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Grain trade enlargement could continue

Numerous influences are still providing useful underpinning for commodity import demand increases in many countries. The upwards trend in world seaborne dry bulk trade appears to be slackening compared with last year's brisk performance, however, and trade disputes have become a greater cause for anxiety.

A pattern of slowing economic expansion among the advanced countries unfolded during this year's first few months. Deceleration was widespread, encompassing the USA, European Union and Japan. But reduced GDP growth rates are widely seen as temporary, a 'soft patch', although clear evidence of economies regaining the more vigorous momentum seen previously is awaited.

Grain & soya

Support for the positive trend in dry bulk trade seems likely to be derived from rising grain movements. According to recent International Grains Council estimates — based on analysis of individual countries' import requirements as well as export supplies available — global trade in wheat plus corn and other coarse grains could continue increasing at about a 2% rate, in the new 2018/19 crop year starting this month.

The forecast of traded grain volumes in the twelve months ahead, totalling 369mt [million tonnes] (as shown in table 1), may change if harvests in northern hemisphere importing countries are substantially different to what is currently expected. These importers, including Europe, North Africa, the Middle East area and China comprise about two-thirds of the world total. Any large shortfalls in domestic crops among this group may result in extra foreign purchases.

Iron ore

Amid receding expectations for another huge boost from China's additional imports this year, forecasts of global iron ore trade growth have been lowered. Nevertheless an increased volume remains a plausible calculation, reflecting solid steel production trends in many influential raw materials importing countries.

An element of uncertainty has been injected by trade tensions involving steel products movements, with potential for disrupting import and export patterns, in turn affecting steel production volumes. Effects have been limited so far but may enlarge. Crude steel output has increased at rates of between 1% (in Japan) and 5% (in China) during the 2018 first five months. The EU's growth was 2% and in South Korea 4%.

Coal

News emerging recently about two of the largest coal buyers in Asia, which together comprise almost one-third of global seaborne coal imports, has illustrated differing circumstances. South Korea's growth prospects seem to have receded, while India's outlook evidently has improved. Underlying these and other changes is the sustained emphasis in many countries on cutting pollution, with unfavourable implications for the coal market in the longer term.

Last year Korea purchased more coal, reflecting new power station capacity being introduced and shortages of nuclear power caused by temporary plant shutdowns. Imports rose by 10% to reach 148mt. A similar boost is not envisaged during 2018. In India a modest strengthening emerged last year, when a 2% increase to 203mt was seen after a sharp reduction in the preceding twelve months. Some forecasts point to a 4–5% rise in the current year, amid higher steam and coking coal requirements.

Minor bulks

Global seaborne movements of fertilizers, comprising mainly phosphates, sulphur, urea, and potash are estimated to have totalled around 160mt in 2017, a 4% increase following two years when a flat trend seemed to be evolving. Some of the components are now showing signs of further growth.

Bulk carrier fleet

Handysize vessels in the 10–39,999dwt size group comprise about 12% of the world bulk carrier fleet. This size group's growth accelerated slightly last year to almost 2%, (table 2), when the total reached 96 million deadweight tonnes. A similar increase is estimated in 2018, despite expectations of lower newbuilding deliveries, because scrapping also seems likely to be much reduced.

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

	2013/14	2014/15	2015/16	2016/17	2017/18*	2018/19*
Asia (excluding Japan)	73.6	89.0	95.0	99.6	97.9	101.5
Japan	23.4	21.9	22.1	23.2	22.6	22.7
Middle East	54.0	56.7	55.8	54.0	60.3	60.3
Africa	65.3	67.1	76.2	75.6	75.5	78.5
Others	94.1	87.4	96.6	100.8	106.4	106.0
World total	**310.4**	**322.1**	**345.7**	**353.2**	**362.7**	**369.0**

*source: International Grains Council, 24 May 2018 *forecast July/June crop years*

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

	2013	2014	2015	2016	2017	2018*
Newbuilding deliveries	6.3	5.4	6.5	4.6	3.4	2.5
Scrapping (sales)	6.7	4.2	5.2	3.2	1.6	0.5
Losses	0.2	0.0	0.0	0.0	0.0	0.0
Plus/minus adjustments	0.0	0.0	–0.1	0.0	0.0	0.0
World fleet at end of year	**90.4**	**91.6**	**92.8**	**94.2**	**96.0**	**98.0**
% change from previous year-end	–0.7	+1.3	+1.4	+1.4	+1.9	+2.1

*source: Clarksons (historical data) & Bulk Shipping Analysis 2018 forecast *forecast*

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Bettercoal and Equitable Origin sign Memorandum of Understanding

On 27 June, Bettercoal and Equitable Origin signed a non-binding Memorandum of Understanding (MoU) to forge an active and mutually beneficial relationship between the two organizations to identify and to develop opportunities including, but not limited, to the harmonization of standards; to share knowledge and expertise on standard-setting and assurance; to collaborate on technology-based platforms for performance measurement and verification; and, to actively support the adoption of both standards and assurance systems in global energy value chains.

Equitable Origin Chief Executive Officer Soledad Mills said: We are pleased to be partnering with Bettercoal to advance responsible energy development. We look forward to collaborating with Bettercoal to build on our respective standards and due diligence systems to support members in identifying responsible sourcing risks and opportunities that exist in other energy value chains.

Bettercoal Executive Director Anne-Claire Howard said, "We are very happy to be signing this MoU with Equitable Origin as we firmly believe that collaboration and partnerships between sustainability standards and initiatives are necessary to build strong sustainable value chains. Extractives industries has many standards and we hope that this collaboration will demonstrate to other organizations the importance of interoperability and cross-recognition."

This agreement will also see Bettercoal and Equitable Origin agree to regular communication and the appointment of a technical liaison in each organization to be the point person for inter-organizational communication.

Equitable Origin is the world's first stakeholder-based, independent, voluntary standards system for energy production and generation established in 2009 with the mission of partnering with communities, business, and government to support transparent, sustainable and equitable energy development that benefits all stakeholders.

Bettercoal is a global standards initiative established in 2012 by major coal buyers striving to promote continuous improvement of sustainability performance in their coal supply chain.

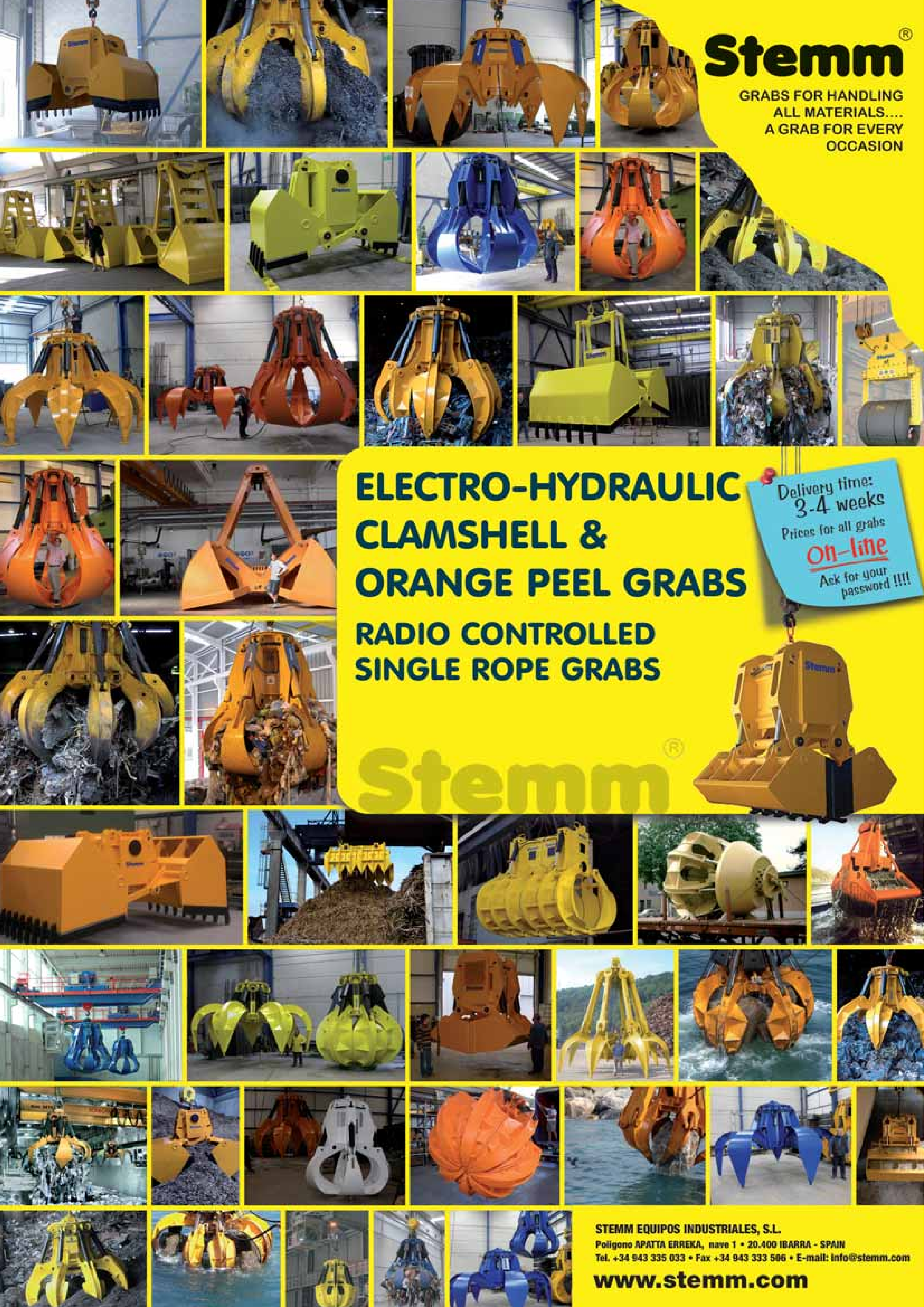
Australia now leading supplier of iron ore to India

In the 2017–2018 fiscal year, Australia proved to be the largest exporter of iron ore to India, despite only ever having been a relatively minor supplier over recent years. It has replaced both South Africa and Brazil, who had previously been India's main source of the mineral.

In the fiscal year to 31 March 2018, Australia exported 2.86mt (million tonnes) of iron ore to India, which was approximately one third of total imports. In 2016–2017, India had imported just 5,539 tonnes of iron ore from Australia.

Fortescue Metals shipped over 2mt of medium-grade fines to the South Asian country since January this year, with the main client thought to have been a large-scale Indian steel mill based on the west coast.

Total iron ore imports to India went up 89% in 2017–18 to 8.7mt compared with 4.6mt in 2016–17. *Barry Cross*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Aluminium's green credentials

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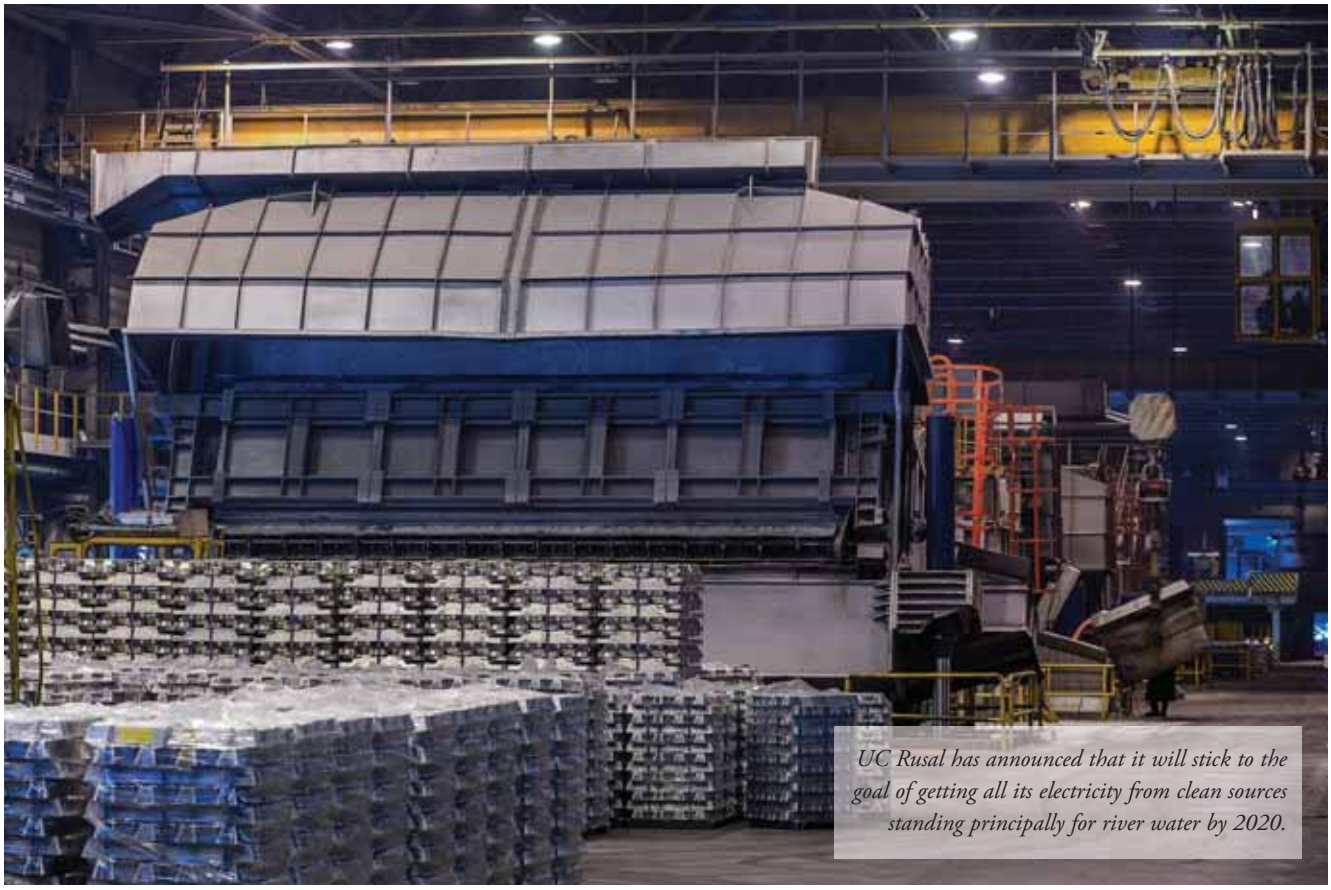

UC Rusal has announced that it will stick to the goal of getting all its electricity from clean sources standing principally for river water by 2020.

Producers of aluminium have always prided themselves on making available a metal that is green whose application in a wide range of areas from packaging to construction to automobile will keep the environment clean, *writes Kunal Bose.* The resolute claim to being green rests primarily on endless recyclability of aluminium.

In their drive not to concede share of the metal market in high end areas, including automobile, to rival aluminium, steelmakers too claim recyclability for the ferrous metal in life cycle cost analysis. But how green is your metal goes well beyond recyclability factor to the kind of energy used in making it. Whether it is aluminium, copper or steel, emissions happen largely at the point of power generation, specially if energy is derived by burning fossil fuel coal. It is widely known that unlike other metals, around one-third of aluminium is globally produced by using hydro electricity, which is renewable and leaves an environmentally tolerable carbon footprint.

Aluminium smelters in Europe and North America source electricity mainly from hydro power stations. Some of these smelters owned by Alcoa, Rio Tinto, UC Rusal and Hydro of Norway have emerged as preferred supplier of the silvery white metal to a growing tribe of customers from Apple, the maker of iPhone, iPad and Macs to Toyota and BMW in the auto industry to food packagers Tetra Pak and Nespresso. All these companies are committed to using materials in whose making the source of electricity is renewable hydro resources so that their final products are seen as environment friendly.

Assured of demand growth from customers from a wide range of industries who want to maintain a green environmental footprint, Rio Tinto is selling branded RenewAl aluminium and Alcoa a product line called Sustana that all release significantly less carbon in the environment than the industry average of 11 tonnes per tonne of aluminium. While in the making of Renewal four tonnes of CO_2 is generated, Ecolum in the Sustana product basket, carbon emissions are a guaranteed low of 2.5 tonnes. Both Alcoa and Rio Tinto are charging premiums for the special lines of white metal, though the exact numbers are not immediately available.

Companies that are part of electronics, automobile, packaging and construction industries in developed countries are coming under increasing pressure from governments and civic society to reduce

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US sanctions unnerve alumina market

In mid-April this year, prices of alumina, the intermediate material from which the white metal is melted, hit a panic driven price of $700 a tonne in reaction to the ill-conceived US sanction against UC Rusal which, besides having a 6% share of the global production, owns alumina refineries in Russia, Ukraine, Italy and Ireland. The sanctions threatened to cut off Rusal from the global market and left buyers of its alumina in a quandary as they were unable to continue with their contracts. In a panic that set in as a result, one or two deals not involving Rusal alumina were reportedly made at $800 a tonne.

What further exacerbated the shortfall in global supply of alumina is Norsk Hydro halving production at its Alunorte refinery in Brazil on court orders involving environmental issues. No wonder alumina prices hit their highest levels since 2011. Metal groups such as India's National Aluminium Company — which make more money by way of selling alumina than the metal — found in recent developments an opportunity to earn super profits. Alumina prices ruling that high took aluminium on London Metal Exchange to $2,600 a tonne in April, marking more than a 20% rise over 2017.

Sanity has since returned to the market with the US softening its stance on Rusal considerably by extending the deadline for companies by about five months to stop dealings with Rusal by October 2018. How the market for alumina and aluminium will behave in coming months will depend largely on what stand the US continues to take *vis-à-vis* Rusal, the world's largest exporter of the white metal.

The 2017 production of Rusal was 3.8mt (million tonnes). Its aluminium

Vedanta Aluminium CEO Abhijit Pati.

output could have been more but for Rusal joining the ranks of the likes of China Hongqiao, Alcoa and Hydro in capacity elimination to bring about a better balance between global demand and supply. The Russian domestic alumina demand being 820,000 tonnes, the company's export of the chemical was 2.9mt last year.

Observers see in the US Treasury Secretary Steven Mnuchin's April 23 statement that "Rusal has felt the impact of sanctions because of its entanglement with Oleg Deripaska. But the US government is not targeting the hardworking people who depend on Rusal and its subsidiaries," a clear possibility of the US "backing down on its threats in return for relatively modest concessions" by the company. The US Treasury hopefully will continue to take an indulgent view of Derispaka, who owns 48% of the company, distancing himself from Rusal by resigning from the board. The CEO and seven other company directors had too resigned to ensure that US sanctions do not become "materially adverse" to Rusal business. Rusal supplies to its global customers have resumed as the fear of banks freezing payments has receded.

Sanctions tensions easing saw retreat in prices of both alumina and aluminium. As for alumina, nominations for the second half 2008 contracts from producers in Taiwan, Japan and South Korea were above $500 a tonne FOB (free on board) with most offers falling in the range of $510 to $520 a tonne. Vedanta Aluminium CEO Abhijit Pati says caustic soda prices rising by nearly 55% since the year start to up to $450 a tonne has added to the cost of making alumina. Traders believe caustic soda prices will continue to move northward in the next few months. So producers are not under pressure to sell. (Alumina is separated from bauxite by using a hot solution of caustic soda and lime.)

While UBS has forecast global alumina supply at 126mt this year, Alcoa sees market deficit of 300,000 tonnes to 1.11mt due mainly to supply disruptions in the Atlantic region. Expect then alumina prices to remain above $500 a tonne for the rest of the year. Pati says aluminium will find support at the current three-month LME price of $2,300 a tonne. Pati's price forecast finds resonance in Fitch group affiliated BMI research saying that aluminium groups in China, which have well over half the share of global output, and outside will continue the process of taking outdated and high cost capacity offline in an environment of strong demand growth. According to Pati, "from here to 2022, world aluminium demand will grow at a CAGR of 3.8%. Demand growth will be particularly impressive in aerospace and automotive sectors."

Kunal Bose

their carbon footprint. One sure way of achieving that will be to use 'cleaner aluminium' in whose making hydro electricity is used. Seeing this trend of demand shift, UC Rusal, which made 3.8mt (million tonnes) of aluminium in 2017 constituting 6% of global output of 64mt, has announced that it will stick to the goal of getting all its electricity from clean sources standing principally for river water by 2020. What works to the advantage of the world's second-largest aluminium producer is its harnessing Siberia's river system for electricity.

Norsk Hydro senior vice president Kathrine Fog told Reuters recently that pressure to make low carbon metal was building up from all sides. "We've seen this coming from the market, our customers, shareholders, financial markets, NGOs, you name it... That means in the end it will affect the bottom line," she said. In this observation is to be found the justification for the Norwegian company buying Rio Tinto's 210,000-tonne aluminium plant in Iceland where electricity is generated exclusively from hydropower and geothermal energy. Once the acquisition is complete, Norsk Hydro will start producing 70% of its aluminium using renewable energy, up from two-thirds of its output in 2017. The company is driven by a strategy to move into a pole position so that users of aluminium produced by renewable energy include Norsk Hydro among their vendors.

Going by International Aluminium Institute data, the use of hydro electricity by aluminium smelters across the world has remained around 200,000 gigawatt hours since 2005. Smelters fed by coal-fired electricity were using an identical amount of GWh that year. But, according to IAI, while a decade since the hydro figure had changed a little, the use of coal power by smelters zoomed past 450,000GWh. Explaining the progress of coal power application in the past decade and a half, Vedanta Aluminium CEO Abhijit Pati says: "The growth in primary aluminium capacity during this period was largely on account of China, which uses thermal power to run its smelters. India too has seen significant smelter capacity growth, thanks to Vedanta installing a 1.7mt plant in Orissa and Hindalco building two units of 360,000 tonnes each. Indian government-owned National Aluminium Company (NALCO) had in the meantime taken smelting capacity to 460,000 tonnes through brownfield route."

Apple favours aluminium, not only for its green credentials, but also for its light weight and recyclability.

Thanks to China's primary aluminium capacity rising to 49mt and India's to 4.2mt compared with the global 81mt, the share of coal in power mix relating to aluminium smelting stands at 59%. The Gulf Cooperation Council that includes UAE, Bahrain, Qatar and Saudi Arabia has in recent years built major smelting capacity using gas-based power and "it will not be very long before you will find GCC production nearing 6mt," says Pati. Gas has a share of 9% and nuclear energy 2% in aluminium power mix. Making good use of gas, a cheap source of energy, Aluminium Bahrain (Alba) is investing $3bn in line 6 expansion project to lift its smelting capacity to 1.5mt. The expansion will make Alba one of the biggest single-site facilities in the world.

"We're expecting the world primary capacity to rise by 7mt to 88mt by 2022 with China likely to have a share of 3mt in that accretion. Some capacity growth in GCC will too happen," says Pati. NALCO chairman Dr Tapan Kr. Chand says, "we're moving fast to create an additional capacity of 600,000 tonnes at our existing 460,000 tonne smelter site at Angul in Orissa by building a fifth potline." Once the project requiring an investment close to $2bn goes on stream in about four years, NALCO will join the ranks of two other 1mt-plus capacity Indian groups.

Pati and his colleagues in Chinese and Indian industries are not comfortable that attempts are being made in some quarters to project aluminium made with electricity derived from coal in an unfavourable light. He says: "Smelting of aluminium is done in very high temperature electrolysis cells where powerful currents are passed through molten aluminium oxide (popularly known as alumina.) Electrolysis cells must have a steady supply of quality power and thermal electricity has traditionally proved to be highly reliable. Any disruption in power supply will severely damage electrolysis cells and leave big quantities of hazardous waste such as cyanide and fluoride."

India has a long good record of producing aluminium in an environmentally friendly way, not so far inviting government censure. "Mind you all Indian smelters have the benefit of captive coal-fired power complexes assuring uninterrupted supply of electricity. The industry's own green commitment and government watchfulness have led to steady fall in emissions by power units, claims Pati. Though not a day too soon, Beijing has started brushing up its environmental image. Its recent crackdown on power plants flouting globally indexed environmental norms and attempts to rein in overcapacity in metals, including aluminium, are pointers to the world's second-largest economy becoming increasingly sensitive to keeping its air clean. Hongqiao Holdings, the world's largest aluminium producer, last year closed 2.68mt of projects. Beijing is also making impressive progress in eliminating polluting steel and coal mining capacity.

The world will be witness to combative behaviours from smelters using renewable power and the fossil fuel-based ones. This is unavoidable since producing one tonne of aluminium in a smelter using coal-based power leads to releases of 18 tonnes of carbon dioxide in the air compared with five to eight tonnes for gas-powered smelters and just two tonnes for smelters powered by hydro electricity. This is even less when secondary aluminium, which is as good as primary metal right for most applications, is produced from scrap. Scrap recycling scores by a very wide margin because it needs just about 5% electricity employed in making primary metal.

Irrespective of the energy source, a point of CO_2 emissions is carbon anode at the electrolysis cells. In the process of electrolysis, oxygen is driven from alumina to a carbon anode with which it reacts to form carbon monoxide and CO_2. The leftover molten aluminium settles on the cathode. The rule of thumb is, production of one tonne of aluminium releases 1.6 tonnes of carbon equivalent emissions at the anode. The fact that aluminium is responsible for about 1% of total global emissions of CO_2 is a big concern for governments and producers and users of the metal.

Whatever that may be, aluminium is a greener and lighter metal than steel which it is replacing in many products, most spectacularly in automobiles. For Apple founder Steve Jobs, the attraction of aluminium went beyond its green credentials of endless recyclability. The thinness and lightness of the metal along with its strength-to-weight ratio make it ideal to give shape to all Apple products. Jobs' successor Tim Cook stays committed to "advancing technologies that are good for the planet and help protect it for generations to come." This being so, it is only natural that Apple will make a common cause with Alcoa and Rio Tinto to develop and commercialize a kind of inert anode that dispenses with carbon and that through the smelting process will release oxygen rather than carbon dioxide.

There is promise that the new technology package will be in the market by 2024. Hopefully then smelters, irrespective of their sources of energy, will readily come forward for retrofitting their facilities with inert anode. Smelters to be built after 2024 will also likely not do with carbon anodes in order to be able to wear green badges.

Cheap Chinese aluminium has led to lean times for Brazil's aluminium industry as it earns more for selling surplus electricity

Brazil's aluminium smelters now make more money from selling surplus electricity, than the metal, as prospects for industry remain subdued, *writes Patrick Knight.*

With large reserves of bauxite, most found adjacent to navigable rivers in the Amazon region, and as a major producer of hydro-electricity, Brazil seems to be a natural location for producers of primary aluminium, as well as a major exporter of the intermediate products, bauxite and alumina.

At the time of its construction, the Alunorte alumina plant was the world's largest.

This was the conclusion of governments in the 1970s and 80s, when long-term planning was in fashion. Along with short fibre pulp, steel, and more recently meats, notably beef and poultry, Brazil's National Development Bank loaned large sums to the aluminium industry. Work was started, notably in the Amazon, in opening new mines, and building plants to process bauxite into the intermediate product, alumina, as well as new smelters, both in the Amazon, as well as closer to domestic users in the south east of the country.

To facilitate the establishment of the new smelting capacity and to ensure investments were made in the Amazon region, the country's second-largest hydroelectric power station, the 4,000 megawats Tucurui plant, was built on the river of that name. Half of its power was available at an accessible price, allowing the Vale mining company, known at the time as Vale do Rio Doce, and a producer of aluminium in Rio de Janeiro, to build the 6.4mt (million tonnes)-capacity 'Alunorte' alumina plant, at the time the world's largest.

The 'Albras' smelter, owned jointly by Vale and the Nippon Aluminium Company, was built alongside. As in most countries, the fast-growing motor industry was the leading customer for products produced from primary aluminium, in the industries early days produced by Vale, as well as Alcoa and Alcan, which had smelters in Minas Gerais, and Bahia states. Most of the bauxite came from the jointly owned MRN Trombetas mine on the Tocantins river, although Brazilian Aluminium Company, the CBA — part of the giant Votorantim group — obtained its ore from lower quality mines in Minas Gerais state. This was processed at CBA's integrated plant at Alumina, a town in Sao Paulo state.

In contrast to all the other companies, CBA generated all the electricity it needed, from its own hydroelectric plants. The leading markets for aluminium were the motor, construction and packaging industries, dominated by the ubiquitous aluminium can, used both for beer and soft drinks, for which demand is almost insatiable in tropical Brazil.

Long-term contracts for the supply of electricity, whose cost forms half of the cost of making primary aluminium, ensured that Brazilian aluminium was competitive with from almost all aluminium making countries. The use of aluminium increased by an average of about 5% a year, although even at its peak in about 2000, the *per capita* consumption of the metal in Brazil only reached 7.5kg. The export of the relatively low value bauxite increased steadily, to peak at about 12mt in 2017, although the 9mt of alumina exported last year earned much more.

Exports of both products earned about $2.5 billion in 2017. In contrast to the situation of market pulp and iron ore, demand for which has grown steadily in recent years, and which has aided Brazil running large trade surpluses in recent years, successive governments have refused to continue making low-cost electricity available to the aluminium smelting companies.

China, of course, now produces 30mt of primary aluminium a year, which compares with Brazil's 1.3mt. Cheap aluminium from China has helped push the world price of the metal to below what it costs to make in most countries. As a result, Alcan and Alcoa have either shut down their smelters in Brazil, or cut capacity, while Vale has shut down smelters, or sold them, as well as its interests in the alumina and bauxite mines and processing plants, to Norsk Hydro, which has become the leading player in the aluminium industry in Brazil.

The CBA, which in early years, exported a third of the 470,000 tonnes the company made at the peak, has now virtually ceased exporting. The company has concentrated on adding value to the products, notably extrusions, sold to the motor and construction companies.

Ironically, rather than complaining about the high cost of electricity, the aluminium smelters now make most of their profits from selling their surplus electricity, to electricity distributors. In the past few years a combination of increased demand, with a series of very dry winters has reduced generating capacity, pushing electricity prices to record highs. In this situation, any hope for a return to subsidies for aluminium smelters is hopeless, even though the import of primary aluminium now cost more exports of bauxite and alumina earn.

The last smelter to be built in Brazil was a quarter of a century ago. Novalis is investing in new facilities for can making, but that is about it. As with all mining industry, bauxite producers are vulnerable to accidents, and the Alunorte alumina plant has been operating at 50% of its 6.4mt capacity after a reservoir storing waste burst its banks. This echoes an identical problem which affected the facilties at MRN's Trombetas mine 40 years ago, although the damage there has now been completely rectified, following the planting of the affected area with resistant species.

On the positive side, demand for motor vehicles has been growing in the past couple of years after a spectacular falls in 2015 and 2016, mainly because the weak Brazilian currency, the real, has allowed record numbers of cars to be exported, most to neighbours.

It is still not clear what effect the advent of cars being fitted with electric engines will have on the use of aluminium. In recent years, emphasis on reducing the weight of vehicles, has encouraged the use of more aluminium in bodywork, but electric engines may contain less aluminium than the latest generation of Otto cycle engines do. After three years when house building came to a virtual standstill, house building is showing signs of a revival, although the increased costs of most beverages, notably beer, means demand from the packaging industry, remains subdued. DCi

Cargo Care's new cargo pump service programme provides peace of mind for vessel operators

Responding to the needs of shipowners and operators, Cargo Care Solutions has developed an integrated, total service programme for cargo pumps, providing cost-effective peace of mind for vessel operators.

Engineers working for the company, which already services and repairs cargo and hatch equipment, devised the new service after recognizing the need for more third-party support in the planned maintenance of cargo pumps.

The new service was officially launched during the Posidonia exhibition which took place in Greece in early June.

Peter Peltenburg, CEO, said: "As an independent and all-round supplier for all types and brands of maritime cargo access equipment, we are ideally placed to extend our first-class service to cargo and ballast pumps. In addition, our engineers have an extensive experience in cargo and ballast pump servicing and maintenance.

"Our complete maintenance service will provide peace of mind for ship operators by offering a cost-effective and high-quality solution which enhances safety and ensures compliance with port state control requirements."

The new service is based at the company's headquarters in Rotterdam and can be delivered throughout the international shipping world. In addition to planned maintenance programmes for cargo and ballast pumps of all major brands, Cargo Care Solutions is able to provide drydock maintenance and ad-hoc or emergency servicing.

As part of its new service, Cargo Care Solutions is able to supply its customers with free remote assistance — meaning troubleshooting and advice is free of charge. Peltenburg explains: "We can keep track of the status of your pumps by having all documentation readily available for our engineers on our servers. Depending on your needs we can make a custom-made package for condition-based maintenance."

The new cargo and ballast service includes:

- **annual surveys:** the best way to ensure the pumping system stays in optimal condition with lowest costs during lifetime. Can be combined with oil monitoring.
- **pre-docking inspection:** prepare for docking and ensure a clear scope of work with all parts available, including: pump evaluation test and oil sampling if required.
- **docking services:** having a CCS engineer to assist during docking ensures major maintenance is done with an expert on site.
- **troubleshooting:** Cargo Care Solutions is available 24/7 to minimize downtime.
- **training:** both on site and off site.

Already several major vessel operators have expressed an interest in Cargo Care Solution's new service.

Peltenburg explains: "In providing this service we are able to demonstrate how our knowledge and experience can produce practical solutions for our customers. Fast and reliable service is the key for us to meet our client's cargo equipment needs. Cargo Care Solutions puts continuous effort into exploring future ways of doing business."

About Cargo Care Solutions

Cargo Care Solutions has a long history in the field of cargo access equipment. As the former after-sales network of Macor Neptun and SEOHAE Marine System, it has more than 30 years of experience in its field and supplies parts and services for all types and brands of maritime cargo access equipment.

It is an independent and all-round supplier, able to supply parts and services for all types and brands of maritime cargo access equipment. Categories of serviced equipment include: folding hatch covers, side-rolling hatch covers, pontoon hatch covers, Ro-Ro equipment and hydraulic doors, boarding systems, tender garages, boarding systems, tender garages, bathing platforms, bulwarks for helicopter decks, pleasure boat and tender retrieval systems, passenger doors, crew entrance doors, etc, designed and delivered by these makers.

The environmentally friendly solution

moving cargo by barge and rail

Disappointing economic growth puts Brazil infrastructure improvements on the back burner

The lion's share of the limited investments made in infrastructure, are allocated to roads, with railways lagging far behind, *writes Patrick Knight.*

While Brazil's output and exports of most farm goods, iron ore and bauxite, pulp, paper and a range of other commodities has been growing steadily for many years, and will continue to do so, spending on improving roads, railways, waterways and at ports has failed to keep pace.

The economy shrank in 2015 and 2016, and grew by only about 1% in 2017. This year's growth, earlier hoped to exceed 2%, has now been downgraded again. With unemployment rising, and with tax revenues considerably lower than before the severe recession struck, government agencies are hard-pressed to just meet essential services. Spending on improvements to infrastructure have been a casualty, but rising transport costs pose a real threat to the profitability of farmers, mining companies, and producers of market pulp. Buoyant earnings from the export of commodities, has largely saved the economy from collapse.

In this situation, the government has resorted to selling as many state-owned assets as possible to raise funds, and has been seeking private finance for the building and maintenance of as many infrastructure projects as possible. Largely because of China's importance as the leading market for a variety of Brazil's commodities, led by soya of which 54mt (million tonnes) of the total 68mt exported was shipped to China last year, as well as iron ore, market pulp, sugar and maize, Chinese companies have been in the lead.

China's giant Communications

Port of Itaqui.

Construction Company, the state-owned CCCC. has been active in financing projects on its own, or in partnership with Brazilian companies. For example, CCCC has formed a joint venture in which it has a 50% share with national companies to build new facilities at fast growing Itaqui, a deep-water port in the northerly state of Maranao. Water is a record 20 metres deep, so expensive dredging, essential in ports further south, is not needed there. Itaqui is both the terminus of the 900km-long railway along which millions of tonnes of iron ore from Vale's Carajas mine travels to the sea each year is embarked, as well as being an outlet for an increasing proportion of the soya and maize grown in the north and North East of Brazil.

The market pulp produced at Suzano's pulp mill at Imperatriz, soon to be duplicated, is also exported from Itaqui, while increasing volumes of the millions of tonnes of fertilizer used on farms via Mato Grosso and other states, previously trucked up from ports in the south, now arrives there, as do large amounts of motor fuels.

Itaqui is one of the ports in what is called the 'Northern Arc' others of which are Itacoatiara, Santarem and Barbacena. Close to 25mt of Brazil's soya and grains crop will be exported from the Arc ports this year, compared with 7mt a decade ago. Almost half of Brazil's grains are now grown in the north and north east. Until recently, the great majority of these were trucked up to 2,000km south to Santos and Paranagua at great cost.

With demand for Brazil's grains expected to double in the next 20 years, almost all the extra needed will be produced in the north, so the importance of Northern Arc ports will continue to increase. Because it takes several days less for the grains shipped from the north to reach most destinations from there, as it does those exported from the ports in the south of Brazil, as well as from up-river ports in Argentina, soya from Brazil is far less susceptible to deterioration on the journey, as those from further afield. This adds to its attraction and competitiveness.

The 1,537km-long North–South railway on which work started in the 1980s, will soon be operating on a regular basis. Bids are now being sought for the right to operate the railway which links the N–S line with the Carajas line in the north, and with other lines in the south. The CCCC company is a favourite to succeed, although there are bids from other Chinese and Russian companies as well. Whoever wins the rights to operate the N–S line, along which more than 20mt are expected to be moved each year in a few years' time, will need to invest at least US$1 billion on building loading facilities along the length of the track, and purchasing hundreds of new locomotives and thousands of new cargo wagons.

One of the problems whoever wins the N–S concession will face, is to negotiate rates for the use of the tracks owned by companies which operate the lines linking N–S tracks to Santos or Paranagua in the south, which are operated by the MRS and Rumo companies. These companies say they are anxious to invest large sums on upgrading the several thousands of kilometres of tracks whose concessions to operate they hold, and which will terminate soon, and on building stretches of brand new track.

Only 6.5% of the small investment in infrastructure of recent years, has been spent on railways, compared with 85% on roads. They have warned the cash strapped government that they will only make the much-needed investments if their concessions, which date from the when Brazil's railway system was privatized 20 years ago, are extended by a further 30 years.

If times were easier, the government might be prepared to allow these concessions to expire, and seek new bidders, who might be able to operate the systems more efficiently, and on better terms. But in the present situation, this is unlikely to happen.

The current concession holders have been criticized for the fact that the speeds at which trains now travel on their tracks have not risen at all during the 20 years since privatization, and have fallen in some cases. The companies counter this claim by pointing out that trains are now much longer and heavier than in the past, that their tracks pass through urban areas which are much more heavily populated than 20 years ago on their ways to ports and that there are numerous level crossings to be negotiated.

The fact that there are two gauges in Brazil, 1:60 metres, and one metre, further complicates operations. The companies say the planned investments are essential if the existing 21% of all the goods moved in Brazil which now travel by train is to continue at this level. Without them. rail's share could soon fall to 17% or so, the companies claim.

The main competition for rail, comes from road of course, and in the past few years, the government has granted concessions for many stretches of road to be privatized, and for tolls to be levied. Much of the proceeds is supposed to be used to upgrade, or maintain these highways. But the years of below-average economic growth meant that expected levels of revenue have not occurred, and as a result, several concession holders have handed back their unprofitable concessions to the government.

Concessions to build and operate some new rail lines, running inland from the coast, have also been handed back. Although the government would ideally like many of the roads along which the 200mt of soya and maize grown each year are taken direct from farms, or from processing plants to ports, or railheads, to operate tolls, few toll roads are in or near the grains producing regions.

Cash-strapped governments have lagged behind in bringing these roads up to a standard at which a private enterprise might be interested in operating them. The key 1,200km-long BR 163 highway, which links the soya plantations of much of the leading producing state of Mato Grosso, which is used by up to 700 trucks each day, and carries at least 25mt of grains a year, on its way to ports in the 'Northern Arc'. But a 200km stretch of this road leading to the riverside port of Miritituba, has still to be paved, with the result that trucks can take five days to negotiate this stretch during the rainy season. The paving work is not expected to be completed in less than two years, and the army has been called in to complete work which private construction

companies have failed to finish.

A concession to build a 1,700km stretch of railway which would run parallel to the Tapajos waterway, where at the moment, large quantities of grains are transferred from trucks to barges before being shipped downstream to the deep water ports of Santarem, Santana, or Barbacena has yet to be awarded. However, the large trading companies active in Brazil say they are prepared to finance such a line, which would run direct to Barbacena, close to the mouth of the Amazon.

With 80mt of soybeans shipped, last year, and with about 2.5mt more being shipped to China each year, and with 30mt of maize to leave this year, such a line will soon become essential.

The CCCC company has not limited its investments to the North and Centre of Brazil, and plans to spend $300 million on new grain storage facilities near the port of Sao Francisco do Sul, in the state of Santa Caterina, which is an alternative to Paranagua. The Chinese company is also negotiating to buy a 50% share in the ALL rail company, recently bought by Rumo, which operates most of the 1,500km of lines, most of them narrow gauge, in the south of the country.

CCCC has undertaken to invest up to $500 million in upgrading these tracks, along which some 25mt of cargo, the majority grains, is now moved each year.

Concern has been shown in some quarters of the risks involved in the major investments being made in Brazil by companies owned by the Chinese state. On the face of it, the deals appear attractive, but as has occurred in several countries in Africa, there are drawbacks. The Chinese usually require that their own nationals occupy all senior managerial positions in such projects, and often insist that Chinese technicians are involved in building works, so few jobs are available to local people.

Many people are aware that Brazil is now the world's leading exporter of soya beans, and that it sells far more beans to China than the world's top producer, the United States, where along with most other leading soya producers, there is little spare land available to plant much more soya than is now the case. Only Argentina, of the world's large-scale growers, could switch more land out of extensive cattle grazing, to growing arable crops, as now happens in Brazil as well.

Less well known has been Brazil's ability to produce and export much more maize, again most of the extra being produced in the northern half of the country. Until ten years ago, Brazil was a major importer of the grain, as more than 50mt is needed each year by Brazil's massive poultry, pork and dairy cattle industries.

Much of the soya grown in the states of the North, notably Mato Grosso, is planted as early in the spring as possible, which means 'winter' maize can be planted as soon as the early soya has been harvested and still do well. In the past few years, considerably more 'winter' than summer maize has been grown in Brazil. As more soya comes to be planted, more of the 'winter' maize crop, most of which is exported, will be available as well.

Up to 30mt of maize will leave from 'Northern Arc' ports this year, an increasing proportion of it heading to China, no longer self-sufficient in this grain as demand for meat and dairy produce continues to surge. Because of the growing importance of the north and now, north east of Brazil, as grains growing area, it is not a surprise that attention is being increasingly focused on improving the waterways which flow north, and in some cases, south into the massive Amazon river, navigable up to 3,000km from the Atlantic, into Peru, Bolivia and Colombia. One main tributary, the Tocantins, is also navigable up to 1,000km from the point where it merges with the main Amazon at the fast expanding port of Santarem, and two important riverside terminals used by barges, have been built there in recent years. Others fall more sharply to the river, so locks are needed to make the rivers navigable. Such a set of locks was built adjacent to the large Tocantins power station, one of Brazil's largest, in the 1980s. However, until now, nothing has been done to clear rocks from a 30km stretch of river downstream from the locks, which now handle barge trains of only a few thousand tonnes, rather than their potential of several millions. Work is now proceeding on removing these rocks, allowing large barge trains to use this route.

GB Railfreight purchases class 56s to provide extra capacity

On 15 June this year, GB Railfreight (GBRf) announced that it is again expanding its fleet of locomotives as a result of continued growth in the services that it runs. GBRf has purchased 16 class 56 locomotives from UK Rail Leasing (UKRL), along with a number of spares and materials.

There is a mixture of stored, serviceable and non-running donor locomotives which GBRf will be able to put to a variety of uses as the needs of the company warrant. In the first instance, some of these locomotives will be moved from Leicester to be stored at various locations pending a decision on their future re-engineering, while others may be returned to service if required.

At this time GBRf is not able to confirm any projected re-engineering as this is still subject to final contract.

GBRf would like to thank UKRL for its assistance hopes tol continue to work together on various projects in the future.

Commenting on the deal, GBRf Managing Director John Smith said: "This is an important deal for us as it provides much needed capacity for our expanding business. At a time when rail freight is facing an uncertain future, GBRf is able to say it is growing and confident that the industry will overcome current challenges. With ambitious housing and infrastructure targets, growing consumer demand, and the need to reduce carbon emissions, rail freight must be ready to play a central role."

About GB Railfreight

Founded in 1999 and headquartered in London, United Kingdom, GB Railfreight is the third largest rail freight operator in the United Kingdom, with a turnover in excess of £120m. GB Railfreight is one of the fastest growing companies in the railway sector and transports goods for a wide range of customers.

DELIVERING A HIGHER STANDARD

Photo credit: Marc Latour

FEDNAV

A LITTLE BULK GOES A LONG WAY

www.fednav.com

Cooper Consolidated: full-service offering for Lower Mississippi River clients

Cooper Consolidated has eight full-service barge fleets (2,000+ barge spaces) and 12 deep-draught ship berths located between Baton Rouge, LA and Belle Chasse, LA. It can therefore offer worry-free logistics services to its customers, managing and executing shipments from start to finish.

With origins that date back to the mid-1800s, Cooper Consolidated LLC is one of the most experienced and well established maritime cargo handling companies operating on the Lower Mississippi River. At each of its three ship terminal sites and eight barge fleets it offers a full menu of cargo services that range from midstream stevedoring to comprehensive logistics management to barge fleeting, switching, cleaning, and repair.

Cooper Consolidated loads and discharges deep draught vessels and ocean going barges with all types of dry bulk and breakbulk commodities, including various grain products, pig iron, fertilizers, coal, coke, steel, minerals, alloys, and project cargo. These services are available 24/7 and on every day of the year.

With eight full-service barge fleets (2,000+ barge spaces) and 12 deep-draught ship berths located between Baton Rouge, LA and Belle Chasse, LA, Cooper Consolidated offers worry-free logistics services to its customers, managing and executing shipments from start to finish.

The company deploys and continues to invest in the industry's most advanced fleet of cargo transfer equipment comprised of 12 high-speed, high-capacity floating cranes. Over the past six years, Cooper Consolidated has reinvested in its state-of-the-art fleet of cranes by on average bringing online one new crane per year. Most recently, the company acquired two AmClyde cranes (Model 37 & MSB 16), some of the largest, strongest, and fastest cranes in the industry, in order to best serve customers through increased efficiencies and speed.

The Cooper Consolidated portfolio of unique assets also includes the floating grain elevator *AMERICA*, one of the largest and most efficient midstream elevators in the world, which transfers grain and grain by-products directly from barge to vessel. In addition to its advanced cargo weighing system, the *AMERICA* seamlessly blends cargos and fully supports FDA certified sampling. This elevator continues to prove itself as one of the nation's most efficient grain export systems.

The floating transfer station *Louisiana Midstream One (LMO)*, which blends, samples and transfers coal or petcoke directly from barge to vessel, is the only asset of its kind operating on the Mississippi River. The *LMO* has been highly utilized over the past eight months as export coal has steadily increased in volume and consistency. The Gulf's coal export barge market is once again showing signs of longevity, and the *LMO* and Cooper Consolidated team stand ready to meet the increased demand.

The difficult operating conditions of 2018 Q1 and Q2 (i.e. high water) drove freight costs skyward. Furthermore, the recent uptick in commodity movements has finally put pressure on the industry's existing hopper barge fleet. With a firm outlook for this summer, increased barge utilization rates are expected while market uncertainty and demand remain high.

Beginning in 2018 Q2, recent steel tariffs have already turned traditional traffic patterns upside down. Cooper Consolidated has adjusted as recent barge movements and loadings have tended to be comprised more of raw materials (e.g. pig iron and scrap) rather than imported finished steel products. The general expectation is that the market will continue to see new trade patterns develop and normalize over time unless tariffs are rolled back or diluted by federal intervention.

Barge freight has been increasingly difficult to secure in the recent months with barge providers content on enjoying spot rates. Also, more vertically integrated barge owners with vessel loading capabilities and/or origination loading seem to be 'circling the wagons' due to the positive outlook, and are less likely to bid on business not under their control or with additional interchange costs.

This is a trend that started with these providers during weak market conditions over the last two years, and it appears likely to continue as they're eager to take care of their internal interests first and ensure that their customers are happier than they were in the past few months when they had difficulty with timing obligations due to difficult operating conditions.

Cooper Consolidated has positioned itself as one of the most premier cargo handling companies in the industry through its continued reinvestment in its state-of-the-art crane fleet, development of the most innovative and efficient portfolio of coal and grain transfer assets, and its customer centred approach in proving the industry's finest cargo transfer services.

Rail capabilities contribute to Port of Tyne being voted Port Operator of the Year

The Port of Tyne in the UK has been voted Port Operator of the Year in the FTA Multimodal Awards.

Now in its third year the awards are organized by the Freight Transport Association (FTA) in association with Multimodal, the UK and Ireland's leading freight transport and logistics exhibition, held annually at the NEC exhibition centre in Birmingham.

Recognizing excellence in air, road, rail, maritime, and freight forwarding services, the awards are voted for by the thousands of readers of the *Multimodal* newsletter, as well as FTA members, and exhibitors at Multimodal 2018.

The Port of Tyne received the most votes from the short-listed ports which included: DP World Southampton, PD Ports, Forth Ports – Port of Tilbury, Grangemouth and London container terminal, Forth Ports Rosyth, and ABP.

The Port of Tyne picked up the award on 1 May at the awards evening hosted by Geoff Miller OBE, former England cricketer, the awards were attended by representatives of all modes of freight transport, including air, sea, road and rail, as well as the industry's buyers and support sectors.

Nolan Gray, Port of Tyne Business Development Director, said: "Thank you to all of our stakeholders, and suppliers who voted for us and for their continued support.

"The FTA *Multimodal* awards are important to celebrate our success collectively as a logistics industry and it is good to see such a diverse range of companies recognized for their contribution to the sector."

The *Multimodal* exhibition is now in its eleventh year, bringing together logistics decision makers to help grow their network, develop new business and discuss industry topics.

The LBH Group and Rhenus plan to establish a joint company

The port services provider, the LBH Group, and the logistics specialist, Rhenus, are planning to co-operate closely in the European inland waterway shipping logistics business. Both companies are currently seeking to set up a joint venture that aims to pool activities in the field of inland waterway shipping and the onward carriage of the associated goods.

"By co-operating with LBH, we'd like to significantly strengthen our joint position at Rotterdam. We'll therefore be able to offer the customers of both the LBH Group and the Rhenus Group an even more efficient and flexible range of services in future than we've done in the past," says Thomas Maassen, Managing Director of Rhenus Port Logistics, giving the reasons for the latest development.

"It's our goal to be able to offer our international customers a complete chain of services from the departure country to the final recipient. We've found a suitable partner in Rhenus to support and strengthen us in this field," says Bert Lagendijk, Managing Partner of the LBH Group. The two partners will establish the structure of the co-operation arrangement in terms of company law during the next few weeks and the deal still has to be approved by the cartel authorities.

The LBH Group was founded by the Dutch brothers Jan and Bert Lagendijk in Rotterdam in 1984 and now not only has business operations at European ports, but on all five continents. The historical roots of Rhenus can be traced back to the Rhine and Main inland waterway routes. The Rhenus Group now has a diverse, global network of business sites with extensive port capacity.

About Rhenus

The Rhenus Group is a logistics services provider with global business operations and annual turnover of €4.8 billion. Rhenus has business sites at 610 locations worldwide and employs 29,000 people. The Rhenus business areas – Contract Logistics, Freight Logistics, Port Logistics and Public Transport – manage complex supply chains and provide a wealth of innovative value-added services.

Freightliner signs exclusive RailSmart deal with 3Squared

On 5 July this year, Freightliner, a subsidiary of Genesee & Wyoming Inc. (G&W), announced that it has selected the RailSmart suite of operational software designed specifically for rail operators from software development specialists 3Squared.

In the five-year deal, Freightliner is not only investing in 3Squared's existing, leading-edge RailSmart products, but will collaborate closely on exclusive future RailSmart developments, putting G&W and Freightliner at the forefront of digital transformation in the UK rail industry.

"RailSmart will transform our UK rail business," comments Neil McNicholas, Managing Director of UK/Europe Region's Rail Services. "Outdated, time-consuming, manual practices will be replaced with the latest intuitive Cloud and mobile-based platforms to streamline processes, increase productivity and support us in delivering an improved, even more reliable service to our customers."

The RailSmart suite of software will initially be rolled out in the UK, starting with the competency management system RailSmart EDS and RailSmart ORS, a Cloud and mobile-based solution for the rostering of employees. Both are planned to be in operation later this year. Subsequent modules will be delivered later this year and in the early part of 2019, driving improvements and efficiencies in other areas of the business.

RailSmart's software will also interface with a number of other Freightliner systems, helping the business share information more effectively across its departments, reducing duplication and unlocking additional benefits.

Neil McNicholas (left) and Tim Jones.

"We are delighted to be working with G&W and the Freightliner team as the industry embarks on this monumental shift to a digital railway," said Tim Jones, MD of 3Squared Ltd.

About G&W

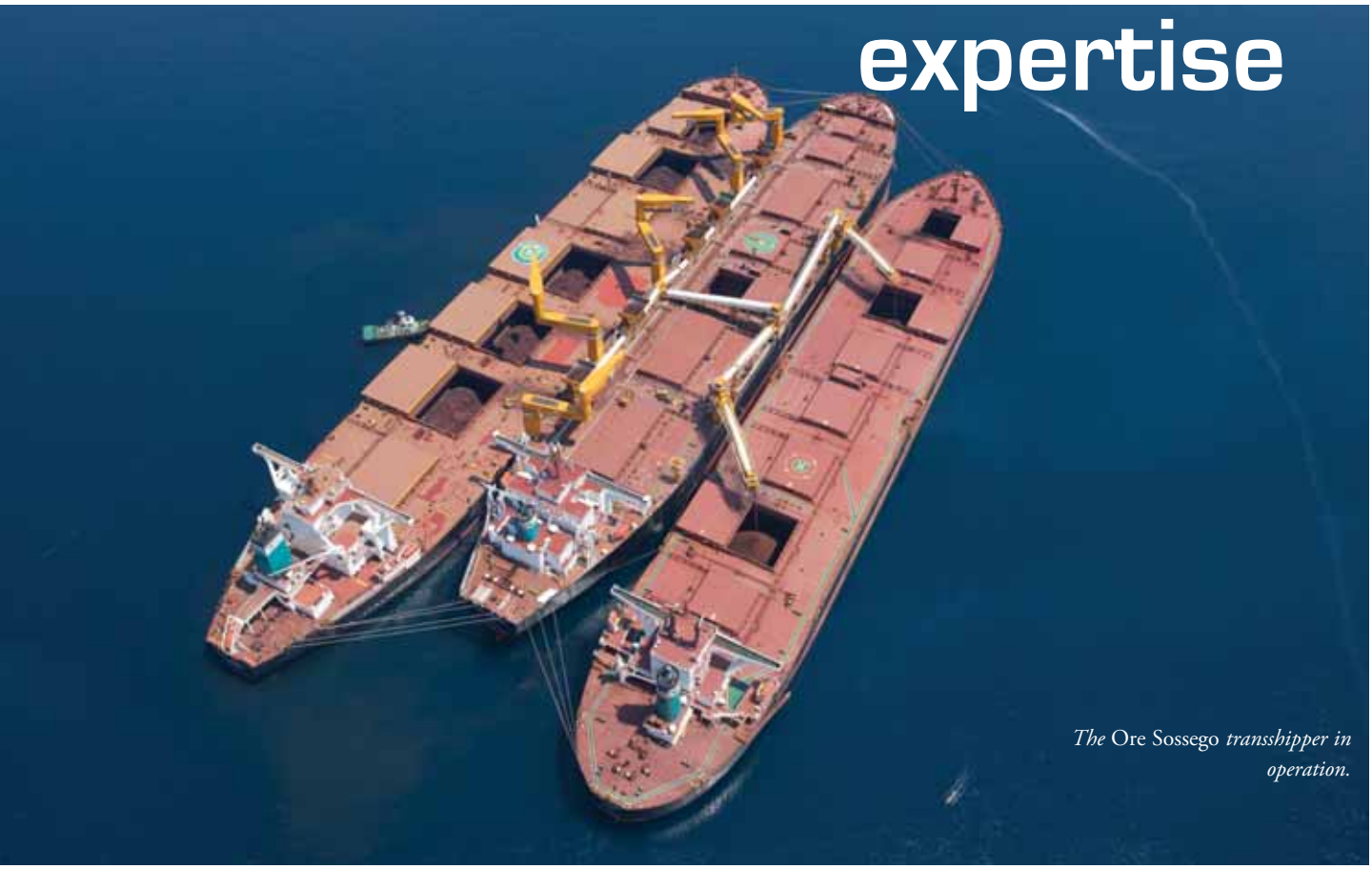
G&W owns or leases 122 freight railroads organized in nine locally managed operating regions with 8,000 employees serving 3,000 customers. G&W's UK/Europe Region includes Freightliner; the UK's largest rail maritime intermodal operator and second-largest freight rail provider, as well as regional rail services in Continental Europe.

G&W subsidiaries and joint ventures also provide rail service at more than 40 major ports, rail-ferry service between the US Southeast and Mexico, transload services, contract coal loading, and industrial railcar switching and repair.

About 3Squared

3Squared is an award-winning Sheffield-based software company that works across the rail industry. Its flagship RailSmart suite of software applications continue to positively disrupt the rail sector as more and more passenger and freight operating companies, and supplier to the rail industry use the software to improve operational efficiency, reduce incidents and better manager business risk. DCi

EMCO-1 project illustrates Bedeschi expertise



The Ore Sossego *transshipper in operation.*

Bedeschi's floating terminals experience comes to the fore

The growth in vessels sizes has witnessed a rapid development since the Second World War but port development has not been able to keep pace, *writes Giorgio Berlato – Project Manager Bedeschi Spa*. Vessels sizes have increased because of economy of scale i.e. larger the vessel size, the lower the per-tonne transportation cost. Port development, unfortunately, has lagged behind mainly because of a high gestation period and high development costs. The only way to overcome this bottleneck is offshore transshipment. Offshore transshipment essentially means transfer of dry bulk cargo like coal or iron ore or other bulk material from large vessels into smaller vessels or vice-versa. Many kinds of transshipment devices have been devised and deployed in various parts of the world mainly for coal and iron ore handling.

A classical transshipper essentially comprises two main components — the cranes and the cargo handling & delivery systems. Their application varies from the usage of the system i.e. if the system is intended to carry out offshore loading of cargo from barges into ocean going vessels (OGVs) or discharging the cargo from OGVs into barges. For a loading system the cranes need not have a very big outreach because they have to pick up cargo from barge which are relatively smaller in size and berthed alongside. The cargo handling system instead should be equipped with a shiploader with sufficient air draft and outreach to deliver cargo into the holds of large OGVs. The reverse is applicable for discharging systems where the cranes, which are supposed to pick up cargo from the largest OGVs have large air draught and outreach and the cargo handling system has a smaller barge loader sufficient to deliver cargo into barges, instead of a shiploader.

Basically the transshippers can be either owned by the ports, exporters/importers or by independent service providers, which give the cargo transfer services to the shippers. They actually supplement the ports by way of overcoming the infrastructure bottlenecks like insufficient draught of inadequate port facility and work in conjunction with the port authorities, under whose jurisdiction the anchorage falls.

The transshippers do have a distinct advantage over shore terminal because they can be implemented without the need to dredge, to enable large vessels to come alongside, in addition to not being cost-prohibitive which the shore terminals are. Dredging, which is an environmentally sensitive issue, creates havoc with marine fauna in addition to being extremely expensive. Moreover, and most importantly, the implementation time of the floating terminal is much shorter compared with the shore terminal. Floating solutions are environmentally safe too.

In 1992, the UN introduced the concept of 'sustainability', defined as 'Development that meets the needs of the present

without compromising the ability of the future generations to meet their own needs'. Work for a sustainable development is required to operate on three different levels: economic, social and environmental. It is clear that ports have a responsibility towards the environment and that port governance should take care of effective logistics and operations.

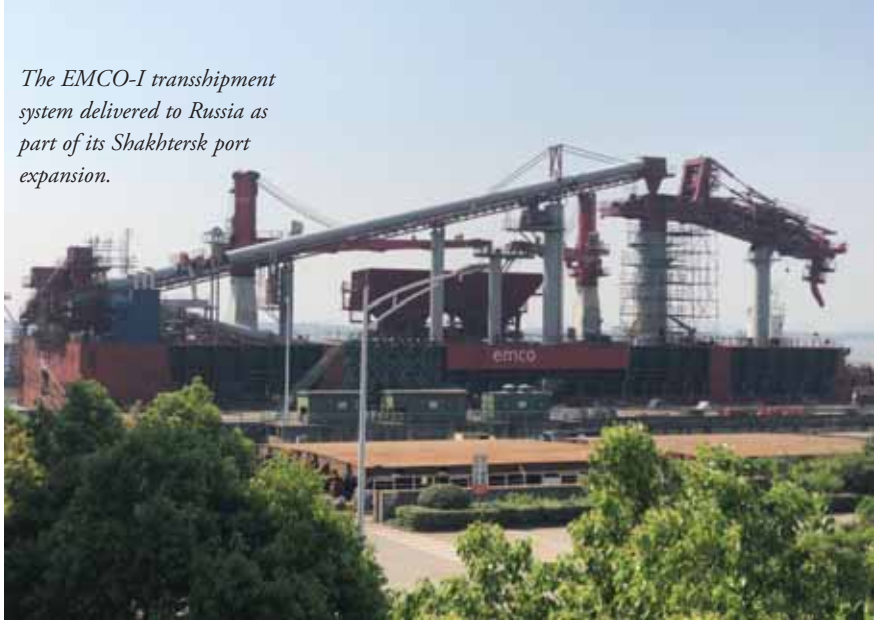
While in the past, environmental safeguards were not an issue, nowadays ports worldwide consider the prevention of pollution a primary objective, especially with the import/export of dry bulk cargo (cement, coal, grain, iron ore, fertilizer, etc...). In this case, the risk of spillage and dust production is very critical. Problems can occur during loading or unloading operations, but also if the material needs to be stored in the port zone.

To achieve a reduction in emissions, the first step could be to use eco-friendly bulk handling equipment. Bedeschi, thanks to its research and development in green technology, is able to design and produce machines, which incorporate sophisticated dust-control measures, able to reach the highest environmental standards. As stated before the most critical features of this kind of equipment are reliability and more and more, being environmentally safe.

Bedeschi has developed the most efficient equipment in operation in the last decade all over the world, setting an unreached benchmark for transshipment size with its transshipment vessels *Ore Fabrica* and *Ore Sossego* for Vale, being able to handle more than 100,000 tonnes per day.

The first and the foremost requirement is to get a full understanding of the client's and the project's requirements and then to design solutions to suit them. Just because a particular system has been successful in one application, it cannot be considered adaptable to all situations. The requirements of every project, however minor in nature, are unique for the project and the systems have to be designed suitably.

Another aspect which helps Bedeschi in staying ahead is being innovative in its thinking and having the ability to translate this innovative approach into workable designs and then having the capability to put the designs into production. This only happens when there is in-depth knowledge of the various nuances of the offshore transshipment field and the zeal to stay ahead.



The EMCO-I transshipment system delivered to Russia as part of its Shakhtersk port expansion.

Some of examples of Bedeschi's innovations have been: curved & rotating delivery chutes on shiploaders to deliver cargo into all parts of ocean going vessels' holds; variable-speed-driven apron feeders for smooth material extraction from hoppers; double shiploaders on transshippers; hoppers with collapsible sidewalls to reduce crane grabs lifts; software integration between desired delivery flow rate; and cargo extraction from hoppers, just to name a few.

The above-mentioned innovations could be implemented only because Bedeschi has the in house design team which works in close co-ordination with the company's projects department to implement the ideas into workable designs. The team then interacts with the in-house production facility, covering a 50,000m^2 area, with state-of-the-art production facilities, where the designs can be fabricated, assembled and tested before being shipped to be installed on board the transshippers.

Very few items — all non-critical — like structures/stairways/walkways etc. are outsourced, thereby reducing any reliance on the unknown and unforeseen. For these too, the drawings are supplied by Bedeschi and close interaction is maintained with the production facilities to ensure strict compliance to Bedeschi standards.

Last example of this is EMCO-I , a new transshipment system delivered to Russia as part of its Shakhtersk port expansion, to support the client East Mining Company to reach their plans of doubling mining and offloading of coal figures (from the 2017 annual record of 4.6mt [million tonnes]) and reach the target value of 8mt.

The vessel has been completely renewed and adapted to the new operational needs by the Bedeschi team in collaboration with its partners.

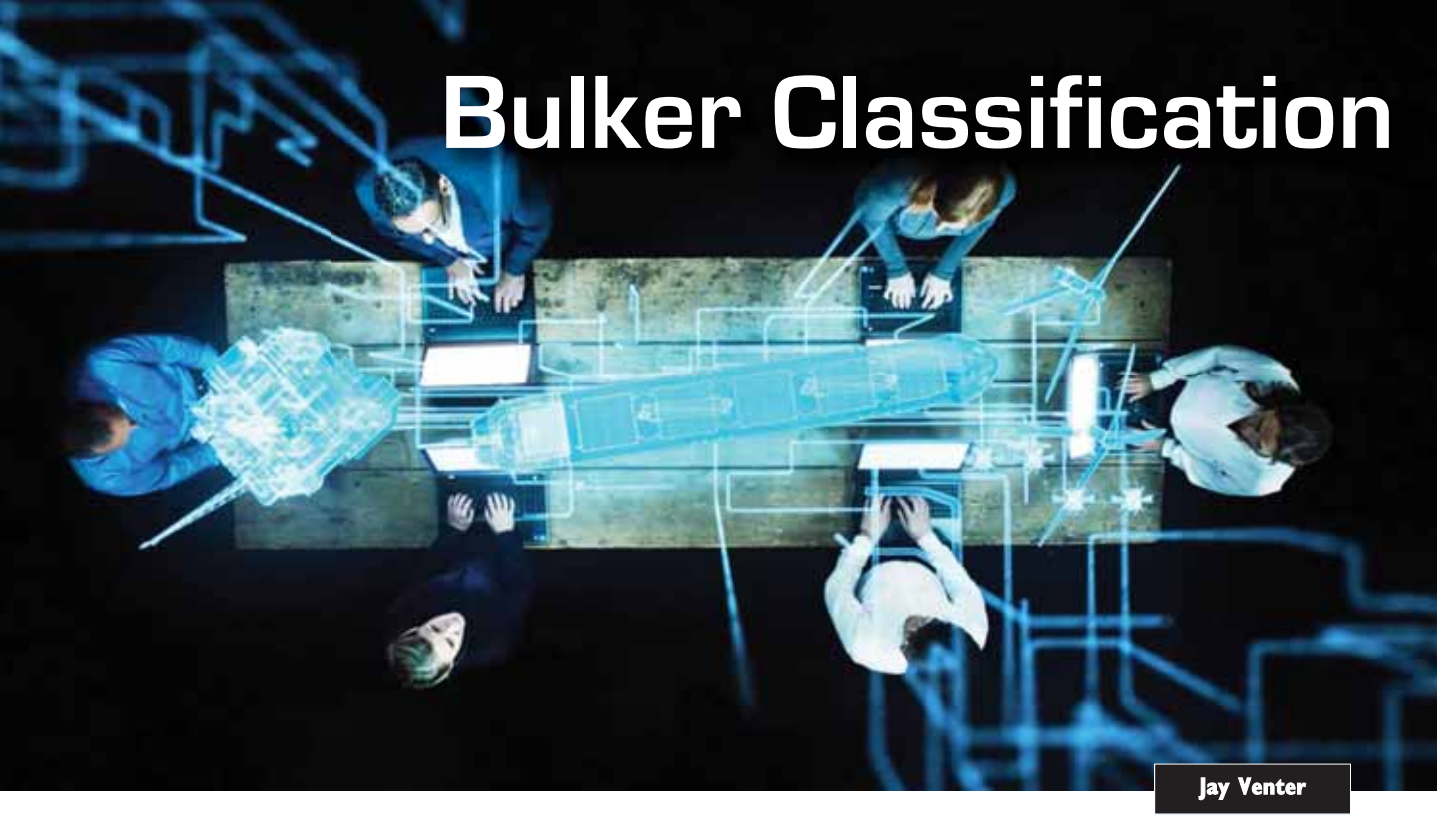
Particular attention has been paid to environmental protection, in order to avoid any dust spillage and meet the strictest standards of 'green operation'.

The cargo handling system consists of a couple of receiving hoppers with an inner volume of approximately 70m^3, filled by two Liebherr cranes, a couple of feeder belts with capacity of 1,300tph (tonnes per hour), three belt conveyors with a capacity of 2,500tph and a slewing and luffing shiploader designed for the loading of Panamax vessels. The solution has been conceived, fabricated and installed by Bedeschi with the support of the Chengxi Xinrong shipyard, based in JingJiang City,Jiangsu, China. The vessel —including its CS — is completed and started operations in Shakhtersk port at the end of May.

While each one of the transshippers implemented by Bedeschi is different from each other, what unites them all is the Bedeschi technology, developed over 110 years of experience, in-house design capability, 50,000m^2 of state-of-the-art workshops and a lifelong commitment for spares supply and after sales service. DCi

EMCO-1.

Bulker Classification



Jay Venter

Digital defence

Cyber risk

As owners act to fortify their ships and shoreside operations against cyber risk in the face of evolving threats and imminent regulation, the classification society DNV GL has expanded its services to cover control systems, software, procedures and human factors

Although the notion of a ship in the middle of the ocean being disabled by a software malfunction or by hackers was initially greeted with considerable scepticism and denial, a spate of incidents, including most notably an attack that disrupted operations at AP Moller-Maersk for several weeks, has transformed attitudes. Today the maritime industry acknowledges the potential dangers and is taking steps to address cyber risk at various levels.

Cyber security is a moving target. Threats continue to grow in reach and complexity, with new vulnerabilities discovered on a seemingly daily basis. In the space of a few years hacks and security breaches have jumped from being an exceptional event confined to a special breed of technology companies to becoming a fact-of-life impacting everyone. No industry is immune.

While in earlier decades, office IT systems were the predominant target, these days, more incidents are affecting operational technology (OT) — the programmable control systems responsible for operating machinery. The trend reflects the growing complexity of such systems and a general increase in connectivity which in turn increases the attack surface of a vessel. This increase is borne out by statistics: the number of attacks on OT in 2016 was double that of the preceding year and four times the level seen in 2013. So whereas before it was mostly a company's finances and reputation at risk, this has now escalated to safety of life, property and environment. The stakes are much higher. For this reason, cyber security must now be considered an integral part of overall safety management in shipping and offshore operations.

Regulatory response

Fortunately, industry policymakers have not been asleep at the wheel. Last year saw two particularly significant milestones in the regulatory environment. A section dedicated to maritime security – including cyber risk – was introduced in the third edition of the Tanker Management Self Assessment (TMSA), which came into effect this January.

Because TMSA is essential in winning charter contracts, tanker operators now have a commercial incentive to demonstrate that they have given systematic consideration to potential vulnerabilities and implemented appropriate mitigations and safeguards to address them.

Shortly after, IMO's Maritime Safety Committee inserted Maritime Cyber Risk Management to the list of ISM Code requirements. Strongly encouraged to start on January 1st 2021, the amendment leaves non-tanker vessel owners with little more than two years to achieve a similar level of preparedness as their tanker-owning colleagues.

Risky job

Ultimately, managing cyber risk is no different to managing any other risk, remarked Patrick Rossi, DNV GL's Maritime Cyber Security service manager. "The equipment and terminology may be unfamiliar and somewhat daunting but the approach is fundamentally the same as, say, preparing for and carrying out hot work modifying a vessel's structure."

Software changes, for example, should not be done on a whim, which can often happen on ships. Because IT engineers do not frequently visit vessels, when they come aboard to update the ECDIS or set up the latest version of a maintenance management application, the temptation is to be helpful. They click to install a new service pack and a backlog of other app updates. Nine times out of ten, this is fine. But occasionally it can disrupt settings elsewhere in the system. Moreover, the consequences may not become apparent until long after the engineer has left and the ship has set sail.

Instead updates should be carefully planned, tested, approved, and recorded. They should be categorized as minor or major to ensure personnel with appropriate authority can approve them. This, Rossi said, is virtually identical to the process for gaining approval prior to carrying out welding.

NotPetya lessons

If there was one positive outcome of the NotPetya ransomware attack on Maersk last spring, reasoned Rossi, it was awakening owners and operators to the

fact that cyber threats are not hypothetical. "Today there is much greater awareness of the real-world implications and acceptance that cyber risk has to be tackled."

However, shipowners and operators are at different stages on the learning curve in formulating a response, he observed. "Some are bewildered by the scale of the problem and don't know where to begin; others have introduced some counter-measures but are uncertain whether they've covered everything they need to cover."

In its role as a classification society DNV GL has adapted and expanded its cyber security offering to assist owners and operators working to protect their assets against an evolving threat landscape and to ensure they satisfy new industry rules and regulations.

It now provides services for educating and raising the awareness of all stakeholders, both on shore and at sea; assessing and implementing defensive and reactive countermeasures; and monitoring and reviewing effectiveness and robustness of barriers, emphasizing continuous improvement.

These are purposely designed not to be system specific, so as to work equally for conventional information technology and industry-specific operational technology, which is important when systems are interlinked. It also prevents them from obsolescence. While the consequences of an OT outage are likely to be more serious, they can often be traced back to a weakness in IT systems, particularly if they originate from an external source.

Practical advice

In September 2016, DNV GL published a Recommended Practice (RP) to educate shipowners and operators on how to deal with cyber risk. "It was designed to demystify a subject, with which the industry was still getting to grips. We took care to write it in a maritime language and contextualize it in a maritime setting", said Rossi.

The focus was on practical steps, stressed Rossi. "Most advice coming from industry bodies at the time, while produced with noble intentions, was very high-level. Our idea was to close the gap between theoretical concepts and the real world."

For example, DNV GL's RP takes into account common constraints such as limited budget and resource availability. The core methodology is to identify weaknesses, assess their severity and then prioritize the most serious ones. The RP has been released as a free resource.

The next step for vessel operators would be to carry out a cyber security assessment. DNV GL can support this task by sending interdisciplinary teams to engage with onshore personnel and offshore crews to identify and address specific business risks.

"While operators typically understand the guidance as it is written down on paper, translating those principles into action is sometimes more challenging," noted Rossi.

Such collaboration results in a highly methodical approach to developing procedures that are effective both at reducing risk and mesh neatly with the operator's structure and working practices. In addition to technical mitigations for closing any cyber security gaps, this appraisal also considers system management and the human factor.

After countermeasures and new risk management procedures are implemented, they can be followed up and qualified by penetration testing. "Testing the robustness of barriers is essential to ensure that assets are secure and that nothing has been overlooked," Rossi explained.

In this process, authorized 'white-hat' hackers do their best to compromise the IT and OT defences to validate comprehensively that safeguards work as they should and risk vectors have been closed.

Lifecycle management

DNV GL also provides third-party verification of cyber security requirements throughout the newbuild project lifecycle. "Our cyber security team recently worked with a major cruise line on a newbuild project to devise a process for embedding cyber resilience from the very beginning of the vessel design phase," said Rossi.

This was accomplished by introducing defined procedures for handling and accommodating risk for all stakeholders in the project – not only the owner and yard, but also the vendors. Incorporating technology and systems from third-party suppliers unavoidably adds complexity to a project, and, from a cyber security perspective, increases the potential attack surface area for malevolent actors. Meanwhile, shipyards are as much on the learning curve as vessel owners.

"For a large, sophisticated vessel like a cruise ship, which is dependent on technology for both operational and hotel needs, collaboration is absolutely critical," Rossi said. "Cyber risks are multifaceted.

So the response has to mirror that. Everyone has to be involved in the conversation, because, as the saying goes, a chain is only as strong as its weakest link."

The feedback from the project, he noted, was overwhelmingly positive. "Tackling cyber security right from the beginning of a vessel's lifecycle enables stakeholders to take a proactive, rather than reactive, approach to the problem. It provides more opportunity to insert barriers."

Based on these advisory services, DNV GL has developed its first classification notations covering cyber resilience. The cyber secure notations have three qualifiers: Basic, Advanced and '+'. Basic is primarily intended for ships in operation, while Advanced is designed to be applied throughout the newbuilding process. The '+' qualifier is available for systems that are not part of the default scope of Basic and Advanced.

Human element

Of course, cyber security is not just a matter of firewalls and antivirus software. Up to 90% of incidents are attributed to human behaviour. Phishing and social engineering, unintentional downloads of malware, for example, remain common issues. At the same time, most crews and onshore staff are not taught how to respond to cyber attacks or major technology failure, resulting in behaviour that fails to contain the damage.

DNV GL has therefore expanded its options for training through its Maritime Academy. Courses covering cyber security from both management and technical angles and even include lessons in hacking to give participants an insight into how cyber attackers operate. In addition, it has developed tools — incorporating friendly phishing campaigns and simulations of other social engineering techniques — to assess staff alertness, enabling customers to fine-tune the level and frequency of cyber awareness training.

Sulphur cap chaos in 2020 warn world's shipowners

The International Chamber of Shipping (ICS) fears 'chaos and confusion' unless the UN International Maritime Organization (IMO) urgently resolves some serious issues concerning the successful implementation of the 0.5% sulphur in marine fuel cap, which is scheduled to come into effect globally overnight on 1 January 2020.

Such chaos would have serious consequences for the movement of the world's energy, raw materials and manufactured products — about 90% of global trade being carried by sea.

This was the principal conclusion of the Annual General Meeting of ICS's member national shipowner associations which met in Hong Kong in May 2018.

Speaking from Hong Kong, ICS Chairman Esben Poulsson said: "The shipping industry fully supports the IMO global sulphur cap and the positive environmental benefits it will bring, and is ready to accept the significant increase in fuel costs that will result. But unless a number of serious issues are satisfactorily addressed by governments within the next few months, the smooth flow of maritime trade could be dangerously impeded. It is still far from certain that sufficient quantities of compliant fuels will be available in every port worldwide by 1 January 2020. And in the absence of global standards for many of the new blended fuels that oil refiners have promised, there are some potentially serious safety issues due to the use of incompatible bunkers."

Poulsson added "Governments, oil refiners and charterers of ships responsible for meeting the cost of bunkers all need to understand that ships will need to start purchasing compliant fuels several months in advance of 1 January 2020. But at the moment no one knows what types of fuel will be available or at what price, specification or in what quantity. Unless everyone gets to grips with this quickly we could be faced with an unholy mess with ships and cargo being stuck in port."

ICS emphasizes that governments will need to make significant progress on these issues at a critical IMO meeting in July about the impending global sulphur cap, to which ICS — in co-operation with other international industry associations — will be making a number of detailed technical submissions to assist successful implementation of what ICS describes as a regulatory game changer.

European commission needs to respect IMO CO_2 reduction strategy

The ICS AGM in Hong Kong endorsed its support for the historic UN IMO agreement adopted in April 2018 on a comprehensive strategy to phase out international shipping's CO_2 emissions completely. This includes targets to improve the sector's CO_2 efficiency by at least 40% by 2030 and 70 percent by 2050, and a very ambitious goal to cut the sector's total GHG emissions by at least 50% by 2050 regardless of growth in demand for maritime transport.

ICS member national associations agreed to contribute constructively to the immediate development of additional IMO regulations that will start to have a direct impact on further reducing international shipping's CO_2 emissions before 2023, in line with the new IMO strategy. They agreed that ICS should come forward with detailed proposals before the next round of IMO discussions in October on reducing GHG emissions from shipping.

However, ICS members expressed serious disappointment at the apparent intention of the European Union to press on with the implementation of a regional CO_2 reporting system at variance to the global system already agreed by IMO, despite having given an undertaking to align the MRV regulation with the global regime.

"We are still waiting to see the final recommendations from the European Commission following a recent consultation," said ICS Chairman Esben Poulsson. 'But the industry has made clear its total opposition to the publication of data about individual ships using abstract operational efficiency metrics that bear no relation to CO_2 emissions in real life and which will be used to penalize shipowners unfairly." Poulsson added: "Anything less than a full alignment with the IMO CO_2 data collection system will be seen as a sign of bad faith by many non-EU nations who recently agreed to the IMO GHG reduction strategy, precisely to discourage such unilateral measures which risk seriously distorting maritime trade and global shipping markets."

ClassNK releases amendments to class rules

Classification society ClassNK released amendments to its Rules and Guidance for the Survey and Construction of Steel Ships on 29 June 2018.

ClassNK is constantly revising its Rules and Guidance in order to reflect the latest results from relevant research and development projects, feedback from damage investigations, requests from the industry as well as changes made to relevant international conventions, IACS unified requirements (UR), national regulations, etc.

More specifically, some of the requirements amended this time are as follows:

- Amendment related to the Class Notations with respect to Structural Assessment based upon Direct Load Analysis (to incorporate research and development results)
- Amendment related to the Anchor Windlass Design and Testing (to incorporate feedback from damage investigations)
- Amendment related to the Pressure Relief Systems for Gas-fuelled Engines (in response to industry requests, etc.)
- Amendment related to the Foam-type Extinguishers for Boilers (in response to changes in international conventions, etc.)
- Amendment related to the Heat Treatment Definitions, Surface Quality and Repair of Defects for Rolled Steels (in response to changes in IACS Unified Requirements, etc.)

The PDF files of ClassNK Rules and Guidance are available free of charge via ClassNK's website for those who have registered for the ClassNK "My Page" service.

Mariso secures contract for 20 Cygnus Hatch Sure leak detectors with Asia Maritime Pacific (Shanghai)

Cygnus Hatch Sure is Type Approved and accepted by all P&I Clubs

With the support of Cygnus Instruments Ltd, Mariso has successfully signed a purchase contract for 20 Cygnus Hatch Sure leak detectors with Asia Maritime Pacific (Shanghai).

Cygnus Instruments Ltd is an established and trusted manufacture of ultrasonic inspection equipment across the marine industry, known for its high quality ultrasonic solutions that are extremely durable and simple to use. The Cygnus Hatch Sure leak detector is a purpose-designed, robust and very lightweight system, used by multi-national ship management companies across the globe to test covers quickly, accurately and cost effectively.

Mariso is one of Cygnus' long-standing Distributors and Service Centres for inspection equipment who provide a professional and first-class service around the globe. In April 2018, Mariso was able to secure a contract for 20 Cygnus Hatch Sure Ultrasonic Hatch Cover Leak Detectors with Asia Maritime Pacific (Shanghai) Limited which belongs to Asia Maritime Pacific Group (AMP).

AMP owns and controls a significant fleet of over forty vessels. Its vessels operate internationally, with a focus on China-West Africa, China-Australia and Atlantic dry bulk trades. The mini-MPP fleet operates on the intra-Asia and Australian dry bulk trades. The company is headquartered in Hong Kong, with offices in Shanghai, Beijing, Tokyo, London and Douala and Texas.

Ultrasonic hatch cover testing is the most accurate, repeatable and convenient method of testing hatch covers, doors, ventilators and access hatches and is the preferred method of inspection by P&I Clubs.

Cygnus Hatch Sure is Type Approved and accepted by all P&I Clubs and the Hatch Sure system comprises of two main components: a powerful ultrasound transmitter with 19 x 40 KHz elements and a hand-held receiver.

The system is used by placing the transmitter within the ship's hold, conducting a quick and simple calibration and then closing down the covers. The transmitter is then switched on remotely and it will fill the hold with ultrasound; any ultrasound that escapes will be detected by the operator, who will be on the deck walking around the periphery of the covers using the receiver.

Using the sensitive microphone attached to the receiver, the system allows the operator to locate ultrasound leaking through any defective seams or joints; exact locations of potential costly leaks in heavy seas or rain are quickly and easily identified.

While ultrasonic hatch-cover testing has been available since the 1980s, Cygnus Hatch Sure has advanced the current technology with fully automatic Open Hatch Calibration (OHC) to set the Open Hatch Value (OHV). This ensures consistent results from hold to hold. The transmitter is powerful enough to saturate the largest cargo hold with ultrasound and the unit has variable output with six selectable power levels — allowing it to also be used in confined spaces, in holds that are full with cargo and for ancillary applications such as the testing of watertight doors.

KR-led consortium expertise supports Korean BWMS

USCG TYPE APPROVAL SUCCESS

The Korean Register (KR) — an IACS member society, has announced that two Korean Ballast Water Management System (BWMS) makers, Samsung Heavy Industries and Techcross, have successfully achieved USCG (United States Coast Guard) type approval.

The KR-led consortium which includes KOMERI (Korea Marine Equipment Research Institute), Dt&C Co.Ltd., SGS Giheung Lab., KTR (Korea Testing & Research Institute) and MEI (Marine Eco-Technology Institute) successfully completed all the necessary tests required by the USCG and submitted the results of the type approval tests for Samsung Heavy Industries PURIMAR™ BWMS and Techcross ECS BWMS to USCG in September 2017, and October 2017 respectively.

Both companies were successfully granted USCG type approval and formally presented on 18 June 2018.

Compared to the requirements of the International Maritime Organization's (IMO) Ballast Water Management Convention, the USCG applies stricter test standards. Vessels wanting to operate in US territorial waters must be fitted with a BWM system type approved in accordance with the USCG implementation 33 CFR Part 151.

The USCG requirements are more onerous than those demanded by the IMO, therefore, USCG approved BWMS is highly regarded in the market.

At the moment, there are only nine BWMS that have been awarded USCG type approval in the world.

KR became the first independent laboratory (USCG IL) in Asia to assess BWMS on behalf of the USCG in 2015, and provides BWMS testing and verification services in accordance with the USCG and IMO requirements for manufacturers.

KR and its consortium partners offer the most expert skills, specialist knowledge and the highest technical capabilities of any test facility anywhere in the world for enhanced type approval services.

Bulker owners in deep water warns The Swedish Club

Bulk carrier owners are warned to pay extra attention to the basics in a new report issued by The Swedish Club. The Club has found that for bulk carrier operators, wet damage is the most costly claim type and the second most common claim that they experience.

The report, *Wet Damage on Bulk Carriers*, which has been prepared in conjunction with DNV GL, and MacGregor, identifies heavy weather and leaking hatch covers as both the most common and the most costly type of wet damage claim. With the average cost for a wet damage cargo claim running at almost US$110,000, this is sobering news.

Whilst weather routeing is used to minimize the effects of heavy weather, green sea on deck should be a surprise to no-one, and it is not unusual for cargo hatch covers to be fully immersed in sea water. Incorrectly applied and poorly maintained cargo hatch covers and sealing systems significantly increase the risk of cargo becoming damaged by water. Case studies have revealed that many of these claims could be avoided, with hatch components in poor repair, and applications of tape and seal-foam proving no substitute for good maintenance.

"Hatches leak for a variety of reasons, but mainly because of poor maintenance or failure to close them properly," explains Lars A. Malm, Director, Strategic Business Development & Client Relations. "Leaking or badly maintained hatch covers can lead to more serious consequences than wet cargo — flooding, accelerated corrosion or even loss of the ship."

The most common wet cargo issues include leaking cross joints, and compression bars, rubber gaskets, hatch coamings, drain channels and cleats in poor condition.

Wet Damage on Bulk Carriers offers practical advice on how to avoid these pitfalls, providing simple checklists and explanations of the routine tasks that can be carried out as part of a vessel's PMS. Proper maintenance will save money and improve safety on board.

Palau International Ship Registry (PISR) appoints Verifavia to provide IMO DCS verification services to its global fleet

Palau International Ship Registry (PISR) has signed an agreement with VERIFAVIA (UK) LTD and VERIFAVIA SARL to act as independent verifiers and to conduct IMO DCS verification services for the registry's worldwide fleet.

Verifavia is a worldwide environmental verification, certification and auditing body for aviation and maritime transport and will work with PISR as independent verifiers to provide IMO Data Collection System (DCS) verification services to Palau-flagged vessels. The DCS reporting process uses the existing method of reporting of fuel oil consumption now commonly applied in the shipping industry. Verifavia will provide PISR vessels with a complete reviewed Data Collection Plan (DCP), which is to be included in the SEEMP Part II by 31 December 2018, allowing PISR to issue to its fleet a Confirmation of Compliance by 31 May 2020. This will be kept on board for the period of its validity enabling PISR vessel owners to start considering the methodology for collecting the fuel oil consumption data that is most appropriate for each ship.

Panos Kirnidis, CEO of Palau International Ship Registry, believes this is a partnership that will benefit the registry's growing fleet.

"We have not been standing still since we were announced as the world's fastest growing flag in 2017 and our aim is to blend technology with the skills and knowledge of our people to offer the highest standards of SMART IT services. This partnership with Verifavia is an extension of these services and vitally important as the latest IMO regulations will have a strong impact on global shipping. The IMO DCS regulations, which target the reduction of greenhouse gas (GHG) emissions from shipping, affect vessels and shipping areas. We now have an independent verifier to assist our fleet in navigating these regulations.

"The IMO DCS requirements on the monitoring, reporting and verification of the fuel oil consumption data, distance travelled and hours underway came into force on March 2018, while the deadline for completion of the Data Completion Plan assessment is 31 December 2018.

"Based on the registered IMO DCS the reporting of the fuel consumption data and other transport works are recorded and the first reporting period is between 1 January and 31 December 2019.

"Following this PISR will be able to issue a relevant Statement of Compliance by 31st May 2020, which should be kept on board for the period of its validity. We want to ensure our fleet complies with these regulations and using Verifavia's services will offer PISR ship owners and managers one single point of contact for a smooth transition."

Verifavia is fully accredited by the United Kingdom Accreditation Service (UKAS) and the French Accreditation Body (COFRAC) as a global EU Monitoring, Reporting, and Verification (MRV) Verifier. Verifavia is also the First Independent Verifier to Provide IMO DCS Verification, CSI Verification and CCWG Verification and is the only such body with a double accreditation.

About Palau International Ship Registry:

The Palau International Ship Registry (PISR), an open registry headquartered in Houston, USA and has its European head office in Athens, Greece. PISR was created by an amendment to the Title 7 of the Republic of Palau National Code in 2010 and was appointed by the Government of the Republic to carry out the day-to-day management of vessels registered to the flag as the Ship Registry Administrator.

- PISR provides full administrative and technical support to the registration of vessels.
- PISR is an active member of both the IMO and ILO and is a member of BIMCO, WCPFC.
- Compact agreement of Free Association (COFA) with USA

IRClass implements electronic certificates for all its classed vessels

Indian Register of Shipping (IRClass), a leading international classification society has started issuing electronic certificates for all its classed vessels.

Recognizing the importance of digitalization, these e-Certificates are in accordance with International Maritime Organization (IMO) guidelines for the use of e-Certificates (FAL.5-Circ.39-Rev2) dated April 2016 and, are available on the IRClass website through a secure platform — giving ship owners, regulators and charterers real-time access to the latest class and statutory certificates from anywhere in the world.

The e-Certificates are incorporated with a digital signature and a unique tracking number for online verification purposes. This allows the user to determine the validity of the certificates — to ensure that they have not been falsified or tampered with. The authenticity, originality and traceability of the e-Certificates are easily verifiable through the IRClass Verification Portal, with access made available for any stakeholder who wishes to confirm the information contained in the e-Certificates.

Commenting on this initiative, Joint Managing Director of IRClass, Mr. Vijay Arora said: "The implementation of IRClass e-Certificates are expected to reduce administrative burden and document handling costs for ship owners, coupled with increasing operational efficiency.

"We have started issuing e-Certificates (provided the flag state has approved its use) to all newbuilding vessels on delivery as well as existing vessels on completion of their upcoming renewal survey."

He added: "As a classification society focused on driving the maritime industry forward, we are looking towards stepping up on our digitalization efforts in various other areas in the near future — as technological advancements continue to transform the industry at a rapid pace."

About Indian Register of Shipping

Indian Register of Shipping (IRClass) is an independent ship classification society providing ship classification and certification as well as technical inspection services.

IRClass is also a Member of the International Association of Classification Societies (IACS).

Covering a wide range of shipping, offshore and industrial projects, their team of dedicated professionals has brought international standardization and assurance to the doorstep.

Revised requirements for IACS membership

Revised IACS membership terms reflect changes in the regulatory regime, *by Robert Ashdown.*

The International Association of Classification Societies (IACS) substantially revised its terms for organization membership in 2017 for the first time in almost a decade, with the new criteria applicable from 1 January 2018. The changes include simplifying the application procedure, requiring Members' class rules to be compliant with International Maritime Organization Goal-based Standards (IMO GBS), introducing a requirement for Recognized Organization (RO) experience, enforcing a more robust Quality System Certification Scheme (QSCS) approval process and requiring better identification of non-compliant ships (i.e. those built and/or operated outside IACS requirements).

In developing the revised Membership Criteria, the standards and attributes required of an IACS Member have been identified, and guidance provided, to allow IACS to make a transparent, objective and justifiable assessment of whether an applicant fulfils the criteria. The revised procedures also reflect the necessity for existing and future Members to comply with robust Membership Criteria to preserve IACS' status as an association of classification societies whose Members all have stringent quality rules. The revised procedures and criteria for membership clearly demonstrate IACS' ongoing commitment to high-quality operations.

This significant revision of Volume 2 of the IACS Procedures was prompted by experience gained through applying the current procedures as well as in response to international regulatory developments. For example, experience revealed that the current membership procedures with its two-stage application process — was not being used as designed, while the 'Applicant Status' previously granted was found to be not well-understood in the wider industry.

One regulatory development that heavily influenced the changes was the introduction of a new International Convention for the Safety of Life at Sea (SOLAS) regulation requiring Goal Based Standards (GBS) to be applicable to bulk carriers (BCs) and oil tankers (OTs) of 150 metres or more in length whose building contracts were placed on or after 1 July 2016. Under that regulation, BCs and OTs must satisfy applicable structural rules confirmed to be in conformity with the requirements of the IMO's International Goal Based Ship Construction Standards for Bulk Carriers and Oil Tankers.

Having ships built to GBS represents a significant regulatory development for classification societies and IACS has supported this by bringing compliance with GBS into its Membership Criteria.

The revised Membership Criteria dictate that IACS Members must be able to contribute to the establishment, review, promotion and development of technical requirements. IACS' Common Structural Rules for OTs and BCs constitute the most comprehensive output of its technical work, which needs constant review and updating. IACS' revised Membership Criteria therefore require that Members contribute to this work in pursuance of their commitment to quality and safety in shipping. The revised Membership Criteria clearly sets out how a new IACS Member's classed fleet is to be brought into compliance with IACS Resolutions.

Simplified application process

The membership changes have also introduced a single membership application procedure, in place of a two-step process, and a requirement that any new Members' non-compliant ships must be publicly identifiable. New Members have three years to ensure that those ships fully comply with all applicable Resolutions.

Additionally, membership eligibility now places a renewed emphasis on experience in working as a classification society with five years of history required, as well as compliance with IACS Resolutions and five years' experience as a RO, a term which means authorization covering all elements of the primary IMO Conventions. This new membership requirement comes on top of the existing requirement for documenting experience gained within the previous ten years demonstrating survey and design assessment capabilities.

New Members

A further new membership condition stipulates that within three years of being granted membership of IACS, Members must ensure that their fleet adheres to all IACS Resolutions. During that period, any vessels which do not comply with IACS Resolutions will need to be publicly identifiable, and IACS will need to be provided with a detailed plan describing how they intend to make all vessels in their registered fleet fully compliant. During the three-year period, all non-compliant ships will be subject to the requirements of IACS PR1D (Procedure for Class Entry of Ships not subject to Procedural Requirements (PR), PR1A or PR1B).

IACS will continue to make its Technical Contributions Forum open to non-IACS classification societies. However, there will still be Forum requirements to ensure that participation is limited to genuine classification societies, and these terms will be outlined in Volume 1 of the IACS Procedures.

Supporting the storage and processing of freight throughout UK ports

The UK ports industry of about 120 commercial ports handles 95% of UK imports and exports.

For 365 days a year, 24 hours a day, these ports are active with the processing and storage of freight. Custom-designed warehouses play a vital part in supporting the smooth operations of UK ports across the whole country.

More than 40 UK ports are owned and operated by nine main commercial companies which are members of the UK Major Ports Group. These nine are Associated British Ports, Belfast Harbour Commissioners, Bristol Port Company, DP World London Gateway, Forth Ports, Hutchison Ports UK, PD Port, Peel Ports and Port of London Authority. Their port activities account for more than 70% of the total tonnage handled in UK ports. Over the last 40 years, most of these ports have been supported by Rubb Buildings Ltd and supplied with a wide range of temporary and semi permanent structures to support the industry operations.

To support economic growth, UK ports process 500mt (million tonnes) of freight per year and around 22 million international passengers. Rubb structures play a big part in making sure cargo is kept secure and protected from the elements. Rubb port structures can be custom designed to meet a variety of bulk handling operations. Modular, temporary and semi-permanent fabric buildings are a cost effective alternative to traditional warehouses.

These design advantages allow Rubb structures to easily adapt to the changing requirements of the end user in a busy port environment. Large clear spans and high translucent ceilings provide a bright, efficient working spaces. Rubb storage warehouses are built to UK building codes but are fully relocatable, extendable and moveable to meet changing needs.

Rubb structures have been supporting Forth Ports at the Port of Tilbury since 1990. With over ten warehouses provided, Rubb has seen buildings, extended, relocated and reconfigured to suit the changing requirements of the ports end users. Rubb alternative storage solutions allow the port to react very quickly to customers' requirements and construct covered warehouse facilities at very short notice.

Ports and marine developments, which are often built on reclaimed land, can also be prone to differential settlement. Rubb fabric structures are not only lighter than traditional fixed buildings, they can accommodate this differential settlement.

About Rubb Buildings Ltd

Rubb Buildings Ltd is globally renowned in the design and manufacture of custom-made relocatable engineered fabric structures.

Highlights include ground-breaking military buildings (aircraft hangars, shelters, storage facilities), specialist sports buildings and structures for a variety of sectors including aviation, ports, construction, bulk storage and environmental (waste and recycling).

All products are designed and manufactured at Rubb's UK plant at the Team Valley Trading Estate in Gateshead, Tyne and Wear. The company was founded in 1977 and has a proud history of delivering innovative and quality structures to a wide range of clients.

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

£2.7 million lock gate project reinforces future of Newport docks

The refurbished South Lock gates at the port of Newport during high tide.

A £2.7 million project to renew the outer lock gates and refurbish the middle lock gates at the UK's Port of Newport has now been completed.

Work was commissioned by port owner and operator ABP South Wales and took place between February and July 2018.

This essential replacement and refurbishment of the Newport Dock outer and middle lock gates will ensure that they can continue to protect the dock impoundment and locking operation for at least the next 60 years.

Newport is home to a busy deep sea shipping programme that sees regular trade between Northern Europe, the Mediterranean, the Baltic, Africa, Australia, North and South America and the Far East. The port supports the import and export supply chains of a number important and local and national industrial customers handling a wide range of commodities including steel, timber, aggregates, metal scrap, animal feeds and fertilizer.

Matthew Kennerley, Director, ABP South Wales, said: "The Port of Newport is an important infrastructure asset for both Wales and the rest of the UK. Careful planning by our engineering department ensured that essential lock gate refurbishment works, were carried out in line with a plan that met all stakeholder needs and did not impact the shipping programmes of port customers."

The South Lock serves as the sole entrance to the Port of Newport's South and North docks. The South Lock is a large chamber that allows vessels to be raised or lowered between differing water levels, allowing safe entry into the port. It is vital that lock gates are watertight.

New environmental crane at Gijon

Spain's leading dry bulk Port of Gijon has introduced a new crane with an environmental hopper, which replaces portal crane number two at the European Bulk Handling Installation (EBHI). The latter has been out of action since January 2016, following an accident.

The new crane cost €8.3 million, of which €4.9 million related to the actual crane itself and €3.3 million to the hopper, which is one of Europe's largest. It can handle 63 tonnes, as opposed to the 50 tonnes of the existing portal cranes. It operates at an average discharge rate of 1,000tph (tonnes per hour), although can reach productivity of 1,200tph. *Barry Cross*

Ventanas inaugurates shiploader

In Chile, Puerto Ventanas has inaugurated a MacGregor shiploader at berth 3, which is expected to triple the amount of copper concentrate that can be handled. This forms part of an overall $30 million modernization plan for the port, which is situated on the coast north of Valparaíso. The upgrade was originally launched in September 2015. (For more details on the modernization, please see 'Spanish DF participates in the expansion of largest Chilean dry bulk port, on p105 of the June issue of *Dry Cargo International*.)

According to Jorge Oyarce, managing director of Puerto Ventanas, the new shiploader is going to make a substantial difference in the way that it loads copper concentrates and allow the port to be much more flexible in future. It will additionally allow the port's clients to fully load vessels with consignments and overcome some of the higher tides that the region suffers from.

With the arrival of the shiploader, the port's head of sustainability, Luis Fuentes, says it consolidates Ventanas' position as Chile's leading dry bulk port. He notes that the equipment is fitted with dust suppressing system that avoid local contamination.

He recalled that, in 2016, the port had opened its main dry bulk warehouse, "La Greda", which can accommodate up to 46,000 tonnes.

By deploying a modern shiploader, Ventanas estimates it will be able to handle around seven million tonnes of copper concentrate annually, since by positioning it at berth 3, vessel will no longer have to manoeuvre alongside to take on a full load, there helping to better improve warehouse use. The shiploader can operate at loads of up to 1,500 tonnes per hour. *Barry Cross*

North Sea Port has best six months ever for cargo traffic

In the first six months of 2018 North Sea Port registered a total seaborne cargo traffic of 35.8mt (million tonnes). With an 11% growth compared to the same period in 2017, this is the best half year ever. The increase that was registered last year continues steadily in about every segment.

The growth is mainly visible in those sectors in which North Sea Port specializes: dry and liquid bulk and general cargo. But also the relatively smaller segments such as container traffic and ro/ro are on the up.

Bulk and general cargo

As for the tonnages, the dry bulk sector takes up the biggest part of the cargo traffic with 16.1mt. The growth by almost 5% is mainly visible in the strong construction market (sand, gravel and building materials). Coal traffic, mainly for the processing industry, remains stable.

Liquid bulk is good for round 11mt and underwent an increase by no less than almost 25%. It is mainly the (petro)-chemical sector that made good progress. The increase is partially the consequence of a relatively low traffic in the first six months of 2017 because a number of companies introduced a maintenance stop then.

General cargo traffic increased by 6% to a total volume of over 6mt. The increase can be found in vegetables, fruit and agricultural products, paper and cardboard traffics and that of metal and steel constructions, among others.

Ro/ro and containers

The rolling stock or ro/ro volumes improved by 2% and ended at almost 2mt. Among other things the growing number of sailings with Sweden and Norway take care of this. Container traffic again underwent a very strong growth of 52% and is evolving towards 1mt. A number of companies at North Sea Port succeeded in attracting new (liner) services.

Inland navigation is on the up

Not only the seaborne cargo traffic is strongly increasing. Also inland navigation shows an improvement in the first six months of 2018: an increase by 9% to almost 31mt.

Expectations

North Sea Port is very pleased with the fact that as a newly merged port it experiences an increase of no less than almost 11% in the first six months of 2018. Expectations are that in the second half of 2018 the increase will not be that big. The second half of 2017 was far better than the first.

About North Sea Port

North Sea Port is a cross-border port area that is 60km long. The area stretches from Vlissingen and Borsele over Terneuzen in the Netherlands to 32km inland to the Flemish/Belgian port of Ghent. Since 1 January, North Sea Port has become the merged port between the Dutch Zeeland Seaports (with Vlissingen and Terneuzen) and the Flemish Ghent Port Company.

Argentina re-enters regional fertilizer market

In Argentina, Profertil, which has a terminal at San Lorenzo, recently took delivery of 39,000 tonnes of fertilizer from the Supramax vessel *Helene Selmer*. This was then re-loaded onto barges for onward transport further up river.

The operation was overseen by the Argentinean port holding, the PTP Group, which specializes in importing fertilizer for Argentina, Uruguay and Paraguay, whilst exporting grain and its derivatives from the same markets, as well as from Mato Grosso do Sul, in Brazil.

The vessel, drawing up to 11.5m of water, offloaded part of its cargo in Montevideo and was then able to access the shallower, 10-metre draught area of the River Plate to access the Port of San Martín.

According to the PTP Group, this is the first time that this size of vessel has gone so far up river, which means it could charge more competitive rates for import fertilizer and export Argentinian cargo. Previously, this type of operation was limited to ports in Uruguay, but is now once again possible in Argentina, too. U p to 400,000 tonnes of fertilizer is expected to be handled in the same way during this course of this year.

To begin this operation, the PTP Group had to sign a number of agreements with relevant sectors in Argentina, especially with the Workers' Port Cooperative of the Port of San Martín, whose speciality is in grain handling. Much of the impetus also came from the Transport Minister, Guillermo Dietrich, who was keen to cut handling costs.

The local agricultural sector needs in the region of a million tonnes of fertilizer annually, although much of it has traditionally gone to ports in Uruguay. However, it takes several days of additional streaming to access the Port of Nueva Palmira compared to using Argentinian ports on the inland waterway system. Nevertheless, port costs in Uruguay are cheaper, thereby ensuring that Argentina has been kept out of the fertilizer market.

According to PTP, proactive policies implemented by the government in Buenos Aires had meant unnecessary or superfluous costs have been reduced, bureaucracy eliminated and markets opened, thereby making it possible for ports in Argentina to win back this type of traffic.

Barry Cross

Colombia exports record coal consignment to Japan

In Colombia, the Compas Aguadulce terminal at the Pacific Port of Buenaventura has handled a record consignment of 70,684 tonnes of metallurgical coal bound for Japan. This was loaded aboard the *Rodon Amarandon*.

According to the company, "Compas Aguadulce is the first and only automated maritime terminal that can load coal using a sealed conveyor system. It can receive vessels of up to 80,000 tonnes, with a daily load rate for coal of 17,000–18,000 tonnes."

In its first full year of trading, the company handled 1.3 million tonnes of cargo, consisting of agribulk, coal, coke, finished vehicles, project cargo and general cargo.

Barry Cross

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Logra Group investing in Port of Cortés

Mexico's Logra Group is investing around $3.2 million in modernizing dry bulk handling facilities at the Honduran Port of Cortés. The money is being spend on boosting loading and discharging of consignments and also on adding extra covered and open storage areas. This will increase capacity from 21,000 tonnes to 65,000 tonnes


Port of Cortés.

"The Logra Group, which has seven terminals in Mexico, has invested here, in this country, in superstructure. We have built silos, open stockpiles, and all the equipment necessary to speed up the discharging of vessels, thereby making it possible to speed up logistics and enabling us to improve all logistics costs," said Tony Medina, who represents the company in Puerto Cortés.

Currently, work is being concluded on two covered warehouses: one for fertilizer and another for industrial salt, which have proved quite slow to off-load, given that they previously needed to be discharged directly onto waiting trucks.

"With all the mechanical equipment that we are installing, along with the new warehouses, we are going to double the rate of discharge," Medina said, pointing out that this is going to speed up vessel turnaround times and allow more vessels to be handled as a result.

Barry Cross

Good growth for the Freeport of Riga in the first six months of the year

The Freeport of Riga completed the first six months of 2018 with good growth. Cargo volume was up by 0.7% compared to the first half of 2017.

From a six-month perspective, rapid growth was observed in the general cargo segment with the last year's cargo turnover exceeded by 21.9%. The number of containers handled by the port continued to grow: 225.6 thousand TEU containers were shipped through the Port of Riga, which is the highest six-month indicator in the history of the port.

The bulk cargo segment also showed growth of 5.2% compared to the last year. In the first half of the year, port terminals handled almost 7mt (million tonnes) of coal, which is an increase of 8.8% compared to the last year. Grain and grain product volume handled in the first six months of this year was up by 67.3%. This growth was driven by favourable cargo trends in the segment, as well as active work of the port stevedores that helped attract new customers through investing in the grain storage and handling infrastructure.

Timber volume handled by the port increased rapidly. In the first six months, the port handled 2.5mt of various types of timber, which is 17% more than in the previous year. The large cargo volume is mainly explained by growing demand for timber in Scandinavian countries. Timber was the second largest cargo category in the Port of Riga falling behind coal only.

"Stable cargo turnover indicators clearly show the advantages of a multifunctional port: growing volume of bulk cargoes and general cargoes was able to compensate for the dropping volume of liquid cargo, especially oil products, at the Port of Riga," Ansis Zeltinš, CEO of the Freeport of Riga, explained.

The number of handled ships grew in the first half of the year. Port terminals handled 1,785 ships, which is an increase of 2.4% compared to the indicators in the first six months of the previous year. The Port of Riga also performed well in the passenger services segment in the first half of 2018. In the first six months of the year, 395.5 thousand passengers went through the port, which is 8.6% more than in the same period last year.

Redcar Bulk Terminal signs major deal with Sirius Minerals Plc

Redcar Bulk Terminal and Sirius Minerals Plc have delivered a huge boost to the economic regeneration of the UK's South Tees region by signing a major land and handling deal.

As work progresses on Woodsmith Mine for the extraction of polyhalite, Sirius Minerals has secured a long-term lease for an area of land on the southern side of the Redcar Bulk Terminal (RBT) site. This will be used to establish a large warehousing facility for the storage of polyhalite from the mine.

In addition, RBT has agreed a long-term material handling agreement to export up to 10mt (million tonnes) of polyhalite per annum from its own facility.

Garry O'Malley, RBT's General Manager, said: "This is excellent news for Teesside and we're delighted to be working with Sirius Minerals on a project of such regional magnitude.

"It's another significant step forward in the continued resurgence of Redcar Bulk Terminal (RBT) as a key partner in the regeneration of the South Tees site and wider Tees Valley economy.

"The closure of SSI clearly hit us hard but it's not in the nature of Teesside people to give up. RBT is an integral part of British Steel's UK operations, and this new business more than justifies their continuing investment as RBT is now back in profit with a healthy business pipeline.

"We've a hugely flexible operation and, coupled with ongoing investment in our port equipment and rail infrastructure, we've diversified our offer and continue to secure significant business in new markets. And we're now working in partnership with a growing number of companies who see the incredible opportunities our business, and the Tees estuary, offer.

"Over the last two-and-a-half years many new businesses at RBT have benefited from operating from one of the best deep water facilities in the UK and we only see this number growing. By enabling them to trade to and from the region we're helping bring millions of pounds into the Teesside economy and creating valuable employment.

"We've great confidence in the future of this business and this site, borne out of announcements like today's. British Steel has ambitious plans for Redcar Bulk Terminal as part of their growing Teesside operations and looks forward to continuing to play a significant role in the continuing success of this site and this region."

Located near Whitby, North Yorkshire, Sirius Minerals' state-of-the-art Woodsmith Mine will target the extraction of polyhalite, a unique type of potash and a multi-nutrient fertilizer.

The project area contains the largest, highest grade resource of polyhalite to be found anywhere in the world which will be extracted via two mine shafts. It will be transported outside of the National Park to Teesside on a conveyer belt system in an underground tunnel. It will then be granulated at a materials handling facility, with the majority being exported to overseas markets.

Sirius Minerals is aiming to achieve first product from the mine by the end of 2021, ramping up to an initial production capacity of 10mt per annum (mtpa) and then full production of 20mtpa.

Chris Fraser, Managing Director and CEO of Sirius, comments: "We are pleased to enter into this arrangement which reduces the complexity of our construction programme and ultimately helps to simplify our stage two financing plan which is being finalized over the coming months.

"By working with a local partner, we can develop our project and also deliver benefits to an existing established business in the Tees Valley. The RBT facility has been underutilized since the closure of the steel works and this agreement will ultimately help us deliver tremendous economic benefits for the region."

Redcar MP Anna Turley said: "The Sirius Minerals project is a huge investment in our area and this handling agreement with RBT is another boost for their excellent facilities on the Tees."

Councillor Sue Jeffrey, Leader of Redcar & Cleveland Borough Council, said: "This announcement is great news and is further confirmation that Sirius is here for the long-term. It's also a further a demonstration of the jobs and growth potential at South Tees. I would like to wish everyone involved the best of luck as this crucial project takes another important step forward."

About Redcar Bulk Terminal

- Redcar Bulk Terminal Limited (RBT) is situated on the South Bank of the River Tees on the North East coast of the United Kingdom;
- RBT operates a 320-metre-long quay which can accommodate vessels up to 17 metres draught and is fitted with two ship-unloaders which can operate on grab or hook for bulk or conventional cargoes respectively;
- it is HMRC (customs)-approved for the storage of un-cleared goods and enjoys direct rail access to the national rail network along with excellent road links to both the A19 and A1(M) motorways;
- the facility operates 24 hours a day all year round and the terminal is equipped to handle rail traffic with separate wagon load and offload bulk handling equipment; and
- key imports include coal, petroleum coke, granulated slag and aggregates while key exports include metallurgical coke and furnace ready scrap.

Newcastle Bulk Terminal to raise the bar

The Port of Newcastle in Australia is demonstrating its commitment to the diversified trades of the port by formally launching the Newcastle Bulk Terminal development at Walsh Point, Kooragang Island.

The launch of the terminal showcases a $33 million investment made by the Port of Newcastle in bulk cargo handling equipment, associated infrastructure and additional strategic initiatives.

The investment and initiatives include:

- the creation of the Newcastle Bulk Terminal through the combining of the Kooragang 2 and Kooragang 3 berths under one banner;
- demolition of existing crane unloader infrastructure;
- construction of a new crane unloader and associated infrastructure;
- provision of temporary mobile hopper unloading infrastructure;
- direct provision of environmental services at the terminal by Port of Newcastle; and
- implementation of direct management of the Terminal by Port of Newcastle, ensuring the core port principle of common user access is maintained.

Kooragang 2 and 3 berths are the busiest common user berths in the port, handling fertilizer, meals, alumina, magnetite, cement and a range of bulk liquid commodities. The two existing ship-unloaders, which are now over 50 years old, will be dismantled and replaced by a new high-capacity ship-unloader, conveyor structures, wharf upgrades and electrical system. Mobile hoppers will provide continuity for customers at the terminal while the new equipment is constructed.

Port of Newcastle's Executive Manager Operations and Infrastructure, Keith Wilks, said the project represented a significant investment by the Port of Newcastle into the next generation in bulk handling infrastructure.

"The Newcastle Bulk Terminal will deliver best practice in safety and environmental management, while driving efficiency and maximizing trade growth.

"We have listened to our customers, who have requested more capacity to grow their cargo volumes, and to the NSW Environment Protection Authority, which wants to see best practice in cargo handling. The new equipment will deliver on both fronts, providing state-of-the-art environmental capabilities, and delivering faster unloading to enable customers to access the berth quicker, reducing vessel turnaround times and moving more cargo across the berth.

"The launch of the Newcastle Bulk Terminal is only Stage 1. Stage 2 of the Walsh Point Master Plan will include minimizing cargo double handling, reducing cargo transfer points and removing trucks from the berths through the use conveyor systems," said Wilks.

Port of Newcastle's CEO, Geoff Crowe said the Port of Newcastle has embarked on an ambitious diversification strategy and the development of the Newcastle Bulk Terminal was a key part of these plans.

"Newcastle is a global gateway for bulk and general cargoes but it needs to continue to diversify. The development of Newcastle Bulk Terminal is a key component in this strategy, as is the development of a container terminal," said Crowe.

The Port has engaged Kerman Contracting Pty Ltd to carry out most of the development including the crane replacement, with electrical work to be performed by Downer EDI. The project is due for completion at the end of 2019.

Argentina to have new river port

In Argentina, it is planned to build a new multi-purpose port at Villa Constitución, in Santa Fe province. This project is being promoted by the private sector and should see the light of day by 2020.

The port will be built close to the Paraguay-Paraná inland waterway system, where a new free zone has already been opened. The project is being promoted by Grupo PTP, which heads up a consortium that already operates the free zone. It is shortly to make an official request to build the port to the federal Undersecretary for Ports and Navigable Waterways.

The government is expected to give the go ahead, with construction taking around 18 months to complete, allowing operations to commence in the first quarter of 2020. The port will be a designated free port, allowing it to work closely with companies in the free zone, says PTP president Guillermo Misiano.

Barry Cross

Largest-ever export of Portuguese clinker

GRUPO ETE facilitates Cimpor's record export of clinker

GRUPO ETE enabled the largest Portuguese clinker export ever, for its client Cimpor — an InterCement company — by concluding successfully the loading of 55,902 tonnes on the *Vinayak* bulk carrier, bound for Ghana.

This export operation, completed in a record time, was entirely carried out on the Tagus river. The clinker was transported in barges pushed by tugboats down the river, from Cimpor's Alhandra plant terminal, and loaded by floating cranes into the *Vinayak* anchored midstream in the port of Lisbon. In total, two floating cranes, three tugboats, and 23 barge voyages were used in this operation.

In Portugal, GRUPO ETE, the only company doing inland waterways transport and performing midstream at anchor loading and unloading operations, handles more than 25 clinker vessels per year exceeding the one million tonne mark.

Exceptional natural conditions of the Port of Lisbon associated with the navigability of the Tagus river allow sustainable and environmentally friendly operations.

The Port of Lisbon's natural conditions mean it is possible to accommodate large vessels like the Vinayak. The port's location in the Tagus estuary — one of the few Portuguese rivers allowing inland cargo transportation — offers all industries settled along the river up to 60km from the mouth of the Tagus the opportunity to benefit from the competitive and environmentally friendly inland waterway mode of transportation.

This sole clinker operation took 2,300 trucks off the roads, and saved 54 tonnes in carbon dioxide emissions. All Cimpor's clinker exports are carried out by inland waterways, using the midstream cargo operation in the Port of Lisbon, thus offering important environmental advantages.

VINAYAK DATA

built	2009
LOA	190m
beam	32m
dwt	58,100 tonnes

According to Pedro Marques, board member of CIMPOR TRADING e INVERSIONES, S.A "Clinker export, because it's a commodity, is only feasible if we are highly competitive, flexible and responsive. GRUPO ETE, our strategic

partner for more than 40 years, offers us a key-in-hand river transport and handling solution that brings this process the needed additional competitiveness and efficiency."

Luís Figueiredo, GRUPO ETE shareholder and board member states that "Challenging clients like Cimpor make us settle transport solutions that add additional competitiveness to these operations, and using the Tagus River is key to this process. Thus, fostering inland navigation will contribute to boosting the Port of Lisbon's development and potentiate the geostrategic value it offers to the Portuguese economy and export companies," he adds.

About CIMPOR

Cimpor, an InterCement company, is among the ten major world cement producers. Its production units located in South America, Africa and Europe have a total production capacity of 48 million tonnes per year, as the company is a market leader in Argentina, Portugal, Mozambique and Cape Verde, second in markets like Brazil and Paraguay and with a strong regional leadership in South Africa and Egypt. Additionally, due to its strong export operations Cimpor has a major position amongst the largest cement traders in the world.

About GRUPO ETE

Founded in 1936, ETE GROUP is the most experienced and largest Portuguese player in the maritime sector, integrating its six main areas — Port Operations, Inland Transport, Shipping, Shipping Agents, Logistic Operations, Engineering and Naval Repair.

It owns the largest Portuguese cargo shipping company; is the Iberian leader in inland water transport; in Portugal is the largest operator of port terminals and concessions; is a highly respected shipping agency in Portuguese ports; offers door-to-door multimodal national and international logistics solutions; is a reference in engineering, naval repair and shipbuilding; and also provides technical management services of ships and crews. It has an international presence with its own operations in five countries (Colombia, Uruguay, Cape Verde, Mozambique and Portugal) over three continents.

AUMUND machines to bring increased productivity to a cement plant in Pakistan

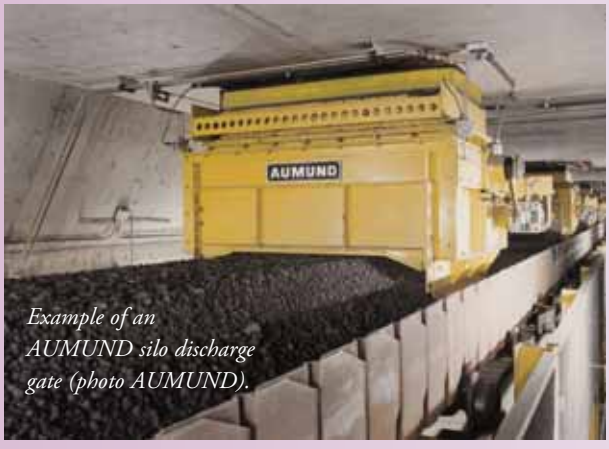
Flying Cement, a member of the Lahore-based conglomerate, Flying Group of Industries, is planning to increase its production considerably by building an 8,000tpd (tonnes per day) kiln line. AUMUND Fördertechnik GmbH won the order for two of the main bucket elevators required to achieve this project, those for the raw meal silo and the heat exchanger, as well as two pan conveyors for clinker. The complete supply package from AUMUND Fördertechnik to Flying Cement also includes 13 AUMUND silo discharge gates.

Of the two AUMUND belt bucket elevators to be supplied, the one to feed raw meal to the silo is designed with a centre distance of 87.6m and will reach a capacity of around 650tph (tonnes per hour). The other AUMUND belt bucket elevator will also have a capacity of 650tph. Its centre distance is 115m and it will take raw meal to the heat exchanger. Flying Cement will use an AUMUND KZB 1200/400 pan conveyor to transport clinker to the main silo. This conveyor will be approximately 115m long, with a lift of 43.5m, and a capacity of up to 580tph. The off-spec silo will be served by an AUMUND KZB 1200/400 pan conveyor which is 42m long and has a capacity of 580tph.

Whilst the bucket elevators will be dispatched to Pakistan at the beginning of August, the pan conveyors will be supplied in a second consignment at the end of this year.

About the AUMUND Group

The AUMUND Group is active worldwide. The conveying and storage specialist has special expertise at its disposal when dealing with bulk materials. With their high degree of individuality, both its technically sophisticated as well as innovative products have contributed to the AUMUND Group today being a market leader in many areas of conveying and storage technology. The manufacturing companies AUMUND Fördertechnik GmbH (Rheinberg, Germany), SCHADE Lagertechnik GmbH (Gelsenkirchen, Germany), SAMSON Materials Handling Ltd. (Ely, England), as well as AUMUND Group Field Service GmbH and AUMUND Logistic GmbH (Rheinberg, Germany) are consolidated under the umbrella of the AUMUND Group. The global conveying and storage technology business is spearheaded through 15 locations in Asia, Europe, North and South America and a total of five warehouses in Germany, USA, Brazil, Hong Kong and Saudi Arabia.



Example of an AUMUND silo discharge gate (photo AUMUND).

Konecranes Gottwald Model 2 mobile harbour crane for new Italian terminal

Konecranes Gottwald Model 2 mobile harbour crane with motor grab for handling coal. The crane was commissioned recently in the new SIR terminal in Brindisi, Italy.

Konecranes recently commissioned the mobile harbour crane that it delivered to Brindisi, where it will handle coal destined for power generation in continuous-duty operation.

In May this year, SIR srl (SIR), a major provider of industry-related environmental services, purchased the eco-efficient diesel-electric crane which will be the backbone of its new port business.

Antonio Roma, managing director and owner of SIR, explains, "We won a tender to provide a coal-fired power plant in Brindisi with imported coal and have taken the opportunity to launch our own handling activity in the Port of Brindisi. The Model 2 crane will play a key role in the supply chain from bulk vessels to the power station, as it will ensure productive and reliable handling of inbound coal in the long term. Thanks to its outstanding versatility, it can also load and unload general cargo and containers when needed. We have therefore opted for a crane we can grow with."

Gino Gherri, regional sales manager of Konecranes Port Solutions, says, "Italy is a very important market for the entire range of Konecranes Gottwald mobile harbour cranes, and has diverse operator needs.

"On one hand, existing and new customers are currently investing in larger cranes to comply with the increasing demand for loading and unloading bigger container vessels," he continues. "On the other hand, SIR is an excellent example of how we can also provide other terminals, including multi-purpose and bulk terminals, with handling equipment that perfectly meets their particular needs. Like our larger cranes, the Model 2 crane was developed for versatile use in terminals of every kind and size."

The Model 2 mobile harbour crane in the G HMK 2304 two-rope variant for Brindisi will be operated with a motor grab. It provides a strong lifting profile with a maximum lifting capacity of 80 tonnes, a strong 32-tonne motor grab curve for efficient handling of bulk material, and offers an outreach of up to 40m.

About Konecranes

Konecranes is a renowned group of Lifting Businesses™, serving a broad range of customers, including manufacturing and process industries, shipyards, ports and terminals. Konecranes provides productivity enhancing lifting solutions as well as services for lifting equipment of all makes.

In 2017, group sales totalled €3,136 million. The group has 16,200 employees at 600 locations in 50 countries. Konecranes shares are listed on the Nasdaq Helsinki stock exchange.

New E-Crane commissioned for Perdue Agribusiness

A new 700 Series E-Crane went into service on 11 May this year, for Perdue AgriBusiness at its Seaford Delaware river terminal. The model EH 4290 PD-E will unload soybeans and corn from barges arriving on the north bank of the Nanticoke River. The barge unloading facility is a brand new investment consisting of the dock, new receiving hopper, conveyor and supporting equipment. The products offloaded by the E-Crane are siloed and distributed to local customers or an in-house feed mill blending facility by truck.

The final commission and training was performed by Mitchell Phillips and Nick Detray from ECI-USA, in co-operation with Mike Phillips (project manager) and Thomas Bunting (plant manager) from Perdue. The local maintenance and operators who participated in the training did a fantastic job and E-Crane looks forward to working together with them as the newest members of the E-Crane family.

About Perdue Agribusiness

Perdue AgriBusiness is a the grain logistics division of Perdue Farms, one of the largest meat, poultry, and pork processors in the United States. Perdue AgriBusiness operates in several markets such as grain/feed, food processing, and renewables. The company's transportation and logistics expertise covers a wide range of activities: truck, rail, marine bulk, and container.

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Major investment at Liebherr in Kirchdorf

The managers and project managers of Liebherr-Hydraulikbagger GmbH broke ground together with representatives of the Kirchdorf community as well as the commissioned construction company.

GROUND-BREAKING CEREMONY FOR THE CONSTRUCTION OF THE NEW LOGISTICS CENTRE FOR PRODUCTION

Liebherr-Hydraulikbagger GmbH is making a new investment in the future in Kirchdorf an der Iller, thus strengthening the development of the original location of the overall Liebherr Group. The first construction phase of the logistics centre for production started on 11 June 2018 with an official ground-breaking ceremony. Liebherr will invest a total of around €35 million in the project. The project is planned to be completed at the end of 2020.

The managers and project managers of Liebherr-Hydraulikbagger GmbH broke ground together with representatives of the Kirchdorf community as well as the commissioned construction company.

Liebherr-Hydraulikbagger GmbH is continuing its works development for a successful and competitive future and is investing in a new logistics centre for production at its premises in Kirchdorf. With the aim of healthy company growth, the company is pursuing the strategy of improving its work processes and increasing its customer focus. "With the restructuring and the optimization of the material flow, the logistics centre for production will make an important contribution in the future to efficient and high-quality production," states Matthias Herzog, Production Manager at Liebherr-Hydraulikbagger GmbH. In his speech he thanked both the shareholders of the Liebherr family for their trust and the community of Kirchdorf and its Mayor Rainer Langenbacher for the support.

Following completion, the new logistics centre for production will have an overall dimension of around 245 x 96 metres and a height of about 22 metres. In the first construction phase, which should be completed by the end of 2019, a new incoming goods area with a high-bay warehouse is to be built. The planned air lock for lorries with a 20-tonne crane system will greatly facilitate the acceptance of goods. In the second stage, another high-bay warehouse and logistics areas for order picking, consolidation and packaging are to be erected. The workstations will be set up with modern technical systems and the complex logistics requirements will be supported by a warehouse management system. For day-to-day work modern picking vehicles with a driving assistance system are available to the employees.

Following completion the new logistics centre for production will have an overall dimension of around 245 x 96 metres and a height of about 22 metres.

The big challenge of the project lies in the fact that the demolition of the existing warehouse and the construction measures are taking place during ongoing operations. In order to be able to guarantee the material supply in production, the construction is realized in two stages. In addition, Liebherr is currently using several outdoor areas for the storage of production material.

Kirchdorf an der Iller is considered the birthplace of the Liebherr Group. Hans Liebherr founded the company there in 1949 on the basis of his parents' construction business. Today Liebherr-Hydraulikbagger GmbH develops and produces a comprehensive range of high-quality hydraulic excavators, material handlers and articulated dump trucks in Kirchdorf. The company produces approximately 3,000 machines a year and is one of the leading manufacturers in the world in the area of wheeled excavators.

Bedeschi SpA's handling of grain gains focus

Founded in 1908, Bedeschi SpA, is one of Europe's long-established companies which specializes in the engineering and manufacturing of machines and systems for bulk handling in cement plants, mines and port & terminals. Under the direction of the Bedeschi family, the company has become ever bigger, and currently the fourth generation of the family is leading the group. Design, engineering, manufacturing and technical assistance all benefit from the company's 100+ years of experience, gained in the course of successful projects carried out in several fields.

Bedeschi can provide its clients with complete turnkey solutions for four different product lines:

- Bulk Handling & Mining,
- Marine,
- Container Logistics,
- Bricks

Bedeschi can provide a complete range of equipment for cereal handling systems (including meals):

- belt conveyors;
- bucket elevators;
- shiploaders;
- ship-unloaders;
- pipe conveyors; and
- any ancillary system (sampling, weighing, analysing).

"We have multiple references for shiploaders, ship-unloaders, pipe conveyors and high capacity belt conveyors. All our systems are tailor-made to satisfy the specific requirements of the end-user's project and can meet any capacity, environmental protection, safety and process requirement." says Bernardi Lodovico, Grain Sales Director of Bedeschi. He adds "In particular, for ship-unloading our systems are based on mechanical type unloading with chain elevator and range from 300tph [tonnes per hour] up."

Bedeschi's background in the handling of complicated materials (humid, sticky, corrosive, abrasive, dusty, explosive) affords the company the capacity to provide out-of-the box solutions for complex handling systems operating in a strictly regulated environment.

While in the past, environmental safeguarding was not an issue, nowadays ports worldwide consider the prevention of pollution a first objective, especially with the import/export of dry bulk cargo (coal, grain, iron ore, fertilizer, etc.). In this case, the risk of spillage and dust production is very critical. Problems can occur during the loading or unloading operation, but also if the material needs to be stored in the port zone. To achieve a reduction of emissions, the first step could be the use of eco-friendly bulk handling equipment. Bedeschi, thanks to its research and development in green technology, is able to design and produce machines, which incorporate sophisticated dust-control measures, able to reach the highest environmental standards.

"Easy maintenance and lowest power consumption are also recognized pros of our machines." explains Lodovico.

As Bedeschi's customers are either end-users or EPC companies, the company is used to integrating equipment, parts and components produced by specialized OEMs. This makes Bedeschi very flexible and effective in providing solutions for the stricter shipping/environmental legislation.

Bedeschi operates worldwide and can boast a reference list with over 4,000 systems supplied in any country in the world. Among its customers in the grain handling industry are Cargill, Bogasari, Bunge, ADM, COFCO. For GAP Insaat, International Seaport in Turkmenistan, Bedeschi was awarded the supply of the complete bulk material handling system, with two parallel lines, for grain and bulk materials.

Although Bedeschi has had some interesting references for shiploaders and pipe conveyors in the past, grain handling was never one of the company's major focuses. But in the last few years, with the increased presence in marine shipping, grain handling has become one of the most important targets of the company and results are exceeding its initial expectations.

In recent years Bedeschi's chain elevator ship-unloading technology has been improved and the company is currently verifying its applicability on different material in its R&D department.

Recent installations

- Ship-unloader for soybean, 800tph for cereal docks in Marghera, Venice;
- automatic storage system with transport for GAP INSAAT DUBAI FZE (Turkmenistan);
- through KRK Latinoamericana, the supply of one 850m x 1,500tph pipe conveyor for soybean and grain to Renova for the new Terminal Rosario, Argentina.
- KERNEL (Ukraine) shiploading system.

Staying in control

crane controls & components

PetroKab offers full customization of its crane cabins

When we consider cranes for handling bulk cargoes, we think about such things as what commodities they can handle, what rates they can achieve, how dust is controlled, how flexible they are, and much more. We do not often think about the cabins fitted to these cranes, but it is essential that cranes' cabins are fit for purpose and will enhance, rather than detract from, the capability of the crane.

PetroKab LLC has been engineering and manufacturing crane cabins as well as containers, E-houses and crane control chair units with electrical equipment since 2007. PetroKab's cabins are all based on a number of standard proven designs, which the company can adapt to the specific requirements of its clients, through the high level of customization it can offer. It is able to ensure that users exactly what they need.

PetroKab is a major producer of crane cabins in Russia, and product supplier to European companies in the Netherlands, Greece, Germany, Romania and Lithuania.

Long-standing experience in the production of welded structures, the use of technical two-component paint, quality furniture, vibration insulation, sound insulation, heating and air conditioning, a comfortable operator unit and a variety of finishing options all contribute to the success of its cabins.

PetroKab offers:

- cabins for tower cranes;
- cabins for gantry cranes;
- E-house, containers;
- cabins for harbour cranes;
- cabins for claw cranes;
- cabins for metallurgical crane;
- non-standard cabins;
- cabins for foundry cranes;
- cabins for electric rope shovels
- RTG RMG cabins;
- cabins for machine loading scrap in the converter;
- operator control stations;
- cabins for ship to shore (STS) container cranes;
- cabins for overhead (bridge) cranes;
- cabins for portal cranes;
- cabins for cleaning machine open wagons;
- cabins for draglines; and
- operator crane cabins for harbour cranes.

Cabins and equipment for harbour cranes

PetroKab's harbour crane cabins and equipment are of particular interest to the bulk industry. For harbour crane cabins:

- construction of the crane cabin is made of steel pipe sections welded together;
- indoor and outdoor construction crane control cabin is made of steel sheet,

Cabin for double girder overhead electric crane with an excavator type grab.

2.5mm thick, forming a strong element;

- the cavities are filled with insulation (mineral wool) with a thickness of 50mm;
- the floor is made of multilayer removable panels and covered by a dielectric mat. Cables and wires are laid under the floor. Cabling is put in the space provided for the underground tunnel, to connect electrical equipment to the operator control unit;
- the windows are made of triplex transparent glass;
- the upper front window and upper side windows are opened using gas springs. Glass is mounted inside the control cabin with the appropriate pressure angles, which allows for easy replacement. Privacy applies to all triple-protected windows along the perimeter of the crane cabin;
- a protective grille on the lower glasses consists of two parts: the upper, removable to allow for the cleaning of the glass; and lower, not removable;
- 2 × 18 W ceiling lamp with switch, 220V lamp connected by wires, which are laid under the floor;
- possible lacquering and painting, depending on the requirements of the customer, in accordance with the RAL colour-classification system. According to GOST: the outer surface — yellow RAL 1004, interior — grey RAL 7047.

Operator cabins for overhead cranes

Overhead (bridge) cranes have load bearing of spans in which the hook moves along the girder that runs along of two widely separated rails.

The most common overhead crane use is in the steel industry. At every step of the manufacturing process, until it leaves a factory as a finished product, steel is handled by an overhead crane. Raw materials are poured into a furnace by crane, hot steel is stored for cooling by an overhead crane, the finished coils are lifted and loaded onto trucks and trains by overhead crane, and the fabricator or stamper uses an overhead crane to handle the steel in his factory. The automobile industry uses overhead cranes for handling of raw materials.

Supporting overhead cranes:

A manual single-girder and double-girder hook is used for lifting and moving cargoes during the occasional times when there is no current power supply to warehouses, installation and repair workshops, in the machine rooms of power plants.

Electrical hook loader single-girder is used for lifting and moving cargoes in plants and warehouses, as well as double-girders used in open areas.

Electrical magnetic cranes are used for lifting and moving products from ferrous metals with magnetic properties.

Clamshell bucket cranes are designed to lift and move bulk cargoes.

Electrical hook loader heavy cranes are designed to move large mass cargoes of the mechanical and assembly plants. In addition, they can be used for assembly and repair works.

Overhead bridge cranes

Manual single-girder single-span cranes are designed for lifting and handling cargoes with periodic works, in the absence of power current supply in warehouses, assembly and repair workshops, in the machine rooms of power plants.

Electric single-girder single-span cranes, two-span cranes are designed to lift and move cargo in covered production and storage rooms. They are suitable for use transporting hot and molten metal, liquid slag with decreasing load by 25% to meet the requirements of the 'Rules for Cranes' (installing reflective displays and having two brakes on the lift mechanism).

Wide reach

PetroKab's cabins are suitable for a range of different industries — and can even be installed on board ships. The level of customization is key to the company's success, and its ability to attract major customers (see reference list).

CUSTOMER REFERENCES LIST

LOCATION	COMPANY	PROJECT
Czech Republic	NOPO ENGINEERING s.r.o.	Cabins for overhead crane;
Germany	BANG Kransysteme GmbH & Co. KG	Cabins for cranes;
Germany	Brunnhuber Krane GmbH	Operator control units;
Germany	Cranetech GmbH	Cabins for crane;
Greece	Assodivers Ltd.	Cabins for marine and offshore cranes;
Lithuania	JSC Strele industrial	Cabins for portal crane;
Romania	SC Elsa Technology SRL	Cranes cabin for refinery, Operator control units;
Spain	GH Crane & Components	Cabins for gantry crane;
The Netherlands	Lagendijk Constructie B.V.	Cabins for marine and offshore cranes;
The Netherlands	Konstruktiebedrijf Coops & Nieborg B.V.	Cabins for marine and offshore cranes;
The Netherlands	EPMC Europe B.V.	Cabins for marine and offshore cranes; Operator control units;
The Netherlands	Safeway B.V., Van Aalst Group B.V	Cabins for marine and offshore cranes;

Service life more than doubled with igus plain bearings in roller chain for long travels

At the recent Hannover Messe, igus exhibited its the P4.1 roller chain for crane and gantry use with optional intelligent wear monitoring.

In order to increase the uptime of crane systems and gantries, igus has now combined its core competencies in the areas of plain bearing technology and energy chains. In the P4.1 roller chain for long travels, newly developed tribologically optimized plain bearings ensure lubrication-free mounting of the individual chain links. This significantly prolongs the service life of the energy chain. Optionally, the P4.1 e-chain can be part of the igus predictive maintenance concept with a new isense wear sensor.

The P4 system has been the solution for demanding applications for many years. The P4 roller chain series has already proven itself in over 1,000 crane and gantry applications worldwide, with travel distances of up to 800 metres, high speeds of more than five metres per second, and several million cycles with low vibration and low noise. Using rollers integrated in the chain link, the friction is reduced to a minimum and the service life prolonged to the maximum. Due to the offset between upper run and lower run, the plastic rollers are not rolled over, but roll past each other to allow very smooth running. As a result, the coefficient of friction decreases and the drive power is reduced by 57%. Users like the world's largest crane manufacturer ZPMC have been relying on the reliable profile roller chain for many years. With the new lubrication-free and maintenance-free plain bearings made of high-performance plastics, igus has now developed the e-chain even further.

New maintenance-free plain bearings and an intelligent wear sensor ensure a longer service life in the P4.1 roller chain for crane and gantry systems (source: igus GmbH).

New P4.1: Merging of two core competences

Since 1964, igus has been developing and producing high-performance plastics for lubrication-free plain bearings and tough e-chains. Through the experience in both areas and the research of new plastic compounds, igus developers were able to further optimize the P4.1 roller chain in order to significantly increase reliability and availability. There is a bearing point for pivoting in every connection of the chain links.

This has now been re-equipped with a maintenance-free tribo-polymer plain bearing, which more than doubles the service life. In this way, cranes in ports, for example, can now achieve a service life of more than 15 years or 20,000 plus

operating hours, with low maintenance and high reliability.

Intelligent networking and predictive maintenance with isense

Optionally, the new P4.1 can be equipped with smart monitoring sensors, such as a wear sensor for the newly installed plain bearings. From a defined wear limit, this can issue a signal to the igus icom communication module and maintenance can be planned in advance. Depending on the customer's requirements, the data of the icom module can be used differently: with a direct integration into the existing software environment and intranet solution for a pure maintenance message or with the connection to the igus data centre for an intelligent and dynamic service life prediction. In this case, the maintenance recommendations via Machine Learning and AI algorithms are constantly compared and defined with the data from many existing applications. Thanks to the intelligent networking of the P4.1 roller chain, the maintenance engineer can access the service life data of the energy chain at any time at any location.

About igus

igus GmbH is a globally renowned manufacturer of energy chain systems and polymer plain bearings. The family business, based in Cologne, Germany, has offices in 35 countries and employs 3.180 people around the world. In 2016, igus generated a turnover of €592 million, with motion plastics, plastic components for moving applications. igus operates the largest test laboratories and factories in its sector to offer customers quick turnaround times on innovative products and solutions tailored to their needs.

soLITE® fibre ropes from Teufelberger ensure operational safety

Ropes constitute one of the key components on cranes. Rope malfunctions can cause activities at the construction site to be stopped and may even compromise workplace safety. There exist proven parameters to determine the point of discard of steel wire ropes, but also that of Teufelberger soLITE® fibre ropes. This makes the use of soLITE® on cranes just as safe as that of steel wire ropes.

COMPARISON BETWEEN STEEL WIRE ROPE AND soLITE® FIBRE ROPE

Discard point noticeable on rope	Commercially available steel wire rope	soLITE®
Outer damage due to breakage of wires or strands or of the fibre cover	YES	YES
Local damage	YES	YES
Reduction in diameter	YES	YES
Deformations	YES	YES
Corrosion	YES	not applicable
Additional condition monitoring on crane		
Load lift counter	NO	YES
Defined lifetime until discard	NO	YES

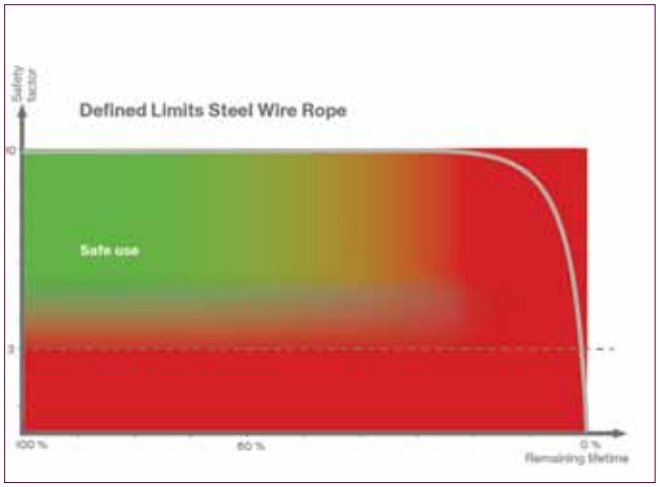
Redundant safety system to determine discard point

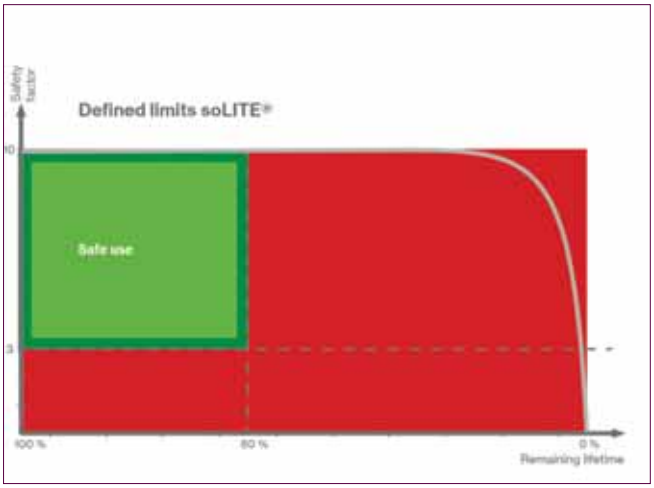
The special cover of a soLITE® rope has no load-bearing function, but serves primarily to help users recognize the rope's discard point and to protect its core. The visible sequential wear of the differently coloured fibres reflects the progress of the deterioration of a soLITE® rope up to its discard point. Once the signal red core becomes visible — which can also be seen clearly from the crane cab — it is very likely that the rope will have to be discarded soon. As soon as the core is fully exposed, the rope must be discarded even though safety is still reliably ensured at that point. In the event that the number of bending cycles on the crane is also documented, the digital calculation of the life span makes a required subsequent rope change easier to predict so that it can be scheduled optimally. Using soLITE® relegates unexpected, costly downtimes to the past. This redundantly protected system helps achieve the best possible levels of safety and availability for construction site, crane and service staff. In fact, they are better than with commercially available steel wire ropes which, usually, are only subjected to visual inspections.

FEM 5.024 standard released in 2017 also provides formal safety

At present, the discard point of a steel wire rope is determined based on a number of possible discard criteria. The most common criteria are broken wires, local damage, deformations, and corrosion. In many cases the residual breaking force of the steel wire rope at the time of reaching the discard point is used in order to measure the residual safety and to verify these discard criteria. However, depending on type of use and rope construction, this provides only limited information about the actual residual safety to the total failure of the rope.

The FEM 5.024 standard released in 2017 defines guidelines "for the Safe Use of





High Performance Fiber Ropes in Mobile Crane Applications," especially with regard to their discard point. It neutralizes the main criticism in connection with the use of fibre ropes on cranes, i.e., that they provide insufficient possibilities to detect their discard state.

This standard represents a hitherto unavailable safety standard for the use of high performance fibre ropes whose rationale and comprehensiveness even eclipses that for steel wire ropes. Throughout the ENTIRE duration of a fibre rope's use — from its installation to its discard point – the rope's condition must not fall below a defined safety factor 3, and every fibre rope must be discarded no later than after 40% of its sustainable bending cycle life. soLITE® is constructed such that, even in the light of such stringent requirements, its use at construction sites makes sense economically.

The comparison between steel wire and soLITE® ropes dispels all doubts

The direct comparison between a steel wire rope and a soLITE® fibre rope as regards criteria used to determine the discard point (see table on p46) demonstrates not only that there exist quantifiable discard criteria for both technologies, but also that soLITE® comes out ahead in this comparison.

About TEUFELBERGER

TEUFELBERGER is a globally successful enterprise specializing in the development and production of high performance steel wire and fibre ropes. Its extensive product portfolio includes high performance steel wire ropes, e.g., for ropeways and cranes, synthetic fibre ropes, e.g., for yachting and on-the-job safety, as well as plastic strapping. In addition to its headquarters in Wels, TEUFELBERGER has other branch locations in Austria, Italy, the Czech Republic, Sweden, Thailand, the US, and China. Furthermore, a close-knit network of distribution partners ensures its worldwide presence. In 2017, its revenue totalled approximately €230 million, more than 90% of which was generated abroad. In recent years, not least because of the purchase of Redaelli Tecna, TEUFELBERGER's global workforce has grown to approximately 1,300.

Quick coupler systems and attachments from Liebherr

Getting the right tool for the job

Liebherr-Hydraulikbagger GmbH develops and manufactures innovative attachments and quick coupler systems to the highest quality standards. They can be used for both hydraulic excavators and material handlers from Liebherr as well as for machines from other manufacturers. The Liebherr product portfolio ranges from quick coupler systems for all applications through digging tools for the earthmoving sector to grabs for diverse applications in material handling technology.

Liebherr can boast substantial experience in the development and production of attachments. As far back as 1954, the company designed the first backhoe bucket for its first hydraulic wheeled excavator. Since then, and initially for its own use, Liebherr has continually developed tools for both earthmoving and material handling applications. The result is a comprehensive portfolio that Liebherr has also been offering for corresponding machine types from other manufacturers since 2012. This gives customers a high degree of flexibility in their day-to-day work.

The choice of the appropriate tool has a significant impact on the success of a project. This is why Liebherr has developed such a wide range with each example optimally adapted in terms of shape, properties and technical equipment to the specific application and machine size. Findings gained from practice and continuous product management ensure that Liebherr tools are always state of the art. At the same time, Liebherr ensures that new developments are compatible with the existing product range so that retrofitting or replacement of individual modules is always possible.

Portfolio for material handling

Liebherr offers innovative attachments for material handlers for applications ranging from scrap, timber and port handling through to waste management and recycling. These are customized to meet the specific requirements of the different

The second proximity sensor increases safety for the hydraulic quick coupler from Liebherr.

With the right Liebherr grab the machine's handling capacity is increased in every application.

applications and therefore optimize handling capacity. In the development and manufacture of its attachments, Liebherr always focuses on reliability, productivity and efficiency. Thanks to Liebherr's flexible and practice-orientated advice, every customer finds the best solution from the portfolio of different clamshell buckets and multi-tine grabs, timber and sorter grabs and various lifting magnets.

Attachments for earthmoving

There are Liebherr attachments for a diverse range of earthmoving applications that can tackle challenges including hard rock, fine sand or bulky demolition material. Liebherr offers numerous options for road construction, civil engineering and tunnel construction, water management, gardening and landscaping, demolition and the mining industry. In addition to backhoe buckets, tilt buckets and trench clearing buckets, tilt rotators, grabs, load hooks and pallet forks are also available. The substantial product range has a modular design. Customers always have access to all relevant optional equipment in every available width of the attachment. This gives rise to countless variants for the common grabs or buckets, which can be configured to meet customer-specific requirements.

Patented quick coupler system

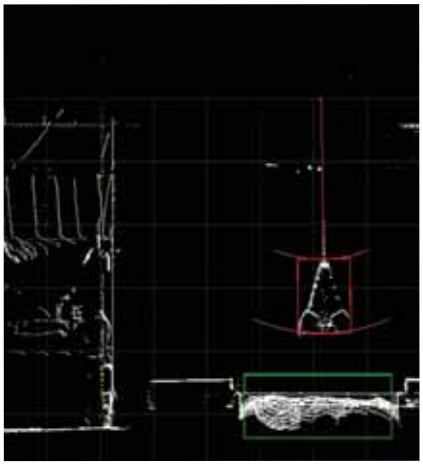
For increased productivity, efficiency and safety on the construction site, Liebherr offers different levels of configuration for its quick coupler systems to suit specific applications. This way, machines, quick coupler system and attachment always form a high-performance unit for maximum efficiency and economy.

Liebherr's mechanical quick coupler is the perfect solution when the aim is to increase machine flexibility and productivity whilst minimizing investment costs. With the hydraulic Liebherr quick coupler system, a simple and safe change of mechanical tool attachments is possible from the cab. If the patented hydraulic coupling system LIKUFIX® is added, then the quick and safe changeover of hydraulic tool attachments can happen at the touch of a button. With LIKUFIX®, the hydraulic excavator's range of uses and machine productivity can be increased by up to 30%. All current official standards, as well as the forthcoming ISO 13031 standard, are met thanks to the hydraulic quick coupler's specially developed safety features.

Future-focused developments

In order to continue to satisfy its customers with excellent results in terms of performance and productivity, Liebherr is constantly developing new solutions for its attachments and quick coupler systems. The continued advance of digital technologies offers various possibilities in this respect. The interfaces and electrical connections between the machine and the attachment are also forward-looking. They make the control of different hydraulic functions, such as transferring GPS receiver signals at the attachment, possible.

Load tracking and control system for cranes



Grab 3D live tracking, hatch and bulk material scan.

The task

In an increasingly competitive environment, all manufacturers and operators of large gantry cranes have been tasked with providing a higher level of automation to provide additional value and reduce the cost of operation.

As a key function, a fast, accurate and reliable detection and control of the load is critical. This applies not only to fully autonomous cranes; a reliable and accurate sway control helps to reduce damages and improve performance also in remote-controlled and conventional cranes.

When moving forward to a partly or fully autonomous operation, the control system needs additional input about its surroundings, be it the distribution of iron ore in a bulk carrier's hatch or an accurate mapping of container positions.

iSAM's load tracking and control system delivers all this information in an easy-to-use package integrating the most advanced sensor systems via a dedicated evaluation unit with direct interfaces to all major PLC control systems. Thus the crane manufacturers and electrical solution providers can focus on their core business without spending years to develop complex software for sensor data processing.

The solution

The development of the load tracking and control system started when iSAM was tasked with the full automation of four large ship-to-shore grab unloaders in the port of Hamburg. From the beginning it was obvious that an entirely new sensor concept would be needed, which became a combination of a newly developed 3D laser scanner, field-proven RTK GPS positioning solutions and leading-edge processing technology.

One of the key components of the automation system is the intelligent grab and load tracking system based on a new 3D real-time LiDAR laser scanner. This high-tech scanner is fast enough to track the crane ropes and the grab itself in real-time to measure sway and grab attitude; it determines the load position, sway and skew with 10Hz update rate.

Grab 3D live tracking, bulk material scan of backreach area.

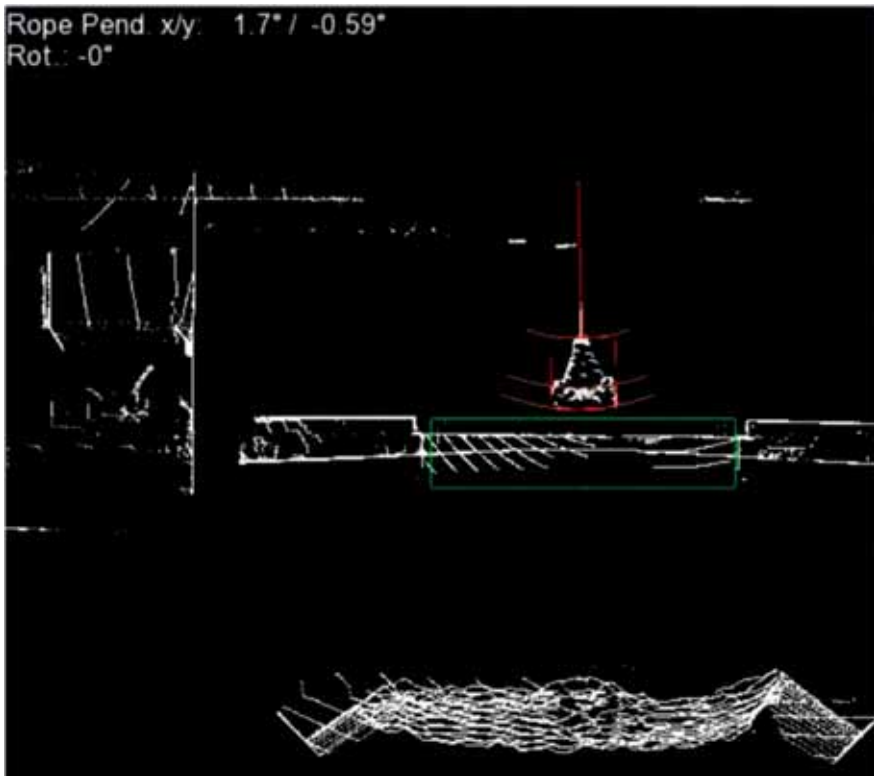
In most installations — with the exception of the largest cranes and special crane geometries — the same sensor can be used to track the load and scan the environment on the ship's deck as well as inside the hatches.

Whereas the 3D scanner is the 'eye' of the automation system, a high-performance evaluation unit is mounted on the crane and connected with the PLC — the 'brain'. In this evaluation unit, data from the real-time sensors ensures a continuous update of the energy and position model for the load along its trajectory. At the same time all scan data is geo-referenced and pre-processed to allow further handling by standard PLC systems. This information allows a precise 'landing' of the load at any given point — nearly independent of weather conditions, at low tide and high tide.

In contrast to a human operator, the sensor system is not only able to calculate the current position, but also the kinetic energy of the load at any point along the trajectory. This makes sure that the load does not collide with the ship, with any obstacles on the deck or with the crane structure during the whole cycle — not even in case of 'hard' stops, for instance when an emergency stop is pushed.

Highlights

- real-time actual measurement of load position and attitude, including sway and skew;
- permanent update of energy and position model along the load's trajectory;
- load control and ship superstructure and load (container/hatch) scan with one sensor;
- 3D environment model for collision prevention and situational awareness; and
- easy integration in existing PLC control systems using interfaces like TCP/IP, Profibus, Modbus.



Grab 3D live tracking, including sway and skew measurements.

Competitive Advantages

The use of iSAM's load tracking and control system means a significant reduction in development costs and project risk for the OEM and the port operator by

- using tried and tested technology which is in daily use in Europe's largest sea ports Rotterdam and Hamburg
- pre-processing complex sensor data so that it can be used easily in standard PLCs
- providing a fully modular system architecture – you buy only, what you need
- making certification easier by referring to already fully certified and operational installations

About iSAM

iSAM AG, Gesellschaft fuer angewandte Kybernetik, located in Muelheim an der Ruhr, Germany, develops and implements automation solutions that enable industry, commerce and service suppliers to increase their performance.

iSAM's team includes specialists from the engineering, computer science and physics sectors as well as business economics, focusing on increasing customer value. The company's customers can be found all over the world and in almost every industry, such as mining, coal handling, transport and logistics, steel and metal manufacturing and processing, tube welding and pipeline construction, mechanical engineering and plant building, electronics and aerospace.

iSAM AG is well prepared for future challenges and iSAM experts are constantly developing, upgrading and adapting their technology to other applications and markets, finding unique solutions for each customer request.

Brieda Cabins: lead author of new paper 'Crane Operator Health & Safety'

Brieda Cabins, a specialist in ergonomic cabins, control stations and desks for manned and remotely-operated cranes, has announced the launch of a new paper on *Crane Operator Health & Safety* by the Port Equipment Manufacturers Association (PEMA). Brieda was lead author for the new publication, which includes 20 key recommendations for crane manufacturers and terminal operators on how to improve cabin ergonomics and safety for drivers of manned rubber-tyred gantry (RTG) and ship-to-shore (STS) container cranes. Celebrating its 40th anniversary in 2018, Brieda has been a PEMA member since 2012.

Developed under the auspices of PEMA's Safety & Environment Committee, the new report contains recommendations on topics including cabin vibration, maintenance, ambient temperatures, airflow, emissions, integrity of glass floors, fall risks, visual and audio warning systems, inertial forces, and conflicting data sets between control workstations and anthropometric readings.

"We are delighted that PEMA has chosen to include crane operator health and safety as one of its industry best practice reports," said Brieda Founder & CEO Siro Brieda. "We were very pleased to contribute to the report with key findings and recommendations from in-depth scientific studies conducted with the Biomedical Technology Department of the University of Milan and the EPM (Research Unit-Ergonomics of the Body Posture and Movement), as well as 40 years of practical experience designing and building crane cabins and control stations." Today, cabins from Brieda are used at ports in nearly 60 countries worldwide. The report can be downloaded free of charge in PDF format from the PEMA website.

About Brieda Cabins

For 40 years, Brieda Cabins has pioneered industry research and development of crane cabin and control station design. Working closely with crane manufacturers around the world, and with scientific experts, Brieda has engineered some of the safest and most ergonomically advanced cabin environments across a wide range of harbour, marine and industrial applications, including container handling quay cranes,

RTG/RMG yard cranes and straddle carriers, ship unloaders, jib cranes, overhead travelling cranes, stackers/reclaimers, control stations and cabins for cranes used in steel mills and offshore platforms. Most recently, Brieda has added ergonomic remote-control desks and simulation technology to support increasing automation of crane operations. DCi

Inland transportation

equipment used in rail and barge handling of dry cargoes

To allow for a high degree of flexibility, tipping and loading can be performed from both left and right side.

Louise Dodds-Ely

Kiruna Wagon's intermodal Side Dumper introduces a new level of flexibility and productivity to dry bulk logistics

The side tipping technology of the SD wagon was originally developed for Swedish mining company Boliden's copper concentrate transports in Arctic Lapland. The challenge then was to design a system that would safely and efficiently transport and unload highly refined and valuable ore products in a demanding subarctic environment.

The new-generation SD, which has recently been released to the market, combines the proven side tipping technology with a design that offers a solution to the urgent demands of today; to improve the efficiency and competitiveness of the European rail transport sector and enable a modal shift from road to rail.

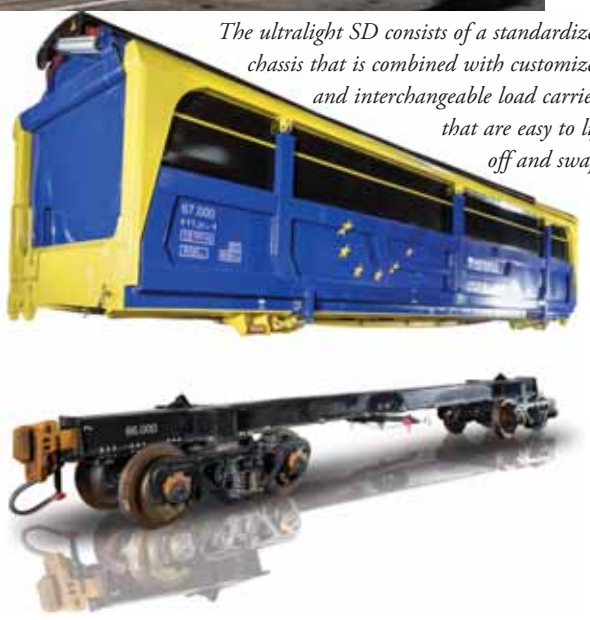
Kiruna Wagon's new and modular SD wagon is designed to facilitate efficient and flexible rail and intermodal operations and achieve important savings in energy and the environment; the wagon is more than 20% lighter than its predecessor.

Like the original Side Dumper, the new SD is roofed and optimized for hazardous, sensitive or highly refined high-density commodities, including dusty and sticky materials. During product development in the European HERMES Project, unloading trials were conducted with salt from project partner ICL Iberia Súria & Sallent, but the wagon is designed to work just as effectively with other goods, such as fine-grained sulphide ore concentrates, or other goods in need of weather protection.

The ultralight SD consists of a standardized chassis that is combined with different, customized and interchangeable load carriers that are easy to lift off and swap. The patented modular logistics system facilitates the integration of the bulk wagon into seamless door-to-door intermodal operations.

Depending on the chosen loading technique, there are two options available for the design of the roof; the wagon can either be constructed with a roof suitable for loading by wheel loader or with a sliding

The SD combines a proven unloading technology with the latest advances in lightweight materials and surface coatings.



The ultralight SD consists of a standardized chassis that is combined with customized and interchangeable load carriers that are easy to lift off and swap.

The wagon can be constructed with a roof suitable for loading by wheel loader or with a sliding roof that is tailored for loading by chute (pictured).

roof that is tailored for loading by chute.

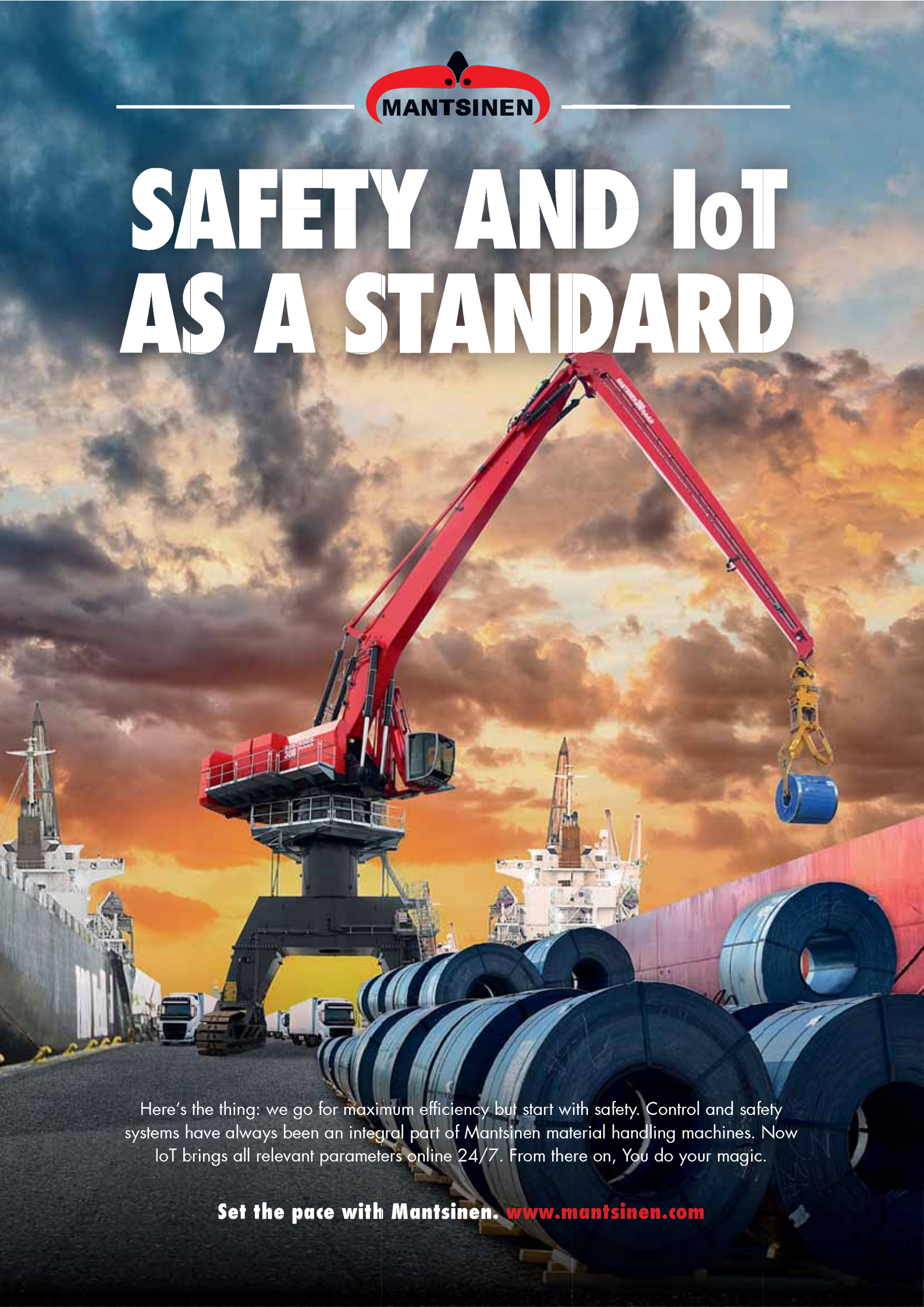
The robust and low-cost SD unloading station, which is also designed and manufactured by Kiruna Wagon, has an advanced mechanical construction but is at the same time a very simple solution — all hydraulic components are of the standard type that are used for example in wheel loaders and trucks.

During discharge, the wagon is locked in the correct position before external lifters connect to the body and tip it to an angle of 60°. The opening of espagnolettes and hatches is mechanically integrated in the tipping function. The roof is kept closed during the entire discharge process.

To allow for a high degree of flexibility, tipping and loading can be performed from both left and right side. For greatest discharge capacity, up to four unloading stations can be used simultaneously. This gives an unloading capacity of up to 15,200 tonnes per hour.

Following successful tests in Spain during 2017, the SD is now ready for the market. "We are very excited to put focus on the European dry bulk market with our new SD, and contribute a smart solution that is aligned with the objectives of Shift2Rail. In designing this product, we have leveraged our broad experience in ore and bulk logistics and constructed a wagon that combines the best features of our unloading technology with the latest advances in lightweight materials and surface coatings," says Keith Taylor, Manager of Business Development at Kiruna Wagon.

Kiruna Wagon's Managing Director, Fredrik Kangas, with Technical Manager Martin Malmelöv, in front of the new-generation SD wagon.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New quadruple rail car dumpers in operation at Caofeidian coal terminal in China

Quadruple rail car dumpers at Caofeidian coal terminal in China.

Technology from thyssenkrupp increases efficiency in coal handling

The coal terminal at the port of Caofeidian is a major hub for supplying the power plants in the south of China. Coal from the mines in the north of the country is brought by train to the port for onward shipping. In the past few years, thyssenkrupp has supplied Caofeidian with eight shiploaders and two quadruple rail car dumper stations for speedy unloading.

Each of these two new dumper stations can unload four 80-tonne-capacity coal cars at a time. The four cars are positioned in the dumper so that they rotate around their coupling axis and, at the same time, discharge their loads into the silo below. The positioning of the full train and emptying of the next four cars is controlled by a positioner (indexer) to ensure fast and reliable unloading. The positioner travels parallel to the track and indexes the entire train. The car couplers themselves are rotary couplers, so it is not necessary to uncouple the cars from the train.

The positioner pushes the entire train with a total of 204 cars and four locomotives; the locomotives are not required to move or slow down the train at any point in the unloading process. As soon as all the cars have passed through the dumper and discharged their contents, the locomotives take over again to move the emptied train out of the port. In this way a quadruple dumper is capable of handling 8,640 tonnes of coal per hour, so an entire train can be unloaded in just two hours.

Each of the dumper stations is fitted with a dust collector, fresh air ventilation, and a water sprayer for dust control. Vibrators on the dumper barrel ensure all coal residues are removed from the cars. Camera systems have been installed to allow monitoring of the entire unloading process.

TTS refurbishes and improves railcar unloading station

Hundreds of millions of tonnes of bulk cargo are transported by railway. The destination of these cargoes usually is a seaport. The transshipment of bulk cargoes from railcars to warehouses or ships in seaports is very intense. The average unloading speed of terminal that transships two millions of tonnes of fertilizer per year should be at least 1,500tph (tonnes per hour). Equipment should work without any downtime caused by repair works, because delays in shiploading are very expensive.

The Latvian company TTS was contacted by one of its customers about a problem of insufficient rail car transshipment speed. The unloading station had been in operation for only eighteen months, but during this short period of time, all the disadvantages of the installed equipment became apparent. The hopper-car unloading station, on two rail tracks, had four receiving bunkers with a capacity of 70 tonnes. Under each bunker was a belt feeder-conveyor that delivered cargo to the main conveyor system.

The main problems with the equipment were:

- the performance of each conveyor made it impossible to reach the required unloading capacity of 1,500tph;
- very often, the conveyor was out of service because of breakdowns in the drive drum;
- it was impossible to start the conveyor, when the receiving bunker was fully loaded, so it always was turned on;
- cargo was falling through the bunker rubber sealing in the places where it was connected to the conveyor, so every day several hundreds of kilograms of scattered cargo had to be shovelled.
- the rubber sealing around the conveyor belt was wearing out very quickly — within eighteen months, the belt had already been changed twice.

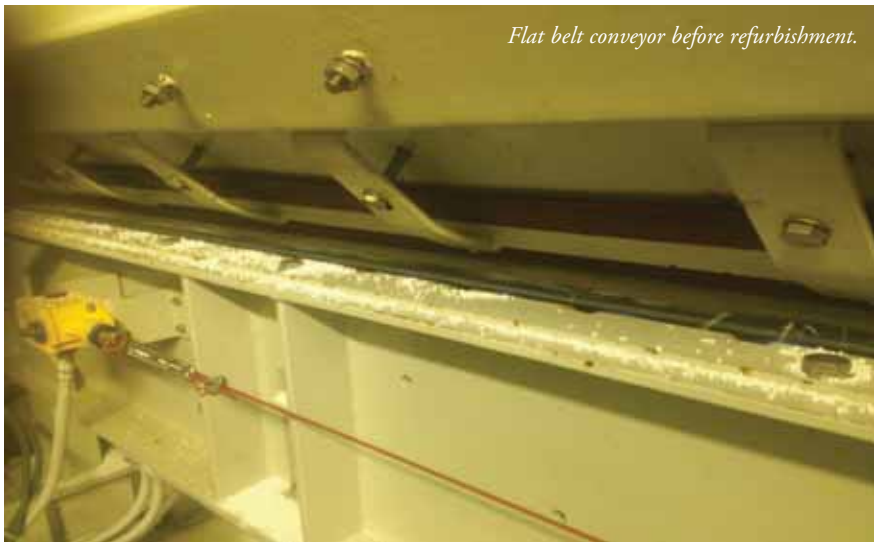
TTS was assigned to resolve these problems with one specific requirement — the terminal should not stop working during the modernization. At the beginning of the project, the company's experts inspected all of the equipment and its operating characteristics and analysed the causes of the problems.

Using its experience gained in the manufactured of equipment to transport dry bulk cargoes, TTS designed and manufactured new equipment and a set of parts for structural improvement of the bunkers under the rail tracks.

Instead of a flat belt conveyor the V-shaped belt conveyor, driven by gear-motor with increased torque, was installed. This improvement increased productivity and made it possible to start the conveyor even when the bunker was fully loaded.

The V-shaped belt conveyor also made it possible to use a different rubber sealing system in the bunkers that fully eliminated scattering of cargo and wearing out of the belt.

The improvement of the bunker construction decreased the direct load of cargo on the conveyor belt and increased energy savings and driving power.



Flat belt conveyor before refurbishment.

The modernization was made on one rail track at a time, so that the terminal could work without any interruptions.

Flat belt conveyor after refurbishment.

About TTS

Latvian company TTS has more than 25 years of experience in designing and manufacturing equipment for the transport of bulk cargo. The company's rich experience proves that reliable results are the consequence of precise engineering calculations and an individual approach to every specific project. For example, in grade computations for feeder conveyors, TTS uses design factors to choose drives and belts that differ from the drives and belts that are used in many belt conveyors. As a result, its customers can be sure that they will receive reliable and working equipment with sufficient productivity and lower maintaining costs such like spare parts, service and cleaning.

ADS™ Dry Fog makes rail dumps cleaner and safer

For coal-fired power plants, one of the most challenging tasks is to control fugitive dust at the point of receipt, *writes Gonzalo Campos-Canessa, TRC CEO of the Raring Corporation*. The Raring Corp (TRC) has implemented many fog-based and passive dust-control systems over the past several years. ADS™ Dry Fog and passive technology has also being applied at transfer points, reclaim feeders, crushers, and bunker rooms.

ADS™ Dry Fog dust-control systems use special acoustic nozzles to fracture water into a cloud of extremely small droplets that are in the same size range as the airborne respirable dust. The water droplets agglomerate with (attach to) the dust particles, become heavier, and settle back to their source.

Successful application of dry fog technology to industrial dust control requires four design elements: containment, an adequate quantity of fog, retention time, and collection surface. Of the four, containment is the most important one and it is also considered on the overall design and implementation of the dust-control system. Truck and rail dumps require features to contain the displaced air by rolling it back into the hopper, and bins need protection from wind and other outside influences.

TRC has designed, manufactured and supplied ADS™ dust-suppression systems to rotary rail dump and bottom dump installations, barge unloading and truck belly dumps applications that are in successful operation at plants in Arizona, Michigan, Utah, Wisconsin, Nebraska and Illinois. In late May this year, the company implemented an upgrade to one of these rotary rail dumps located in Illinois in order to improve its maintenance procedures and to keep it working for the next ten years. TRC designed the upgrades to be made on the field, supplied all the components and its Field Service Manager spent a whole week supervising the modification required to successfully upgrade the system.

As an example of how TRC managed one of the turnover car dumper projects in the past, the company has addressed the issues of containment, operation in sub-freezing weather, automated control, installation in a normal outage. This rotary dump application incorporates TRC's containment design and control. Located in a power plant burning PRB coal, it is situated inside an unheated building and at that time was fitted with a dust-extraction system without modern airflow containment features. Visibility was obstructed by dust, causing the operators to use the presence of coal on the barrel as an indicator of a full hopper. This led to frequent unloading delays and maintenance problems. Wash down after each train to remove many inches of dust from the hopper level machine floor and the track-level access platforms required a full shift. A vacuum truck had to be used where the dust was deep to prevent explosive dust clouds.

After an initial evaluation, a graphic 3-D model of the dumper was modelled, and containment requirements defined. The model was then presented to the client which included its operating and maintenance personnel in the process. Working together, a containment design that was both functional and user friendly was agreed upon.

TRC guaranteed that there would be not more than one quarter inch of dust on the access and machine floors after five trains and that the fog system would not increase the time required to unload a train as well as meeting all applicable local, state and federal air quality regulations.

In most areas around the dumper, there was only trace dust after five trains and in the worst areas, not more than the one quarter inch promised as an average. Operating horsepower has dropped from the several hundred horsepower of the dust-extraction system to 30 horsepower of compressed air. It is now a ten-minute job and can be dispensed without risk during cold weather.

Routine maintenance is now limited to occasional nozzle cleaning and replacement, small valve repair and changing filters. The major maintenance associated with a baghouse is gone.

All of the rotary rail dumps that have been fitted with TRC ADS™ Dry Fog systems had existing dust-extraction/ baghouse systems. Some of the baghouses were not performing well, and the fog was installed to improve dust control but other cases, the baghouse was performing well and the fog was installed simply to reduce cost.

In conclusion, fog-based dust control is now a proven and cost-effective option for rail and barge unloading facilities using PRB coal.

ADS™ Dry Fog dust-control systems use special acoustic nozzles to fracture water into a cloud of extremely small droplets that are in the same size range as the airborne respirable dust.

Sackett-Waconia rail-to-truck expertise streamlines fertilizer transportation

According to the 2017 States of the Industry Report from The Fertilizer Institute (TFI), over19 million short tonnes of fertilizer were moved by rail in 2016, with a nearly identical amount via barge, in the US. To handle this amount of product, the transportation sector of the fertilizer industry requires equipment that operates reliably in adverse environments and has a long service life. Sackett-Waconia offers a diverse line of equipment to support those needs.

Sackett-Waconia can provide basic rail to truck loading systems, that can be located along any siding, rail receiving systems that load to a building or direct to a truck, and various other systems for transload. Its barge unloading systems are frequently used in terminal settings, and normally include the hopper, de-lumping, and transfer equipment. Often, its inland marine projects include both rail and barge equipment.

Rail and barge equipment can be as diverse as the companies that utilize them. Knowing that, Sackett-Waconia leverages its 121 years of experience on every project. Having such a large store of knowledge and technique allows it to build simple and efficient solutions that are easy to use and emphasize safety.

A current example of rail and barge support is the recently updated SeaGate Marine Terminal, in Chesapeake, VA. The terminal was in need of upgraded receiving, expanded warehousing, and load-out for ammonium sulphate and other bulk products. This involved upgrading the existing receiving system infrastructure to feed a new 66,000-tonne warehouse and adding new rail and truck loadout systems.

Situated on the Lower Reach of the Elizabeth river, 20 miles from the mouth of the Chesapeake Bay and 18 miles inland of the Atlantic Ocean, SeaGate Terminal offered the diverse challenges and opportunities of working in a marine environment, the first being the water itself. The river is a tidal finger of the Chesapeake Bay and has the same salinity levels as the Atlantic, making for a harsh environment that required careful attention to materials of construction.

The terminal is south of Naval Station Norfolk, and directly across the river form the Norfolk Naval Ship Yard in an advantageous location that provides deep water access for both barge traffic and up to Panamax-sized bulk carriers.

The project was to be completed in two phases. Phase I involved integrating a new conveyor, truss, and tripper conveyor system into to the existing receiving line to feed the new building. From this storage building a new 1,200tph (tonnes per hour) load-out system was installed to feed an existing shiploader.

Phase 2 began with repurposing the original warehouse for new products, and included adding a dedicated ship receiving system, and building a high speed rail/truck loadout system. Along the dock, a new receiving conveyor would be fed by stacker conveyors which, in turn, feed movable hoppers that are placed over the 600tph belt in line with whichever hold of the vessel was being unloaded. Received bulk material is then conveyed to the existing tripper conveyor in the warehouse. The new equipment's finishes, slopes, belt speeds, and transition designs, etc. were all custom engineered to allow for products that may bridge easily.

The original warehouse has a rail spur running its length that is connected to the switching yard just off the property. A reclaim belt conveyor with a movable

hopper was installed and runs the full interior length of the warehouse. This conveyor feeds a slow speed bucket elevator which, in turn, feeds the loadout tower. Placed over the rail spur, this tower system was designed for one rail loadout lane and one truck loadout lane, with provisions for an additional (future) rail lane engineered into the design. The new loadout system is NTEP certified and eliminates the need for scaling out of the terminal.

The SeaGate project was about finding the best way to transport materials as efficiently as possible while working with existing equipment and limiting potential failures driven by the environment. Fertilizer is corrosive enough, but in a marine terminal metal faces an old foe — the sea. Like naval and seagoing vessels, the systems designed and built for SeaGate Terminal are tough, corrosion-resistant, and as simple as possible.

Using smart design to limit complexity has the benefits of reducing the amount of equipment to be installed/maintained, limiting the amount of motors used (and thereby power requirements) and streamlining material flow to its most efficient state. A heavy duty paint scheme, stainless components, fibreglass conveyor covers and fibreglass decking limits the amount of preventative maintenance required. Lastly, building an expandable NTEP certified loadout system saves time and costs associated with scaling vehicles out of a site and also limits rework during future expansion.

All of these efficiency gains can be adapted in some form to any site and used to the advantage of any business. Working closely with a customer to determine their requirements is the key to achieving a well-engineered project that features both efficiency and longevity.

Rail and road connections vital for inland terminal in Paris

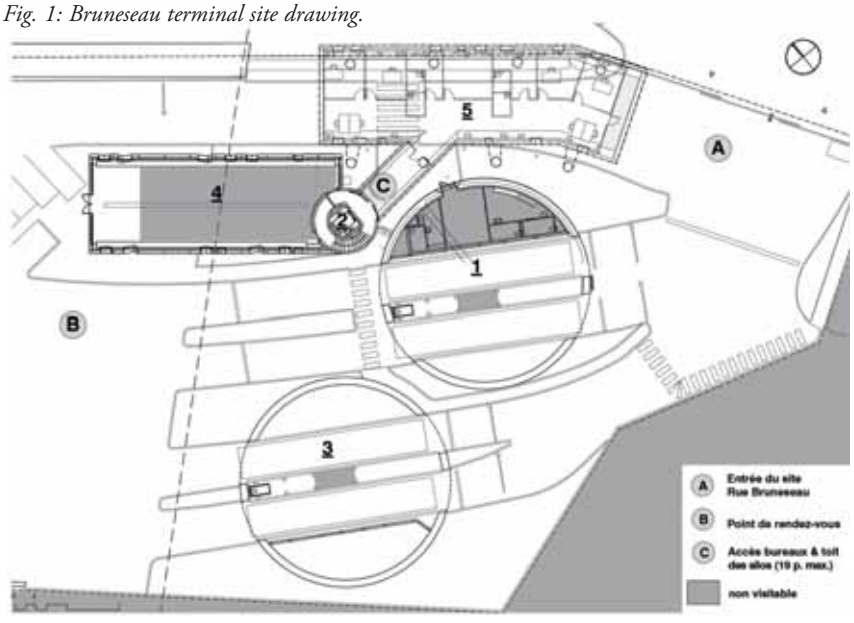
Fig. 3: Railcar unloading section.

Jérôme Lestringant of Ciments Calcia, France, and Jürgen Bostelmann of IBAU HAMBURG, Germany, describe the new inland cement terminal Bruneseau, which is strategically located in the Centre of Paris.

Introduction

In July 2014 a new cement distribution centre opened in Bruneseau on the ring road of Paris, the Boulevard Périphérique. The terminal was built by SEMAPA, a public, local development company in Paris and is operated by Ciments Calcia, which is part of the Italcementi Group. Bruneseau is a fast-growing urban district at the end of the Avenue de France in the East of Paris, and is linked to Paris and its suburbs by a pedestrian axis and a driveway lined by hundreds of homes and cultural amenities. The cement distribution centre is also linked to the Austerlitz rail station and faces the Berlier building. At the heart of the area a 180m twin tower office building will soon be built. The challenge for the architects was to make the industrial project fit in with its neighbours.

Fig. 1: Bruneseau terminal site drawing.



The new Bruneseau cement distribution centre replaces the existing Tolbiac terminal of Ciments Calcia and will increase the company's total delivery capacity for Greater Paris by 20%. With Gennevilliers, it is the largest of five inland terminals in the Île-de-France. All the cement production is upstream and transported by rail, mainly from Calcia's Couvrot integrated plant. Downstream deliveries to customers are made by trucks which usually cover the remaining few kilometres, travelling in the opposite direction to the general flow of traffic. Trucks can be loaded 24h a day, and deliver at night, in order to avoid the growing problems of daytime traffic in Paris.

Terminal architecture

The new terminal is a masterpiece of industrial architectural design living in harmony with its environment. Located on a site of only 4,500m^2, and consisting of two multi-compartment storage silos, each with a volume of 5,500m^3, a diameter of 20m and a height of 37m, a silo-shaped stair tower/elevator building and two silo-shaped horizontal office/ laboratory

buildings (Fig. 1). Two rail unloading lines are integrated as well as roads for trucks. Each silo has two truck loading lanes below it for optimum cement distribution. To accommodate all the buildings and facilities on the site some of it is built below the eight lane Périphérique and some is built on legs or columns above the driveways.

The architecture of the office and laboratory buildings comprises a futuristic oval-shaped design with window openings in the shape of aggregates used in Italcementi's industrial activities (Fig. 2). The same forms are used in the stair tower, giving the terminal a distinctive aesthetic identity. There will be about 20 permanent employees at the terminal and the new Unibéton concrete laboratory is equipped with the latest technologies such as a 5,000kN tester for concrete mixtures used in very tall buildings. The environmental regulations were demanding and include limiting the acoustic noise level to below 55dBA at the terminal boundary and a dust limitation of below 5µg/Nm^3.

Fig. 2: Aesthetic terminal design.

Terminal technology

The terminal has an annual capacity of 400,000 to 500,000 tonnes and is supplied completely by rail, so that road traffic problems are eliminated and energy consumption as well as GHG emissions of the terminal logistics are minimized.

Ciments Calcia has a partnership with Freight SNCF/RFF for the terminal. Two trains per day will supply nearly 2500 tonnes of cement. Each train can haul up to 26 railcars, which can be split and unloaded on two parallel rail tracks (Fig. 3) in about 5 hours. The high unloading rate of 4 x 100tph (tonnes per hour) is achieved by a new railcar design and railcar connections to four unloading pipes. The railcars have a length of 12.5m instead of the standard 16.5m which makes them more compact and they have large 150mm openings for a quick discharge.

The discharge air for the railcar unloading is supplied by a compressor station. So each railcar is manually connected to the unloading pipe and the compressed air pipe. An electronic system identifies the cement type in each railcar and directs it via 26 motorized flaps to one of the four unloading pipes. It is therefore possible to unload four different cement types at a time. From the unloading pipes, each compartment of the two storage silos can be filled. Controlled diverter valves and diverter pipes (Fig. 4) are used for distributing the cement to the silo compartments. Each compartment has its own bag filter system, so that different cement types are not mixed and can be separated and redirected to the appropriate compartment.

Figure 5 shows a drawing of how the silos are arranged. The two IBAU inverted cone cement silos have a capacity of 6,000 tonnes each and are of the three-compartment design with radially symmetric compartment walls. Each compartment has its own aeration system with two discharge sections. Tangentially arranged open fluidslides transport the cement to a central radial fluidslide within the aeration section. The material then passes via a radial fluidslide to an automatically actuated flow-control gate,

Fig. 4: Diverter valves and pipes on the silo top.

which ensures that there is a controlled discharge of the required amount of material from each sector. The system guarantees a first-in, first-out silo emptying and fully complies with the IBAU 'safety first' principle guaranteeing the highest emptying rates[1].

Below the central cone of each silo there are two intermediate bins. Fluidslides transfer the cement from the silo compartments to the intermediate bins and from there to the two truck loading systems of each silo. The arrangement of the fluidslides allows the cement to travel to each bin and from each bin to each loading system. The trucks are detected by an automatic system (Fig. 6), which guides them to the correct loading lane for the specific cement to be loaded. The high loading rate allows for two trucks each with 27-tonne capacity to be loaded in ten minutes. The platform scale under each loading lane controls the loading procedure.

If trucks are overloaded, a special system at the platform scales allows the return-transfer of the cement to a buffer silo. Additionally at silo 1 there is a truck unloading station (Fig. 7), which allows the reloading of final cement from trucks to any of the storage bins, including silo 2. The complete system achieves total separation of the different cement types, so that no mixing of different cements can occur at the silo. The separation of cements also applies to the different filters for each silo and each intermediate bin. Bag filters guarantee dust emissions levels below 5µg/Nm³.

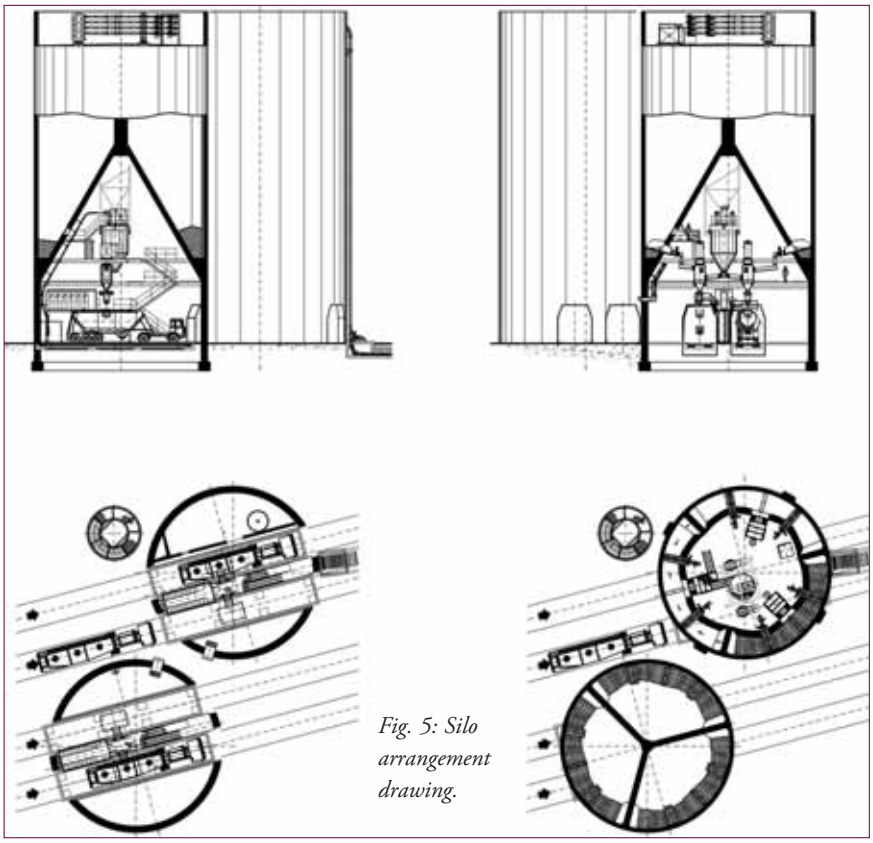


Fig. 5: Silo arrangement drawing.

It goes without saying, that the new inland terminal is state-of-the-art technology. The cement supply from railcars is mostly automated. The cement is detected and automatically directed to the appropriate silo compartments. Loading of trucks is also fully automated. When a bulk tanker drives into a loading lane, the vehicle is registered by the weighing bridge control system, which has all the data for a faultless operation of the scales. After the truck is positioned underneath the loading chute, the loading hatches have to opened by the truck driver. The loading system is fully automated and managed by a SCADA computer control system. From driving in to driving out a loading cycle takes only about ten minutes.

Performance data of the Inland terminal

IBAU HAMBURG was awarded the engineering and supply contract for the terminal technology, including process

Fig. 6: Bulk tanker loading area.

engineering, supply of design drawings, and equipment, erection and installation, automation, commissioning and performance testing. IBAU was, in reality, responsible for the complete project, excluding civil and steel construction. Commissioning of the inland terminal was completed in time and complied with all the occupational health and safety standards. A noise level below 55dBA at the site boundaries was achieved as well as dust emissions of less than 5µg/Nm³ vent air.

A silo extraction rate of >99% was guaranteed and fulfilled. The guarantee also required the discharge of a cement train with 20 railcars and a capacity of 70 tonnes per railcar in seven-and-a-half hours. In fact a discharge time of close to five hours was achieved. Two trucks with 27-tonne capacity had to be loaded in parallel from each silo in ten minutes, including truck positioning, weighing and leaving the loading section under the silo. This target was fully achieved. As a result Ciments Calcia is very pleased with the new inland terminal, which gives them easy access to clients in the East of Paris.

Fig. 7: Truck unloading station.

Outlook

The challenges for the cement industry in highly populated areas such as Greater Paris are increasing. Cement delivery and distribution are in competition with dense traffic patterns and timely delivery of cement to customers cannot be compromised. Ciments Calcia's solution is an excellent example of how future projects can be designed to overcome these problems. IBAU HAMBURG also has designed plants for inland terminals in England (Fig. 8), the USA, Australia and Vietnam[2–4], to mention a few. One common feature of these examples is that the cement is either delivered or distributed by train or by ship to take advantage of lower transportation costs and to provide a faster and more environmentally friendly cement delivery.

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Fig. 8: Buxton terminal.

Quality on track with equipment from Superior Industries

Meeting market demand with cost-effective rail car transport & efficient unloading and stockpiling systems

Scotty's Contracting & Stone, LLC is 'on track' when meeting the growing demand for high-quality aggregate and paving in the Hardin County, Kentucky region. In May of 2017, the company unveiled its new Vine Grove Stone Yard, a 65-acre plot that features a cost-effective rail unloading operation, and an efficient aggregate stockpiling facility which feeds a new asphalt drum plant. Allowing the company to nearly double its annual production output, the rail unloading operation positions Scotty's as a primary supplier of quality state-specification stone and paving services in the Elizabethtown and Fort Knox market area. Through low-cost rail transport, Scotty's can better manage its inventory in these key markets while responding quickly to increasing demand.

The new rail facility began with the refurbishing of an existing railroad spur along the P&L Railroad line, allowing aggregate transport via rail cars from the 500,000-tonne-per-year Grayson County Quarry to the new strategically-located and carefully-designed stone yard more than 40-miles away. "Without the opportunity of partnering with the P&L Railroad to access rail transport, the new Vine Grove facility would not have been possible. Costly truck haulage of material from the Grayson Quarry would have been far too expensive," says Mike Law, who serves as Scotty's VP of Material.

System design & engineering

Scotty's worked closely with the engineering team at Superior Industries to create a 2,000tph (tonnes per hour) unloading, conveying, and stockpiling system. Founded in 1972, the Morris, Minn.-based Superior Industries engineers and manufactures a complete line of bulk material processing equipment; and material handling systems and components.

After looking at several suppliers, Law says that they chose Superior Industries for its heavy-duty equipment, and its expertise in designing customized rail car unloading systems. "Together, we examined different layouts and concepts. Their input was invaluable in coming up with solutions that would meet our rail height restrictions while delivering our desired tonnage," he says.

The company broke ground on the stone yard in August of 2016 and by the

following May, the facility was up and running. "Superior's team was very involved in the setup and startup of the systems, as well as any troubleshooting. It was a seamless and easy installation. Just a few months later, we had already unloaded and stockpiled 250,000 tonnes of material at Vine Grove," says Law.

More than 3,000 tonnes of rock is transported daily on a train comprised of a locomotive, owned by P&L Railroad, and thirty 100-tonne aluminium belly-dump rail cars, purchased by Scotty's. Once used to haul coal, the rail cars have been cleaned, refurbished and painted. The Scotty's logo is stenciled on each car, and Law adds the train acts as a "series of rolling billboards" as it travels through their local market area.

The entire unloading and stockpiling system requires only a crew of two for operation. One by one, each rail car reaches the drive-over rail car unloader, which is positioned over a hopper. For peak efficiency, bottom-drop cars are used as they provide faster unloading. With the push of a button, the five doors on the underbelly of each car discharge into the hopper. To ensure a continuous material flow, the hopper is emptied just as the next car starts dumping. It only takes 45-seconds to unload each 100-tonne rail car — and under three hours to unload the entire train, all without the use of a wheel loader or truck.

From the hopper, material is fed to a Superior 42in × 400ft stationary groundline

conveyor, which transports the material to a 42in × 190ft Superior TeleStacker® conveyor for stockpiling. This telescoping radial stacking conveyor is operated via remote control, allowing the crew to easily move and adjust the stacker to stockpile a variety of specification products.

Maximizing stockpile volumes

"When designing the system, the higher-capacity TeleStacker Conveyor definitely stood out. With the 42in × 190ft unit, we can reach our required stockpile volumes, while minimizing additional material handling," says Law. He adds that the telescoping radial stacker keeps the material desegregated. "With our remote control, we can easily raise and lower the stacker to minimize the drop of the material; and we can work the unit back and forth to eliminate segregation," he says.

According to Superior Industries, it has designed and manufactured more than 1,300 telescopic radial stackers since its first model in 1997. "Today's units have been updated over the years to increase automation capabilities, and overall strength, performance, and portability," says Jason Adams, Superior Industries VP of Systems. Adams worked closely with Scotty's throughout the design and build of its new stone yard.

"Scotty's wanted a heavier-duty unit versus that of conventional models," says Adams. He notes that the TeleStacker Conveyor is engineered with a more robust undercarriage support system for greater safety and stability. "It's designed with more steel for rock-solid bracing at the stacker's most crucial points of stress," he says, adding that this upgraded undercarriage support results in 17 times less structural deflection (shifts under a load) when compared to conventional units. Adams also points to the use of heavy-duty support rollers which are designed to safely guide and support the internal stinger conveyor as it travels in and out of the main frame. The rollers are designed to be load-equalizing, each carrying an even amount of weight. This eliminates excessive and unsafe stress on each single roller.

Adams says that although the 190ft radial stacking conveyor can make one continuous, high-volume stockpile; Scotty's required eight or more different stockpiles — and they needed to maximize the volume of each pile. "Versus standard radial stackers, telescoping radial stackers can increase stockpile volumes by more than 30%," he says.

"Our main purpose for the yard is to feed our on-site asphalt plant, so we positioned the asphalt plant as close to the stockpiles as possible, to minimize material handling," says Law. He explains that after they had determined the desired stockpile volumes required for each product type, the TeleStacker conveyor allowed them to stockpile up to 8,000 tonnes of each product type (manufactured sand, and #4, #9, and #57 rock) used to feed the asphalt plant. "Our base stone pile is at least 25,000 tons and covers a larger radius area, but in every case, we are able to maximize stockpile volumes," he says.

Scotty's Contracting & Stone operates eleven paving crews and has asphalt production facilities throughput Central Kentucky. Approximately 95% of its asphalt production is used to support its own paving crews which, in large part, focus on state and federal roads. The new Vine Grove facility strengthens the company's mission of "quality paving the way," while keeping it on track in providing much-needed aggregate for its growing markets.





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Buiscar's trailer solutions facilitate both rail and barge transportation of bulk and breakbulk cargoes

Buiscar Cargo Solutions in Utrecht, the Netherlands is a major manufacturer of high-quality, heavy duty trailers for use in port terminals and industrial areas of manufacturing and process industries. The company's product range includes:

- terminal trailers;
- industrial trailers;
- multi trailer systems;
- parts; and
- grabs.

Of particular interest is its **MTS trailers** handling bulk, which can also be used at rail terminals to load and onload containers from trains. Also of interest are its **bulk trailers** which are used to transport bulk material from barges/ships to production facilities, as well as its **log trailers** which are used to transport wood logs from barges to production facilities

Terminal trailers

- **Skeletal trailers:** the new-generation Buiscar Skeletal trailers for container handling are the result of more than 40 years of experience.
- **MTS trailers:** two up to five trailers which are coupled into a train with one tractor.
- **Tipping trailers:** trailer to tip 20ft containers.
- **Roll trailers:** Buiscar roll trailers have proven their durability for decades which is mainly due to the robust construction.
- **Gooseneck/parking stand:** gooseneck for replacing/transporting roll trailers without fixed gooseneck.

Industrial trailers

- **Remote controlled trailers:** self-propelled trailers, innovative equipment for industrial transportation.
- **Drawbar trailers:** custom-made trailer solutions

Multi trailer system (MTS) — MTS trailers

The most famous trailer concept from Buiscar Cargo Solutions is the Multi Trailer System, well known as the MTS train and Flexi train.

The MTS is a very efficient solution for cargo transportation. About 40 years ago Buiscar, together with the Technical University of Delft, developed the concept of the MTS train. The concept has recently been further innovated. From two up to five trailers are coupled behind each other to form a trailer trail pulled by a one terminal tractor.

The principle of the MTS concept is the very accurate mechanical steering system which enables every trailer in the train to follow approximately the same track as the terminal tractor. Due to this accuracy, the system is very reliable and can be applied at almost every port or terminal.

Buiscar both offers a standard range, which may be customized by value adding options, and custom engineered trailer trains.

Benefits of the MTS trailer train

- MTS system for different terminals/ operating layouts;
- reduction of movements; also very efficient over longer distances;
- reduced of delays for cranes and other handling equipment;
- significant reduction in total equipment investment and personnel costs; and
- four configurations are available.

Bulk trailers

Buiscar's Bulk trailers are used to transport bulk material from ship to production facility. The trailers have hydraulic hatches at the bottom of the trailer bin to unload raw material. The Bulk trailer is a more flexible solution when compared with

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conveyor belts.

- efficient transport of bulk cargo over longer distances;
- load capacity e.g. up to 90t and 130m³, different types of raw material;
- fully loaded, the Bulk trailer operates with a Dolly trailer; and
- low total cost of ownership.

Log trailers

Log trailers are used to transport wood logs from barges to production facility.

Buiscar Log trailers may also be configured so that they can transport both containers and logs using add-on frames.

- heavy duty U-frames to support the logs either from steel or aluminium;
- choose standard single Skeletal trailers or MTS trailers;
- in case of specific customer requirements, Buiscar offers custom engineered solutions; and
- low total cost of ownership.

Grabs

As well as trailers, Buiscar Cargo Solutions offers a range of grabs, which are widely used in the loading of railcars and trailers. The company's grab range includes:

- **Hydraulic clamshell bucket, type HBN1800-HS-KS.** This has a capacity of 1,800 litres (under a dome of 30°). It can handle products including sand, gravel and glass. It weighs 2,000kg. The clamshell bucket is in protected execution (cylinders). The knives are equipped with an overlap to avoid leaking.
- **Mechanical four rope clamshell bucket, type MVBL9000.** This has a capacity of 9,000 litres (under a dome of 30°). It can handle bulk materials, and weighs 10,000kg. The four-rope clamshell bucket is equipped with two closing ropes and two suspension ropes. The execution of the shells is round shaped and completely closed. The clamshell bucket is provided with pockets.
- **Electro hydraulic clamshell bucket, type EHBN6300.** This has a capacity of 6,300 litres (under a dome of 30°). It can handle bulk materials, and weighs 5,070kg. The shells of this clamshell bucket are in open execution. The clamshell bucket is provided with two cylinders, pump and motor.

Parts

Buiscar offers an excellent spare parts service for industrial and terminal trailers. It can supply spare parts and components to its customers instantly, as it keeps most parts in stock, both for new and used Buiscar trailers, as well as those from other brands.

Customer base

Buiscar trailers are sold to a broad range of customers: container terminals, multi-purpose terminals, inland terminals.

Buiscar maintains its position in the market by offering proven designs for standard products and custom-engineered solutions in case customers have non-standard requirements.

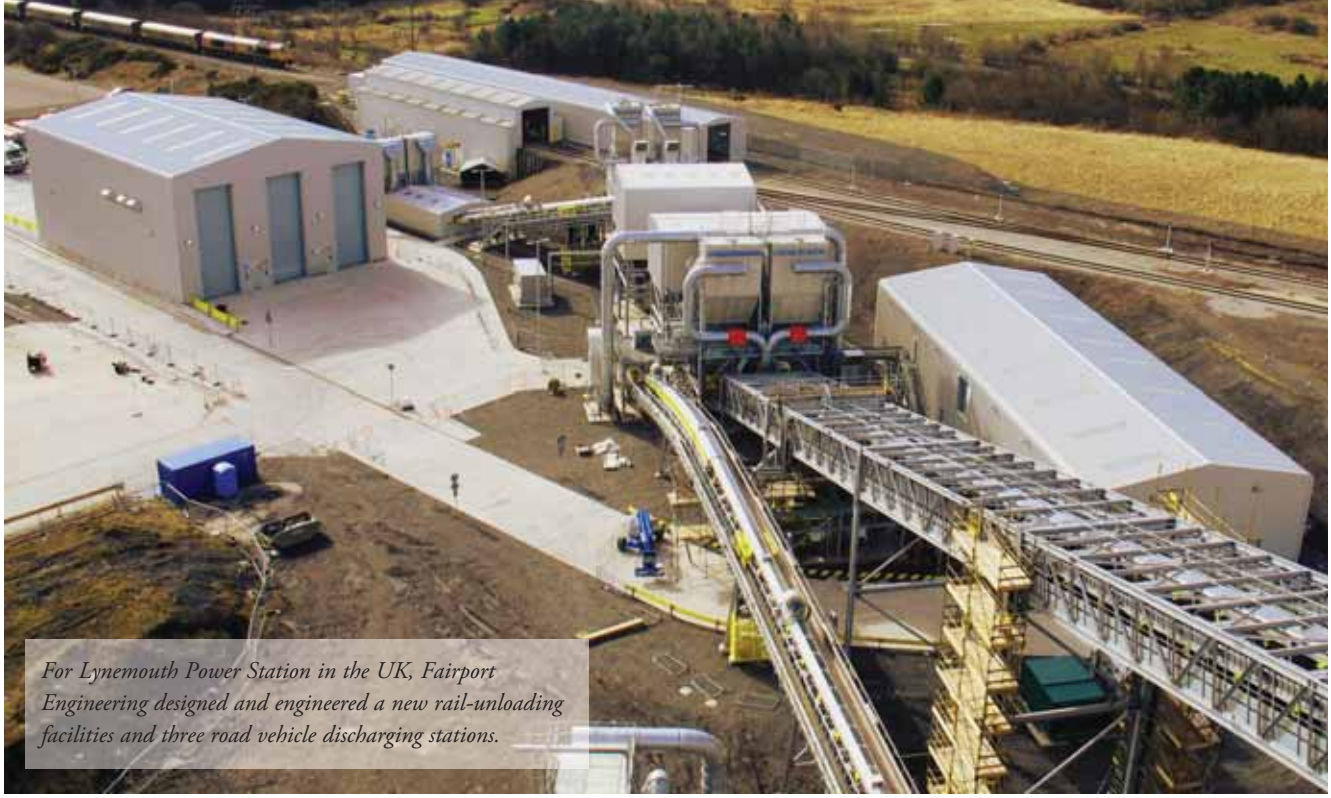
All aboard with Fairport Engineering

'The Plough' from Fairport Engineering separates tramp metal pieces from coal cargoes as they discharge from a vessel's hold.

Fairport Engineering Limited has, for more than 35 years, been involved in many industries where materials have had to be stored and processed. Over this time, bulk transport by road, rail and sea has played an important part in the projects that Fairport has designed and built. Fairport's origins can be traced back to the 1980s when the UK coal industry serviced the national power industry. Virtually every colliery was then, in some way, linked to a power station and the majority of steam raising coal was transported between the two by 'merry-go-round' trains. Nowadays the few coal-fired power stations that remain are linked to ports and use imported coal from many parts of the world. Not that this has halted Fairport's involvement with modern-day coal-handling systems.

A recent Fairport innovation, known colloquially as 'The Plough', has managed to reduce demurrage costs when unloading coal from Panamax dry bulk carriers at ABP's Port of Immingham in the UK. This device, pictured above, is fitted to a belt conveyor and consists of a metal detector that senses in 'real time' tramp metal pieces as they are discharged with the coal from the vessel. A down-stream 'belt plough' is then activated for a short period to discharge the increment containing the metal down a side-chute to a safely contained compound. This allows the discharge of the vessel to continue uninterrupted at maximum rate and the contaminated coal to be subsequently searched off line.

Ports are relied on to handle a diverse range of materials from the vessels to shore, ideally through equipment that is reliable and flexible. Fairport's mobile hoppers are found in ports across the UK, handling biomass, agri-feed stuffs, grain and other dusty materials, many of which have ATEX and DSEAR classifications. These hoppers can either discharge into road vehicles, mobile or static dockside conveyors or rail wagons. The mobile hoppers can be self-powered or towed; they may include self-steering capability and are designed to work with specific grab



For Lynemouth Power Station in the UK, Fairport Engineering designed and engineered a new rail-unloading facilities and three road vehicle discharging stations.

sizes to contain dust from the bulk cargoes.

One bulk commodity, the volumes of which have significantly grown over recent years, is biomass, particularly wood pellets; mainly at the expense of coal for use in power generation. Lynemouth Power Station's recent conversion from coal requires biomass pellets to be imported using primarily rail but also, in smaller quantities, by road. Fairport designed and engineered the new rail-unloading facility and three road vehicle discharge stations for this project. All these systems incorporated dust containment and spark prevention measures in view of the wood pellets' physical properties. These new rail and road facilities are shown in the photograph above.

The systems described so far all focus on the movement of bulk materials by various forms of transport — sea, rail and road — all with markedly different carrying capacities. Transshipment of bulk materials between these types of transport very rarely happens instantaneously and in most cases requires some form of intermediate storage between the transport modes. Fairport has engineered many types of storage systems for a wide range bulk materials including ground stores and elevated bunkers and silos. Two recent projects epitomize this particular skill; one (shown left) being six slip formed, concrete, waffle bottomed mass flow silos for biomass at Lynemouth Power Station. Each silo contains 12,500m³/8,500t of wood pellets that in total can sustain the station's operation for nearly a fortnight.

Biomass silos.

The other (shown left) is part of the construction raw materials intake project being established at the new Hinkley Point C power station. It is of bolted steel construction and is intended to hold some 5,000 tonnes of GGBS (ground granulated blast furnace slag) that will be used in the on-site cement batching process. Fairport has been at the forefront of development in the bulk materials handling industry technology for 35 years, and continues to do so; enhancing for its clients profitability, availability, reliability and reducing energy, emissions and costs for marine, rail and road transport operators.

This bolted steel silo for the Hinkley Point C power station will hold 5,000 tonnes of GGBS.

Dino has a dust solution for any load

The Dino mobile bulk truck loader is mobile to use and can load quickly, simply and safely. But how does it actually perform as regards preventing dust forming during loading? Does a mobile bulk truck loader actually have solutions for this? Van Beek has decades of experience as regards loading and, over that time, the company has developed numerous innovative solutions.

Can be used on any Dino

A particular property of all these solutions is that they can be used on any Dino, even if it is a decade old. Van Beek has in fact developed modules that can be attached to any Dino.

The cheapest and most effective way

The loading bellows on the outlet side of the Dino is by far the most popular means of reducing dust. This can be connected quickly, safely and efficiently to the manhole on the top of a bulk truck and for a small investment eliminates a lot of dust development.

More savings with extraction unit

The loading bellows can be connected to an extraction unit. This creates a negative pressure in the loading compartment and so fewer fines or small particles escape during loading.

The next logical step in dust reduction is to connect the inlet hopper of the Dino to the extraction unit. The unit immediately extracts most of the dust that is released when emptying big bags or 25kg bags.

Operation of dust filters

The extraction unit extracts the dust through a row of filters. At set times, a blast of air passes through the filters, this knocks out the dust which then falls into an easily removable collection bin underneath. To minimize product loss Van Beek can fit the filter unit above the body of the Dino and fit it with a rotary valve. The dust particles collected and knocked out of the baghouses then fall straight back into the product stream.

Up to 30m² filter area

The standard Dino filter has a total area of 12m². "In some cases a bigger filter area is wanted," says Roel Kneepkens, sales engineer at Van Beek. "We have developed a module for this with a filter area of 30 m²."

Dust prevention for loading from big bags

Whether you are now loading from big bags, a shovel or 25 kg bags, the Dino has a suitable dust-reducing module for this application. For big bags with a flexible hose underneath, Van Beek can fit the cover on the inlet hopper with a round hole into which the flexible hose fits precisely. In combination with an extraction unit, this gives minimal dust development. Van Beek can fit the inlet hole with a flexible hose clamp for even less dust in the warehouse or logistics department.

For big bags with no flexible hose, Van Beek fits the inlet hopper, a sort of big open metal box, with cutters that cut a cross in the bottom of the big bag. The product then runs straight into the Dino, during which process a minimal amount of dust can escape.

Filling cabinet for smaller bags

For smaller bags the Dino can be extended with a lockable filling cabinet. The operator lays the bags on a screen and cuts them open. The product then falls straight into the Dino.

Can also be extended later

By working with modules, the Dino can also be adapted to new situations or requirements even years after its purchase. "For example we had a client who had bought a Dino 12 years ago to load granulates. They had now changed over to powders and this created a lot of dust. By fitting the Dino with dust extraction and a loading bellows the problem was solved in an instant", says Kneepkens.

Demand for dust reduction growing

Due to more stringent requirements for the protection of personnel, according to Kneepkens clients are increasingly often extending the Dino they have already been using for years with dust-reducing modules. "You see fewer and fewer logistics departments where the personnel always wear a dust mask for their work because of dust clouds. Companies are doing all they can to reduce dust and by upgrading their Dino a great saving can be made for a low investment."

Dino remains mobile

The strength of the Dino is that it is mobile and can load quickly, simply and safely. When developing the dust-reducing modules, Van Beek has taken great care that the Dino retains these positive properties even with its extensions. So even with an extraction unit or an extra-large filter area the Dino remains mobile, quick and safe.

CFS Handling grabs its place in the barge market

Civettini Italo & c sas — under the brand name CFS Handling — is a major designer and manufacturer of grabs for the handling of bulk commodities. The company's product range includes mechanical, hydraulic and electro-hydraulic buckets as well as hydraulic and electro-hydraulic grabs.

CFS Handling grabs are widely used in the bulk cargo handling market, and are ideal for loading and unloading cargoes to/from barges. Its grabs are precise, and prevent spillage from between their blades.

CFS Handling has 30 years of experience, so it is able to guarantee high quality, good prices, excellent design quality and customer focus. It operates worldwide, and its equipment can be found in countries from Brazil to Russia, for large production machines with buckets from 18m³ to 40m³, with hydraulic Bosch Rexroth special applications for faster closure and optimized landing costs and boarding.

CFS Handling uses wear-resistant building materials which characterize its machines, such as Hardox 500 for the blades or automatic greasing systems on the bucket. This enhances the grab's features and decreases

Hardox plates are used to manufacture CFS grabs, to ensure a long working life in a challenging environment.

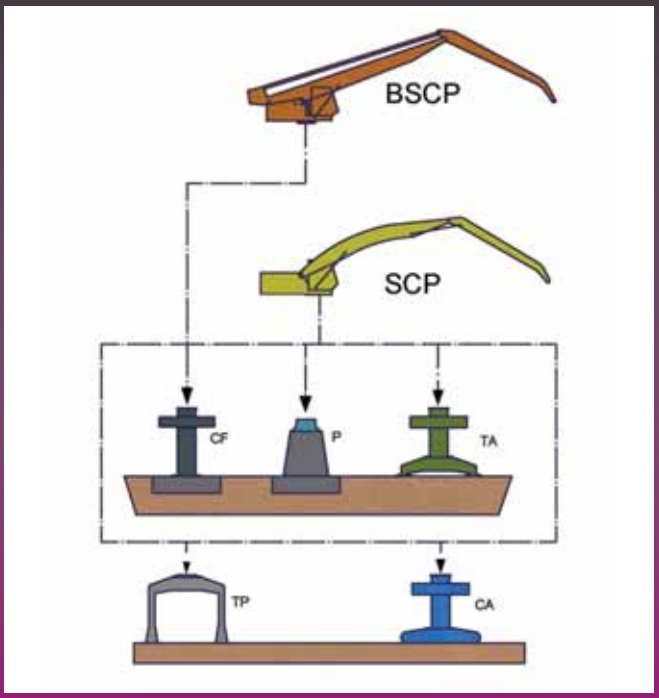
CFS grabs work efficiently on fixed cranes

Grabs from CFS Handling are becoming more popular for use on cranes with fixed or stabilized bases for material handling. These are used for handling bulk materials in ports, scrap facilities, steel mills, waste recycling operations, and general handling operations. Using the appropriate equipment, and with electronic control of all movements, it is possible to be effective in confined spaces and when faced with obstacles.

The fixed cranes are generally fixed on a plinth foundation, and are autostabilized with a dedicated frame. They are either fixed or mobile on wheels or on rails.

The cranes are controlled either via the cabin controls or using a remote-control system.

The grabs from CFS Handling combine with these high-tech cranes to provide an efficient, state-of-the-art handling system.



maintenance time, prolonging bucket life.

Civettini Italo & c sas continues to research materials and components of increasing sophistication and high-performance, such as hydraulic grabs fitted with diesel engines of 60kW and the ability to lift 20m^3 with a remote control for cereals and for use with the cranes used by its customers who have not yet adopted the use of port cranes such as those supplied by Terex Gottwald or Liebherr.

CFS Handling grabs are exported to many countries worldwide, including India, Thailand, Indochina, and South and North America.

Martin Engineering expands operations

A technician mills a belt cleaner blade prior to installation.

UK and Scandinavian operations boosted

Martin Engineering, a major provider of bulk material handling solutions has expanded its UK and Scandinavian operations, allowing it to offer wider service, faster equipment delivery and extensive employee training to customers. Martin Engineering's new facility located near Mansfield, Nottinghamshire includes a new office, training centre, production area and warehouse. With its expanded team of knowledgeable industry professionals, the company will partner with UK and Scandinavian customers to offer solutions to common material handling problems, while at the same time improving the work environment with safer equipment and detailed training seminars. The result is a highly responsive unit committed to improving efficiency and compliance, while minimizing customer operating costs.

The Martin Engineering team exhibited at the Hillhead 2018 Quarrying, Construction and Recycling Exhibition at the Hillhead Quarry in Derbyshire, UK, in late June. There, its team met with current and potential customers to discuss common issues and unique problems affecting their operations.

"The UK and Scandinavia are centres of excellence when it comes to bulk material handling and processing," said Robert Whetstone, Martin Engineering's European Vice President. "It's exactly the kind of market that benefits from the innovations in products and services for which Martin Engineering is known."

Since 1944, Martin Engineering has designed, engineered and manufactured heavy duty conveyor components and material flow aids with a focus on safety, efficiency and ease of service. The company has had offices and manufacturing in the region for more than 30 years, and has established a reputation for premium quality equipment and expert service throughout Northern Europe in a wide range of industries, including heavy building products, mining, cement, steel production, fertilizer, power generation, recycling, food, railheads, ports and bulk storage industries.

Working from a purpose-built production facility, products including air cannons and belt cleaners will be manufactured at the new location. Also housed there will be factory direct equipment and spares for Martin Engineering bulk handling solutions to be

Belt cleaners are among the products that will be manufactured at the new location.

quickly dispatched to any area in the region to keep customer plants running efficiently and safely, while reducing expensive downtime.

Martin Engineering's ability to deliver operational and safety training that is specific to the region's strict occupational and workplace regulations is an important asset to bulk handlers in the region. Using its *Foundations*™ reference book, now in its fourth edition, the firm's experts train customer employees on the function, maintenance and safe operation of conveyor systems. In addition, the company's *Foundations for Conveyor Safety* presents more detailed concepts specifically focused on safety regulations and procedures. The entire programme is designed to maximize operators' understanding of current equipment and technologies, help improve system performance, reduce downtime and minimize hazards.

Appointed as general manager to head up the team, Aaron Bartram is a UK native who has been part of Martin Engineering's recent launch of the Mr. Blade® programme, a unique service which ensures clean conveyor belts at all times. Bartram's 30 years of experience running major production operations in the heavy building products sector will be invaluable to the success of the new endeavour.

Also bringing their experience to the team are customer service representative Richard Housechild and service engineer Wayne Crossland. Housechild will be accommodating the growing sales demand of the UK market and Crossland will be on sites installing and servicing customer equipment.

"The expanded Martin team is already working with a number of customers in the region," said Whetstone. "Now that we've bolstered our staff and opened the new facility, we're geared up to achieve our ambitious growth plans."

Martin Engineering is a global innovator in the bulk material handling industry, developing new solutions to common problems and participating in industry organizations to improve safety and productivity. The company's series of *Foundations* books is an internationally recognized resource for safety, maintenance and operations training — with more than 20,000 print copies in circulation around the world. The entire volumes can also be downloaded as free PDFs from the Martin website. Martin employees take an active part in ASME, SME, VDI, CMA and CEMA, and the firm played a pivotal role in writing and producing the 7th edition of the CEMA reference book, *Belt Conveyors for Bulk Materials*. Martin Engineering products, sales, service and training are available from factory-owned business units in Australia, Brazil, China, Columbia, France, Germany, India, Indonesia, Italy, Mexico, Peru, Russia, Spain, South Africa, Turkey and the UK. DCi

Left to right: Richard Housechild (Customer Service), Wayne Crossland (Service Tech), Aaron Bartram (General Mgr.) and Dave Harasym (Field Sales Mgr.).

Engineering consultancy

a vital link in the cargo handling chain

Small projects: a 2,000tph barge loader and enclosed conveyor system for aggregates and sand (USA).

Selpeco Resources Inc: bringing together the right teams for the best result

Selpeco Resources, Inc. is a planning, engineering and contractual resource focused on the needs of customers involved with bulk material handling projects and technology. Formed originally in 1991, the company has grown and evolved over the past 27 years into a company that specializes in the engineering, procurement and construction activities of owners, engineers or contractors, who are mostly concerned with bringing quality projects on line, on budget and in time to meet the business objectives associated with projects.

Primary client relationships secure Selpeco services as owner's representative, programme or project manager, construction manager or speciality consultant. The company's primary focus is assimilating teams of companies and individuals that provide the greatest value to the customer, using the best resources available from each company and the industry.

> **"We have an obligation to our customers to ensure that our expertise — and that of the expertise resident in the teams and technology providers that we form — will prove valuable to the customer before Selpeco takes on any assignment. We're not committed to any one company or individual, we are committed to the effectiveness of the team and how the team supports our customers"**
>
> Steve Laccinole, COO

The business

Bulk material handling encompasses technologies and projects to move large volumes of solids of various sizes and properties from one location to another, storing, reclaiming and moving on demand at the rates and with the environmental properties that make the material valuable. From mines or industrial facilities to trucks, trains, conveyors or oxcarts to piles or vessels of all shapes, sizes and properties, from where it can be reclaimed for loading, distribution, blending or consumption, and ultimately to its intended use, there are technologies that are continuously being updated, modernized and improved. Selpeco maintains a familiarity with these technologies and techniques that forms its core business. The company has evolved over its history to become recognized as a worldwide resource for its customers. The company will not accept an assignment unless it believes, through screening discussions with its customers, that the project opportunity can be improved through Selpeco's efforts.

The difference

Throughout the Selpeco corporate history,

Major equipment: a 16,000tph shiploading for iron ore (Brazil).

an evolution in the project management of material handling projects has occurred. What used to be defined by an owner selecting a consultant or turnkey contractor followed by design, procurement, construction and commissioning of a new or existing facility by the owner and/or the consultant or turnkey contractor has now become optimized through a redefinition of projects based on:

- owner's in-house expertise;
- budgets based on incomplete scopes and/or expertise derived from industries not necessarily familiar with current bulk material handling technologies and limitations;
- desired capacities based on incomplete analysis;
- pre-determined equipment technology selections;
- multiple consultants or supplier expertise;

Storage facilities: a 100,000+ tonne storage facility for potash (West Coast USA).

- local construction capabilities — wherever possible;
- limited commissioning experience to enable proper warranty and construction completion acceptance; and
- consultants that may or may not have complete experience from planning through design, construction and commissioning.

In essence, a matrix of requirements. Selpeco's corporate objective is to assist its clients with developing a comprehensive solution to the project's pre-defined requirements that are not consistent with any one company's technologies, expertise, or capabilities — including the project owner. To define what is missing and fill in the gaps only as required, working with customers to support, not necessarily replace, what is already present and required for the project.

Selpeco prides itself on its ability to service the needs of the project, be it through the perspective of the owner, the engineer or the contractor.

The company's logo depicts this in graphic form with each circle overlapping, respectively:

- owner with respect to engineer with respect to contractor
- quality and/or schedule and/or budget
- engineering and procurement and construction.

Selpeco operates in the shaded region — with expertise built on decades of experience with each of the above elements that contribute to the success of bulk material handling projects anywhere in the world.

Old technology (left): dust curtains manually installed around a bauxite shiploader hatch in the Caribbean (Jamaica). New technology (below) — a completed enclosed, long distance pipe conveyor handling petcoke and sulphur (Venezuela).

CWA Engineers Inc. offers engineering and project management expertise

CWA Engineers Inc. is a multidisciplinary engineering and project management firm with over 20 years of experience providing innovative and practical solutions in bulk material handling to industry-leading clients around the world.

With a comprehensive suite of services that covers every phase of the project lifecycle from concept development through commissioning and ongoing maintenance support, CWA understands that innovative design and planning in the early stages of a project can minimize construction and lifecycle costs while achieving a higher-quality finished project.

Combining technical knowledge with hands-on field experience, CWA's team of professionals delivers cost-effective designs that are innovative, efficient, and easily integrated into terminal operations. The solutions consider the optimum use of space, the safe transfer of bulk products, dust mitigation, fit-for-purpose equipment, and operational efficiency.

CWA is ideally located to serve clients across Canada, the USA, and Latin America, with a head office located in Vancouver, British Columbia and regional offices in Saskatoon, Saskatchewan and Houston, Texas.

Ports and marine terminals

The planning, design, and development of marine terminal and bulk port facilities is at the core of CWA's expertise. With the successful completion of projects locally and worldwide, CWA prides itself on designing and developing first-class port and marine terminal facilities.

CWA's seasoned professionals have experience in the handling of a wide variety

of products, including coal and petcoke, fertilizers, agricultural products, construction aggregates, ore and mineral concentrates, and wood products.

CWA specializes in infrastructure and material handling systems including storage and reclaim systems and loading and unloading systems for ships, barges, rail, and trucks. It offers proven and versatile engineering solutions capable of coping with a range of ship configurations, ship sizes, local dock conditions, and tidal changes.

From infrastructure to power supply, CWA's goal is to ensure increased throughputs while minimizing costs and focusing on safety.

Optimization and value engineering

CWA has helped its clients to realize multi-million-dollar savings in capital, maintenance, and operations costs through operational improvement projects including efficiency and optimization assessments, de-bottlenecking studies, and environmental and dust control initiatives.

Within two weeks of receiving the conceptual design for a material handling system for a proposed potash terminal in the USA, CWA was able to identify cost-saving measures to reduce the cost of the project by over $20 million while improving the operations, maintenance, and safety of the terminal.

By employing alternative procurement strategies for the marine structures at the Stewart World Port in British Columbia, Canada, CWA produced capital cost savings of $6.8 million without compromising material and fabrication quality.

Marine infrastructure

In addition to bulk material handling, CWA has a proven track record of providing versatile engineering designs for a variety of marine structures including:

- dock structures;
- mooring and berthing systems;
- dolphins;
- trestles;
- bulkheads; and
- foreshore retaining walls.

CWA's project portfolio ranges from barge ramps to deep sea berths.

The company's team of experts also provides services that are critical to the early phases of a project, such as berth availability assessments, metocean and ice studies, seismic risk assessments, sedimentation assessments, and dredge planning.

3D technology

Using state-of-the-art 3D technology, CWA improves the safety and functionality of designs for both greenfield and brownfield sites. CWA's full suite of capabilities includes 3D scanning, 3D modelling, finite element analysis, discrete element method modelling, and computational fluid dynamics.

CWA uses 3D technology to model entire greenfield terminals for site layout and general arrangement improvements, design optimization, interference checking, simplified 2D drawing generation, and walk-throughs/fly-overs.

The models are used for early reviews of the design with various stakeholders to

Bühler grain storage and handling project

Major equipment and technologies supplier Bühler has given *Dry Cargo International* details of a recent project to provide grain handling and storage facilities for a client in Indonesia.

Bühler's Grain Storage business unit is highly specialized in supplying customized solutions for grain reception and storage. Bühler Grain Logistics Grain Storage is dedicated to the development of individualized collection solutions to meet any customer requirement and offers reliable solutions in the area of grain handling and storage. Sustainable grain storage and intelligent quality management are among the key tasks during the agricultural stages of the value-added chain. Every customer group is served competently — from individual solutions for small-scale operations to major industrial facilities. The range of services includes conveying, cleaning, drying and cooling as well as grading and storage and shiploading and -unloading.

Bühler offers:

- a reliable partner for successful project realization.
- competence from one source;
- custom-tailored solutions thanks to modular design; and
- quality and efficiency through proven technology.

Nusa Prima project

For this project, Bühler has equipped a grain terminal, which receives, storage and dispatches wheat, corn, soya bean and soya bean meal.

The large-scaled project was for the client Nusa Prima Logistik, for its terminal in Surabaya in Indonesia. Bühler worked on the ultra-modern new facility from May 2016 to August 2017.

This was a turnkey project from Bühler, which included the complete assembly, engineering, automation and commissioning. The ultra-modern terminal is also equipped with a WinCos control system.

Storage and handling equipment installed

Storage:

- steel silo: 10 x 8,000 tonnes;
- flat storage: 2 x 58,000 tonnes (with scrapper);
- total intake capacity: 3 x 1,000tph [tonnes per hour] (ship), 1 x 500tph (truck); and
- total outtake capacity: 2 x 7,500 tonnes/day.

Conveying systems:

- **chain conveyors:** 34 x AHKG 400/600/1000;
- **belt conveyors:** 9 x LBAA 650/1200/1600;
- **double screw conveyors:** 40 x AHAS 400;
- **scrapper:** 2 x T750; and
- **elevators AHEL:** 4 x 800/800, 1x 1000/1900.

Dust aspiration systems:

- 21 x filter, 2 x MVRU 9324

Control system:

WinCos

The types of grain handled at this facility include: wheat, corn, soya bean and soya bean meal.

About Bühler

Every day, billions of people come into contact with Bühler process technologies to cover their basic needs for food and mobility. Its solutions ensure healthy and safe food for two billion on a daily basis, and they help move one billion people per day. Together with its customers and partners, Bühler develops innovations for a better world with a focus on sustainability, health, safety, and energy efficiency. It helps manufacturers produce healthy and safe food, manufacture higher-efficiency vehicles, improve eyesight, advance telecommunications, and make buildings more economical.

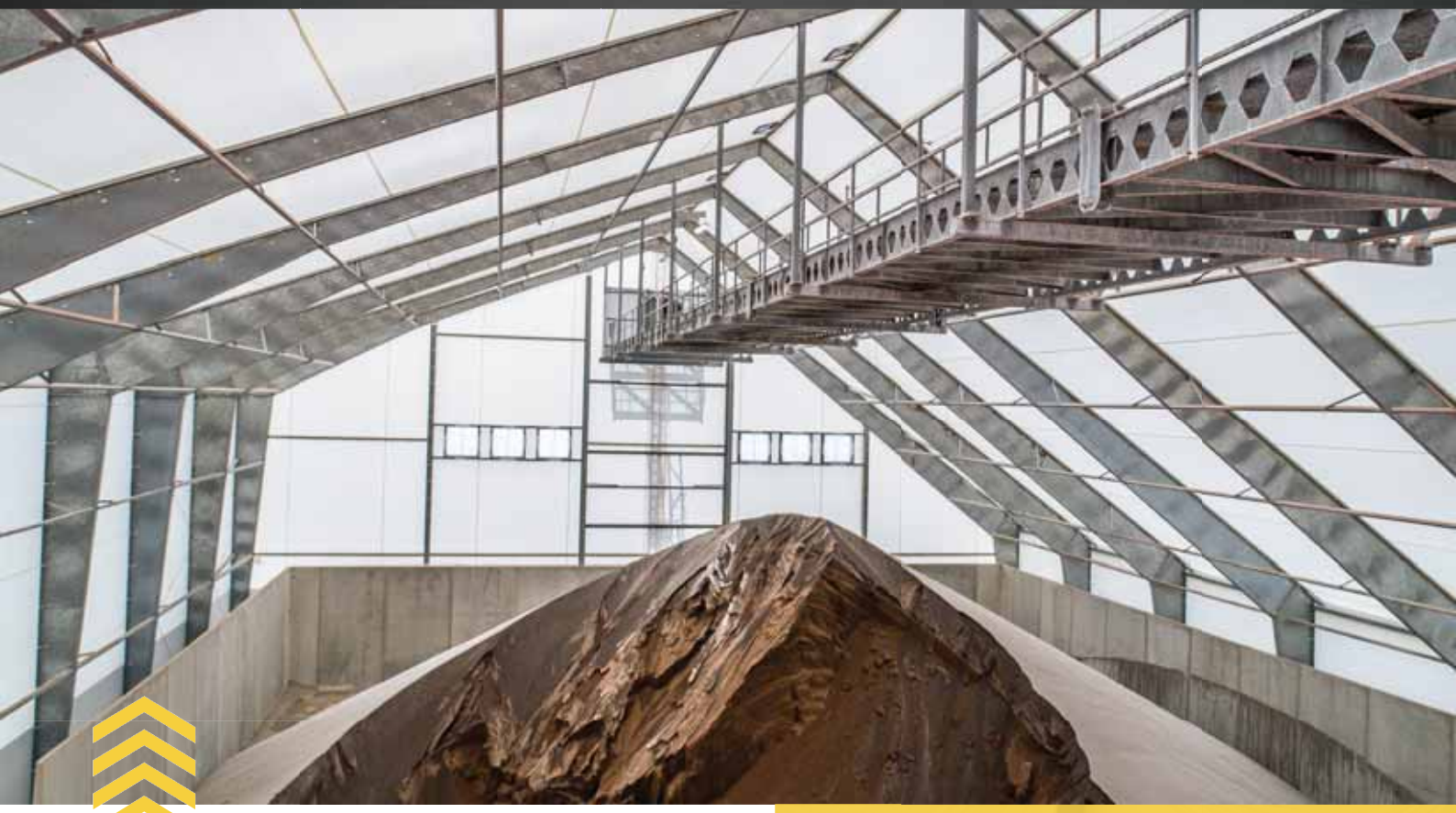
As a renowned and respected technology group, Bühler invests up to 5% of its turnover every year in research and development. In 2017, around 11,000 employees in over 140 countries generated a turnover of CHF 2.7 billion. As a globally active Swiss family-owned company, Bühler is particularly committed to sustainability. It wants its customers to be successful.

Bühler wants every human being to have access to healthy food. It wants to protect the climate with energy-efficient cars, buildings, and machinery.

LEGACY
BUILDING SOLUTIONS

CUSTOM TENSION FABRIC STRUCTURES

VERSATILE. BOLD. CUTTING EDGE.



THE LEGACY ADVANTAGE

- **FULLY** CUSTOMIZABLE
- **FAST-TRACK** CONSTRUCTION
- **IN-HOUSE** ENGINEERING
- **RELOCATABLE**
- **PATENTED** ATTACHMENT SYSTEM
- **ENERGY** EFFICIENT
- **CORROSION** PROTECTION
- **CONSTRUCTION** MANAGEMENT

ExxoTec™

EXCLUSIVE PVC FABRIC

EXCLUSIVELY EXO AVAILABLE

- Cost competitive with PE + other PVC fabrics
- ExxoTec™ Elite is twice as strong as 12 oz. PE
- Improved quality, strength + long-term weathering

meet operational, safety, and maintenance requirements. This allows the stakeholders to participate in the design process to a level that is difficult to achieve with 2D models.

Utilizing 3D laser scans, CWA creates accurate 3D models of existing equipment and infrastructure for brownfield modifications. Inserting 3D models of new designs allows CWA's engineers to ensure constructibility and viability of the design early in the process. The models are particularly helpful for co-ordinating between disciplines and avoiding interferences, especially when designing complex mechanical assemblies with moving parts.

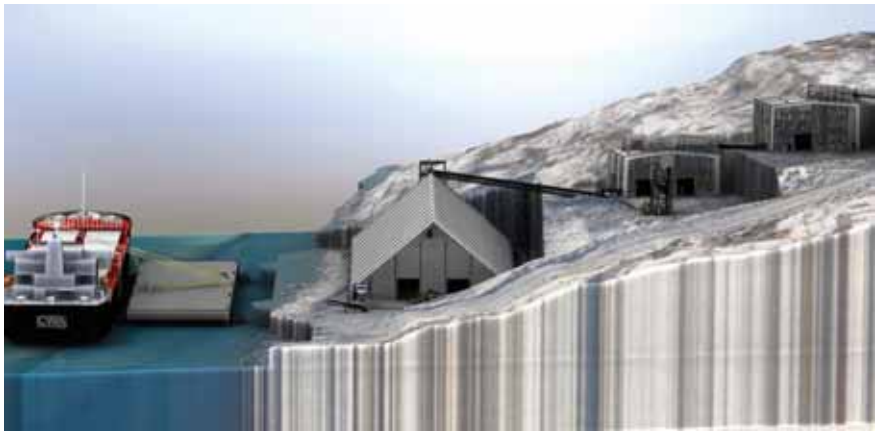
Dust management solutions

Dust control has become a growing consideration for health, safety, and environmental management. By combining decades of experience with sound engineering knowledge, CWA provides practical solutions to dust management challenges.

CWA's experience in dust management extends to systems that incorporate velocity monitoring, dust sprays, chemical systems, enclosures, wind fences, cyclones, bag houses, spill trays, washdown systems, and passive dust control techniques.

CWA has developed solid expertise in the design of passive dust control systems, including state-of-the-art soft-handling conveyor transfers.

Combining techniques such as discrete element method modelling and computational fluid dynamics, CWA has developed an effective tool that accurately predicts material flow and trajectories in bins and chutes. Using this method, bins and chutes can be designed to reduce the turbulence in the material flow and contain dust within the material flow itself, thus reducing fugitive dust emissions and product degradation.



Asset reliability

Terminal operations depend on the effective planning, design, and maintenance of assets. CWA goes beyond engineering to provide solutions that take into account the maintainability and operability of equipment and infrastructure, extend service life, and reduce the lifetime cost of ownership.

Within CWA, the Asset Reliability Division is a dedicated group of professionals that provide responsive asset management to prolong the lifespan and enable the safe operation of equipment and infrastructure.

The Asset Reliability Division works closely with client maintenance and operations personnel to provide engineering, procurement, and project management services for equipment and structure inspections and maintenance, modernization, and repair projects, as well as system audits, testing, and commissioning.

CWA's inspectors are also design engineers, allowing them the unique ability to easily identify problem areas, damage, and deterioration, as well as quickly identify safety-related problems, advise repair methods to minimize operational impacts, and develop a prioritized rehabilitation plan.

CWA has also assisted its clients in developing complete asset maintenance programs based on a data-driven approach that:

- enables owners to extract the maximum value from their assets;
- allows for more informed investment and maintenance decisions;
- ensures that requests for capital or maintenance spending can be backed up by hard data; and
- creates KPIs that can be used to measure maintenance performance.

CWA's asset maintenance systems focus on

predictive or condition-based maintenance to reduce the costs resulting from unexpected operational shutdowns by proactively identifying and resolving areas of concern before they become a problem.

Expertise. Innovation. Results.

The quality and value of CWA's work is a reflection of their commitment to:

- build long-term partnerships with its clients and exceed their expectations;
- create a corporate culture of innovation, excellence, and continuous improvement;
- develop its people with core expertise in the industries it serves; and
- enhance health, safety, environmental, and operational performance.

CWA is organized to respond quickly and efficiently to its clients' needs on a wide range of projects. It takes pride in its cost-effective designs that focus on safety, construction, operations, maintenance, and environmental protection. DCi

Containerized bulk handling

Preparing the Eurospec container rotator for transport to QSL in Canada.

Tipping point? Solving the handling conundrum with Container Rotation Systems

The idea of moving bulk product in containers is growing in popularity. However, this relatively new initiative brings with it its own challenges, including getting the right handling equipment in place to empty containers that are full of loose/free-flowing product.

Container Rotation Systems (CRS), based in Sydney, Australia, has developed a new design of rotator, the Eurospec, which offers an efficient solution to the problem of unloading bulk from containers.

CRS has recently delivered its first Eurospec to Canadian stevedore and terminal manager, QSL, to empty its alumina cargoes.

The Eurospec is a single-beam machine that can easily handle half-height containers.

Widespread applications for Eurospec

Container Rotation Systems (CRS)' Eurospec has wider applications than just bulk products. The system can be applied anywhere that benefits from the tippling of containers — it has already revolutionized operations at construction specialist Crown Resorts at Barangaroo in the heart of Sydney, Australia.

The CRS system is being used to handle waste at the Crown Resorts site, which is part of a broader transformation of a disused container terminal into a 22-hectare waterfront precinct, complete with office towers, residences, retail, restaurants and entertainment. Construction is under way on Crown Resorts' six-star hotel and casino complex at the site. Project manager on the Crown project, Lend Lease, and its engineering contractor, Ward needed a solution to the problem of contaminated fill emanating from underground site workings.

The material had to be safely and efficiently removed from site and transported through the heart of Sydney before disposal at Badgerys Creek on Sydney's outskirts.

CRS's system consists of: half height containers with sealed lids, supplied by global container firm Seaco; special container spreaders for working underground; and a specially designed Eurospec 32 container rotation system at the dump site.

The Barangaroo project is the first civil sector contract for CRS which has previously supplied container rotating systems, and related gear, to mining projects in Australia, Africa, South America, and Asia.

"There is good scope for potential growth in the civil sector in Australia and globally, in tunnelling and construction projects," said Murray Bridle, owner and managing director of CRS.

With this in mind, CRS has established a rentals business which reflects the fact that civil projects might need a system for far shorter terms that the four- or five-year contracts predominating in mining.

"The rentals business caters for the spot or short-term market where someone might have a four- or six-month project," explained Bridle. "CRS has a whole solution that they can rent. It's very quick to mobilize and fast to deliver."

The Crown project's use of CRS' system also responds to equipment constraints in the booming Sydney infrastructure market.

"By using a containerized system it answers the overload of truck and dog systems," said Bridle. "There is so much infrastructure in Sydney that truck and dogs are at capacity. The container solution is also very cost effective."

"We have patented a new locking system for the lid so that it's physically locked while allowing the use of automated lid-lift on the Rotainer system," concluded Bridle.

The new machine will handle alumina at a QSL facility in Quebec, a location prone to freezing winter conditions. As a result, CRS' managing director, Murray Bridle, explained that the Eurospec is a fully sealed unit. "It's a single beam machine," he explained. Everything is inside and fully sealed. The machine was designed for the North American and European markets where they have snow and ice. The machine was tested in minus 16° conditions. Its design parameter is from –20° to plus 60."

The Eurospec's design followed CRS' close study of the European container

rotating market for mineral concentrates. "Europe is a 32-tonne market with half-height containers, so I had to design a completely new machine for that region," explained Bridle.

Eurospec, thus, has a working load limit of 32 tonnes compared with the 38 tonnes of CRS' heavy duty Rotainer RS machine. It can be optioned up to 50t WLL. In addition to being about 30% lighter than the Rotainer, the Eurospec is, in some ways, simpler.

"We've reduced our moving components by 80%," said Bridle. The new machine is also efficient. "We had to go to Tier 4 engines because the Canadians are the first in the world to adopt updated emission specifications for small diesels. It makes everything else on the market obsolete."

CRS' Canadian delivery follows its supply of rotators and tipplers to, at various times, Australia, Eritrea, Chile, Taiwan and Russia.

In the local market, the company will in coming months announce details of supply of a system to the civil construction sector, where it will handle contaminated waste in an underground environment.

No sweat: the Eurospec32 for QSL handles alumina with ease.

Bridle expects to see more of this sort of thing. "I see great potential in small spot markets where people want to rent a whole system for three or six months, especially in the construction sector," he said.

In addition to the Eurospec, CRS is pushing its Tiltainer, a container tilting system for end-door discharge. "The patent applications have been lodged," said Bridle.

"We can tip and discharge with normal containers over the hold of a ship. Because we are not rotating we can just use generic containers, we don't need side wall strength." DC

Containerized bulk handling with RAM Spreaders

In May 2015, NSL's RAM Spreaders business merged with the grab business of Salzgitter Maschinenbau AG (SMAG) one of the world's leading cargo grab manufacturers and the leading shipboard crane grab builder under a joint venture arrangement through PEINER SMAG Lifting Technologies GmbH.

The merger gave birth to the world's leading lifting accessories supplier in both bulk cargo and container handling industries. The Group's business include lifting equipment and accessories for container terminals, bulk ports, bulk cargo vessels, waste to energy incineration plants, scrap metal yards, steel mills, marine dredging and mining businesses, where it is able to offer a full spectrum of bulk cargo and container lifting solutions to port operators and crane manufacturers worldwide; with strong production and a large global network of after sales and service.

Containerized bulk handling (CBH)

This new method of exporting bulk is quickly growing in popularity due to cost effectiveness, dust free environmental benefits and fast to market approach. It is now in operation at various bulk ports and also standard container terminals, as there is no stockpiling or dust plume issues as the bulk commodity is stored, transported and unloaded from sealed containers; with the RAM Revolver being deployed to unload the commodity.

The containers are used as a method of storage and can be transported either by road, rail or both, making the system safe, secure and environmentally friendly.

The RAM Revolver®, a rotating spreader handles the container, lifts the lid and rotates the container through 360 degrees, gently tipping the commodity out.

Step 1: Fill the container.

Step 5: Unload container using RAM Revolver.

Step 3: Transport the container.

The CBH process can be summarized as:

1. **Fill the container** at the mine. Existing site equipment is used and as there is no loss of commodity no required
2. **Seal the container:** Lids are self locking and remain sealed until commodity is unloaded.
3. **Transport:** Containers are transported by rail, road or both with no contamination or loss of commodity.
4. **Store container at port:** As there are no stockpiles, there is no dust or contamination and loading is fast and efficient. The beauty of this system is that different types of commodities can be stored at the same location without any cross contamination, unlike stockpiling.
5. **Unload using RAM Revolver®:** All types of cranes can be used such as STS, MHC, Ship, Reach Stacker and Bridge Crane. Loading can reach up to 1,00tph (tonnes per hour) and a SWL up to 45t.

Containerised Bulk Handling with RAM Revolver®

The revolutionary award winning solution

Use existing port equipment

as part of the bulk handling process

For all types of crane

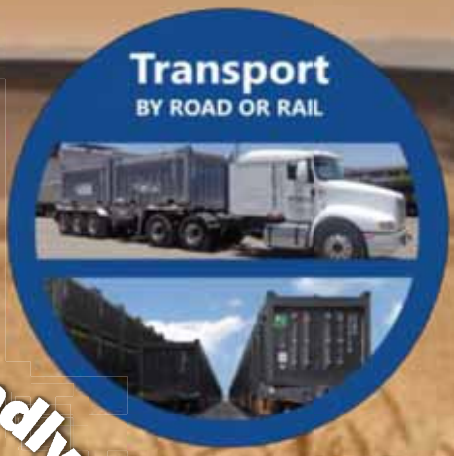
Ship to Shore | MHC | Ship | Reach Stacker | Bridge Crane

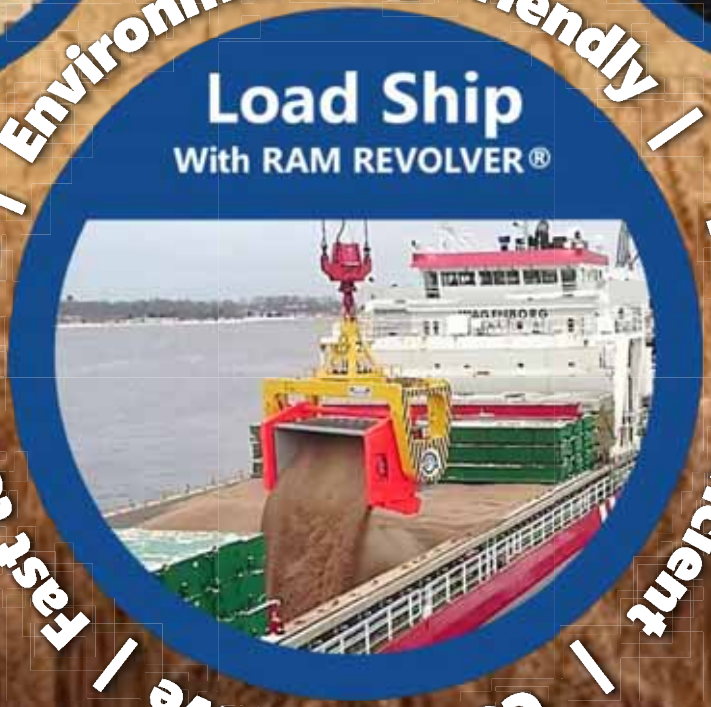
Container as transport & storage

Commodity is safe & secure with no stockpiling

Commodities Handled

Grains | Mineral Sands | Soya | Wood Chip | Coal | Scrap Metals | Bagged Materials | Iron Ore | Copper Concentrate





RAM SPREADERS

www.ramspreaders.com

The Lid Lifter technology ensures a dust-free process, while the twistlock & grippers secure the container during rotation.

Benefits of containerized bulk handing:

- **Setup costs are lower,** as no conveyor, ship loader or storage sheds are needed;
- **Zero dust** means no clean-up required;
- **Safe and fast** – virtually an unmanned operation with up to 1,000tph achievable; and
- **Proven & reproducible**, an award-winning solution.

CBH allows container terminals to export bulk

Due to the environmental benefits and low set-up costs of the CBH system, RAM are actively promoting the CBH system to ports and terminals, who before CBH did not consider bulk export as viable option due to its environmental impact, the freeing up of valuable space for stockpiling or the expense of building storage sheds simply to hold the commodity before it is exported.

Now thanks to CBH, standard container terminals can expand into bulk handling increasing revenue without environmental or financial impact.

CBH export with PEINER Grabs

With the collaboration of PEINER SMAG, the Group are now able to offer a complete CBH import solution which involves high quality PEINER Grabs for unloading the commodity from the ship into the open top CBH containers, where once sealed are transported by road, rail or both to the bulk processing facility where RAM Revolver is used on bridge cranes to unload the commodity.

TOC EUROPE talk

TOC Europe 2018 in Rotterdam played host to a talk by RAM Spreaders Cameron Hay on the trends in tandem lifting that show an increase in container ports and terminals using single hoist tandem.

The talk began by making reference to a published technical article by SIPG revealing some design and complexity issues with dual hoist operations, and that dual hoist operations consume a high amount of energy, which as a result are not generally in high use. Also discussed was the fact that new terminals are not selecting dual hoist cranes, but instead opting for more economical single hoist dual spreader cranes.

The results of an independent review showed the RAM SingFlex™ single hoist system was a superior headblock.

Hay commented "The industry is clearly moving toward higher TEU ratios and tandem 40 will be the norm. Terminals using SingFlex are achieving greater than 40% of all moves in tandem with its flexible design."

New developments

As a forward looking company RAM Spreader continues to keep a close watch on market trends in the container handling and bulk handling industry, exploring relevant opportunities. "I am glad to share that our research and development efforts have been fruitful, and in the coming months, we will be launching new products, which will provide customers with an even bigger choice of machines to suit their needs." says Philip Lee, Chief Executive Officer, RAM Spreaders. "In particular, you can look forward to next generation PinSmart™ Automated Twistlock Handling". DCi

Bulk is big business

on the North American West Coast

Jay Venter

Port of Stockton reports best year on record

The Port of Stockton has announced that 2017 was a record-setting year. Overall cargo volume was up over 21% and the number of vessel calls increased by more than 10%.

"In 2017 we grew our cargo business to record levels and our tenant base is at an all-time high," said Port Director, Richard Aschieris. "Those are remarkable achievements. I'm proud of our team for competing to earn and retain our clients' business by leveraging our unique operational strengths which help our customers profit and grow."

Aschieris continued, "There are many factors contributing to our record growth. One advantage the Port of Stockton has is that we facilitate customers getting their product to market as quickly as possible. A few examples of how we move freight faster are that we are centrally located, adjacent to less congested highways and offer a 24/7 gate for round-the-clock access to freight. The Port of Stockton is served by the UP and BNSF railways and has 2.5 miles of on-dock rail. This gets freight moving to and from any point in North America as quickly as possible. Another contributor to increasing our business is that clients have room to grow. We offer seven million square feet of existing warehouse space and another 600 acres for future development."

"While 2017 was a record-setting year for us, we continue to look to the future as we proceed with a number of new development projects," stated Board of Commissioners Chair, Sylvester Aguilar. "Strengthening our infrastructure will help us meet the needs of continued growth and capacity. We anticipate that even more companies will follow suit and set down roots at the Port of Stockton."

"Our growth adds strength to the Stockton and San Juaquin County economies and help to create jobs," said Aschieris. "Currently we support more than 5,500 family-wage jobs and anticipate growing employment opportunities. We made a strategic move to diversify our cargo base and began investing in improvements ten years ago. Combine that with the hard work of our labour forces and the results are new positive highs for the Port of Stockton."

The Port of Stockton is an inland facility situated on a deep-water channel located in the extended San Francisco Bay Area. Operating since 1933, the Port of Stockton is the fourth-largest port in California and handles dry bulk, breakbulk, liquid bulk, warehousing and project cargoes. Services include stevedoring, warehousing, inventory management and transloading.

TRC ADS™ Dry Fog: solving fugitive dust problems in ports

TRC, headquartered in Vancouver, WA USA, focuses on cost-effective dust control solution equipment.

TRC has been in the business of fog and water based dust control since 1984. The company has well over 600 installations worldwide, in more than 20 countries.

"ADS™ Dry Fog technology applies to many dry bulk materials and in many different applications." says Gonzalo Campos-Canessa, TRC CEO. "When done properly, it is as effective as extraction technologies and less expensive to implement, operate, and maintain."

TRC's Dry Fog systems use acoustic nozzles to create a cloud of extremely small droplets that are in the same size range as the airborne respirable dust. Key to the reliable delivery of fog into the system is the design of its FP series acoustic nozzles. These devices use compressed air to create high frequency sound waves that shatter water into the fog sized droplets needed while retaining adequate kinetic energy to project the fog where it's needed and penetrate through opposing air flows. These water droplets agglomerate with the dust particles, make them heavier, and settle back to their source.

Successful application of dry fog technology to industrial dust control requires four design elements: containment, an adequate quantity of fog, retention time, and collection surface. Of the four, containment is the most important. Unloading hoppers need protection from wind (Like WeatherSolve windfences) and other outside influences.

The nozzles incorporate relatively large liquid ports which act along with the acoustic nature of the nozzles to resist plugging. Nozzles are available in three sizes with air capacities ranging from 1–8cfm (1.7–13.6nm^3/hr). A typical transfer point will require between six and 20 nozzles depending on belt size and speed, flow rate, chute height, material nature, and other factors.

ADS™ Dry Fog is particularly well suited to most containable dust sources, and is sometimes the only choice that has a chance of success, and it sometimes cannot be used. In most plants, a well-thought-out combination of technologies is the best solution.

"One very interesting integration of a passive and an active technology," explains Campos-Canessa, "is what we have created on the unloading hopper at ports facilities, putting together the windfence from WeatherSolve and the ADS™ Dry Fog from the Raring Corp we can offer a pretty unique way to control the dust at these specific points. We have had successfully used this integration in many applications and in different industries." According to Campos-Canessa, the most important requirement for ADS Dry Fog to successfully work at controlling the dust, is the need of containment. Adding a WeatherSolve windfence is a good way to add the containment feature to the dust control system, maintaining the fog and dust on the controlled boundaries which help give the fog the retention time needed for doing its job.

Specifically, in ports TRC recommends its clients to consider both ADS™ dry fog and windfence on the unloading hoppers, which it has implemented in several ports in different parts of the world, giving a successful solution for controlling the dust in a challenging and always difficult application. The hoppers are always exposed to wind gusts from different directions and the operation limits the amount of windfence to be installed, nevertheless the integration of these two technologies seems to be a good fit for TRC's clients.

Ports America appoints new CFO and CEO

Richard Surett, Ports America's new chief financial officer.

Mark Montgomery, new president and CEO of Ports America Group, Inc.

New CFO

New Jersey-headquartered Ports America, has announced the appointment of Richard Surett as its new chief financial officer.

Surett has been with Ports America since 2010 and most recently held the position of senior vice president, FP&A and treasury. He is an accomplished financial professional with more than 20 years of experience in mergers and acquisitions, debt and equity financings and financial planning and analysis.

"We are fortunate to have Rick assume his new role for Ports America," said Ports America President & CEO Mark Montgomery. "He is imminently qualified to take on the CFO duties, and his leadership and expertise will contribute toward the company's goal of expanding the logistics solutions we currently offer our clients."

New CEO

Ports America Group also announced the appointment of Mark Montgomery as president and CEO. Montgomery replaces former president and CEO, Michael Hassing. The company wishes Hassing the best of luck and success in his future endeavors.

Montgomery was previously president and CEO of Ports America Chesapeake (PAC) from 2010 to 2014, and currently serves as a senior advisor and operating partner to the Infrastructure Investing strategy of Oaktree Capital Management, L.P. (Oaktree), where he brings more than 30 years of maritime industry experience. Montgomery led the company through a successful Public Private Partnership with the Maryland Port Administration at PAC in 2010. He also serves in board roles at the Port Newark Container Terminal (PNCT), PAC, the Delaware River Stevedore joint venture in Philadelphia, the CP&O joint venture in Norfolk, the Port of Miami Terminal Operating Company and the Eller-ITO Stevedoring joint ventures in Miami. Montgomery also serves on the Board of the National Association of Waterfront Employers, the North Atlantic Ports Association and the General Stevedoring Council. His exceptional track record of outstanding customer service, market-leading safety and operational performance will serve Ports America well.

Concurrent with the transition, Dave Starling will assume the responsibility of chairman of the board of directors. He has more than 40 years of experience in the North American rail, intermodal and global shipping logistics industries. Most notably, he served as the CEO of Kansas City Southern (KCS), a publicly traded Class I railroad. He currently serves on the board of directors of Greenbrier, an international railcar manufacturing and leasing company. Prior to KCS, Starling held management, leadership and operational positions at the Panama Canal Railways Company, American President Lines, the St. Louis-San Francisco Railroad and Burlington Northern. He was named the Railway Age's Railroader of the Year in 2012. Furthermore, he currently serves as a senior advisor to Oaktree's Infrastructure Investing strategy.

"Ports America provides the only tri-coastal terminal operating footprint in North America. Our position provides us an excellent springboard to achieve our goal of expanding the logistics solutions we currently offer our clients," said Montgomery. "I am thrilled to be assuming leadership of the Ports America platform. The company will remain focused on providing best-in-class service to many of the world's leading shipping lines. I also believe there is a tremendous opportunity to provide improved workflow solutions to beneficial cargo owners to drive dramatic growth for the company."

Ports America has a proven track record of delivering the highest quality operations for our customers combined with an unparalleled focus on the safety of our employees. The company is the leader in the North American marine terminal sector with its tri-coastal footprint handling containers, roll-on, roll-off and breakbulk cargo and cruise passengers.

"Having Mark Montgomery join our team is the next major step in the evolution of Ports America," added James Kowalishin, the current chairman of the company. "Mark's strong leadership, experience and track record of building superior management teams focused on customer satisfaction, safety and operational excellence gives the board the utmost confidence that he will drive the continued growth of the company."

While Dave Starling will replace James Kowalishin as chairman of the board, James will continue to serve on the board of directors.

"Ports America thanks James for his two years of service as the company's chairman and we look forward to the benefit of his continued advice and wise counsel," said Starling. "We are excited about the future direction of the company and look forward to helping build on the outstanding foundation of excellence that is already in place."

About Ports America

Ports America, headquartered in New Jersey, is the largest independent marine terminal operator and stevedore company in the United States. The company currently operates in more than 42 ports and 80 locations. Ports America handles all types of cargo, including container, bulk, breakbulk, automotive, project, military and cruise, typically handling 13.4 million TEU, 2.5 million vehicles, 10.1 million tonnes of general cargo and 1.7 million cruise ship passengers.

High temp air cannon installation & service without production shutdown

The inventor of low-pressure blasting using plant air for improved bulk material handling has announced a new technology for installing air cannons without a processing shutdown. The system allows specially-trained technicians to mount the units on furnaces, preheaters, clinker coolers and in other high-temperature locations while production continues uninterrupted.

Martin Engineering developed the patent-pending Martin® Core Gate™ to dramatically reduce expensive downtime associated with traditional installation methods, which require that high-heat processes be halted to allow core drilling and mounting of the cannons. The company has proven the technology in dozens of installations to date, helping bulk handlers maintain effective material flow and minimize shutdowns, improving efficiency while reducing lost production time.

The new system has been paired successfully with the firm's Smart Nozzle™ Series, a family of air cannon nozzle designs which can be serviced or replaced during production, without removing the cannons themselves. Currently the only technology to safely install air cannons and replace nozzles during production, the specialized equipment and process require no confined space entry. With all installation and service performed from outside the vessel or process, the Core Gate system also contributes to a safer workplace by minimizing the difficulty and hazards of installation and maintenance.

"Both of these innovations represent significant technical breakthroughs in the industry," observed Global Flow Aids Manager Brad Pronschinske. "In the past, when material accumulation problems became an issue, processors would have to either limp along until the next scheduled shutdown or endure expensive downtime to install an air cannon network. That could cost a company hundreds of thousands of dollars per day in lost production," he said.

"Our initial advancement was engineering a nozzle design that could be safely replaced with no production stoppage," Pronschinske continued. "Now this new technology allows us to add air cannons and nozzles to an operation while it's in full swing, without disrupting the process."

To install air cannons in a running process, Martin technicians first conduct a thorough assessment of the accumulation patterns and blockages to identify the proper air cannon locations, then drill through the outer wall and weld the Core Gate in place. The core drill is mounted, checked for alignment and started, with progress monitored from a safe distance as it works its way through the refractory. As soon as the drill cuts through the refractory, the drill is backed out and an isolation shield is slid into place to protect workers from the severe environment. The Smart Nozzle assembly is mounted next — using an 8-bolt pattern that delivers excellent support — followed by the nozzle itself.

Technicians drill through the outer wall, then weld the Core Gate in place.

The core drill is mounted and aligned.

The drill cuts through outer wall and refractory, then retracts automatically.

Martin® Core Gate technology allows air cannons to be installed and serviced without a process shutdown.

Replacing a conventional fan nozzle on existing equipment typically requires the removal of refractory material from around the nozzle opening, usually with a pneumatic hammer from inside the vessel. The process invariably weakens the surrounding refractory and renders it more susceptible to spider-webbing and subsequent cracking. In contrast, the Martin replacement system leaves the refractory undisturbed during service, and one worker can safely perform installations or maintenance from outside the vessel. The Martin Engineering design features a smaller footprint than typical fan jet nozzles, delivering a larger blast pattern than pipe nozzles or standard fan jet designs.

"Now as soon as a material accumulation issue is identified, we can inspect the problem, design an air cannon layout and install the units quickly," Pronschinske said. "As long as the blockage isn't so severe that it completely obstructs the process flow, we can generally keep production moving while we mount the equipment for the solution." The new Core Gate and Smart Nozzle technologies are expected to find utility in cement manufacturing, coal-fired operations, ash handling and other high-temperature applications.

Martin Engineering is a global innovator in the bulk material handling industry, developing new solutions to common problems and participating in industry organizations to improve safety and productivity. The company's series of Foundations books is an internationally-recognized resource for safety, maintenance and operations training — with more than 20,000 print copies in circulation around the world. The entire 500+ page volumes can be downloaded as free PDFs from the company's web site. Martin employees take an active part in ASME, SME, VDI, CMA and CEMA, and the firm played a pivotal role in writing and producing the 7th edition of the CEMA reference book, Belt Conveyors for Bulk Materials. Martin Engineering products, sales, service and training are available from factory-owned business units in Australia, Brazil, China, Columbia, France, Germany, India, Indonesia, Italy, Mexico, Peru, Russia, Spain, South Africa, Turkey, the USA and UK.

Rising prices result in buoyant pulp market

Fibria's seven pulp mills now belong to industry behemoth Suzano.

Full steam ahead for Brazil's market pulp, following merger of Suzano and Fibria

With short fibre pulp now being sold for three or four times more than the commodity costs to make in Brazil, and with the price still rising, it is no surprise that the industry there is in a buoyant mood, *writes Patrick Knight.*

The long talked-of merger of the country's two largest players, Fibria and Suzano, has finally come about, with Suzano agreeing to pay US$12 billion for the seven mills owned by Fibria. Suzano now becomes the world's largest maker of short fibre pulp; the company owns 11 mills, with the capacity to make about 12mt (million tonnes) of pulp a year. This is 40% of the world's total output of short fibre pulp which, following a steady rise in price in the past 12 months, is now sold for between US$750–1,200 per tonne, depending on destination.

Suzano will control 18% of total world short fibre pulp production, ahead of the share controlled by International Paper, whose mills can make 5mt (of the 7.5mt capacity of Indonesia's 'Paper Excellence', which bid US$11.4 billions for Fibria's assets). Paper Excellence, of course, is now the owner the Eldorado mill, which is adjacent to Fibria's Novo Horizonte mill in Mato Grosso do Sul state, where a second line started up last year. A total of 300,000 tonnes was produced from Fibria's new line in 2017, with 1.8mt to be made there this year.

Paper Excellence was prepared to pay much more for Eldorado than Fibria or Chile's Arauco, which also bid. This is reportedly because the company, which has Chinese participation, was anxious to get access to Brazilian technology. Paper Excellence paid $2,800 per tonne of capacity at Eldorado, considered extremely high.

Some are surprised that the Votorantim conglomerate, owners of Fibria — a group formed following the merger of the mills owned by the VC company, with those of the Aracruz complex a decade ago — should decide to sell at a time when prospects for Brazil's market pulp seem so good.

As well as being strong in pulp, however, Votorantim is the market leader in cement in Brazil, where it has more than 40% of the market. The company also mines bauxite and makes aluminium, as well as zinc and copper. It has recently sold its orange juice business, and is reportedly planning to invest in cement production in other countries. Perhaps it was wise to sell when the pulp price is so high. Demand from China, destination of 40% of the 16mt of pulp exported from Brazil last year, still continues strong. The average Chinese uses only 4kg of paper each year, most of it tissue, compared with the 24kg of each US citizen. So great potential still exists, as millions of Chinese move from the countryside to cities each year, and use more paper. Thirty-three new mills able to make tissue will start up in China in the next few months, and with world pulp stocks low, there was little resistance in China to the ten price rises which caused the price to rise by up 50% in 2017.

The price in Asia reached $750 a tonne, $140 per tonne more than it was a year previously. It has shot through the $1,000 per tonne barrier in the United States, and to $970 per tonne in Europe.

There had been some resistance to the sale by the JBS company of the Eldorado mill to Paper Excellence. Many hoped it would be bought by Fibria or Suzano and remain in Brazilian hands. It should be remembered that the fast growth of Brazil's pulp industry of the past 40 years, was facilitated by low-cost finance made available by the National Development Bank, the BNDES. The BNDES identified pulp as being a commodity which Brazil could make and export at a profit, so decided to aid the industry. Beef, also produced by the JBS company was another commodity which has been helped by the BNDES. But several JBS directors have

been prosecuted for financial wrongdoing in the past few years, after politicians and others were bribed, and two leading JBS directors have ended up in gaol. But the cash-strapped Brazilian government seems to have been prepared to overlook JBS's misdemeanours, in its need for an inflow of foreign capital, to the detriment of the nationally owned sector which it previously defended so strongly.

One of the contenders for the presidency in elections to be held later this year, has strongly attacked the inflow of Chinese and other Asian capital into Brazil. Such investments have been concentrated in infrastructure projects and agriculture, and it is feared could eventually lead to the loss of control of key assets in agriculture and logistics.

With demand for pulp so strong, Suzano, and several other players, are planning to make major new investments. Suzano is considering duplicating two of its mills, at Imperatriz, located close to the Carajas railway in Amazonia, and at Mucurui, in Bahia state. The company has also recently taken over 90,000 hectares of eucalyptus forest owned by the Duratex company. Suzano owns the 400,000 tonne-capacity Limeira mill, in Sao Paulo state, and the extra forests could to supply a 1.5mt mill.

Klabin is to duplicate its recently built 'Puma' mill, one of the few able to make both long- and short-fibred pulp. It reported that several mills which now make long-fibre pulp, are considering switching mills to make the now more popular short-fibre pulp.

The Japanese-owned Cenibra company is to expand its mill in Minas Gerais state, where output could eventually rise to 1.3mt, while a third 1.8mt-capacity line may be added at the previously Fibria-owned mill at Novo Horizonte.

To ensure the market is not over-supplied, Suzano may close one of the elderly, relatively small and above average cost Aracruz lines, and some of its own high-cost capacity near Sao Paulo city, to ensure supply does not grow too much. Up to 100,000 tonnes of high-cost production will be taken out of operation.

On the positive side, it is estimated that an extra 1.2mt of short-fibre pulp will be needed in China alone this year, and that prices could rise by an further 30% during 2018. This despite the fact that second line at the Novo Horizonte mill will near full capacity this year, and that the expanded RioGrandense mill, owned by Chile's CMPC company, will also be re-started this year, adding 1.3mt to capacity.

As well as being used to make short-fibred pulp, eucalyptus wood has been used to make the charcoal needed by the iron and steel industry, and several million hectares have been planted to the variety in Minas Gerais and neighbouring Bahia states for this purpose in the past 30 years. But with demand for pig iron down sharply, as steel makers switch to electric furnaces which use scrap, rather than using pig iron as a main raw material, the pig iron price has collapsed, along with exports of what used to be a leading commodity for Brazil. A French company wants to sell 230,000 hectares of its eucalyptus plantation in Minas Gerais state, which would be sufficient to supply two or three new pulp mills.

As well as paper doing well, the rest of Brazil's forest products industry has responded to the recovery in most world markets, and the renewal of demand from the construction industry. Production and exports of virtually all forest products, sawn timber, board, plywood and veneer have all been buoyant. The Swiss-owned 'Precious Woods' company, which owns 500,000 hectares of forest in Amazonia, as well as plantations in Gabon, and which exports 140,000m^3 of 45 types of tropical hardwood a year, is to expand to meet growing demand. Precious Woods says that only 7% of all tropical wood is certified as renewable, but as public concern about sustainability increases, demand is growing strongly. The timber is placed on rafts in Manaus, then taken downstream to Belem, from where it is shipped abroad.

There is concern that the cutbacks to government spending and activities in the past three years, when the Brazilian economy declined by 6%, has meant that policing in the Amazon region has fallen, allowing illegal logging, as well as gold mining, to grow. With Brazil's economy, as well as exports, increasingly dominated by mining and farm sector goods, the strong farming lobby has been almost completely unchecked, and protected areas, and Indian reservations, are under increasing pressure.

Renewable efficiency for timber trade and related business at Brake seaport

The seaport in Brake is a specialist among port service providers. One of its business divisions is the handling of forestry products like pulp, paper and timber. The port offers covered storage space of 130,000m^2. It is therefore one of the most important European transshipment and distribution hubs, and is the largest German port for import of pulp.

Brake seaport places particular value on the product-specific storing and handling of all goods. As part of its Cargo Care service package, the seaport controls the quality of customers' goods and can also readily take on claims processing for any potential damages.

Brake offers many accompanying services such as container stuffing and stripping and organizing the upstream and downstream processes. Timber trade and related business profit furthermore from its excellent railway connection. It is possible to reach all destinations with a siding within 48 hours — anywhere in Europe. And even if orders come in at short notice, a good availability of wagons assures perfect project processing as needed. Rail is an environmentally friendly transport which is becoming ever more popular with customers in the timber trade and pulp industry.

Brake seaport has been importing pulp since 1968. It has generous storage areas and guarantees gentle handling of the sensitive raw material. Also, the seaport is a significant one for the transshipment of any kind of timber. Brake offers a trimodal connection, heavy duty cranes and expansive areas for dry storage — it also has large pre-handling areas for efficient project processing.

High-quality sawn timber, as a building material, finds its way through Brake seaport to the construction industry in the USA, North Africa and the UK at an increasing frequency. The reason for this is the state-of-the-art terminal, robust equipment, and expansive storage spaces. Because of these advantages, Brake has become a central hub for the wood and pulp processing industry.

Wood handling for every situation with Sennebogen

Timber handling with precision: at Sägewerk Koch GmbH in Langenbach in Germany's Westerwald forest, a Sennebogen 723 E has been successfully deployed in its log yard and supply operations since 2017.

Compact pick & carry material handler showcases its skills in Germany's Westerwald forest

"A key piece of equipment in our sawmill and in the log yard," is the glowing review given by Managing Director Bernd Koch in relation to the green Sennebogen 723 material handler. This machine with a reach of 11m and a 1.25m² log grapple has been put to use with great success at Sägewerk Koch GmbH in Germany's Westerwald region.

With a history stretching back to 1910, the Koch sawmill has developed into a state-of-the-art sawmill operation in recent decades. Construction timber and a wide range of products for the packaging industry both in Germany and abroad are now produced by the firm.

The new Sennebogen 723 pick & carry material handler, which sales and service partner BRR Baumaschinen Rhein-Ruhr Mitte delivered to Langenbach in 2017, has since become an all-purpose machine within the company's operations.

The material handler is now used in a whole host of applications including removing the logs from the sorting boxes, filling the mill decks, moving the long timber onto the cross conveyor, and supplying the chipping lines. The Sennebogen 723 E-Series is equipped with material handling equipment with a reach of 11m and the reliable hydraulics are powered by an economical 119kW diesel engine that meets the stage IV emission standard. When it came to the features that the drivers and company management were looking for, the compact and flexible nature of the machine in particular was the decisive factor, as Bernd Koch confirms. Of particular importance to the drivers was the excellent view afforded by the elevated cab and the fact that the machine would be easy to access for maintenance purposes. The machine also impressed with its fast work cycles and low noise emissions.

Depending on the application, trunks ranging from 2.5m to 20m in length and with diameters of between 13 and 50cm are moved at Koch. The original Sennebogen log grapple with a capacity of up to 1.25m² and extra-low design thanks to the horizontal cylinders is particularly suited to this task. DCi

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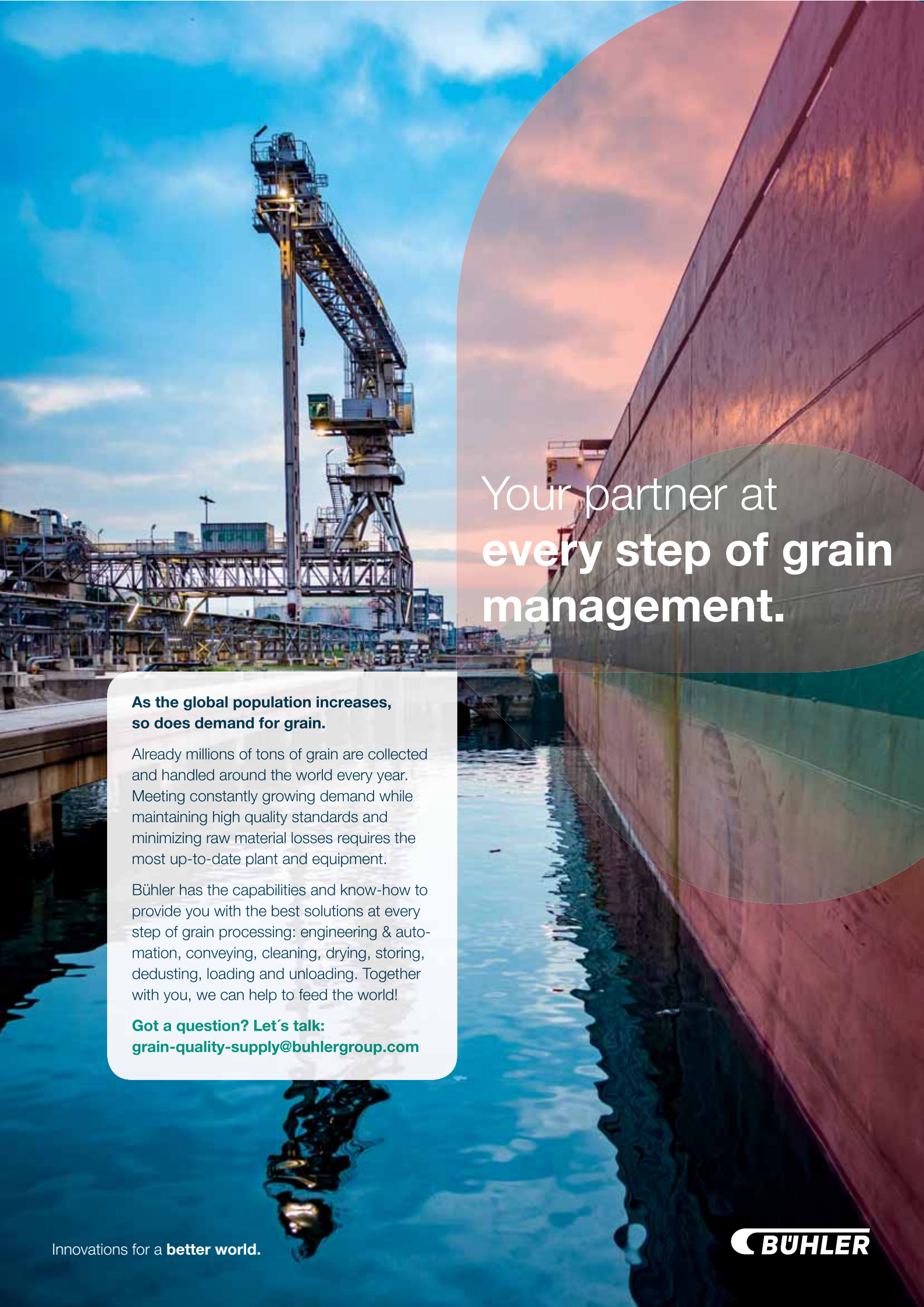

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Bedeschi's wide product range includes equipment for industries such as Bulk Materials Handling, Marine Logistics and Mining.
Services range from feasibility studies and basic engineering to complete green field, turn key installations.
Design activities are performed at our technical centers in Italy and United States, while the state-of-art workshop in Italy handles all manufacturing.

BEHN + BATES Maschinenfabrik GmbH & Co. KG

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D-48153
Germany
Contact: Ms Gabriele Buss
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E: sales@behnbates.com
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Manual, semi-automatic and fully automatic filling systems for the filling of all kind of food and animal feed products into valve and open-mouth bags with filled weights from 1.5 up to 50 kg and big bags of up to 1,800 kg.

Bendezu Port Equipment GmbH

C/Camino Padre Cura, 15
Bloq. Oasis II
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Málaga
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We deal with used port equipment such as Mobile Harbour Cranes, STS cranes, Material Handlers, Reach Stackers, Terminal Trucks, Grabs and Spreaders. We also offer new equipment like Diesel Engines, Hoppers and Conveyor Belts, all on an International level. We also suppyl new hoppers, with and without dust suppression, and conveyor belts for loading vessels.

Bergu International AB

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Box 5006
Helsingborg
S-250 05
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Contact: Mr Conny Simonsson
T: + 46 42 12 7970
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Design and manufacture bag emptying equipment as well as pneumatic conveyors, silos and silo discharge systems, diverter valves, etc.

Best Service Group (B.S.G.) bvba

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BGS Holland

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E: info@bgsholland.nl
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Specialise in tailor made design/manufacturing of loading spout for dry granular and powdery products prone to dust problems. Produce the unique Choke Feed Scavenger.

Birrus International Pty Ltd

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Blue Water Misting

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BLUG Credeblug S.L.

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F: + 34 943 815 665
E: comercial@blug.es
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BLUG is strongly related to bulk terminal handling operations for more than 54 years, with different grabs performing successfully in the 5 continents. BLUG's presence in maritime terminals is mainly focused in European, American and African ports as a quality product reference.

Bobcat EMEA s.r.o

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26312
Czech Republic
Contact: Mr Pavel Svoboda
Job Title: Communication Manager
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Range of compact skid-steer and tracked loaders for ship-trimming and cargo hold unloading (together with grab) with operating capacities from 343 - 1850kg: telescopic handlers with lift capacities from 2.6 - 5.0 tonnes and max lift heights from 5.8 - 24.1 metres.

Bosch Rexroth B.V.

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F: + 31 411 65 14 83
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W: www.boschrexroth.nl
Has a worldwide responsibility for turnkey projects and the development and production of Hydraulic Cylinders.
Core competence is the development of engineered-to-order products, mostly one-off solutions for specific applications.

BossTek

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DustBoss® suppression systems deliver field-proven solutions for open-area dust issues, including source-point particle management and a family of mobile units.
Proprietary technology delivers superior results and reliability, able to blanket up to 280,000 square feet with a single oscillating machine.

Boyne Area Manufacturing (BAM)

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Bulk Material Handling Specialist. Design, Engineer and Build, Spouts,Positioners, Gates& Valves, Diverters,Air Flow Conveyors,Hoppers, Bin Vents,& Dust Collectors.We are a new (4yrs.)& growing company with over 100 years of combined experience. Our designs and equipment have been sold and installed throughout the world.
Other services -onsite inspection & equipment recommendations.

Brock Grain Systems

A Division of CTB, Inc
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Brock Grain Systems manufactures and supplies reliable commercial grain storage silos and hopper-bottom holding silos, grain dryers and controls, sweeps, bucket elevators, drag and screw conveyors, and catwalks and structural support towers.

BRUKS AB

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BRUKS Rockwood Incorporation

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Bucket Mart Inc.

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E: salesbucketmart@aol.com
W: www.bucketmart.net
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Buhler AG, Grain Logistics

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Contact: Mr Marcel Sherrer
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Customized solutions for grain handling.
Bühler Grain Logistics Terminals is the ideal partner when it comes to reliable solutions in the area of grain handling and storage. The company's wide range of offerings includes ship loading and unloading solutions, conveying systems and silos as well as storage equipment.

Buhler GmbH

Grain Quality & Supply
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Bühler Grain Quality & Supply offers package solutions, machinery and components throughout the entire food value-added chain - from an agricultural product's reception through to the final stages of processing. Whether it's a silo installation, a plant or individually tailored malting systems: Bühler is a competent global partner providing individualized on-site customer service from conception to startup. Safety, dependability and sustainability thereby form the basis of a trustful customer relationship.

Bulk Lift International

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Manufactures a wide array of flexible intermediate bulk containers (FIBCs), or bulk bags. With manufacturing faciliies worldwide and stocking available in the United States the company can offer just in time deliveries of all bulk bag requirements.

Buttimer Engineering

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Buttimer Engineering is a diversified mechanical engineering firm specialising in bulk materials handling solutions and high-quality steel fabrication. From once off design, fabrication or installation works to full turnkey projects, Buttimer Engineering can call upon skilled teams to deliver the service that our clients require.

Buttimer Polska Sp. z o.o.

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C Spencer Ltd

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Spencer Group is an industry leader in materials/mechanical handling, including the transportation of biofuel and biomass. We have vast experience in heavy-duty materials handling including loading/unloading, by road, ship or rail, and the automatic transportation of materials using bespoke conveyors.

Cachapuz Bilanciai Group

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Cachapuz is a reference in the implementation of innovative solutions to automate the logistics, dispatching, reception and weighing processes in industrial plants. With a modular platform and extensive know-how, Cachapuz is able to meet the needs of several sectors worldwide.

Calim Grab Industry

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W: www.calimkepce.com
Calim Grabs is a manufacturer of mechanical, electro-hydraulic and remote controlled grabs.

Camar Mill Systems Ltd

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Suppliers of fully moulded sidewall belting, high incline conveyor systems, dome storage reclaim systems and conveyor components.

Caterpillar Inc

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Wide range of front end loaders, bulldozers, wheel loaders etc, used for all types of bulk products and different industry applications.

Cavotec Deutschland GmbH

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Germany
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F: + 49 6196 50950 22
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Cable management systems with electrical cable reels, hose reels, cables/hoses with up to 25kV. Spring reels; Plugs and sockets/connectors up to 660A up to 25kV medium voltage collectors, remote controls with Atex.

Cavotec SA

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include: Eex radio remote controls, electrical connectors up to 15kV, flexible cables, cable reels, and slipring units. Distribution is supported by 22 Cavotec sales and service companies around the world.

CDM Systems, Inc

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Job Title: Vice President
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CDM Systems offers a comprehensive array of Bulk Conveying Systems, Components and Engineering/Design Services. With over 30 years of experience, we can provide you with conveying and bulk handling solutions for Materials from Ash through Zinc, including marine applications as well as those in hostile, severe or high-temperature environments.

Cesur Packaging Corporation

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Yüzyil Caddesi, No:64,
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Cesur Packaging is a manufacturer of all types of FIBC 's (Type A, B, C, D for various industries - UN, Food Grade, Hygiene big bags), PP woven bags and international dunnage bags with 82 years of experience in the industry and international markets.

CHIA Espirales.es

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CHIA focuses its efforts on providing tailor-made solutions for port, coal and olive oil industries. Specialized equipment for industry, hoppers, ship unloaders conveyor belts, lifts, port terminals, solid bulk storehouses, ecological load and unload systems are only some of the tasks most carried out by this enterprise.

Chief Industries UK Ltd.

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Essex
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E: info@chief.co.uk
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International supplier of galvanized grain storage silos and ancillary equipment. Undertake complete projects or component supply to main contractors. Manufacturing companies in USA, UK and France, providing flexibility for international design standards. Experienced in countries throughout the world.

Chief Industries, Inc.

Chief Agri
P.O. Box 848
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Chief Agri specializes in the design, manufacture and sale of grain storage systems around the world. Chief offers everything needed in a complete grain storage system, including steel grain bins, grain handling, conditioning equipment along with continuous flow grain dryers and square feed mill storage bins.

Christianson Systems Inc.

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Manufactures ship unloaders and conveyor systems under brand names of Handlair, VacBoss, Vac-U-Vator, SeedVac, ChemVac, Push-Pac, SuperTower and SuperPortable.
Equipment for the transfer of dry flowable products including grain, feed, seed, rocks and sand.

Cimbria Unigrain A/S

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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.

Civettini Italo & C sas (CFS Handling)

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Clariant Corporation

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Clariant Cargo and Device Protection offers moisture solutions such as Container Dri® II container desiccants for a broad range of transport applications: from goods traveling in conventional cargo containers to shipment and storage of sensitive electronic and semiconductor devices.

Claudius Peters Projects GmbH

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Cleveland Cascades Ltd

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Stockton on Tees
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F: + 44 1642 753270
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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

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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:
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Condepols S.A.

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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

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F: + 49 7621 662 144
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Conductix-Wampfler's core competency is in the development, production, consulting, and installation of tailor made, engineered solutions like festoon systems, conductor rails, cable chains, slip ring assemblies or spring and motorized cable reels that provide energy supply and data transmission for moving machinery. Other equipment/services: Energy & Data Transmission Systems.

Conductix-Wampfler Americas

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Mobile Electrification systems: Motorized reels, cable festoon systems, cable chains, slip ring assemblies (including hazardous duty), and pendant or radio remote controls. Conductix Wampfler is a global leader in the electrification of rail mounted equipment and bulk handling equipment involved in the storage and handling of all types agricultural products.

Conservatek Industries, Inc.

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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)

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Tennessee 38134
USA
Contact: Mr Brian Morphis
Job Title: Marketing
T: + 1 901 382 4070
F: + 1 901 388 2534
E: mail@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
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35594
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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 Antriebssysteme GmbH

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ContiTech Transportbandsysteme GmbH

Breslauer Strasse 14
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Job Title: Managing Director
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W: www.contitech.de/conveyorbelts
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.

Conveyor Dynamics, Inc.

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Bellingham
Washington
98225
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CDI designs the longest, strongest, and most advanced belt conveyor systems in the world. Last year we commissioned the world's longest belt conveyor: a 27km conveyor in South Africa. We specialize in detailed mechanical design, software development, and control system.

Cotecna Inspection SA

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CPS Projects (Pty) Ltd

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Affiliated with CPS Projects Pty and Salzgitter SA Pty in South Africa, Portquip Pty provides mechanical shiploaders, grabs and truck loaders and unloaders.

CRS - Container Rotation Systems Pty Ltd

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CRS specialises in the design and manufacturing of containerised load and discharge system for any free flowing grain and related commodities.

CST Covers

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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.

CST Storage

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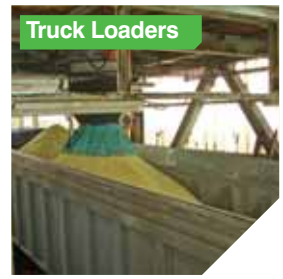
E: sales@cst-storage.com
W: www.cstindustries.com
Columbian TecTank is the leading manufacturer of bolted steel, and factory welded storage tanks for the dry bulk market. Columbian TecTank is proud to introduce a new coating -Trico-Bond EP™, a high-performance, factory-applied, thermally-cured, highly-engineered modified epoxy powder coating.

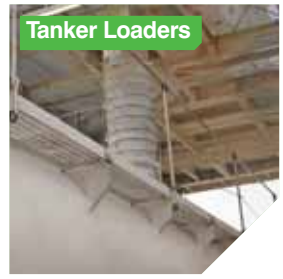
CWA Engineers Inc.

#380 - 2925 Virtual Way
Vancouver
BC
V5M 4X5
Canada
Contact: Ms Nadine Clark
Job Title: Marketing & Proposal Lead
T: + 1 604 637 2275
F: + 1 604 637 2276
E: nadine.clark@cwaengineers.com
W: www.cwaengineers.com
CWA is a multidisciplinary engineering and planning consultancy that provides professional services including planning, engineering, procurement, construction management, and maintenance

Cleveland Cascades Ltd

Global leader in bespoke dry bulk loading chutes





Cleveland Cascades are Specialists in the design and manufacture of bespoke dry bulk loading chutes.

Our bespoke solutions are designed to meet each customer's specific requirements from a tool kit of proven components, utilising the expertise of a team of specialist in house design engineers.

We lead the loading chute industry & set the standard for dust emissions and environmental pollution control in dry bulk handling.

Our worldwide reputation is built on high quality, well-engineered, robust, high performance chutes, backed up by excellent customer service and global lifetime product support.

Contact Cleveland Cascades Ltd

Unit 22, Dukesway, Teesside Industrial Estate, Thornaby, Stockton-on-Tees, Cleveland, TS17 9LT, United Kingdom Tel: +44 1642 753260 | Fax: +44 1642 753270

E-mail: enquiries@clevelandcascades.co.uk | Website: **www.clevelandcascades.co.uk**

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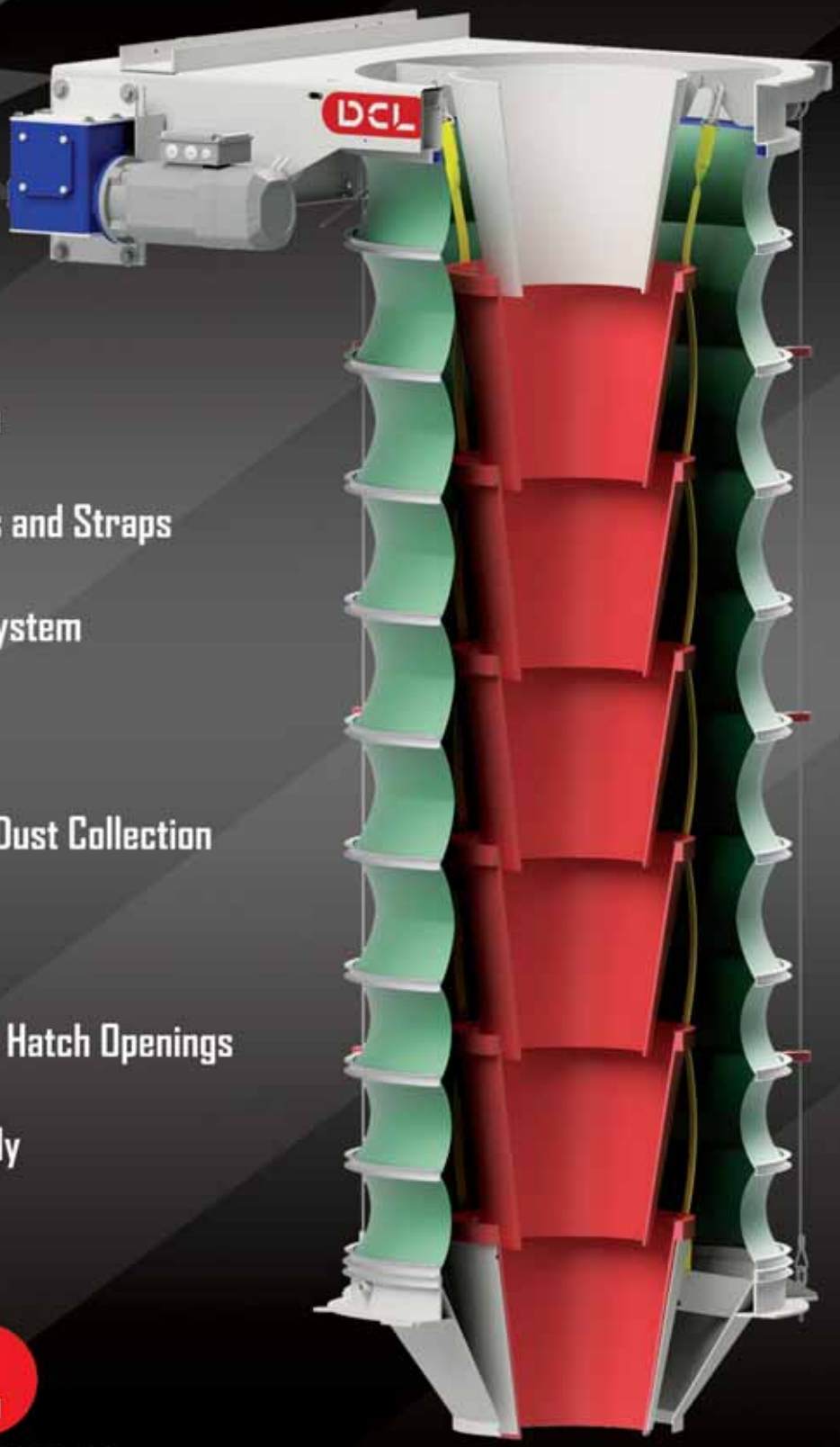

Low Profile Design

Available with Urethane Cones and Straps

Three Point Cable Lift System

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DCL, INC. • 08660 ANCE ROAD • CHARLEVOIX, MI 49720 • USA • 231-547-5600

and operations management in the bulk materials handling and ports and marine terminals sectors to industry-leading clients around the world.

DCL, Incorporated

08660 Ance Road
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 loading systems as well as components to the bulk material handling industry. Our product line includes Loading Spouts, Loading Spout Positioners, Aeration Equipment, Shut-Off Valves, Diverter Valves, Dust Collection Equipment, Bag and Drum Filling, System Design, and Plant Automation.

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.

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 Patented DEMARCO Industrial Vacuum Systems and vacuum loaders for portable, stationary and central manifold systems. 10 to 300 HP

Dinnissen BV

Horsterweg 66
Sevenum
NL-5975 NB
The Netherlands
Contact: Mr P Konings
T: + 31 77 467 35 55
F: + 31 77 467 37 85
E: powtech@dinnissen.nl
W: www.dinnissen.nl
Dinnissen Process Technology specialises in handling and processing bulk materials. Complete processes for the milling, sieving, weighing, mixing, dosing, drying, expanding, extruding, vacuum coating, packaging and transporting of powders, grains and granulates. Developed, tested and manufactured in-house. 70 years international experience in bulk materials technology, machine development, processing, engineering, control, automation and service.

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 45 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, LLC

4946 North 29th East
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ID
83401
USA
Contact: Mr Jason Miller
Job Title: Vice President of Marketing
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F: + 1 208 529 0854
E: jason.miller@dometechnology.com
W: www.dometechnology.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 N Haroldsen Drive
Idaho Falls
Idaho
83401
USA
Contact: Mr Mike Hunter
Job Title: General Manager
T: + 1 208 522 5520
F: + 1 208 522 5344
E: domtec@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

Industriestraße 11
Dülmen
48249
Germany
Contact: Mrs Susanne Fulko
Job Title: Marketing Manager
T: + 49 2594 781 0
F: + 49 2594 781 21
E: IAF-de@donaldson.com
W: www.DonaldsonToritDCE.com
Donaldson offers innovative dust collection systems. The products are engineered to improve efficiency, save energy and extend filter lifetime. The R&D engineers invented new filtration technologies for customers and their specific applications.

Doosan Infracore Europe BV

International Business Centre
Pobrezni 620/3
Prague
18600
Czech Republic
Contact: Mr Kevin Lynch
Job Title: Marketing Team Leader
T: + 44 7769 700 857
E: kevin.lynch@doosan.com
W: www.doosanequipment.eu
Doosan is one of the world's leading equipment manufacturers, offering a broad selection of products including crawler and wheeled excavators (with operating weights from 1 to 52 tonne), wheel loaders (covering capacities from 1.9 to 6.4 m3) and articulated dump trucks (with maximum payloads up to 40 tonne).

Dos Santos International, LLC

531 Roselane Street
Suite 810
Marietta
GA
30060
USA
Contact: Mrs Amy D. Duncan
Job Title: Marketing Manager
T: + 1 770 423 9895
F: Text: + 1 916 US SNAKE
E: info@dossantosintl.com
W: www.dossantosintl.com
Foremost authority on sandwich belt high angle conveyors with the inventor of the worldwide system at the helm of the company. DSI offers discipline-oriented engineering services in mechanical and structural engineering, along with their in-house conveyor analysis software, ExConTec. Other Equipment: Sandwich Belt High Angle Conveyors.

Dry-Bag A/S

Dalagarde 1
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DK 8000
Denmark
Contact: Mr Soren
Job Title: Marketing
T: + 45 86 19 0500
F: + 45 86 19 0577
E: production@dry-bag.dk
W: www.desiccant.com

DSH Systems Ltd.

PO Box 48052
Blockhouse Bay
Auckland
0644
New Zealand
Contact: Mr Ian Walton
Job Title: CEO
T: + 64 275 999 592
F: + 64 9828 8012
E: ian@dshsystems.com
W: www.dshsystems.com
DSH Systems award winning dust suppression loading spouts contain the dust from free-running, dry, granular products in a tight free-falling column. No electricity required, has no internal moving parts, mitigate dust explosion risk, achieve health, safety, environmental and business benefits.

Dust Solutions Inc

130 Bay Pines Road
Beaufort
South Carolina
29906
USA
Contact: Mr Richard Posner
Job Title: President
T: + 1 843 846 3700
F: + 1 843 846 3701
E: sales@nodust.com
W: www.nodust.com
Manufacturers of Dry Fog Dust Suppression Systems for conveyors, truck & rail dumps, hoppers, feeders, crushers, ship loaders/unloader. Modular systems produce fog droplets that attach to like size airborne dust particles. Functions in below freezing temperatures. DustTamer Windfences for hoppers & stockpiles.

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@e-crane.com
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.

E-Crane World Wide / 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@e-crane.com
W: www.e-crane.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.

ECS Eurocargo Services AS

Tongavej 19
Aarhus 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

EDGE INNOVATE. (NI) LTD

30 Farlough Road
Newmills
Dungannon
County Tyrone
BT71 4DT
Northern Ireland
Contact: Mr Lee Williamson
Job Title: Sales Manager
T: + 44 2887 740525
F: + 44 2887 747244
E: info@edgeinnovate.com
W: https://edgeinnovate.com/
Edge Innovate are a blue sky thinking, imaginative and creative equipment manufacturing company. With our ethos of "Innovation at Work" EDGE persist in pushing the boundaries of design and manufacturing to produce hard working, quality machinery to fit any materials handling requirement from recycling, material handling to quarrying.

Elgin Engineering and Construction

2001 Butterfield Road
Downers Grove
Chicago
Illinois
60515
USA
Contact: Mr Bob Williams
Job Title: Marketing Director
T: + 1 630 434 7200
F: + 1 630 434 7272
E: soros@elgin industries.com
W: www.elgin industries.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: Mr Kyle Sorensen
Job Title: Assistant Manager, Global Sales & Market Research
T: + 1 613 966 6611
F: + 1 613 966 6710
E: sales@ems-tech.net
W: www.ems-tech.net
A multi-task, multi-discipline company specialising in design and supply of dry bulk material handling equipment, including custom designed conveyors, shiploaders, stackers and reclaimers, self-unloading ships, transhippers, belt elevators, receiving hoppers, storage/loadout systems, environmental controls.

Enco Engineering Inc

4410 13th Street
Wyandotte
MI
48192
USA
Contact: Ms Bobbi Lang
T: + 1 734 407 2400 x 202
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.

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 guaging, 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 4 268 2216
F: + 971 426 822 17
E: sales@equipo.ae
W: http://www.equipollc.com/

Esch Group BV

Veerweg 14
Hoorn
5145 NS
The Netherlands
Contact: Mr Rob ver Doren
Job Title: Managing Director
T: + 31 229 282 940
F: + 31 229 233 177
E: info@eschgroup.nl
W: www.stas-nl.com
Stas is a manufacturer (production) of transport rollers, drive and tension drums and import bearings and bearing blocks.

ESI Eurosilo BV

Newtonstraat 26-28
Purmerend
1446 VR
The Netherlands
Contact: Mr Richard Spaargaren
Job Title: Commercial Director
T: + 31 299 630 730
F: + 31 299 630 737
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.

Essar Industries

15/B, Manjushree, 1st Floor, 2nd Floor
Sri MVC Hanumanthaiah Road
Nrupathunga Extension
R.T. Nagar
Bengaluru
Karnataka
560032
India
Contact: Mr A.M Sherif
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T: + 91 844 7531774
E: essarinds@gmail.com
W: www.essarmaterialhandling.com

Euromec Srl

Via Visano 78/80
Isorella
25010
Italy
Contact: Mr Ricardo Segala
Job Title: Sales and Marketing
T: + 39 030 9958 151
F: + 39 030 995 2223
E: sales@euromecsrl.info
W: www.euromecsrl.com
EUROMEC, 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.

Euro-tech 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

Spacelab 47 D
Amersfoort
3824MR
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 Magdeburger Förderanlagen und Baumaschinen GmbH

Sudenburger Wuhne 47
Magdeburg
D-39112
Germany
Contact: Mr Michael Kutza
Job Title: Director, Sales & Marketing
T: + 49 391 6380 10 1 03

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Golfetto Sangati is a reference point for the design and construction of complete port systems for loading and unloading ships. The company designed and built more than 50 port systems all over the world and plays a primary role in technological advancement from the first pneumatic ship unloader to the more advanced mechanical loaders and unloaders.

The company supplies a large range of handling, processing and storage, loading and unloading systems on tires or rail with a capacity of 50 to 2,000 tons per hour implementing the best technical principles.

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www.golfettosangati.com
info@golfettosangati.com

F: + 49 391 6380 10 1 99
E: sales@fam.de
W: www.fam.de
FAM successfully plans, designs, manufactures and delivers turnkey equipment for extracting, producing, loading and storing bulk materials. FAM combines know-how of series and customized production processes and offers a complete range of manufacturing services including after-sales services along with engineering services.

FFE Ltd
9 Hunting Gate
Hitchin
Hertfordshire
SG4 0TJ
UK
Contact: Mr Mark Wood
Job Title: Business Development Manager
T: + 44 1462 444 740
F: + 44 1462 444 789
E: sales@ffeuk.com
W: http://www.ffeuk.com/

Figee Crane Services BV
PO Box 235
Zaandam
1500 EE
The Netherlands
Contact: Mr Robert de Rijcke
Job Title: Commercial Director Kenz Figee Group
T: + 31 75 6810 410
E: r.derijcke@kenz-figee.com
W: www.kenz-figee.com
Engineering, manufacturing, commissioning and service of a wide range of harbour cranes and lifting systems such as grab cranes, including floating Lemniscate cranes, single and double boom 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.

Flexco Europe GmbH
Leidringer Strasse 40-42
Rosenfeld
D-72348
Germany
Contact: Mr Joerg Schairer
Job Title: Managing Director
T: + 49 7428 94060
F: + 49 7428 9406260
E: europe@flexco.com
W: www.flexco.com
Manufacturer and distributor of mechanical belt fastening systems, installation tools, ceramic lagging, cleats and cleaners.

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@flexoveyor.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.

Franz Wölfer Elektromaschinenfabrik Osnabrück GmbH
Industriestraße 14
Osnabrück
49082
Germany
Contact: Mr Ulrich T. Beholz
Job Title: Vice President Sales
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W: www.woelfer-motoren.com

Freeport of Riga Authority
12 Kalpaka Boulevard
Riga
LV-1010
Latvia
Contact: Ms Vita Gerharde
Job Title: Sales specialist
T: + 371 6 703 0874
E: info@freeportofriga.lv
W: www.freeportofriga.lv/

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 unlaoders, level luffing harbour grab cranes, floating grab cranes and other bulk handling equipment.

General Kinematics Corp.
5050 Rickert Rd.
Crystal Lake
IL
60014
USA
Contact: Mr Gordon Frank
Job Title: VP Sales & Marketing
T: + 1 815 455 3222
F: + 1 815 455 2285
E: info@generalkinematics.com
W: www.generalkinematics.com
General Kinematics specializes in vibratory and rotary equipment and solutions for bulk processing of material in the foundry, recycling, scrap, mining, minerals, food, chemical, and wood industries. Custom engineered to your unique application.

Geometrica Inc
12300 Dundee Court
Suite 200
Cypress
Texas
77429
USA
Contact: Mr Cecilio Zalba
Job Title: Sales Manager
T: + 1 832 220 1200
F: + 1 832 220 1201
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 irregular piles.

Geroldinger GmbH & Co KG
Au-Strasse 9
Sigharting
A-4771
Austria
Contact: Mr Walter Geroldinger
Job Title: CEO
T: + 43 7766 24370

Golfetto Sangati technology ensures smooth operations at this grain terminal.

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.

Getriebebau NORD GmbH & Co. KG
Getriebebau-Nord-Str. 1
Bargteheide
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Contact: Mr Joerg Niermann
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Golfetto Sangati S.R.L.
Via Monte Grappa, 8
Galliera Veneta (PD)
35015
Italy
Contact: Mr Pietro Barbujani
Job Title: Handling Product Manager
T: + 39 0422 476 700
E: barbujani.p@golfettosangati.com
W: www.golfettosangati.com
Complete plants for bulk or bag handling, including pneumatic or mechanical shipunloaders (ranging from 50 to 2.000 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 AS
Bjoernslettveien 2
Porsgrunn
N-3917
Norway
Contact: Mr Knut Halvorsen
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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.

Greystones Cargo Systems (Pty) Ltd
PO Box 41314
Rossburgh
Durban
4072
South Africa
Contact: Ms Linda Smit
T: + 27 31 274 2600
E: lindas@greystonescargo.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
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Guttridge Limited
Wardentree Park
Pinchbeck
Spalding
Lincolnshire
PE11 3UU
UK
Contact: Mr Doug Anderson
Job Title: Sales and Marketing Manager
T: + 44 1775 765300
F: + 44 1775 765304
E: sales@guttridge.co.uk
W: www.guttridge.co.uk
Manufacture a range of bespoke bulk conveying and elevating equipment, as well as storage facilities.

Guven Grab and Machine Ltd. Co

Nazim Hikmet Cad 536. sk. No: 9
Aske Köyu
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.

Hapman

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Haskoning India Pvt Ltd

13th Floor, Maithili's Signet
Plot - 39/4, Sector 30A
Vashi
Navi Mumbai
400 705
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Contact: Mr Hareld van den Brink
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E: hareld.van.den.brink@rhdvhv.com
W: www.royalhaskoningdhv.com

HASLER GROUP SAS

Z.I. De l'Abbaye
496 rue Louis Bréguet
Pont-Evêque
38780
France
Contact: Mr Michel Jamey
Job Title: CAO
T: + 33 474 161151
F: + 33 474 161155
E: sales.fr@hasler-gp.com
W: www.hasler-gp.com
We are specialized in the study and the realization of industrial installations grouping an important and coherent set of equipments. Our Strategic Business units are: dosing, mixing, filtration and processing.

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

Equipment Division of The HALL Group
701 Technology Drive
Suite 100
Canonsburg
PA
15317
USA
Contact: Mr Len Walnoha
Job Title: Vice President
T: + 1 412 481 1100
F: + 1 724 758 1558
E: heylpatterson@hallindustries.com
W: www.heylpatterson.com/railcar_unloaders.aspx
Heyl & Patterson Equipment specializes in custom engineered capital equipment for bulk material handling. We engineer railcar movers, dumpers, stacker reclaimers and barge unloaders, as well as provide replacement parts, upgrades and retrofits for the life of our equipment, which is measured in decades.

HKD Blue

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1760
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Contact: Mr Gordon Santry
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E: gsantry@hkdblue.com
W: http://www.hkdblue.com/
HKD Blue engineers and manufactures water-atomizing dust control equipment and technology. The company offers powerful misting cannons for sensitive material handling, as well as turnkey engineering and design services for automated dust suppression infrustructure.

Horizon Conveyor Equipment

Unit 1, Hayseech Road
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B63 3PD
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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 steel, plastic idler rollers and Idler Sets, conveyor belt scrapers, pulleys/drums and conveyor components.

Huadian Heavy Industries Co., Ltd.

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E: chenq@chec.com.cn
W: www.hhi.com.cn; www.chec.com.cn

Hycontrol Limited

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B98 7DP
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T: + 44 1527 406800
F: + 44 1527 406810
E: sales@hycontrol.com
W: www.hycontrol.com
Hycontrol has been providing precision level measurement solutions to industry for over thirty-five years, measuring most liquid and solid materials including slurries, pastes, powders, grains, pellets and flakes at ranges up to 100m. Hycontrol is also the world's leading silo pressure safety system expert.

IBC International Handling AB

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S-311 32
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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

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IMGS

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Inspectorate (Suisse) SA - Bureau Veritas Commodities Division

Route de Cossonay 28b
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F: + 41 21 623 67 00
E: Agri@inspectorate.ch
W: www.inspectorate.com
Inspections and testing of various commodities worldwide.

Inspectorate America Corporation

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Interjute BV

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F: + 31 114 311512
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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.

Intermodal Solutions Pty Ltd

The Zhen Building
210/33 Lexington Drive
Bella Vista
NSW
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F: + 61 288 835 195
E: gpinder@intermodalsolutions.com
W: www.pittoship.com/
Suppliers of a dust free logistics , storage and ship loading system using bulk containers and tipplers. Visit our website to see how the system works www.pittoship.com

Intersystems

9575 N 109th Ave
Omaha
NE
68142
USA
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T: + 1 214 495 9713
F: + 1 214 495 9741
E: sampling@intersystems.net
W: www.intersystems.net
Intersystems manufacturers 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.

Istop Spamat Srl

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Italgru S.r.l

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J & B Grabs B.V.

Rijksstraatweg 32
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Utrecht
3545 NA
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Contact: Mr Edgar Joustra
Job Title: Director
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E: info@jb-grijpers.nl
W: www.jb-grabs.com
Designs, engineers and manufactures mechanical and hydraulic grabs for all kinds of bulk material.

Jansen & Heuning

Bulk Handling Systems
Duinkerkenstraat 11
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F: + 31 50 313 80 18
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JEM International

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Job Title: VP - Marketing
T: + 1 913 441 4788
F: + 1 913 441 1711
E: info@JemScales.com
W: www.JemBaggingScales.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
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MA
01879
USA
Contact: Mr Joseph Pitkin
Job Title: Marketing Manager
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E: jpitkin@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
Hsiao Kang Dist.
Kaohsiung
81266
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Contact: Mr Guillermo Su
Job Title: International Sales Manager
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E: jw@roller.com.tw
W: www.roller.com.tw
Since its establishment in 1982 and meet the ISO certification in 1998, Jim Way is an expert belt conveyor accessories manufacturer. We focus our know-how to produce idlers, pulley laggings, belt cleaners, skirt rubber, ceramic liners, etc.

JSC RIKON

Tvaika Street 68b
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LV-1034
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F: + 371 67393828
E: rikon@rikon.lv or sales@rikon.lv
W: www.rikon.lv
A/S RIKON manufactures portal slewing and gantry cranes, parts of cranes, grabs, spreaders. A/S RIKON makes handling devices, overhead cranes and other steel structures, provides services for installation, commissioning and handling portal cranes, gantry cranes and various other port equipment.

Kalenborn Kalprotect GmbH & Co. KG

Asbacher Str 50
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Kinergy Corporation

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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
Job Title: Sales Manager
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.

KINSHOFER GmbH

Hauptstrasse 76
Waakirchen
Bavaria
D-83666
Germany
Contact: Mr Martin Locher
Job Title: Marketing
T: + 49 8021 8899 2520
F: + 49 8021 8899 37
E: m.locher@kinshofer.com
W: www.kinshofer.com
KINSHOFER GmbH produces Premium Quality Attachments such as Clamshell Grabs (up to 7 cubic metres) for excavators & re-handling machines up to 100 t operating weight, HD Orange Peel, Selector and Timber Grabs. Big Bag Handlers too. Custom solutions. Catalog available.

KOCKS ARDELT KRANBAU GmbH

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Crane manufacturer (designing, fabrication, assembling, commissioning, training, after sales service in one hand for harbour cranes, shipyard cranes, balancer cranes - refurbishment, inspection, repair service for own and third party cranes)










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Tel.: +90 262 743 88 58 pbx Fax: +90 262 743 11 41
info@guvengrab.com
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KOCKS ARDELT KRANBAU GMBH

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Crane manufacturer (designing, fabrication, assembling, commissioning, training, after sales service in one hand for harbour cranes, shipyard cranes, balancer cranes - refurbishment, inspection, repair service for own and third party cranes)

KOMATSU MINING CORP.

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Previously known as Joy Global and Continental Conveyor Ltd.

KONECRANES PORT SOLUTIONS - DEMAG CRANES & COMPONENTS GMBH

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D-40597
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Job Title: Sales & Marketing Director
T: + 49 211 7102 3771
F: + 49 211 7102 3651
E: ps.info@konecranes.com
W: www.konecranes.com
FOR GREATER BULK HANDLING PRODUCTIVITY Reach out and grab it with eco-efficient Konecranes Gottwald Mobile Harbor Crane technology. Depending on site and operating conditions, our four-rope grab cranes, also available as rail-mounted portal and floating cranes, achieve handling capacities of up to 2,000 tph in continuous-duty bulk handling. Our broad range of products with their smart crane features is supported by dedicated planning and consultancy services and backed by a global service network.

KRÖGER GREIFERTECHNIK GMBH & CO. KG

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LACHENMEIER MONSUN A/S

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E: mail@lachenmeier-monsun.com
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LAIDIG SYSTEMS INC

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Mishawaka
Indiana
IN 46544
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Contact: Mr Mike Schuster
Job Title: VP - Sales
T: + 1 574 256 0204 x 236
E: sales@laidig.com
W: www.laidig.com
Laidig Systems Inc, manufactures custom engineered storage and reclaim systems 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.

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F: + 1 901 942 5402
E: blangston@langstonbag.com
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LAWRENCE INDUSTRIES, INC.

10403 Arbor Trail
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Contact: Mr Kerry McAtee
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T: + 1 260 432 9693
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E: kmcatee@lawrenceindustriesnow.com
W: www.tivar88.com
Lawrence Industries, Inc. is a supplier of industrial lining materials that improve bulk material flow in silos, bins, and bunkers. TIVAR 88 is a primary material that is used to eliminate bridging, arching and ratholing. Lawrence Industries designs and fabricates.

LEGACY BUILDING SOLUTIONS, INC.

19500 County Road 142
South Haven
Minnesota
55382-9240
USA
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Job Title: Director of Marketing
T: + 1 320 258 0500
F: + 1 320 259 0087
E: marketing@legacybuildingsolutions.com
W: www.legacybuildingsolutions.com
Legacy structures harness the power of corrosion resistance, natural light, and a faster installation process for an increase in ROI. Custom engineered to spec, worldwide installation, built in half the time, warrantied in corrosive environments. Legacy Building Solutions, customized for your needs.

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
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Feasibility studies and development of conceptual layout includind tender preparation for grain terminal.

LIBRAWERK MASCHINENFABRIK GMBH

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Lower Saxony
D-38104
Germany
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T: + 49 531 370980
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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-MCCTEC ROSTOCK GMBH

(Liebherr Mobile Harbour Cranes)
Liebherrstr. 1
Rostock
18147
Germany
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.

LION BULK HANDLING B.V.

Global Headquarters
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Krimpen aan de Lek
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LISTENOW GMBH & CO.

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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 200-2000mm 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.

MACAWBER ENGINEERING, INC

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37801-3796
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F: + 1 865 984 5286
E: webinquiry@macawber.com
W: www.macawber.com
Designing and manufacturing low-velocity pneumatic conveying systems to solve your conveying needs, especially when your material is difficult to handle. With thousands of materials conveyed in virtually every industry, Macawber has remained true to its core business for 40 years with proven capability and expertise to create systems that are not only reliable and efficient but also cost-effective to operate and maintain.

MACK MANUFACTURING INC

PO Box 1559
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36582
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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.

MANTSINEN GROUP LTD OY

Valikankaantie 3
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Finland
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T: + 358 20 755 1230
E: mari.riissanen@mantsinen.com
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Mantsinen Group manufactures highly efficient and precise hydraulic harbour cranes for bulk and general cargo operations. Mantsinen cranes can be tailored to best suit each application. Mantsinen HybriLift® energy saving system and wide range of attachments makes the cranes economical, efficient and universal tools for stevedoring companies and harbour operators. Other equipment/expertise: Wood handling Log stackers, subcontracting.

MAQUINAS CONDOR SA

Av Dos Estados 1383
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RS
90200-001
Brazil
Contact: Mr André Meyer da Silva
Job Title: Director
T: + 55 51 2104 3388
F: + 55 51 2104 3345
E: andre@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 coveyor, bucket elevator and mechanical conveyor. Operating from barges up to capesize ships, to 3000 tph. Shipunloaders and shiploaders operating successfully in ports around the world.

MARTIN ENGINEERING

One Martin Place
Neponset
Illinois
IL 61345
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Job Title: Customer Service Manager
T: + 1 309 852 2384 ext 214
F: + 1 800 814 1553
E: rickf@martin-eng.com
W: www.martin-eng.com
Supplier of conveyor components, flow aids, safety products and training to make bulk material handling cleaner, safer and more productive.

Martin Engineering GmbH
In der Rehbach 14
Walluf
Hessen D-65396
Germany
Contact: Mr Joachim Preiß
Job Title: Marketing Manager Europe
T: + 49 61 23 978 221
F: + 49 61 23 75 5 33
E: info@martin-eng.de
W: www.martin-eng.de
Conveyor Inspection (WTB) Safety training seminars, Conveyor equipment, 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
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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 90720
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, Pneumatical Docking Devices and even Railcar Dumping Systems for economical unloading of trains with open railcars.

Matrix PDM Engineering
5100 E Skelly Drive
Suite 100
Tulsa
OK 74135
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Contact: Ms Katie Smith
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T: + 1 918 838 8822
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E: katherinesmith@matrixpdm.com
W: www.matrixpdm.com
Matrix PDM Engineering delivers complete design-build services to the grain industry for 35 years. From greenfield facilities, retrofits, and expansions our services include Owner's Engineer, multidiscipline engineering, fabrication, construction, marine and dock expertise, silo design and inspection and control systems integration.

MegaDome® Buildings by Harnois
1044 Prinicipale
St-Thomas
Saint-Thomas
Quebec
J0K 3L0
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Contact: Ms Geneviève Hétu
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T: + 1 450 756 1041
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MegaRoller
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Merrick Industries
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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.

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18087-050
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Metso Minerals Industries, Inc.
Bulk Materials Handling
2715 Pleasant Valley Road
York
PA
17402
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Contact: Mr Tom Lippencott
Job Title: VP, Mineral Process Solutions Sales, USA
T: + 1 412 999 8552
F: + 1 717 849 7148
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
49720-0438
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Contact: Mr Walter Pair
Job Title: President and CEO
T: + 1 231 547 4000
F: + 1 231 547 9453
E: sales@midwestinternational.com
W: www.midwestmagic.com
Midwest International's specialized Vacupac™ Bustle Filters, velocity reduction modules, and vented low velocity trimming spoons make loading of grains into barges and ocean going vessels simple and dust free. Available in multiple configurations and sized to handle up to 100,000 bushels per hour, these devices can be adapted to an existing telescoping spout, or supplied as a complete telescoping solution.c

Minebea Intec GmbH
Meiendorfer Strasse 205 A
Hamburg
D-22145
Germany
Contact: Ms Inken Martens-Teuscher
Job Title: Marketing
T: + 49 40 67960917
E: Inken.Martens-Teuscher@minebea-intec.com
W: www.minebea-intec.com
Minebea Intec is one of the market's leading industrial measuring technology companies for high-precision measurement and product inspection. We offer an extensive range of products, solutions and services for food manufacturing processes – from goods-in to goods out, including platform scales, process vessels/silo scales, checkweighers and equipment for detecting foreign objects, as well as software solutions for statistical process control and formulation applications.

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: contactus@molemaster.com
W: www.molemaster.com
Silo, bin, bunker, transport and process vessel cleanout & unclogging services and equipment. Pipe cleaning, Vacuum services, Dry ice Blasting, Media Blasting, Silo structural inspection services and facility cleaning.

Monolithic Dome Institute
177 Dome Park Place
Italy
Texas
76651
USA
Contact: Mr David B South
Job Title: President
T: + 1 972 483 7423
E: sales@monolithic.com
W: www.monolithic.org/

Motherwell Automation
10 Sangiorgio Court
Osborne Park
West Perth
WA
6017
Australia
Contact: Mr Lawrence Sule
Job Title: Sales Manager
T: + 61 8 9212 4444
F: + 61 8 9212 4479
E: lsule@motherwell.net.au
W: www.motherwell.net.au

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 50 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 drive. 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 Director Fluitex
T: + 49 7304 801 33
F: + 49 7304 801 23
E: karin.albrecht@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 Lars 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 belts ATEX conform safety monitoring equipment. Design engineering and problem solving.
Elevator belt bolt hole punching up to 2000 mm width
Specialist in abrasion resistant polyurethane liners.

MWI Silo Systems Inc.
5001 Rd. 104 N. Easthope Perth East
Wellesley
Ontario
N0B 2T0
Canada
Contact: Mr Joel Gingerich
Job Title: Sales and Project Management
T: + 1 519 656 2341
F: + 1 519 656 3252
E: joel@mwisilo.com
W: http://mwisilo.com

Natural Grabs
Toros Caddesi Fethi bey sokak no 11
Natural Business Center
Maltepe
Istanbul
Turkey
Contact: Mr Hayrettin Yakut
T: + 90 216 380 60 03
F: + 90 216 380 65 59
E: sales@naturalgrab.com
W: www.naturalgrab.com/

NAVCO (National Air Vibrator Co)
PO Box 40563
Houston
TX
77240-0563
USA
Contact: Mr. Trey Gros
Job Title: Technical Sales Manager
T: + 1 832 467 3636
F: + 1 832 467 3800
E: trey@navco.us
W: www.navco.us
Manufacturer of high quality, industrial grade air vibrators and vibratory equipment. NAVCO is the leading expert in material flow solution using industrial vibrators and vibratory equipment.

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: commercialteam@nectar.co.uk
W: www.nectargroup.co.uk
Nectar is involved in handling bulk commodities such as cereals and fertilizers in ports and/or inland locations. Involvement ranges from positioning of mobile bagging machines for spot cargoes to long term projects including terminal management and storage and logistics solutions.

NEGRINI
since 1967
S.R.L.

Negrini company, established in 1967, specializes in engineering and manufacturing a comprehensive range of grabs and buckets for rope machines and crawler mounted cranes; they are employed to do many jobs. Negrini buckets and grabs are very well-known for quality as well as for the very accurate and skilful engineering work; in fact Negrini supports their clients by analyzing the job to be done and, if needed, by adjusting the standard design of grabs and buckets to enhance their performance once in operation.

VIA TORRICELLI 4 · CASTELFRANCO E. (MO) ITALY
www.negrini.org

Negrini Srl

via E. Torricelli n.4
Castelfranco Emilia
Modena
41013
Italy
Contact: Mr Massimo Negrini
Job Title: Managing Director
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 tailormade 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.

NEO CORP BRASIL

Avenida Bento Munhoz da Rocha Neto, N°:1777
Jardim Samambaia
Paranaguá-PR
83212-000
Brazil
Contact: Mr Christopher Paolo
T: + 55 41 3122 5771
E: christopher@neocorpbr.com.br
W: http://www.ncbr.com.br/

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.com
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 Industrietechnik GmbH

Neuerostrasse 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: a.haeuser@neuero.de
W: www.neuero.com
NEUERO offers a wide range of pneumatic ship unloaders up to 800 t/h and ship loaders with Neuero KIKO system and loading capacities up to 3.000 t/h.
Bulk handling products varies from grain to alumina and biomass. Special unloading systems with rotating feeder for non-free flowing materials are also available.

Nilfisk SpA

Via Porrettana 1991
Zocca
Modena
41059
Italy
Contact: Dr Leonardo Bianco
Job Title: Director of Marketing
T: + 39 059 973 00 00
F: + 39 059 973 00 99
E: industrial-vacuum@nilfisk.com
W: Nilfisk SpA
Nilfisk SpA is the world leader in the production of industrial vacuums, pneumatic conveyors, centralized vacuum systems and high power vacuums.

NK Tehnologija SIA

120Z Dzelzavas Street
Riga
LV-1021
Latvia
Contact: Mr Andrey Oleynik
Job Title: Marketing & Publications
T: + 371 67271092
F: + 371 67271038
E: nkteh@nkteh.lv
W: www.nkteh.lv
Industrial design, engineering and assembly company specializing in dry bulk material handling projects and lifting equipment since 2001. In addition to shiploaders, weigh hoppers and container tilting spreaders we supply solutions for integrated bulk handling systems and equipment allocation.

NMH s.r.o

Priemyselná 4608/10
Sered
926 01
Slovakia
Contact: Ms Veronika Kreml
Job Title: Marketing Manager
T: + 42 131 230 4441
E: v.kreml@nmh-sro.com
W: www.nmh-sro.com

Nordströms Konstruktionsbyrå

Storgatan 58
Umeå
SE-903 30
Sweden
Contact: Mr Peter Vedin
Job Title: Marketing
T: + 46 90 1136 4500
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 worm 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

5895 Ambler Drive
Mississauga
Ontario
L4W 5B7
Canada
Contact: Mr Bill Van Duyn
Job Title: Sales Manager
T: + 1 289 562 6402
F: + 1 289 562 6445
E: wmvanduyn@nordstrongequipment.com
W: www.nordstrongequipment.com
Provides range of material handling equipment including belt, drag, screw and pipe conveyors and bucket elevators.

O B Wiik AS

Industriveien 13
Skedsmokorset
2020
Norway
Contact: Mr Ole Gregersen
Job Title: Export & Marketing Director
T: + 47 64 83 55 00
F: + 47 64 83 55 01
E: obw@obwiik.no
W: www.obwiik.com
WiikHall Storage Tents are used for storage of food and non-food items within the construction segment, industry in general, Storage and logistics, Oil and gas. WiikHalls are installed in more than 100 countries. Size: in widths from 4 to 100 meter. Unlimited length in 5 meter sections.

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.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 eliminate pollution.

ORTS GmbH Maschinenfabrik

Schwartauer Strasse 99
Sereetz
D-23611
Germany
Contact: Herr Sigvard Orts
T: + 49 451 3988515
F: + 49 451 392374
E: soj@orts-gmbh.de
W: www.orts-grabs.de
Grabs "Made in Germany". Whole range of grabs for all kind of bulk materials, dredging and scrap handling: Radio controlled independent working motor grabs, electro- hydraulic grabs, mechanical rope grabs, load- beams. For nearly all kind of dry bulk materials and scrap handling.

PAGE MACRAE ENGINEERING

61 Aerodrome Road
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Bay of Plenty
3116
New Zealand
Contact: Mr Bruce Ennis
Job Title: Cargo Handling Equipment Manager
T: + 64 7 575 5079 Ext 810
F: + 64 7 574 8594
E: brucee@page-macrae.co.nz
W: www.page-macrae.co.nz
With over 50 years of engineering experience behind it, Page Macrae Engineering is regarded as Australasia's leading manufacturer of ship cargo handling equipment. They have commanded a reputation for delivering high quality equipment that is robust, low maintenance and highly productive, regardless of conditions and loads.

Pakiet

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Gdansk
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Contact: Mr Piotr Rzeszutek
Job Title: Director
T: + 48 55 247 17 70 ext.32
E: patrycja@pakiet.com
W: https://pakiet.com

Paul Hedfeld GmbH

Hundeicker 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 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 business.

PEBCO®

PO Box 7506
225 North 4th Street (42001)
Paducah
KY
42002-7506
USA
Contact: Mr David Finke
Job Title: VP, Sales and Marketing
T: + 1 270 442 1996
F: + 1 270 442 5214
E: sales@pebco.com
W: www.pebco.com
PEBCO® is recognized world-wide 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® and dustless loading chutes.

Peinemann Cranes

Nieuwe Langeweg 40
Hoogvliet
DB 3194
The Netherlands
Contact:
T: + 31 10 295 50 00
F: + 31 10 295 50 49
E: kranen@peinemann.nl
W: www.peinemann.nl

PEINER SMAG Lifting Technologies GmbH

Windmühlenbergstrasse 20-22
Salzgitter
D-38259
Germany
Contact: Mr Arnulf Köhnemann
Job Title: Area Sales Manager
T: + 49 5341 302 613
F: + 49 5341 302 424 or 606
E: arnulf.koehnemann@peiner-smag.com
W: www.peiner-smag.com
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.

Peterson Agricare & Bulk Logistics BV

Boompjes 270
Rotterdam
3011 XZ
The Netherlands
Contact: Mr Arno Maehlmann
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 agribulk commodities, mineral bulk commodities, chemicals, biomass and biofuels. Complete supply chain covered from origin to destination.

Pfister Waagen Bilanciai GmbH

Linker Kreuthweg 9
Affing-Mühlhausen
D-86444
Germany
Contact: Ms Susanne Geller-Dürr
Job Title: Marketing and Sales 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/Ada Byron, 220
Gijón
Asturias
33203
Spain
Contact: Dr Jose Ramón Prado
Job Title: Technical & Commercial Director
T: + 34 984 495 640 / + 34 984 49 55 00
F: + 34 985 134 222
E: joseramon.prado@pwh.es
W: http://www.grupotsk.com/
PHB Weserhütte, has over 60 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.

Pirs SAS

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.

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.

Pneumat Systems Inc

110 Mohr Dr
Mankato
MN
56001
USA
Contact: Mr Sam Cebula
Job Title: Sales and Marketing Manager
T: + 1 507 345 4553
F: + 1 507 345 3639
E: info@pneumat.com
W: http://pneumat.com/

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.olin@polymerindustries.com
W: www.polymerindustries.com
Other equipment: wear and liner components.
UHMWPE and other olefins for impact, wear and flow applications.

Portpack UK Limited

Unit A2/G11 Enterprise Business Park
Wigwam Lane
Hucknall
Nottinghamshire
NG15 7SZ
UK
Contact: Ms Sharon Henson
Job Title: General Manager
T: + 44 1159 680130
F: + 44 1159 641926
E: portpack@portpack.biz
W: www.portpack.biz
Portpack design and manufacture containerised Mobile Bagging Systems for the direct discharge of bulk carriers in the port of arrival, with materials weighed and bagged at dockside, filled sealed bags are loaded directly onto trucks for onward distribution or delivery.

Port-Trade AS

Karetmagervej 9
Fredericia
DK 7000
Denmark
Contact: Mr Peter J Muller
Job Title: Managing Director
T: + 45 7628 0102
F: + 45 7628 0103
E: peter.muller@port-trade.com
W: www.port-trade.com
Sales and service in all Nordic countries of mobile harbour cranes, grabs, containerspreaders, shiploaders, reclaimers, material handling equipment etc.

Powertex Inc

1 Lincoln Boulevard
Rouses Point
New York
New York
12979
USA
Contact: Mr Stephen Podd
Job Title: President and CEO
T: + 1 518 297 4000
F: + 1 518 297 2634
E: stephenpodd@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 Nederland BV

Franse Akker 1
Breda
4824 AL
The Netherlands
Contact: Mr Frédéric Felten
Job Title: Export Manager
T: + 31 76 524 2510
F: + 31 76 522 8039
E: export@preciamolen.nl
W: www.preciamolen.nl
For almost 150 years Precia Molen is specialized in industrial weighing equipment such as weighbridges, hopperscales, baggingscales, platformscales, truckdumpers etc.

Premier Tech Chronos

1, avenue Premier
Premier Tech Campus
Rivière-du-Loup
Québec
G5R 6C1
Canada
Contact: Ms Marie-Pier Vallée
Job Title: Communications Coordinator
T: + 1 418 868 8324
F: + 1 418 862 6642
W: http://www.ptchronos.com/
With offices around the world, Premier Tech Chronos is among the largest packaging equipment manufacturers in the world and well-known in the bulk industry for its state-of-the-art packaging machines and complete lines for small and large-scale production.

Premier Tech Chronos B.V.
Meerheide 40
Eersel
Noord Brabant
5521 DZ
The Netherlands
Contact: Mr Robert Vet
Job Title: Marketing Representative
E: vetr@premiertech.com
W: www.ptchronos.com
PREMIER TECH CHRONOS (PTC) is recognized worldwide for its innovative and customized packaging, material handling and bulk processing solutions. We are driven by innovation: we developed several state-of-the-art technologies which are still in the lead today. Our prime objective is to meet your packaging needs in the most creative and efficient way.

Premier Tech Chronos GmbH
Löhestrasse 18
Hennef
53773
Germany
Contact: Mr Robert Oster
Job Title: Geschäftsführer
T: + 49 2242 9335 0
F: + 49 2242 9335 186
E: info-eu@ptchronos.com
W: www.ptchronos.com
PREMIER TECH CHRONOS (PTC) is recognized worldwide for its innovative and customized packaging, material handling and bulk processing solutions. We are driven by innovation: we developed several state-of-the-art technologies which are still in the lead today. Our prime objective is to meet your packaging needs in the most creative and efficient way.

Premier Tech Chronos Ltd
Unit 1, Centurion Business Centre
Blenheim Industrial Estate
Nottingham
Notts
NG6 8WN
UK
Contact: Mr Peter Orm
Job Title: General Manager
T: + 44 115 935 1351
F: + 44 115 960 6941
E: info-eu@ptchronos.com
W: www.ptchronos.com
PREMIER TECH CHRONOS (PTC) is recognized worldwide for its innovative and customized packaging, material handling and bulk processing solutions. We are driven by innovation: we developed several state-of-the-art technologies which are still in the lead today. Our prime objective is to meet your packaging needs in the most creative and efficient way.

Procon Engineering Limited
Vestry Estate
Otford Road
Sevenoaks
Kent TN14 5EL
UK
Contact: Mr Brian Sangster
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.

Protan International
PO Box 420
Brakerøya
Drammen NO-3002
Norway
Contact: Mr Erik Øyno
Job Title: Direktor Protan International Roofing
T: + 47 90 51 30 72
E: erik.oyno@protan.no
W: www.protan.no

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: conveyor.div@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.

QML Srervices
Unit 4
178 Main Road
Sydney
NSW 2284
Australia
Contact: Mr Steve Maxwell
Job Title: GVice President, Mining, APAC Sales
T: + 61 2 4908 2222
F: + 61 2 4968 2043
E: info@tpt.com
W: www.qmlservices.com

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 40 years experience, Quadrant EPP's SystemTIVAR® 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 Srl / Roncuzzi - WAM Group
Via del Cmapo Sportiuo 40
Mezzana
48123
Italy
Contact: Mr Michael Grass
Job Title: Marketing Communications Manager
T: + 39 0535 61 81 11
F: + 39 0544 41 10 99
E: Michael.Grass@wamgroup.com
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.

RAM SMAG Lifting Technologies
6 Selby Place
Stanley
Skelmersdale
Lancashire
WN8 8EF
UK
Contact: Mr Patrick Draper
Job Title: PR & Communication
T: + 44 1695 556355
F: + 44 1695 556356
E: p.draper@ramspreaders.com
W: www.ramspreaders.com
RAM Spreaders, one of the leading manufacturers and suppliers of container handling equipment for over 40 years have developed their environmental friendly RAM Revolver® for dust free containerized bulk handling solutions in association with specialist container suppliers.

Rapat Asia
Clark, Philippines
Angeles
Pamapaga
061
Philippines
Contact: Mr Craig Stall
Job Title: General Manager
T: + 1 2182514261
F: + 1 2184833344
E: cstall@rapat.com
W: www.rapat.com

Rapat Corporation
919 O'Donnell Street
Hawley
MN
56549-4310
USA
Contact: Mr Ron Werner
Job Title: General Manager
T: + 1 218 483 3344
F: + 1 218 483 3535
E: info@rapat.com
W: http://www.rapat.com/

Rapidpack Corporation
Suite 207
Mazaya Tower AA1
Jameirah Lakes Towers
Dubai
UAE
Contact: Mr Peter Ascot
Job Title: Sales Manager
T: + 9714 445 8336
F: + 9714 445 8337
E: peter@rapidpack.ca
W: www.rapidpack.ca
Rapidpack designs, engineers and manufactures state of the art bulk cargo handling machinery for ports, trading houses and shipping companies around the world.

RBL-REI France
11 Boulevard Brune
Paris
Cedex 14
75682
France
Contact: Mr Sébastien Bouhours
Job Title: Technical Sales Representative
T: + 33 2 41 21 3670
F: + 33 2 41 21 19 59
E: s.bouhours@rblrei-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.

REEL Alesa Ltd
Max Hogger-Strasse 6
Zurich CH - 8048
Switzerland
Contact: Mr Marcel Polidori
Job Title: Manager Sales & Marketing
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F: + 41 432 0666
E: marcel.polidori@reel-alesa.com
W: http://www.reel-alesa.com/
Specialised in dry bulk materials handling system for

port terminals and plant, travelling pneumatic ship unloaders >600 t/h, storage systems, truck/railcar loading unloading systems, all kind of pneumatic conveying system (incl. dense phase, dilute phase, airlifts, airslides, suction systems), belt and tube conveyors, bath plant & carbon recycling plant, which includes for crushers, electrolysis pot control system, engineering services for all project activities above including civil and structural.

REEL Alesa Ltd

150 Rockland Rd
Town of Mount Royal
Quebec H3P 2V9
Canada
Contact: Mr Jean-Pierre Desmoulins
Job Title: General Manager
T: + 1 514 937 9105 ext. 2231
F: + 1 514 937 0473
E: jean-pierre.desmoulins@reel-alesa.com
W: www.rta-alesa.com
Alesa Engineering Ltd is 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.

REMA TIP TOP AG

Gruber Straße 65
Poing
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Germany
Contact: Mr Bertrand Heckel
Job Title: Director Global Belting Sales
T: + 49 8121 707 10100
F: + 49 8121 707 10100
E: info@rema-tiptop.com
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.

Representaciones Alfredo Brand y Cia. Ltda.

Casilla 16871
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Región Metropolitana 7510147
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Contact: Mr Alfredo Brand
T: + 56 222 38968
F: + 56 234 40817
E: abrandp.gm@gmail.com
W: www.abrandp.com

RHC Deutschland GmbH

Am Taennele 6
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Bayern
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Germany
Contact: Mr Rolf Hofmann
Job Title: CEO
T: + 49 174 2050 164
F: + 49 7307 253 39
E: info@rhc-deutschland.de
W: http://rhcheavymachinery.com/
RHC is a German company with engineering and manufacturing facilities in Europe and Asia.

River Consulting

3510 N. Causeway Blvd
Ste 515
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LA 70002
USA
Contact: Mr Kevin Fry
Job Title: Vice President
T: + 1 504 293 3900
E: kfry@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 Ltd

Coleford Road
Darnall
Sheffield
S9 5PA
UK
Contact: Mr Tris Young
Job Title: Marketing Manager
T: + 44 114 244 4221
F: + 44 114 243 3066
E: youngt@robson.co.uk
W: www.robson.co.uk
Design and Manufacture and Install Bulk Handling Systems including Belt, Screw and Chain Conveyors, Elevators, Hoppers, Vibros and Feeders. Steelwork and Supports. Individual units or Turn Key Projects.

Ronin GMS

No 1 Nobel Avenue
Modderfontein
Johannesburg
Gauteng
1645
South Africa
Contact: Mr Ferdinand Meyer
Job Title: Sales and Marketing Executive, Ronin Group
T: + 27 11 608 3666
F: + 27 11 608 4679
E: ferdi@roningms.com
W: www.roningms.com
Ronin GMS supplies Bulk Inventory management solutions, analytical grading equipment and services to the Southern African Grain Handling Industry. We provide Cargo Monitoring, Bulk Audits, Portside and Marine services on hard Commodities. We promote our laser Inventory Systems Worldwide.

Royal Haskoning DHV

George Hintzenweg 85
Rotterdam
3068 AX
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T: + 31 10 2865 398
F: + 31 10 443 3688
E: info@rotterdam.royalhaskoning.com
W: www.royalhaskoningdhv.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.

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
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.

SAMSON Materials Handling Ltd (AUMUND Group)

Gemini House
Cambridgeshire Business Park
1 Bartholomew's Walk
Ely, Cambridgeshire
CB7 4EA, UK
Contact: Mr Dale Lockley
Job Title: Managing Director
T: + 44 1353 665001
F: + 44 1353 666734
E: sales@samson-mh.com
W: www.samson-mh.com
Experts in mobile bulk materials handling equipment for surface installation: from truck unloaders, to ship loaders, rail and barge loaders, ecological import hoppers and mobile stockpiling equipment. Hard-working equipment designed for rapid set-up and continuous high performance.

Saxlund International Ltd

11 Freemantle Business Centre
Millbrook Road East
Southampton
Hampshire
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Contact: Mr Matt Drew
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Schenck Process UK Limited

Alpha Court
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Doncaster
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Contact: Mr Richard Sims
Job Title: Technical Sales Director
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E: enquiries@schenckprocess.co.uk
W: www.schenckprocess.co.uk
Schenck Process Group provides innovative solutions for the handling and storage of bulk materials using pneumatic and mechanical conveying technologies together with weighing, feeding and air filtration equipment to give a comprehensive package of products and services.

Schouten Commodities BV

Burgstraat 12 4283 GG Giessen
Giessen
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Contact: Mr Marius van Doorn
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E: info@schoutenproducts.com
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Scorpio Engineering Pvt. Ltd

Scorpio House
132 Wheeler Road
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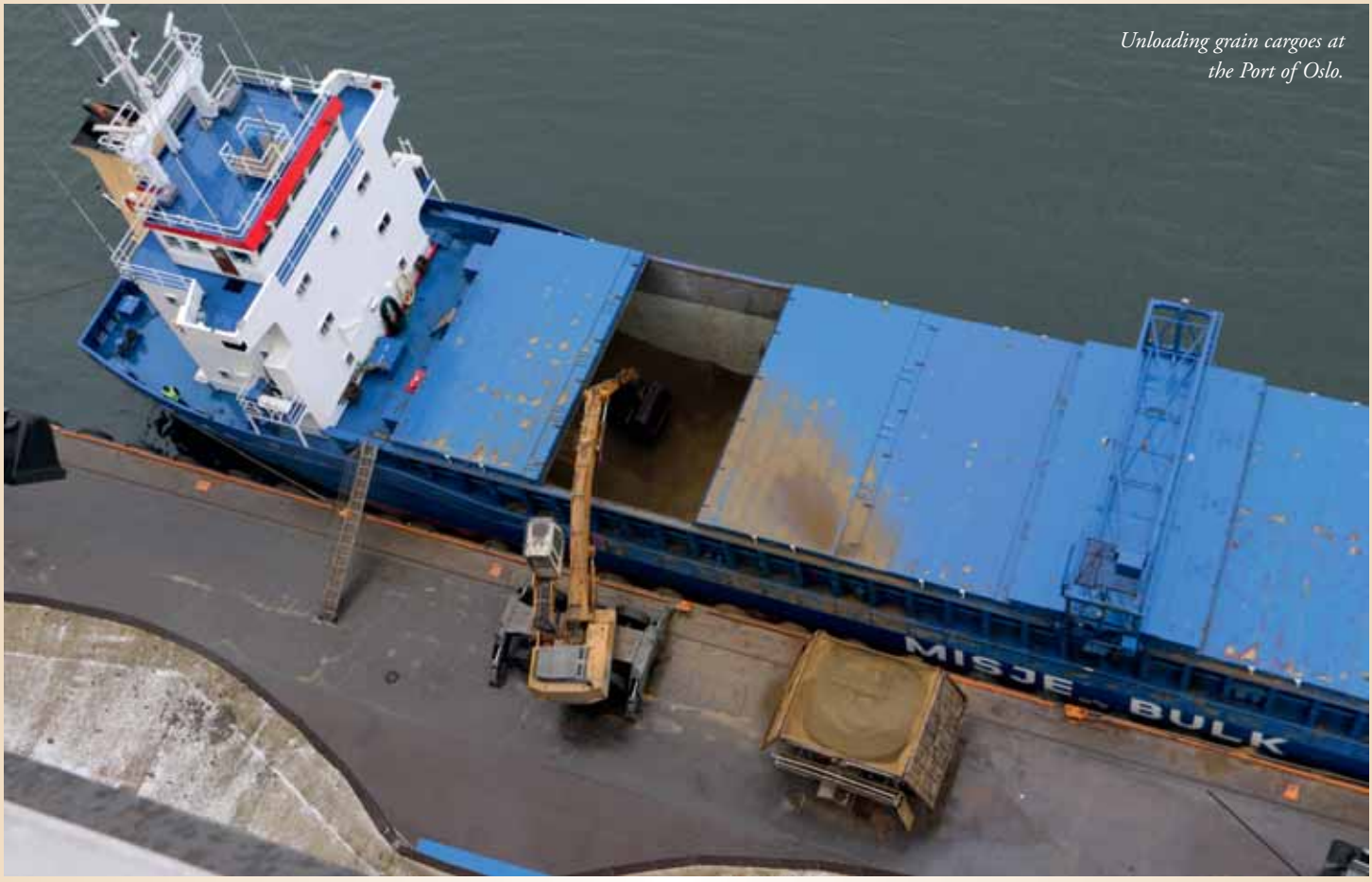
Bangalore 560 005
India
Contact: Mr Jacob P.
Job Title: VP - Marketing & Application
T: + 91 99801 625 39/+ 91 77026 3779
F: + 91 80 2548119
E: jacob@scorpioengg.com, jacobsebmh@gmail.com
W: www.scorpioengg.com
The company engineers and manufactures a complete range of grain & flour handling equipment 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 & flour handling systems for large grain processors & food processing industry.



Unloading grain cargoes at the Port of Oslo.

Seabulk Inc

Suite 150
10271 Shellbridge Way
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British Columbia
V6X 2W8
Canada
Contact: Mr Sidney Sridhar
Job Title: President
T: + 1 604 273 1378 Ext 103
F: + 1 604 273 1358
E: sbs@seabulk.com
W: www.seabulk.com
Design and build contractors involved with ports, self-unloaders and transshippers 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
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Sweden
Contact: Ms Hakan Lagergren
Job Title: Sales and Marketing Manager
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

Modecenterstrasse 22
10 rue des charretiers
Vienna
1030
Austria
Contact:
T: + 43 1 797770
E: sempertrans@semperitgroup.com
W: www.sempertrans.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

Hebbelstrasse 30
Straubing
D-94315
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Contact: Mr Alfred Endl
T: + 49 9421 540148
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

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Job Title: Managing Director
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W: www.servoberkelprio.eu
Servo Berkel Prior B.V. is the biggest manufacturer and supplier of weighing equipment in the Netherlands.

SESCOTRANS For Developed Logistics (SAE)

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(Behind Sheraton Airport)
Cairo
11361
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Job Title: Assistant General Manager
T: +2 057 229 00 95
F: +2 057 229 08 49
E: kareem.abdelatif@sescotrans.net
W: www.sescotrans.com
Other Equipment: Mobile Harbour Cranes - CMA, SMA. SESCOTRANS has 50 years experience of integrated logistics solutions for your business, serving main Egyptian ports including transportation, customs clearance, warehousing, loading and discharging of different cargo and vessel sizes, supported with full setup of facilities and fully-employed resources.

SEW-EURODRIVE GmbH & Co KG

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Bruchsal
D-76652
Germany
Contact: Ms Martina Wegerich
Job Title: Marketing Dept
T: + 49 7251 75 0
F: + 49 7251 75 1970
W: www.sew-eurodrive.com
Complete drive packages: Helical gear units, Bevel-helical gear units, motors, couplings, swing bases, brakes, geared motors. Planetary gear units, frequency inverters Torque range: 100 ... 1 Mio Nm

SGH Equipment Limited

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King Street Trading Estate
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SGH Equipment provide process & materials handling engineering solutions, specialising in bulk powder & granular materials
Equipment: Storage Silos & Vessels, Conveying, Weighing, Mixing & Blending, FIBC Fill+Discharge, Dust Collection, Filtration, & Suppression, Bagging, Weighing & Packing Machines
Services: Design, Manufacturing, Fabrication, Electrical - Control & Instrumentation, Installation (Mechanical & Electrical), Commissioning

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SGS Australia Pty Ltd

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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.

Shanghai Global Machinery. Co., Ltd (SGMC)

No.1449 Baishi Road
Qingpu District
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201711
China
Contact: Mr Huang
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E: zhuang@sgmc.biz
W: www.sgmcgrab.com
We are a Chinese grab manufacturer, specializing in the shore and ship crane grabs for handling bulk cargo, such as radio remote control grabs and motor-hydraulic grabs. www.sgmcgrab.com

Shanghai Janus Grab Co., Ltd.

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W: http://www.janusgrab.com/

Shanghai Qifan Co., Ltd.

25F, Baoding Mansion
Xujiahui Road
Shanghai
200025
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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 handing tools, loading and unloading equipment, steel structure frame and other mechanical products.

Shanghai Zhenhua Port Machinery Co (ZPMC) Ltd

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PR
200125
China
Contact: Mr Chen Kai
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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
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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.servodaygrabs.com
Manufacturer & Exporter of Radio Remote Control Grabs, capacity from 6 CBM to 55 CBM, with the unique features of Grabs operation counting, with Weight calculation, online Grab monitoring systems etc.

Siwertell AB
PO Box 566
Gunnarstorp
Bjuv
SE-267 25
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Contact: Mrs Emily Braekhus Cueva
Job Title: Marketing & Communications Manager
T: + 46 42 858 00
F: + 46 42 858 99
E: sales@siwertell.com
W: www.siwertell.com
Siwertell dry bulk handling systems are based on a unique screw technology and provide the most environment-friendly, efficient and versatile operation on the market today. All systems can be tailor-made to fit each port or terminal.

Sly Incorporated
8300 Dow Circle
Suite 600
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Contact: Mr Bill Kurz
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SMB International GmbH
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25451
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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.

Smiley Monroe Ltd
23 Ferguson Drive
Knockmore Hill Industrial Park
Lisburn, Co. Antrim
Northern Ireland
BT28 2EX
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Contact: Mr Tim Monroe
Job Title: Marketing Manager
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E: sales@smileymonroe.com
W: www.smileymonroe.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
245, boul. Yvon - L'Heureux Nord
Beloeil
Quebec
J3G 5R8
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 Martin Adam
Job Title: Sales/Marketing
T: + 41 81 3035841 / 5800
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E: office@stag.net
W: www.stag.net
STAG bulk material technology for mechanical and pneumatic conveying technology as well as ensilage technology . We are also the ideal partner as a general company for complex assignments for nearly all bulk materials in plant construction.

Stemm Equipos Industriales, S.L.
Polígono Ibarluze
Pabellón B-9
Hernani
Gipuzkoa
20120
Spain
Contact: Mr Martín Amesti
Job Title: General Manager
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With extensive experience in the bulk handling sector, STEMM manufactures a wide range of grabs for harbour and industrial cranes, especially electrohydraulic clamshell and orange peel grabs and single rope radio-controlled clamshell grabs with state-of-the-art construction and service concepts.
STEMM is your partner for consulting, manufacturing and servicing around the grab world.
For further information, kindly check our website www.stemm.com

Strudes Inc
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Canada
Contact: Mr Henry Nowodworski
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W: www.strudes.ca
Strudes Inc. is an Engineering Consulting Company, specializing in design for heavy industry in general and Cement Industry in particular. For markets and more information: www.strudes.com.

Suomen Viljava Oy
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Suomen Viljava is the leading Finnish company in grain logistics specializing in storage and handling. We serve, in addition to domestic market, companies operating in export, import and transit trade in and around northeastern Europe. Suomen Viljava operates in 19 different storage locations in Finland. The silo plants of Rauma, Naantali, Helsinki, Loviisa and Kotka are situated at ports. These ports are able to serve ships year-round..

Supercargo, Lda
Rua Alfredo Cunha, 107
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Contact: Mr Artur Rocha
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T: + 351 212 946 220
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Supercargo is a GAFTA and FOSFA accredited members Superintendent and applies a Quality Management System for Supervision, Inspection and Surveys in International Trade according NP EN ISO 9001:2008

Superior Industries, Inc.
315 East State Highway 28
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Contact: Mr Corey Poppe
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Swire CTM Bulk Logistics
C Transport Maritime SAM
Gildo Pastor Centre
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Monaco MC 98000
Monaco
Contact: Captain Giorgio Vallega
Job Title: Operation/Commercial Manager
T: + 377 9798 5981
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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.

TAIM WESER, S.A.
Carretera de Castellón, km 6,3
Polígono Industrial La Cartuja
Zaragoza 50013
Spain
Contact: Mr Javier Salvador
Job Title: Marketing
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W: www.taimweser.com
TAIM WESER is a worldwide company, present in more than 65 countries and able to guarantee, with over 100 years of experience, the development of any project related to its range of manufacture: bulk materials handling, lifting and waste treatment.

TBA Doncaster
4 Railway Court
Ten Pound Walk
Doncaster
South Yorkshire DN4 5FB
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Contact: Mr David Trueman
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T: + 44 1302 330 837
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W: www.tba.group
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.

TBMA Europe BV
Delfweg 18
Noordwijkerhout
NL-2211 VM
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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
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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.

TBS Shipping Services
612 Grassy Sprain
Yonkers
New York
10710
USA
Contact: Mr Gregg McNelis
T: + 1 914 961 1000
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E: TBSRates@nyc.tbsship.com
W: www.tbsship.com/

Tebodin Netherlands B.V.
Jan Tinbergenstraat 101
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Contact: Mr Bert Frowijn
Job Title: Projects Director
T: +31 88 996 75 84
F: + 31 570 63 6350
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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 andustrial as well as utility projects. A structured and decisive project approach results in high efficiency.

techNaero aps
Blaabaervej 3
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
Bankmore Way East
Omagh
County Tyrone
BT79 0NZ
Northern Ireland
Contact:
T: + 44 28 82 25 11 00
F: + 44 28 82 25 22 11
E: sales@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 Un-loaders, mobile truck un-loaders, link conveyors and hopper feeders.


Shiploader from TMSA.

Teta Mühendislik A. .
Çankırı Yolu 7.km Aselsan Karşısı
Akyurt
Ankara
06950
Turkey
Contact: Mr Talat Isik
Job Title: General Manager
T: + 90 312 8475361
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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.

Teufelberger Seil Ges.m.b.H
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Wels
4600
Austria
Contact:
T: + 43 7242 615 0
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W: www.teufelberger.com

The Grab Specialist B.V.
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Contact: Mr Emiel Bleyenberg
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T: + 31 365 32 88 22
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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
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T: + 1 800 445 3503
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W: www.thermofisher.com/bulkweighing
The Thermo Scientific Bulk Weighing & Monitoring product line for material handling in grain applications includes conveyor belt scales, weighbelt feeders, impact weighers, numerous level indication devices, speed switches and conveyor safety switches.

thyssenkrupp Industrial Solutions AG
Mining Technologies -OU
Materials Handling Germany
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Saarland
D-66386
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Contact: Dr Wei Ye
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T: + 49 6894 599 0
F: + 49 6894 599 468
E: info-mh@thyssenkrupp.com
W: www.thyssenkrupp-industrial-solutions.com
Besides individual items of machinery as listed above, thyssenkrupp Industrial Solutions design and supply complete material handling plants turn-key.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.

TMSA Tecnologia em Movimentação S/A
Avenida Bernardino Silveira Pastoriza, 710
Bairro Sarandi
Porto Alegre
RS
91160-310
Brazil
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F: + 55 51 2131 3330
E: marketing@tmsa.ind.br
W: www.tmsa.ind.br
The TMSA group, headquartered in Brazil with offices in LATAM and the USA, is one of the largest suppliers for bulk material handling equipment for Port Terminals, Agro Industries and Oilseed Processing Plants under turn-key, EPCM and Partnership Contract Agreements.

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Cirencester Road
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GL6 9BH
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Job Title: Marketing Coordinator
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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 Weighlog α10 , Weighlog 200 and Loadmaster series.

Tramco Europe Limited
Mendham Business Park
Hull Road
Saltend
Hull
HU12 8DZ
UK
Contact: Mr Dave Fanthorpe
Job Title: General Manager
T: + 44 1482 782 666/ + 44 7813 800251
F: + 44 1482 793 920
E: sales@tramceurope.co.uk
W: www.tramceurope.com
A global leader in bulk material handling, TRAMCO EUROPE LTD produce a complete line of high quality, robust, fully ATEX certified enclosed conveyors including TramrollTM, JetBeltTM, Bulk-FloTM, the Model G, Model RB, and Bucket Elevators.

Tramco, Inc
1020 East 19th Street
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KS
67214
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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
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Subic Bay
Zambales
Freeport Zone 2222
Philippines
Contact: Mr John Wellington
Job Title: Managing Director
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65014
Ukraine
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F: + 38 482 34 74 07
E: e.mashtakov@transship.ua
W: www.transship.com.ua

Triodetic
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Ontario
K7S 0C3
Canada
Contact: Mr Tim Staniszewski
Job Title: Sales & Marketing Manager
T: + 1 613 623 3434 ext 2234
F: + 1 613 622 4003
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
Ryokuchieki Building 7F,
2-4-1, Terauchi,
Toyonaka
Toyonaka
Osaka
561-0872
Japan
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T: + 81 6 6862 2329
F: + 81 6 6862 8516
E: sales@tsubaki-bulk.com
W: http://tsubakimoto.com/tbs/
Produces bulk handling systems equipment, bucket, flow and pan conveyors.

TTS HuaHai Ships Equipment
18th Floor
3255 Zhou Jia Zui Road
Shanghai
200093
China
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F: + 86 21 6539 7400
E: info@tts-huahai.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
7741KC
The Netherlands
Contact: Mr Paul Kuiper
T: + 31 524 599 333
F: + 31 524 599 330
E: mach@veenstra-coevorden.nl
W: www.veenstragroup.nl

Verstegen Grijpers BV
PO Box 1014
Nieuwegein
3430 BA
The Netherlands
Contact: Mr Eric Visser
Job Title: Managing Director
T: + 31 3060 62222
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W: www.verstegen.net
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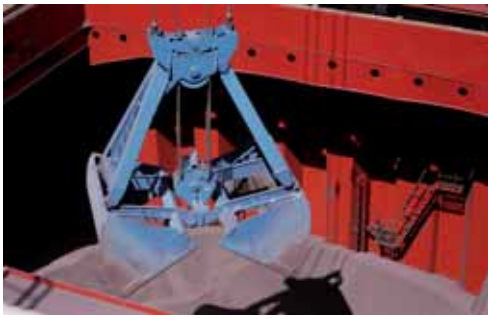

Are you looking for a new grab?

Please contact us. At Verstegen we are fully specialised in rope-operated mechanical grabs. Our goal is to provide the optimal grab for your specific operation. A new Verstegen grab leads to higher production rates and lower maintenance costs through extreme reliability and long lifetimes. Tell us how you want to improve your operation and together we will find the best solution.

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WWW.VERSTEGEN.NET

Vibco Inc

75 Stilson Road
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Contact: Ms Lisa F Huftalen
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F: + 1 401 539 2584
E: marketing@vibco.com
W: www.vibco.com
We're the Expert Vibrator Guys! Since 1962, providing 1800+ standard products developed with more than 46 Patents. We create value by manufacturing high-quality and low-maintenance industrial and construction vibrators; offering world-class technical support and personalized service.

Vibrafloor

Za 27 Rue de la Tuilerie
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71640
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Contact: Mr Jean-Claude Poncet
Job Title: President
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F: + 33 3 85 44 06 79
E: jc.poncet@vibrafloor.com
W: www.vibrafloor.com
VIBRAFLOOR, the modular vibrating floor, is used in various bulk industries, inside silos, ships and railway cars as a versatile reclaimer using powered gravity.

VIGAN

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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
VIGAN equipment are suited for most of materials in bulk such as cereals, oilseeds, alumina, chemicals and wood pellets.
As a solution provider, VIGAN can manage your bulk handling projects from initial design up to full erection under "turnkey" conditions.

Vortex Global

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W: www.vortexglobal.com
Vortex manufactures loading spouts, slide gates & diverters for fast and steady loading flow of dry/bulk materials. Vortex spouts are designed to capture fugitive dust, prevent material waste, and ensure plant and environmental safety, with low maintenance and service expenses.

WeatherSolve Structures

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Contact: Mrs Barbara Robinson
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F: + 1 604 909 1914
E: Barbara@WeatherSolve.com
W: www.weathersolve.com
WeatherSolve Structures dust control professionals that build customized suspended fabric systems for many situations from dust / wind fencing, hopper, truck dumps, conveyor and many more situations requiring dust control. Give a call today and we will come up with a solution for you. 1.604.607.7781 or www.weathersolve.com

Webster Griffin Ltd

Brooklands Park
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Crowborough
East Sussex
TN6 2JD
UK
Contact: Mr Mark Wilson
Job Title: Managing Director
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W: www.webstergriffin.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.

Windmöller & Hölscher KG

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F: + 49 5481 14 3355
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W: www.wuh-group.com/
Windmöller & Hölscher - one of the leading machine manufacturers in the world for the flexible packaging industry and the global leader in bag making and bagging equipment.

Wolf Point Engineers & Contractors

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60602
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W: www.wolfpointengineers.com/

Worley Parsons Canada (Westmar)

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F: + 1 604 985 2581
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W: www.westmar.com
Provides consulting engineering services to clients worldwide. The diverse experience gained over thousands of projects, combined with a commitment to research results in maximum value for clients.
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ZAO SMM

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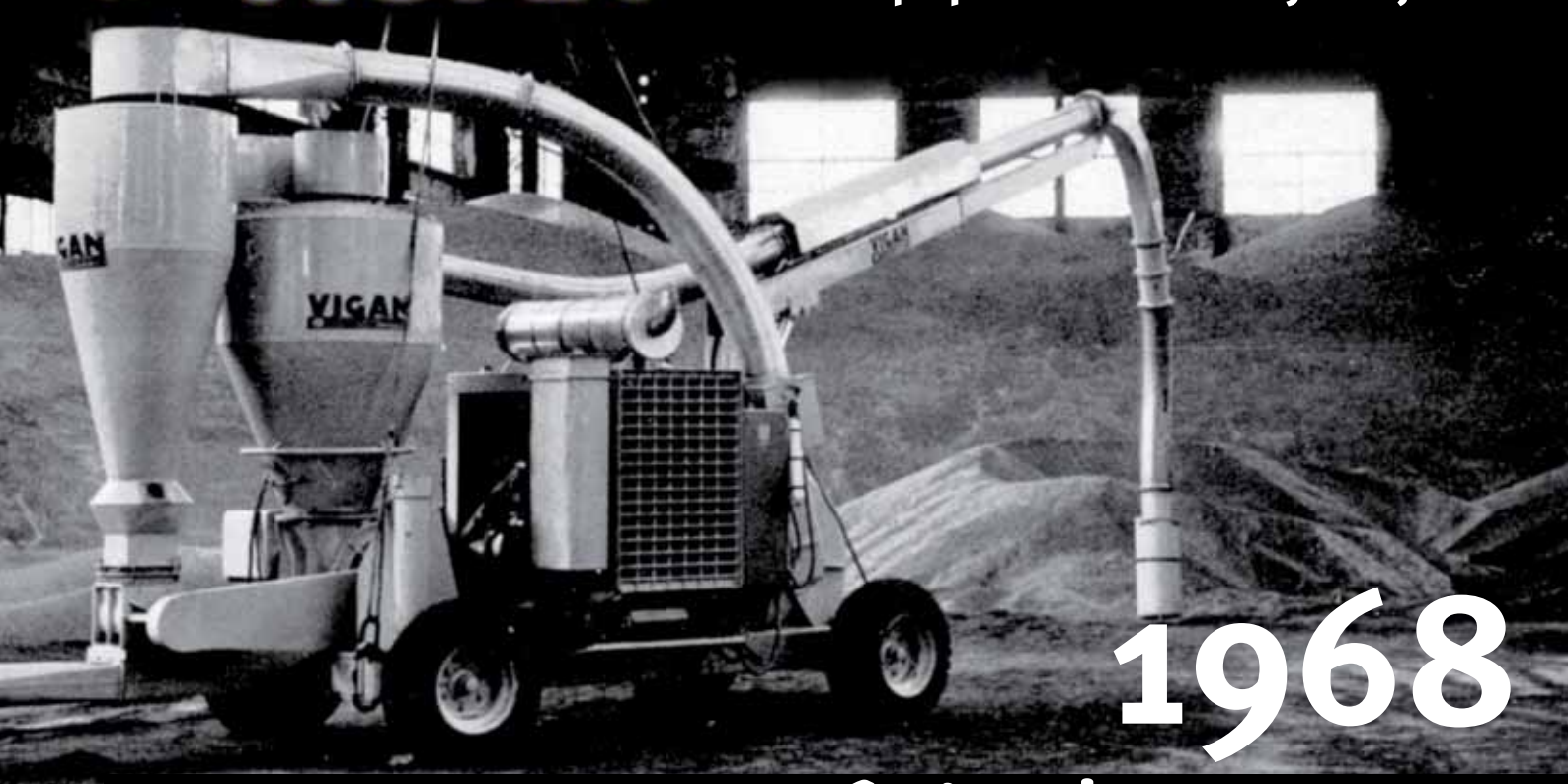
W: www.zaosmm.ru/

VIGAN

Pneumatic or Mechanical
Ship Loaders & Unloaders
Port Equipment - Turnkey Projects



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GRAIN HANDLING EQUIPMENT SUPPLIED

KEY

S&BL	=	ship and barge loaders
PS&BL	=	pneumatic ship and barge loaders
MS&BU	=	mechanical ship and barge unloaders
C	=	conveyors
FB	=	FIBCs, bags & bag handling
H	=	hoppers
G	=	grabs
DS	=	dust suppression
S&I	=	sampling & inspection
W&M	=	weighing & measuring
G&S	=	grading & sifting
TL&U	=	truck loaders & unloaders
RL&U	=	railcar loaders & unloaders
SS	=	storage systems
EC	=	engineering consultants
O	=	other

	S&BL	PS&BL	MS&BU	C	FB	H	G	DS	S&I	W&M	G&S	TL&U	RL&U	SS	EC	O
2000 Engineering															✔	✔
4B BRAIME Components			✔	✔												
A/S Cimbria	✔			✔		✔		✔			✔	✔	✔	✔	✔	
Ag Growth Intern'l (AGI)				✔		✔	✔	✔						✔		
Agrico Sales, Inc.	✔			✔										✔		
Agromatic AG									✔	✔					✔	
Alex Stewart Agriculture Ltd									✔	✔						
Alex Stewart International Corporation Ltd									✔							
AMECO SAS	✔													✔	✔	
Anvil Attachments	✔					✔	✔									
Applied Conveyor Technology, Inc. DBA The ACT Group				✔		✔		✔		✔			✔		✔	✔
Arlona Engineering			✔	✔	✔	✔	✔								✔	
Arodo BVBA																✔
Ashton Bulk Ltd																
Atlas Manufacturing Co. Inc							✔									
August Penkert GmbH	✔			✔				✔	✔	✔		✔	✔		✔	
Aurecon	✔															
Ausenco Engineering Canada Inc.	✔		✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Australian Superintendence Co																
B.V. BECO							✔									
Bayards Aluminium Constructions														✔		✔
Bedeschi Mid-West Conv.	✔		✔	✔		✔		✔				✔	✔	✔	✔	✔
Bedeschi SpA	✔		✔	✔		✔		✔						✔		
BEHN + BATES Maschinenfabrik GmbH & Co. KG					✔											
Bendezu Port Equipment GmbH	✔		✔	✔		✔	✔	✔							✔	✔
Bergu International AB				✔										✔		
Best Service Group (BSG)	✔					✔	✔					✔	✔	✔		
BGS Holland	✔				✔			✔				✔	✔	✔		
Birrus International Pty				✔												
Blue Water Misting								✔								
BLUG Credeblug S.L.							✔									
Bobcat EMEA s.r.o	✔		✔									✔	✔			

	S&BL	PS&BL	MS&BU	C	FB	H	G	DS	S&I	W&M	G&S	TL&U	RL&U	SS	EC	O
Bosch Rexroth B.V.	✔	✔	✔	✔		✔										
BossTek				✔		✔		✔								✔
Boyne Area Manufacturing (BAM)	✔	✔	✔	✔	✔	✔	✔	✔				✔	✔	✔	✔	✔
Brock Grain Systems				✔										✔		
BRUKS AB																
BRUKS Klöckner GmbH																
BRUKS Rockwood Incorporation																
Bucket Mart Inc.	✔	✔	✔	✔		✔	✔			✔		✔	✔		✔	✔
Buhler AG, Grain Logistics	✔	✔	✔	✔		✔		✔	✔	✔	✔	✔	✔	✔	✔	
Buhler GmbH	✔	✔	✔	✔	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔
Bulk Lift International	✔				✔									✔		
Buttimer Engineering	✔		✔	✔		✔		✔		✔		✔		✔	✔	
Buttimer Polska Sp. z o.o.																
C Spencer Ltd	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Cachapuz Bilanciai Gp										✔		✔			✔	✔
Calim Grab Industry	✔					✔	✔					✔	✔			
Camar Mill Systems Ltd															✔	
Cambelt International Corp				✔									✔	✔		
Caterpillar Inc												✔				
Cavotec Deutschland GmbH	✔			✔											✔	
Cavotec SA																✔
CDM Systems, Inc			✔	✔												
Cesur Packaging Corporation					✔											
CHIA Espirales.es	✔		✔	✔		✔		✔			✔	✔	✔	✔	✔	
Chief Industries UK Ltd.				✔										✔		
Chief Industries, Inc.														✔		
Christianson Systems Inc.		✔		✔								✔	✔			
Cimbria Unigrain A/S	✔			✔				✔				✔	✔			
Civettini Italo & c sas (CFS Handling)							✔									
Clariant Corporation																✔
Claudius Peters Projects GmbH																
Cleveland Cascades Ltd	✔							✔				✔	✔	✔		
COBRA Europe SA				✔												
Condepols S.A.					✔											
Conductix-Wampfler	✔	✔	✔	✔								✔				✔
Conductix-Wampfler Americas	✔	✔	✔	✔		✔							✔	✔		✔
Conservatek Industries, Inc.														✔		
Continental Construction (Memphis)	✔	✔	✔	✔		✔		✔				✔	✔	✔		
Continental Conveyor & Equipment Co Inc				✔												
ContiTech Antriebssysteme GmbH																
ContiTech Transportbandsysteme GmbH				✔												
Conveyor Dynamics, Inc.				✔									✔		✔	
Cotecna Inspection SA									✔							
CPS Projects (Pty) Ltd	✔						✔					✔				
CRS — Container Rotation Systems Pty Ltd																✔
CST Covers														✔		
CST Storage						✔								✔		
CWA Engineers Inc.	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
DCL, Incorporated	✔			✔	✔			✔				✔	✔	✔		
De Regt Conveyor Systems				✔												
DeMarco Industrial Vacuum Corporation	✔	✔			✔							✔	✔			
Dinnissen BV				✔	✔	✔					✔					
DMN-WESTINGHOUSE					✔					✔						
Dome Corp of N. America								✔						✔		
Dome Technology, LLC														✔	✔	
DOMTEC International														✔		
Donaldson Filtration Deutschland GmbH								✔								
Doosan Infracore Europe	✔		✔									✔	✔			
Dos Santos Intern'l, LLC	✔		✔	✔											✔	✔
Dry-Bag A/S																✔
DSH Systems Ltd.	✔							✔				✔	✔	✔		
Dust Solutions Inc								✔								

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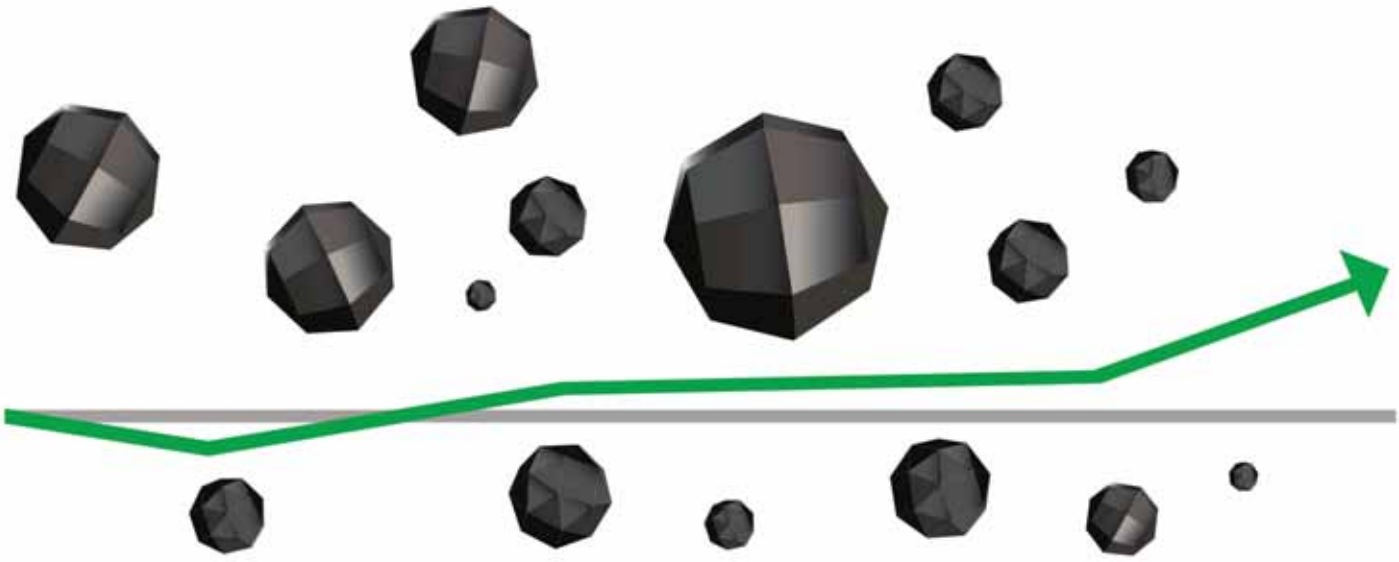
E-Crane World Wide	✔		✔				✔									
E-Crane World Wide / E-Crane International USA	✔		✔			✔	✔								✔	
ECS Eurocargo Services								✔	✔							
EDGE INNOVATE. (NI) LTD	✔			✔								✔	✔			
Elgin Engineering and Construction															✔	
EMS-Tech Inc	✔		✔	✔		✔		✔					✔	✔	✔	✔
Enco Engineering Inc	✔			✔		✔								✔	✔	
Endress + Hauser Inc										✔						
Engicon nv	✔			✔		✔						✔	✔	✔		
EQUIPO LLC							✔									
Esch Group bv																✔
ESI Eurosilo BV														✔	✔	
Essar Industries																
Euromec Srl							✔									
Euro-tech Corporation							✔									
Euro-Tramco BV			✔	✔												
FAM Magdeburger Förderanlagen und Baumaschinen GmbH	✔		✔	✔	✔	✔			✔			✔	✔	✔	✔	
FFE Ltd																
Figee Crane Services BV	✔		✔			✔		✔							✔	
Flexco				✔												
Flexco Europe GmbH				✔												
Flexoveyor Conveyor				✔								✔	✔			
Franz Wölfer Elektromaschinenfabrik Osnabrück GmbH																
Freeport of Riga Authority																
Ganz Danubius Trading Co Ltd	✔		✔				✔									
General Kinematics Corp.				✔						✔						
Geometrica Inc								✔						✔		
Geroldinger GmbH & Co KG				✔	✔	✔						✔	✔	✔		
Getriebebau NORD GmbH & Co. KG																
Golfetto Sangati s.r.l.	✔	✔	✔	✔				✔		✔	✔			✔		
Goodman Conveyor Company				✔												
Goodtech AS				✔	✔	✔	✔	✔		✔		✔	✔	✔	✔	
Greystones Cargo Systems (Pty) Ltd	✔	✔		✔												
Gulsan A.p.					✔											
Guttridge Limited			✔	✔	✔	✔		✔						✔		
Guven Grab and Machine Ltd. Co							✔									
Hanson Silo Company														✔		
Hapman																
Haskoning India Pvt Ltd																
HASLER GROUP SAS										✔						
Henry International Diplomatic Marine																✔
Heyl & Patterson	✔		✔				✔	✔					✔		✔	
HKD Blue																
Horizon Conveyor Equipment					✔											
Huadian Heavy Ind.																
Hycontrol Limited										✔					✔	
IBC Inter'l Handling AB				✔	✔	✔				✔					✔	
IMASA																
IMGS																
Inspectorate (Suisse) SA - Bureau Veritas Commodities Division									✔	✔						
Inspectorate America Corporation									✔							
Interjute BV					✔											
Intermodal Solutions	✔													✔	✔	
Intersystems				✔					✔	✔				✔		✔
Istop Spamat Srl																
Italgru S.r.l																
J & B Grabs b.v.							✔									
Jansen & Heuning																

	S&BL	PS&BL	MS&BU	C	FB	H	G	DS	S&I	W&M	G&S	TL&U	RL&U	SS	EC	O
JEM International				✔	✔	✔				✔						
Jenike & Johanson Inc.						✔		✔						✔	✔	
Jim Way Enterprise Co.,				✔												
JSC RIKON							✔									✔
Kalenborn Kalprotect GmbH & Co. KG																
Kinergy Corporation				✔		✔					✔		✔			
King Bag & Manufacturing Co					✔									✔		
KINSHOFER GmbH					✔		✔									
Kocks ARDELT KRANBAU GmbH	✔		✔													
KOCKS ARDELT KRANBAU GmbH			✔									✔	✔			
Komatsu Mining Corp.				✔												
Konecranes Port Solutions -																
Demag Cranes & Components GmbH	✔		✔													
Kröger Greifertechnik GmbH & Co. KG																
Lachenmeier Monsun A/S				✔				✔				✔		✔		
Laidig Systems Inc						✔						✔		✔		✔
Langston Companies Inc.					✔											
Lawrence Industries, Inc.						✔								✔	✔	✔
Legacy Building Solutions, Inc.	✔			✔		✔								✔	✔	✔
Libran Engineering and Services	✔	✔	✔	✔	✔			✔				✔	✔	✔	✔	
Librawerk Maschinenfabrik GmbH					✔					✔						
Liebherr-MCCtec Rostock GmbH	✔		✔													
Lion Bulk Handling b.v.																
Listenow GmbH & Co.	✔				✔							✔	✔			
Macawber Engineering, Inc				✔												
Mack Manufacturing Inc							✔									
Mantsinen Group Ltd Oy	✔		✔				✔					✔	✔			✔
Maquinas Condor SA	✔	✔	✔	✔			✔	✔								
Martin Engineering				✔				✔							✔	
Martin Engineering GmbH	✔			✔				✔	✔						✔	
Martin Engineering South Africa				✔												
Maschinen und Mühlenbau Erhard Muhr GmbH	✔											✔	✔			
Matrix PDM Engineering															✔	
MegaDome® Buildings by Harnois														✔		
MegaRoller																
Merrick Industries										✔						
Metso Brasil Industria e Comercio Ltda.																
Metso Minerals Industries, Inc.	✔		✔	✔			✔						✔	✔	✔	
Midwest International Standard Products, Inc.	✔							✔				✔	✔			
Minebea Intec GmbH									✔	✔						
Mole•Master Services Corporation™						✔								✔	✔	
Monolithic Dome Institute														✔		
Motherwell Automation																
MRS Greifer GmbH							✔									
Mühlen Sohn GmbH & Co. KG		✔										✔	✔	✔		
Muller Beltex BV				✔											✔	✔
MWI Silo Systems Inc.																
Natural Grabs																
NAVCO (National Air Vibrator Co)																✔
Nectar Group Ltd		✔	✔	✔	✔	✔	✔			✔		✔	✔	✔	✔	
Negrini Srl							✔									
Nemag BV			✔				✔	✔								
NEO CORP BRASIL																
NERAK GmbH Fördertechnik				✔												

The World Coal Leaders Network

14 - 16 October 2018
Pullman Barcelona Skipper, Barcelona, Spain

Shape the future of the global coal market at Europe's largest coal event



Coaltrans Conferences

www.coaltrans.com/wcln

	S&BL	PS&BL	MS&BU	C	FB	H	G	DS	S&I	W&M	G&S	TL&U	RL&U	SS	EC	O
Neuero Industrietechnik GmbH	✔	✔	✔	✔												
Nilfisk SpA		✔		✔		✔										
NK Tehnologija SIA	✔			✔		✔		✔				✔	✔	✔	✔	
NMH s.r.o																
Nordströms Konstruktionsbyrä	✔			✔		✔			✔			✔	✔	✔		
Nordstrong Equipment Ltd				✔												
O B Wiik AS														✔		
Orthos Projects Ltd.			✔	✔		✔		✔		✔				✔		
ORTS GmbH Maschinenfabrik							✔									
PAGE MACRAE ENGINEERING						✔	✔	✔				✔				
Pakiet																✔
Paul Hedfeld GmbH				✔												
PEBCO®	✔							✔		✔		✔	✔			
Peinemann Cranes																
PEINER SMAG Lifting Technologies GmbH							✔									
Peterson Agricare & Bulk Logistics BV									✔							
Pfister Waagen Bilanciai GmbH										✔						
PHB Weserhütte, S.A.	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Pirs SAS														✔		
PLM Cranes B.V.							✔									
Pneumat Systems Inc																
Polymer Industries - Ultrapoly Division																✔
Portpack UK Limited					✔											
Port-Trade AS	✔		✔				✔						✔	✔		
Powertex Inc					✔											✔
Precia-Molen Nederland BV					✔	✔				✔						
Premier Tech Chronos				✔	✔					✔						✔
Premier Tech Chronos b.v.				✔	✔	✔				✔						
Premier Tech Chronos GmbH				✔	✔	✔				✔						
Premier Tech Chronos Ltd				✔	✔	✔				✔						
Procon Engineering Limited										✔						
Protan International																
PT. Bando Indonesia				✔												
QML Srervices																✔
Quadrant Engineering Plastics Products						✔						✔	✔			
R & S Srl / Roncuzzi - WAM Group	✔	✔		✔	✔	✔		✔		✔		✔	✔	✔	✔	✔
RAM SMAG Lifting Technologies	✔							✔					✔			
Rapat Asia																
Rapat Corporation																
Rapidpack Corporation	✔	✔	✔	✔	✔	✔	✔	✔		✔	✔	✔	✔	✔	✔	
RBL-REI France				✔		✔						✔		✔		
REEL Alesa Ltd	✔	✔		✔								✔	✔	✔		
REEL Alesa Ltd	✔	✔		✔		✔						✔	✔	✔		
REMA TIP TOP AG				✔					✔					✔	✔	✔
Representaciones Alfredo Brand y Cia. Ltda.																
RHC Deutschland GmbH	✔	✔	✔	✔		✔		✔	✔				✔	✔	✔	
River Consulting															✔	
Robson Handling Technology Ltd				✔		✔				✔		✔		✔	✔	
Ronin GMS									✔	✔	✔			✔		✔
Royal Haskoning DHV															✔	
Rubb Buildings Ltd														✔		
RULMECA HOLDING S.P.A.				✔												
SAMSON Materials Handling Ltd (AUMUND Group)	✔		✔	✔		✔		✔				✔	✔			
Saxlund International Ltd																
Schenck Process UK Ltd																
Schouten Commodities BV																✔
Scorpio Engineering Pvt. Ltd	✔	✔		✔	✔	✔		✔		✔		✔	✔	✔	✔	
Seabulk Inc	✔			✔											✔	
S-E-G Instrument AB										✔						

	S&BL	PS&BL	MS&BU	C	FB	H	G	DS	S&I	W&M	G&S	TL&U	RL&U	SS	EC	O
Sempertrans				✔												
SENNEBOGEN Maschinenfabrik GmbH	✔		✔		✔		✔					✔	✔			
Servo Berkel Prior										✔						
SESCOTRANS For Developed Logistics (SAE)	✔	✔	✔	✔	✔	✔	✔			✔	✔	✔		✔	✔	✔
SEW-EURODRIVE GmbH & Co KG																✔
SGH Equipment Limited				✔	✔	✔		✔		✔	✔	✔		✔	✔	
SGS (Nederland) BV									✔							
SGS Australia Pty Ltd									✔							
Shanghai Global Machinery. Co., Ltd (SGMC)							✔									
Shanghai Janus Grab Co., Ltd.						✔	✔									
Shanghai Qifan Co., Ltd.	✔						✔									
Shanghai Zhenhua Port Machinery Co (ZPMC)	✔		✔												✔	
Shanthi International		✔	✔	✔		✔	✔							✔		
Siwertell AB	✔		✔	✔								✔	✔	✔	✔	✔
Sly Incorporated																
SMB International GmbH	✔		✔	✔	✔										✔	
Smiley Monroe Ltd				✔												
Solimar Pneumatics														✔		
Sotecma inc				✔								✔	✔	✔	✔	
STAG AG				✔												
Stemm Equipos Industriales, S.L.							✔									
Strudes Inc	✔	✔	✔	✔	✔	✔		✔	✔	✔		✔	✔	✔	✔	
Suomen Viljava Oy	✔	✔		✔	✔	✔		✔	✔	✔	✔	✔	✔	✔		
Supercargo, Lda									✔	✔				✔		
Superior Industries, Inc.	✔			✔		✔						✔	✔	✔	✔	✔
Svendborg Brakes USA, LLC																
Swire CTM Bulk Logistics																✔
TAIM WESER, S.A.	✔		✔	✔		✔	✔					✔	✔	✔	✔	
TBA Doncaster										✔				✔	✔	
TBMA Europe BV	✔				✔				✔	✔		✔	✔		✔	
TBS Shipping Services																
Tebodin Netherlands B.V.															✔	
techNaero aps								✔								
Telestack Limited	✔		✔	✔		✔		✔		✔		✔	✔			
Teta Mühendislik A.Ş.		✔	✔	✔	✔					✔				✔		
Teufelberger Seil Ges.m.b.H																
The Grab Specialist b.v.							✔									
Thermo Fisher Scientific									✔	✔						
thyssenkrupp Industrial Solutions AG	✔		✔	✔		✔		✔	✔	✔		✔	✔	✔		
TMSA Tecnologia em Movimentação S/A	✔	✔	✔	✔		✔	✔	✔	✔			✔	✔	✔		✔
Topcon Technology Ltd										✔						
Tramco Europe Limited	✔		✔	✔									✔			
Tramco, Inc				✔												
Translift Port Equipment Services Inc		✔		✔		✔										
Transship LTD																
Triodetic								✔						✔		
Tsubakimoto Bulk Systems Corporation				✔												
TTS HuaHai Ships Equipment																✔
V D D B (Pty) Ltd																✔
Veenstra Machinefabriek B.V.	✔							✔								
Verstegen Grijpers BV							✔									
Vibco Inc				✔		✔					✔	✔	✔			
Vibrafloor																
Vigan	✔	✔	✔	✔								✔	✔	✔	✔	
Vortex Global	✔							✔				✔	✔			✔
WeatherSolve Structures	✔	✔	✔	✔		✔		✔				✔	✔	✔		
Webster Griffin Ltd					✔											
Windmöller & Hölscher KG					✔											
Wolf Point Engineers & Contractors																
Worley Parsons Canada (Westmar)	✔	✔	✔	✔		✔		✔				✔	✔	✔	✔	
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NEUERO
Industrietechnik

Ausführung	
Leistung:	400 t/h
Fördergüter:	Getreide
Abmessungen:	30 m Ausleger
Bauweise:	Auf Gummireifen mit Generator
Schiffsgrößen:	bis Panamax
Bemerkungen:	8 ton Hilfshubwinde

Design	
Capacity:	400 t/h
Products:	Grain
Dimensions:	30 m Boom
Type:	On rubber tires
Ship size:	< Panamax
Remarks:	8 ton payloader winch

290-2017

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