeding other Telestack equipment and many more. This unit can also be easily fed from wheel loaders, which allows for direct feeding from stockpiles on site, especially when trucks are not available or in between the truck cycle time for increased production capacities.

TELESTACK UNITS FULLY BUILT AND TESTED IN FACTORY BEFORE DISPATCH

Telestack products are fully designed and manufactured in the state-of-the-art manufacturing facility in the UK. All products are custom designed to each specific application, material, loading



TU 515R mobile radial truck unloader loading rail wagons directly from trucks or wheeled loaders.

rate, and so forth. The equipment is fully built and tested in the factory before dispatch, with extensive testing of all operations, including electrics, hydraulics, functions etc. before been packed for transport (either containers or ro/ro). This ensures high

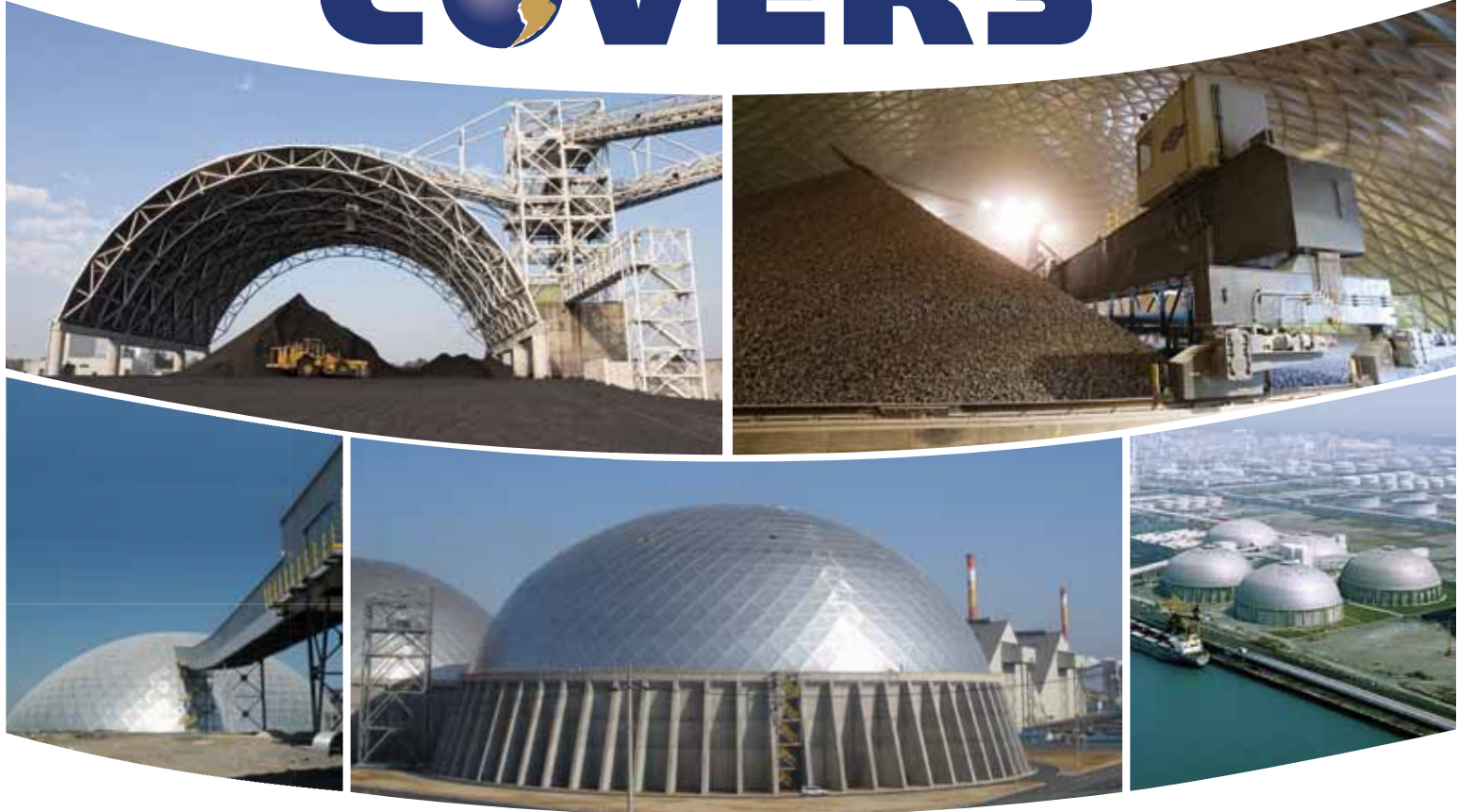
quality design and manufacturing throughout the process and ensures there are no issues with the equipment on site. In terms of installation and commissioning, all units are bolted together (no welding), minimal hydraulics and electric (plug and socket system), which ensures the units are operational within one week or less.



TU 515R mobile radial truck unloader loading rail wagons directly from trucks or wheeled loaders.

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Railcar unloading with technologies from Martin Engineering

Unloading bulk materials from railcars is often a difficult, dirty job, it can be slow, labour-intensive, messy, noisy, and unsafe. Unloading procedures can be risky; they require workers to go underneath the car to connect the outlet to the under-track conveying system. Slow flow is costly and when the material is compacted by miles of rail travel, it hangs up in the cars, slowing the flow and lengthening the unloading process. When the material is moving, it is exposed to the elements, becoming contaminated or escaping into the environment. This lost material is costly.

Martin Engineering offers railcar connectors which are air powered, and which safely and cleanly funnel material from the railcar to the under-track conveying system. The BOOT-LIFT® railcar connector is installed between the tracks and forms a link between the railcar and the conveying system. Powered by air, they raise the unloading boots to the gates for clean, efficient, and safe unloading of bottom discharge hopper cars. By funnelling material to the under-track system, BOOT-LIFT® railcar connectors prevent material from being blown away by wind while eliminating the safety hazard of requiring workers to crawl under the car.

The boots automatically connect to rise with the railcar as it empties, maintaining an effective seal. Using only one cfm of air at 90psi, the system is efficient. It is easily and safely operated by remote air-over-hydraulic control console. Different models are available to suit any car, including single- or double-opening, round-opening, and GATX.

Martin also provides a full range of railcar connector accessories to simplify railcar unloading.

The BOOT-LIFT® manual aligner simplifies car positioning by allowing adjustment of the BOOT-LIFT® railcar connector up to six inches (152mm) total along the track. The BOOT-LIFT® pneumatic aligner provides eight inches of total adjustment and requires only 1 cfm of air at 30psi. BOOT-LIFT® cylinder covers prevent damage and contamination of air cylinders from material



Martin Engineering's railcar opener.

build-up and environmental conditions.

The MARTIN® railcar opener proves successful in opening stubborn car-bottom gates, reducing safety risks for personnel, and improving unloading efficiency. The weight of the railcar's cargo load against the discharge gate makes the gate very difficult to open. Martin Engineering's railcar opener uses compressed air to provide powerful force to open even the most stubborn gates, improving efficiency and safety of unloading operations.

Opening gates without backbreaking labour, gate damage, or loud noise, the railcar opener utilizes 2,700 ft-lb of torque and 90psi. Three pivoting wheels allow for maximum manoeuvrability, and can be positioned by a single worker. The height can be adjusted to fit various car gates and compensate for variations in unloading platforms. Stabilizers slide out to provide wide base for increased leverage. The adjustable width can also be an advantage when sliding through narrow doors and small spaces. The steel tube frame provides long life in 'real world' conditions. The 10" x 4" pneumatic wheels manoeuvre easily over rough rail-side connections.

Martin also offers a complete line of railcar vibrators. The vibration of a railcar over the track will compact the car's bulk material cargo, prohibiting the cargo from flowing out freely once the discharge gate is opened. Railcar vibrators from Martin provide powerful vibratory energy that enhances material flow to achieve full unloading. MARTIN® railcar vibrators will help customers receive the cargo they paid to have shipped to their facilities.

To stay competitive in the market, Martin Engineering continues to be an innovator. Since 1944, Martin has delivered tough, tested, and innovative material handling solutions, backed by genuine and dependable industry experience since 1944. Staying one step ahead of the competition, Martin has pioneered and introduced many technologies that are now trusted standards.



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New E-Crane® barge-haul systems improve unloading efficiency



E-Crane Worldwide is a modern, state-of-the-art engineering and heavy equipment construction company, based in Adegem, Belgium and with subsidiary companies in the Netherlands (E-Crane International Europe) and Ohio, USA (E-Crane International USA).

The standard E-Crane product line consists of five series of balanced hydraulic cranes (E-Cranes): 700 Series, 1000 Series, 1500 Series, 2000 Series, and 3000 Series. The E-Crane is a truly revolutionary material handling machine as its main design feature is a parallelogram style boom configuration which allows the machine to be in near perfect balance throughout the duty cycle.

E-Cranes are unloading barges worldwide at up to 2,000tph (tonnes per hour), often in 'mission critical' applications where the E-Crane is the only means of unloading. Now E-Crane offers barge-haul equipment designed to increase the speed and economy of the overall unloading operation.

The following is a brief outline of a 'typical' barge-haul system for moving loaded coal or limestone barges. This design provides 'utility grade' unloading equipment and can move one or two loaded 35ft x 195ft jumbo barges with a capacity of 1,500 metric tonnes. Available travel distance is +/- 145m.

The vector-opposed barge-haul system consists of two opposed winches — one forward, one trailing (upstream/downstream) — that work in tandem with a continuous 7/8-inch diameter steel cable that includes two master links with a hitch rope for tying to the material barge. The barge can be secured against drifting away from the river cell or dock face by

a continuous barge-breasting cable. This is the fastest and safest way to handle and offload a barge.

The two winches are mounted to the dock-cell tops with high-strength epoxy grout and 20 anchors. Each winch has a rated capacity of 14,000 lb on a single layer (21,000 lb starting) at a variable rope speed of 0–30 feet per minute. Winch motors are 15hp, 0–1,800rpm, 460V, three-phase, 60Hz, inverter duty, totally enclosed blower cooled with dust and water-tight motor-mounted disc brake, and 1,024ppr encoder for motor speed feedback.

The barge-haul system can be operated from inside the E-Crane operator's cab or from a remote location by ground personnel while an empty barge is substituted for a full barge.



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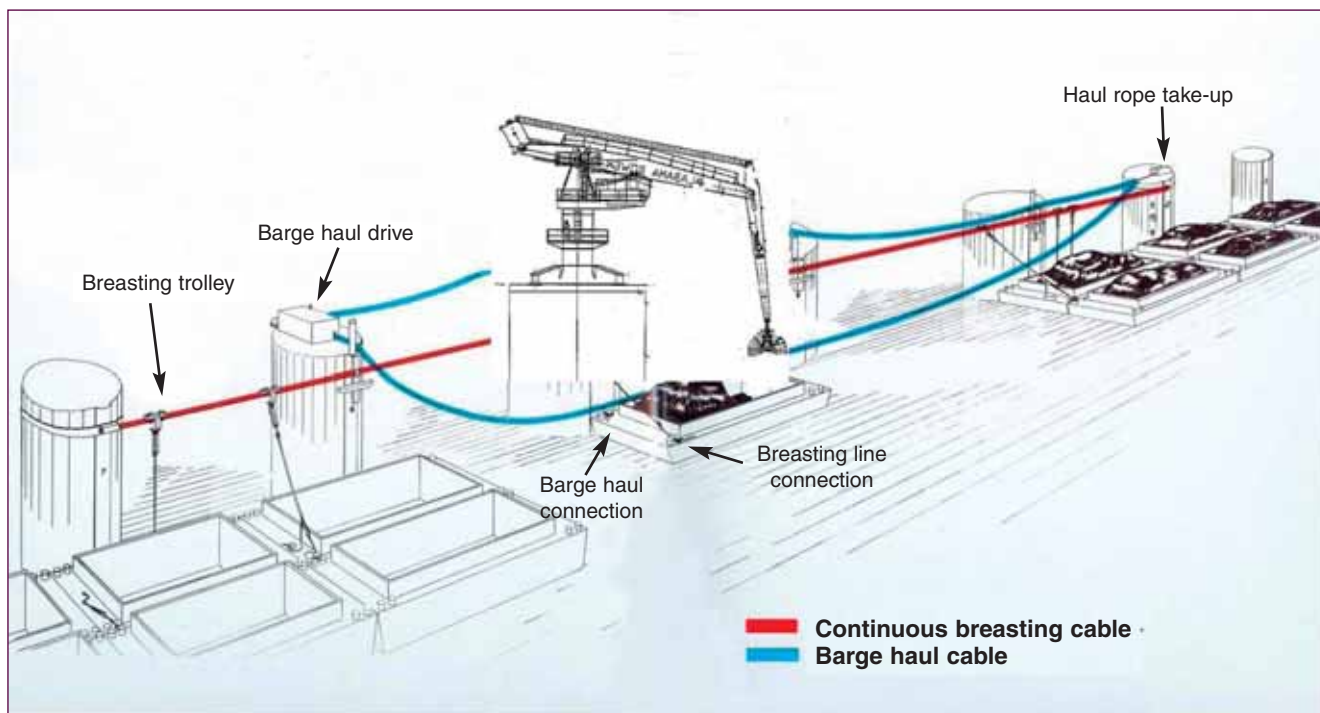
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www.flsmidth.com





Local controls are mounted at each winch. The push button station inside the E-Crane cab is located for easy, convenient use; and a foot switch provides for hands-free barge hauling while the operator is simultaneously unloading the barges.

The control system uses dual vector drives, commanded by a PLC, to electrically co-ordinate both winches for maximum control over the barges. The operator's station allows for independent or tandem operation of the winches. In tandem mode, the forward winch pulls rope in while the trailing winch pays rope out under controlled back tension. Winch motor speed is continually monitored by the PLC to eliminate freewheeling or loss of payout control. Acceleration and deceleration ramps with brake delays are programmed into the system to prevent shock loading of equipment.

The system also includes a NEMA 4 vector electrical control enclosure with all appropriate auxiliary equipment for the barge-haul drive control system, transformer, distribution panel and other electrical equipment.

Each E-Crane (equilibrium crane) and auxiliary equipment/systems are custom engineered for the customer's specific application type, production goals and profit potentials. Thus the barge-haul system specifics may vary from application to application, depending also on peculiarities such as the river current speed, water level fluctuations, convoy sizes, space available for unloading equipment, and any harsh environmental conditions.

If the infrastructure, environmental issues or other circumstances do not favour a permanent installation, the complete material and barge handling package can be mounted on a floating material handling platform. In this case, E-Crane employs an experienced naval architect and qualified barge builders to assure compliance with all regulations and to assure a high quality, cost efficient offloading solution.

The floating material handling platform is the ideal solution where there is little or no existing infrastructure; when environmental issues prohibit the construction of a permanent infrastructure; or if the flexibility of a floating, moveable system is desired.

E-Cranes excel and have unprecedented life in applications requiring heavy-duty production cycles and difficult working conditions. They are available in several models with outreach up to 150ft (45m) and duty cycle capacity up to 50 tonnes. Field service technicians and parts/service support for E-Crane equipment is available 24/7 from E-Crane locations in the USA and Europe.

E-Crane's unique parallelogram design features a hydraulic pivoting, mechanically linked counterweight that keeps the E-Crane in near-perfect balance at all times. This reduces horsepower consumption and power requirements up to 50%. E-Cranes are available on pedestal, rail, crawler or barge mounts.



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Versatile SMB International offers systems to load bags and bulk into barges

Whether you need to rebuild existing loading systems for bulk materials or bags, or find a combined system for bags and bulk material, the project managers and engineers at SMB International GmbH can offer a range of solutions.

Shiploading can be a very expensive business, especially in countries and regions that have plenty of rivers and other waterways, like Bangladesh, Russia or Vietnam. Variations in water levels on rivers exacerbate this issue. Labour costs for bag loading are very high; the process is very labour-intensive. This can result in extremely high demurrage costs.

SMB from northern Germany designs and builds automatic barge loading systems and shiploading systems for bags, for situations just like these. SMB's systems use a loading arm with that can reach the entire hatch of the ship by slewing and luffing of the boom. A telescopic spiral chute extends the loading distance from the boom to the bottom of the ship. The telescopic loading head can be rotated in order to reach the entire freight area.

Numerous rivers make transportation advantageous, since wide routes can be covered by ship and it is not necessary to reload the cargo onto other vehicles. Furthermore, several loading-spots exist along the river.

SMB's systems are used primarily for the transport of fertilizers, sulphur, rice, sugar and cement, as well as bulk materials and bags in general. Even heavy goods — for example



clinkers — are transported.

SMB specializes in supplying combined loading systems for bags and bulk materials. It uses a combination of conveying systems, making it possible for both loading types to work independently of each other.

SAVING MONEY BY MODERNIZING EXISTING SHIPLADERS

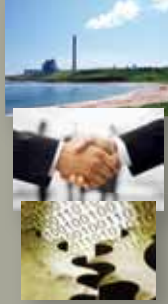
Modern technology guarantees efficient operation of the systems, as well as fast loading and unloading. SMB has extensive experience in shiploading systems, as well as the redesign and modernization of existing systems by equipping them with modern controls. This enables remote system diagnostics and maintenance via the internet. It is also possible to achieve higher performances and capacities.

SMB's main focus is always to guarantee optimized operations using the most modern procedures and well-thought-out systems.

When rebuilding systems, SMB's engineers use existing steel-frameworks and install the latest and most modern technology into them. This procedure is particularly profitable as the main structure of the system will remain. According to the type of redesign, it can be carried out with only six weeks of system downtime. There are considerable advantages over investing in a whole new system, not least financial considerations.

The German company can carry out the entire modernization, all the way from conception and including project management and drawings, as well as all technical work. SMB operates worldwide.





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- Clean environment and working safety in one product



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Loading chutes – for flexible and

For many years, loading chutes have been used for loading dry bulk products into different vessels, such as tanker trucks, open trucks, wagons, ships, barges, etc. The strong point of the loading chute has always been the flexibility and the versatility in respect of being able to load all kinds of dry bulk materials, under virtually all thinkable and unthinkable conditions, and in nearly all known applications, i.e. in ports, in refineries, in cement and power plants, in grain terminals, etc.

For 25 years, Cimbría has produced and installed more than 12,000 loading chutes world wide, branded Moduflex, where the chutes are being used for loading anything from cobber concentrate over fly ash and cement to fertilizer, grain and food stuff. The chutes are used for loading ships and barges, open bag trucks and dumper trucks, stockpiling, tanker trucks and boats as well as train wagons. In many cases, the chutes are loading not only one specific product, but many products through the same chutes — for instance in port terminals. Other systems on the market only offers loading in open back trucks, and only with very specific and homogenous products.

This variety can only be supplied due to the versatility of the loading chute, based on the general construction and built-up. The Moduflex loading chutes are designed with a unique modular construction, which means that the loading chute can be adapted to suit 99% of all known applications within the dry bulk industry, although the parts being used are standard components. This ensures that the operators know that the loading chutes are based on well-founded, known technology that provides the user with quick access to standard spare parts, if a breakdown occurs, so down times are kept to a minimum. On top of this, the Moduflex loading chutes can cater for capacities up 4,000tph (tonnes per hour) in the standard configuration, and a drop of more than 25 metres. This flexibility can only be achieved using a loading chute, and is not possible in alternative loading systems.

Due to the fact that Cimbría manufactures several hundreds of Moduflex loading chutes every year, the price becomes very attractive, considering the price-quality relationship, and very low life cycle cost for the user. Installation cost of the loading chutes is negligible, as it only requires mounting the chute to the flange of the inlet with a number of bolts and connecting it to power (and pressurized air if the chute is with integral filter).

The Moduflex loading chutes can of course be used in light duty industries for loading grain, bran, feed stuff, etc., but also in the heavy duty industries for loading cement, limestone, fly ash, clinker, minerals, etc. Again this versatility is founded in the ability to construct the various parts of the chute in e.g. high density polyamides, abrasive resistant steel, stainless steel, liners in Vautid and/or ceramic compound materials. Furthermore, loading of products with larger particle sizes or very low densities and little structure are completely impossible to load, except through a loading chute. No other loading system can offer neither the same degree of adaption to specific needs of the users, nor the same safety and durability in one piece of equipment.

The proof of this point becomes even more evident when looking at toxic products, or products that need to be loaded in a closed system (food and chemicals), as this again is only possible using a loading chute. The demands of food safety and cleanliness within the chemical industry makes it impossible to load products as for instance sugar with any 'open' system, that exists on the market. The risk of contamination loading any

versatile bulk material loading into barges, trains, ships and trucks

product for human consumption and almost any chemical base materials in non-sealed systems is unacceptable and in some case dangerous to health. GMO products are another example of material that needs to be loaded within totally concealed systems. In order to avoid such contamination, a closed system with a closing device at the outlet that ensures an active sealing during loading and plugging when the chute is not in use, is required. The avoidance can be achieved by using accessories, FlexClose and FlexSeal, which are available for the Moduflex loading chutes.

Looking at it from a different point of view, the overall purpose of the loading chute is to ensure a dust free loading of the above-mentioned products. The environmental authorities in more and more countries are imposing strict legislation on environmental protection, and enforces these laws vigorously. This means that the 'duties' of loading involves 1) protecting the natural environment [air, water, soil], 2) protecting the surrounding ['neighbours'] environment and 3) the working environment [health and safety]. There is no argument against the fact that only loading chutes are able to fulfil all these tasks, and truly provide a dust free situation. Although other systems claim to do so, dust and particles will inevitable escape in the space between the outlet of the material provider (a silo or similar) and the inlet of the chute, e.g. a hopper, a hose or similar. Looking at the products mentioned above, they all have the common characteristic, that they create dust during loading. This dust needs to be confined and dealt with in a safe and efficient way. This objective can only be secured in a well aspirated loading chute, which is either connected to a separate filter or is provided with an integral filter.

The third aspect of modern loading is the varied



environments where loading takes place. In some case the loading does take place inside, in nice enclosed surroundings, but the vast majority of loadings are done outside, where wind, sun and humidity affect the material being loaded and the loading equipment. As an example, if loading is done through a hopper system, the wind will seriously affect the free falling product, creating dust problems, and if loading is done using a simple hose or bag, the humidity in the air will affect the product and cause disruptions in the loading procedure.

The conclusion can therefore only be, that loading chutes are, for now and for the years to come, the only alternative within loading systems where you combine flexibility and versatility with efficient loading, and at the same time adhere to the environmental legislation and work safety, that is a must for companies today dealing in loading and transportation of dry bulk commodities. Alternative systems have such a limited usage, that they can only be justified in very few applications, where the conditions and the product are so homogenous, that they will

work to the satisfaction of the users. Cimbria Moduflex has built-up a vast experience — due to the huge installed base — within loading of all kinds of dry bulk materials. This means that whenever it is faced with ever more stringent environmental legislation and/or new demands from companies, it can draw from this experience and very quickly adapt to fulfil these demands.

The Moduflex loading chutes are designed and sold by Cimbria Bulk Equipment A/S, a part of the Cimbria Group of Companies. CIMBRIA was established in 1947 and is today an international organization with 600 employees in 15 companies throughout the world. Cimbria offers equipment and processing plants for the grain and seed industry and transport and conveying equipment for bulk handling.



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Liebherr grab cranes for major offshore facilities



In some seaborne supply chains the rapid rise in export possibilities has not been matched by an equally fast expansion in port infrastructure. Today, much emphasis is laid on reliable offshore floating terminals, transshippers or geared tonnage. These are the ideal solution when port infrastructure does not allow for the direct loading of large vessels. This may be due to limitations in the port itself or draught restrictions in access waters or even impositions of local authorities.

To this end, Liebherr has further developed its range of special four-rope grab cranes which display their true ability in continuous operation, not only on land but also in open seas. The range includes slewing CBG type cranes as well as double girder MPG cranes. Both are specially designed for heavy duty continuous operation and provide excellent turnover rates. Two major transshipping projects involving Liebherr's heavy duty marine cranes have recently been realized.

One of the world's leading logistic companies, Coeclerici, has selected ten units of Liebherr heavy duty four-rope grab cranes type CBG 350 for installation on its two new tailor-made Supramax offshore transshipping units. These vessels will operate off the shores of Mozambique on behalf of the South American mining giant Vale and the handling of over 11 million tonnes of coal per year is anticipated. The first vessel has been put into operation and the second, just delivered, will be

operating within the first half of 2012.

Depending on tidal depths the average load for the transshipping will be 44,000 tonnes of coal, which will then be transhipped to open waters, where it will be transferred to ocean-going vessels of up to 180,000dwt using the five Liebherr four-rope grab cranes (one for each hold). The transshipper will be loaded using onshore conveyer belts. During this time the Liebherr cranes are parked towards the aft of the vessel. A specially developed interlock device is installed in the slewing column of each crane and the jib is rested on a console positioned to the side of the pedestal of the next crane.

This locking system allows for the jib to be parked (or locked) without having to dismount the four-rope grab and so saves valuable time when putting the cranes into operation and/or when storing the cranes for the short journey between port and ocean going vessel and return.

The Liebherr CBG 350 is a dedicated heavy duty high-performance four-rope grab crane. Designed for high speed continuous operation, these CBG cranes incorporate specific features for heavy duty conditions and operation in open water, including compact slewing column design, specially designed heavy duty hoisting winches, heel trim alarm systems and emergency operation functions. Additionally, an extended cabin ensures optimum visibility of the hold for the operator leading



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ORTS GmbH

to safer and more efficient operation.

Safe and precise crane operation is further supported with Liebherr's own Litronic® crane control and management system. Litronic® facilitates smooth and high speed operation as well as preventative maintenance. Amongst other information, the load indication and limitation as well as the load recordings are displayed. The machine data is recorded, including alarms and failures, and service and inspection intervals can be determined. Optionally, modem access is available for remote fault-finding through skilled Liebherr engineers. The software is available in several languages.

The latest major transshipping project for Liebherr involves the largest transshipping facility to date which has just been delivered by a Chinese shipyard, also for the South American



- ❖ faster crane cycle thanks to double geared configuration and faster hoisting/lowering speeds;
- ❖ independent drive systems ensuring continuous operation with full load, should a single drive fail operation can continue at reduced speed and so reduce downtime;

- ❖ less wear and therefore longer lifetime of ropes due to special positioning of the hoisting winch; and

- ❖ Liebherr's own Litronic Robot Control (LRC) and Dynamic Anti-Collision System (DACS®).

LRC and DACS® have been developed in-house by Liebherr in order to increase safety and enhance performance. The robot control eases operation between two pre-defined fixed points. DACS® prevents collision between the cranes and/or fixed obstacles as each crane knows and compares its position with the other crane or any defined obstacle. This allows operation of two cranes on the same hold or close to any obstacle and therefore offers highest flexibility and safety. Dynamic anti-collision does not mean only sector limitation, but dynamic position monitoring of the cranes.



mining company Vale. This facility is handling iron ore from Valemax vessels in Subic Bay in the Philippines. Design and advisory services were provided by Logmarin Advisors of Genoa, Italy, and the 285,000 tonnes buffer storage floating terminal — the only one of its kind — is equipped with five Liebherr MPG cranes and a sophisticated conveyor belt/loading system designed and built by Bedeschi. The cargo handling facility is certified by RINA.

The five Liebherr MPG 40 tonnes high-speed, heavy duty, double girder jib cranes are side-mounted on the Vale vessel and have an outreach of no less than 42 metres. Safety, performance and low maintenance requirements are of utmost importance and the design of the MPG cranes considers all of these points:

- ❖ reduced crane height leading to low centre of gravity;
- ❖ no luffing ropes/mechanism meaning less maintenance and better stability of the crane in offshore operations;
- ❖ driver's cabin is positioned on the underside of the grab rotating arms allowing unrestricted views of the hold on both vessels;
- ❖ significant reduction in grab swing during slewing;

Therefore no limitations in the crane working area.

With the design focus on maximum safety and operating capacities as well as minimum maintenance and life-cycle costs the Liebherr cranes are ideally suited to round-the-clock working cycles.



Pit-to-port infrastructure



Ken Devencorn of Aurecon discusses the logistics chain as an intrinsic element of the mining process.

THE MARKET PERSPECTIVE

Writing in *International Longwall News* on Friday, 3 February 2012 Hogsback reflected that:

- ❖ the real problem facing resource development in Australia has less to do with digging the product out of the ground, than it does with getting the product to port, onto a boat, and to the customer;
- ❖ the many billions of dollars touted by mining entrepreneurs in resource and mine development is often overshadowed by the development cost of the heavy haul railway systems, deepwater port, stockyards, bulk material handling equipment, and fleets to turn the resource into money; and
- ❖ the true cost of the project, including access to shared and new rail and port developments, can be astronomical.

The development of robust, economical transport infrastructure is a key driver to sovereign economic growth.

Notwithstanding the value of undeveloped mineral resources, they are of little value unless brought to market. In a global context, Australia well understands the importance of such infrastructure making us internationally competitive and well placed to capitalize on what many have described as the greatest ever resources boom.

We well understand that mining the resource is only part of

the solution — the balance is putting it to market at a competitive landed cost. Australia has solved many of the challenges developing resource nations are now facing.

RECENT DEVELOPMENTS

Recent developments in remote monitoring and operations have spawned a surge in automation development in the mining industry. 'Remote Working Strategies' is the phrase coined to describe the means by which modern mining — as contemplated by the likes of BHP and Rio Tinto — is now able to operate and control pits from hundreds of kilometres away.

These initiatives are extending beyond the mine gate with significant commitment to driverless trains and other initiatives aimed at increased site safety by moving people out of harm's way and replacing them with machinery.

With automation of operations comes the opportunity to track the consignment along the logistics chain — and so is born the true pit to port whole of logistics channel.

SOMEONE ELSE'S PROBLEM

Mining of just a few decades ago characterized rail and port logistics chains as someone else's problem — a problem simply solved by someone else. Miners mine and someone else runs the trains down to the port.

This is, of course, an over-generalization in that Australia's larger miners very early understood the true impact of these networks to the viability and competitiveness of their product. They understood and sought to maximize the value of



integration of mine, rail, materials handling, and port across the entire logistics chain. Those decades ago, the only true way to have such absolute integration was to own all of the elements — your mine, loading your trains, that load into your port and then (sometimes) even onto your ships.

For the smaller miners this was not a viable option — so it was very much a case of placing your trust in someone else's system, to the vagaries of someone else's operations.

Remote monitoring has changed all of that and now miners can track their product from pit right through to the ship's hatch — a true quality system; something which manufacturers and primary producers have long since been able to do. From a mine perspective, this sort of operational monitoring can be a very effective means of getting the most from rail capacity, reducing rail costs, and improving the competitiveness of rail relative to other modes of transportation.

ALL THE EASY PROJECTS ARE DONE

It is a given that all the easy projects are done — we are now seeing projects being developed in more remote, challenging, and marginal reserves. Hence, the logistics network — even those owned or controlled by someone else — is of critical importance to the resource developer.

It is no longer acceptable to simply leave the logistics chain to someone else. There is now an intrinsic link between the viability of the resource and the path to market.

THE ICC (INTEGRATED COORDINATED CONTROL CENTRE)

Trains are getting longer, and heavier — and smarter.

Trends in rail signalling, remote sensing, and in-motion sensing provides a wealth of information such that the cargo can be

tracked across the whole of supply chain — from mine load-out to ship's hatch and beyond.

We are seeing this at Integrated Co-Ordinated Control Centres such as the ILC (Integrated Logistics Centre, Mackay, Queensland) and HVCCC (the Hunter Valley Coal Chain Coordinator, Newcastle, NSW).

Some of the most significant current trends in mining are in improving the operational efficiency of the logistics chain. This is where all of the supply chain players can benefit and play a part.

Technology has improved — longer, heavier trains made up of more powerful locomotives and higher-capacity wagons, so too has operations planning expertise. We are now seeing the benefit of integrated and coordinated operations. This means information sharing, coordinated problem solving, and opportunistic operations to drive supply chain throughput.

THE LOGISTICS CHAIN AS PART OF THE MINING PROCESS

Put simply, the movement of the product by heavy haul rail, down to a port where it is stacked and prepared for export, is an intrinsic part of the mining process in that it can often mean the difference between viability and failure of a prospective and operating mine.

From a historical perspective, the growth of bulk resource export infrastructure has been a major contributor to the growth in export bulk materials in countries such as Australia, South Africa and Brazil, and thus their sovereign wealth. As technical capabilities improved, railways were able to run longer, heavier trains made up of more powerful locomotives and higher-capacity wagons. Ports received and loaded ever bigger ships, and all the bulk materials handling equipment was likewise increased and improved to feed the supply chain. The

opportunity for reducing operating costs and increasing capacity has provided a powerful incentive to push the limits of engineering capabilities.

We are now seeing longer, heavier, faster trains on smarter railways — where the system can be run as an integrated whole. Just as JIT (Just in Time) was the catch-phrase of the 1980s, XOT (Exactly on Time) is fast becoming the benchmark of heavy haul rail operations.

INTEGRATED PIT TO PORT LOGISTICS CHAINS

The challenge has always been to improve the efficiency of the entire export/import network. Step change improvements in just one element at the expense of inefficiency in others often yields no benefit.

Our experience shows that greater operational integration between the logistics chain elements, by simple means such as improved communications and coordination of operations, maintenance, and throughput, can show remarkable improvements for very low investment.

The traditional response to a problem has been more infrastructure. A more effective approach would be to take a whole of supply chain perspective with a view to improving each element of the chain to its optimal efficiency before resorting to the expense of more infrastructure. This approach would start

with the clear identification of the intrinsic interdependencies of the various elements and how each impact upon each other to diminish the overall effectiveness of the chain as a whole.

Many firms leap to an infrastructure-intensive solution, often working on an incentive of payment for building something. Constantly seeking to innovate, Aurecon's focus is more on improving operational efficiency in a master plan approach which contemplates expansion steps to deliver the nominated target tonnage at the lowest cost. We are committed to working closely with our clients to deliver out of the box thinking on some of the world's most complex and

important development projects.

Technology is making the logistics chain the competitive battlefield for smart resource exporters – and many are looking at what their competitors have done, are doing, and are learning from their experience.

DCi

Ken Devencorn is Aurecon's rail leader and has a long history in rail operations planning, project development, project delivery, and railway investment. Ken has considerable experience in the development and operational, improvement of railways and logistics supply chains across Australia, Asia, and South Africa.



Handling bauxite & alumina



VIGAN expertise in alumina unloading

Up-to-date handling technologies for alumina are a major concern in many ports, not only to achieve low operational costs for the vessel unloading, but also for the protection of the environment.

Alumina is a white powder with a density generally between 0.85 to 1.05, very free flowing and quite abrasive: its particle characteristics make its handling rather complex in order to achieve optimum performances, in terms of quantity that can be conveyed, and the amount of dust and spillage must also be taken into consideration during unloading operations.

THE PROBLEM WITH THE TRADITIONAL UNLOADING SYSTEM SUCH AS GRABS

Most frequently, alumina is unloaded from sea vessels via a special conveying system to the storage facilities or into a hopper from which it is loaded into trucks (special or normal bulk ones). However, it can also be directly packed on the quays, into one- or two-tonne big bags for instance. These bags are then loaded onto trucks and/or railcars and transported to the smelting plants. Eventually, they are stored in stockpiles nearby the quays before being transported onwards.

The traditional unloading method is done by grabs and simple hoppers on the quay.

The hoppers can be integrated with weighing scales and filling equipment for large-size bags. Usually one grab crane is able to feed up two of these hoppers, each one with one or two weighing-filling lines.

This traditional method is causing two major concerns:

- ❖ firstly, as ports are frequently situated very close to urban areas, pollution is a serious problem. It is quite difficult to avoid when using the grabs, as any moderate breeze will blow away the alumina. This means that contaminated air and surrounding areas need to be continuously cleaned.
- ❖ the second major concern is the amount of spillage. According to the circumstances, it can reach 0.2% to 0.5% of such valuable product as alumina.

The use of hoppers with dust suppression devices like fans and air filters is feasible, but it can raise concerns about the investment cost and the operational flexibility of such complex port equipment.

VIGAN PNEUMATIC UNLOADERS

Pneumatic unloading is a very convenient way for conveying alumina. Its free-flowing characteristics make suctioning easy, and because the product is handled in a totally enclosed system, pollution and spillage are almost totally eliminated.



After the alumina is 'vacuumed' from the ship hold, it is separated from the conveying air thanks to a special large-size air filter before passing through a special designed valve (see picture on p105), down to a chain conveyor which transports the alumina to the top of the quay hopper, for instance. The end of this conveyor has one or two loading telescopic chute(s) with a cover to provide a seal around the alumina's entrance into the hopper (see picture above).

When entering into the receiving hopper, the alumina flows down gently in such a way that it will be easily conveyed downwards.

This means handling must be controlled very carefully from the negative to normal pressure area, in order to be continuously conveyed at a determined rate.

VIGAN technology achieves this control thanks to its engineering and equipment design to precisely monitor the amount of alumina in the receiving tank and its flow down to the conveyor through a specially designed valve.

This technology allows for the elimination of all the maintenance costs of an airlock for instance, which often suffers significant wear due to the abrasive nature of alumina.

Special sealing features ensure that no dust will escape out of the mechanical conveyor and the dust at transfer points is continuously collected thanks to a suction fan with self-cleaning filter.

Moreover, as they are self-propelled on rails or tyres, the unloaders are able to move easily along the ship and no additional equipment (such as hoppers) must be displaced to ensure quick and reliable unloading operations and eventual packing (see picture, left). VIGAN is also able to design and manufacture the entire bagging system.

In all equipment, a frequency converter — also called a speed variator, or an inverter — allows for the continuous and precise control of the suction pattern, as well as significant energy consumption savings.

With equipment for alumina unloading already commissioned in several countries such as Finland, France, Poland, China and Iran, VIGAN has gained a large amount of experience regarding this raw material handling in bulk. This cost-effective technology for alumina unloading is a most promising alternative for many ports and the alumina processing industry.



E-Cranes unloading 5mt of bauxite each year for Sherwin Alumina



E-Crane Worldwide is a modern, state-of-the-art engineering and heavy equipment construction company, based in Adegem, Belgium and with subsidiary companies for sales management, technical support and service in The Netherlands (E-Crane International Europe) and Ohio, USA (E-Crane International USA). E-Crane Worldwide develops turnkey material handling solutions with engineering services, equipment manufacturing, erection, operator/maintenance training and custom tailored ongoing service programmes for its clients.

The standard E-Crane product line consists of five series of balanced hydraulic cranes (E-Cranes): 700 Series, 1000 Series, 1500 Series, 2000 Series, and 3000 Series. The E-Crane is a truly revolutionary material handling machine as its main design feature is a parallelogram style boom configuration which allows the machine to be in near-perfect balance throughout the duty cycle. Compared to conventional cranes that require as much as 80% of their available energy just to move the boom, stick, and grab, the E-Crane makes gravity work for you instead of against

you, reducing horsepower requirements and power consumption by up to 50% and significantly reducing maintenance and operating costs.

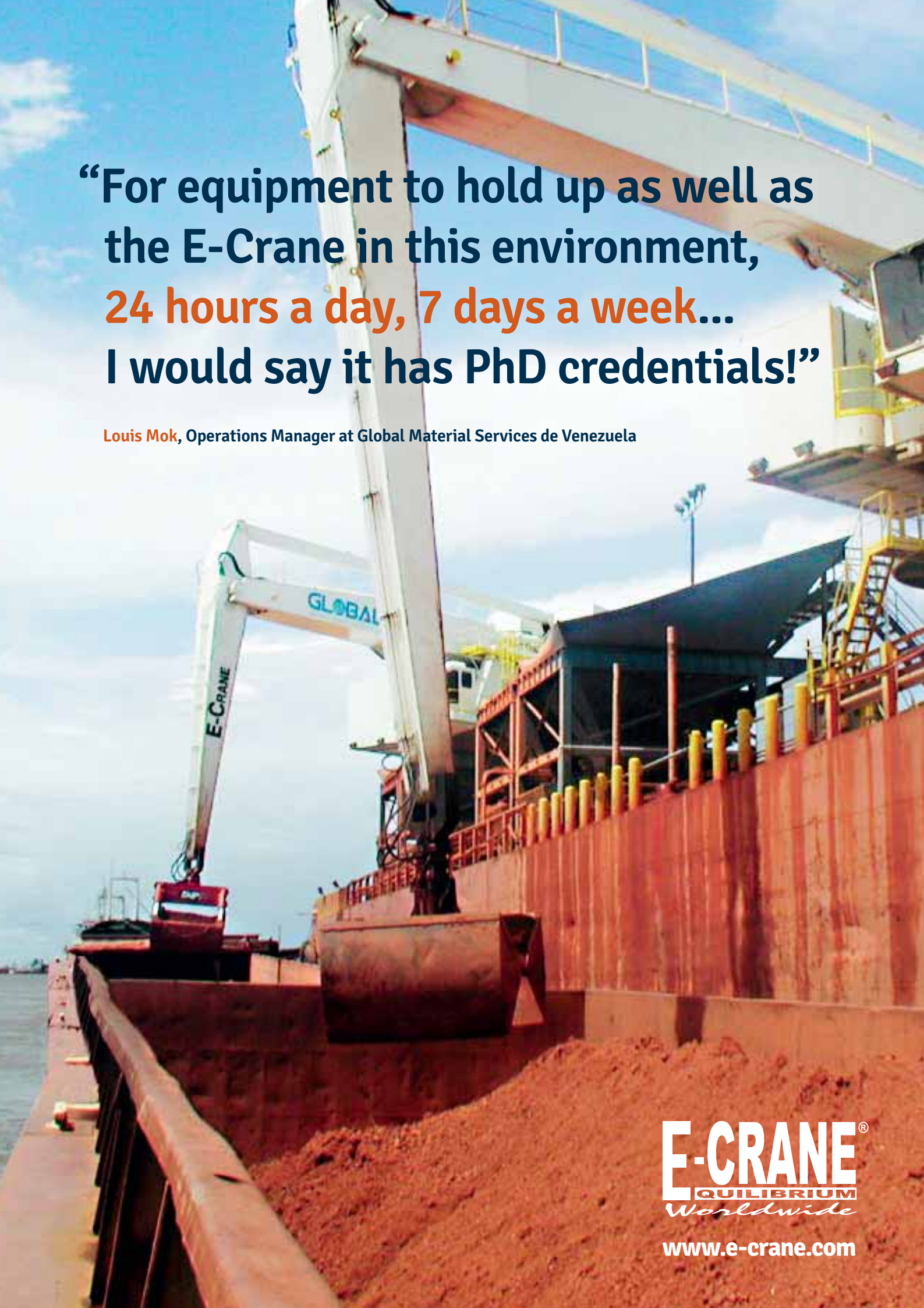


E-CRANE IN BAUXITE AND ALUMINA: THE SHERWIN ALUMINA COMPANY

Two 2000 Series E-Cranes were put into service at The Sherwin Alumina Company LLC in Gregory, Texas in 2010. Both E-Cranes are high gantry rail mounted and have an outreach of up to 147' and a duty cycle capacity of 27 US tonnes. Together, these cranes unload up to 5mt (million tonnes) of bauxite from Handymax and Panamax size ships annually.

Sherwin Alumina has been producing alumina (aluminium oxide) near Gregory Texas for more than 50 years. Before 2010, Sherwin Alumina was using continuous ship unloaders (CSUs) purchased in the 1980s. These were complicated machines that required lots of maintenance,

generated high amounts of dust, and could not unload ships on time. While these CSUs have an impressive mechanical design, the constant and high cost of maintenance, along with poor



**“For equipment to hold up as well as
the E-Crane in this environment,
24 hours a day, 7 days a week...
I would say it has PhD credentials!”**

Louis Mok, Operations Manager at Global Material Services de Venezuela

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reliability, was causing major unloading delays resulting in huge demurrage costs. Sherwin needed to find a replacement for these unloaders that would reliably unload the incoming bauxite ships.

Research showed E-Crane to be the perfect and reliable solution, and E-Crane was contacted in late 2008. After a detailed analysis of all possible ship unloading solutions, it was decided that two 2000 Series E-Cranes would be the solution. These E-Cranes were purchased fully assembled and ready for pick-up at an offsite location for less than half the cost of one CSU, new in the 1980s. The new E-Cranes were built in the

E-Crane
Worldwide
facility in
Adegem, Belgium
and were
transported to
Sherwin Alumina
exactly one year
after the initial
down payment.
A special heavy
lifting shipping
method was
used to minimize
downtime at the
customer's dock.

E-Crane also
provided one
week of
classroom
training for the
32 operators.
After a written
test, the
operators
experienced
'simulator'
training. After
passing a test in

the cab simulator, the operators moved on to 'in-the-seat' training, and E-Crane technicians were there monitoring the operators 24/7 for a further two weeks until management was satisfied that the operators could function on their own.

The E-Cranes immediately proved themselves to be reliable and cost-effective ship unloaders by minimizing demurrage costs due to lower maintenance, minimal downtime, and high reliability. Bally Kissoon, former port manager, often says, "I wish all our equipment was working like the E-Cranes!" Since the installation, both E-Cranes have been in 24/7 continuous operation at the docks with average cycle times of 60 seconds.



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Plastics - Rubber

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Industrial Equipment

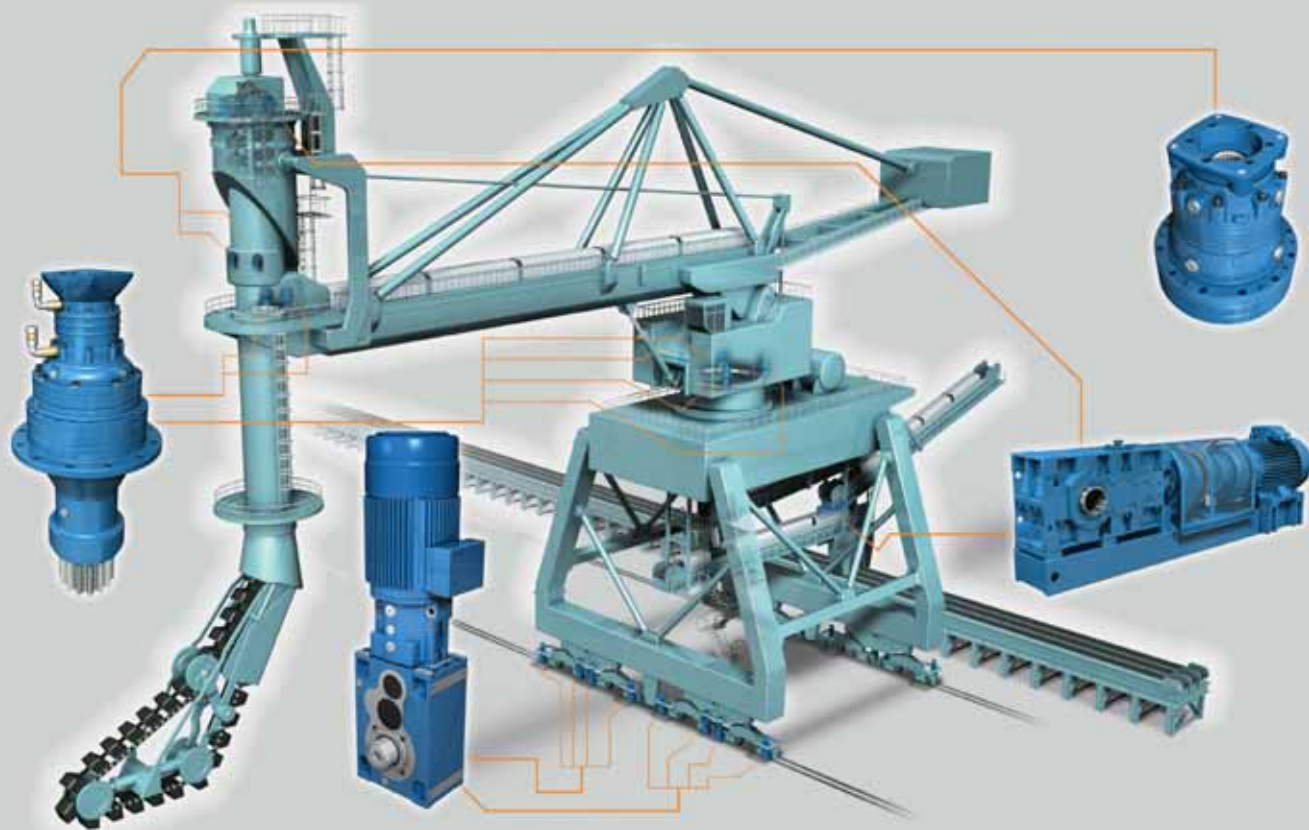


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Drives & control systems

precision bulk handling



Jay Venter

Torque about improving handling accuracy

Dry bulk handling is en route to becoming a precision science with a level of control previously undreamt of, thanks to 20 years of research and development into digital non-contact torque monitoring.

Dry bulk handling is following many other industrial processes that have been redeveloped from a 'black art' to a highly accurate and controlled procedure.

A generation ago much of industry was in the hands of time-served artisans who relied on their many years experience to tweak and tease operations to ensure a good result. Usually they were unable to explain why they made the decisions they did, but the results generally turned out okay!

While the idea of horny-handed sons of toil is all very romantic, it is hardly the stuff of modern industry where precision has to be the watchword — where margins and timetables are so tight that everything must be controlled to within very demanding tolerances.

Computers have of course been crucial to this advancement, and it is developing the ability for them to 'see' what is actually going on and constantly retune the process that is the heart of the matter.

"Technically we call this real time data collection," says Tony Ingham of Sensor Technology Ltd, one of the companies at the forefront of current developments. "It's the eyes and ears of the computerized system that constantly monitor what is going on. With that information flowing, the computer can then do its bit."

Real-time data is collected by having sensors monitoring the critical variables of an industrial process. This is fed straight to a computer which can perform a number of tasks related to the process. For instance, it can optimize one variable against another, convert raw data to useful information, or summate data for complex analysis.

However, some critical data can be hard to collect, and that is where Sensor Technology's research into torque monitoring

comes in. Nearly all machines are driven by a motor through a rotating shaft, and monitoring the torque, speed and power in this can provide masses of useful information.

“Consider a screw conveyor or auger,” explains Ingham. “If this is rotating empty, it requires little power from its drive shaft. If it is half full, it requires rather more, and if it is completely full it needs a lot more.”

“The same goes for speed - the faster, the more power consumed. And the denser the material being conveyed, the more power required.”

“So by constantly measuring the torque in the driveshaft, we can determine the volume and weight of material conveyed.”

This is vitally important for say filling a ship’s hold, and if this information is combined with more real time data, the process becomes highly controllable.

But measuring torque is far harder than you may first imagine. Because the shaft is rotating wires attached to it would wind up and snap, so a special way of monitoring it is required. The traditional solution is to use slip rings, but these are expensive, difficult to set up and far too delicate in use for most industrial applications.

Sensor Technology stumbled on a solution to this problem some years ago when working on a project for the automotive industry and has been steadily transferring the technology to other industries ever since. Ingham gives the basic principles: “Our technology, called TorqSense, effectively senses and measures the sound waves generated by a rotating shaft and converts them to a torque measurement. Additionally, we don’t

need physical contact with the SAW, just a radio frequency, RF, pickup close by”

TorqSense torque sensors actually use two tiny Surface Acoustic Wave devices or SAWs made of ceramic piezoelectric material containing frequency resonating combs. These are glued onto the drive shaft at 90° to one another. As the torque increases the combs expand or contract proportionally to the torque being applied. In effect the combs act similarly to strain gauges but measure changes in resonant frequency.

The adjacent RF pickup emits radio waves towards the SAWs, which are then reflected back. The change in frequency of the reflected waves identifies the current torque.

This arrangement means there is no need to supply power to the SAWs, so the sensor is non-contact and wireless.

“TorqSense measurement together with the digital outputs it offers is often the only practical way to measure torque and integrate it into an industrial environment. And once you are collecting torque data this way, you are well on the way to sophisticated real-time control of complex process.”

TorqSense is already in use in many liquid handling applications, in mixers, in the nuclear industry, for testing aerospace components, running drug trials. It is applicable to all sizes, from dispensing active pharmaceutical ingredients, through stirring industrial quantities of cook-chilled curries, to modelling storm and flood water flows.

“Dry bulk handling is traditionally thought to be harder to monitor,” says Ingham. “But using TorqSense puts it on exactly the same footing as many well-established processes.”

iSAM AG – integrated automation for bulk material handling



iSAM AG
Gesellschaft
für angewandte
Kybernetik



- driverless stacker reclaimers
- driverless ship unloaders
- fully automatic train loading stations
- material transport and flow control systems
- SCADA systems for central control rooms
- storage management and logistic systems

we deliver solutions ...



Vale utilizes iSAM's 3D stockyard management and automation system

Reclaimer operating automatically on an irregular stockpile.



Vale has decided to implement iSAM's state-of-the-art 3-D stockyard management and automation system at its new VMMP iron ore hub in Malaysia.

The system will control the entire stockyard with initially one stacker, one reclaimer and three combined stacker/reclaimer using 3-D laser scanners for pile profiling and RTK GPS for positioning.

ABB will supply the overall automation system for the entire port and stockyard. The iSAM 3D automation will be seamlessly integrated into the ABB solution thanks to an already existing cooperation agreement between the two companies.

iSAM has been founded in 1983 by Dr. Jürgen Hellmich in Mülheim an der Ruhr, Germany and has focused on advanced automation systems from the beginning. Today the iSAM Group has nearly 100 employees in four global offices in North America, Asia-Pacific and Europe servicing customers in more

than 20 countries.

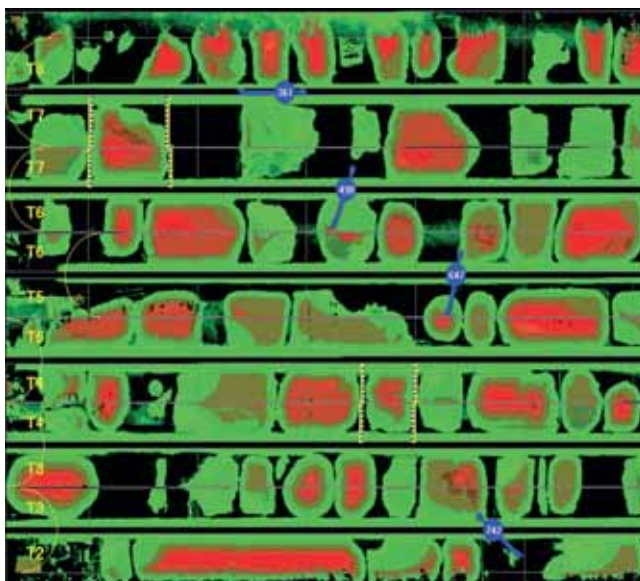
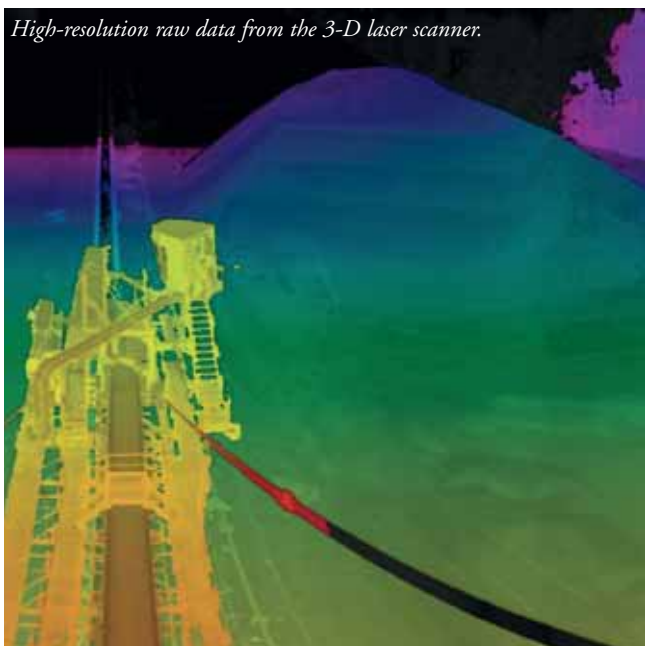
iSAM holds several patents in the bulk handling industry and was the first company using GPS and 3-D vision technology for bulk handling automation. With an installed base of more than 40 fully automated machines, including 25 stacker/reclaimers and the world's first operator-less grab ship unloader, the company has broad experience handling nearly all grades of coal, iron ore and similar bulk materials.

Apart from Vale and several smaller port operators major international ports like

- ❖ Hansaport, Hamburg, Germany;
- ❖ EMO, Rotterdam, the Netherlands;
- ❖ ILVA, Taranto, Italy
- ❖ Westshore, Vancouver, Canada
- ❖ Fortescue, Port Hedland, Australia

have already decided to implement iSAM's technology.

High-resolution raw data from the 3-D laser scanner.

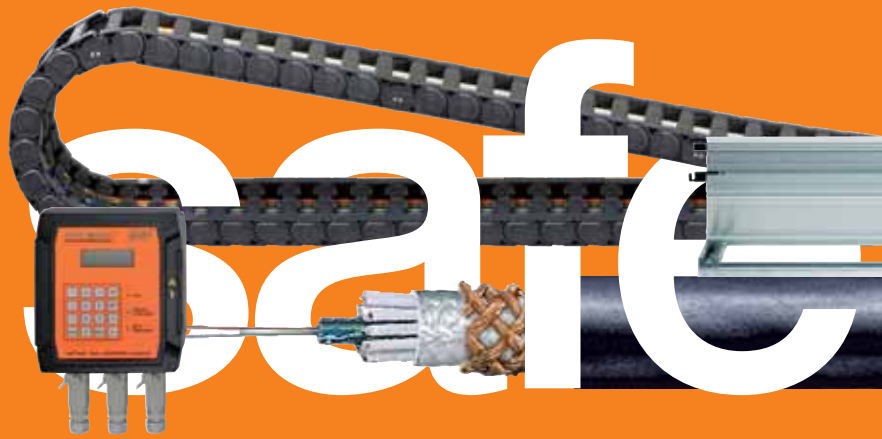


Bird's-eye real-time view on the stockyard generated from laser scan and GPS data.

Low friction for long travels: new roller energy chains offer cost-effective possibilities to achieve even more solutions for an economic energy supply by igus



Roller energy chains of the series 3500R for long travels: safe, silent, durable and abrasion-resistant.



safe power...safe data...safe operation...save money



Lightweight, durable and energy-efficient: low-friction P4 roller energy chain systems* for 57% less drive energy consumption + Easy to install and corrosion-free modular aluminium-guide troughs for less system weight + High-speed data transmission with rugged chainflex® fibre optic cables + Easy PPDS 2.0 condition monitoring system for push-pull forces to prevent downtime.

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 France +33-1-49840404
 Great-Britain +44-1604-677240

igus® GmbH
 Spicher Str. 1a
 D-51147 Cologne

India +91-80-39127800
 Italy +39-039-5906-1
 Japan +81-3-58192030
 Malaysia +603-7880 5475
 Mexico +52-728-284-31 85
 Netherlands +31-346-353932
 Poland +48-22-8635770
 Portugal +351-22-6109000

phone +49-2203-9649-0
 fax +49-2203-9649-222
 cranes@igus.com

Singapore +65-64871411
 South Africa +27-11-312-1848
 South Korea +82-32-8212911
 Spain +34-936-473 950
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Following the success of the P4 roller energy chain, igus has introduced two new roller energy chains as the ideal solution for long travels. They are part of the constantly growing modular system for all types of movement. If the travel is too long for a purely sliding application, and a robust P4 roller energy chain is over-dimensioned due to its filling weight and its dynamic, igus can now offer two alternative energy chains based on the proven e-chain families 'E4.1' and 'E2/000'.

EFFICIENT ENERGY SUPPLY TOOLBOX FOR ANY MOVEMENT

The 'E4.1' energy chain range combines the best design features of various original e-chain series — outer and inner brackets for flexibility and straightforward installation, an interlocking 'tongue and groove' for stability and a damping stop system for smooth running. In addition, the 'E4.1' has 30% larger gliding surfaces than its predecessor — for long travel applications. These are completely integrated, so cannot be lost; loud additional gliding shoes are not required.

Now even the longest travels can be achieved with energy efficiency using the new 'E4.1' roller e-chain. The system runs very smoothly due to an equal pitch of the roller and standard chain links. Therefore, the rollers significantly contribute to a silent operation. Built-in 'ramps' provide for a more silent run of the rollers when they run over each other. As the friction between the upper run and the lower run is reduced significantly by the roller links, drive power reductions up to 75% are possible. Maximum speeds up to 5m/s can be reached. The immense line of accessories from the 'E4.1' modular kit and the cable-friendly interior separator programme guarantee for tailor-made and long life



igus GmbH, Cologne Long-life roller energy chain for travels longer than 50 m – reduces drive power consumption up to 75%.

solutions. Many application areas that do not require the heavy duty version from the P4 series can be made accessible with the new roller chain. Examples are automation and material handling, cranes, coal conveyors and in general travels longer than 50m or applications that require an especially long service life.

ALL-ROUNDER IN A LARGE MODULAR RANGE

According to igus, the 'E2/000' chain series is an all-rounder from the modular range encompassing almost 80,000 parts. It combines sturdiness with easy and versatile installation, high stability with quiet running, long cable service life with a multitude of attachment possibilities. The chains can be opened very quickly through hinged crossbars that can be opened both to the left and right and on both the inner and outer radii, and can be swivelled through 180°. All you need to open them is a screwdriver or the recently developed chain opener, which radically reduces installation time. They are easily closed by hand. The key features of the crossbars include their very high

holding force of up to 700N depending on the series, thus guaranteeing safe and secure operation.

The new light weight roller chain series 3500R is based on the proven two-piece energy chain family 'E2/000'. With this innovation, travels with low additional loads can be cost-effectively achieved. The known advantages of the design — safe, silent, durable and abrasion-resistant — are maintained. The energy chain, which can be opened from the external radius, is particularly variable due to its modular interior separation. Easy to install, it is particularly suitable for horizontal applications. The modular design of the roller chain link allows the use of all widths of the standard series 3500.

The roller system with low friction does not only save drive energy, it is especially energy-efficient compared to sliding solutions. Travels up to 150m at speeds up to 4m/s can be reached more economically. All energy chains of the series 3500R are part of the comprehensive modular system, they are available at short notice and when required completely ready-to install.

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NBE acquires General Processing Systems

On 15 June this year, National Bulk Equipment, Inc. (NBE) announced that it has completed the acquisition of General Processing Systems, Inc., manufacturer of ProductSaver® packaged material reclamation systems.

The acquisition of General Processing Systems, Inc., located just west of Chicago, IL, brings to NBE three new product lines that will each serve as complementary product offerings to the full line of NBE bulk material handling systems. "ProductSaver packaged material reclamation enables processing and packaging operations to recover not only packaging material but also the dry or wet contents from packages that may be off-spec, mislabelled, or for other reasons, unsalable," said Todd Reed, president of NBE.

"The ProductSaver product lines provide two primary advantages for processing and packaging operations.

ProductSaver systems reduce process material loss levels, beyond what even inline systems can do. And, ProductSaver systems are recognized for making significant contributions to sustainability scoring initiatives," Todd added.

"We are very pleased with the way the NBE existing customer base has quickly recognized the total process contribution ProductSaver systems can make to their operation," stated Dave Denhof, general manager/EVP of NBE. "Jeff Swiatlo, former president of General Processing Systems, is now directing the sales activity for the ProductSaver line, and his extensive applications knowledge and market experience have already identified many new customer and market opportunities for NBE. NBE will continue to move forward with a very tactical acquisitions strategy. ProductSaver is a great addition to the capabilities and resources of NBE," Dave said.

New VP of Sales for American Starlinger-Sahm

As of March 1, 2012, Alfred Rak joined American Starlinger-Sahm, Inc., a 100 % subsidiary of Starlinger & Co GmbH of Austria, as Vice President of Sales.

In his new position, Alfred Rak oversees the entire Starlinger product portfolio for the US and Canadian market. He looks back on almost 30 years of experience in international sales and trade, his previous position having been President and CEO of KIEFEL Technologies, Inc., sales and service organization for European made machinery for KIEFEL and Bruckner, and member of Bruckner Group.

With a decade of experience on the North American Market, Alfred Rak sees growing potential especially in the field of plastics recycling: "I am sure that the world of plastic manufacturers will be more directed into reusable processes, meaning that recycling technologies are absolutely on the upswing. Starlinger's position as a market leader for plastic processing machines will open new avenues to customers for more sustainable technologies and savings within the arena of recycling."

Also the market for flexible woven plastic packaging in North America — ranging from consumer and dry bulk goods packaging to FIBC — has been growing steadily over the past years. The number of US-based woven packaging manufacturers is increasing, while woven sack imports are on the decline. In response to this development, Starlinger is strengthening its US team in order to provide the best possible service and support to the American and Canadian customers. Based in Greenville, South Carolina, American Starlinger Sahm Inc. (ASSI) is a manufacturers' representation of the Starlinger-owned companies Starlinger and Georg Sahm, Inc.. ASSI provides sales and aftersales service to the US and Canadian customers and also acts as an agent for a select group of companies linked to the plastics and textile industries.

ABOUT STARLINGER

Starlinger, a Viennese family business with production sites in Weissenbach, Lower Austria, and Taicang, China, has been in

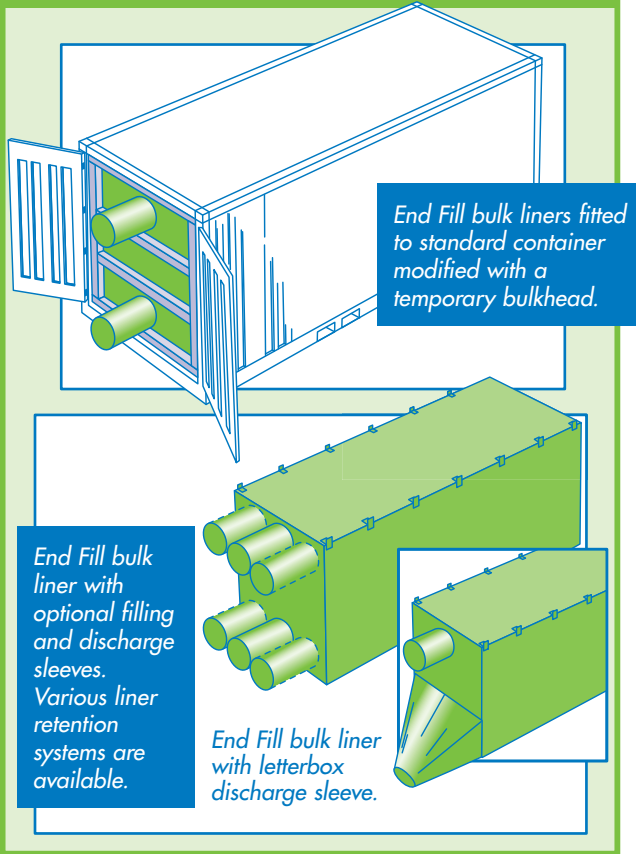


the mechanical engineering industry since 1835 and has been exporting products worldwide for over 45 years. Being world renowned in the field of machinery and complete lines for woven plastic bag production and PET recycling and refinement with an export quota of more than 99.5%, Starlinger & Co. Ges.m.b.H. is a synonym for leadership in quality and technology in over 130 countries.

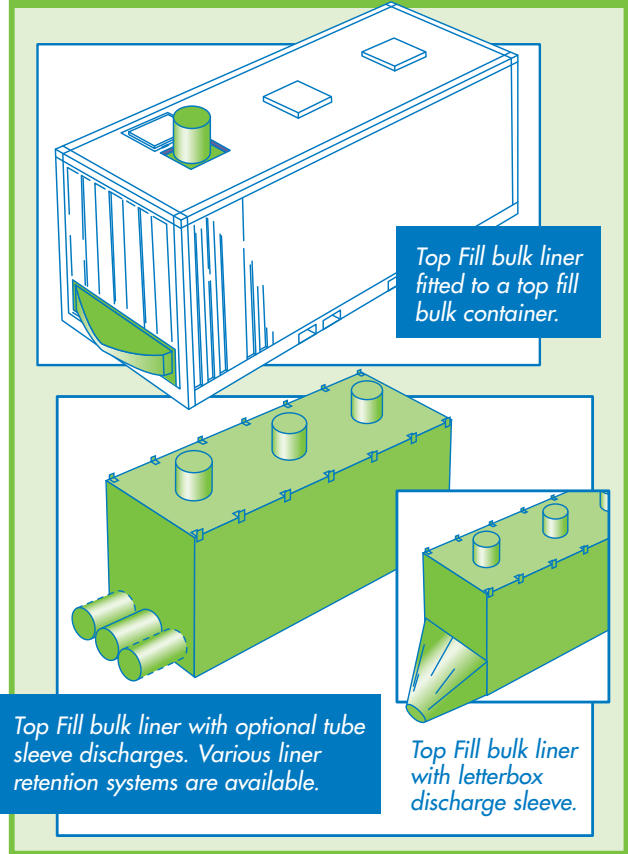
The establishment of branches in Brazil, China, India, Indonesia, Russia and the USA clearly underlines Starlinger's emphasis on customer-oriented service.

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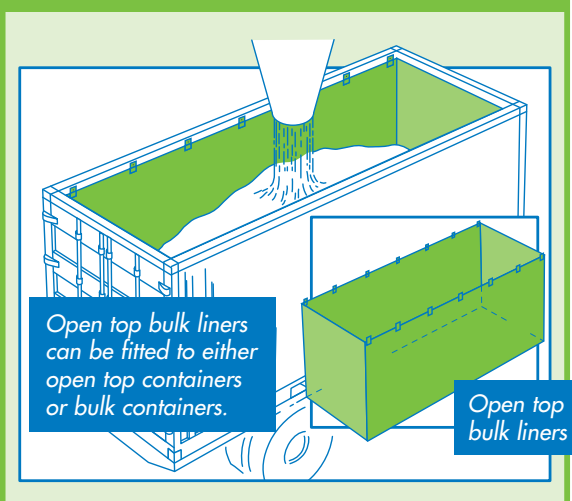
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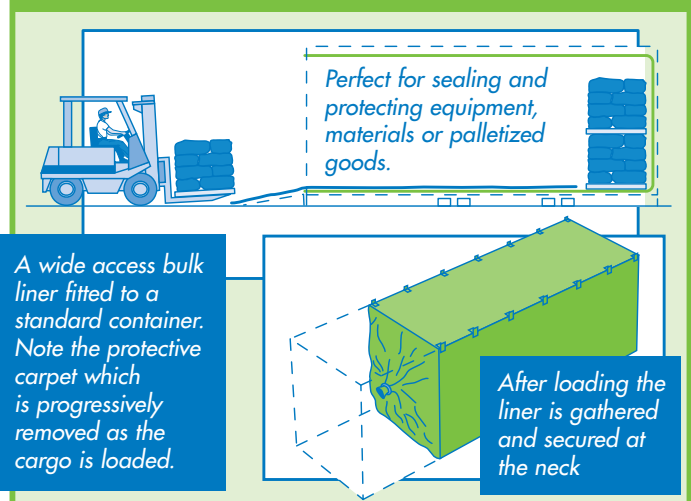
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High-speed bagging system installed at Veetee Rice

A new high-speed Chronos BTH automatic packing system has been supplied to Veetee rice's UK production facility at Rochester in Kent. The high-speed packing system features an innovative combination of a high speed open-mouth bagging system and a tubular form fill seal system complete with integrated check weigh and inspection systems including automatic reject of bags, automatic palletization and stretch hooding of finished pallets.

The installation was completed in 2011 and was part of Veetee Rice's investment into a new UK packing operation and mill expansion. This saw its annual milling capacity increased to 125,000 tonnes and the new packing system handles a diverse range of bag types (including PE, paper, hessian and woven polypropylene), in sizes from 5 to 45kg and rates of up to 1,000 bags/hour.

Flexibility of operation was an important design feature, which saw the two different packing systems provided for pre-made bags or the form, fill and seal option; gusset reforming on the pre-made bags; plus various closing options including heat sealing or stitched sealing with crepe over taping.

To help meet Veetee Rice's strict quality control procedures the packing system includes metal detector and reject conveyor; plus a high-level check-weigher and X-ray machine with reject conveyor.

The sealed bags are transferred to a high-level Chronos BTH PGB1000 palletizer in an adjacent warehouse, which allows optimum palletization to be achieved complete with bag overlapping for maximum load stability. The integral empty pallet magazine includes a PE bottom sheet dispenser and the whole palletizing system is capable of automatic operation with three



different types/sizes of pallet.

Line automation at Rochester was completed with the utilization of a CHRONO-STRETCH™ RAINBOW — a stretch hooder, which operates with two different reels of films for the different sized pallets and changes automatically to accommodate the different sized pallets. Outloading of the hooded pallets can be carried out directly into the warehouse or onto a truck loading station.

Chronos BTH Limited incorporates Richard Simon Limited, Verville and Premier Tech Chronos – America for European spares, refurbishments, service, installation and commissioning.





Sharp rise expected in Brazilian pulp



Patrick Knight

10MT MORE PULP TO BE PRODUCED BY 2020 — IF ALL GOES ACCORDING TO PLAN

After a gap of three years, when the amount of market pulp made in Brazil remained almost static at 14mt (million tonnes) and an average of about 8.7mt has been exported each year, a new 1.5mt-capacity pulp mill will start up in the state of Mato Grosso do Sul at the end of this year. It plans to export about 1.3mt in 2013.

If all goes according to plan, this mill — being built by newcomer the Eldorado company, an associate of the world's largest meat producing company, the family owned JBS — will be followed by another six mills between 2013 and 2020.

Close to 10mt will be added to output and exports — half expected to go to China, compared with the present 40% or so — will almost double as well

Early next year, a 1.3mt-capacity mill being built jointly by the Chilean Arauco company and the Swedish/Finnish owned Stora Enso, partner with market leader Fibria in the Veracel mill in Bahia state, will start up in neighbouring Uruguay.

This mill is expected to be followed towards the end of next year by the first of two mills to be built in the north eastern states of Maranhao and Piaui, by the Suzano company, now negotiating a partnership with the Anglo American associate, Mondi. Back in the 1980s, Mondi had a 30% share in the Aracruz mill.

Brazil's largest paper maker, Klabin, will be next on the list, with a 1.5mt mill using both eucalyptus and pine as a raw material to come on stream in 2016 or so in Parana state.

Only then will Fibria, which now produces more than 5mt of eucalyptus pulp from its four mills — Aracruz, Jacarei, Tres Lagoas and Veracel — set about adding a second, 1.5mt line to its Tres Lagoas mill, which started up in September 2009.

Another newcomer, the GMR company, an associate of one of Brazil's largest electricity distributors, is to start building a mill in the state of Tocantins, to come on stream in about 2018

At about the same time, CMPC is expected to complete a major expansion of the Guaiba mill in Rio Grande do Sul state, which CMPC bought from Fibria a couple of years ago, to take output there to more than 3mt.

The Japanese-owned Cenibra company is considering adding a new 1.3mt line to its mill in Minas Gerais state. However, land in the area is hilly, obliging Cenibra to cut more than the average proportion of wood manually, while new restrictions on the amount of land foreign-owned companies can now buy in Brazil may delay this project.

If all the mills do go ahead as planned — and a lot depends on the state of the world economy, notably that of China, gradually increasing its share of the pulp exported by Brazil — about 2.5 million hectares of forest will have to be added to the seven million now owned by Brazil's pulp and paper industry.

BRAZILIAN EXPORTS OF PULP, PAPER AND TIMBER PRODUCTS, TONNES

	2011	2010	2009	2008	2007	2006
Pulp	8,910,445	8,803,049	8,591,577	7,216,543	6,584,155	6,245,743
Paper	2,051,259	2,073,305	2,007,305	1,979,613	2,005,601	1,989,499
Plywood	515,891	613,502	634,970	914,716	1,101,173	1,235,679
Veneer	29,346	19,059	15,346	52,104	145,580	101,108
Sawn	688,495	703,600	716,798	1,127,611	1,724,521	1,707,860
Processed	117,947	138,248	163,845	248,006	367,096	364,568
Board	193,419	170,801	203,779	252,730	409,072	451,186
Other	1,573,751	1,681,000	1,467,057	2,021,840	2,246,748	2,211,149
All wood	3,089,849	3,321,210	3,202,496	4,617,012	5,965,861	6,071,548

Source: Ministry of Trade

Whether more paper machines will be added at mills has yet to be decided.

The paper makers seems to have convinced the government to take measures to ensure that imports, which totalled about 800,000 tonnes last year, are in fact only destined for the newspaper and magazine industries, as the law envisages.

Imports of paper for use by the press are allowed into Brazil tax free, but there has been considerable abuse of this rule in recent years. It is claimed that at least half all the paper, much of it from China and often from Brazilian pulp, is in fact used for other purposes and undercuts the paper made in Brazil.

Klabin, for one, will eventually use most of the extra pulp it plans to produce, to make more packaging paper. This is not least because Klabin's leading customer, the Tetrapak company —

one of whose largest plants is located in Brazil — is planning to almost double output to 15 billion units a year. Twenty per cent of what Tetrapak produces in Brazil is now exported to many of the 170 countries where Tetrapak products are sold.

The demand for liquid packaging — for milk and fruit juices, and more recently for solid foods, notably vegetables and fruits — continues to grow steadily.

International Paper, which owns three paper mills in Brazil, may add a new machine at its plant adjacent to Fibrias Tres Lagoas mill, when this is expanded.

Until about March this year, Brazil's pulp and paper industry had been badly handicapped by the increasing strength of the currency, the Real, which had risen by up to 40% against the US dollar and other currencies in the past seven years.



The strengthening Real made Brazilian pulp and paper lose competitiveness, something which was further complicated by the financial problems in Europe, still the destination for about 60% of Brazil's long fibre pulp and the United States, market for a further 15%.

But with the Brazilian economy beginning to splutter during 2011, the government took steps to lower the high interest rates paid in Brazil. High interest had attracted a flood of foreign capital, seeking obtain higher rates of return than that obtainable in countries of the developed world since the financial crisis exploded.

Interest rates in Brazil have now been cut to about 3% after inflation and, coupled with the intensification of the crisis in Europe, the Real has lost 20% of its value against the US dollar in the past eight months, which is greatly benefiting exporters.

The average price of market pulp has also risen somewhat in the past year, so for the time being at least, prospects for the industry appear positive.

With no more land available to allow new mills to be built near the coast in Brazil, all the new projects are located 800–1,000km from ports. Notable amongst these is Santos, which is used by the majority of pulp exporters, notably Fibria and Suzano, together with Portocel, used to ship pulp from Fibras Aracruz mill, as well as that from Cenibra.

The increasing distance between mills and the ports means the cost of transport is rising, and to combat this, all the companies plan to make greater use of rail in future.

The new Eldorado mill, not far from Fibras Tres Lagoas complex, has signed a 15-year contract with the ALL railway company, which has undertaken to carry 700,000 tonnes of Eldorado pulp from the new mill, to Santos. Eldorado is to build its new terminal adjacent to one owned at Santos by Fibria, which already takes most of its market pulp both from Tres Lagoas and Jacarei, to the fast-expanding port by rail.

The latest generation of wagons able to carry more than 80 tonnes are now being built for ALL, to cut costs.



Progress is also being made in raising yields in the plantations. At the moment, about 40 cubic metres of eucalyptus wood is grown each year on a hectare of the highest yielding areas, much more than in most competing countries.

However, Fibria anticipates increasing the amount of pulp which can be produced from the wood grown on an average hectare, from 10 tonnes a year to 15 tonnes.

One major advantage of raising yields by so much is that significantly less land will be needed to keep mills supplied in future than at present.

Exports of all timber products continue to slip, and the 3mt or so shipped last year, was only half as much as was exported in the course of 2006.

There are several reasons for this. The main one is the fast growth of the Brazilian economy, which has grown by an average of 4% a year for the past 15 years or so. This means that millions more people have more money to spend on things like furniture. There has also been a boom in construction, with millions more flats and houses

built, which has caused demand for plywood and sawn timber to shoot up.

More than 30 million Brazilians have been vertically mobile in the past few years and if growth continues, even at a slower pace, more will do so.

About half the wood which is exported used to come from the Amazon rainforest. Because restrictions have been tightened up there, the rate at which the forest is being cleared has slowed dramatically in the past few years. Concern about the risk of climate change means this state of affairs will not be reversed.

The steady rise in the value of the Brazilian currency, has also made timber and wood products from Brazil less competitive than in the past, and although this situation has changed somewhat in recent months, the domestic demand has always absorbed the majority of the wood produced in Brazil.

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

ROTOTILT — A FLEXIBLE SOLUTION

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

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

ULTRA MODERN MANUFACTURING PLANT

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

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

Indexator uses a Computer Integrated Manufacturing (CIM) solution, which includes a

Flexible Machining System (FMS).

This allows full integration of the design, sales ordering, production planning and manufacturing functions. To ensure the quality of the complex designs, work is done exclusively via a modern 3D CAD system. Indexator is rightfully proud of its world class manufacturing abilities.

STRONG BRAND AND A WORLDWIDE BUSINESS

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

Indexator exports about 65% of its production to over 40





commitment of the company's employees is what allows Indexator to live up to the name "quality factory".

FULL-SCALE TESTING

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

QUICK SPARE PART DISTRIBUTION AND LOCAL SERVICE

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

Indexator is there

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

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

QUALIFIED TECHNICAL SUPPORT

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

worldwide markets. In addition to the international distributor network Indexator also has two subsidiaries, Indexator GmbH that covers Germany, Austria and Switzerland and Indexator Inc that covers North America.

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

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

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

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

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

INDEXATOR — THE QUALITY FACTORY

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

EVERYTHING UNDER ONE ROOF

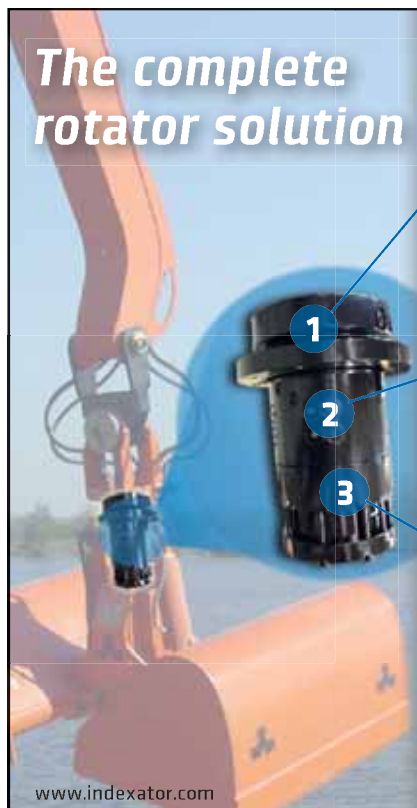
Indexator's production facilities are located in Vindeln, outside of Umea in northern Sweden. The 8,500 square metre production facility for rotators shares space with corporate management, product development, sales and after-market support.

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

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150 Rockland Rd
Town of Mount Royal
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H3P 2V9
Canada
Contact: Mr Rudy Keller
T: + 1 514 937 9105
F: + 1 514 937 0473
E: rudy.keller@riotinto.com
W: www.alcanalesa.com

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20 Sefton Business Park
Netherton
Liverpool
Merseyside

L30 1RD
UK
Contact: Mr Alex Stewart
Job Title: MD
T: + 44 151 523 5438
F: + 44 151 523 3760
E: alex.stewart@alexstewartinternational.com
W: www.alexstewartinternational.com
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21 Sefton Business Park
Netherton
Liverpool
Merseyside
L30 1RD
UK
Contact: Mr Glenn Forbes
Job Title: Agriculture Manager

T: + 44 151 525 1488
F: + 44 151 530 1563
E: Glenn.forbes@alexstewartagriculture.com
W: www.alexstewartagriculture.com
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Casilla 16871
Santiago
Región Metropolitana
7510147
Chile
Contact: Mr Alfredo Brand
T: + 5622238968
F: + 5623440817
E: abrandp.gm@gmail.com
W: www.abrandp.com

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Leidinger Strasse 40-42
Rosenfeld
D-72348
Germany
Contact: Mr Walther Sützle
Job Title: Managing Director
T: + 49 7428 94060
F: + 49 7428 9406260
E: info@anker-flexco.de
W: www.anker-flexco.de
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Stallings House
Stallings Lane
Kingswinford
West Midlands
DY6 7LG
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Contact: Mr John Moore
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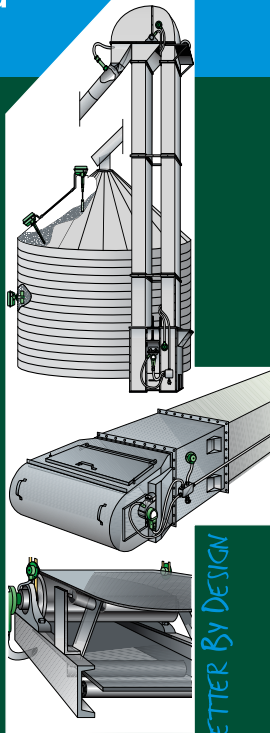


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T: + 1 225 654 8223
F: + 1 225 654 3125

E: Sales@AnvilAttachments.com
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Contact: Mr Steve Christy
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T: + 27 31 205 95 90
F: + 27 31 205 98 35
E: steve@arlona.co.za
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Contact: Mr Ashley Watson
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E: ashley@atlasmanufacturing.net
W: www.atlasmanufacturing.net
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Adelaide
South Australia
5000
Australia

Contact: Mr Stephen Symons
Job Title: Development Manager
T: + 61 8 8237 9905
F: + 61 8 8237 9778
E: SymonsS@ap.aurecongroup.com
W: www.aurecongroup.com

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L4, 152 Wharf Street
Spring Hill
Brisbane
Queensland
4000
Australia

Contact: Mr Peter Thomson
T: + 61 7 3166 7777
F: + 61 7 3173 8001
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British Columbia
V6B 2W2
Canada

Contact: Mr Joel A Cawker
Job Title: VP International, Process Infrastructure
T: + 1 604 638 4740 (direct)
F: + 1 604 688 5913
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W: www.birrus.com.au

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Juan XXIII - 9
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Guipuzcoa
20730
Spain
Contact: Mr JR Zubeldia
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T: + 34 943 810 150
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The Netherlands
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T: + 31 411 65 19 51
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49712
USA
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T: + 1 231 459 4242
F: + 1 231 459 4243
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E: brock@ctbinc.com
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5975 Shiloh Road
Suite 109
Alpharetta
GA
30005
USA
Contact: Mr Ken Upchurch
Job Title: Vice President of Sales & Marketing
T: + 1 770 849 0100 x109
E: kuh@bruks.com
W: www.bruks.com

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PO Box 1240
Marion
Illinois
62959
USA
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Gupfenstrasse 5
Uzwil
St Gallen
9240
Switzerland
Contact: Mr Martin Stöckling
Job Title: Head of Market Segment Terminals, GLTE1
T: + 41 71 955 3290
F: + 41 71 955 8920
E: martin.stoekling@buhlergroup.com
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IL
60110
USA
Contact: Mr Brian Kelly
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T: + 1 847 428 6059 x 215
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T: + 31 347 323 100
F: + 31 347 377 780
E: h.vanvuren@beco-vianen.nl
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Braga
Braga
4701-952
Portugal
Contact: Mr Nuno Matos
Job Title: International Business Developer
T: + 351 253 603 480
F: + 351 253 603 485
E: info@cachapuz.com
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1600 King St N
St. Jacobs
Ontario
N0B 2N0
Canada
Contact: Mr Rick Weber
Job Title: President
T: + 1 519 664 3709
F: + 1 519 664 3700
E: rick@camar.ca
W: www.camar.ca

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2820 West. 1100 South
Salt Lake City
Utah
84104
USA
Contact: Mr Dave Hansen
Job Title: VP, Sales
T: + 1 801 972 5511 ext 205
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E: info@cambelt.com
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Bjöv
SE-267 25
Sweden
Contact: Ms Cecilia Lo Greco

Laustsen
Job Title: Communications Manager
T: + 46 42 85800
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E: blksales@cargotec.com
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Ave des Etats Unis
Charleroi
B6041
Belgium
Contact: Mr Philippe Michaux
Job Title: Marketing
F: + 32 71 25 29 56
E: michaux_philippe@cat.com

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Peoria
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616-6335
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 34876
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 T: + 90 216 377 28 55
 F: + 90 216 377 11 90
 E: info@cesur.com
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 Montichiari
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 Italy
 Contact: Mr Italo Civettini
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 T: + 39 0309 64199
 F: + 39 0302 072026
 E: sales@cfshandling.it
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 Contact: Mr Zheng Liu

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 F: + 86 10 68 710553
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9 Temasek Boulevard #42-01
 Suntec Tower 2
 Singapore
 038989
 Singapore
 Contact: Mr Eugene Tan
 T: + 65 6808 1880
 F: + 65 6808 1881
 E: sg@chinasonangol.com
 W: www.chinasonangol.com

CHRISTIANSON SYSTEMS INC.



20421 15th Street Southeast
 Blomkest
 Minnesota
 56216
 USA

Contact: Mr Mike Schow
 Job Title: Sales Manager
 T: + 1 320 995 6141
 F: + 1 320 995 6145
 E: sales@christianson.com
 W: www.christianson.com
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 Nottingham
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 NG6 8WN
 UK
 Contact: Mr Mike Simmonds
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 Contact: Mr Ingo Jonas
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Drejervej 10
 Sunds
 DK- 7451
 Denmark
 Contact: Mr Lars Noergaard
 Job Title: Managing Director
 T: + 45 72 42 24 00
 F: + 45 72 42 24 99
 E: cbe@cimbria.com
 W: www.cimbria.com
 Markets a large line of products within dustfree loading systems. Loading solutions can be delivered for all types of material using ship loading, stock piling, road and rail. Close to 30 years experience. Product programme covers all branches where bulk products are handled from agriculture to industry.

CLAUDIUS PETERS TECHNOLOGIES S.A

34 Avenue de Suisse
 BP 269
 Illzach
 Cedex
 F-68316
 France
 Contact: Mr Jean Christophe Holfert
 Job Title: Product Manager
 T: + 33 389 313 304
 F: + 33 389 619 525
 E: technologiessa@

claudiuspeters.com
 W: www.claudiuspeters.com
 Worldwide suppliers of stacking and reclaiming equipment for linear or circular storage systems for a wide range of bulk commodities within process or dispatch terminals.

CLEVELAND CASCADES LTD

Unit 22 Dukesway
 Teesside Industrial Estate
 Thornaby
 Stockton on Tees
 TS17 9LT
 UK
 Contact: Mr Ian Barnard
 Job Title: Managing Director
 T: + 44 1642 753260
 F: + 44 1642 753270
 E: enquiries@clevelandcascades.co.uk
 W: www.clevelandcascades.co.uk
 Designs, manufactures, markets and installs bulk loading chutes for ship loading, silo filling, truck loading, conveyor transfer point; minimising dust emissions and product degradation, as well as segregation.

COBRA EUROPE SA

12 rue Henry Guy
 BP 40081
 LUXEUIL les Bains Cedex
 70300
 France
 Contact: Mr E Mansour
 Job Title: President
 T: + 33 671 58 72 56
 F: + 33 384 40 44 92
 E: emphone@cobra-cs.com
 W: www.cobra-cs.com
 The COBRA group is specialized in the manufacturing and distribution of conveyor components for the material handling industry. COBRA group combines five businesses: Conveyor belts (Depreux, Transco, Indi), Components for conveyor (Go Smart) and Vulcanising presses (Mossier). Regional contacts: COBRA EURASIA; Tel: + 73 84 25 85 598, Email: cobraeurasia@bk.ru COBRA AMERICA; Tel: + 1 423 968 9700, Email: bambi@cobraamerica.com COBRA SOUTH PACIFIC; Tel: + 61 2 4722 5633, Email: terry@cobrasp.com.au

COFELY EXPERTS BV

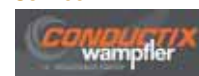
Computerweg 21
 PO Box 34
 Amsterdam
 1000 AA
 The Netherlands
 Contact: Mr John Visser
 Job Title: General Manager
 T: + 31 88 484 90 00
 F: + 31 88 484 93 00
 E: john.visser@cofely-gdfsuez.nl
 W: www.cofely-gdfsuez.nl

CONDEPOLS

Pozuelo de Alarcón
 Madrid
 28037
 Spain
 Contact: Mr Ignacio Baillo
 Job Title: Commercial Director
 T: + 34 91 337 7048 / +34 91 337 7040
 F: + 34 91 515 3172
 E: ignacio.i.baillo@condepols.es
 W: www.condepols.es
 Manufactures and commercialises big bags made of polypropylene to store or transport merchandise

ranging from 500 to 2000kg, with one or four lifting points. Also manufacture liners in polyethylene or polypropylene 'Dbulk' for maritime containers to store or transport merchandise in bulk. All the products manufactured are food approved.

CONDUCTIX-WAMPFLER



10102 F Street
 Omaha
 Nebraska
 NE 68127
 USA
 Contact: Mr Rod Griffith
 Job Title: Director of Marketing
 T: + 1 402 339 9300
 F: + 1 402 339 9627
 E: rod.griffith@conductix.com
 W: www.conductix.us
 Mobile Electrification systems: Motorized reels, cable festoon systems, cable chains, slip ring assemblies (including hazardous duty), and pendant or radio remote controls.

CONSERVATEK INDUSTRIES, INC.

498 North Loop 336 East
 Conroe
 Texas
 77301
 USA
 Contact: Ms Nita Bailey
 T: + 1 936 539 1747
 F: + 1 936 539 5355
 E: nbailey@conservatek.com
 W: www.conservatek.com
 Designs, fabricates and installs aluminium domes and aluminium roof structures for use on tanks of various shapes and sizes. Typical applications include bulk storage enclosures.

CONTINENTAL CONSTRUCTION (MEMPHIS)

5646 Shelby Oaks Drive
 Memphis
 Tennessee
 38134
 USA
 Contact: Mr Brian Morphis
 Job Title: Marketing
 T: + 1 901 382 4070
 F: + 1 901 388 2534
 E: bmorphis@continentalconst.com
 W: www.continentalconst.com
 Heavy Industrial Contractor for Foundations, Silos, Conveying, and Unloading. Call (901)382-4070 or go to www.continentalconst.com for more information.

CONTINENTAL CONVEYOR & EQUIPMENT Co Inc

PO Box 400
 438 Industrial Drive
 Winfield
 Alabama
 35594
 USA
 Contact: Mr Mike Roberts
 Job Title: Group Manager/Engineered Systems
 T: + 1 205 487 6492
 F: + 1 205 487 4233
 E: info@continentalconveyor.com
 W: www.continentalconveyor.com
 The HAC® has proven itself to be a versatile and money saving alternative for elevating and lowering materials at any angle,

up to and including 90° (vertical). The HAC® can be located on a ship or in a loading area.

**CONTITECH
TRANSPORTBANDSYSTEM
E GmbH**

Breslauer Strasse 14
Norheim
37154
Germany
Contact: Mr Andrew Soine
Job Title: International Sales
Manager MAXOFLEX

T: + 45 512 99056
F: + 45 864 68841
E: andrew.soine@
cbg.contitech.de
W: www.contitech.de
With over 30 years experience in design, manufacturing and supply, MAXOFLEX has become one of the leading solution providers in the field of steep angle conveying. Quality, reliability and service is what our customers have come to expect. We pride ourselves on delivering and no challenge is too small.

**CPS PROJECTS (PTY)
LTD**

PO Box 47261
Greyville
KZN
4023
South Africa
Contact: Mr Banzi Majola
Job Title: Managing Director
T: + 27 31 466 4396
F: + 27 31 466 4399
E: banzi@cpsprojects.co.za
Affiliated with CPS Projects Pty and Salzgitter SA Pty in South Africa, Portquip Pty provides mechanical shiploaders, grabs and truck loaders and unloaders.

GST COVERS



CST Industries
9701 Renner Boulevard - Suite 150
Lenexa
Kansas
66219
USA
Contact: Mr Tony Thill
Job Title: Corporate Vice
President
T: + 1 913 748 4559
F: + 1 913 621 2145
E: tthill@cstindustries.com
W: www.cstcovers.com
Designs, manufactures and installs large (30m to over 145m diameter) clear span aluminium domes for covering storage systems of all types. Conveyor penetrations and support can be all part of the roof design. Each dome is custom designed to the site and customer specific requirements worldwide. Cost competitive and virtually maintenance free as aluminium does not rust, rot or solar degrade.

GST STORAGE

9701 Renner Blvd, Suite 150
Lenexa
KS 66110-2907
USA
Contact: Mr Sharon Banning
Job Title: Director of Dry Bulk

Sales
T: + 1 620 421 0200
F: + 1 620 421 9122
E: sales@columbianteck.com
W: www.cstindustries.com
Columbian TecTank is the leading manufacturer of bolted steel, and factory welded storage tanks for the dry bulk market. Columbian TecTank is proud to introduce a new coating - Trico-Bond EP™, a high-performance, factory-applied, thermally-cured, highly-engineered modified epoxy powder coating.

DBIS

9 Station Road
Adwick-le-Street
Doncaster
South Yorkshire
DN6 7BB
UK
Contact: Mr David Trueman
Job Title: Sales Director
T: + 44 1302 330 888
F: + 44 1302 724 731
E: david.trueman@dbis.biz
W: www.dbis.biz
Specialize in Industrial IT Solutions. The CommTrac system is a total Facility Management solution for grain and animal feed stores, combining optimized operations and stock control with traceability and HACCP food safety procedures in compliance with legislation and assurance scheme requirements.

DCL, INCORPORATED

PO Box 125
Charlevoix
MI
49720
USA
Contact: Mr Kyle Smith
T: + 1 231 547 5600 Ext 3124
F: + 1 231 547 3343
E: sales@dclinc.com
W: www.dclinc.com
DCL provides full dust control loading systems as well as partial components to the bulk material handling industry. Technical Sales, Engineering and Manufacturing providing custom equipment to meet all field applications. Product lines: Loading Spouts, Positioners, Dust Collectors, Gates, Valves, Silo Aeration and Conveyors.

**DE REGT CONVEYOR
SYSTEMS**

Ijzendijkseweg 5
Biervliet
Zeeland
4521 GX
The Netherlands
Contact: Mr Peter De Regt
Job Title: Director
T: + 31 115 481238
F: + 31 115 481234
E: peter@deregt.com
W: www.deregt.com
De Regt is a company specialized in developing, building and installing conveyor systems and structures needed to achieve a partial or total project.

**DEARBORN MIDWEST
CONVEYOR Co.**

4220 Shawnee Mission Pkwy
Suite 301B
Kansas City
Kansas
66205-2513
USA
Contact: Mr Sudy L Vohra

Job Title: Executive Vice
President & General Manager
T: + 1 913 261 2406
F: + 1 913 261 2470
E: sudyv@dmwcc.com
W: www.dmwcc.com
DMW furnishes the design, supply and erection of Grain Handling Conveyor Systems, fertilizer storage, unloading and loading systems at terminals. Some of the systems include grain storage facilities in Egypt and China. The Products include Pipe Conveyors and Air Supported Conveyors.

**DEMAG CRANES &
COMPONENTS GmbH**

Benefit recipient: Gottwald Port
Technology
Forststrasse 16
Düsseldorf
D-40597
Germany
Contact: Mr Christoph
Kreutzenbeck
T: + 49 211 71 02 3907
F: + 49 211 71 02 53907
E: christoph.kreutzenbeck@
demagcranes-ag.com
W: www.demagcranes-ag.com
Demag Cranes & Components GmbH - a subsidiary of Demag Cranes AG - is a supplier of industrial cranes and crane components for material flow, logistics and industrial drive applications. It also offers spare parts, maintenance and refurbishment services. Represented globally by approx. 5,000 employees in 22 foreign subsidiaries and agencies in 46 countries. With more than 650,000 Demag brand cranes and hoists for industrial applications in operation, the company has the largest installed base worldwide.

**DEMARCO INDUSTRIAL
VACUUM CORPORATION**

PO Box 1138
Crystal Lake
IL
60039-1138
USA
Contact: Mr Thomas DeMarco
Job Title: President
T: + 1 815 344 2222
F: + 1 815 344 2223
E: Sales@
DeMarcoVacuums.com
W: www.DeMarcoVacuums.com
Manufacturer of MaxVac industrial vacuum systems and vacuum loaders for portable, stationary and central manifold systems.

DINNISSEN BV

Horsterweg 66
Sevenum
NL-5975 NB
The Netherlands
Contact: Mr Henri A J M Michiels
Job Title: Director
T: + 31 77 467 35 55
F: + 31 77 467 37 85
E: powtech@dinnissen.nl
W: www.dinnissen.nl
Dinnissen is an international company for bulk materials technology, machine development, processing, control, automation and engineering. Intake of raw materials, conveying, storage, mixing, drying, sieving, big-bag filling. Machines and systems for powders and granules for the chemical / pharmaceutical / food /

petfood / feed / aquafeed industry.

**DMN-
WESTINGHOUSE**

Gieterij 3
PO Box 6
Noordwijkerhout
Zuid-Holland
NL-2210 AA
The Netherlands
Contact: Mrs Tonneke Krempel
Job Title: Manager Marketing
Services and PR
T: + 31 252 361 800
F: + 31 252 375 934
E: dmn@dmn-nwh.nl
W: www.dmnwestinghouse.com
Offering tailor-made solutions in the design and manufacture of rotary valves, diverter valves and other components for the bulk solids handling industry for more than 40 years. The company's products are distributed and supported worldwide.

**DOME CORP OF NORTH
AMERICA**

5450 East Street
Saginaw
Michigan
48601
USA
Contact: Mr Ross Lake
Job Title: President
T: + 1 989 777 2050
F: + 1 517 777 3477
E: sales@dome-corp-na.com
W: www.dome-corp-na.com

DOME TECHNOLOGY



3007 East 49th Street North
Idaho Falls
Idaho
83401
USA
Contact: Mr James Moore
Job Title: Business Development
T: + 1 208 529 0833
F: + 1 208 529 0854
E: james.moore@dometech.com
W: www.dometech.com
Dome Technology Inc., (Inventors of the thin shell concrete dome) - activities include the design and construction of modern, insulated reinforced concrete domes for both industrial and commercial applications. Dome Technology builds domes for all bulk storage products throughout the world. Products commonly stored include fertilizer, cement, clinker, gypsum, fly ash, coal, alumina, grains and mining ores. Established in 1976.

**DOMTEC INTERNATIONAL
LLC**

4355 North Haroldsen Drive
Idaho Falls
Idaho
83401
USA
Contact: Mr Mike Hunter
Job Title: Director of Marketing
T: + 1 208 522 5520
F: + 1 208 522 5344
E: mhunter@domtec.com
W: www.domtec.com
Serving the bulk storage industry for many years, constructing concrete domes to store a multitude of products. The

company designs and constructs high quality concrete domes, delivering projects on time and within budget. They have broad experience with a variety of reclaim systems, both mechanical and pneumatic, pending on clients' needs.

**DONALDSON FILTRATION
DEUTSCHLAND GmbH**

Büssingstraße 1
Haan
42781
Germany
Contact: Mrs Susanne Fulko
Job Title: Marketing Manager
T: + 49 21 29 569 0
F: + 49 21 29 569 100
E: IFS-de@donaldson.com
W: www.donaldson.com

DOOSAN BENELUX SA

Drève Richelle 167
Waterloo B-1410
Belgium
Contact: Mr George Schmalzried
Job Title: Public Relations
Manager
T: + 32 2 371 6811
F: + 32 2 371 6900
E: george.schmalzried@
doosan.com
W: www.bobcat.eu;
www.doosanequipment.eu
Range of compact skid-steer and tracked loaders for ship-trimming and cargo hold unloading (together with grab) with operating capacities from 318-1542 kg; telescopic handlers with lift capacities from 2.2-4.0 tonnes and max lift heights from 5.2-16.7 metres.

**Dos SANTOS
INTERNATIONAL, LLC**



531 Roselane Street
Suite 810
Marietta
Georgia 30060
USA
Contact: Mrs Amy D. Duncan
Job Title: Marketing Manager
T: + 1 770 423 9895
F: + 1 866 473 2252
E: info@dossantosintl.com
W: www.dossantosintl.com
Specialists in belt conveying technology for bulk materials. One of the world's foremost authorities on high angle conveyor applications and design of sandwich belt type high-angled conveyors. Additionally, discipline-oriented engineering services in mechanical and structural engineering are offered as well as our ExConTec, a conveyor software design program.

DSH SYSTEMS LTD.



PO Box 5074
Napier
4145
New Zealand
Contact: Mrs Judi Schwass
Job Title: Admin/Marketing
T: + 64 274 955 754
F: + 64 6 844 6894
E: info@dshsystems.com
W: www.dshsystems.com

DSH Systems unique dust suppression loading systems handle dry, granular, free-running product. Our standard models require no electricity, have no internal moving parts and concentrates the stream of product into a tight free-falling column containing the dust in the column.

DUST CONTROL TECHNOLOGY

1607 W. Chanute Rd.
Peoria
IL
61615
USA
Contact: Ms Laura Stiverson
Job Title: Office Manager
T: + 1 309 693 8600
F: + 1 309 693 8605
E: laura@dustboss.com
W: www.dustboss.com
The DustBoss dust and odour control system combines an oscillating ducted fan with high pressure mist to create a virtual dust/odour barrier. Proprietary technology delivers superior results, blanketing up to 125,000 square feet with a fine mist of water droplets that are the optimal size for trapping dust particles.

DUST SOLUTIONS INC.

14300 N.E. 20th Ave.
D102-185
Vancouver
Washington
98686
USA
Contact: Mr David Gilroy

Job Title: Sales Manager
T: + 1 360 546 0072
F: + 1 360 546 0073
E: d.gilroy@nodust.com
W: www.nodust.com

E BUTTIMER & Co. LTD



Carrigeen Industrial Estate
Cahir
Co. Tipperary
Republic of Ireland
Contact: Mr Eddie Buttimer
Job Title: Director
T: + 353 52 744 1377
F: + 353 52 744 1087
E: info@buttimer.ie
W: www.buttimer.ie
The Company is an Engineering, Manufacturing and Erection Business offering a single source solution for all handling and storage issues in Grain and associated industries

E-CRANE INTERNATIONAL USA



1332 Freese Works Place
Galion
Ohio
44833
USA
Contact: Mr Mark W Osborne
Job Title: President
T: + 1 419 468 0090
F: + 1 419 468 0074

E: mark.osborne@ecrane.com
W: www.ecrane-usa.com
Equilibrium Cranes from 6 to 40 tons capacity, reach from 64 to 147 feet with project specific lowers such as fixed, gantry, rail or crawler for bulk material handling.

E-CRANE WORLD WIDE



Koekoeklaan 53
Adegem
B-9991
Belgium
Contact: Mr Bas Tolhuizen
Job Title: International Sales Manager
T: + 31 165 320100
F: + 31 165 320759
E: bas.tolhuizen@ecrane.eu
W: www.e-crane.com
Provides engineering, sales management and technical product support for the E-Crane fleet. The 'E' stands for equilibrium. A revolutionary hydraulic bulk material handler, the E-Crane uses the balance principle and is perfectly suited for loading and unloading ships and inland river barges, all while consuming up to 50% less energy.

ECS EUROCARGO SERVICES AS

Tongavej 19
Århus C
DK-8000

Denmark
Contact: Mr Peterson
T: + 45 86 20 82 20
E: ecs@eurocargoservices.dk
W: www.eurocargoservices.dk
Custom clearance Evaluation of damages

ELGIN ENGINEERING AND CONSTRUCTION

Suite 1800
222 South Riverside Plaza
Chicago
Illinois
60606
USA
Contact: Mr Bob Williams
Job Title: Marketing Director
T: + 1 312 236 8100 ext: 340
F: + 1 312 726 2872
E: soros@elginindustries.com
W: www.elginindustries.com
An international consulting and engineering firm specialised in conceptual development, planning, feasibility studies, design engineering, project management, construction supervision, etc.

EMS-TECH INC

699 Dundas Street West
Belleville
Ontario
K8N 4Z2
Canada
Contact: Ms Gail Carl
Job Title: Executive Assistant,
Sales & Marketing
T: + 1 613 966 6611
F: + 1 613 966 6710
E: gail.carl@ems-tech.net
W: www.ems-techinc.com

A multi-task, multi-discipline company specialising in design and supply of dry bulk material handling equipment, both mobile and stationary; including conveyors, bulk elevators, receiving hoppers, storage/loadout systems, environmental controls, shiploaders, stackers and reclaimers, self-unloading ships.

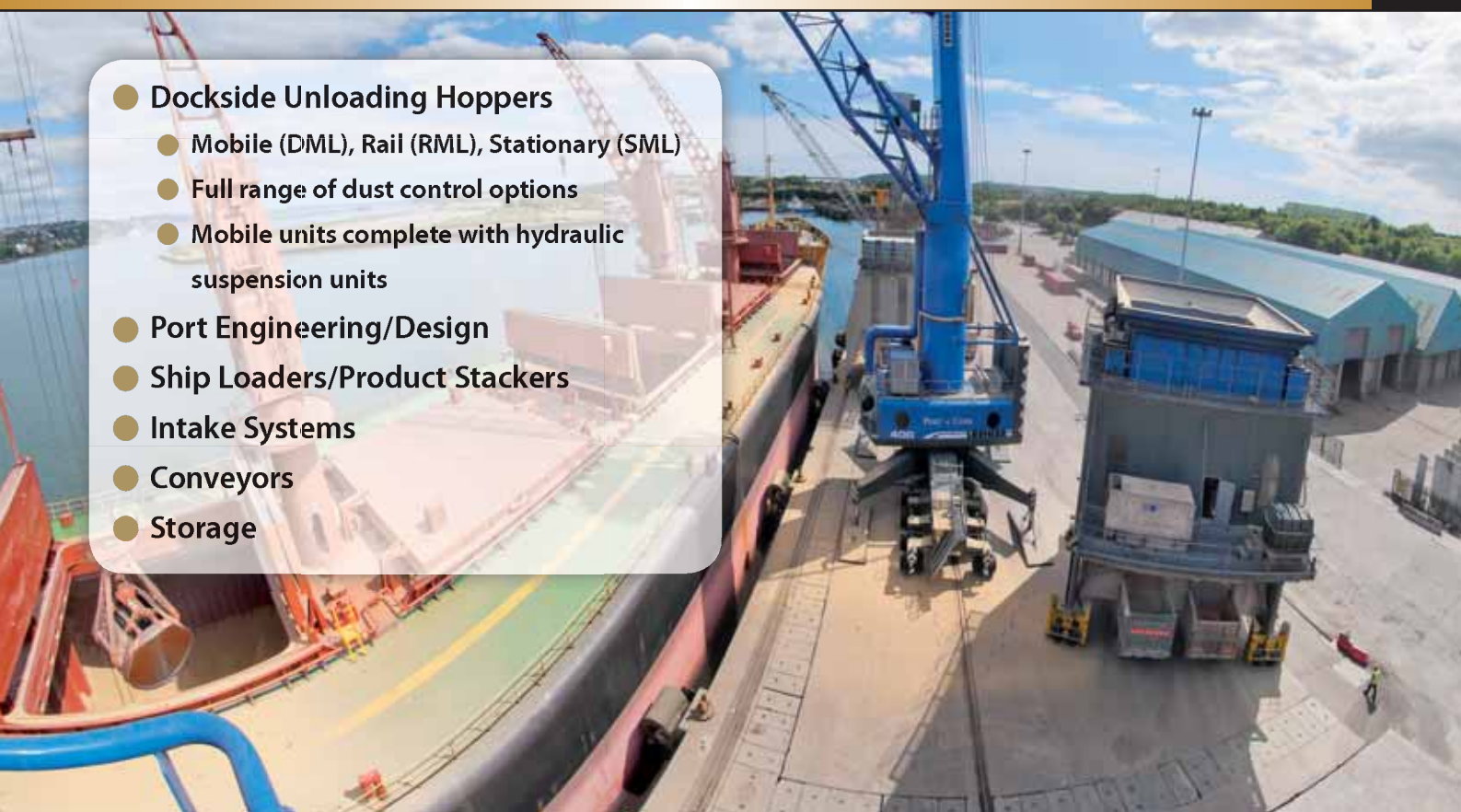
ENCLOSED BULK SYSTEMS BV

Wijkemeer Weg 72
Beverwijk
1948 NX
The Netherlands
Contact: Mr Van der Zee
T: +31 85 877 4026
E: info@enclosedbulk.nl
W: www.enclosedbulk.com
EBS is specialized in the supply of environmental friendly enclosed conveyor belts.

ENCO ENGINEERING INC

4410 13th Street
Wyandotte
MI
48192
USA
Contact: Ms Bobbi Lang
T: + 1 734 407 2400
F: + 1 734 676 3436
E: enco@encoeng.com
W: www.encoeng.com
Enco Engineering provides a broad spectrum of services ranging from conceptual studies through detailed engineering and supply of ship loaders and related bulk handling equipment.

- Dockside Unloading Hoppers
 - Mobile (DML), Rail (RML), Stationary (SML)
 - Full range of dust control options
 - Mobile units complete with hydraulic suspension units
- Port Engineering/Design
- Ship Loaders/Product Stackers
- Intake Systems
- Conveyors
- Storage



Contact **Buttimer Ireland...**

Carrigeen Industrial Estate,
Cahir, County Tipperary, Ireland
www.buttimer.ie e-mail: info@buttimer.ie
Tel: +353 52 7441377 Fax: +353 52 7441087

ENDRESS + HAUSER INC

2350 Endress Place
Greenwood
IN
46143
USA
Contact: Mr Victor Wolowec
T: + 1 317 535 1410
F: + 1 317 353 1481
E: info@us.endress.com
W: www.us.endress.com
Processes control devices and measurement systems, which include level flow, pressure tank gauging, temperature and liquid analysis systems.

ENGICON NV

Broelstraat 20
Harelbeke
B-8530
Belgium
Contact: Mr Pieter Van Acker
Job Title: Sales & Marketing Director
T: + 32 56 73 21 21
F: + 32 56 73 40 40
E: sales@geldof.be
W: www.geldof.be
Specialised in the engineering, construction and erection of storage and handling installations for bulk goods. Fully equipped mechanical shiploaders; Silos; Tanks; Dust reducing hoppers and stackers; Belt, chain and bucket elevators, conveyors and screws. Large turnkey installations combining storage and handling; Environmental projects - flue gas cleaning, waste incineration plants, recycling plants.

EQUIPO LLC

Salahudeen Road
Dubai
64624
UAE
Contact: Mr Mohamad Yasar Aboobackar
Job Title: Operations & Sales Manager
T: + 971 506 408 626
F: + 971 426 822 17
E: yasararafat@gmail.com
W: www.equipo.ae

ESI EUROSILLO BV

Newtonstraat 26-28
Purmerend
1446 VR
The Netherlands
Contact: Mr Jaap P J Ruijgrok
Job Title: Managing Director
T: + 31 299 630 730
F: + 31 229 630 737
E: esi@eurosilo.com
W: www.eurosilo.com
Large scale flat bottom storage silos with a Eurosilo stacking and reclaim system inside. Max storage volume 100,000 m³ per unit.

EUROMECS SRL

Via Visano
78/80 Isorella
Brescia
25010
Italy
Contact: Mr Ricardo Segala
Job Title: Sales and Marketing
T: + 39 030 9958 151
F: + 39 030 995 2223
E: sales@euromecsrll.info
W: www.euromecsrll.com
EUROMECS, born from the merger of companies Eurohydromec and Isomec, has years of experience in the material handling field and

the production of products such as lifting equipment, electrohydraulic and mechanical grabs and buckets.

EUROTECH CORPORATION

195 23rd. Street
Pittsburgh
PA
15215
USA
Contact: Mr Richard W. Theobald
T: + 1 412 782 0600
F: + 1 412 782 6200
E: sales@eurotechcorporation.com
W: www.eurotechcorporation.com
Eurotech Corporation is a distributor of crane & excavator attachments. We service North and Central America. Our product range includes attachments of all types and in all size ranges including hydraulic, electro hydraulic, diesel hydraulic and mechanical grabs for bulk material handling.

EURO-TRAMCO BV

Space-shuttle 8G
Amersfoort
3824 ML
The Netherlands
Contact: Mr Hans Plekkenpol
T: + 31 33 4567033
F: + 31 33 4558149
E: hans@tramco-europe.com
W: www.tramcoinc.com
Manufactures chain, screw and bucket conveyors and 'Aerobelt' air-supported belt conveyor systems.

FAM FOERDERANLAGEN MAGDEBURG

Sudenburger Wuhne 47
Magdeburg
D-39112
Germany
Contact: Mr Ulrich Schneider
Job Title: Director Sales and Marketing
T: + 49 391 6380 10 101
F: + 49 391 6380 10 1 99
E: sales@fam.de
W: www.fam.de
An independent company with its head office in Germany whose scope of services includes: consulting, planning, projecting, design, fabrication, erection, commissioning and plant service.

FIGEE CRANE SERVICES BV

PO Box 235
Zaandam
1500 EE
The Netherlands
Contact: Mr Henk van Til
Job Title: Business Manager,
Harbour Cranes
T: + 31 75 6810 413
F: + 31 75 6315 996
E: h.vantil@figee.com
W: www.kenz-figee.com
Engineering, manufacturing, commissioning and service of a wide range of grab cranes, including floating Lemniscate cranes, floating Derrick cranes, single jib cranes, double jib cranes and gantry grab cranes.

FLEXCO

2525 Wisconsin Avenue
Downers Grove
IL
60515-4200
USA
Contact: Ms Kelly Clancy

Job Title: Public Relations Specialist
T: + 1 630 971 0150
F: + 1 630 971 1180
E: kclancy@flexco.com
W: www.flexco.com
Founded in 1907, this US-based company services the world's belt conveyors through subsidiaries in Mexico, England, Germany, Australia and South Africa. Perhaps best known for heavy-duty Flexco® bolt- or rivet-attached belt fasteners, the company has expanded into providing a wide range of accessory products to enhance belt conveyor performance.

FLEXOVEYOR CONVEYOR

3795 Paris St., Unit D
Denver
Colorado
80239
USA
Contact: Mr Bill Priday
T: + 1 303 375 0200
F: + 1 303 373 5149
E: billpriday@conveyind.com
W: www.flexoveyor.com
A leading manufacturer of material handling equipment for bagged material to include belt conveyors, bag palletizers, empty pallet dispenser and full pallet conveyors. Systems are complete with all required electrical controls, wiring and programming. All equipment is shipped as fully assembled as possible and is tested 100% prior to shipment.

FLSMIDTH WADGASSEN GMBH



Karl-Koch-Strasse 1
Wadgassen
Saarland
66787
Germany
Contact: Mr Arrien Westhuis
Job Title: CEO
T: + 49 6834 470 0
F: + 49 6834 470 339
E: wadgassen@flsmidth.com
W: www.flsmidth.com
FLSmidth's bulk material handling systems and components are based on more than 60 years of experience in design, engineering, manufacturing and maintenance and are in use for the mining, processing, blending, storage and handling of any type of bulk material.

GANZ DANUBIUS TRADING CO LTD

PO Box 1138
Budapest
H1325
Hungary
Contact: Mr Karol Bayus
Job Title: Director
T: + 36 1 350 5570
F: + 36 1 329 8041
E: gdtco@hu.inter.net
W: www.ganztrading.hu
Suppliers of mechanical shiploaders and unloaders, level luffing harbour grab cranes, floating grab cranes and other bulk handling equipment.

GARWOOD CONSULTING LTD

Garwood Lodge
Wentworth
Ely

Cambridgeshire
CB6 3QG
UK
Contact: Mr Barry Woodbine
T: + 44 780 102 4583
F: + 44 1353 777315
E: barry@garwoodconsulting.com
Consultancy and advice in every aspect of dry bulk materials handling for import and export plus storage and distribution including loading and discharge of ships, railcars and road trucks.

GENERAL KINEMATICS CORP.

5050 Rickert Rd.
Crystal Lake
IL 60014
USA
Contact: Mr Thomas Musschoot
T: + 1 815 455 3222
F: + 1 815 455 2285
E: tmusschoot@generalkinematics.com
W: www.generalkinematics.com
General Kinematics specializes in vibrating and rotary equipment and solutions for bulk processing of material in the foundry, recycling, scrap, mining, minerals, food, chemical, and wood industries. Each piece of GK equipment is custom engineered to your specifications to meet your process objectives.

GEOMÉTRICA DE MÉXICO, S.A. DE C.V.

Puerto Vallarta # 801
Colonia La Fé
San Nicolás de los Garza
N.L.
66477
Mexico
Contact: Mr Fuad Dawabeh
T: + 52 81 8882 8300
F: + 52 81 8882 8301
E: sales.mexico@geometrica.com
W: www.geometrica.com/
bulk-storage
Specialises in the design, fabrication and erection of bulk storage enclosures requiring large, column-free interiors. Geometrica structures may span over 300m, may be galvanised steel or aluminium. Geometrica domes are used over circular, square, rectangular and even irregular areas.

GEOMETRICA INC

12300 Dundee Court
Suite 200
Cypress
Texas
77429
USA
Contact: Mr Francisco Castañó
Job Title: President
T: + 1 832 220 1200
F: + 1 832 482 0879
E: sales@geometrica.com
W: www.geometrica.com
Specializes in design, fabrication and erection of bulk storage enclosures requiring large, column-free interiors. Geometrica structures may span over 300m and may be galvanized steel or aluminium. Geometrica domes are used over circular, square, rectangular and even irregular areas. They are designed with conveyor, vehicle and access openings, tailored to each project and installed quickly with local semi-skilled workers.

GEROLDINGER GMBH & CO KG

Au-Strasse 9
Sigharting
A-4771
Austria
Contact: Mr Walter Geroldinger
Job Title: General Manager
T: + 43 7766 24370
F: + 43 7766 243724
E: office@geroldinger.com
W: www.geroldinger.com
Product range includes grain silos and bins, railcar loaders and unloaders, truck loaders and unloaders and hopper systems.

GOLFETTO SANGATI SPA

Via F.lli Bandiera, 3
Quinto di Treviso tv italy
Quinto di Treviso
TREVISO TV
31055
Italy
Contact: Mrs Monica Giantin
T: + 39 0422 476700
F: + 39 0422 476800
E: info@golfettosangati.com
W: www.golfettosangati.com
Complete plants for bulk or bag handling, including pneumatic or mechanical shiploaders (ranging from 50 to 1200 tons per hour), bulk or bag shiploaders, engineering of fully automated systems for grain handling.

GOODMAN CONVEYOR COMPANY

U.S. Route 178 South
PO Box 866
Belton
South Carolina
29627
USA
Contact: Mr Carter Matthews
Job Title: VP Sales & Marketing
T: + 1 864 338 7793 x 102
F: + 1 864 338 8732
E: info@goodmanconveyor.com
W: www.goodmanconveyor.com
Belt conveyor idlers, screw conveyors, bucket elevators, drag conveyors.

GOODTECH SOLUTIONS AS

Bjoernslettveien 2
Porsgrunn
N-3917
Norway
Contact: Mr Knut Halvorsen
Job Title: Commercial Group Manager
T: + 47 35 93 05 50
F: + 47 35 93 05 60
E: knut.halvorsen@goodtech.no
W: www.portabulk.com or www.goodtech.no
Part of the Norwegian Goodtech Group, Goodtech Solutions' business network provides superior materials handling technology, services and systems, under the PORTABULK® brand, to a wide variety of user segments throughout the world.

GOTTWALD PORT TECHNOLOGY GMBH

Postfach 180343
Düsseldorf
D-40570
Germany
Contact: Mr Giuseppe Di Lisa
Job Title: Sales Director
T: + 49 211 7102 0
F: + 49 211 7102 3651
E: info@gottwald.com
W: www.gottwald.com

Offers a wide range of mobile harbour cranes including professional four-rope grab cranes with lifting capacities ranging to 120 tonnes and radii up to 56m. Comprehensive customer support services including spare parts stocks, field service, full service contracts and a 24-hour call-out.

GREYSTONES CARGO SYSTEMS (PTY) LTD

PO Box 22034
Glenashley
Durban
4022
South Africa
Contact: Mr Bruce Poucher
T: + 27 31 274 2600
F: + 27 31 569 2626
E: paul@greystones.co.za
W: www.greystones.co.za
Manufactures pneumatic and mechanical shiploading and unloading systems, belt conveyor systems and other bulk handling equipment.

GULSAN A.P.

Organize Sanayi Bolgesi 2 Cad.
No: 18
Gaziantep
27180
Turkey
Contact: Ms Gülden Saka
Job Title: Marketing Manager
T: + 90 342 337 1180
F: + 90 342 337 2528
E: info@gulsan-group.com
W: www.gulsan-group.com

GUTTRIDGE LTD

Wardentree Park
Pinchbeck
Spalding
Lincolnshire
PE11 3UU
UK
Contact: Mr Bill Lewis
Job Title: Senior Engineer
T: + 44 1775 765300
F: + 44 1775 765301
E: sales@guttridge.co.uk
W: www.guttridge.co.uk
Manufactures a range of bulk conveying and elevating equipment, as well as storage facilities.

GUVEN GRAB AND MACHINE LTD. CO



Nazim Hikmet Cad 536. sk. No: 9
Aske Köyü
Cayirova
Kocaeli
41420
Turkey
Contact: Mr Engin Demir
Job Title: Sales & Export Manager
T: + 90 262 743 8858
F: + 90 262 743 1141
E: info@guvengrab.com
W: www.guvengrab.com
Established in 1984, Guven Grab & Machine (Guven Kepce Makine) has its own manufacturing facilities. Its product range includes radio remote control grabs, electro hydraulic clamshell/orange peel grabs, mechanical clamshell orange peel touch down grabs and mechanical double wired grabs. It has supplied its units to countries all over the world.

HANSON SILO COMPANY

11587 County Rd
8 SE
Lake Lillian
MN
56253
USA
Contact: Mr Mike Hanson
Job Title: Director of Business Development
T: + 1 800 843 7456
E: hscinfo@hansonsilo.com
W: www.hansonsilo.com
Hanson Silo is the leader in Modular Precast Concrete Storage Systems.

HASLER INTERNATIONAL SA

Z.I. De l'Abbaye
Pont-Èvêque
38780
France
Contact: Mr Michel Jamey
Job Title: President and Sales Director
T: + 33 474 161151
F: + 33 474 161155
E: sales.fr@hasler-int.com
W: www.hasler-int.com

HENRY INTERNATIONAL DIPLOMATIC MARINE

27502 Vilna Avenue
Santa Clarita
CA
91351
USA
Contact: Mr Jim Hill
Job Title: International Sales Manager
T: + 1 713 676 2400
F: + 1 713 673 5805
E: jhill@henry.com
W: www.henry.com
Products include: RAM-NEK - Premium heavy duty hatch cover tape. GULF-SEAL - Heavy duty hatch cover tape. MARITAPE-60 - Hatch cover tape. MARITAPE-40 - Hatch cover tape. KOAMING-AIDE - Coaming joint sealant. RAM-WRAP - Pipe repair system

HEYL & PATTERSON INC



PO Box 36
Pittsburgh
PA
15230
USA
Contact: Mr Harry Edelman
Job Title: Executive Vice President
T: + 1 412 788 9810
F: + 1 412 788 9822
E: info@heylpatterson.com
W: www.heylopatterson.com
Since 1887 the company has designed and manufactured equipment for material handling industries. The line of equipment includes continuous barge unloaders, railcar dumpers, train positioners and railcar indexers. Heyl & Patterson's 'Cub' railcar mover, designed to move short strings of cars at slower speeds, is used by the grain industry for loading and unloading grain cars.

HORIZON CONVEYOR EQUIPMENT

Unit 1, Haysech Road
Halesowen
West Midlands
B63 3PD
UK
Contact: Mr Alan Bowler

Job Title: Managing Director
T: + 44 121 550 2218
F: + 44 121 550 2243
E: info@horizonconveyors.co.uk
W: www.horizonconveyors.co.uk
Manufacturers of plastic, aluminium and steel idler rollers, conveyor belt scrapers and conveyor components.

HYCONTROL LIMITED

Larchwood House
Orchard Street
Redditch
B98 7DP
UK
Contact: Mr Nigel Allen
Job Title: Marketing
T: + 44 1527 406800
F: + 44 1527 406810
E: nallen@hycontrol.com
W: www.hycontrol.com

IBC INTERNATIONAL HANDLING AB

Hamnv. 1
Falkenberg
S-311 32
Sweden
Contact: Ms Maria Penca
Job Title: Marketing Manager
T: + 46 346 56910
F: + 46 346 56918
E: sales@ibc-international.se
W: www.ibc-international.se
IBC International Handling AB is a total supplier of services and equipment for handling dry bulk goods. We focus in particular on operational security, ergonomic thinking and environmental responsibility. Main products are FIBC filling and emptying stations with adjacent equipment.

IMASA

Palacio Valdes 1
Oviedo (Asturias)
33002
Spain
Contact: Mr Amancio Garcia
T: + 34 985 22 71 78
F: + 34 985 22 25 98
E: amancio.garcia@imasa.com
W: www.imasa.com

INSPECTORATE

Route de Cossonay 28b
Prilly
CH-1008
Switzerland
Contact: Mr Ivan Ivanov
T: + 41 21 623 62 30
F: + 41 21 623 67 00
E: ivan.ivanov@inspectorate.ch
W: www.inspectorate.com
Inspections and testing of various commodities worldwide.

INSPECTORATE AMERICA CORPORATION

12000 Aerospace Avenue
Suite 200
Houston
Texas
77034
USA
Contact: Mr Trace Griglione
Job Title: Operations Manager
T: + 1 504 392 7660
F: + 1 504 393 5248
E: trace.griglione@inspectorate.com
W: www.inspectorate.com

INSPECTORATE INTERNATIONAL LTD

2 Perry Road
Witham
Essex
CM8 3TU

UK

Contact: Mr Julian Sowry
Job Title: Sales & Mktg Mngr,
Steel & Energy Products
T: + 44 1376 536849
F: + 44 1376 520819
E: Steelenergycbt@inspectorate.co.uk
W: www.inspectorate.com
Inspectorate is one of the world's largest independent inspection companies undertaking commodity inspection and analysis services for bulk commodities. Its UK Lab is equipped to carry out all types of analysis through classical wet chemistry, fire assay and instrumental techniques, accredited to UKAS/ISO 17025 and approved by the LME.

INTERBULK ENTERPRISE

12 Mariam Walk
Singapore
507172
Singapore
Contact: Mr Michael Lian Soon
Leong
T: + 65 654 66335
F: + 65 654 50985
Bulk bag packaging items.

INTERJUTE BV

PO Box 154
Hulst
4560 AD
The Netherlands
Contact: Mr Ed Wessels
Job Title: International Sales Manager
T: + 31 114 311208
F: + 31 114 311512
E: ewessels@interjute.nl
W: www.interjute.com
INTERJUTE is a global supplier of woven polypropylene bags and big bags with offices in the Netherlands, Spain, Romania and Brazil. Based on its 50 years' experience supplying flexible packaging materials, the company has achieved a leading position in the international bulk packaging sector offering quality, efficiency and competitive prices. We deliver from stock throughout Europe including Black Sea and Baltic ports but also to Africa.

INTERSYSTEMS

9575 N 109th Ave
Omaha
NE
68142
USA
Contact: Mr Ray Vrtiska
Job Title: VP Sales, Bulk Material Handling
T: + 1 402 330 1500
F: + 1 402 330 3350
E: bulkmat@intersystems.net
W: www.intersystems.net
Intersystems manufactures a complete line of enclosed belt and en-masse conveyors, bulk weighers, bucket elevators, samplers, probes, screeners, distributors, micro ingredient systems and bolted bin systems.

ITALGRU S.R.L.

Statale Briantea, 4
Ambivere
(BG)
24030
Italy
Contact: Mr Riccardo Losa
T: + 39 0 35 49 32 411
F: + 39 35 49 32 409
E: riccardo.loso@bonfanti.it
W: www.italgru.com

J & B GRABS B.V.

PO Box 176
De Meern
Utrecht
3454 ZK
The Netherlands
Contact: Mr Jan Joustra
Job Title: Director
T: + 31 3066 21616
F: + 31 3066 63765
E: info@jb-grabers.nl
W: www.jb-grabs.com
Designs, engineers and manufactures mechanical and hydraulic grabs for all kinds of bulk material.

JEM INTERNATIONAL & EXPRESS SCALE PARTS

6873 Martindale
Shawnee
Kansas
66218
USA
Contact: Mr James Mattison
T: + 1 913 441 4787 Ext 228
F: + 1 913 441 1711
E: info@jemesp.com
W: www.jemesp.com
Manufactures complete range of open-mouth bag filling equipment and bag closing conveyors. Also makes self contained bag plants comprising bag filling scales, bag closing conveyors, air compressor surge hoppers, control panels - all container installed and mounted.

JENIKE & JOHANSON INC.

400 Business Park Drive
Tynngsboro
MA
01879
USA
Contact: Mr Brian Pittenger
Job Title: Director Business Development
T: + 1 978 649 3300
F: + 1 978 649 3399
E: mail12@jenike.com
W: www.jenike.com
Bulk solids handling engineers with nearly 50 years of field experience. Based on the scientific approach, the company will assist with handling needs, improving the reliability of clients' existing equipment and helping to choose new equipment. The quick response engineering team provide on-site consulting services in: Testing, Modelling, Functional design, Structural design, Equipment supply and Courses/seminars.

JIM WAY ENTERPRISE CO LTD

No 17 Chang Tai Street
Lin Hai Industrial District
Hsiao Kang
Kaohsiung
812
Taiwan
Contact: Mr Danny Yang
Job Title: General Manager
T: + 886 7 8718126
F: + 886 7 8718128
E: jw@roller.com.tw
W: www.roller.com.tw
Professional manufacturer established in 1980. Specialize in fabrication of belt conveyor component parts, idler, pulley, belt cleaner, skirtings, impact & wear-resistant products. Has passed ISO 9001 certification, and have more than 22 years' experience devoted to operation international business.

JOLODA (INTERNATIONAL) LTD

51 Speke Road
Garston
Liverpool
L19 2NY
UK
Contact: Ms Carol McBride
Job Title: Marketing Manager
T: + 44 151 427 8954/5
F: + 44 151 427 1393
E: info@joloda.com
W: www.joloda.com

JOY MINING MACHINERY

West Quay Road
Sunderland Enterprise Park East
Sunderland
Tyne & Wear
SR5 2TD
UK
Contact: Mr Paul Bancroft
Job Title: Sales & Marketing Director
T: + 44 191 516 5353
F: + 44 191 516 5399
E: sales@continental-conveyor.co.uk
W: www.continental-conveyor.co.uk
Previously known as Continental Conveyor Ltd.

KARDESLER GRAB & MACHINE

Sultan Orhan Mah
Hasköy Sanayi Sitesi 11/B Blok
No:24
Gebze
KOCAELI
41400
Turkey
Contact: Mr Huseyin Isikoglu
Job Title: Export Manager
T: + 90 262 6445018
F: + 90 262 6445017
E: kardesler@kardeslerkepce.com
W: www.kardeslerkepce.com and www.kardeslergrab.com
Established in Istanbul/Maltepe in 1985, KARDESLER GRAB AND MACHINE first produced grabs for sand. Now products are produced suitable for the needs of the modern age. The company considers quality service and customer satisfaction vital and happily serves clients both in Turkey and foreign countries. Today, to provide better service, clients are served out of its factory in Kocaeli Gebze Haskoy.

KINERGY CORPORATION

7310 Grade Lane
Louisville
Kentucky
40219
USA
Contact: Mr Bill Ware
Job Title: Project Manager
T: + 1 502 366 5685
F: + 1 502 366 3701
E: bware@kinergy.com
W: www.kinergy.com
Manufacturer of vibratory machines for bulk solid material handling. Induced Vertical Flow units either discharge or densify materials placed in storage. Induced Conveying units use vibration to transport or process bulk solid materials.

KING BAG & MANUFACTURING CO

1500 Spring Lawn Avenue
Cincinnati
OH

45223
USA
Contact: Mr Mike Jennings
T: + 1 513 541 5440 ext 306
F: + 1 513 541 6555
E: mike@kingbag.com
W: www.kingbag.com
Manufactures FIBCs with 100 years of experience in the speciality bag business producing custom sewn products for customers around the world.

KIROW ARDELT GmbH

Heegermühler Straße 64
Eberswalde
Brandenburg
16225
Germany
Contact: Dr Wolfgang Melzer
Job Title: Managing Director
T: + 49 3334 62 2275
F: + 49 3334 62 2121
E: Wolfgang.melzer@ardelt.de
W: www.ardelt.de
Specialist for bulk handling, founded 1902. Range: Double jib level luffing cranes; Double Jib level luffing cranes with integrated hopper; Single jib cranes; Balancer cranes; Mobile harbor cranes; Shipyard & Dock cranes. Bulk handling performances upto 2.200 t/h

KRANUNION

Spinnereistraße 13
Leipzig
04179
Germany
Contact: Ms Gabriela Schilk
T: + 49 3 41 49 53 212
F: + 49 3 41 49 53 125
E: juergen.kuehn@kirow.de
W: www.kranunion.de

Laidig Systems Inc



14535 Dragon Trail
Mishawaka
IN 46544
USA
Contact: Mr Mike Schuster
Job Title: Vice President
T: + 1 574 256 0204
F: + 1 574 256 5575
E: sales@laidig.com
W: www.laidig.com
Laidig Systems Inc, provides custom-engineered bulk storage and reclaim systems as well as silos and silo reclaimers for tough, hard to handle materials and whole grains. Such materials include soybean meal, other grain meals, whole grains, wood chips, sawdust, and recycled materials.

LANGSTON COMPANIES Inc

401 East Clay Street
PO Drawer 350
Crowley
LA
70527-0350
USA
Contact: Ms Carla Lormond
Job Title: Bulk Bag Division Site Manager
T: + 1 337 783 2010
F: + 1 337 788 1000
E: clormond@langstonbag.com
W: www.langstonbag.com
A subsidiary of Langston Companies. A bulk bag manufacturer with multiple plants and product lines and multiple warehousing/distribution centres

from coast to coast. Langston's multi-product line consists of bulk bags, kraft paper bags and textile bags. The cotton industry is also serviced. The corporate headquarters for Langston companies is located in Memphis, TN.

LANGSTON COMPANIES Inc.

PO Box 60
Memphis
Tennessee
38101-0060
USA
Contact: Mr Bob Langston
Job Title: President
T: + 1 901 774 4440
F: + 1 901 942 5402
E: blangston@langstonbag.com
W: www.langstonbag.com

LAROX FLOWSYS Oy

Marsitie 1
PO Box 338
Lappeenranta
FIN-53101
Finland
Contact: Ms Marjatta Kupias
Job Title: VP, Marketing
T: + 358 201 113 323
F: + 358 201 113 300
E: marjatta.kupias@larox.fi
W: www.larox.fi

Produces pinch valves and hose pumps for abrasive and aggressive conditions in various industries including mining, chemical, pulp and paper. For more information please contact the company in Finland or some of their representatives around the world.

LIBRAN ENGINEERING AND SERVICES

C-33, First Floor
Malviya Nagar
New Delhi
110 017
India
Contact: Mr Anil Seth
Job Title: Director
T: + 91 11 266 71658
E: libranengineering@gmail.com
W: www.libranengineering.com
Feasibility studies and development of conceptual layout including tender preparation for grain terminal.

LIBRAWERK MASCHINENFABRIK GmbH

Vossenkamp 1
Braunschweig
Lower Saxony
D-38104
Germany
Contact: Mr Klein
T: + 49 531 370980
F: + 49 531 3709888
E: info@librawerk.de
W: www.librawerk.de
Fully automatic and semi-automatic bagging units for almost all kinds of bulk goods. Big bag filling machines with a weighing range of up to 2,000kg, with capacities from 5 to 60 bags/hour.

LIEBHERR-WERK NENZING GmbH

Dr. Hans Liebherr Str. 1
Nenzing
A-6710
Austria

Contact: Mr Leopold Berthold
Job Title: Sales Director
T: + 43 50809 41725
F: + 43 50809 41447
E: mobile.harbour.crane@liebherr.com
W: www.liebherr.com
With over 35 years of experience in mobile harbour crane business, Liebherr offers today a range of 7 models (42 - 208 tonnes capacity), providing ideal solutions for the efficient handling of containers, bulk, general cargo and heavy lifts.

LISTENOW GmbH & Co.

Dieselstrasse 21
Rutesheim
71277
Germany
Contact: Mr Carsten Lohr
T: + 49 7152 50900
F: + 49 7152 509050
E: c.lohr@listenow.com
W: www.listenow.com
Loading equipment from 200-2000 mm and length up to 24m, loading tubes - patented - PU flex, loading tubes of many materials, filter for loading equipment, electric rope winches, bellow expansion joints, collars, hoses, folding stairways, transport racks.

LogSys NV

Land Van Waaslaan 5
Haven 1213
Kallo
B-9130
Belgium
Contact: Mr Etienne Leneveu
Job Title: General Manager
T: + 32 3 540 5670
F: + 32 3 755 89 61
E: hdehondt@logsys.eu
W: www.logsys.eu
LGS.Stevedore is a Terminal Operating System for dry bulk, break bulk and multipurpose terminals, developed by LogSys. Next to LGS.Stevedore, Logsys also provides solutions for maintenance management, payroll management, customer portals, road transport management, ...

MACAWBER ENGINEERING, Inc

1829 Clydesdale Street
Maryville
TN
37801-3796
USA
Contact: Mr John Bell
Job Title: Process Automation
T: + 1 865 984 5286
F: + 1 865 977 4131
E: macawber@macawber.com
W: www.macawberengineering.com
Specializing in low-velocity, dense-phase pneumatic conveying solutions and installations worldwide for over 30 years.

MACK MANUFACTURING Inc

PO Box 1559
7205 Bellingrath Road
Theodore
Alabama
36582
USA
Contact: Mr Matthew A. Davidson
Job Title: Vice President - Marketing
T: +1 251 653 9999
F: +1 251 653 1365

E: sales@MackMfg.com
W: www.mackmfg.com
A leader in designing and building heavy-duty high performance grapples and clamshell buckets since 1942. We are dedicated to supplying our customers with the right attachment for their application. Quality and reliability are trademarks of Mack grapples and buckets.

MAQUINAS CONDOR SA

Av Dos Estados 1383
Porte Alegre
RS
90200-001
Brazil
Contact: Mr Carlos Roberto
Fritsch
Job Title: Director
T: + 55 51 2104 3388
F: + 55 51 2104 3345
E: condor@maquinascondor.com.br
W: www.maquinascondor.com.br
Founded 1959. Engineers and manufactures complete systems for solid bulk materials handling ports and terminals. Equipment range includes pneumatic grain unloading, continuous shiploading, bulk stacking, reclaiming, belt conveyor, bucket elevator and mechanical conveyor. Operating from barges up to capsize ships, to 3000 tph. Shipunloaders and shiploaders operating successfully in ports around the world.

MARTIN ENGINEERING

One Martin Place
Neponset
Illinois
IL 61345
USA
Contact: Mrs Chelsea Blake
Job Title: Marketing Specialist
T: + 1 309 852 2384 ext. 518
F: + 1 800 814 1533
E: info@martin-eng.com
W: www.martin-eng.com
Martin Engineering delivers tough, tested, and innovative material handling solutions, backed by genuine and dependable industry experience since 1944. Martin is the worldwide leader in making bulk materials handling cleaner, safer, and more productive.

MARTIN ENGINEERING GmbH

In der Rehbach 14
Walluf
D-65396
Germany
Contact: Mr Joachim Preiß
Job Title: Marketing Manager
T: + 49 61 23 978 221
F: + 49 61 23 75 5 33
E: julius.mueller@martin-eng.de
W: www.martin-eng.de
Conveyor belt cleaners, belt tracking systems, impact cradles, sealing systems, dust suppression systems, air cannons and vibrators, silo cleaning services, air supported conveying systems, inertial flow transfer chutes.

MARTIN ENGINEERING SOUTH AFRICA

PO Box 12696
Leraatsfontein
1038
South Africa
Contact: Mr Hannes Kotze
Job Title: Managing Director
T: + 27 13 656 5135
F: + 27 13 656 5129

E: hannesk@martin-eng.co.za
 W: www.martin-eng.co.za
Installation & Maintenance of belt cleaners, sealing systems, impact support, belt tracking, air-cannons, screen vibrators, silo cleaning, service contracts, Martin Engineering Service Group - MESG S Class air supported conveyors, Inertial Flow chutes.

MASCHINEN UND MÜHLENBAU ERHARD MUHR GmbH



Grafenstraße 27
 Brannenburg
 D-83098
 Germany
 Contact: Mr Roland Muhr
 Job Title: Managing Director
 T: + 49 8034 9072 26
 F: + 49 8034 9072 526
 E: info@muhr.com
 W: www.muhr.com
MUHR offers a wide range of high quality Bulk Loading Systems (for open and closed, dust-free loading), Loading Spout Positioners, Pneumatically Docking Devices and even Railcar Dumping Systems for economical unloading of trains with open railcars.

MERRICK INDUSTRIES

10 Arthur Drive
 Lynn Haven
 FL
 32444
 USA
 Contact: Mr Ron Selbe
 Job Title: Sales Manager
 T: + 1 850 265 3611
 F: + 1 850 265 9768
 E: info@merrick-inc.com
 W: www.merrick-inc.com
Invented dynamic weighing in 1908 and has been operating continuously ever since. Offer carbon and stainless steel belt scales, weigh belt feeders, loss-in-weight feeders, volumetric feeders, flow meters and microprocessor controls. The company is focused on the dynamic weighing of powders, granules, pellets and liquids while in motion. Products are supplied worldwide and can be used in batching, continuous weighing and continuous feedrate control applications.

METSO

Bulk Materials Handling
 4000 Town Center Boulevard
 Suite 400
 Canonsburg
 PA
 15317
 USA
 Contact: Mr Tom Lippencott
 Job Title: VP Mining Capital Sales, USA & Canada
 T: + 1 412 269 5137
 F: + 1 412 269 5212
 E: Tom.Lippencott@metso.com
 W: www.metso.com
*Products: Railcar and Barge Pullers, Railcar Dumpers and Positioners, Grab & Equilibrium Unloaders, En-Masse Conveyors, Ship Trimmers, Throwers, Railcar Indexers, Barge Haul Systems, Breasting Winches, Apron Feeders
 Brand Names: Stephens-Adamson, McNally Wellman,*

PECO, Nolan HCM, MKT, Mead Morrison, McDowell Wellman, NICO

MIDWEST INTERNATIONAL STANDARD PRODUCTS, INC.

105 Stover Road/ PO Box 438
 Charlevoix
 MI
 49720
 USA
 Contact: Mr Walter Pair
 Job Title: Director of Operations
 T: + 1 231 547 4000
 F: + 1 231 547 9453
 E: sales@midwestinternational.com
 W: www.midwestmagic.com
Founded in 1967 the company focuses on dust-free loading and stockpiling of dry bulk products. The Paragon Series and Heavy Duty Mining Series product lines have throughput capacities to 1400 STPH and 6000 STPH respectively and useful vertical travels to 45 feet and 100 feet. Chokefeeder dust-free shiploading systems are used by governments and industries in over 50 countries.

MOLE•MASTER SERVICES CORPORATION™

27815 State Route 7
 Marietta
 Ohio
 45750
 USA
 Contact: Mr David Laing
 Job Title: General Manager
 T: + 1 740 374 6726
 F: + 1 740 374 5908
 E: contact@molemaster.com
 W: www.molemaster.com
Silo, bin, bunker and process vessel cleanout and unloading services and equipment.

MRS GREIFER GmbH

Talweg 15-17
 Helmstadt-Bargen
 D-74921
 Germany
 Contact: Mrs Karin Greulich
 Job Title: Export Manager
 T: + 49 7263 912 915
 F: + 49 7263 912 912
 E: export@mrs-greifer.de
 W: www.mrs-greifer.de
Approaching 40 years experience in producing all types of grabs. The company's product range extends from mechanical grabs, also radio-controlled, to hydraulic and electro-hydraulic grabs with motor drives. Besides excellent after-sales service, MRS provide spare parts from stock.

MÜHLEN SOHN GmbH & Co. KG

P.O. Box 1165
 Blaustein
 D-89130
 Germany
 Contact: Mrs Karin Albrecht
 Job Title: Sales Manager Fluitex
 T: + 49 7304 801 33
 F: + 49 7304 801 23
 E: albrecht.karin@muehlen-sohn.de
 W: www.muehlen-sohn.de
Mühlen Sohn GmbH & Co. KG is one of the leading suppliers of fluidising fabrics and looks back to a success story since 1880 which means over 130 years of

weaving experience. Fluitex® air slide fabrics for pneumatic loading and unloading systems, airslides for pneumatic conveying, storage and homogenising silos, discharging cones, fly ash handling systems.

MULLER BELTEX BV

Ambachtsweg 28A
 Pijnacker
 2641 KS
 The Netherlands
 Contact: Mr Frits Muller
 T: + 31 15369 5444
 F: + 31 15369 7864
 E: info@mullerbeltex.com
 W: www.mullerbeltex.com
Other Equipment: Elevators. Specialists in elevator components, buckets and belts and ATEX conform safety monitoring equipment. Engineering and problem solving. Belt hole punching service up to 2000 mm width on CNC machine Specialist in abrasion resistant liners for bulk handling equipment.

NAVCO (NATIONAL AIR VIBRATOR Co)

PO Box 40563
 Houston
 TX
 77240-0563
 USA
 Contact: Mr Ben Snider
 Job Title: Marketing
 T: + 1 832 467 3636
 F: + 1 832 467 3800
 E: ben@navco.us
 W: www.navco.us

NECTAR GROUP LTD

No 1 Ashton Gate
 Ashton Road
 Harold Hill
 Romford
 Essex
 RM3 8UF
 UK
 Contact: Mr Guy Wilkes
 Job Title: Commercial Director
 T: + 44 1708 386 555
 F: + 44 1708 386 665
 E: nectar.uk@nectargroup.net
 W: www.nectargroup.net
NECTAR is involved in the handling of bulk commodities such as cereals and fertilizers in ports and/or inland locations. Involvement ranges from the positioning of Nectar's own mobile bagging equipment to handle one-off cargoes, through to period leases or sales of equipment to joint-ventures with port authorities and strong local partners. Nectar also operates and manages silos and flat storage construction at bulk handling terminals.

NEGRINI SRL

via E. Torricelli n.4
 Castelfranco Emilia
 Modena
 41013
 Italy
 Contact: Mr Rossetti Alessandro
 T: + 39 059 923110
 F: + 39 059 920378
 E: info@negrini.org
 W: www.negrini.org
Negrini srl considers the attainment of client satisfaction our primary objective, through a continuous and effective process of study and collaboration with both clients and suppliers. Professionalism and versatility

towards different customer demands: this is the business philosophy of Negrini srl.

NEMAG BV

Deltastraat 15
 PO Box 110
 Zierikzee
 4300 AC
 The Netherlands
 Contact: Mr Riny Stoutjesdijk
 Job Title: Sales Manager
 T: + 31 111 418 900
 F: + 31 111 416 154
 E: sales@nemag.com
 W: www.nemag.com
NEMAG specializes in sales and manufacture of tailor made mechanical grabs. Also rope end fittings like the NEMAG Rope Pear Socket and NEMAG Quick Release Link. NEMAG is one of the leading grab manufacturers world wide.

NERAK GmbH

FÖRDERTECHNIK
 Brigitta 5
 Hambühren
 D-29313
 Germany
 Contact: Mr Edgar Bleeker
 Job Title: Marketing
 T: + 49 50 84 944 0
 F: + 49 50 84 944 222
 E: bleeker@nerak.de
 W: www.nerak.de
Conveying on combined horizontal/vertical paths is our strength. The NERAK rubber block chain is the basis for the world wide success of NERAK conveyors: reliable, nearly maintenance free, without any lubrication and very silent, operating in various industries.

NEUERO

INDUSTRIE-TECHNIK GmbH

NEUERO
 Neurostrasse 1
 Melle
 D-49324
 Germany
 Contact: Eng Andreas Haeuser
 Job Title: Sales & Project Manager
 T: + 49 5422 9503 26
 F: + 49 5422 9503 50
 E: ha@neuero.de
 W: www.neuero.com
NEUERO offers a wide range of pneumatic conveyors and unloaders from 10tph to 1,000tph. Mechanical ship unloaders up to 1,200 tph and solution systems for loading ships to 3,000tph. Product varies from grain to alumina and biomass. Special unloading systems with rotating feeder for non free flowing materials like biomass or feedstuff. Environmental friendly and operation safe.

NILFISK-CFM SpA

Via Porrettana 1991
 Zocca
 Modena
 41059
 Italy
 Contact: Dr Leonardo Bianco
 Job Title: Marketing Manager
 T: + 39 059 973 00 31
 F: + 39 059 973 00 99
 E: info@nilfisk-cfm.com
 W: http://www.cfm.it/
CFM SpA is world leader in the production of industrial vacuums, pneumatic conveyors, centralized

vacuum systems and high power vacuums (Spirovac).

NKM NOELL SPECIAL CRANES GmbH

Postbus 638
 Hoofddorp
 2130AP
 The Netherlands
 Contact: Mr Enno Kramer
 Job Title: Managing Director
 Hoofddorp Branch
 T: + 31 20 655 0030
 F: + 31 20 655 0040
 E: enno.kramer@nkmnoell.com
 W: www.nkmnoellspecialcranes.com
Leading manufacturer of lemniscates cranes and special equipment for the bulk industry. Turn key project capability; design, manufacturing and erection in-house. Our maintenance division provides added value service for refit, modernisation and redesign for increased performance.

NORDSTRÖMS KONSTRUKTIONSBYRÅ

Storgatan 58
 Umeå
 SE-903 30
 Sweden
 Contact: Mr Peter Vedin
 Job Title: Marketing
 F: + 46 90 1330 69
 E: arletun@nordstroems.se
 W: www.nordstroems.se
The company, established 1981, is a supplier of turnkey plants and custom-made equipment for general dry bulk solids and aggregate material handling. The product portfolio includes belt and worn conveyors; telescopic loading chutes; weighing scales; silos, bins and hoppers; feeders and valves. Machines are parametrically adjusted to meet individual client's needs on terms of specifications and capacities.

NORDSTRONG EQUIPMENT LTD

400 Ambassador Drive
 Mississauga
 Ontario
 L5T 2J3
 Canada
 Contact: Mr Bill Van Duyn
 Job Title: Sales Manager
 T: + 1 289 562 6402
 F: + 1 289 562 6445
 E: wmvanduynd@nordstrongequipment.com
 W: www.nordstrongequipment.com
Provides range of material handling equipment including belt, drag, screw and pipe conveyors and bucket elevators.

ORTHOS PROJECTS LTD.

Fernie Road
 Market Harborough
 Leicestershire
 LE16 7PH
 UK
 Contact: Mr Nick Hall
 Job Title: Director
 T: + 44 1858 462806
 F: + 44 1858 464403
 E: nick.hall@orthosprojects.com
 W: www.eandf-services.com or www.orthosprojects.com
Orthos Projects, specialists in bulk materials handling have taken over the operation of E&F services. Their Dockside Mobile Loaders have gained a technological lead in eliminating

spillage and controlling dusty products from Ports operations. Their range of Filters eliminating pollution.

**ORTS GmbH
MASCHINENFABRIK**



Schwartauer Strasse 99
Sereetz
D-23611
Germany
Contact: Herr Sigvard Orts
T: + 49 451 398850
F: + 49 451 392374
E: sigvard.orts-jun@orts-gmbh.de
W: www.orts-greifer.de
Whole range of grabs for all kind of bulk materials, dredging and scrap handling: mechanical single-, 2- and 4-rope grabs, electro- hydraulic grabs, remote controlled diesel- hydraulic grabs, special constructions, repair and overhauling of grab.

**PAM POUL ANDERSEN
MASKINFABRIK A/S**

Vejlevangen 5
Kerteminde
DK - 5300
Denmark
Contact: Mr Erik Andersen
Job Title: Director
T: + 45 65 32 12 41
F: + 45 65 32 43 53
E: pam@pam.dk
W: www.pam.dk
PAM is a privately owned family company which was founded in 1935. PAM produces pneumatic conveying units. Mobile suction units 100-150 t/h or suction blowing units 100-120 t/h, with diesel engine or electric motor.

PAUL HEDFELD GmbH

Hundecker Strasse 20
Gevelsberg
58285
Germany
Contact: Mr Burkhard Hedfeld
T: + 49 2332 6371
F: + 49 2332 61167
E: hedfeld@hedfeld.com
W: www.hedfeld.com
The company has produced and delivered complete installations for over 60 years for the transport of bulk goods such as bucket elevators, screw- and chain conveyors. The delivery of spare parts used in these conveyors was and is the basis of the current worldwide activities. An extensive warehouse, long-time experience and cooperation with efficient forwarding agents guarantees the observance of our goal: We hold your bulks in movement.

PEBCO®

PO Box 7506
225 North 4th Street (42001)
Paducah
KY
42002-7506
USA
Contact: Mr Mark Kettler
Job Title: Director of Sales and Marketing
T: + 1 270 442 1996 ext 202

F: + 1 270 442 5214
E: sales@pebco.com
W: www.pebco.com
PEBCO® is recognized worldwide as the leading manufacturer of powder and dry bulk solids handling equipment. Products range from truck, train, and ship loading equipment to gates, valves, diverters, mass flow feeders, Cascade® chutes, dustless loading spouts, and telescopic chutes.

**PETERSON AGRICARE &
BULK LOGISTICS BV**

Boompjes 270
Rotterdam
3011 XZ
The Netherlands
Contact: Mr Henk Kikkert
T: + 31 10 282 3333
F: + 31 10 282 3282
E: info@peterson.nl
W: www.peterson.nl
Offers a wide range of logistic, inspection, laboratory and certification services in agrifluid commodities, mineral bulk commodities, chemicals, biomass and biofuels. Complete supply chain covered from origin to destination.

**PFISTER WAAGEN
BILANCIAL GMBH**

Linker Kreuthweg 9
Affing-Mühlhausen
D-86444
Germany
Contact: Ms Susanne Geller-Dürr
Job Title: Marketing Manager
T: + 49 82 07 9 58 99 28
F: + 49 82 07 9 58 99 29
E: marketing@pfisterwaagen.de
W: www.pfisterwaagen.de
Truck weighbridges, railway scales, platform scales, crane scales, weighing data management software, load cells, load cell units, weighing indicators.

**PHB WESERHÜTTE,
S.A.**



Parque Científico y Tecnológico de Gijón
C/Luis Moya Blanco 82
Gijón
Asturias
33203
Spain
Contact: Dr Jose Ramón Prado
Job Title: Technical Commercial Director
T: + 34 985 13 41 71
F: + 34 985 13 42 22
E: joseramon.prado@pwh.es
W: www.pwh.es
PHB Weserhütte, has over 50 years' experience and its own "know how" in the area of materials handling. The company has vast experience in the development of Turnkey Projects in the sectors of energy, cement, ports, iron and steel, fertilisers, mining and industrial plants.

**PHENIX ROUSIES
INDUSTRIES**

Rue de Maubeuge
Rousies
59131
France
Contact: Mr Frederic Lepretre

Job Title: Export Sales Manager
T: + 33 3 27 69 42 42
F: + 33 3 27 64 95 85
E: lepretre.export@silos-phenix.com
W: www.silos-phenix.com
Produces dust control covers for belt conveyor systems and grain storage silos fitted with integrated gantry and aeration systems.

PIRS SA

ZI St Hermentaire
309, Avenue de l'Europe
Draguignan
Var
83300
France
Contact: Mr Fikri El Mourabet
Job Title: International Sales Manager
T: + 33 4 98 10 6767
F: + 33 4 98 10 6768
E: info@domepirs.com
W: www.domepirs.com
Specialists in the construction of reinforced concrete dome storage for bulk products. Storage capacity can reach up to 100,000 tons depending on the product. The company has built more than 100 domes worldwide and provide engineering, materials, supervision construction and turnkey projects.

**PLANTRAGG
DEVELOPMENTS**

4 Wold View
Caistor
Lincoln
Lincolnshire
LN7 6UU
UK
Contact: Mr Bob Harrison
Job Title: Director
T: + 44 1472 852 498 or
+ 44 7973 832 741
F: + 44 1472 852 498
E: ptag.dev@talktalk.net
W: www.plantragg.co.uk
The company has 14 years experience with the removal of 'hung' cargoes from bulk carrier frames with their 'Vibrotrig' patented device, ideally suited to be mounted on a telescopic handler, which in its own right is a very useful machine to be used on other duties. Ship Trimming Aid "Vibrotrig" patented equipment to facilitate fantastic improvements to ship turnaround and terminal throughput.

PLM CRANES B.V.

Sluisweg 21-25
Heijningen
4794 SW
The Netherlands
Contact: Mr Pieter Pulleman
Job Title: Managing Director
T: + 31 167 528510
F: + 31 167 524444
E: info@plmcranes.com
W: www.plmcranes.com
We build hydraulic and electric cranes from 50 to 2000 tm with a transhipment capacity up to approx. 2000 ton/hour. We are specialized in shipboard cranes, mobile cranes and harbour cranes for dredging, transhipping, hoisting and pile-driving.

PM GRABS

61 Aerodrome Road
Mount Maunganui
Tauranga
New Zealand
Contact: Mr Bruce Ennis
Job Title: Cargo Handling

Equipment Manager
T: + 64 7 575 5079
F: + 64 7 574 4408
W: www.pmgrabs.co.nz

**POLYMER INDUSTRIES -
ULTRAPOLY DIVISION**

2404 Center Street
Tacoma
WA
98409-7638
USA
Contact: Mr Bryan Olin
T: + 1 253 272 1217
F: + 1 253 272 1457
E: bryan@ultrapoly.com
W: www.polymerindustries.com
Other equipment: wear and liner components. UHMWPE and other olefins for impact, wear and flow applications.

PORT-TRADE APS

Karetmagervej 9
Fredericia
DK 7000
Denmark
Contact: Mr Peter J Muller
Job Title: Sales Manager
T: + 45 7628 0102
F: + 45 7628 0103
E: peter.muller@port-trade.com
W: www.port-trade.com
Sales and service in Scandinavia of harbour cranes, grabs, containerspreaders, loaders, reclaimers etc.

POWERTEX INC

1 Lincoln Boulevard
Rouses Point
New York
12979
USA
Contact: Mr George Bombardier
Job Title: Vice President Sales and Marketing
T: + 1 518 297 4000
F: + 1 518 297 2634 / 2242
E: georgebombardier@powertex.com
W: www.powertex.com
Powertex is a market leader in the dry bulk container liner market, with its Sea Bulk container liner system for 20' and 40' ocean containers. Powertex assist clients through Project Management, with Logistics and with Loading and Discharge Equipment - supplying equipment specifically designed for the use of bulk container liners.

PRECIA-MOLEN BV

Frans Akker 1
Breda
4824 AL
The Netherlands
Contact: Mrs Monique Kuijter-Heessels
Job Title: Communication & Marketing
T: + 31 76 524 2513
F: + 31 76 522 8039
E: monique.heessels@preciamolen.nl
W: www.preciamolen.nl
For more than 143 years Precia Molen is specialized in industrial weighing equipment such as weighbridges, hopperscales, bagging scales, platform scales, truckdumpers etc.

**PRIMASONICS
INTERNATIONAL LIMITED**

North Lakes Business Park
Flusco
Penrith
Cumbria

CA11 0JG
UK
Contact: Mr Donald Cameron
Job Title: Managing Director
T: + 44 17684 80372
F: + 44 17684 80374
E: sound@primasonics.com
W: www.primasonics.com;
www.quattrosonics.com
Primasonics designs and manufactures a range of Audiosonic Acoustic Cleaners which are used to de-bond powders allowing free flow of material. Wherever ash, dust, powders or granular material is processed, stored, generated or transported.

**PROCON ENGINEERING
LIMITED**

Vestry Estate
Olford Road
Sevenoaks
Kent
TN11 5EL
UK
Contact: Mr Joe Naylor
Job Title: Sales Manager - Beltweighers
T: + 44 1732 781 300
F: + 44 1732 781 311
E: joe.naylor@proconeng.com
W: www.proconeng.com
Manufactures belt weighers for process control and trade use in the grain industries. Weighing systems for grain have been produced with capacities as low as 2t/h and as high as 2,000t/h. (In other materials the company has machines as high as 12,000t/h. Many single sites trade over GBP£100 million per annum over their Procon Inflo trade approved belt weighing systems.

PT. BANDO INDONESIA

Wisma Hayam Wuruk, 6th floor,
Suite 600
Jln. Hayam Wuruk No. 8
Jakarta
10120
Indonesia
Contact: Mr Wahyono Wardiman
Job Title: Conveyor Belt Division
T: + 62 21 3517590
F: + 62 21 3517591
E: conveyordiv@bandoindonesia.com
W: www.bandoindonesia.com
PT. Bando, established in 1987, is one of the leading automotive and industrial power transmission belt manufacturers in Indonesia. It has one main plant located in Tangerang and its marketing office located in Central Jakarta.

**QUADRANT
ENGINEERING PLASTICS
PRODUCTS**

2120 Fairmont Avenue
Reading
PA
19612
USA
Contact: Mr Ron Mesing
Job Title: Project Development Manager
T: + 1 412 384 5592
F: + 1 412 384 8910
E: ron.mesing@qplas.com
W: www.systemtivar.com
With more than 30 years experience, Quadrant EPP's System TIVAR® Engineering designs, fabricates and installs lining systems worldwide for use in hoppers, chutes, bins, dump bodies, railcars, ships, etc.,

featuring industry-leading low coefficient of friction, abrasion-resistant TIVAR® 88 family of products.

R & S S.R.L.

Via del Cmapo Sportiuo 40
Mezzana
48123
Italy

Contact: Mr Silvio Banzi
Job Title: Head of Advertising
T: + 39 0535618 205
F: + 39 0544411 099

E: s.banzi@gwam.it
W: www.roncuzzi.com

Design and build wide range of equipment for bulk handling material. Pneumatic ship unloaders, mechanical ship loaders (bulk and bags), grab loading hoppers (dust free) conveyor belt, bucket elevators and chain conveyors. Rotary valves, Screw conveyors, diverters, telescopic bellows.

RBL-REI FRANCE

11 Boulevard Brune
Paris
Cedex 14
75682
France

Contact: Mr Sébastien Bouhours
T: + 33 2 41 21 19 40
F: + 33 2 41 21 19 59

E: s.bouhours@rbl-france.com
W: www.rblrei-france.com
Designs, builds and supplies continuous bulk handling belt conveyor systems and associated equipment, stackers up to 10,000 tph, reclaimers up to 15,000 tph and shiploaders up to 3,000 tph.

RDS TECHNOLOGY LTD

Cirencester Road
Minchinhampton
Stroud
Gloucestershire
GL6 9BH
UK

Contact: Mr Mark Evans
Job Title: Business Development Manager

T: + 44 1453 733300
F: + 44 1453 733311
E: info@rdstec.com

W: www.rdstec.com

RDS specialises in the design and manufacture of electronic instrumentation including on-board weighing systems for loaders operating in grain and animal feed applications enhancing operational efficiency. The range includes the new Weighlog 10, Weighlog 200 and Loadmaster i series.

REMA TIP TOP GMBH

Business Unit Industrie
Gruber St. 63
Poing
Bavaria
D-85586

Germany
Contact:
T: + 49 8121 707 245
F: + 49 8121 707 222

E: info@tiptop.de
W: www.rema-tiptop.com
World leader in high-quality conveyor maintenance, wear protection and corrosion prevention. Provides products, accessories, technical consultancy and customized problem solving solutions in over 170 countries. Equipment range

– rubber linings for wear protection; rubber repair material for conveyor belts; pulley laggings; corrosion protection linings; coating and bonding systems.

RIVER CONSULTING

445 Hutchinson Ave
Suite 740
Columbus
OH
43235
USA

Contact: Mr Walter Martin
Job Title: Vice President
T: + 1 614 890 3456
E: wmartin@riverconsulting.com
W: www.riverconsulting.com
River Consulting delivers EPCM material handling experience, including project management, design/supply of conveying systems and engineering. With 30 years of experience, we provide proven solutions including blending, conveying, silo and stacking tubes, automation and controls, and marine structures.

ROBSON HANDLING TECHNOLOGY

Geo. Robson & Co. (conveyors) Ltd.
Coleford Road
Sheffield
S9 5PA
UK

Contact: Mr Ian Atkinson
Job Title: Sales Director
T: + 44 114 244 4221
F: + 44 114 243 3066
E: atkinsoni@robson.co.uk
W: www.robson.co.uk
Design and Manufacture of Install Bulk Handling Systems

including Belt, Screw and Chain Conveyors, Elevators, Hoppers, Vibros and Feeders. Steelwork and Supports. Individual units or Turn Key Plant.

ROYAL HASKONING

ROYAL HASKONING
Enhancing Society

George Hintzenweg 85
Rotterdam
3068 AX

The Netherlands
Contact: Ms Berte Simons
Job Title: Director Advisory Group
T: + 31 10 2865 398
F: + 31 10 443 3688
E: info@rotterdam.royalhaskoning.com
W: www.royalhaskoning.com

With knowledge and experience in the development of modern ports and (un)loading, transport and storage systems, high quality advice and comprehensive project management is provided in the field of grain and other dry bulk handling. Clients' objectives vary from increasing capacity, operational efficiency and handling speed to shifting from road to rail or inland water transport. From pre-investment studies and conceptual design to construction management, practical, sustainable and cost-effective engineering solutions are offered.

RTA ALESA LTD.

Max Hogger-Strasse 6
Zurich
CH - 8048
Switzerland
Contact: Mr Hanspeter Stahl
T: + 41 44 435 33 33

F: + 41 44 435 33 66
E: hanspeter.stahl@riotinto.com
W: www.rtaalesa.com
Specialised in tailor made solutions for the pneumatic handling of bulk materials. Travelling ship unloaders are typically designed for capacities above 600 t/h. Dense Phase conveyors is another speciality of which various capacities and conveying distances have been contracted.

RUBB BUILDINGS LTD

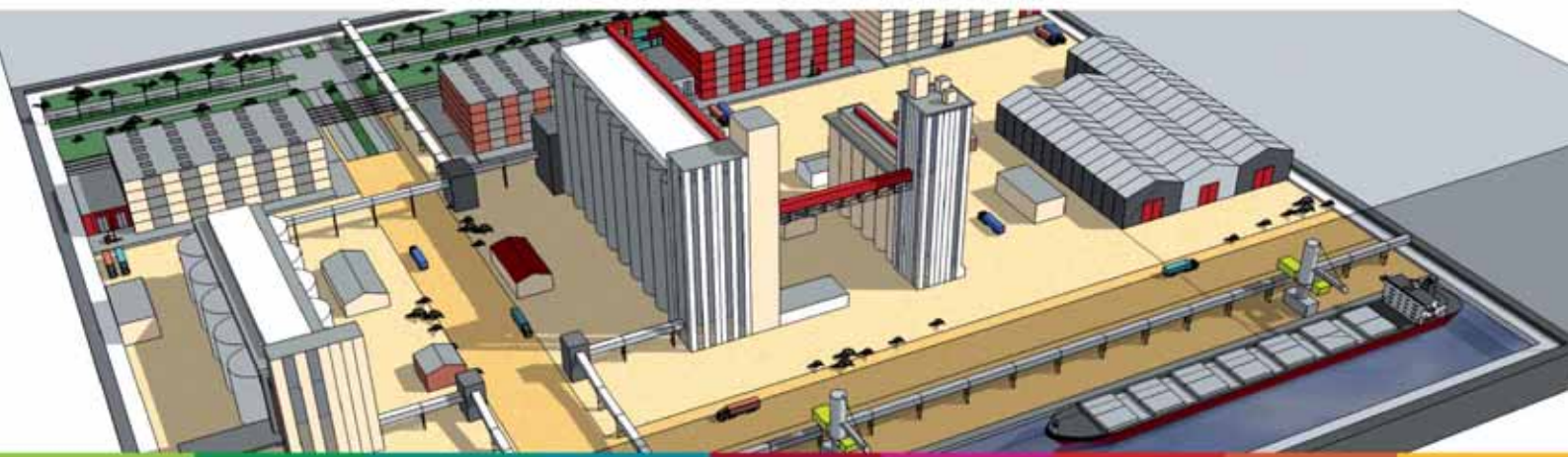
Dukesway
Team Valley Trading Estate
Gateshead
Tyne & Wear
NE11 0QE
UK

Contact: Ms Clare Wilson
Job Title: Marketing Director
T: + 44 191 482 2211
F: + 44 191 482 2516
E: info@rubb.co.uk
W: www.rubb.co.uk
Designs, manufactures and installs bulk storage and general storage buildings from 3m span to 100m span. Supply structures for storage of all types of cargo, from coal and grain to salt. The structures are totally prefabricated and relocatable, are maintenance free and the fabric has a life expectancy of up to 25 years depending on usage.

RULMECA HOLDING S.P.A.

Via A Toscanini 1
Almé
Bergamo
24011
Italy

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;
- conceptual design and feasibility studies;
- detailed tender design;
- preparation of tender documents and contracting;
- construction management and commissioning;
- start-up assistance and training.

Royal Haskoning Rotterdam, the Netherlands – Phone: +31 (0)10 2865 463 E-mail: b.simons@royalhaskoning.com

www.royalhaskoning.com

ROYAL HASKONING
Enhancing Society

Contact: Mr Carsten Spanggaard
 Job Title: Group Sales Director
 T: + 39 035 430 0111
 F: + 39 035 545 700
 E: rulmeca@rulmeca.it
 W: www.rulmeca.com
 The RULMECA Group specializes in the production of rollers, motorized pulleys and other components (such as stations, suspended garland sets and covers) for bulk material handling applications. It is composed of 10 manufacturing units, 7 sales companies and 2 representative offices and employs more than 1100 people + temporary workers.

**SALZGITTER
 MASCHINENBAU
 AG/PEINER GRABS**



Windmühlenbergstrasse 20-22
 Salzgitter
 D-38259
 Germany
 Contact: Mr Arnulf Köhnmann
 T: + 49 5341 302 613
 F: + 49 5341 302 424 or 606
 E: arnulf.koehnmann@smag.de
 W: www.smag.de
 Manufacturer and supplier of a complete range of grabs, ie (electro-hydraulic) motor grabs, single-rope grabs, two- and four-rope grabs, hydraulic grabs as well as rotators (slewing units) and special grabs for all kinds of bulk materials for various applications and purposes.

**SARTORIUS
 MECHATRONICS T&H
 GMBH**

Meiendorfer Strasse 205
 Hamburg
 D-22145
 Germany
 Contact: Mr Johannes Kratz
 Job Title: Marketing Manager
 T: + 49 40 67960303
 F: + 49 40 67960383
 E: info.mechatronics@sartorius.com
 W: www.sartorius.com
 The core competencies lie in weighing sensors (load cells), display units (indicators) and complex process control (system controllers) for industrial use. Its customers primarily operate in the chemicals, pharmaceuticals, construction materials, food and cosmetics industries, among others.

**SCHENCK PROCESS UK
 LIMITED**

Carolina Court
 Lakeside
 Doncaster
 South Yorkshire
 DN4 5RA
 UK
 Contact: Mr Paul Markwell
 Job Title: Marketing Manager
 T: + 44 1302 321 313
 F: + 44 1302 554 400
 E: enquiries@schenckprocess.co.uk
 W: www.schenckprocess.co.uk
 Schenck Process provides innovative solutions for the

handling of bulk materials using pneumatic and mechanical conveying technologies together with air-filtration and weighing equipment to give a comprehensive package of products and services for dry cargo and materials.

**SCHENCK PROCESS UK
 LTD T/A REDLER**

Redler House
 Dudridge
 Stroud
 Gloucestershire
 GL5 3EY
 UK
 Contact: Mr Andrew Workman
 Job Title: Director - Bulk Materials Handling
 T: + 44 1453 761 784
 F: + 44 1453 763 582
 E: sales@redler.com
 W: www.redler.com
 Leading global supplier of bulk materials handling and storage systems. Known for quality and reliability. Can offer a turnkey package for a grain storage complex or a single machine from its portfolio of conveyors and elevators ranging from 10 to 2000 tonnes per hour. A range of belt conveyors, mobile hoppers and flat store filling "bridge" conveyors is also available.

**SCHOUTEN
 COMMODITIES BV**

Postbus 1
 Giessen NBR
 4284 ZG
 The Netherlands
 Contact: Mr Marius van Doorn
 Job Title: Commercial Manager
 T: +31 10 299 5400
 F: +31 10 299 5401
 E: info@schoutenproducts.com
 W: www.schoutenproducts.com

**SCORPIO ENGINEERING
 PVT. LTD**

Scorpio House
 132 Wheeler Road
 Cox Town
 Bangalore
 560 005
 India
 Contact: Mr Jacob P.
 Job Title: VP - Marketing & Application
 T: + 91 99801 625 39
 F: + 91 80 2548119
 E: jacob@scorpioengg.com
 W: www.scorpioengg.com
 The company engineers and manufactures a complete range of grain handling equipment with turnkey engineering capability. Capacities of equipment range from a few tonnes per hour to about 500mt per hour. Key strengths are the ability to engineer, manufacture, install and commission complete grain terminals for ports and grain storage and handling systems for large grain processors.

SEABULK SYSTEMS INC

Suite 150
 10271 Shellbridge Way
 Richmond
 British Columbia
 V6X 2W8
 Canada
 Contact: Mr Sidney Sridhar
 Job Title: President
 T: + 1 604 273 1378
 F: + 1 604 273 1358
 E: sbs@seabulk.com

W: www.seabulk.com
 Design and build contractors involved with ports, self-unloaders and transhippers for bulk cargo. The firm provides turn-key logistics solutions for the transportation, storage and handling of bulk materials, prototype new developments including material handling systems for ship and open-sea transshipment.

**S-E-G INSTRUMENT
 AB**

Box 111 43
 Bromma
 S-161 11
 Sweden
 Contact: Ms Eva Söderholm
 Job Title: Assistant
 T: + 46 8 764 74 00
 F: + 46 8 764 75 00
 E: inform@s-e-g.com
 W: www.s-e-g.com
 S-E-G is one of few companies in the world specializing in industrial weighing. For over 50 years we have acquired a unique knowledge in our special fields such as Belt Scales, Mass Flow Meters, Batching Systems, and Level Measuring.

**SEMPERTRANS FRANCE
 BELTING TECHNOLOGY
 SAS**

Sempertrans Marketing
 10 rue des charretiers
 Argenteuil Cedex
 95104
 France
 Contact: Mr Dumong
 T: + 33 1 30 25 72 30 / + 33 1 30 25 72 37
 F: + 33 2 39 80 46 16
 E: contact@sempertrans-france.com
 W: www.sempertans.com
 SEMPERTRANS has been developing, manufacturing and installing conveyor belts for more than 50 years. Its knowhow, its experience and the quality of its products make SEMPERTRANS one of the world's leading companies in its field.

**SENNEBOGEN
 MASCHINENFABRIK
 GMBH**

SENNEBOGEN
 Hebbelstrasse 30
 Straubing
 D-94315
 Germany
 Contact: Mr Bernhard Kraus
 T: + 49 9421 540143
 F: + 49 9421 43882
 E: marketing@sennebogen.de
 W: www.sennebogen.com
 SENNEBOGEN offers a wide range of all kinds of materials handling machines, HD rope excavators/cranes, crawler cranes, telescopic cranes and base carriers. SENNEBOGEN has a specific strength in realizing solutions based on individual customer specifications.

SERVO BERKEL PRIOR

Jan Evertsenlaan 4
 Katwijk
 2224 SV
 The Netherlands
 Contact: Mr Erwin van Diest

Job Title: Managing Director
 T: + 31 71 4030101
 F: + 31 71 4032317
 E: info@servoberkelprior.eu
 W: www.servoberkelprio.eu
 Servo Berkel Prior B.V. is the biggest manufacturer and supplier of weighing equipment in the Netherlands.

**SEW-EURODRIVE
 GMBH & Co KG**

P O Box 3023
 Bruchsal
 D-76652
 Germany
 Contact: Mr Manfred Müller
 T: + 49 7251 75 0
 F: + 49 7251 75 1970
 E: sew@sew-eurodrive.de
 W: www.sew-eurodrive.com
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Estates House
 Alvaston Business Park
 Middlewich Road
 Nantwich
 Cheshire
 CW5 6PF
 UK
 Contact: Mr Stuart Henderson
 Job Title: Director
 T: + 44 1270 619 721
 F: + 44 1270 619 742
 E: sales@sghequipment.co.uk
 W: www.sghequipment.co.uk
 SGH Equipment specialise in powder & granular materials, supplying storage and handling equipment. Equipment: Silos, Conveyors, Mixers, FIBC - Fill / Discharge, Dust - Collection & Filtration / Suppression - Fogging systems, Valves etc Services: Fabricated equipment, full Mechanical / Electrical design, installation & commissioning services, including automation & control systems.

SGS

Suite 210B
 1919 S. Highland Ave
 Lombard
 Illinois
 60148
 USA
 Contact: Ms MaryLynn Dobush
 T: + 1 630 953 9300
 F: + 1 630 953 9306
 E: info@sgs.com
 W: www.sgs.com

SGS (NEDERLAND) BV

Malledijk 18
 Spijkenisse
 AE
 3200
 The Netherlands
 Contact: Mr Rolf Wiltling
 T: + 31 181 69 3260
 F: + 31 181 69 3581
 E: rolf.wiltling@sgs.com
 W: www.sgs.nl

**SGS AUSTRALIA PTY
 LTD**

Unit 16
 33 Maddox Street
 Alexandria
 NSW
 2015
 Australia

Contact: Mr Stephen Hemsworth
 Job Title: National Business Manager
 T: + 61 2 8594 0400
 F: + 61 2 8594 0419
 E: stephen.hemsworth@sgs.com
 W: www.au.sgs.com
 SGS is the world's leading inspection, verification, testing and certification company. SGS also designs and supplies mechanical sampling systems for a wide range of bulk materials. SGS has more than 30 years experience in this field with equipment in operation throughout the world.

**SGS AUSTRIA
 CONTROLL-CO GMBH**

Diefenbachgasse 35
 Vienna
 A 1150
 Austria
 Contact: Ms Susann Beyer
 T: + 43 1 512 25 67152 137
 F: + 43 1 512 25 679
 E: sgs_austria@sgs.com
 W: www.at.sgs.com

**SGS MINERALS
 SERVICES**

1 Place Des Alps
 PO Box 2152
 Geneva
 CH 1211
 Switzerland
 Contact: Mr Richard Lihou
 T: + 41 22 739 9111
 F: + 41 22 739 9815
 E: richard.lihou@sgs.com
 W: www.sgs.com
 The SGS Group is the global leader and innovator in verification, inspection, testing and certification services. Founded in 1878, SGS is recognised as the global benchmark for the highest standards of expertise and integrity. With over 30,000 employees, the Company operates a network of offices and laboratories in over 140 countries around the world.

**SHANGHAI QIFAN Co.,
 LTD.**

25F, Baoding Mansion
 Xujiahui Road
 Shanghai
 200025
 China
 Contact: Mr Eric Liu
 T: + 86 21 51029257
 F: + 86 21 51062358
 E: ericsphy@163.com
 W: http://www.qifangrab.com.cn/
 Develops high-tech grabs, such as motor hydraulic bulk grab, motor hydraulic orange peel grab, wireless remote control bulk grab and contractible single rope bulk grab. Also manufactures a variety of handling tools, loading and unloading equipment, steel structure frame and other mechanical products.

**SHANGHAI ZHENHUA
 PORT MACHINERY Co
 (ZPMC) LTD**

3470 Pudong Nan Lu
 Shanghai
 PR
 200125
 China
 Contact: Mr Chen Kai
 Job Title: General Manager
 T: + 86 21 5839 6666

F: + 86 21 5839 9555
 E: mail@zpmc.com
 W: www.zpmc.com
 A world-famous manufacturer of bulk materials handling equipment. Its main products include ship loaders and unloaders, bucket wheel stackers and reclaimers. With proven design, manufacturing and fully-erect shipment capabilities to ensure on time delivery.

SHANTHI INTERNATIONAL
 21, Center Point
 Indira Gandhi Road
 Jamnagar
 Gujarat 361008
 India
 Contact: Mr Sanjay Masuria
 Job Title: Director - Marketing - International
 T: + 91 288 255 6671 / +91 288 2555 867
 F: + 91 288 255 4254
 E: sanjay@servoday.in
 W: www.servoday.com
 Manufacturer & Exporter of Radio Remote Control Grabs, capacity from 6CBM to 22 CBM, with the Unique features of Grabs operation counting, with Weight calculation, online Grab monitoring systems etc.

SMB INTERNATIONAL GmbH



Friedrich List Str 3-5
 Quickborn
 Hamburg
 D- 25451
 Germany
 Contact: Mr Andreas Heckel
 Job Title: Managing Director
 T: + 49 41 06 12388 0
 F: + 49 41 06 12388 19
 E: heckel@smb-group.de
 W: www.smb-shiploading.com
 SMB meets the demanding material-related requirements of conveying bulk and bagged goods. The company designs and manufactures high-performance conveying solutions designed for trouble-free long-term operation. Projects all over the world convince fertilizer producers, port operators and industrial specialists of the quality of German engineering.

SOBEMAI BY IRI NV
 Bogaardestraat 168M
 Maldegem
 Oost-Vlaanderen
 B-9990
 Belgium
 Contact: Mr Kilian de Lille
 Job Title: General Manager
 T: + 32 50 711801
 F: + 32 50 710402
 E: sales@sobemai.com
 W: www.sobemai.com

SOLIMAR PNEUMATICS
 8001 Ranchers Road NE
 Minneapolis
 Minnesota
 MN 55432-3103
 USA
 Contact: Mr Jeff Lucke
 Job Title: Director of Sales
 T: + 1 763 574 1820
 F: + 1 763 574 1822
 E: jeff@solimarpne.com
 W: www.solimarpneumatics.com
 Discharge aids for storage silos.

SOTECMA INC PROCESS ENGINEERS

3126 Bernard-Pilon
 Suite 200
 Saint-Mathieu-de-Beloeil
 Quebec
 J3G 4S5
 Canada
 Contact: Mr Denis C Boulais
 Job Title: President
 T: + 1 450 464 4426
 F: + 1 450 464 4534
 E: cgermain@sotecma.com
 W: www.sotecma.com
 Canadian company offering turnkey engineering and construction services in bulk handling and flat storage solutions at low cost. The type of structure used is a highly versatile alternative to conventional constructions. The storage shed can be dismantled and be relocated. For more details visit www.sotecma.com.

STAG AG

Industriestrasse 11
 Maienfeld 7304
 Switzerland
 Contact: Mr Thomas Zanettin
 Job Title: Sales/Marketing
 T: + 41 81 3035800 / 53
 F: + 41 81 3035899
 E: office@stag.net
 W: www.stag.net
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STAS BV

Kathodeweg 4
 Hoom 1627 LK
 The Netherlands
 Contact: Mr Rob ver Doren
 Job Title: Managing Director
 T: + 31 229 282 940
 F: + 31 229 233 177
 E: info@stasgroup.eu
 W: www.stas-nl.com
 Stas is a manufacturer (production) of transport rollers, drive and tension drums and import bearings and bearing blocks.

STEWART INSPECTION AND ANALYSIS (PTY) LTD

PO Box 267
 Brakpan 1541
 South Africa
 Contact: Mrs Carol Le Cordeur
 T: + 27 11 740 0621
 F: + 27 11 740 0626
 E: clecordeur@stewartgroupglobal.com
 W: www.stewartgroupglobal.com

STRUDES INC

4700 De La Savane
 Suite 218
 Montreal
 Quebec
 H4P 1T7
 Canada
 Contact: Mr Henry Nowodworski
 Job Title: President
 T: + 1 514 731 6951 x 123
 F: + 1 514 737 4146
 E: nowodworski@strudes.ca
 W: www.strudes.ca
 Strudes Inc. is an Engineering Consulting Company, specializing in design for heavy industry in general and Cement Industry in

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20 Shamrock Road
 Erin
 Ontario
 NOB ITO
 Canada
 Contact: Mr Don Johnstone
 T: + 1 519 833 0054
 F: + 1 519 833 9344
 E: don@bulk-store.ca

SUOMEN VIJAJA OY

Kielotie 5 B
 Vantaa
 01300
 Finland
 Contact: Mr Hannu Korttesmaa
 Job Title: Marketing Manager
 T: + 358 10 3464 204
 F: + 358 01 3464 200
 E: hannu.korttesmaa@suomenviljava.fi
 W: www.suomenviljava.fi
 Suomen Viljava Oy is Finland's biggest grain handling and storage company. We have stores at 21 locations in south and middle Finland. The total storage capacity is 1.4 million tonnes. Our services comply with ISO 9001 and GTP standards.

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Rua Alfredo Cunha, 107
 Monte de Caparica
 2825-056 Caparica
 Portugal
 Contact: Mr Artur Rocha
 Job Title: Director
 T: + 351 212 946 220
 F: + 351 212 946 228
 E: mail@supercargo.pt
 W: www.supercargo.pt

SUPERIOR INDUSTRIES, LLC



315 East State Highway 28
 PO Box 684
 Morris
 Minnesota
 56267
 USA
 Contact: Mr Corey Poppe
 Job Title: Marketing
 T: + 1 320 589 2406
 F: + 1 320 585 5644
 E: info@superior-ind.com
 W: www.superior-ind.com

SVENDBORG BRAKES A/S

Jernbanevej 9
 Vejstrup 5882
 Denmark
 Contact: Ms Yvonne Küttemann
 Job Title: Marketing Manager
 T: + 45 63 255 302
 F: + 45 63 255 300
 E: yak@svendborg-brakes.com
 W: www.svendborg-brakes.com
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SWIRE CTM BULK LOGISTICS



C Transport Maritime SAM
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7 Rue du Gabian
 Monaco
 MC 98000
 Monaco
 Contact: Captain Giorgio Vallega
 Job Title: Operation/Commercial Manager
 T: + 377 9798 5981
 F: + 377 9798 2306
 E: gvallega@ctmmc.com
 W: www.swirectmbl.com
 Sums up the experience, know-how and networks of its parent companies in the dry bulk and logistics field, providing a full range of integrated services from the supplier to the end users, including specialised barge services, transshipment, river, coastal and ocean transportation by means of conventional bulkcarriers or self-unloading vessels and barge.

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 Vancouver
 BC
 V5Z 4H6
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 F: + 1 604 594 9193
 E: dsawrey@gmail.com
 W: www.tdmicronic.com
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Carretera de Castellón, km 6.3
 Poligono Industrial La Cartuja
 Zaragoza
 50013
 Spain
 Contact: Mr Simon Whalley
 Job Title: Sales Director
 T: + 34 976 500 006
 F: + 34 976 500 028
 E: info@taimweser.com
 W: www.taimweser.com
 TAIM WESER is a solid industrial organization, present in 59 countries and able to guarantee, with over 100 years of experience, the development and execution of any project related to its lines of manufacture: bulk handling, lifting, waste treatment and renewable energies.

TAKRAF GmbH

Torgauer Str. 336
 Leipzig
 D-04347
 Germany
 Contact: Dr Holger Lieberwirth
 Job Title: Executive Vice President
 T: + 49 341 2423943
 F: + 49 341 2423610
 E: sales@takraf.com
 W: www.takraf.com
 Development, planning, design, manufacture, supply, installation and commissioning of machines and equipment in open cast mines, bulk materials handling equipment and systems in ports, terminals, power stations and steel mills, as well as cranes for special applications.

TBMA EUROPE BV

Delfweg 18
 Noordwijkerhout
 NL-2211 VM
 The Netherlands
 Contact: Mr E A J Houben
 Job Title: Managing Director
 T: + 31 252 37 50 68
 F: + 31 252 37 54 36
 E: info@tbma.com
 W: www.tbma.com/engels/
 Systems and Components for dry Solids Handling. Pneumatic and mechanical conveying, rotary valves, diverter valves, sampling equipment, bellow feeders, Big-Bag filling and discharging equipment, dosing feeders, silo discharge equipment etc.

TEBODIN CONSULTANTS & ENGINEERS

Postbus 433
 Deventer
 7400 AK
 The Netherlands
 Contact: Mr Bert Frowijn
 Job Title: Office Director
 T: + 31 570 63 8900
 F: + 31 570 63 6350
 E: b.frowijn@tebodincce.nl
 W: www.tebodincce.nl
 Tebodin CCE is a successful team of technical consultants and engineers with international reputation in the field of design, engineering, tendering, and implementation of industrial as well as utility projects. A structured and decisive project approach results in high efficiency.

TECHNAERO APS

Finlandsgade 29
 Haslev
 DK-4690
 Denmark
 Contact: Mr Anders Larsen
 Job Title: CEO
 T: + 45 56314925
 F: + 45 56314555
 E: sales@techNaero.dk
 W: www.techNaero.dk
 Other Expertise: Pneumatic transport systems. Supply of complete, high quality, low cost, professional dust removal systems according to ATEX. Efficient round filters. Spotfilters to removal from transferpoints. Pit-intake filters for discharge from trucks, railcars and around crane hoppers. Complete projects for Pneumatic Transport.

TELESTACK LIMITED



Omagh
 County Tyrone
 BT79 0NZ
 Northern Ireland
 Contact: Miss Samantha Gant
 Job Title: Marketing Co-Ordinator
 T: + 44 28 82 25 11 00
 F: + 44 28 82 25 22 11
 E: samantha@telestack.com
 W: www.telestack.com
 Telestack Limited specialize in the design, manufacture, installation and commissioning of MOBILE bulk material handling solutions for the Ports & Inland Terminals, including a range of ship-loaders/ Ship Unloaders, mobile truck unloaders, link conveyors and hopper feeders.

TETA MÜHENDİSLİK A.

Çankırı Yolu 7.km Aselsan Karşısı
Akyurt
Ankara 06950
Turkey
Contact: Mr Talat Isik
Job Title: General Manager
T: + 90 312 8475361
F: + 90 312 8475399
E: teta@tetamuh.com.tr
W: www.tetamuh.com.tr
Provides engineering, representation, manufacturing and erection of industrial equipment and plants for storage, handling and weighing, as well as bagging and loading of wide ranging bulk products.

THE GRAB SPECIALIST

B.V.
Draaibrugweg 1
Almere 1332AA
The Netherlands
Contact: Mr Emiel Bleyenbergh
Job Title: Director
T: + 31 365 32 88 22
F: + 31 365 49 99 22
E: info@tgs-grabs.nl
W: www.tgs-grabs.nl
The Grab Specialist B.V. design, develop and manufacture grabs for the dry bulk cargo, dredging and recycling industry. A service-oriented company, complying with the highest standards of after-sales and spare part supply service to secure productivity in your operations.

THERMO FISHER SCIENTIFIC

501 - 90th Avenue NW
Minneapolis MN 55433
USA
Contact: Ms Paula Frisk
Job Title: Product Manager/Marketing
T: + 1 763 783 2500
F: + 1 763 783 2525
E: sales.bulk-handling.us@thermofisher.com
W: www.thermoscientific.com/bulk-handling
Thermo Scientific's Bulk Weighing & Monitoring product line includes conveyor belt scales, weightbelt feeders, impact weighers, sampling systems, numerous level indication devices, flow/no flow indicators, speed switches and conveyor/personnel protection switches.

THYSSENKRUPP CANADA

1177-11th Avenue SW
Suite 500
Calgary
Alberta 2TR 1K9
Canada
Contact: Mr Steve Harrington
Job Title: Vice President Marketing
T: + 1 403 209 4431
F: + 1 403 245 5625
E: infocanada@thyssenkrupp.com
W: www.krupp.ca
Involved in the design and supply of turnkey mining and bulk materials handling projects. The product line of equipment encompasses shiploaders/ship unloaders, conveying systems, crushing systems, stackers, storage and reclamation systems.

THYSSENKRUPP FÖRDERTECHNIK GMBH
Business Unit Materials Handling
Ernst-Heckel-Strasse 1

St Ingbert-Rohrbach
Saarland D-66386
Germany
Contact: Dr W Ye
Job Title: Vice President Sales
T: + 49 6894 599 0
F: + 49 6894 599 468
E: info-mh@thyssenkrupp.com
W: www.tk-materialshandling.com
Besides individual items of machinery as listed above, ThyssenKrupp Fördertechnik design and supply complete material handling plants turnkey to the fertilizer industry (for handling of urea and phosphates etc.), the cement and mining industry, coal handling systems for power stations as well as complete port handling solutions.

THYSSENKRUPP ROBINS, INC.

7730 E. Bellevue Ave
Suite #404
Greenwood Village
Colorado 80111-5820
USA
Contact: Mr Bill Halley
Job Title: Mechanical Engineer
T: + 1 303 770 0808
F: + 1 303 770 4522
E: bill.halley@thyssenkrupp.com
W: www.krupprobins.com
Located in Denver, Colorado the company has been involved for many years in the design and supply of turnkey, environmentally sensitive mining and material handling projects. The product line of equipment includes: conveying systems; crushing systems; stackers; shiploaders and ship unloaders; storage and reclamation design and supply.

TIDWORKS TECHNOLOGY - EUROPE

Maaswijkweg 7
Spijkenisse
3203 LG
The Netherlands
Contact: Mr Rik Verspeek
Job Title: Business Manager
T: + 31 181 668668
F: + 31 181 668660
E: info@tideworks.com
W: www.tideworks.com

TIMARS SVETS & SMIDE AB

Industrivägen 12
Falkenberg S-311 33
Sweden
Contact: Mr Peter Stenbeck
T: + 46 346 82100
F: + 46 346 82800
E: info@timars.se
W: www.timars.se
Sweden based company specialising in bag handling equipment. The company builds filling as well as discharge machines for big sacks and also design complete production lines with equipment and education.

TMSA TECNOLOGIA EM MOVIMENTAÇÃO S/A



Bernardino Silveira Pastoriza, 710
Bairro Sarandi
Porto Alegre
RS 91160-310
Brazil
Contact: Mr Luciano Schuch
Job Title: Marketing Analyst
T: + 55 51 2131 3332

F: + 55 51 2131 3330
E: luciano.schuch@tmsa.ind.br
W: www.tmsa.ind.br
Sales, development, engineering, procurement, management, fabrication, construction, installation and technical assistance of electro-mechanical solutions for bulk material handling and processing.

TRAMCO EUROPE LIMITED

Mandham Business park
Hull Road
Hull
HU12 8DZ
UK
Contact: Mr Gus Walker
Job Title: General Manager
T: + 44 1482 782 666
F: + 44 1482 793 920
E: gus@tramcoeuropa.karoo.co.uk

TRAMCO, INC



1020 East 19th Street
Wichita
KS
67214
USA
Contact: Mr Steve Cloud
Job Title: President
T: + 1 316 264 4604
F: + 1 316 264 7965
E: sales@tramcoinc.com
W: www.tramcoinc.com
TRAMCO has been involved in the design, application, engineering and manufacture of the worlds most complete line of chain conveyors, enclosed belt conveyors, specially designed conveyors and conveyor conversions since 1967. TRAMCO's philosophy is to produce high quality, reliable equipment that meets specific customer needs.

TRANSLIFT PORT EQUIPMENT SERVICES INC

Building 3
SRF Area
Subic Bay
Zambales
Freeport Zone 2222
Philippines
Contact: Mr John Wellington
Job Title: Managing Director
T: + 63 47 252 6332/4/5
F: + 63 47 252 6336
E: translift@transliftsubic.com

TRIODETIC

10 Didak St
Amprior
Ontario
K7S 0C3
Canada
Contact: Mr Glenn Kohut
Job Title: Vice President, Business Development
T: + 1 613 822 2922
F: + 1 613 822 1375
E: info@triodetic.com
W: www.triodetic.com
Designs, manufactures and installs unique enclosed storage systems for all kinds of bulk materials, including the high capacity Space Frame domes and barrel vaults.

TSUBAKIMOTO BULK SYSTEMS CORPORATION

4-1
Terauchi 2-Chome
Toyonaka
Osaka
561-0872
Japan
Contact: Mr Y. Horii
Job Title: Manager, Overseas Operations
T: + 81 6 6862 2329
F: + 81 6 6862 8516
E: info@tsubakimoto.com
W: www.tsubakimoto.com
Produces bulk handling systems equipment, bucket, flow and pan conveyors.

TTS HUAHAI SHIPS EQUIPMENT

18th Floor
3255 Zhou Jia Zui Road
Shanghai
200093
China
Contact: Mr Lian Zhou Yang
Job Title: Business Development Manager
T: + 86 21 6539 8257
F: + 86 21 6539 7400
E: info@tts-huahai.com

ULRICH BREHME GMBH

Hauptstraße 137-143
Osterode am Harz
37520
Germany
Contact: Mr Wolfgang Noreik
Job Title: Marketing Manager
T: + 49 5522 9008 0
F: + 49 5522 9150 0
E: info@brehme-ubo.com
W: www.brehme-ubo.com

V D D B (PTY) LTD

PO Box 16985
Lyttelton
Gauteng
0140
South Africa
Contact: Mr Leonard van der Dussen
T: + 27 12 664 2300
F: + 27 12 644 2902
E: admin@vddb.co.za
W: www.vddb.co.za
Services are delivered to a variety of projects for mining and industrial clients and range from performing a particular task such as providing a bill of quantities to taking charge of a comprehensive cost structuring, capital estimating and project cost management service through to final accounts and close-out.

VEENSTRA MACHINEFABRIEK B.V.

De Holwert 10
KC Coevorden
7741
The Netherlands
Contact: Mr Paul Kuiper

T: + 31 524 599 333
F: + 31 524 599 330
E: mach@veenstra-coevorden.nl
W: www.veenstra-coevorden.nl

VERSTEGEN GRIJPEERS BV



PO Box 1014
Nieuwegein
3430 BA
The Netherlands
Contact: Mr Eric Visser
Job Title: Managing Director
T: + 31 3060 62222
F: + 31 3060 60657
E: info@verstegen.net
W: www.verstegen.net
Manufactures and supplies wide range of grabs for all bulk commodities.

VIGAN



Rue de L'Industrie 16
Nivelles
B-1400
Belgium
Contact: Mr Nicolas Dechamps
Job Title: Managing Director
T: + 32 67 89 50 41
F: + 32 67 89 50 60
E: info@vigan.com
W: www.vigan.com
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Brooklands Park
Farmingham Road
Crowthorugh
East Sussex
TN6 2JD
UK
Contact: Mr Mark Wilson
Job Title: Managing Director
T: + 44 1892 664250
F: + 44 1892 664340
E: info@webstergiffin.com
W: www.webstergiffin.com
Manufactures all types of bag and sack filling systems (including mobile systems), big bag/bulk bag filling systems, robot palletising systems for all types of grain, granular or powdered products.

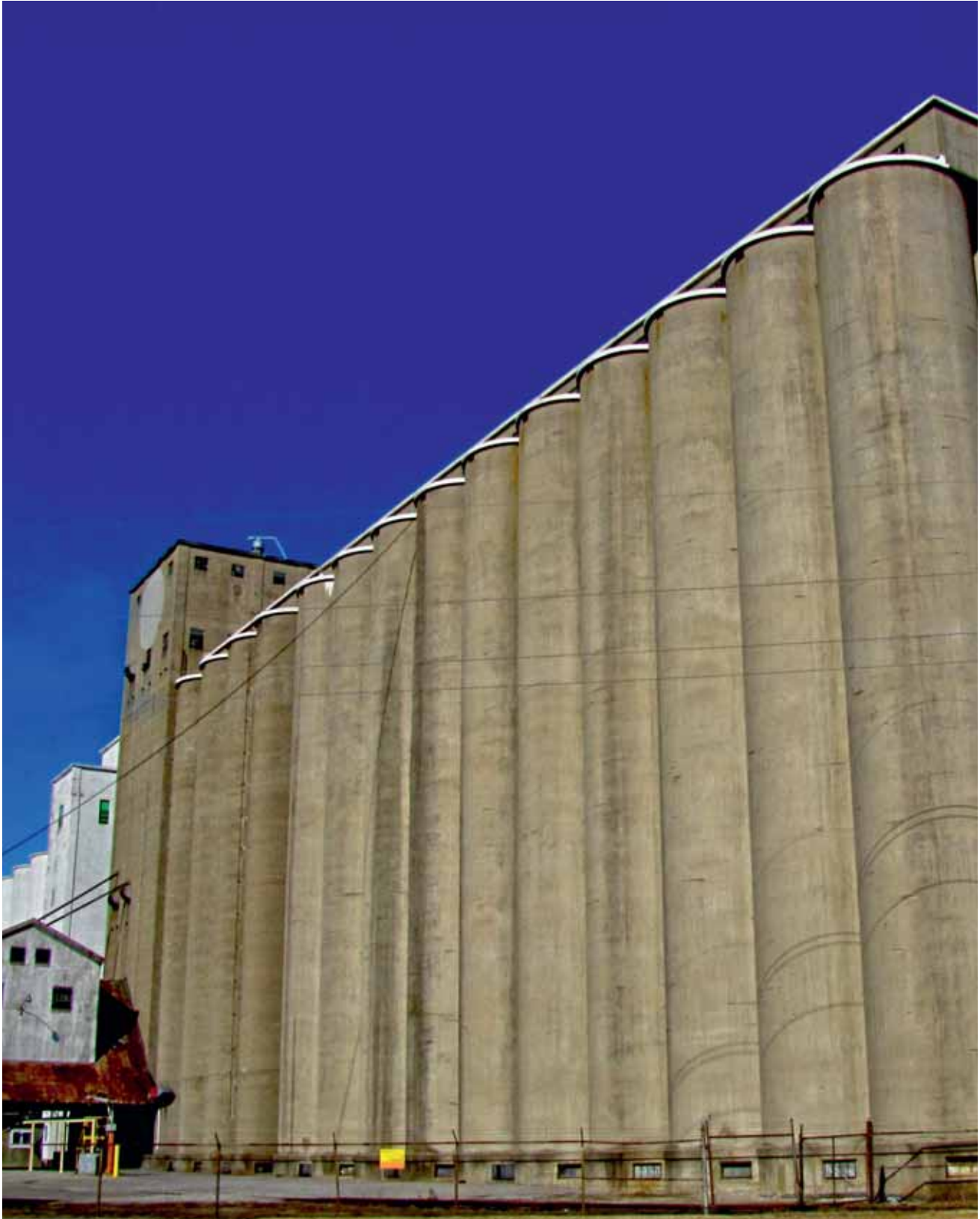
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Wetterkreuz 12
Erlangen
91058
Germany





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Contact: Mr Gerhard Borrmann
 Job Title: Export Manager
 T: + 49 9131 60 67 0
 F: + 49 9131 60 67 97
 E: info@wieland-luft.de
 W: www.wieland-luft.de
 Wieland Lufttechnik GmbH & Co.KG has manufactured industrial vacuum cleaning equipment for more than 50 years. Specialized in portable, stationary and truck- or trailer-mounted vacuum systems. See www.wieland-luft.com.

WINDMÖLLER & HÖLSCHER KG

Münsterstr. 50
 Lengerich
 D-49525
 Germany
 Contact: Mrs Elisabeth Braumann
 Job Title: Public Relations
 T: + 49 5481 14 2929
 F: + 49 5481 14 3355
 E: elisabeth.braumann@wuh-group.de
 W: www.wuh-group.com/
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- 7



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- 8



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EFFICIENT
- 9



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DESIGN
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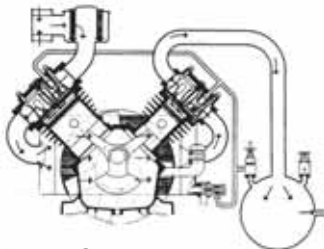
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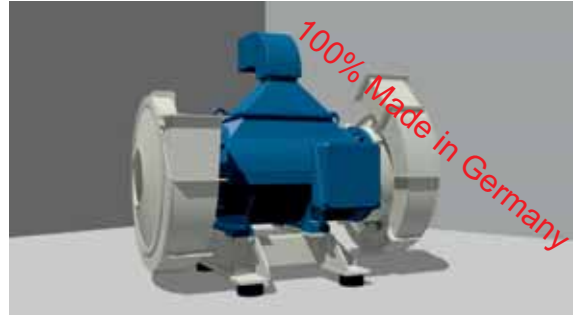
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T: +49 5422 9503 0 ● F: +49 5422 9503 50 ● E: neuro@neuro.de H: www.neuro.de