



DRY CARGO

international

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FEATURES

-
- European Coal Trades
 - Hamburg–Le Havre
 - Stockyard Equipment
 - Scandinavian Focus
 - Bulk Handling Drives, Systems & Controls
-

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Transshipper Bulk Zambesi seen from her twin unit Bulk Limpopo at Beira Port. The two vessels were specifically designed by CC to overcome logistical constraints inherent to the port and to optimize Vale's coal handling process from the Moatize mine to worldwide customers.

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Grain and soya trade prospects contrasts

Signs of positive influences affecting imports of bulk commodities into a number of countries around the world are still evident. But indications of negative changes are also very prominent, potentially offsetting much of the growth elsewhere. As a result, there is only restrained optimism for continuation of the upwards trend in global seaborne dry bulk trade.

The world economy's evolution is not providing much support. Recent (September) calculations by the OECD organization confirmed that world GDP growth in 2016 is likely to be slightly below last year's sluggish 3.1% pace, at 2.9%, and next year any improvement probably will be modest. Global economic activity is described as remaining in a "low-growth trap".

GRAIN

One encouraging dry bulk trade feature is the continued expansion of soya movements, included in the 'grain' category. As shown by the figures in table 1, world trade (mostly seaborne) in soyabeans and meal is estimated to have grown by 6% in the 2015/16 marketing year which has just ended, to 195mt (million tonnes). US Dept of Agriculture forecasts point to a further 4% increase in the next twelve months.

Strongly growing soyabeans imports into China, which reached an estimated 82.5mt in the past twelve months, are boosting the global total. Additional imports into a wide range of other countries contribute as well. In 2015/16 this strength was accompanied by a robust 5% rise in world wheat and coarse grains trade to 354mt but, in the year now starting, a 2% reduction in that segment is likely, based on USDA figures.

IRON ORE

Despite subdued steel production in key raw materials importing countries this year, iron ore trade has benefited from greatly increased purchases by Chinese buyers. In the first eight months of 2016, imports of iron ore into China were 57mt or 9% higher than seen in last year's same period, at 670mt.

Steel production weakness in the EU, Japan and South

Korea has greatly restrained raw materials requirements recently. There has been an absence of growth in China's steel output also, but other factors have raised iron ore imports, including increasing stocks and further substitution of ore from domestic mines with foreign supplies. However, it is uncertain whether this strong trend will persist over the months ahead.

COAL

Positive news about coal trade is less visible. While imports into some countries are growing and appear set to continue enlarging, possibly for many years, most of the major buyers are seeing downwards pressure on consumption and import demand, with environmental policy influences having a big impact.

During the next few years, several countries in southeast Asia could become larger importers of steam coal. Malaysia, Thailand and Vietnam in particular are seen as rapidly expanding markets amid growth in coal-fired power station capacity already under way and greater reliance on foreign coal supplies.

MINOR BULKS

Following another increase in seaborne steel products trade last year, prospects for 2016 are difficult to assess. Some estimates point to a flat outcome. One positive element is Imports into the EU, which have risen very rapidly and, together with falling exports, were reflected in European steel production weakness. Conversely, steel imports into the USA, another major market, were 25% lower at 17.1mt in this year's first seven months.

BULK CARRIER FLEET

A bulk carrier fleet size group likely to see minimal growth in 2016 is the panamax segment, which comprises about one quarter of the entire fleet.

Although newbuilding deliveries could increase, compared with last year, higher scrapping probably will offset a larger proportion, as shown in table 2. The result is expected to be only a minimal 1% increase in Panamax bulk carrier deadweight capacity.

TABLE 1: WORLD SOYABEANS AND SOYAMEAL IMPORTS (MILLION TONNES)

	2011/12	2012/13	2013/14	2014/15	2015/16*	2016/17*
European Union	32.9	29.5	31.4	32.6	34.1	34.2
China	59.3	59.9	70.4	78.4	82.5	86.0
Other Asia	27.5	27.8	30.3	32.3	33.9	36.3
Others	31.8	33.8	38.9	40.6	44.6	46.0
World total	151.5	151.0	171.0	183.9	195.1	202.5
% change from previous year	+4.0	-0.3	+13.2	+7.6	+6.0	+3.8

source: US Dept of Agriculture (12 September 2016) Oct/Sep marketing years *forecast

TABLE 2: PANAMAX (65-99,999DWT) BULK CARRIER FLEET (MILLION DEADWEIGHT TONNES)

	2011	2012	2013	2014	2015	2016*
Newbuilding deliveries	21.8	27.1	19.9	12.8	9.9	11.0
Scrapping	5.2	8.7	5.0	4.8	6.7	9.5
Losses	0.2	0.0	0.0	0.0	0.0	0.0
Plus/minus adjustments	0.2	-0.1	0.1	0.1	-0.4	0.0
World fleet at end of year	151.1	169.4	184.4	192.5	195.3	196.8
% change from previous year-end	+12.5	+12.0	+8.9	+4.4	+1.5	+0.8

source: Clarksons (historical data) & BSA 2016 forecasts *forecast

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

Vale forecasts significant drop in iron ore output

Brazil's mining, shipping and terminal operating group Vale S.A. has noted that production of iron ore this year will only meet its lowest original forecast and that output in 2017 will also be lower than expected. This, it is suggested, is an indication that Vale is attempting to control output at its mines where the lowest margins are to be found.

In a report, the company noted that output in the second quarter reached 86.823mt (million tonnes), which is a decrease of 2.8% over the same period in 2015.

Trends in the first six months of the year suggest that output for 2016 will be in the region of 340mt to 350mt, which is close to the lowest initial forecasts released by the company. In 2015, Vale produced 345.9mt.

Company policy is to replace high cost tonnage, which should mean that in 2017 output will be below the original forecast targets of 380–400mt.

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European coal trades



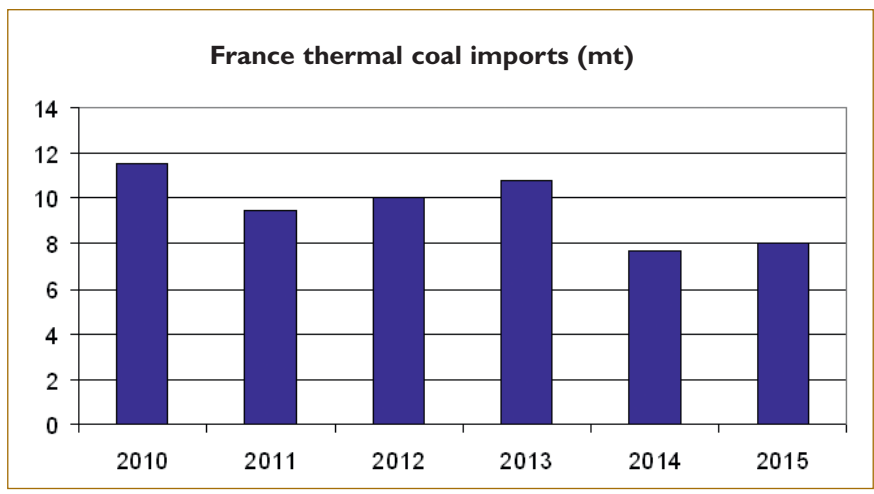
Hansaport at the Port of Hamburg.

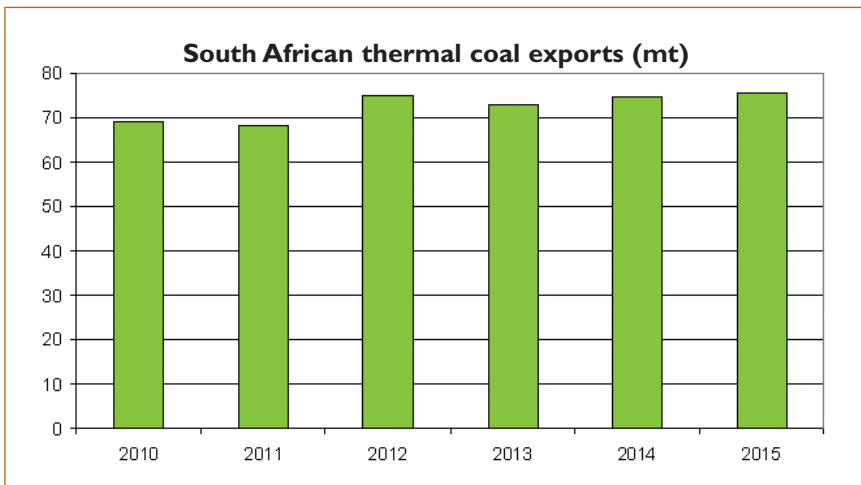
Dr Tim Jones, e-coal.com

European thermal coal demand is expected to be about 160mt (metric tonnes) this year, and has been steadily decreasing from 197.5mt in 2012. Much of this decline has been in the United Kingdom. The delivered price of thermal coal into northwest Europe in February this year fell to the lowest level since 2003 and was reported to be US\$42/t basis 6,000kcal/kg NAR (net as received). The market has since firmed in the region of US\$60/t basis 6,000kcal/kg NAR.

The United Kingdom saw a slowing in thermal coal imports as this year got under way, largely due to lower gas prices and economic incentives which favour gas over coal. The closure of many British coal-fired power stations in order to comply with European Union legislation on emissions over recent years has also meant demand for thermal coal has declined substantially.

During 2016 alone so far, another 5.4GW of coal-fired power generating capacity has been shut down for good. This happened at the Longannet, Ferrybridge, and Rugeley power stations. The





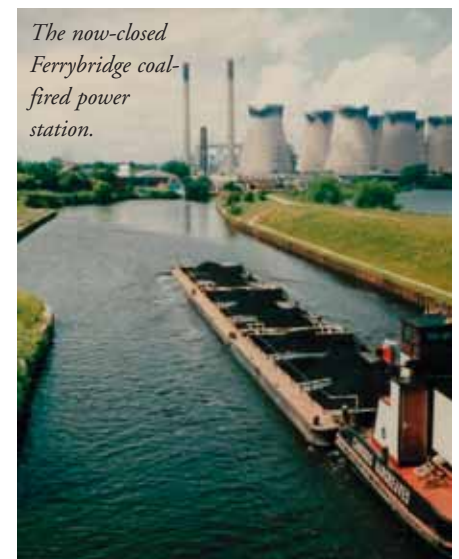
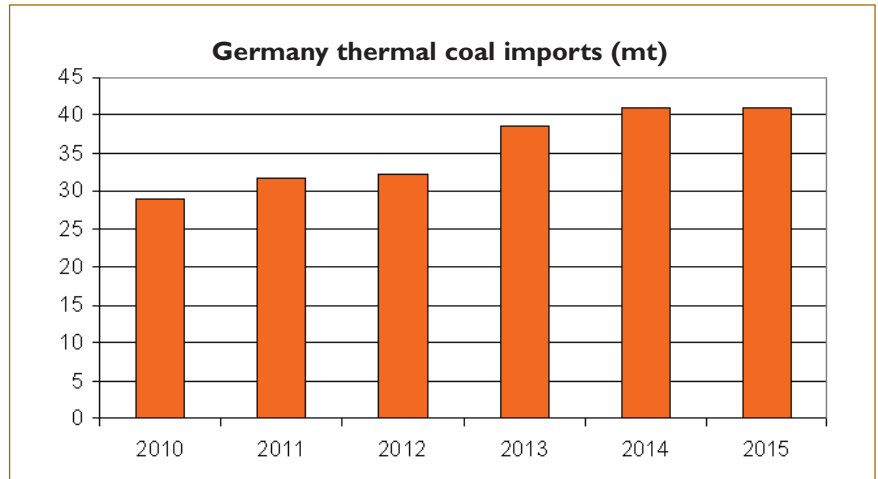
period in 2015. The other main supplier countries, Colombia and the USA, saw shipments fall by some 3.8mt between them.

Coal consumption in the United Kingdom has decreased this year compared with last year, and the latest estimates suggest the total thermal coal consumption could be around 14mt in the lowest case scenario. That would be less than half that recorded in 2015 at some 29mt. Consumers have been using a significant quantity of domestic thermal coal during 2016, particularly at the power stations due for closure, and this is reflected in the

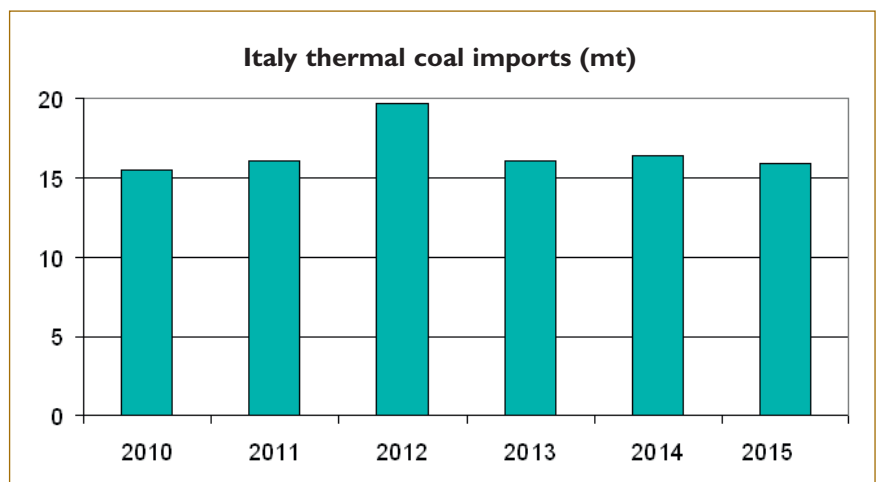
United Kingdom now has only some 13GW of usable coal-fired power generating capacity left.

Electricité de France has cancelled its planned upgrades at the 2GW Cottam and 2GW West Burton coal-fired power stations amid low electricity prices. The French company also withdrew from contracts with the UK government which would have seen the two power stations operating during the winter months in 2019–20 and 2020–2021. The future of the two power stations is now uncertain, and if closed as well, will lead to further decreases in demand for coal in the United Kingdom during the 2020s.

At the time of writing, for the period



January to May 2016, total thermal coal imports reached only 2mt. This compares with 10.2mt imported during the same period in 2015. Estimates suggest the United Kingdom could import only about 5mt of thermal coal in 2016 in total, indicating a substantial decrease in tonnage over the past couple of years. In 2015 a total of 17mt was recorded, but that was also a substantial decrease compared with the year before that at 32.4mt. Imports from Russia during the first five months of 2016 were down drastically at only 0.6mt compared with 4.9mt during the same



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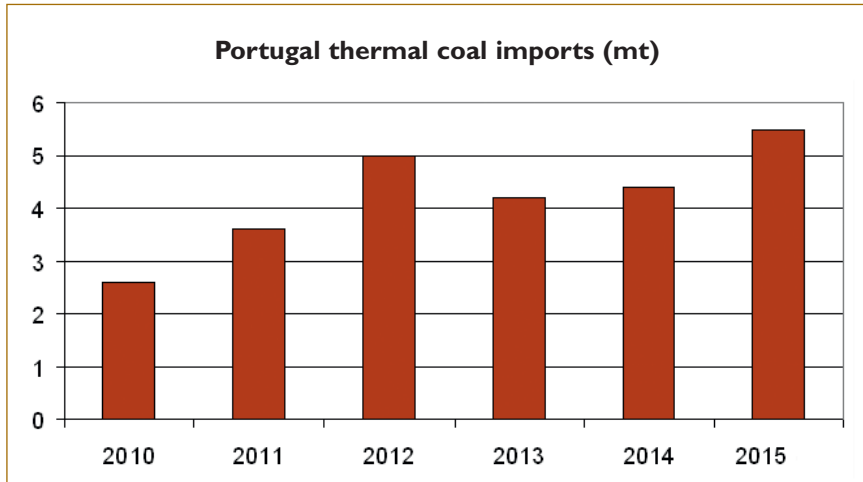
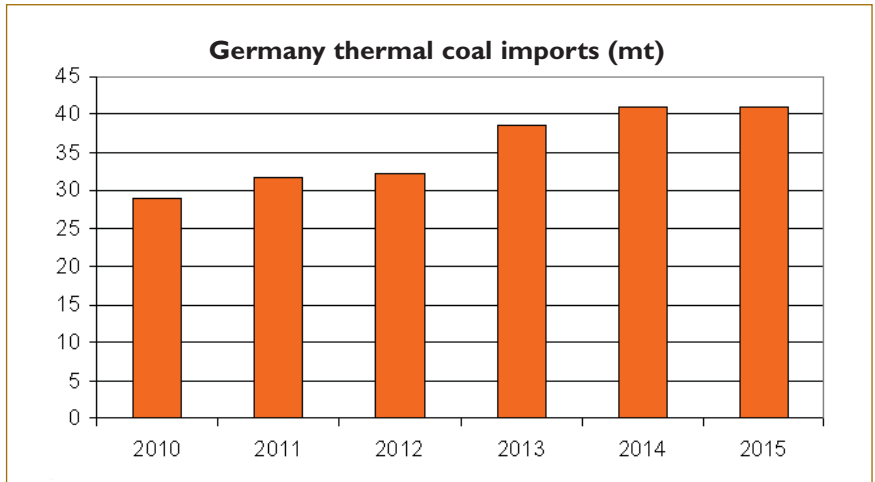
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lower import tonnage being reported. In the first four months of this year, thermal coal stocks had decreased from about 12mt at the start of the year to about 7.5mt. A seasonal increase in import demand is possible during the remainder of the year as winter approaches, and strategic stockpiles are kept at the required levels. This would appear to be on a spot basis as the contract market has been reported to have been very quiet this year. Only 10kt of coal was produced in the United Kingdom's remaining deep mines in the first five months of 2016. This compares with



1.5mt during the same period last year. The opencut mines produced 1.6mt in the first five months of 2016 compared with 3mt in the same period in 2015. Demand for coal imports next year is forecast to increase compared with this year, but given the state of the coal-fired power generating sector it is unlikely to reach levels recorded just a couple of years ago.

Germany has continued to increase its power generation from coal in the aftermath of the Japanese nuclear disaster. Output from renewable sources has also been increasing but in contrast to the United Kingdom this year, gas-fired power generation was also lower in the period up



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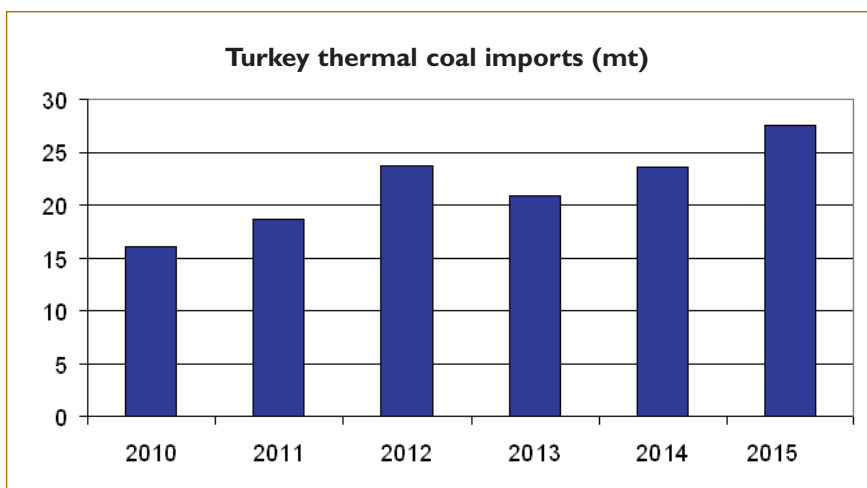
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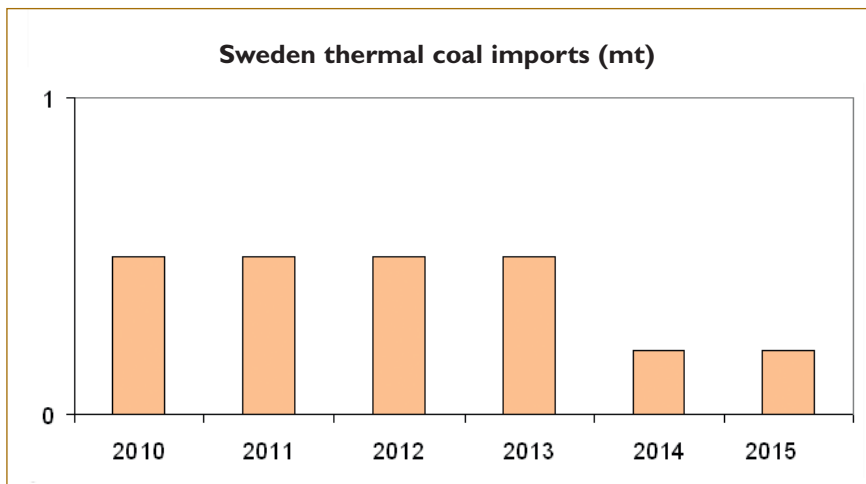
FROM COAL MINES TO POWER LINES

to the time of writing. The country's domestic coal output, however, was only half that recorded last year during the period from January to March this year at 1.3mt. Germany now has only two coal mines left; the Ibbenbüren and Prosper Haniel operations. These are also doomed due to the European Union policy of ending financial support for coal mines. The last German mines will close by the end of 2018, and will follow the closure of the Auguste Victoria mine last year.

Thermal coal imports to Germany reached close to 14mt during the period from January to April this year, which was a decrease of about 0.5mt compared with the same period last year. Polish and South African shippers lost out to Russian exporters during that period, with the latter recording 6mt in total. Coal-fired power generating capacity is due to decrease overall in Germany by 2020 despite new coal-fired plants being commissioned. With the demise of domestic coal production, the country will be reliant on imported coal in the next decade, but demand will be relatively low if competition



supply pressure on producers. The government bailed out the loss making Kompania Weglowa in April with over \$600 million in total, allowing the national coal miner to remain in operation amid high production costs at its deep mines, and low coal prices. Government policy is aimed at supporting the domestic coal producers so this will affect the coal import market for the foreseeable future, with forecasts suggesting little or no growth in imports.



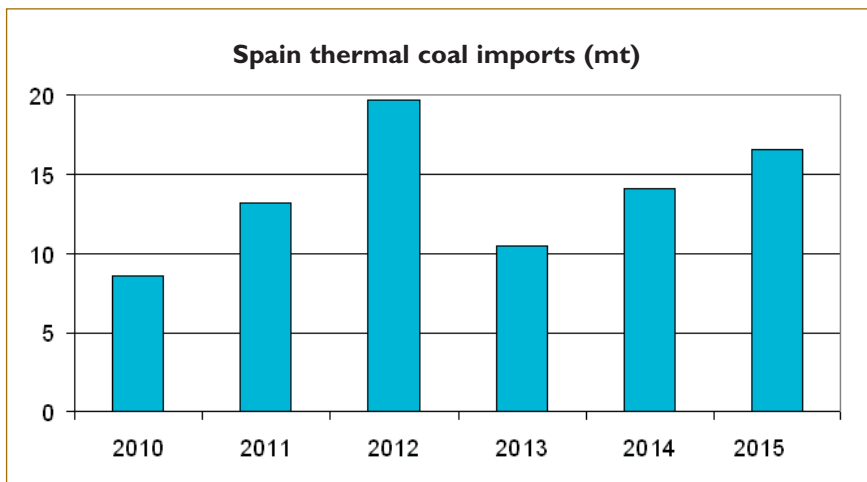
Italy's coal-fired power production got off to a poor start this year with about a third less output from coal in the first five months which was taken up by the use of gas amid lower hydroelectric power availability. Thermal coal imports by Italian consumers have been fairly steady in recent years at about 16mt so the country has been a significant customer for coal shippers to Europe. Steady tonnage has been purchased from Colombia, Indonesia, and Russia each year, while in 2015 there was increased buying from South African exporters, reaching 4mt. This replaced most of the decline in tonnage available from the USA. Colombia and Russia had

from renewables and other fuels dominates the electricity generating sector.

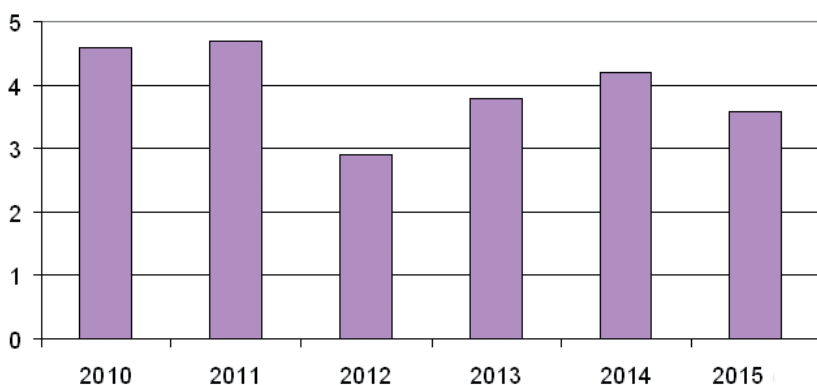
Coal is the main source of energy in Poland's power generating sector, but consumption has been facing competition from other sources including renewables this year. Gas and wind power displaced some coal in the first part of 2016, and electricity generation from coal was lower during the first quarter compared with the same period last year. Coal imports were only 1.4mt during the first quarter of 2016 which was 0.3mt more than in the same quarter last year. Domestic production satisfies the bulk of Poland's coal demand, with Russia supplying some cheaper material for the Baltic coast users this year.

Poland produced 28.4mt of hard coal in the five months to 31 May 2016. Some 23mt of this was thermal coal and these results were only slightly lower than those recorded in the same period in 2015. Demand has been sufficient to allow the large stocks of coal around the mines and facilities to be used, and to reduce some

most of the business in the earlier part of this year. Enel shut down its 140MW Marghera coal-fired power station in 2015 and as a member of the European Union its coal consumers are facing pressure in the coming years to comply with various regulations which adversely affect the use of coal. Thermal coal imports are therefore expected to decrease over time, and are forecast to fall by about 1mt this year to reach a total of about



Denmark thermal coal imports (mt)



15mt.

Turkey continues to be a major consumer of coal in eastern Europe, with a total of 27.8mt imported in 2015. This compares with just over 16mt recorded in 2010, and demand this year has also been firm. Coal-fired power generation dominates the Turkish electricity sector, and production has grown during 2016. Electricity generation from renewables has also been growing, with energy sources including hydro, wind, and biomass seeing increased utilization this year. Recycled waste has also recorded increased use in electricity generation in Turkey recently. These alternative sources of energy have displaced consumption of gas, while slowing what could have been a higher rate of coal consumption growth this year.

During the first five months of 2016, thermal coal imports reached 11.1mt which was an increase of about 0.4mt compared with the same period last year. The bulk of this came from Colombia which recorded 5.3mt. This was an increase of 1.3mt compared with the same period last year. Russian shippers delivered 4mt during the five months which was an extra 0.4mt compared with the equivalent time in 2015. Less South African tonnage was received by Turkish buyers during the period, with 1.3mt less being shipped from Richards Bay to reach 1.512mt. The lack of business with Ukraine since the Russian move there is notable.

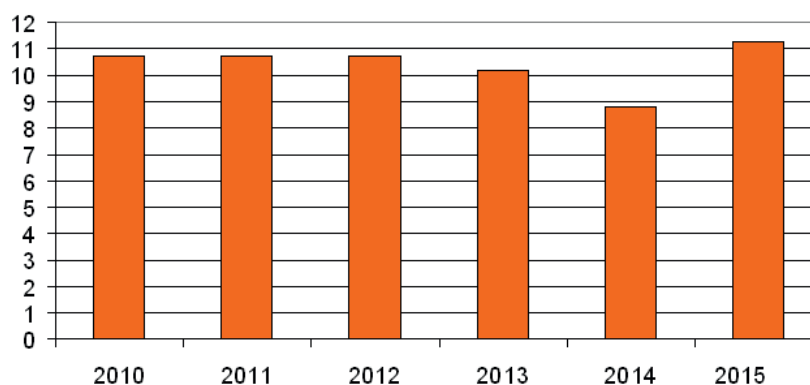
An additional 1400MW of coal-fired power generating capacity is due to come online soon and Eren Enerji's existing

power station in Catalagzi-Zonguldak could consume up to 6.5mtpa (million tonnes per annum) of coal when at 2790MW capability.

Thermal coal import demand is forecast to increase in Turkey in the coming years as more coal-fired power generating capacity is constructed. At present, nine power companies have plans for a total of 8665MW to be added to the country's portfolio of coal-fired plants, with planned commissioning dates ranging from this year to 2020. Three of the largest of these expansions amount to 3720MW and are likely to take until 2020 or possibly longer based on the current rate of progress.

Spain has enjoyed increased hydro electric power availability during the first half of 2016, while generation from coal decreased. This was also the case for nuclear power and gas consumption. Thermal coal imports have been increasing in the past couple of years, after a significant drop to 10.5mt in 2013 to reach 16.3mt in 2016. The high availability of hydro power appears to be the main factor that will cause a decrease in coal consumption this year, and imports

Netherlands thermal coal imports (mt)



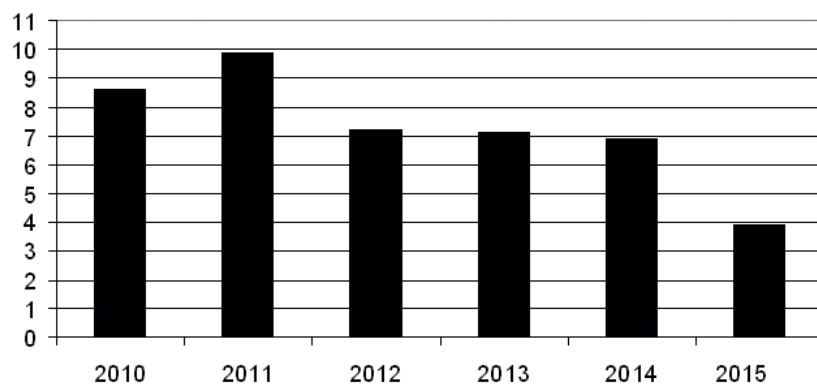
are forecast to decline to about 14mt and remain subdued in 2017.

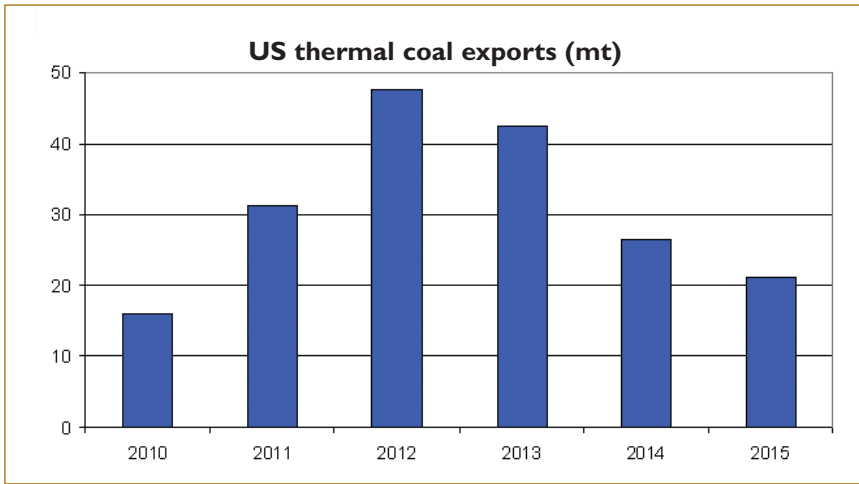
Spain is being paid €2.1 billion by the European Union to close 26 coal mines by 2019. With a bleak future for coal-fired power stations as well, there is unlikely to be an increase in demand for thermal coal imports in the future.

Portugal saw increased power generation from strong hydro availability and the use of renewable energy in the first half of this year. This impacted coal consumption at the Sines and Pego power stations. It appears, however, that the thermal coal importers decided to build their stocks amid this climate of lower coal demand, and recorded imports were higher than in the same period last year. South African tonnage has been received, as well as more Colombian material. Overall this year, imports are forecast to reach around 4mt which would be some 1mt less than in 2015.

Coal demand in France has been weaker this year after reaching around 8.3mt in 2015. The total could be around 2mt lower

Poland thermal coal imports (mt)



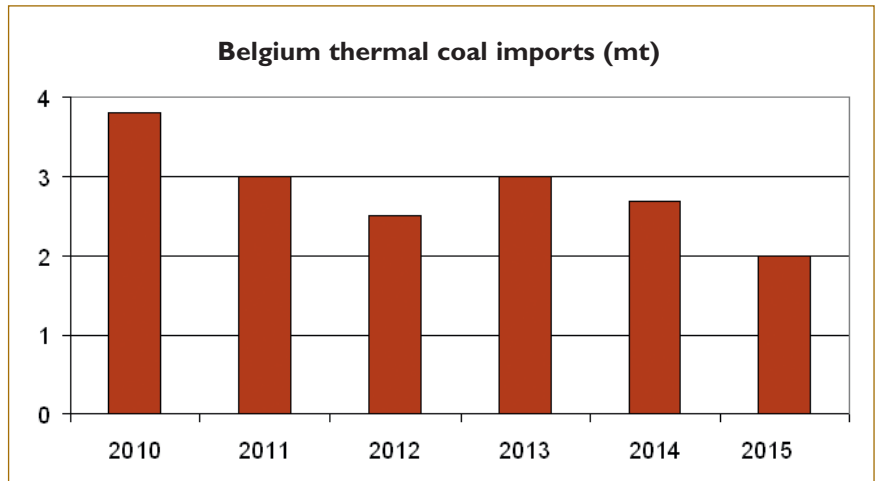


this year, and the country started the year with lower consumption compared with early 2015. Nuclear generation was also lower, but the overall electricity production level was similar to the same period last year. The level was maintained by increased use of gas, wind, and hydro.

Coal imports did not rise as much as they could have in the early part of this year because consumers drew down from

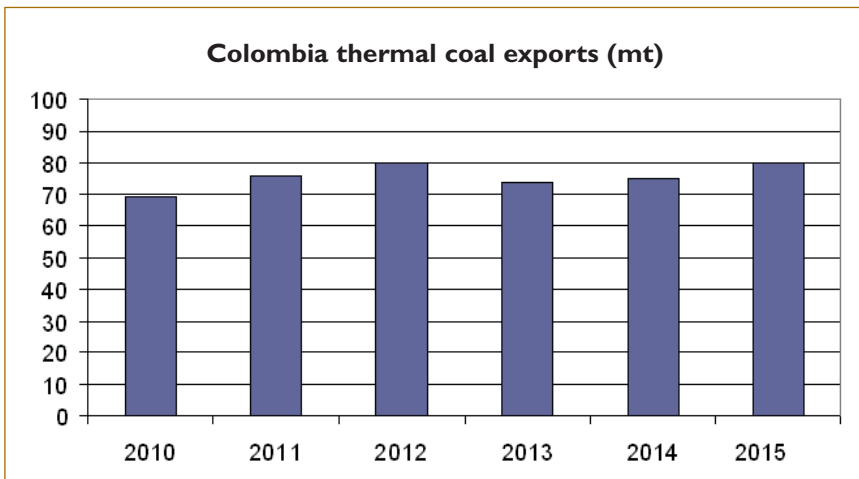
demand to much lower levels in the coming years rendering France a small market compared with what it was.

Belgium imported 1.7mt of thermal coal for its domestic use last year, and has maintained trade at about 1.3–3.0mt over recent years. Overall imports are recorded as higher because other tonnage is shipped on to customers in other parts of Europe. In 2015, the total import tonnage received in Belgium



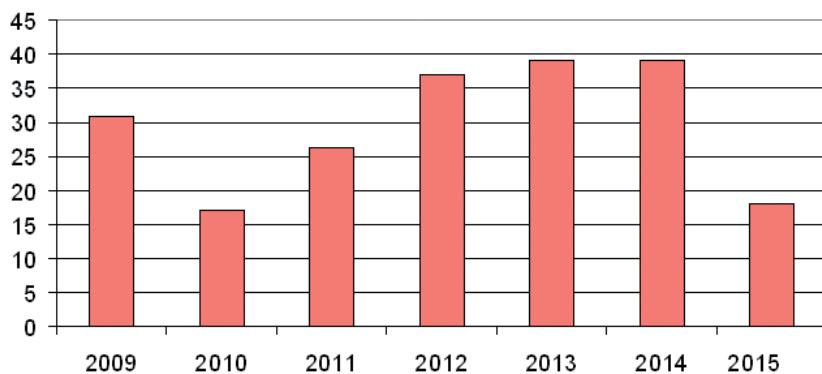
stockpiles, using up more than 1mt during the first four months of 2016. Nevertheless, there was an increase in coal imports during the four months to 30 April with 3.3mt recorded which was 0.6mt higher than in the same period in 2015. Long haul product from Australia increased by 588kt during that period compared with 2015, to reach 664kt. Russia supplied 841kt and the Colombian shippers sent 668kt during that period which

reached 3.174mt so almost half of that was then moved on to other countries. Demand elsewhere in Europe determines the overall volume arriving in Belgium, and this amounted to 5.632mt in 2010, of which only 1.322mt was consumed within the country itself. Last winter, Belgium was burning more coal than in the same period a year earlier and recorded 0.671mt imported for its own consumption during the first quarter of



2016. This was 0.154mt higher than during the same quarter in 2015. Most of the coal came from Russia, which shipped 0.7mt and recorded an increase of 0.1mt compared with the first quarter in 2015. Total imports reached 0.947mt this time. Coal-fired electricity generation during the five months to 31 May was lower compared with the same period last year. Significant increases were recorded for nuclear generation which dominated the power sector during that period after two dormant nuclear power stations were restarted last December. After shutting down its nuclear assets, Germany then found itself with these nuclear facilities

United Kingdom thermal coal imports (mt)



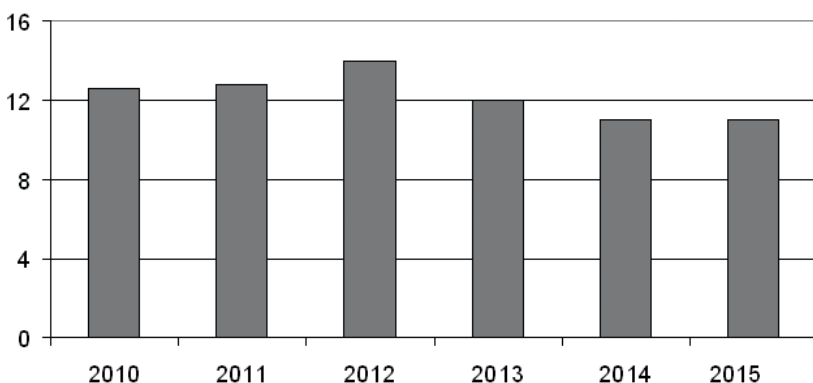
operating on its doorstep again. While the Belgian nuclear plant continue to operate, the demand for coal is set to diminish in the country. Imports for its own use could drop to around 1mt next year.

Denmark's thermal coal demand has been declining in recent years. Gas consumption for power generation has also decreased as biomass fuel has grown in use, and the country also imports electricity from neighbouring countries. The availability of hydroelectric power from Norway has been notably strong this year. Dong Energy has been converting the 250MW Avedore and 375MW Stadstrup coal-fired power stations to biomass firing, and HOFOR is doing the same at the 95MW Amager 2 coal unit. By 2017 there will be even less demand for coal in Denmark.

Thermal coal imports reached 2.77mt last year, compared with 4.23mt in the previous year. Colombian and Russian suppliers enjoyed some increase in shipments during the early part of 2016, but at the expense of the South African exporters who saw no business in the first four months of this year compared with 0.17mt during the same period in 2015. Less than 2mt of thermal coal imports has been predicted for 2016.

Finland was one of the main consumers of coal in northeast Europe, but again this has seen decreases in recent years from 5.7mt in 2011 to 2.2mt last year. The early part of this year saw coal buck the trend and coal-fired power generation increased

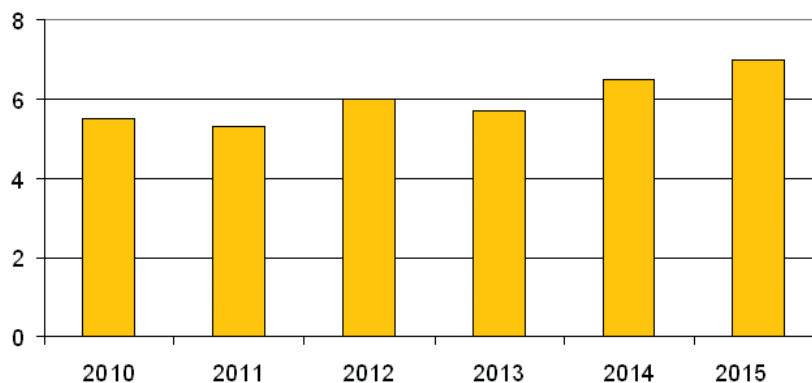
Israel thermal coal imports (mt)



during the first few months of 2016. Total thermal coal consumption in the first quarter reached 1.11mt which was an increase of some 4% compared with the same period last year. There was a draw down of coal stocks at the power stations during that period from 3.5mt at the start of January to 2.9mt at the end of March. While imports tend to increase later in the year in Finland in order to build up stock requirements ahead of the winter, the general decreasing consumption and import trend is expected to continue. Almost three quarters of Finland's imported coal comes from Russia, but the volumes have been small this year. In fact, the year got off

to the weakest start since the 1990s when only 0.11mt was imported in January, and only 0.35mt was taken during the first quarter overall. This was 46% below the total recorded in the same period in 2015. Polish coal imports have been low this year compared with last as well. Total thermal coal imports to Finland during 2016 could reach less than 1.5mt and are forecast to be even less next year.

Morocco thermal coal imports (mt)



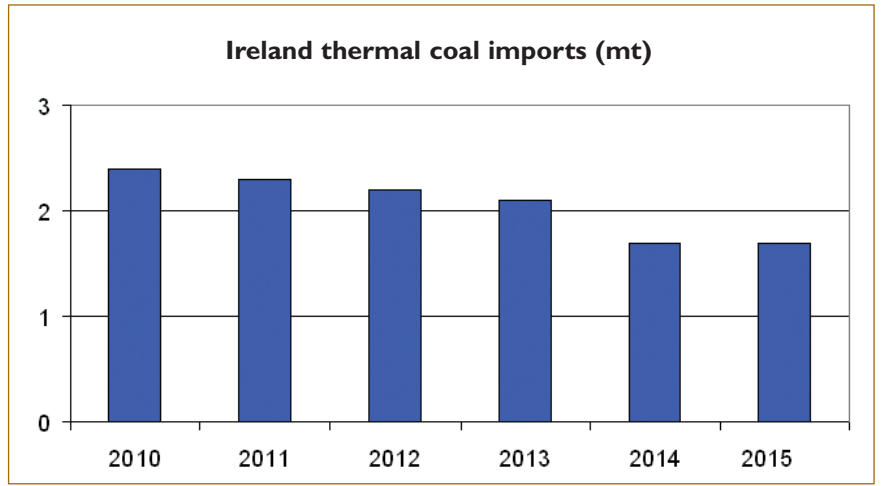
Discussions with coal market traders at the time of writing indicated that positions had been taken which were keeping short term prices steady. This was particularly so for coking coal. Plenty of coal is still available from major suppliers. Freight rates are favourable for large Capesize cargoes to be shipped from Newcastle to Europe at present. Several cargoes of Australian thermal coal have arrived in north west Europe

recently and more are due to be delivered in the coming weeks. The deals appear to have outwitted competitors trying to sell thermal coal from suppliers nearer to Europe and they have been unable to understand the finances of the Australian deals.

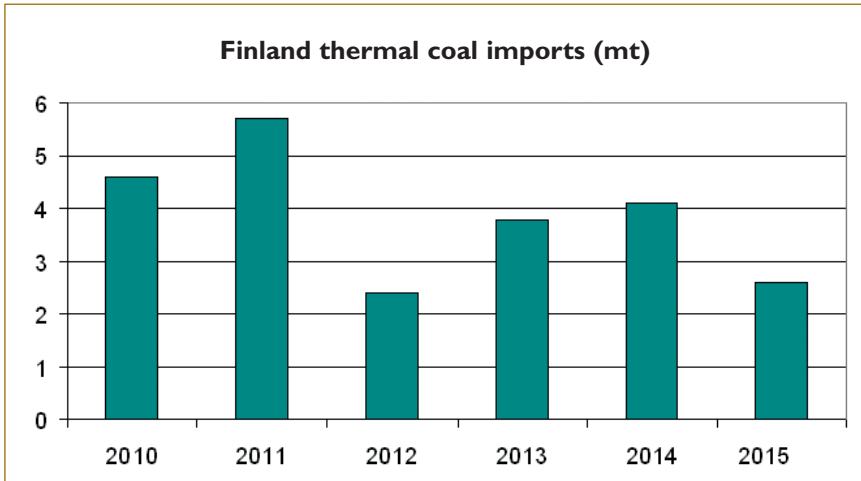
Thermal coal prices in Europe have been gaining ground at the time of writing, but coal stocks on the pads in the Amsterdam–Rotterdam–Antwerp ports have been increasing due to the reduced coal consumption over the summer months. These were approaching 4mt overall for all coal types in the three ports at the beginning of September. A July loading

recently arrived from Newcastle with standard quality Hunter Valley product for a European utility. A similar cargo is en route for delivery in October, along with at least another two for one trader. The price of the coal at the time of the deals is believed to have been in the mid US\$60s per tonne FOB (free on board) basis 6,000kcal/kg NAR.

With thermal coal prices having hit the lowest level for twelve and a half years in February this year, and since recovering, there is some optimism in the international coal market. The fundamental supply/demand situation may be moving more into balance, driven largely by cuts in production in China and the USA. While this may result in more activity in some world markets, the European thermal coal market operates within the European Union policy of greener power generation, at least for those countries subject to the



rules set in Brussels. While the United Kingdom has voted to leave the European Union, it is too late to address its decommissioned coal-fired power stations, and how they might have helped its coal industry and associated assets and



businesses to operate, so coal demand will now remain low there. In the years ahead it could be a different scenario for the future of coal trade in Europe if other countries vote to leave the European Union and find themselves able to consider their own policies on coal utilization once more.

Dr Tim Jones is Director of e-coal.com Consultancy and Editor of the weekly publication Coal Market Intelligence which covers 11 spot markets worldwide, gives key information on the latest deals and tenders, company news, people and jobs, industrial relations, and ports, shipping, and freight rates.

DC



The Caterpillar-developed Cat® GH800B Longwall Plow System, mining very low coal seams at high rates in the German Ibbenbüren mine.

GAC Brazil continues expansion with new port office

AÇU BECOMES SEVENTH OFFICE OFFERING GAC SHIPPING, LOGISTICS AND BUNKER FUEL SERVICES

In the latest stage of its national expansion, GAC Brazil has opened a seventh office to offer its shipping, logistics, bunker fuels and marine logistics at one of the country's newest and rapidly growing port complexes, in the north of Rio de Janeiro State.

The new office, which officially opened in late July at São João da Barra RJ, covers operations at the Açú port complex. Located 315km north of

Rio de Janeiro city, Açú has ten berths, with plans to add a further 20, and at 21 metres, is deep enough to accommodate some of the world's largest freight vessels.

"The Açú Port is expected to become one of the largest port complexes in Latin America. The combination of commodities and activities related to shipping and logistics is definitely a great opportunity for GAC Brazil to showcase its main assets to the local market. Having this scenario, we can assure our customers that GAC is a reliable option as our shipping team has a distinctive blend of dry bulk and O&G specialists," says Rodrigo Kill, Shipping Manager at GAC Brazil.

Jorge Nikulin, Project Manager for GAC Brazil Logistics, adds, "For project logistics, Port Açú is a bright place for development, combining strategic localization with opportunities for growth. GAC Brazil is gathering synergy through its services to offer a complete solution to our customers backed by ship agency, project logistics and our full package of logistic solutions."

GAC serves the Brazilian shipping and logistics markets from its headquarters in São Paulo, and six branch offices in Angra dos Reis, Macae, Recife, Rio de Janeiro, Santos and now Açú.

The Group also serves the Latin America market through its operation in Trinidad & Tobago.

ABOUT GAC GROUP

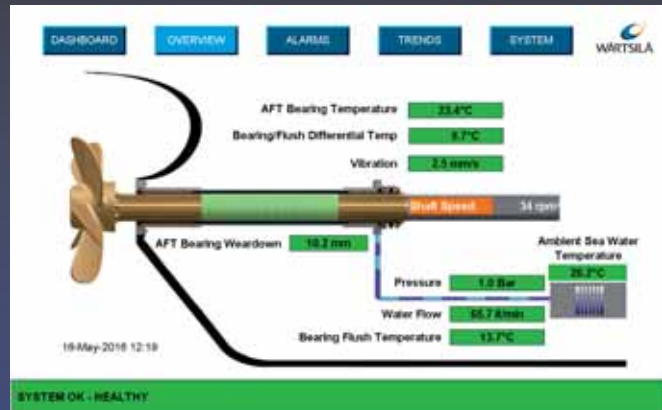
GAC is a global provider of integrated shipping, logistics and marine services. Emphasizing world-class performance, a long-term approach, innovation, ethics and a strong human touch, GAC delivers a flexible and value-adding portfolio to help customers achieve their strategic goals. Established since 1956, the privately-owned group employs over 9,000 people in more than 300 offices worldwide.



New Wärtsilä Sea-Master uses digital technology to maximize uptime and reduce lifecycle costs of vessel shaft lines

The new Wärtsilä Sea-Master system was launched at SMM 2016, the leading trade fair for shipbuilding, machinery and marine technology which took place in Hamburg in early September 2016. The Wärtsilä Sea-Master system uses digital technology to monitor shaft bearings and seals to help customers maximize uptime and lower lifecycle costs of vessel shaft lines. The Wärtsilä Sea-Master system collects real-time data from the tail shaft of the vessel, providing valuable information about the operational health of the tail shaft equipment.

“The Wärtsilä Sea-Master system is an exciting example of how digitalization can advance the maintenance of propulsion technology. The system provides extensive real-time technical information and applies data analytics to deliver careful expert analysis and performance-enhancing recommendations,” says Matthew Bignell, Sales Development Manager, Wärtsilä Seals & Bearings. “With the Wärtsilä Sea-Master, our customers will have a window into the operational health of the vessel’s shaft line and gain knowledge about, for instance, the wear rates of the equipment. This allows for more accurate



maintenance planning and reduces vessel downtime. The Wärtsilä Se-Master also allows customers to take a long-term view on their shaft line systems and to ensure regulatory compliance. Moreover, the Wärtsilä Sea-Master can enable a controlled extension of tail shaft maintenance withdrawal intervals for water lubricated systems.”

The Wärtsilä Sea-Master system is available for all vessel segments and ship types as well as for new build and retrofit applications.



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Hudig & Veder is a solution-driven partner who offers a total in-house package of shipping solutions and an international network.

At Hudig & Veder we are strongly positioned to offer the total Supply Change Logistics for bulk and breakbulk cargoes.

- Storage & Cargo Handling
- Agencies
- Cargo Inspections and Lab Service
- Coastal & Barge Chartering

HUDIG & VEDER

SINCE 1795

MSI forecasts fourth quarter ‘bounce’ for dry bulk market



The Q4 bounce — a seasonal staple of the dry bulk markets — looks likely for Capesize and Panamax segments, but the effects may be limited.

Maritime Strategies International (MSI), an independent research and consultancy firm is forecasting a fourth quarter bounce in dry bulk market earnings, driven by improving iron ore, coal and grain trades. In its latest *Dry Bulk Freight Forecaster* MSI sees positive signs beyond the traditional summer lull in chartering activity for both the Capesize and Panamax sectors. However, the geared bulker segment will see slim opportunities with fundamentals weakened by strong vessel deliveries.

With the vacation season keeping downwards pressure on earnings in the short term, market sentiment for Capesize spot rates in Q3/4 has dropped over the last month.

But MSI remains more positive than the Forward Freight Agreement curve which itself is indicating a substantial improvement in sentiment. The August Capesize Timecharter Average contract was marked at \$4,525 on 17 August by Freight Investor Services and the Q4 contract at \$8,250. MSI predicts an average spot earnings level for a modern Capesize in October 2016 of \$10,400.

Will Fray, Senior Analyst, MSI said: “Contrary to recent reports, vessel movements data shows that Roy Hill’s new iron ore operation in Western Australia is ramping up more quickly than expected and should reach just below its maximum capacity by December. Seasonal coal trade should also provide some support for Capesize shipments into China. We continue to forecast Capesize spot rates over \$10K/day in October, but rates will most likely drop early in the new year on seasonal trade weakness.”

In the Panamax market, the FIS forward curve was marked on August 17 at \$5,550 for the August TC contract and \$6,625 for the Q4 contract. MSI forecasts an average spot rate in October of \$7,000. The recent strength in Chinese and Indian coal imports have diverging causes and may cancel each other out as China’s stronger imports hold up India’s fall over the near-term.

However, winter stockpiling demand in the rest of Asia should support Panamax demand in Q3/4 this year.

Near-term support will also materialize from US grains exports, with The International Grains Council making a 6% upwards revision in its estimates for 2016/17 US wheat and coarse grain exports and a 10% cut to Brazilian corn production.

In the Handymax/Supramax segment however, hopes for a resumption in bauxite trade from Malaysia have diminished with another extension of the ban on production until mid-September. Beyond stronger US grains exports in August/September, there appear to be slim opportunities for the geared bulker segments over the next six months, with market fundamentals weakened by strong vessel deliveries. MSI’s forecast for Supramax spot rates puts October rates below July levels, falling to below \$6K/day in the new year.

ABOUT MARITIME STRATEGIES INTERNATIONAL

Since its inception in 1986, Maritime Strategies International (MSI) has established itself as one of the shipping industry’s foremost independent research and consultancy firms. Its success is built on a strong focus on maritime economics and econometric modelling. It provides a comprehensive range of advisory services, including forward valuations market forecasts, reports and commercial consultancy services for all shipping sectors. MSI asset price forecasts are used by ship finance providers holding 40% of all shipping bank debt and it provides analytical and methodological support to give the context and credence to its results.

MSI has recently launched Forecast Marine eValuator (FMV), the first web-based tool to provide historical and forecast price and cash flow data covering all key deepsea shipping sectors. MSI FMV offers unique insight into future values and cash flows for individual ships across all key shipping sectors. Recent history and a near-term perspective are provided via quarterly metrics; the long view is provided by 15 years of forecast annual average data.



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Egyptian heavy lift project enabled by AAL's unique semi-liner solution

AAL'S UNIQUE SEMI-LINER CAPABILITY BETWEEN ASIA AND THE RED SEA, DELIVERS SOLUTION FOR SIEMENS' EGYPTIAN MEGAPROJECT

Pictured are modules for a state of the art heat recovery steam generator (HRSG) and destined for the Beni Suef power plant in Egypt, being loaded aboard the AAL *Dalian* in South Korea. Commissioned by global logistics provider the LPL Group, this is the first of a series of cargo shipments that AAL will undertake between Asia and the Red Sea for the Siemens Megaproject in Egypt — a project that includes the development of three 4.8 gigawatt turnkey combined power plants in Beni Suef, Burullus and New Capital.



Namir Khanbabi, Managing Director of AAL's Tramp & Projects Division, explained, "This is an incredibly important project for Siemens and indeed Egypt — one that will boost power generation capacity for the country by 50%, to 16.4 gigawatts. Accordingly, we are providing Siemens with a comprehensive and dedicated solution that involves four of our owned 31,000dwt A-Class vessels being deployed between Asia and the Red Sea.

"The commitment of this best-in-class tonnage provides Siemens with the guaranteed capacity, bi-monthly schedule integrity and port call flexibility it needs to meet its logistics and time objectives. It also gives our other multipurpose and heavy lift customers around the world a regular and highly flexible semi-liner service: Asia – Red Sea – Asia."

AAL's 'ASIA - RED SEA – ASIA Semi-Liner Service' strengthens the operator's growing tramp and projects capabilities between the Middle East and the region's key trade partners. AAL already operates 'EU – ME – ASIA' and 'GULF – ASIA' Semi-Liner Services. These services harness the world's youngest multipurpose fleet — seven classes of flexible multipurpose tonnage, designed to safely and efficiently load and transport heavy lift project and breakbulk cargo, alongside dry bulk.

ABOUT AAL

AAL is one of the world's leading breakbulk, project cargo and heavy lift shipping operators, providing a unique dual tramp and liner service for its customers throughout Asia, Europe, Middle East and the Americas. Established in 1995, the company operates the multipurpose sector's youngest fleet — multiple classes of modern multipurpose heavy lift vessels (ranging from 12,000, to 31,000dwt) and each specifically designed to accommodate heavy lift and project cargo alongside breakbulk, containers and bulk.

In 2014, AAL won 'Best Maritime Cargo Provider' at Cargo Logistics Canada. In 2015, it launched an international co-operation with Peter Döhle, to offer enhanced global tramp & projects solutions and new semi-liner services on key global trades. In the same year, AAL won 'Best Shipping Line — Project Cargo' at the Asian Freight, Logistics and Supply Chain Awards (AFLAS) for a second year running and then repeated its success for an unprecedented third win in 2016.

The award-winning operator is headquartered in Singapore and is a member of Schoeller Holdings, a long-standing and highly respected maritime group.



Thordon's SeaThigor seal delivers new level of redundancy for COMPAC

Thordon Bearings has unveiled what is potentially the marine industry's safest, most robust shaft seal as part of a programme of enhancements under way to optimize its award-winning COMPAC seawater lubricated propeller shaft bearing system.

Targeting high quality, low leakage, long life and minimum maintenance, Thordon's new SeaThigor forward seal was unveiled at the SMM maritime trade fair in early September. Its outstanding technical features raise the bar in dynamic and static seal design, with an unmatched performance of the primary dynamic seal, and an ingenious secondary seal module that provides a safe-return-to-port capability in the event of a face failure of the primary seal.

After several years of development and testing, the new SeaThigor safety seal design incorporates a pneumatically activated inflatable element to stop water ingress along the shaft, allowing for the repair of the main seal whilst at sea, or allows for the shaft to turn at a lower speed so the vessel can safely return to port for primary seal repair or replacement.

Providing a new level of redundancy to single screw or mission-critical vessels operating seawater-lubricated propeller shafts, SeaThigor can function as both a dynamic and static seal to provide water-tight integrity around a shaft, while allowing the propeller shaft to rotate in both directions across a range of shaft speeds.

With inside the engine room application and typically mounted on a rear bulkhead or stern tube flange, the modular design incorporates two wear-resistant silicon carbide seal faces that contact each other to provide primary static and dynamic sealing.

The seal is designed with an enclosed housing protecting the rotor components, so no moving parts are exposed, resulting in installation simplicity and requiring minimal maintenance. Its 'all-metal' construction made of marine-grade bronze also guarantees corrosion resistance for life.

"The SeaThigor abrasion resistant sealing faces achieve dynamic sealing with leak and maintenance free operation," said Andy Edwards, Thordon Bearings Commercial Director. "If there was ever a true fit-and-forget system, then SeaThigor is it."

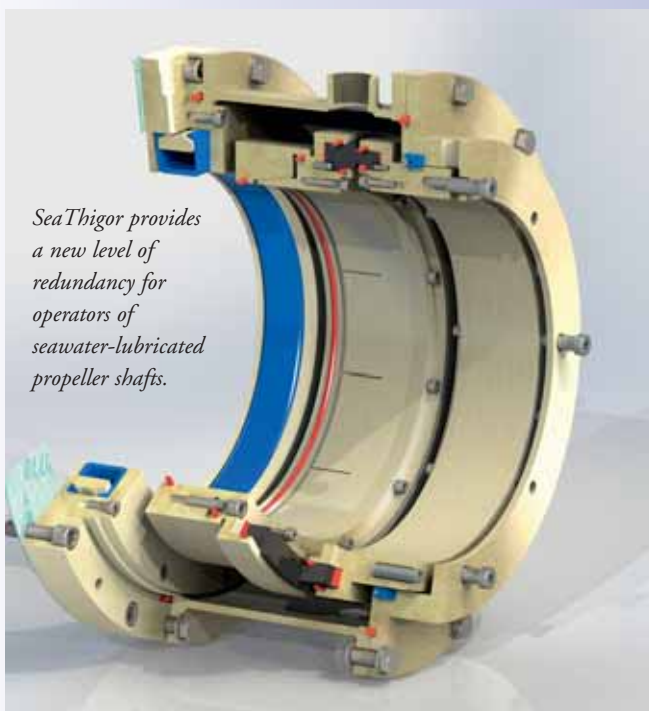
Suitable for 300mm (11.8") to 650mm (25.6") diameter water-lubricated propeller shafts, the seal features a series of precision compression springs that are unaffected by water temperatures, pressure or draught. These springs are used to linearly load the seal faces, ensuring that the pressure is equally distributed to the entire contact surface.

Unlike other water-lubricated stern tube seals which adopt an 'inside pressurized' design, the SeaThigor is designed to operate with a hydraulically-balanced, outside pressure to better withstand higher water draughts and pressure variability in rough seas. This 'outside pressurization' design also counters the natural outflow direction through the rotating seal face, further reducing leakage.

Since both the static and safety sealing elements use Thordon's proprietary elastomer technology, shelf life concerns are allayed with a much longer service life than traditional rubber seals.

SEATHIGOR PRINCIPAL PARTICULARS

- ❖ shaft diameter size: 300mm to 650mm (11.8" to 25.6")
- ❖ primary sealing faces: silicon carbide
- ❖ quiet operation (no vibration)
- ❖ no visible leakage
- ❖ high water pressure: rated to 2 bar/30psi (0.2mpa)
- ❖ high shaft surface speeds: up to 10m/s (32.8ft/s)
- ❖ axial shaft movement: ± 10 mm ($\pm 3/8$ ")
- ❖ radial shaft movement: ± 5 mm ($\pm 1/5$ ")
- ❖ fully tested in Thordon Laboratory
- ❖ LR and DNV-GL Type Approved



SeaThigor provides a new level of redundancy for operators of seawater-lubricated propeller shafts.

This was affirmed during Lloyd's Register Type Approval trials last year when two 443mm (17.44") shaft diameter SeaThigor seals were tested simultaneously on the Thordon Marine Seal Test Rig, in Burlington, Canada. After extensive testing, the safe-return-to-port emergency seal showed no sign of wear after 15 days of use. SeaThigor received LR and DNV-GL Type Approval this summer.

"Thordon Bearings will install the SeaThigor to an undisclosed vessel during a scheduled drydocking later this year," said Edwards.

"We are seeing a resurgence of interest in seawater lubricated propeller shaft bearing systems and the SeaThigor is an important part of this. Market interest so far has been beyond expectation, with a number of commercial ship operators making tentative enquiries," he said

ABOUT THORDON BEARINGS INC

A global leader in seawater lubricated propeller shaft bearing and seals systems with over 35 years' experience in this technology, Thordon Bearings designs and manufactures a complete range of non-metallic sleeve bearing solutions for marine, clean power generation, pump, offshore oil, and other industrial markets. The polymer bearings operate pollution free without oil or grease.

The immeasurable value of underwater inspections

Building upon conventional technical skills and know-how while also taking advantage of the latest technology, Hydrex offers a unique hull monitoring service to its customers. This gives shipowners total control of their ship's hull condition and consequently its performance, with only a minimum of work on their part. Underwater inspections represent a small investment and, if properly done, have the potential to save an owner a great deal of money.



advance. Otherwise it can be transported to the location of the vessel immediately from one of Hydrex's fast response centres where a large stock is available for its teams at all times. This was demonstrated in August when a rope guard had come loose, which was revealed during an underwater inspection. The Hydrex team secured the rope guard without any delay for the owner.

Competent underwater inspections, particularly if carried out regularly can detect:

- ❖ problems with the propeller such as bent or damaged blades (which can put undue strain on bearings), roughness due to fouling, cavitation damage or bad polishing which can reduce the propeller's efficiency;
- ❖ anodes which have wasted away, rendering the cathodic protection system unworkable, leading to corrosion and added hull friction;
- ❖ hull cracks or other damage which, if not rapidly arrested, can worsen and increase the cost of any subsequent repair;
- ❖ ropes inside the stern tube assembly which may cause seal problems if neglected;
- ❖ leaking stern tube or thruster seals which can cause an environmental problem in port and lead to costly changes to a ship's schedule if not caught quickly and repaired;
- ❖ clogged sea chest grids (preventing proper cooling of the ship's engines), or loose or damaged grids;
- ❖ loose or broken grids on thruster tunnels which can result in damage to thruster propellers;
- ❖ damaged, bent, broken or detached bilge keels which again can become much worse if not caught early; and
- ❖ a damaged rudder which will continue to deteriorate if not addressed rapidly, resulting in the need for much more costly repairs and representing a safety hazard in extreme cases.

Regular inspections carried out by competent divers and followed by comprehensive and accurate reports can detect any of these or other problems so that they can be corrected early and prevent more costly repairs and further damage. Because Hydrex has over 40 years' experience in both maintenance and repair services, it can carry out any required follow up repair very fast without any unnecessary loss of time. Planning in a new date is not needed as all Hydrex's diver/technicians are skilled to perform the repair work as well.

If the damage found during an inspection can be anticipated, the required equipment can be mobilized in

INSPECTIONS BEFORE DRYDOCKING

There is another important way for underwater inspections to be used to save costs. A thorough inspection carried out a week or two before a ship is due to go to drydock can save a great deal of money in drydock. An accurate estimate of work required can lead to efficient scheduling. If thrusters are to be repaired in drydock they can be removed prior to the ship's drydocking and can be repaired and ready for reinstallation when the ship is in drydock, rather than waiting until the docking to find out and then having to extend time in drydock in order to repair and replace the thruster.

An accurate report on the state of the rudder can lead to effective repair and recoating of the rudder so that it does not suffer further damage. The all-too-frequent scenario of a low estimate for drydocking which grows exponentially once the drydock gate has closed and the ship is out of the water can thus be avoided.

EASY TO COMBINE WITH OTHER OPERATIONS

Because an underwater inspection is a small operation, it can be combined with one or more other operations very easily. This can be another maintenance operation like a propeller buffing or any type of repair job. By doing this, the shipowner is saved the hassle and cost of multiple mobilizations and possible delays to his vessel's sailing schedule.

SPEED IS OF THE ESSENCE

Hydrex diver/technicians can carry out inspections underwater and on-site very swiftly without disturbing the vessel's sailing schedule. A good example of this are the inspections of the bow thrusters carried out recently on two ferries in Calais. Because of the nature of these vessels, the time frame was extremely short. Both times all three bow thrusters needed to be inspected in the small window available. A change to the schedule was out of the question as it would do great harm to the reputation of the owner.

Hydrex has always put great effort into minimizing the impact of our services to the schedule of a vessel. Its teams are trained to adapt themselves to the agenda of the ship and not the other way around.

Self-Unloaders

Swiss Army knives of the sea



Gisela Oldendorff (81,500dwt geared Kamsarmax, built 2015) transhipped 78,000 metric tonnes of coal from the Maverick Gunner in September 2016.



Jay Venter

Oldendorff transloaders: salvaging the situation

In 2016, Oldendorff Transloaders have performed four major ship-to-ship cargo salvage operations. Having transloaders fitted with side-mounted cranes which are capable of unloading up to Capesize bulk carriers, has provided some unusual business opportunities. Oldendorff is not a salvage company but its transloaders have been called upon by salvage companies and charterers to assist in ship-to-ship transfer of cargo.

‘E. OLDENDORFF’ UNLOADING IRON ORE FROM ‘NEW KATERINA’ IN SUEZ CANAL

E. Oldendorff (77,000dwt) was chartered by SMIT to unload a full cargo of iron ore from the *New Katerina* (170,082dwt), which lost steering and intentionally grounded in the Suez Canal. The 1997-built bulk carrier was en route from Yuzhnyi, Ukraine to China when she struck an embankment on 25 February. She suffered a hole in the fore part below the waterline with water ingress.

The iron ore was transloaded from the *New Katerina* into the *E. Oldendorff* then into the *Indian Partnership* (181,000dwt). The *Indian Partnership* was chartered by Oldendorff to deliver the cargo to China. *E. Oldendorff* used her three side-mounted Liebherr MPG cranes and grabs for the transfer operations.

‘GEBE OLDENDORFF’ UNLOADING MAIZE FROM ‘ARCHIMEDES’ IN SINGAPORE

Gebe Oldendorff (81,500dwt, built 2016) was chartered to unload a 64,100 metric tonne cargo of maize from the *Archimedes* which was originally loaded in Paranagua Brazil. The *Archimedes* was on charter to Cargill but was arrested when she arrived in Singapore on her way to South Korea. The *Archimedes* was under arrest for 3.5 months before Oldendorff was asked to provide a cargo solution.

After the *Gebe Oldendorff* berthed alongside the *Archimedes* using four Yokohama fenders in Singapore’s Jurong Port, she used her side-mounted cranes and grabs to transfer the maize from the *Archimedes* into her cargo holds.

The cargo transfer operation took about 14 days which included multiple stoppages for rain, fumigation delays and cargo

hold clean-up. After completion of self-loading the maize, *Gebe* sailed for South Korea where the cargo was discharged in two ports.

‘ANTONIE OLDENDORFF’ UNLOADING GRAINS FROM ‘AO HONG MA’ IN SINGAPORE

Antonie Oldendorff (94,000dwt built 2015) was time-chartered to sail from the Arabian Gulf to Singapore to transfer a 78,500 metric tonne cargo of bulk wheat and bulk canola from *AO HONG MA*. The *AO HONG MA*, was arrested at Jurong Port in Singapore. The charterer wanted the cargo to continue to its destination in the Arabian Gulf. The *Antonie Oldendorff* used her cranes and grabs to transfer the wheat and caonola from the *AO HONG MA* into her own holds and then delivered the cargo to Muscat, Jebel Ali and Abu Dhabi.

‘GISELA OLDENDORFF’ UNLOADING COAL FROM ‘MAVERICK GUNNER’ IN SINGAPORE

Gisela Oldendorff (81,500dwt geared Kamsarmax built 2015) transhipped 78,000 metric tonnes of coal from the *Maverick Gunner* in September 2016. The *Maverick Gunner* was arrested in Singapore about three months earlier and the charterers wanted delivery of their coal cargo. The coal cargo was initially loaded in Vancouver, Canada and will soon be delivered to a port on the east coast of India by the *Gisela Oldendorff*.

The transshipment was performed using the 4 x 40 metric tonne side-mounted cranes and 20m³ SMAG grabs of the *Gisela Oldendorff* to efficiently transfer the coal into her own cargo holds. This transshipment operation was carried out on behalf of charterers; Tata Steel Global Procurement Company Pte. Ltd. in cooperation with Jurong Port Singapore.

CUSTOM SERVICE

Oldendorff Carriers is always interested in using the unique features of its vessels to provide a bespoke service for its customers. All four of the above transshipment operations had different characteristics, however in each case the company was able to find a good solution to make the operations successful.



Gebe Oldendorff (81,500dwt built 2016) was chartered to unload a 64,100 metric tonne cargo of maize from the Archimedes which was originally loaded in Paranagua Brazil.



E. Oldendorff (77,000dwt) was chartered by SMIT to unload a full cargo of iron ore from New Katerina.



Antonie Oldendorff (94,000dwt built 2015) was time chartered to sail from the Arabian Gulf to Singapore to transfer a 78,500 metric tonnes of bulk wheat and bulk canola from AO HONG MA.

CSL announces the retirement of Rod Jones, President and CEO

Rod Jones



Louis Martel



LOUIS MARTEL, PRESIDENT, CSL INTERNATIONAL AND EXECUTIVE VICE-PRESIDENT, CSL GROUP, IS NAMED AS SUCCESSOR

The CSL Group announced on 13 September that Rod Jones has decided to retire effective 31 March 2017, after a nine-year tenure as President and Chief Executive Officer, and a career with CSL that has spanned over 30 years.

During his three decades at CSL, Jones worked with CSL-ers around the world to transform what was a Great Lakes-focused shipping business into the largest owner and operator of self-unloading ships in the world. Under his leadership, CSL expanded beyond Canada and the Americas to Australia, Asia and Europe.

“The CSL Board of Directors and the Martin family are very

grateful for the enormous contribution Rod Jones has made to the company’s growth and success,” said Paul Martin, Chair of the CSL Board. “Rod has stood out as an inclusive, visionary and modern leader who leaves behind a sound company and lasting legacy built on authentic values and a commitment to people, safety and the environment.”

Effective 1 April 2017, Louis Martel, President, CSL International and Executive Vice-President, CSL Group, will assume the role of Chief Executive Officer.

“I have been privileged to lead our talented and committed ship and shore teams through an era of transformation at CSL and in the shipping industry,” said Rod Jones. “It’s now time to move on and I am extremely pleased with the Board’s decision to appoint Louis Martel to chart the new course for CSL.

“I look forward to working with Louis during a seven-month transition period. He is an experienced and accomplished leader with extensive knowledge of our ships, markets and strategies.”

Louis Martel joined Canada Steamship Lines as a Naval Architect in 1997 and transferred to CSL Americas in 2003 where he became Vice-President, Technical Operations. He took the helm of Canada Steamship Lines as President in April 2012 and was promoted to Executive Vice-President, CSL Group, and President, Canada Steamship Lines in January 2014. A year later, he was appointed President, CSL International.

“Over the course of his 19-year career at CSL, Louis Martel has demonstrated a strong commitment to our customers and employees, and the aptitude and drive to successfully advance CSL’s strategic vision,” said Paul Martin. “The Board is confident in Louis’ ability to successfully lead CSL into the future.” **DCi**

Vostochny Port to complete expansion in 2017



Next year Vostochny Port will complete its ambitious expansion project, which enables it to increase the throughput to 39mtpa (million tonnes per annum) in 2019. A new stage of the Russian largest coal terminal will be put into operation in autumn 2017.

Vostochny Port is a high-tech ice-free seaport located in the Far East of Russia. Being the largest coal port in Russia, Vostochny Port handles about 23mtpa of coal and consists of two separate terminals:

- ❖ Specialized Coal Terminal (17.5mtpa);
- ❖ General Cargo Terminal (5.5mtpa).

More than 60% of the overall throughput of the port is provided by Carbo One Ltd., which is the largest supplier of high-quality steam and PCI coal from Russia with annual sales of about 50mt (million tonnes).

Currently, Vostochny Port is not only investing in modernization of coal-handling equipment already installed in

the port, but also implementing the project for further expansion of the current capacity.

The expansion of the Specialized Coal Terminal has been the largest and most ambitious project being implemented in Russia for the last 25 years. Along with the development of the railroad yard of Nakhodka-Vostochnaya station, it will enable the port to increase its annual throughput to 39.0mt in 2019.

The expansion includes a railway station, two railcars heater facilities with a total capacity of 80 railcars, two tandem railcar tipplers, a system of conveyor lines, four reclaimers, two stackers, four coal storage sites with simultaneous storage capacity up to 750,000 tonnes, a deep-water berth of 385m long and draught of 16.5m and two highly efficient shiploaders.

The conveyor belt system is designed to link up the existing conveyor belts of the Specialized Coal Terminal with the new ones, creating a joined-up system. After the expansion it will be possible to distribute the arriving coal between the existing and new storage areas subject to cargo owner's instructions, significantly improving the efficiency of handling operations. It will be possible to store up to 1.6mt of coal at the terminal at any given time.

Vostochny Port is equipped with a high-tech magnetic decontamination system. Electric magnets are located on transfer towers — at the point where moving coal is poured from one conveyor belt to another and where they are the most effective in terms of the removal of metal contamination. This guarantees the highest quality of magnetic cleaning of coal from any metal impurities.

After discharging from railcars, coal passes through the multistage magnetic cleaning system before loading onto a vessel.

Depending on the location of coal, each tonne will pass through 9 to 12 magnetic stations with a capacity up to 2,100





gauss and weight of 12–17 tonnes each. These are the most powerful magnets available on the market by now.

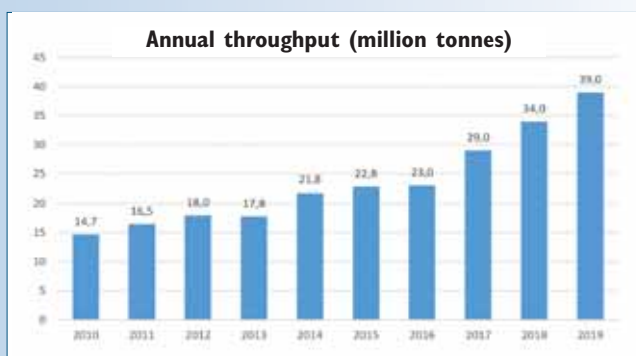
Four magnetic drum separators installed in Vostochny Port significantly improve the quality of coal cleaning from metal contamination. The drums are set at the ends of the conveyer system. The magnetic drum attracts metal impurities thoroughly because of its immediate proximity to the conveyer belt and the flow of coal. The effective area of the magnetic field of the drum extends at a distance of 0–150mm from the surface of the magnet with the capacity of magnetic induction up to 2,100 gauss. Even small parts of metal contamination are removed from coal on this stage of cleaning. Under magnetic field of the drum, metal impurities remain stuck to the surface of the conveyer belt. After passing over the drum, contamination free coal pours from one conveyer belt to another, but metal impurities keep moving along with the conveyer belt around the drum until being automatically removed to the receiving tray.

Altogether the terminal has 34 modern high-tech magnet stations. When the expansion of the Specialized Coal Terminal comes into operation the total number of magnet stations will be increased up to 65 units.

Vostochny Port is an eco-friendly company. Modern technologies are applied to ensure environmental protection and

health care. The port is equipped with a highly efficient air purification system which removes coal dust from the air. The effective stockpile irrigation system prevents the spread of dust in the air.

Water treatment facilities installed at the port are compliant with the international standards and provide day-to-day environmental monitoring and auditing. Sustainability is one of the key elements of corporate strategy of the port which not only strives for prosperity and success in business, but also is committed to minimizing the impact of its operations on the surrounding environment and community.



SPECIALIZED COAL TERMINAL

	Current	After expansion
Coal handling, mt	17.5	33.0 in 2019
Terminal area, hectares	45.0	98.0
Tandem railcar dumpers	2	4
Coal storage capacity, t	600,000	1,350,000
Magnetic separators	34	65
Screening and crushing facilities	4	6
Coal crushing available, mm	0–50	0–50
Berths	2	3
Draught, m	16.0	16.0
DWT, t	150,000	150,000
Shiploaders	4	6
Loading rate, t/day, SSHINC	45,000	45,000

GENERAL CARGO TERMINAL

Coal handling, mt	2016: 5.5
	2020: 6.0
Terminal area, hectares	24.0
Coal storage capacity, t	250,000
Screening and crushing facilities	8
Berths	4
Draught, m	11.0 – 12.2
DWT, t	up to 70,000
Loading rate, t/day, SSHINC	8,500

The overall throughput of Vostochny Port in 2019: 39.0 million tonnes (33.0mt + 6.0mt).

Port of Antwerp invests for first time in West Africa



Port of Antwerp.

The Port of Antwerp and the Port of San Pedro in Côte d'Ivoire are to collaborate over the next few years to manage further expansion of this West African entrepot. San Pedro, the leading cacao port in the world, aims to develop at regional level so as

to become a logistics hotspot for handling commodities such as fertilizers, cashew nuts and cacao, among other things. To achieve this ambition, work will start next year on construction of a logistics platform under the name of 'San Pedro Logistique'. Part of the capital cost will be financed by Port of Antwerp International (PAI), the consultancy and investment subsidiary of Antwerp Port Authority. While PAI has already been active in West Africa for many years now, this will be the first time it has made a financial investment in the region.

COLLABORATION

Already in 2011 the ports of San Pedro and Antwerp signed an agreement for collaboration between them. Since then the freight volume handled by San Pedro has expanded to 4.9 million tonnes annually, a master plan for development of the port has been drawn up, logistics zones have been developed and mutual promotion has been carried out. This positive balance has now led the parties to renew the agreement for a further period of five years. A new five-year Memorandum of Understanding was therefore signed on 1 September by Eddy Bruyninckx, CEO of Antwerp Port Authority, Kristof Waterschoot, director of PAI and Hilaire Lamizana, general manager of San Pedro Port Authority.

In addition to supplying the necessary technical expertise for the development, the agreement also specifies that APEC, the training centre for the port of Antwerp, will hold two training seminars per year for San Pedro port personnel.

INVESTMENT

One of the components of the master plan for development of the port of San Pedro is the creation of a logistics platform. The Belgian group Sea-Invest, which already operates in Côte d'Ivoire in the port of Abidjan, will take the lead for this initiative. On Thursday this week Sea-Invest presented its detailed plans for the new platform, construction of which is scheduled to begin early next year. The overall price ticket for the project is €5.5 million, 35% of which will be financed by PAI. In exchange the latter will have two directorships in the company behind San Pedro Logistique. The platform is expected to be operational around the summer period of next year. "This is the first concrete investment by the port of Antwerp in West Africa," says Eddy Bruyninckx, CEO of Antwerp Port Authority. "With this clear commitment we are emphasizing our belief in the potential of San Pedro. Its geographical location and its connections with Liberia, Guinea and Mali represent enormous potential benefits for Antwerp which is already the market leader for West Africa," he concludes.

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GRUPO E.T.E.

New opportunity beckons at Blyth



The Port of Blyth has announced that a major new development opportunity has arisen for operators in the dry bulks sector wishing to move goods in and out of the UK by sea.

Due to a streamlining of services at the leading North East of England port and continued investment at the rail-linked Battleship Wharf terminal, the port is now able offer potential partners a range of cost effective solutions including the rapid turnaround of vessels, the use of purpose built dry bulk warehousing and open storage options as well as excellent road and rail links including access on to the east coast mainline.

An important gateway for the movement of dry bulk cargo in and out of the UK, with easy access to markets in Scotland and

northern England as well as strong transport links to southern England and Wales, the port offers high quality solutions delivered by a dedicated and highly trained workforce.

ACCESSIBLE AND VERSATILE

Strategically positioned on the east coast of the UK, the Port of Blyth is perfectly positioned to service clients importing or exporting to and from mainland Europe or further afield. Located in a sheltered bay, Port of Blyth is an all-weather port offering near 365 day-a-year access into deep water berths. Known for fostering long-term partnerships with clients, the Port of Blyth's consistently high service levels make it the 'go-to'

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utilising 20 cbm grabs**

35,000 DWT vessels

**Modern all weather port
with highly flexible & experienced labour**

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northern UK port of choice for many dry bulk customers.

COMPREHENSIVE SERVICE

Handling vessels up to 35,000dwt, the port has developed a strong reputation for the quick turnaround of cargoes at 15,000 tonnes per day, with a particular expertise in coal, aggregates, agribulks, biomass and chemicals. Mobile 100-tonne cranes with 20m³ grabs provide versatility and flexibility.

Vessel and terminal handling is also backed up with a modern dry bulk rail loading facility capable of moving 1,500 tonnes per day and an extensive array of handling equipment including bulk tippers, load shovels, dozers and bobcats.

For weather-sensitive cargoes, a complex of ten modern dry



PORT OF BLYTH CAPABILITIES

- ❖ all-weather port offering near 365 day a year access;
- ❖ extensive range of equipment available to hire on flexible terms;
- ❖ highly flexible and experienced labour; and
- ❖ five main terminals — fully ISPS security compliant.

Key characteristics

- ❖ tidal deep water port accessible in virtually all weather conditions;
- ❖ on site craning for dry bulks up to 100 tonnes;
- ❖ over 1.5km of berths up to 9.5m draught;
- ❖ 10,000m² of modern warehousing dedicated to dry bulks; and
- ❖ fresh water and fuel bunkering.

Parameters

- ❖ 200m LOA;
- ❖ 55m beam;
- ❖ 9.5m draught; and
- ❖ no air draught restrictions.

bulk warehouses are located immediately adjacent to the working quays with integrated bulk walling.

Large secure areas of purpose built open storage are also available with water spray dust suppression systems, concrete pads and bulk walling as appropriate.

VALUE-ADDED SOLUTIONS

In addition to the standard services provided by the Port of Blyth, it also delivers a number of key value-added services in line with clients' specific needs.

Port of Blyth offers additional services such as blending, bagging and screening, as well as a full temperature monitoring provision and under floor aeration facilities.

With staff trained exclusively by the port's award-winning training subsidiary Port Training Services, the continued development of the skillset of every member of staff ensures a standardized level of high quality service across the port.

DISCHARGE TO SILO

For those customers with specific requirements relating to finer dry bulks, the port operates a specialist standalone terminal for bulks suitable for pneumatic discharge to silo and then onto rail or road.

STORAGE SOLUTIONS

The port's ship handling operations are supported by extensive open and covered storage facilities providing an essential buffer for the efficient and cost effective movement of all cargoes.

More than 10,000m² of high-quality covered bulk warehousing is provided at Battleship Wharf alone, alongside large areas of open storage close to working quays and all within a fully secure port terminal environment. Together with extensive CCTV coverage, this ensures all goods remain safe and secure.

TRUST PORT STATUS ENSURES INVESTMENT

The Port of Blyth is the port operating division of Blyth Harbour Commission, an independent statutory trust established in 1882 and operated for the benefit of stakeholders including customers, staff, the local community and the wider regional economy.

This unique model of ownership and management ensures that all surpluses are able to be re-invested into improving the facilities and services offered by the port, with such regular investment benefiting clients and enabling them to prosper. **DCi**



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Hamburg–Le Havre range

uneven growth in dry bulk

Grain handling at the Port of Rouen.



Haropa Ports, the holding company set up to administer the ports of Paris, Rouen and Le Havre, reports handling 6.43mt (million tonnes) up to the end of May 2016. This represents growth of 18.5% compared with the first five months of 2015, writes Barry Cross.

According to Imad Dridi, Head of Strategy Unit, “This growth has been influenced by an increase of 16.8% in cereals traffic, which has so far amounted to 4.5mt in 2016.”

Indeed, the main cargo handled remains cereals, a reflection of the fact that both Rouen and Le Havre have historically had an agribulk focus, given their location within a major cereals producing region. All Europe’s main players in the sector are located there and have built their own facilities.

Nowadays, dry bulk represents between 25% and 30% of all Haropa Ports’ combined tonnage. Significantly, while China remains the group’s third most important client in the dry bulk sector, the slowdown in that country has yet to have an impact on traffic, possibly because it is an importer of cereals, rather than other heavy industry commodities. Other main clients are to be found in the Mediterranean area, as well as in Europe and

North America.

“At present, we have sufficient capacity to handle all our existing dry bulk activity and we still have some important investments in the pipeline as a means of maintaining and developing capacity,” says Dridi.

In fact, in 2014–2019 €178 million has been set aside for various projects on the Seine River. These include the ‘Access Programme’, which involves dredging to gain an extra metre of draught over a distance of 120km from Honfleur to Rouen. In addition, a vessel turning area is being established at Hautot-sur-Seine and a vessel waiting station at Radicatel.

Rail and inland waterways play an essential role at all three ports in terms of the movement of dry bulk consignments. Nowadays, these non-road alternatives account for 35% of Rouen’s cereal transport, for example.

Geared vessels are few and far between; in fact, all dry bulk is now exclusively handled using shore-based equipment, says Dridi, who points out that, globally, vessel sizes are on the increase.

“Those vessels with a gross tonnage superior to 30,000dwt

increased from 30% to 57% of the total between 2000 and 2015," he reveals.

In terms of a breakdown by commodities, cereals traffic is usually carried by vessels in the 25,000dwt to 52,000dwt range; coal tends to generate 150,000dwt bulk carriers; fertilizer, peat and clay vessels are smaller, being between 3,000dwt and 10,000dwt; and aggregates see ships of between 15,000dwt and 35,000dwt rostered.

Finally, when asked whether greater environmental legislation is making it more difficult for Haropa Ports to handle some dry bulk commodities, Dridi says there are no real constraints.

Ghent, which is Belgium's leading dry bulk port, reports that in the first five months of 2016 it handled 12.51mt of dry bulk, compared to 12.94mt in the corresponding 2015 period. These figures break down as follows: seagoing bulk dropped from 7.42mt to 6.95mt in 2016, while inland movements increased from 5.51mt to 5.56mt.

In the January–May period of the current year, seaborne and inland dry bulk represented 58.9–62.7% of total traffic, with inland varying between 59.6% and 61.7% and seagoing between 58.4% and 63.5%.

As for 2015, in terms of seaborne cargo, Ghent remained Belgium's leading dry bulk port for the third year running, despite the fact that volumes plateaued at 16.7mt. Dry bulk accounted for almost two-thirds of its overall seaborne volume for last year. Indeed, for the year, Ghent handled 46.5mt, of which 26.4mt were shipped by sea and 20.1mt went inland.

Johan Bresseleers, the port authority's communications manager notes that the recent slowdown in China has had no effect at all on Ghent's traffic.

"We've become a specialist in dry bulk because of our



Aerial view of the Port of Ghent.

corporate and industrial strategy. We have long been an industrial port, because we need iron ore for the steel industry, rapeseed and wood pellets for bio-based industry, as well as sand and gravel for building materials," he says, pointing out that



Being in business for nearly a century has allowed us to build a solid reputation with our customers and subcontractors. We can charter tonnage, select the right port; find the best terminals, stevedores and process throughput via road, rail and inland waterway to the final destination. We organize and coordinate all freight inspections, customs affairs and paper work. Having the best specialists in the cargo handling and transport business, Gans Cargo Operations is able to provide her customers with competitive prices for bulk-, break-bulk and containerized cargoes. Our strong teams of cargo superintendents monitor all 'on site' transactions in the ports of Rotterdam, Antwerp, Amsterdam, Ghent, Terneuzen, Flushing, Ostend and Zeebrugge, as well as every other European port at customer's request.

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Inside a Eurosilos grain silo at the Port of Ghent.



Ghent also handles coal, scrap metal, wood pellets, anthracite and fertilizer.

Bresseleers says that Ghent has become the European granary, since it is the European leader in the storage of grains and derivatives.

“This position as European distribution platform has been on the rise in recent years, because Ghent has a unique total storage capacity of 1.3mt. This gigantic storage availability allows stocks to be held for both short and long periods, making the port perfect for regulating retail distribution. Storage is possible at various (waterfront) locations in the port, in both horizontal and vertical silos. These silos are equipped for the storage of grain, derivatives, oilseeds and related products, such as linseed, rapeseed, soya beans, wheat, barley, sorghum, rye, rice, maize, beet pulp and palm,” he says.


Where grains and derivatives are concerned, the port of Ghent has trading partners in Brazil, Canada, Australia, France, the Ukraine and Romania, among other countries.

The other significant advantage that Ghent has, he suggests, is that it is multimodal port, so can move consignments around by sea, inland waterway, road or rail.

“Ghent port lies at the intersection of various European modes of transport. This ensures that the goods and raw materials that arrive at the port by sea can easily be transported further on to businesses and customers all over Europe.”

The port is connected to the European short sea shipping network, linking the Mediterranean Sea, the UK and Scandinavia, to the Baltic States and Russia. Meanwhile, an extensive network of inland waterways provides Ghent via river and canal outlets to the Netherlands, Germany and northern France and (in the future) to Paris. Ghent is also connected to the (East) European inland waterways network of the Rhine–Main–Danube.

The port has a centrally located marshalling yard, from where trains serve a variety of destinations throughout Europe.



COAL INTO GERMANY

via Rhenus Midgard's Seaports

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


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

Coal Terminal Nordenham on the River Weser (Germany):

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

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

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Coal terminal at the Port of Düsseldorf.



As for motorways, the R4 ring road around the port area connects to the three most important motorways in Europe: the E40, E17 and E34.

The vast majority of ocean going bulk carriers handled make use of shore-based cranes, says Bresseleers, who points out that average vessel size is 10,791 tonnes, with capacity continuing to grow. As a result, the port needs a larger lock system to be built at Terneuzen, in the Netherlands in order to allow larger vessels to dock, with the port authority willing to stump up 15% of the total cost.

RheinCargo is the umbrella organization operating seven ports on the Lower Rhine, these being Düsseldorf (two harbours), Neuss and Cologne (four harbours).

In 2015, its barge operations alone accounted for 510,000 tonnes of grain (3% of total traffic), 2.93mt of foodstuffs (17%), 398,000 tonnes of solid fuel (2%), 1.43mt of ores and scrap metal (8%), 144,000 tonnes of non-ferrous metals, iron and steel (1%), stones and earth 1.96mt (11%), and 58,000 tonnes of fertilizer (1%).

However, RheinCargo is also a major rail operator which, combined with its barge activities, gives it a total annual capacity of 50mt.

The company's press officer, Michael Fuchs, notes that, in terms of traffic, there is a mixed picture the moment.

Coal, often an industry staple, remains in long term decline, as Germany switches to greener alternatives.

Fuchs recalls that Düsseldorf, which is one of the smaller ports on the Rhine, did handle some unexpected winter coal traffic last year for a power station. "This was a nice extra business for us", he says, noting that the import coal market is characterized by declining volume and rising competition nowadays. "One terminal's gain is another terminal's loss," he adds.

While imported coal is down, locally mined lignite remains strong, since it is used to generate electricity, with one-third of

the country's power generation depending on it.

Scrap metal traffic, in contrast, is booming, albeit because low water levels at the end of last year meant that it was uneconomic to shift by barge. Companies therefore stored it and have been releasing it throughout the earlier part of this year.

While older commodities decline, Fuchs stresses that the recycling business is generating new ones all the time.

Another dry bulk to appear in the last 10–20 years is calcium sulphide produced by power stations in a process of clearing up their emissions.

"We used to have a phosphate business, but once this was taken out of washing detergents, it virtually disappeared overnight. Bauxite is another commodity that has all but disappeared. Cologne used to handle 1mt annually, but the local aluminium industry switched to aluminium hydroxide, which is just one 10th as much of the amount of ore we handled."

In terms of exports, stones and earth are quarried locally and despatched along the Rhine.

The port of Neuss has seen imports of iron ore rise from 1mt per annum to 1.3mt in a year.

"Coal is moved either by barge or rail. Power stations needing continuous supply tend to use rail, while those buying coal for storage will generally prefer barge. Often, deep sea vessels will offload onto barges, which in turn feed railheads. This is one of our core businesses," says Fuchs.

Barges vary in size, with the largest able to convey around 5,000 tonnes. The larger barges are invariably used to move iron ore.

However, the low water levels in the second half of last year made a lot of barge traffic uncompetitive, since many barges could only carry one-third of their normal load, meaning a lot of business switched to cheaper road hauliers.

"It was the lowest water level on the Rhine since 2003 and much traffic in Southern Germany and Switzerland ceased," says



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Capesize bulker at the Bulk Terminal Wilhelmshaven (source: Rhenus).



Fuchs. “Sometimes we also suffer from high water in the winter, which means barge traffic can stop all together for a combined two or three weeks.”

Rail is also a very competitive industry, since RheinCargo, being a private operator, has to compete with state-owned operators in Germany, Austria, Switzerland and France, many of whom have to keep running trains irrespective of profit to keep their large fleets of wagons and locomotives busy.

“We only operate our trains if it is profitable to do so,” stresses Fuchs.

Finally, in terms of environmental legislation, he notes that dust suppressant systems have to be in place and authorization sought before certain commodities can be handled nowadays. Noise is also a problem, especially if new residential areas are built close to the port.

“A scrap metal customer in the port of Cologne who wants to expand his business has not been able to obtain a licence to operate despite trying for years,” recalls Fuchs.

Despite strong competition from the likes of RheinCargo, the Duisport Group generated a total operating performance of €217 million in 2015, up 10% over the previous year and a new record. Its EBITDA figure of €37 million represented growth of 6%.

“In view of the stagnating logistics markets in Europe, we can certainly be very satisfied with the results that have been achieved. Despite a difficult market environment in the logistics and packing sector in terms of price, we have been able to increase the total return of the group by implementing a large number of process improvements. Our integrated service portfolio thus remains the basis for stable earnings developments,” says Erich Staake, Chief Executive Officer of Duisburger Hafen AG.

The Duisport Group made investment of approximately €20 million during the 2015 financial year, compared with €17 million in 2014, with a continued focus on expanding handling and terminal capacities. These activities included, among others, the construction of a second portal crane at Logport III and the expansion of the DIT Terminal at Logport I.

Total overall traffic of 129mt compared with 131mt for 2014. The slight decline is attributable to handling developments at the private commercial ports due to economic factors.

The total handling volume at the ports of the Duisport Group grew by 6% to 69mt, as against 65mt the previous year. This was a new record. Handling volumes for rail and ship reached 35mt in 2015, up 2mt over 2014. While vessel handling stayed at the previous year’s volume of 16mt, rail handling grew by 12% to 19mt.

A new central warehouse for Benteler Distribution was officially opened in October 2015. This central warehouse (35,000m²) offers storage capacity for up to 27,000 tonnes of steel tubes. With a height of 25 metres and 10,000 cassettes, this new high-rack facility is the largest in Europe.

Duisport is not expecting any significant improvement in the global trade situation for the year 2016. In contrast to previous years, the large Asian sea ports are reporting only very minimal growth rates, and significant decreases in some cases. Current handling trends in the Hamburg–Le Havre range also do not give rise to optimism.

“At present, we can say that the idea of steadily increasing movements of goods due to globalization and the associated double-digit growth rates in transport logistics appear to be a thing of the past. At this time, there is no real driver for global economic growth. Therefore we are not expecting growth impulses for the current year, which means that developments in



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2016 will likely be very subdued,” concludes Staake.

In the first three months of this year, the nine ports (Brake, Cuxhaven, Emden, Leer, Nordenham, Oldenburg, Papenburg, Stade and Wilhelmshaven) forming the group known as the Seaports of Niedersachsen handled around 3.4mt of dry bulk, broadly similar to the same total in the corresponding period of the previous year.

According to managing director Inke Onnen-Lübben, traffic tends to be affected by a series of economic factors. In particular, she cites the result of harvests in Germany and Europe, since these influence how much grain and other crops have to be imported from abroad. As for coal, this depends on volumes coal-fired power stations order for the production of electricity. Sometimes, there are technical inspections that can result in the temporary shut-down of energy production, thereby lessening the need for coal.

“Overall, dry bulk accounts for roughly 30% of the traffic of our port group,” says Onnen-Lübben. “However, we haven’t yet seen any special impact caused by the slowdown in the Chinese market,”

In many ways this is because the various group ports form part of the supply chain of some large industrial areas and companies located nearby and have to ensure the consistent flow of raw materials, thereby guaranteeing a certain utilization of port handling capacities.

“Nevertheless,” says Onnen-Lübben, “we do have to keep an eye on the market as there is strong competition for dry bulk cargo, especially when it comes to the transshipment of agricultural product, as well as in the handling of coal and building materials.”

Despite having built up a successful portfolio of dry bulk clients, the ports are always striving for new business, she adds, meaning it is important to keep adding to capacity. At the port of Brake, for example, the state-owned port infrastructure company Niedersachsen Ports, is investing in the installation of a second berth for seagoing vessels of up to 275 metres in length. The new berth will be ready this autumn.

“This measure of Niedersachsen Ports is intended to strengthen Brake’s position as one of the leading handling ports for the agricultural industry in Europe,” she says.

In addition, two years ago, the J. Müller Group, which is the local port operator at the port of Brake, expanded its warehousing capacity by building a new 47,000-tonne-capacity silo. Nowadays, the port offers a storage capacity for dry bulk products such as grain or feedstuffs of more than 700,000 tonnes in total. The J. Müller Agri and Breakbulk Terminal is Germany’s largest port facility for the import of feedstuffs.

Located close to the Oldenburger Münsterland, Europe’s largest compound feed area, the port of Brake is, furthermore, ideally suited for the handling and storage of grains, feedstuffs, oilseeds, fertilizer, renewable natural resources, biomass products, sugar, and food-related products, as well as other suitable bulk and agricultural goods. Just-in-time delivery is possible 24 hours a day,

seven days a week.

In addition, the J. Müller Agri and Breakbulk Terminal also offers a wide range of processing services, such as aspirating, milling, rough-grinding, mixing, crushing and drying.

Onnen-Lübben also cites Rhenus Midgard at the port of Wilhelmshaven, which has established the deepwater Bulk Terminal Wilhelmshaven specifically for the handling of bulk commodities, especially coal. The company can discharge fully laden Capesize bulkers there due to a water depth of 18.5 metres.

“The government of the federal state of Niedersachsen in its capacity as owner of the Bulk Terminal Wilhelmshaven (formerly known as ‘Niedersachsenbrücke’) invested about €25 million to upgrade the infrastructure,” she says, while the Rhenus group has spent about €90 million since 2009 upgrading the unloading equipment, investing in a more efficient conveyor belt system, fully automatic stacker/reclaimers and a high-performance wagon loader to increase the efficiency of the long-standing bulk commodity. Now, the company is able to handle volumes of about 8mt of coal in Wilhelmshaven per year.

The space used to provide temporary storage for the huge amounts of coal has also been enlarged.

Within the next few years, Wilhelmshaven will therefore become Europe’s second-largest coal import hub.

Rail and inland waterway transport play a big role in moving dry bulk. The supply to hinterland coal-fired power stations is done by both rail and inland waterway. Agricultural products are also transported by rail and river barge.

The supply of the above mentioned Oldenburger Münsterland compound feed area is being done by river barge as well as by truck due to the fact that the distance from the port is rather short.

As for the types of vessels handled, the Panamax bulk carriers tend to use solely shore-based loading and discharge equipment. However, the nine ports see a variety of vessel sizes, from coasters up to Panamax bulkers.

Finally, asked about environmental legislation, Onnen-Lübben concedes that this is getting stricter, meaning that ports have to make sure to meet these requirements — and, in the end, this means not only investing in the appropriate technical equipment, but also in educating staff and re-organizing handling processes.



The agri and breakbulk terminal at the Port of Brake (source: J. Müller Group).



HAROPA

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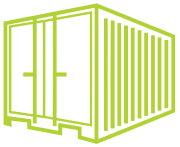
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capacity for bulk liquids

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of grain storage
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loading throughput:

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580 000 m²
 of warehouses
available in early 2017

Le Havre further develops port software package S-WiNG®

Since 16 June 2016, HAROPA — Port of Le Havre has displayed itself in three dimensions through the development of its software package S-WiNG®. This allows professionals and the general public to plunge virtually into the environment of the Normandy port, to go into the heart of its daily activities and draw a wealth of information from them.

At the Port of Le Havre, vessel movements are now freely accessible and can be visualized by everyone, in 3D and in real time from a computer, a tablet or a smartphone. Every vessel

present in the harbour waters is represented according to its category (container ships, oil tankers, bulk carriers, roll-on/roll-off ships, dredgers, tugs, barges, liners, ferries, etc.) with its draught, according to the real water level, the swell and the weather. Ergonomic, user-friendly and interactive, the S-WiNG – 3D application allows the user to look by a single click at the information linked to each vessel present in the tidal basins of the port zone, notably in the outer port, and at Port 2000, sailing in the basins or at berth (vessel length, width, capacity, origin, destination, etc.).

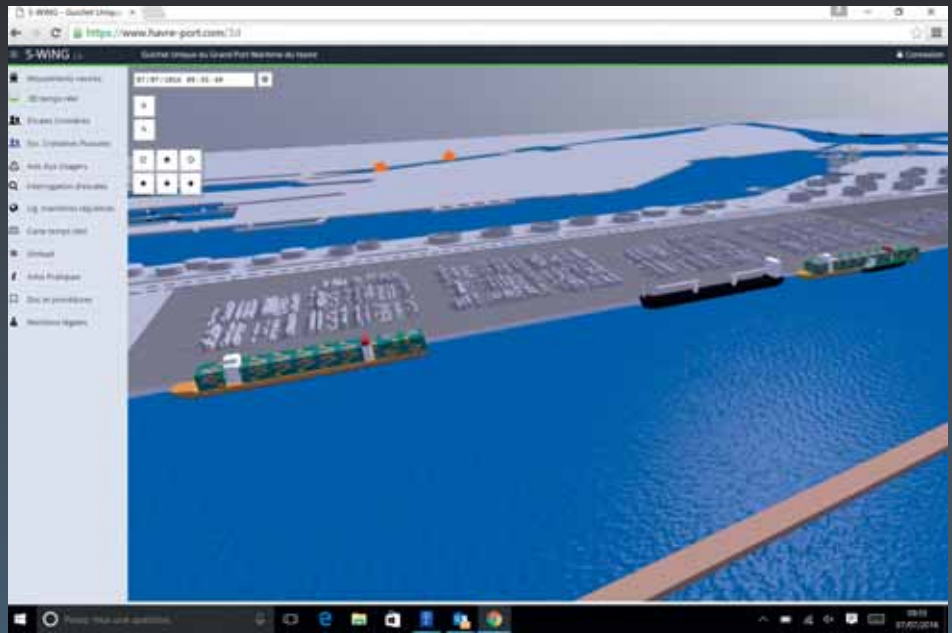
Some functions such as position of the cranes that operate the vessels are also searchable but reserved for the relevant professionals. All the information is available in real time but also in replay, thus allowing to go back in time and to view past calls a posteriori (back to two weeks).

FIRST FOR A EUROPEAN PORT

“This e-navigation constitutes a first in a European port,” states Jérôme Besancenot, head of the Information System Development department at HAROPA – Port of Le Havre. “We intend to continue and further expand such an innovative approach as part of the Smart Port.” This system is indeed only a starting point: “the tool is intended to include more and more realism, to change and to be continuously developed; it will quickly provide more extensive information both about the selected port zones and the targeted activities.”

Jean-Marc Leroux, managing director of the Aerys start-up which made the developments, explains that “this was made possible through an innovative 3D technology based on our Minko™ engine, and using real time data provided by the S-WiNG® port single window developed by HAROPA – Port of Le Havre.”

The tool enables all professionals of the port community to follow the activity in real time, and teachers and school children to understand the port life in a recreational way. It also offers tourists and other ship lovers the chance to



discover the port from a new perspective.

For the record, the software package S-WiNG® developed by the teams of HAROPA – Port of Le Havre, is a port authority single window used by the whole community — sailors, pilots, linesmen, tugs, shipping agents, ship-owners, logisticians, customs officers, stevedores, port officers, authorities, internal users, policemen and custom officers — for collection of declarations, the management, planning, organization and operational monitoring of the sea and river calls. At the heart of the port information systems, it co-ordinates all the operations and events relating to a call. Bringing an effective and secure answer to the growth in volume and flows, S-WiNG today constitutes the key-element of the digital port. Marketed by the port of Le Havre, the software has already been installed in other French and foreign ports including Nantes and Abidjan.

With S-WiNG-3D, HAROPA resolutely establishes itself as the connected port of the future.

ABOUT HAROPA – PORT OF LE HAVRE

Owing to its outstanding location on the West-European sea board, HAROPA-Port of Le Havre is the number one French port for external trade and number five North-European port for container traffic. Each year it accommodates around 6,000 vessels among which the world largest containerships. Accessible 24/7, it handled about 70 million tonnes of cargo in 2015 and almost 40 % of the French imports of crude oil.

Being a member of HAROPA, the leading French port system, together with Rouen and Paris, Port of Le Havre offers an easy and fast gateway to all continents for all world major shipping lines with around 600 ports of call worldwide. As one of the biggest European port systems, HAROPA has almost 500 hectares of estate available or likely to be developed along the Seine corridor. It helps its customers setting up and managing competitive and sustainable logistics systems to serve the N°1 European consumer basin with 25 million inhabitants.

HAROPA renews support for 'greenest' shipping companies



HAROPA, a founding partner of the ESI (Environmental Ship Index) approach, has reaffirmed its backing for shipping companies which commit themselves by their side in favour of the environment. The ESI is a benchmark measure, which assesses the environmental performance of vessels, was initiated in 2009, in collaboration with five other ports in the north European range.

Being forerunners as regards sustainable development and mitigation measures, the three ports of the Seine corridor awarded the trophy 'Best Green Shipping Line HAROPA – ESI 2015' on Wednesday, 7 September. The event took place at Port 2000, during its ten-year anniversary.

On 7 September in Le Havre, HAROPA awarded 13 trophies to 12 shipping companies for their green calls: 12 for Le Havre and one for Rouen. This approach and initiatives reassert HAROPA's will to work jointly with shipowners to improve the port environment of tomorrow. It is important to remember that the purpose of this trophy is to encourage shipowners to reduce the emissions of their ships and to promote ever 'greener' shipping. Shipowners are particularly aware of this cause, and ever-increasing numbers of them are keen to participate in green initiatives, and some even voluntarily go beyond the regulatory requirements. Since its creation in 2012, 21 shipping companies have signed the HAROPA charter and, by the end of 2015, HAROPA rewarded a total of 890 calls.

It is worth remembering that the ESI gives a score, for each participating ship, based upon several parameters including the performance of her engines, the facilities and equipment on board and the quality of the fuels used. The reward can be up to the equivalent of 10% of the port dues owed by the shipping companies, according to conditions defined by each of the participating ports.

PORT 2000 — APPROACH INTEGRATING THE ENVIRONMENT

HAROPA wanted to celebrate the ten years of Port 2000 by organizing the award ceremony on site. As it has since its inception, Port 2000 has taken into account the particularly

sensitive environmental context in which it was included. In addition to the measures made to reduce the impact of the works themselves, it has been the start of a real concerted approach with a view to the environmental restoration of the river Seine estuary through the environmental measures included into the project and the scope of which goes beyond mere mitigation.

KEEN TO EXTEND THE APPROACH

This year, the 'Environmental Ship Index' trophy has become the 'Best Green Shipping Line HAROPA' and integrates the 'Green Label' approach. Originally exclusively maritime, the approach is now onwards extended to river shipping; it was in March last that the first environmental trophy of the river fleet was launched by HAROPA – Ports of Paris.

The trophies were awarded by: Régine BREHIER, HAROPA President, CEO of HAROPA – Ports of Paris; Hervé MARTEL, HAROPA Vice-president, CEO of HAROPA – Port of Le Havre; and Nicolas OCCIS, HAROPA Vice-president, CEO of HAROPA – Port of Rouen. The shipping lines rewarded, in alphabetical order, are: APL; CMA CGM Le Havre and CMA CGM Rouen; EUKOR; EVERGREEN; HAMBURG SUD; HANJIN SHIPPING; HAPAG LLOYD; MAERSK LINE; MOL LINER; MSC; NYK and UASC.

ABOUT HAROPA

HAROPA, the fifth-largest port complex in Northern Europe, is a joint venture between the ports of Le Havre, Rouen and Paris. It is connected to every continent owing to a first-rate international shipping offer (linking 600 ports worldwide). It serves a vast hinterland whose core is in the Seine valley and the Paris region forming the biggest French consumer market area. With around ten Normandy and Paris area partner ports, the 'one-stop' hub now forms in France a global transport and logistics system, capable of providing a comprehensive end-to-end service. HAROPA handles over 120 million tonnes of cargo by sea and waterway each year. HAROPA business represents 160,000 jobs.

DCi

Doppelmayr: RopeCon enables transport of platinum ore across difficult terrain

The South African mining company Booyensdal Platinum (Pty) Limited, a subsidiary of Northam Platinum Limited, accesses the Booyensdal South ore deposit as part of its expansion of the mining capacities at the Booyensdal concession. The mined ore is to be taken to an existing processing plant. In September 2016, Doppelmayr Transport Technology GmbH, headquartered in Austria and a subsidiary of the Doppelmayr group, a leading manufacturer of ropeways, was awarded the contract to build a RopeCon® system to transport the mined ore to the processing plant. In view of the difficult topographical situation the

belt conveyor, which runs on ropes, proved to be the ideal solution to transport almost 500,000 tonnes of material per month safely and easily over a distance of approximately 4.9km and a difference in elevation of 530m. The conveyor is due to be in operation by the end of 2018.



REMA TIP TOP increases stake in COBRA to 100%

REMA TIP TOP has increased its stake in COBRA Group/DEPREUX to 100%. The complete takeover of COBRA, a specialist in the manufacturing of conveyor belts and accessories for the mining, food, agricultural, packaging and logistics sectors, allows REMA TIP TOP to further strengthen its global conveyor technology business.

"We are the global number one in the tyre repair and surface protection areas of our business divisions. Now, we are focusing on stabilizing our position among the top three in the field of conveyor technology," says Thorsten Wach, CEO of REMA TIP TOP. "We are ahead in the conveyor technology sub-area wear protection. The complete takeover of the COBRA group now further increases our capacities in the area of conveyor belts."

With the REMA TIP TOP service offering in combination with Dunlop Belting Products South Africa from the site in South Africa, the company directly addresses mine operators. COBRA will continue to act independently in the market, directly addressing service providers. "We make use of synergies by pooling purchasing volumes or central functions like quality management or IT," explains Thorsten Wach. "Apart from that, COBRA remains autonomous. We want to preserve its entrepreneurial agility and provide the company with the necessary independence."

REMA TIP TOP will invest into the expansion of COBRA's production capacities and the modernization and extension

of the distribution network and open up additional cross-industry perspectives for the company in Europe, in the USA, China and Asia-Pacific. Headquartered in Luxeuil-les-Bains in France, the COBRA group operates production sites in Poland, France and China. In the past fiscal year, the company employing 500 people generated sales of approximately US\$100 million. Both companies have agreed not to disclose financial details of the transaction.

ABOUT REMA TIP TOP

REMA TIP TOP AG is a globally operating system provider of services and products in the field of conveying and treatment technology as well as in the automotive sector. The company provides a global service network and offers a broad range of rubber products, linings and coatings for the industrial sector as well as for repairing tyres.

In almost 100 years of corporate history, the company gained unique expertise in material development and industrial services and is active in the business segments Material Processing, Surface Protection and Automotive.

By the end of financial year 2015, REMA TIP TOP has generated sales of more than €800 million. The company employs more than 5,500 people and has more than 140 subsidiaries and participations — including notable brands like Dunlop Belting Products South Africa, Cobra/Depreux or Asplit.

Engineering & Equipment



Five new grabs for Associated British Ports

To facilitate an expansion in trade, Associated British Ports (ABP) at Ipswich has placed orders for five new grabs from pALM Bulk Solutions Ltd, the UK dealer for MRS Greifer GmbH in Germany.

The grabs are all of high close, clamshell design. The largest will

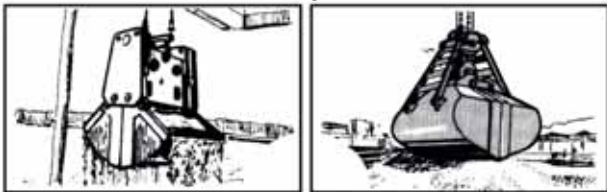


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have a capacity of 13m³ and is designed to handle a wide range of bulk materials with a bulk density of up to 1t/m³, including fertilizer, grain, soya, animal feeds and similar materials.

With a grab weight of nearly eight tonnes, it is suitable for connection to ABP's dockside crane which has a minimum 21-tonne lifting capacity. A powerful 37.5kW integral hydraulic power pack ensures rapid opening and closing rates to achieve high levels of performance, critical to minimize the amount of time in unloading vessels where excessive delays can generate high level of demurrage cost.

The second heavy duty hydraulic grab, which has a 3.5m³ capacity, is designed to handle material up to 1.5t/m³, including sand and aggregates and is provided complete with an adaptor plate to suit ABP's dockside material handler.

The remaining three grabs ordered range in capacity from 4–5m³ capacity, and are suitable for materials with bulk density up to 1t/m³. These are again provided with an adaptor plate to suit ABP's dockside material handlers.

Each of the grabs incorporates a unique design with a fork lift pick-up point, high close shells rated for zero degrees repose angle and close tolerance spill-free Pantanax wear-resistant lower and side knives. The design of these has been developed in conjunction with ABP on several previous grab orders during recent years where grabs have been supplied to ABP at Ipswich, Kings Lynn, Garston, Newport and Ayr.

This brings the number of MRS grabs supplied in the UK to 99 — there will certainly be a big celebration when number 100 is ordered!

Siwertell system chosen for the fourth time in four years by Turkish cement specialist



Siwertell, part of Cargotec, has secured its fourth road-mobile unloader order from Turkish cement specialist, Muhammet Gümüstas. Three similar systems have been delivered to the same customer since 2012. However, this latest unloader will be a 'next-generation' unit, employing the same proven technology as its predecessors, but with the added benefit of some significant mechanical and electronic advances.

The new trailer-based, diesel-powered, Siwertell 10 000 S road-mobile unloader will be used to discharge cement at 300tph (tonnes per hour). It will be equipped with a double bellows system to allow continuous operation. Next-generation units have an automatic shifting function as standard on unloaders with double-bellows. The unloader will also be fitted with a dust filter to minimize atmospheric emissions.

"Good experience with its three existing Siwertell systems was an important factor in winning this latest contract with Muhammet Gümüstas," says Jörgen Ojeda, Director, Mobile Unloaders, Siwertell. "The fact that its competitors use Siwertell units was also a significant driver in this competitive business.

"The customer knows our machines and appreciates that the screw-type unloading system works extremely well with cement, offering high levels of efficiency and reliability. We also offered an extremely short lead time of around six weeks," he adds.

The new unloader will be put into operation in the Turkish ports of Kardeniz and Marmara, taking full advantage of the flexibility offered by Siwertell's road-mobile units. It is being built at Siwertell's manufacturing premises in Bjuv, Sweden. Delivery is scheduled before the end of August 2016.

The road mobile Siwertell unloader was originally designed to handle cement, making it ideally suited to this commodity. Steady development and refinement mean that Siwertell offers some of the most reliable, environmentally-friendly and sustainable systems for cement operations. In addition to flexibility, high capacity and low running costs, Siwertell road-mobile unloaders do not require any preparatory civil engineering works and can start commercial operations immediately on arrival.

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

Siwertell is part of Cargotec. Cargotec's sales in 2015 totalled approximately €3.7 billion and it employs over 11,000 people.



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corners
of the
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CEMEX places further order for new Bobcat Telehandlers

CEMEX representatives visited Bobcat's plant in Pontchâteau (Loire-Atlantique, France) this summer to place further orders for eight new Bobcat telehandlers. The visit followed the delivery of eight machines to various production sites belonging to the CEMEX Group at the beginning of the year. The CEMEX orders once again demonstrate Bobcat's ability to meet the needs of major clients, including this world-famous producer of ready-mixed concrete and aggregates.

CEMEX operations make full use of the versatility of Bobcat telehandlers, which have been supplied with a range of attachments such as pallet forks, buckets, jibs and manplatforms. CEMEX uses the TL range of telehandlers from Bobcat with lifting heights of 6 and 7m for a range of tasks including handling large bagged loads and the Bobcat T series of telehandlers with lifting heights of 14 and 18m as part of maintenance operations using manplatforms.

Based on good experience with the new Bobcat telehandlers at the start of the year, CEMEX followed this with an order for two 14m telehandlers and a third order in July for a further six telehandlers to complete its fleet.

Cemex cement facility in California, USA.



The CEMEX France teams chose Bobcat for several reasons:

- ❖ the specifications and options offered by Bobcat were particularly suited to the needs of CEMEX operations teams;
- ❖ the total cost of the equipment and the finance solutions were highly favourable; and
- ❖ the French made equipment is fully in line with CEMEX's policy of corporate responsibility, particularly in terms of responsible purchasing.

MAJOR PLAYER IN THE CONSTRUCTION MATERIALS INDUSTRY

CEMEX is the world's third-largest producer of ready-mixed concrete, the fourth-largest producer of aggregates and the seventh-largest producer of cement, and is active in over 50 countries. In France, CEMEX is a leader in ready-mixed concrete and aggregates and operates over 330 sites around the country to be as close as possible to all of the company's customers.

CEMEX is committed to responding to social needs in its activities and in its impact on the environment by developing land in a sustainable manner, ensuring the well-being of users and employees alike.

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AUMUND successful in semi-turnkey project for Vassiliko Cement Works in Cyprus

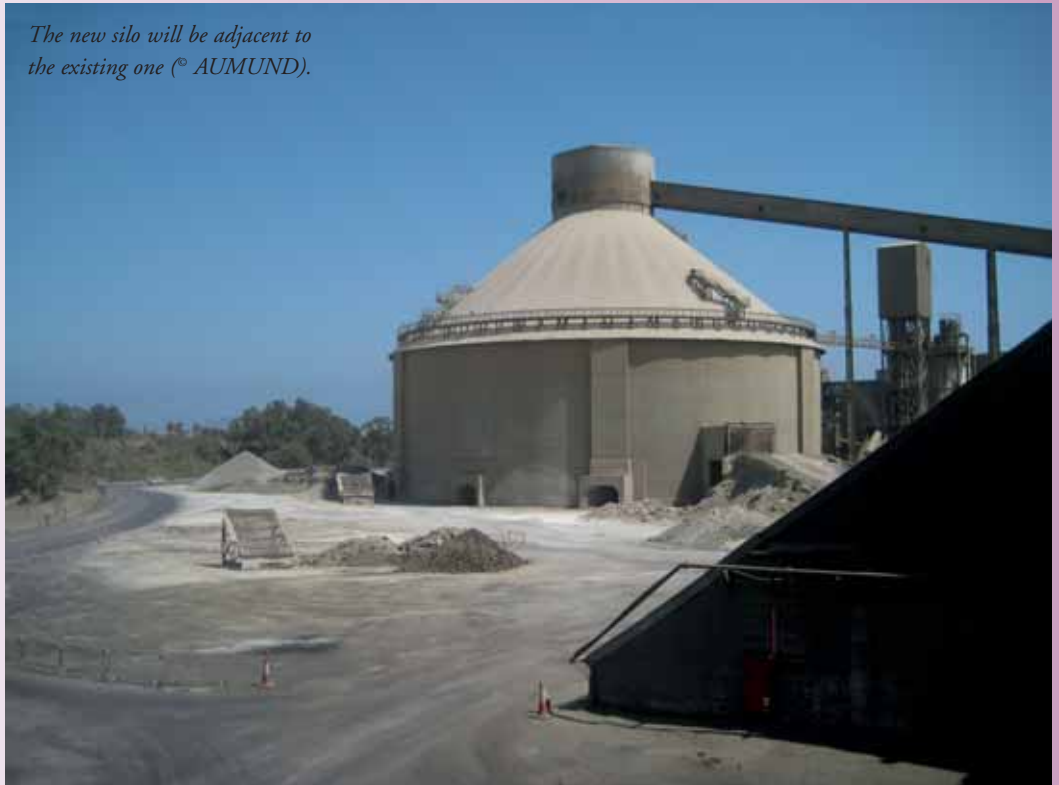
Under the technical leadership of AUMUND Fördertechnik GmbH, the Cypriot cement producer, Vassiliko Cement Works, over the next 18 months, is constructing an additional clinker silo with a capacity of around 100,000 tonnes, at its works close to the coastal town of Limassol. Vassiliko Cement has made considerable investments over the past ten years, installing a cement grinding plant with vertical mill, a kiln line with a capacity for two million tonnes per annum of clinker, and a clinker silo with a capacity of 100,000 tonnes. The plant was first established here in 1963, and Vassiliko has been operating it since 2011 with a kiln capacity of 6,000 tonnes per day. Approximately 50% of the production is exported through its own port.

Under a semi-turnkey contract covering the construction of the additional clinker silo, complete with conveyor bridges, transfer towers, superstructures, loading silos and supports, AUMUND is responsible for the technical organization and coordination. Back in 2008, AUMUND had already won the order to supply conveying equipment for clinker.

KZB pan conveyors with a capacity of up to 600 tonnes per hour are used for the transportation of clinker from the kiln to the clinker silo and from the clinker silo to the loading silos. Material chutes and feed points are equipped with filters to keep the plant substantially dust-free.

AUMUND's scope of supply and services also includes all drive units and instrumentation as well as the complete plant design and the supervision of all installation work on site up to commissioning of the clinker transportation and silo system.

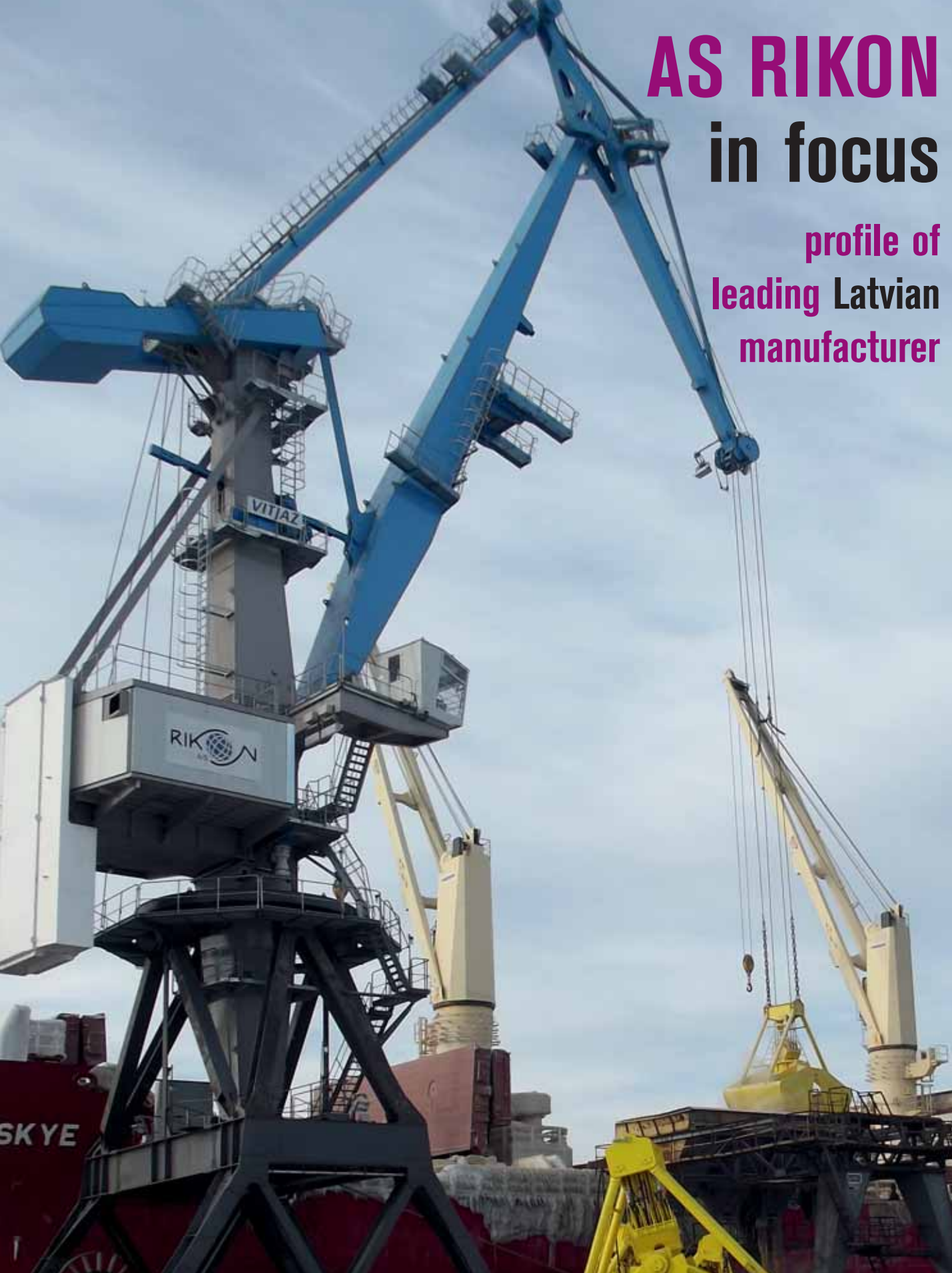
The new silo will be adjacent to the existing one (© AUMUND).



Various AUMUND machines supplied to Vassiliko in 2008 (© AUMUND).



The earthworks and concreting for the silo foundations will be carried out by local companies. "We are delighted that we were able to convince Vassiliko with our complete package of machine supply, integrative design and site supervision," says AUMUND Sales Director Cement, Martin Dalbert. At the time of writing, site work was due to have begun in September, and the commissioning of the complete clinker transportation and storage system is planned for the end of 2017.



AS RIKON in focus

profile of
leading Latvian
manufacturer



AS RIKON (a joint stock company) is a leading manufacturer of port handling equipment, and has more than 60 years' experience. The Latvian company manufactures high-quality level-luffing portal cranes and grabs for multiple purposes, loads and material types.

The company has a reputation as a producer of durable and reliable products, engineered and produced by committed professionals. Its portal level luffing cranes and grabs are therefore well known, widely used, and proven in the toughest conditions in such seaports as Riga, Murmansk, Novorossiysk,

Ust Luga, St. Petersburg, Nakhodka, Batumi and many others.

The production facilities are located in the north part of the Freeport of Riga, with a highly developed infrastructure, which consists of production and storage spaces, a railway branch line, and AS RIKON's own 130-metre-long quay and road connection. In the last ten years, the company has grown exponentially, delivering more than 100 cranes and 450 grabs — tangible proof of trust from its customers. It has made major investments in plant equipment — advanced plasma cutting, bending and welding machines have been installed to allow it to fulfill the most challenging customer requests.

Following demand, AS RIKON has expanded its crane model list: starting from a medium portal crane with 16-tonne grab capacity at 32m boom reach, up to a heavy duty crane with a 52t grab capacity at 50m boom reach — this particular crane has average vessel loading performance of 1,450 tonnes of coal per hour.

In close co-operation with its most reliable customers, AS RIKON has developed rope grabs for coal capable of withstanding the most demanding conditions for operating frozen coal in Northern Russian ports.

Due to simplicity of the mechanical structure and the electrically driven drives, AS RIKON's cranes are more temperature-resistant than any diesel-driven hydraulic cranes. Its cranes have demonstrated excellent reliability by non-stop operation in the most demanding conditions with temperatures ranging between -60°C in Northern Russia ports and $+40^{\circ}\text{C}$ in Black Sea region ports. The very first cranes manufactured by AS RIKON has accrued more than 50,000 hours in intensive coal loading operations, and are still operating successfully today.

RECENT PROJECTS

In March 2016, AS RIKON commissioned two medium portal cranes for coal handling with 18t grab capacity and 36m boom reach at stevedore company Maliy Port (port Nakhodka). In May, it commissioned one heavy portal crane for coal handling with 32t grab capacity and 40m boom reach at JSC Vostochny





MAIN ADVANTAGES OF AS RIKON'S CRANES

- ❖ **double jib level luffing construction:** a moving counterweight, low pendulum swing, ideal horizontal load path and short rope lengths allow fast and precise operation;
- ❖ **low maintenance costs:** fully electrically driven drives, fewer moving parts, reduced friction and shorter rope lengths, reduce spare parts list and demand less frequent maintenance.;
- ❖ **low energy consumption:** up to 60% less energy consumption compared with diesel driven hydraulic cranes thanks to power regeneration and almost zero energy consumption in standby mode;
- ❖ **long lifespan:** 25 years or 2,500,000 cycles, 1,000,000 cycles before general inspection/overhaul;
- ❖ **advanced controls:** anti sway, positioning, automated grabbing, container spreader controls;
- ❖ **high versatility:** dry bulk handling operation, container-handling operation, magnetic traverse operation, heavy-duty general cargo operation — all possible with one crane;
- ❖ **space saving:** the construction of the crane portal allows for easy passage of trucks and wagons under the crane;
- ❖ **customer oriented solutions:** each crane is designed and produced to match the exact needs of the customer;
- ❖ **highest grade materials and quality control:** AS RIKON provides the highest level of quality, evidenced in all the stages of manufacturing, i.e.:
 - quality control of the materials and parts used;
 - technological control at every stage of processing and manufacturing;
 - welding control by ultrasonic technique;
 - unit by unit control assembly;
 - test operation of the crane mechanisms; and
 - the use of first-rate components.
- ❖ **the company is certified** according to the requirements of ISO 9001:2009, ISO 3834-2:2005, EN 1090, all products have a **CE** marking.

Port which is suitable for loading Capsize vessels. In June and July, AS RIKON commissioned two medium portal cranes for coal handling with 18t grab capacity and 32m boom reach and one large size portal crane for coal handling with 32t grab capacity and 40m boom reach at JSC Murmansk Sea Commercial Port.

Recently, AS RIKON has been awarded with contracts for three heavy portal cranes (40m boom reach, 32t grab capacity) with Novorossiysk Commercial Seaport and for two heavy-duty portal cranes (40m boom reach, 50t grab capacity) with Norilsk Nickel. All cranes are to be used in dry bulk handling operations.

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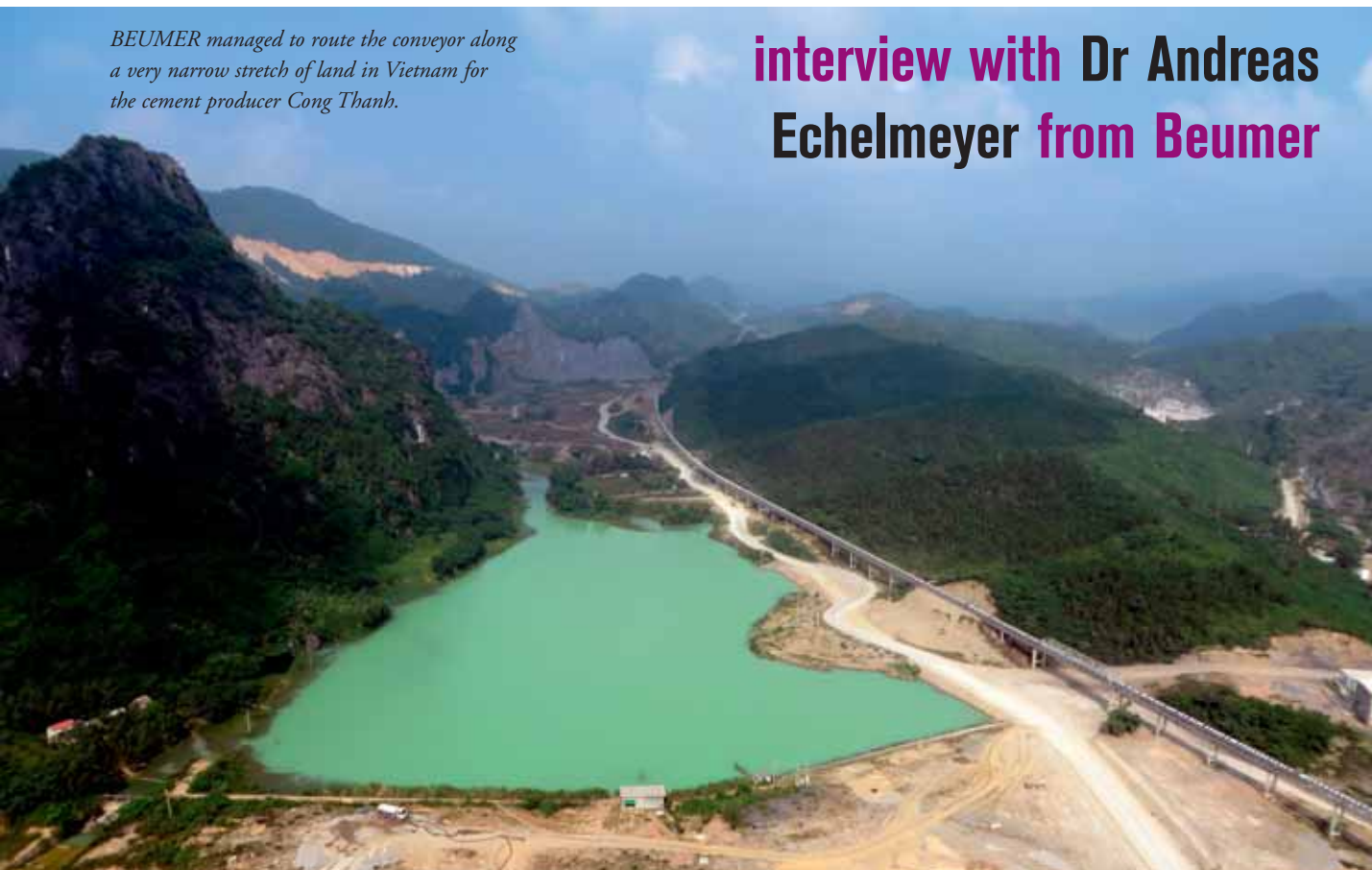
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'We have to listen closely'

BEUMER managed to route the conveyor along a very narrow stretch of land in Vietnam for the cement producer Cong Thanh.

interview with Dr Andreas Echelmeyer from Beumer



Q: Dr. Echelmeyer, you have been Director of Conveying & Loading Systems at BEUMER Group in Beckum for a few months now. What are your responsibilities and what would you like to achieve?

Dr. Andreas Echelmeyer: Since August 2015, I have been the head of the new Center of Competence (CoC) for Conveying & Loading Systems (CL Systems) segment. Under the leadership of the CoC, we would like to globally develop and implement complex system solutions for various industries, such as the mining and raw materials industries, and port handling. In order to achieve this, the customers have to notice us in those fields. BEUMER is known for providing innovative intralogistics solutions. Some are still surprised to learn how fast the BEUMER Group has grown in recent years. Today, Beumer now also offers complex system solutions in the raw materials industry, a sector in which business was traditionally limited to sales of single machines. Our goal is to become internationally known as a reliable partner in the area of plant engineering as well. We have fewer inquiries from Germany, and increasingly more from Australia, the Far East, Africa, South America and the US. Our mission is to build an international team for Conveying & Loading Systems that works together on specific projects. In order to ensure a high standard internationally, we must get qualified colleagues from all our local companies on board in all regions.

*Dr. Andreas Echelmeyer,
Director
Conveying &
Loading Systems,
BEUMER
Group.*



Qualified means that they have to understand the customers in order to precisely communicate their needs with us and develop the perfect solution together with our team in Beckum. This means that we need to stay curious and open-minded for this type of teamwork.

Q: What has changed now for BEUMER Group with the introduction of the CL Systems segment?

Dr. Andreas Echelmeyer: We are rooted in material handling, which is specifically about the efficient movement of bulk materials. Each industry we serve has very specific requirements however. The cement industry, for example, relies increasingly on alternative fuels and raw materials to reduce the use of expensive primary fuels, such as coal and oil. This can also be achieved with household waste that is processed for a particular application. Due to the differing composition of this material, its handling is often very complex. We consult with our customers based on our extensive knowledge of system solutions and provide entire systems, starting from receiving the material at the factory gate, to storing, mixing, conveying and introducing it into the cement production process via the main burner or calcinator.

Q: How do you define expertise in system solutions for your work?

Dr. Andreas Echelmeyer: In order to customize a solution, we have to listen very carefully and ask the right questions. These are often questions the customer has not even thought about. Some customers can also have very specific ideas about the solution. Together we analyse the task, and in this dialogue the user learns that we can supply the perfect system solution that can sometimes differ considerably from the original ideas. Our main goal is to understand the user. Another important prerequisite for us as a system manufacturer is flexibility. In order to successfully tackle specific tasks, we sometimes have to learn to let go of established solutions and find an entirely new approach, depending on the application.

Q: How do you get in contact with the users?

Dr. Andreas Echelmeyer: Our globally operating colleagues are in



The route of the overland conveyor for the end customer, Cemindo Gemilang, passes through the middle of the rain forest.

close contact with our customers. We are constantly exchanging ideas. Our local colleagues are familiar with the country-specific customs, speak the language and know the market and customer-specific requirements. They can pinpoint the relevant potentials and priority areas. Ideally, the customers themselves approach us at an early stage. Together, we then develop the perfect system. If a new customer comes to us, we will send out experts from our Beckum site in Germany. A team from the local company, accompanied by experts from the CoC, will then discuss the problem in detail with the customer. As a third possibility, the customer sends us a request for quotation. We analyse and examine the request in regards to completeness, and whether all

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of our questions have been sufficiently answered, and then we evaluate the request. Together with our local colleagues from the responsible group company, we then develop a fitting solution.

Q: *Your administrative field is called Center of Competence (CoC), the globally centralized organization within a matrix structure. Do you also work together with other CoCs?*

Dr. Andreas Echelmeyer: In the case of orders from the cement industry, for example, we work closely with our colleagues from the CoC Cement. We can mutually benefit from our respective expertise. Those collaborations are always project-specific.

Q: *From which industries do you get requests?*

Dr. Andreas Echelmeyer: This can vary a lot, because our system solutions are used wherever you need to transport large quantities of bulk material. This is particularly the case for the ore and raw materials industry, but we also deal with applications outside of these core areas, such as food transport. In ports, for example, we ensure that different materials are efficiently loaded onto ships.

Q: *What skills are you looking for in your colleagues?*

Dr. Andreas Echelmeyer: As you can imagine, the engineers for this task are very experienced and highly qualified, and are able to think outside the box. Often they need to find new ways in order to find the perfect system solution. Particularly with large conveyor systems, the demands on engineers are becoming increasingly complex. Public acceptance of road transport by truck is declining throughout the world, which means that our conveyors have to deal with greater and greater challenges in overcoming topography. For example, we are designing systems with a length of more than 12km that transport material over extremely steep inclines and declines — and without transferring material on the way.

If we don't want to send an expedition team first, we will have to use special software that allows us to merge satellite and aerial images of different resolutions with the respective topographical data. The challenge now for my colleagues is to estimate and analyse the project, in order to make a concrete offer to the customer. We usually don't have a lot of time for this. It is only possible with an excellent global team.

Q: *What experiences do you bring into your new position?*

Dr. Andreas Echelmeyer: I am familiar with the system manufacturing side, as well as the user side. I was working in the cement industry for eight years. As production manager, I had to oversee complex systems that manufacture more than 13,000 tonnes of steel per day. This is how I am familiar with the demands on system manufacturing coming from the users. I then switched sides and have now worked in systems manufacturing for 12 years. During this time I have set up a global customer support division, among other activities, and I therefore know the expectations of customers: they have ever-increasing demands on machine availability and, therefore, on customer support.

Q: *How would you assess the current development for plant design in mining?*

Dr. Andreas Echelmeyer: The prices for raw materials like iron ore or copper have been extremely low for the last two or three years now. This is why the market situation is very difficult at the moment. We feel the effects of companies cutting investments and stopping projects. We expect this low level of investment to continue for another two, three years, until the market stabilizes.



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Among other things, BEUMER supplied a troughed belt conveyor with horizontal curves and a length of 3.5km for the Thai cement producer, the TPI Polene Public Company.



What else has changed? There is a general trend towards larger tonnages and throughputs because larger production facilities are more efficient. Many users don't want to set up several parallel systems, but want to cover their entire requirements with one line or as few as possible. This trend influences considerably the development of our systems.

Q: *Today, the trend is towards a comprehensive product portfolio in order to offer complete solutions for the entire production process to the customer. Do all components come from BEUMER?*

Dr. Andreas Echelmeyer: We want to offer comprehensive services to our customers, so that we can also avoid unnecessary interfaces. This is why we deliver everything from one single source. For many of the components that are not part of our portfolio, we always ask ourselves whether to purchase or manufacture them in-house. For gear units and electric motors, as well as systems to quantify material flows, we use selected partners. We also attend trade shows to get a clear picture of the current market developments. It's the only way to make sure to provide the perfect solution to our customer in terms of profitability. It is not uncommon for plant manufacturers to purchase many of the components. This way we focus on our core competence and always provide the perfect solutions. Our goal is to always supply turn-key systems that allow the customer to work efficiently.

Q: *Are you planning on becoming an EPC (Engineering, Procurement and Construction) company for bulk material — or even an EPCM (Engineering, Procurement and Construction Management) supplier for large-scale plants, also in order to avoid interfaces?*

Dr. Andreas Echelmeyer: Not necessarily. As plant manufacturers, we want to focus more on the required system solutions and less on industrial construction, excavation and concrete construction. In addition, climate conditions and legislation can vary greatly from China to Tierra del Fuego, Australia or Alaska. This is why for every project we decide if we will be the single provider or if we will work together with a reliable partner in the region.

Local partners are familiar with their environment and the pricing, and are usually well connected. We always want to be well aware of the interfaces. We usually decide on a case by case basis whether or not to use a local partner. We keep a very close eye on the EPC topic, however.

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Bulk stockyard systems

in focus



SCHADE bridge-type reclaimer at the Holcim plant in Campulung, Romania (©SCHADE).

SCHADE Lagertechnik secures orders in Uzbekistan and Jamaica

Over the last few years SCHADE's projects have focused strongly on the power sector, but its latest two orders have come from the cement industry.

In July SCHADE, an AUMUND Group company, won the order to supply two bridge type reclaimers and a stacker to Kyzylkumzement in Uzbekistan with its technical solution, which was preferred by the customer over those of its five cement industry competitors. The two reclaimers, each with a capacity of 1,000tph (tonnes per hour) and a rail span of 30m, and the 1,200tph stacker will be delivered in the autumn of 2017 so that the plant can be commissioned in early 2018. The project is being realized with the aid of World Bank financing.

The order is part of the modernization and improvement of

cement plants that was called for two years ago by the Uzbek construction materials collective, Uzstroyateriali. This investment programme comprises nine projects for modernization and reconstruction of plant at three of the largest cement works in the country, Kyzylkumzement in Nawoi and Akhangaranzement, and Bekabadzement in the Tashkent region. The investment volume at Kyzylkumzement alone is in the order of US\$ 40 million. Currently there are six cement plants in Uzbekistan with a total installed capacity of around 8mt (million tonnes).

FULL-PORTAL RECLAIMER FOR CARIBBEAN CEMENT

In autumn 2017, SCHADE will also supply a full-portal reclaimer

for limestone, with a capacity of 700tph and a rail span of 42m, to Caribbean Cement, the only producer of Portland cement in Jamaica.

Caribbean Cement Company Ltd., or Carib Cement, located in Rockfort, near the capital city of Kingston, has been producing cement using 100% Jamaican raw materials since 1952, and has a cement manufacturing capacity of 2mt per annum.

The project phase leading up to this order had been going on for almost 20 years. Rather than investing in a new machine the initial plan was to convert an existing one. In the end the management decided that the purchase of a new machine would be more economical than incorporating all the required modifications into the existing machine.

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 major force in many areas of conveying and storage technology. The manufacturing companies AUMUND Fördertechnik GmbH (Rheinberg, Germany), SCHADE Lagertechnik GmbH (Gelsenkirchen, Germany), SAMSON Materials Handling Ltd. (Ely, England), as well as AUMUND Logistic GmbH (Rheinberg, Germany) are consolidated under the umbrella of the AUMUND Group. In conjunction with the headquarters of the manufacturing companies, the global conveying and storage technology business is spearheaded through a total of ten subsidiaries in Europe, Asia, North and South America and supported by four warehouses in Germany, Hong Kong, USA and Brazil.

Quiet and emission-free: E-mobile solutions for shunting and loading operations

At InnoTrans in Berlin, which took place from 20–23 September, Vollert focused on mobile electrical shunting solutions. Vollert, a specialist in cost-effective shunting and loading systems for connecting and secondary railway systems, is currently working on projects in Germany and Russia for Tegometall, Shell, and EuroChem. These all confirm the increased demand, not only for autonomous battery-operated systems, but also for cable-fed systems.

The advantages of e-mobile systems are their cost-efficient operation without any exhaust gases, offering a significant reduction in noise levels and easier maintenance. For the Swiss Tegometall AG company, a leading global manufacturer of loading equipment, shelving systems, and warehouse technology, these are good arguments in favour of a decision to purchase a BR 60 battery-operated shunting robot. With a starting traction force of 60kN, the shunting robot transports freight trucks containing metal coils on a 2km-long route from the rail junction to the production buildings. Speeds of up to 7km/h and the self-sufficient battery-powered operation facilitate a swift connection, despite the length of the route which traverses a road at a level crossing. The BR 60 is operated by means of a mobile radio controller. The first shunting robot delivered by Vollert entered service at Tegometall two years ago and the company is now also opting for this powerful solution at its facility in Krauchenwies, Germany.

“Electrically operated systems are ideal, especially where there are stringent requirements with regard to noise levels and exhaust fumes,” explains Jurgen Schiemer, Vice President Shunting Systems division at Vollert. “At Tegometall the production within the buildings is not adversely effected by exhaust fumes. In a further project for the Shell Rheinland 2 refinery, protection of local residents was the primary concern: the specification for noise levels here is <48 dB(A).” Furthermore, in loading and unloading operation, electrical systems are particularly energy-efficient in view of the frequent stationary and idle periods. At the same time, the maintenance costs are significantly lower.

CABLE-FED FOR LOADING AND UNLOADING OPERATIONS

Under the severest weather conditions, EuroChem in Russia is using a new KR 75 e-mobile shunting robot at its subsidiary plant Phosphorit Industrial Group in Kingisepp for efficient loading



Tegometall has been using a Vollert battery-operated shunting robot at its Sauldorf plant for two years, and has now also chosen this robot for its Krauchenwies plant.

procedures involving ammophos fertilizers. This robot is supplied with a motorized cable drum which feeds the power to the robot.

A further order to supply shunting robots of the same type has been submitted for the loading of sulphuric acid. The systems have tractive power of 22kW and can pull a total train weight of up to 1,500 metric tonnes. Each robot draws its energy from a drum-mounted retractable cable with a length of over 300 m.

ABOUT VOLLERT ANLAGENBAU GMBH

As a provider of innovation, Vollert has developed economical shunting systems for in-plant and connecting railway systems. Stationary, rope-mounted shunting systems from Vollert have been used for manoeuvring railway carriages and trains ever since the 1950s. As a technology leader, Vollert also offers independently operating shunting systems (shunting robots), heavy-duty transfer carriages, and travelling platforms for reliable and efficient processes in refineries, mines, ports, steel and cement works, explosion protection areas, railway washing facilities, and maintenance centres. System solutions from Vollert are used in over 80 countries, with subsidiaries in Asia and South America further increasing sales activities in those parts of the world. The company employs some 250 personnel at its headquarters in Weinsberg.

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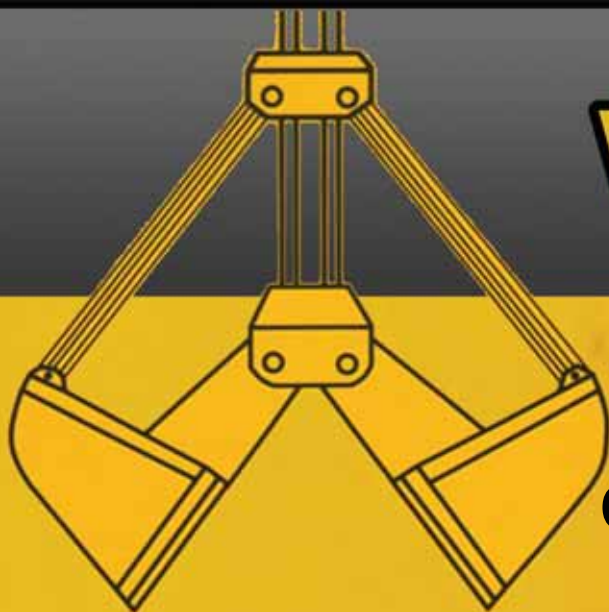
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Intensive field surveys help Caterpillar continuously improve the design of wheel material handlers for low-cost operation and maximum customer value, while maintaining proven Cat quality, reliability, and features, such as the Cat Smartboom™, load-sensing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

FUEL EFFICIENCY AND SUSTAINABILITY

The MH3022 and MH3024 use the Cat C7.1 ACERT™ engine, rated at 169 horsepower (126kW, 171 PS), and have operating weights of 22.7 and 25.7 metric tonnes, respectively.

The engine meets US EPA Tier 4 Final/EU Stage IV emission standards and features refinements that yield added torque and faster response to changes in load. With a durable, field proven design, the engine now integrates an emission after-treatment system, which requires no attention other than periodically replenishing the diesel exhaust fluid (DEF) tank.

Emissions technology includes the Cat NOx-reduction system, selective catalytic reduction, diesel oxidation catalyst, diesel particulate filter (DPF), and high-pressure/common-rail fuel system. The DPF features passive regeneration which does not require operator intervention and causes no interruption in the work cycle. The design of the engine and the after-treatment system results in low fluid consumption for new models, conserving both fuel and DEF to lower operating costs.

An engine-idle shutdown system saves fuel by shutting down the engine when it has been idling for a preset amount of time. In addition, the Eco Mode has been refined and reduces engine speed with no reduction of power, providing reduced fuel consumption with no compromise in performance.

A new electronically controlled hydraulic system combines with new medium-pressure pumps and new fan pump to enhance hydraulic response and reduce overall load on the engine for greater fuel efficiency. The optional Cat Bio HYDO™ Advanced hydraulic oil and bio-diesel blends up to B20 can be used without reducing the life of these systems.

COMFORT AND SAFETY

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

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

The standard lighting package for the new models, now includes a counterweight and RHS lights (enhancing the camera function at night), three cabin-mounted lights, and light on the boom as well as new stick lights. Standard LED lights replace the previous halogen lighting for enhanced illumination, lower power consumption, and longer life. Optional guards are available on the front linkage lights for applications in which falling and flying debris are hazards. Two counterweights are available to match application needs, increase stability, and provide great lift capacities.

The MH3022 and MH3024 also incorporate a PIN-code anti-theft system. For operator convenience during short breaks in production, the system remembers the last code entered before engine shutdown and allows that code to remain active for a period of time.

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An automatic system, when enabled by the operator, senses machine parameters and locks the axle-oscillation function and sets the service brakes, readying the machine to work. This feature reduces operator fatigue by removing the need to constantly press the brake pedal and results in added productivity. Brake and axle lock are automatically released when the operator presses the travel pedal again. Also, a new travel-lock system, engaged via the switch panel, combines implement-stop and swing-lock functions.

A Cat MH3024 material handler working alongside a Cat 972M wheel excavator in a wood chip pile at the port of Sevilla.



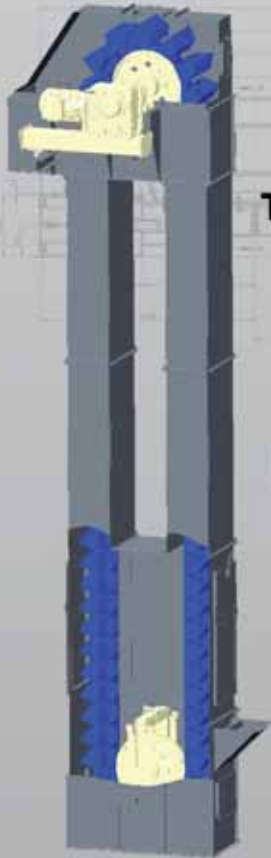


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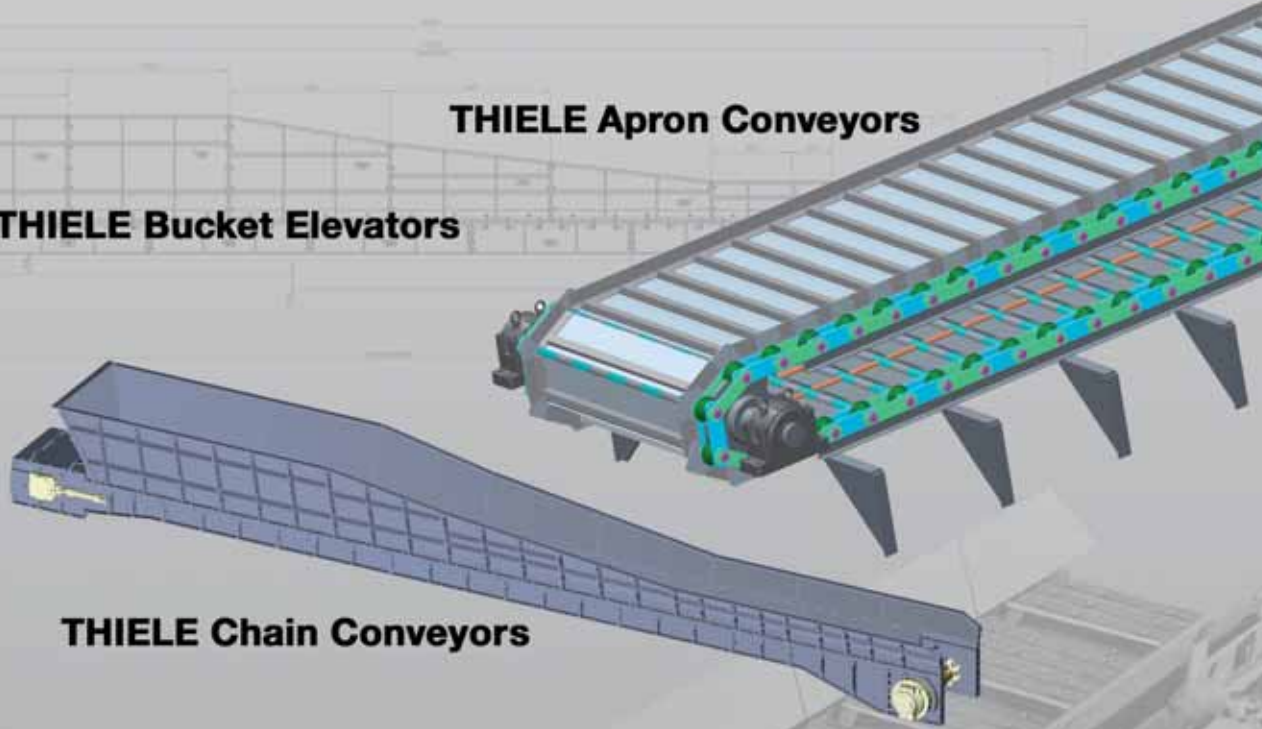
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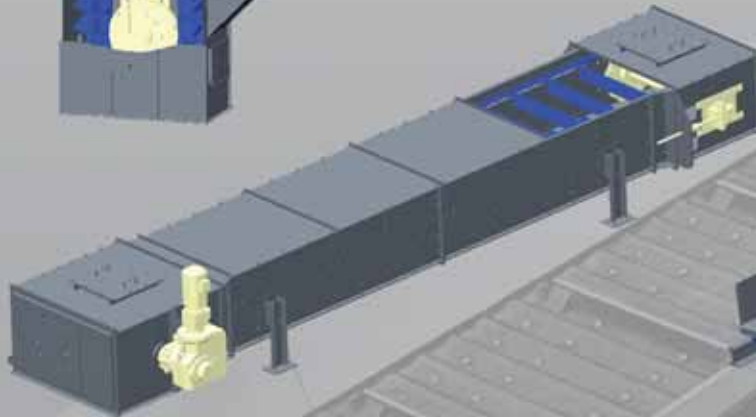


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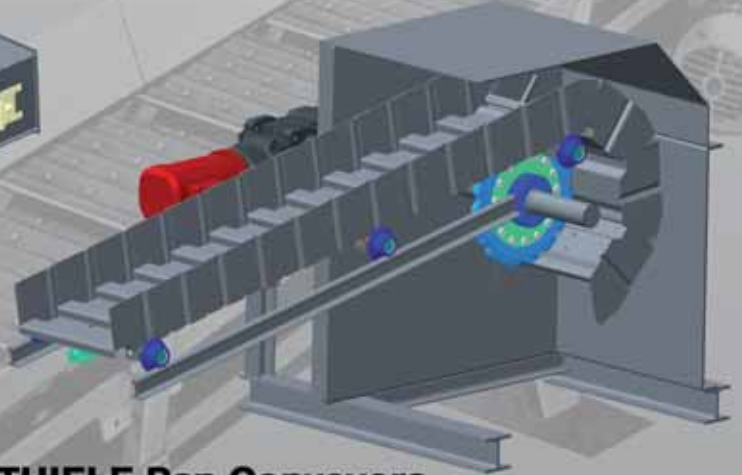
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The engine, as in predecessor models, is longitudinally mounted with the cooling package forward of the engine, resulting in easy, ground-level access to routine maintenance points. An electric fuel-priming pump eliminates filling filters before installation. All the



coolers are now grouped in the same compartment, and the condenser can be tilted with no tool for ease of cleaning. A new industrial package will provide improved protection when working in harsh environments, including a thin-grid mesh and engine air pre-cleaner. Electrical and hydraulic components are now grouped in specific areas for ease of service, and an automatic centralized greasing device (Auto-lube) is standard, allowing operators to remain focused on the job. Access to the top platform is also improved, including a new service platform for DEF and fuelling, as well as new handrails.

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The MH3022 and MH3024 can be equipped with a variable angle boom, one-piece boom, or material handling boom, as well as a choice of sticks, quick coupler, and work tools.

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Clean and safe conveyor systems: central to a successful stockyard

MARTIN ENGINEERING DISPLAYS ITS WARES AT MAJOR EXHIBITION

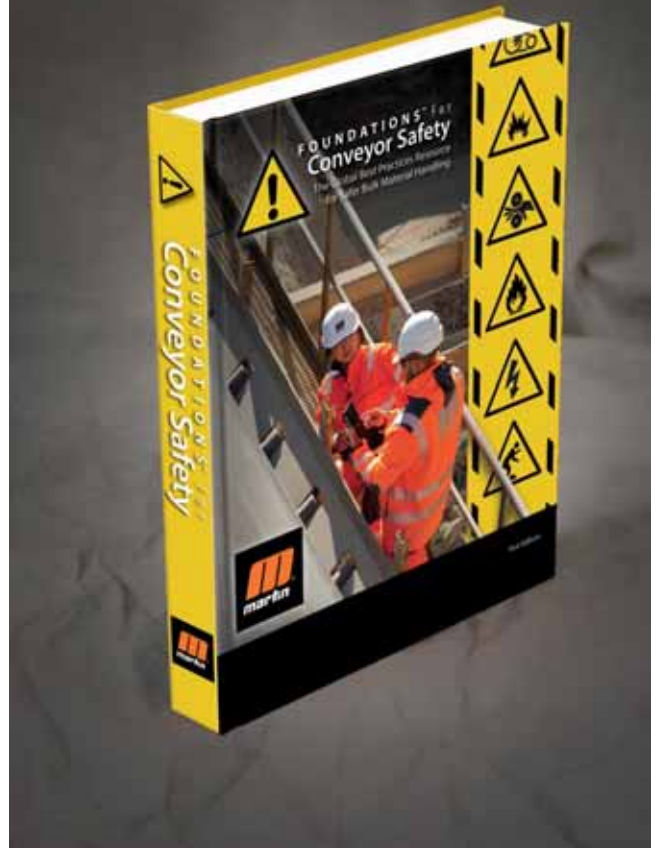
At the recent MINExpo INTERNATIONAL® 2016, which took place in late September, Martin Engineering showcased a broad range of advanced technologies for safer and more productive bulk handling. At the exhibition, Martin Engineering unveiled new and improved component designs for conveyor belt cleaning, dust management, load containment, risk reduction and improved material flow.

A highlight of the company's exhibition was the industry's first-ever reference book dedicated to reducing conveyor risk and injuries. A collaboration of experts with vast experience in bulk material handling from around the world, *Foundations™ for Conveyor Safety* was written and published with the simple mission of improving conveyor safety. It's designed to educate readers by identifying hazards, danger zones and unsafe work practices around conveyors, helping raise awareness and provide guidance to management, operators and maintenance personnel. The content provides a detailed overview of hardware solutions, global best practices, risk assessment and safer conveyor construction, with a summary discussion of the return on safety investment and how to measure the payback.

Among the featured products was the Martin® Roll Gen™ System, a patent-pending design to create a self-contained mini power station that allows operators to run a wide variety of electrical systems, including monitoring devices, safety mechanisms and pneumatic belt cleaner tensioners. The Roll Gen System can also be used to power tracking devices, industrial lighting and solenoids for air cannons or dust control in areas without convenient access to an electrical source. Able to be retrofitted on existing idler support structures, the device is considered a first step toward eliminating power production obstacles, as conveyors move into the next generation of 'smart systems' that are predicted to be more sustainable and autonomous.

The company's outdoor booth was dedicated solely to Martin Engineering's Mr. Blade® service, a new factory-direct replacement

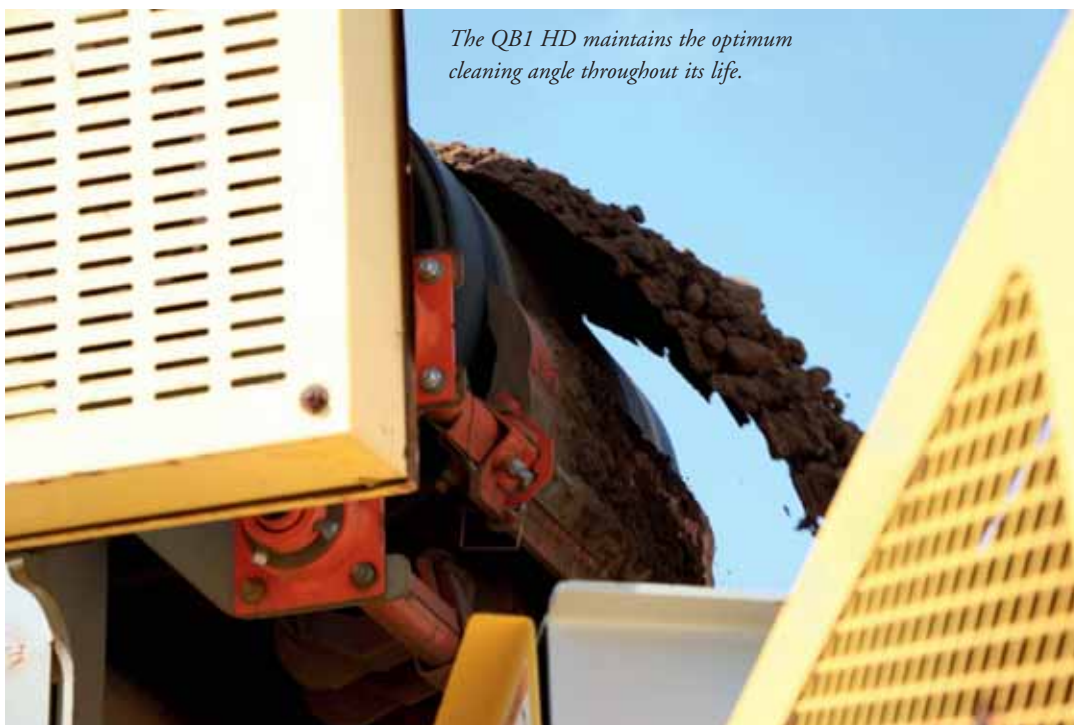
Foundations for Conveyor Safety is written with the mission of improving conveyor safety.



programme for belt cleaners, delivering fresh polyurethane blades, specified and custom-fitted on-site and installed free of charge. Customers are assured of accurately-sized, professionally installed and properly tensioned replacement blades that are matched to their specific applications, providing optimum cleaning performance and service life. Mr. Blade® guarantees perfect

pressure for the life of any blade installed by Martin Engineering technicians, providing continuous optimal cleaning performance. The company had one of its custom-designed vans on site where it gave live demonstrations of cutting and preparing belt cleaner blades.

A variety of new belt cleaners was also on display, including the patented CleanScrape™ design. The unique system has been recognized by the Australian Bulk Handling Award in the 'Innovative Technology' category



The QB1 HD maintains the optimum cleaning angle throughout its life.



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Tenova TAKRAF is a key supplier of individual machines and integrated systems for handling bulk materials in mine stockyards, ports, power stations and metallurgical plants. Each project is approached from the end-user's viewpoint in order to deliver optimized solutions that meet and exceed requirements and expectations.

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Tenova is a worldwide supplier of advanced technologies, products and engineering services for the mining and metals industries.

for its engineering and potential benefits, which include low belt wear, extended service life, reduced maintenance and low cost of ownership.

Visitors were also able to view Martin Engineering's safe-to-service primary belt cleaner and the patented Martin® QBI™ Cleaner HD, manufactured with the firm's unique 'CARP' (Constant Angle Radial Pressure) technology to maintain the most efficient cleaning angle throughout its service life. The QBI™ HD features a no-tool replacement process that can be performed safely by one person in less than five minutes.

A selection of dust management and load zone technologies were exhibited, including customizable suppression systems, high-speed impact cradles and Martin® ApronSeal™ Double Skirting, which provides two wear surfaces on a single elastomer sealing strip installed along the bottom of the skirtboard in a belt conveyor loading zone. The Martin® High-Speed Impact Cradle was in the spotlight — a unique, patent-pending design that's able to absorb greater impacts than conventional impact cradles, without sacrificing its sealing ability. Engineered to withstand the severe conditions, heavy loads and faster speeds of today's mining conveyors, the new cradle features a modular, slide-out design that allows safe and easy service with a minimum of downtime.

Among the flow aids featured at the event was the company's heavy-duty electric vibrators to facilitate material movement, including factory-direct replacement motors for shakers,



The new impact cradle features a modular, slide-out design for safe and easy service.

screening equipment and material separation. Built specifically to withstand the rigours of heavy industrial applications and continuous use, the designs are finding utility in high frequency vibratory screens, sizing equipment, dewatering operations and other vibratory equipment for the mining industry. The indoor booth also featured a variety of air cannon technologies and nozzle designs to prevent clogs and break up accumulation in storage vessels, chutes and loading equipment.

MINExpo INTERNATIONAL® 2016— held 26–28 September at the Las Vegas Convention Center — is the largest show of its kind. Held every four years, the event draws visitors from all mining regions of the world. Approximately 1,450 companies exhibited, filling 12 exhibit halls and a large outdoor area.

MINExpo is dedicated to providing solutions to help the mining industry grow by meeting the challenges and capitalizing on the opportunities in the rapidly changing world of metals,

minerals and energy. Show organizers and exhibitors are dedicated to presenting imaginative new products and services, innovative technologies and opportunities to learn from the expertise of others.

Martin Engineering, based in Neponset, IL, is an industry leader in developing and manufacturing flow aids and conveyor products around the world for a wide variety of bulk material applications, including mining, coal processing, cement, rock/aggregate and other materials. The firm offers manufacturing, sales and service from factory-owned business units in the U.S., Brazil, China, France, Germany, Indonesia, Mexico, Peru, Russia, South Africa, Turkey, India and the UK, and under exclusive licence with ESS Australia.



The unique CleanScrape™ belt cleaner delivers exceptional performance, extended service life and low maintenance.



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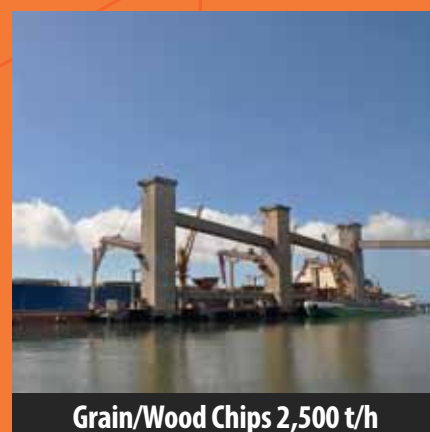
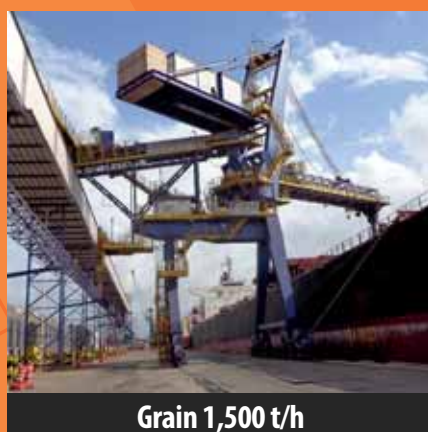
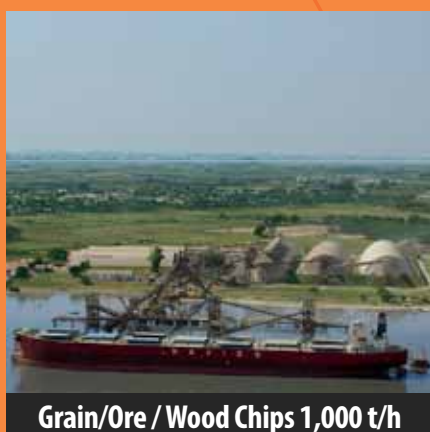
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BRUKS Rockwood supplies circular petcoke stacker to the Port of Lake Charles

BRUKS Rockwood is a major presence in mechanical-engineering and equipment supply for the bulk materials handling industries and it includes stockyard systems among its extensive portfolio. It provides specialized customer solutions, including the development of custom machines and systems. The company's comprehensive services include project engineering, technical support, start-up training, and remote-monitoring/servicing of machine functions. From truck dumpers to shiploaders, and mobile chippers to stacker reclaimers, BRUKS Rockwood product portfolio offers a wide variety of customizable solutions for the bulk materials handling industry. Customer service and product performance are at the heart of its corporate culture.

CUSTOMER CASE STUDY: CIRCULAR PETCOKE STACKER

Company: Port of Lake Charles

Location: Lake Charles, Louisiana, USA

BRUKS Rockwood supplied the circular petroleum coke stacker for the Lake Charles Mill site in Louisiana. Designed to accommodate both petroleum coke and coal, this system stacks



the material at 1,200tph (tonnes per hour), while having the ability to slew 360°. In addition, the machine is equipped with a shuttling feature that enables the port to maximize its storage volume in a restricted space. An extended discharge chute skirt is an additional feature to control dust from the material. Work on the project was completed in June 2013, and the stacker continues to work effectively.



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RopeCon® direct link between pit and valley at El Limón-Guajes gold mine

To connect the El Limón gold ore pit with the processing plant it was necessary to overcome an altitude difference of approx. 400m in steep terrain. Minera Media Luna, S.A. de C.V. (MML), 100% owned subsidiary of Torex Gold Resources Inc., opted for the RopeCon® as a means to transport 1,000 metric tonnes of gold ore per hour into the valley over a distance of 1.3km. Along with other aspects, safety and environment were key considerations in prompting the decision.



The El Limón-Guajes gold ore pit of MML is located approximately 180km south-west of Mexico City in the state of Guerrero, Mexico. The ore mined at the two pits of El Limón and Guajes is processed in one central processing plant. The El Limón pit, however, is approximately 400m higher up on a steep ridge. During the planning phase, one of the issues that had to be addressed was the transport of the material from the pit down into the valley. Along with the costs, operational safety and the impact on the environment had to be taken into account. In March 2013, MML decided to use the RopeCon® as a means of transport, a system which covers the vertical rise of approximately 400m and the length of 1.3km with just one tower structure before

TECHNICAL DETAILS

Length	1,308m
Vertical rise	383m
Conveying capacity	1,000tph
Speed	3.3m/s
Number of towers	1
Motor rating, cont.	1,026kW

unloading the material onto a stockpile. Construction of the RopeCon® started in early 2014. Doppelmayr's assembly team carried out the job in just six months — accident-free and on schedule. The RopeCon® took up operation as planned in March 2016. It now connects the pit with the processing plant.

RopeCon®, a product of the ropeway manufacturer Doppelmayr, essentially relies on a flat belt with corrugated side walls to transport materials of all kinds. The belt performs a haulage function and is driven by, and guided around, a drum at both ends. To account for the great vertical rise and consequently the steep incline between the El Limón pit and the valley, the belt has been fitted with cleats to prevent the material from slipping. Axles are mounted on the belt at regular intervals to support it. They have plastic running wheels attached to their ends. These wheels run on track ropes with fixed anchoring and guide the belt. The track ropes run over tower structures so that this conveyor system is lifted off the ground, leaving only a minimal footprint. The system features three track rope pairs in total, with the bottom pair supporting the empty belt and the pair in the middle carrying the loaded belt. An inspection vehicle travelling on the third track rope pair at the top serves to provide easy and safe access to any point along the line. Almost all moving parts are attached to the belt and therefore pass through the stations at regular intervals. Service and maintenance works can thus be performed at one central point.

The El Limón RopeCon® system generates approximately 1MW of green energy from braking actions, which contributes to a reduction of the overall operating costs. This, and the fact that no fossil fuel (diesel) is required to operate the system is one of the significant differences between RopeCon and trucks, the other means of transport under consideration for the transport of the ore.





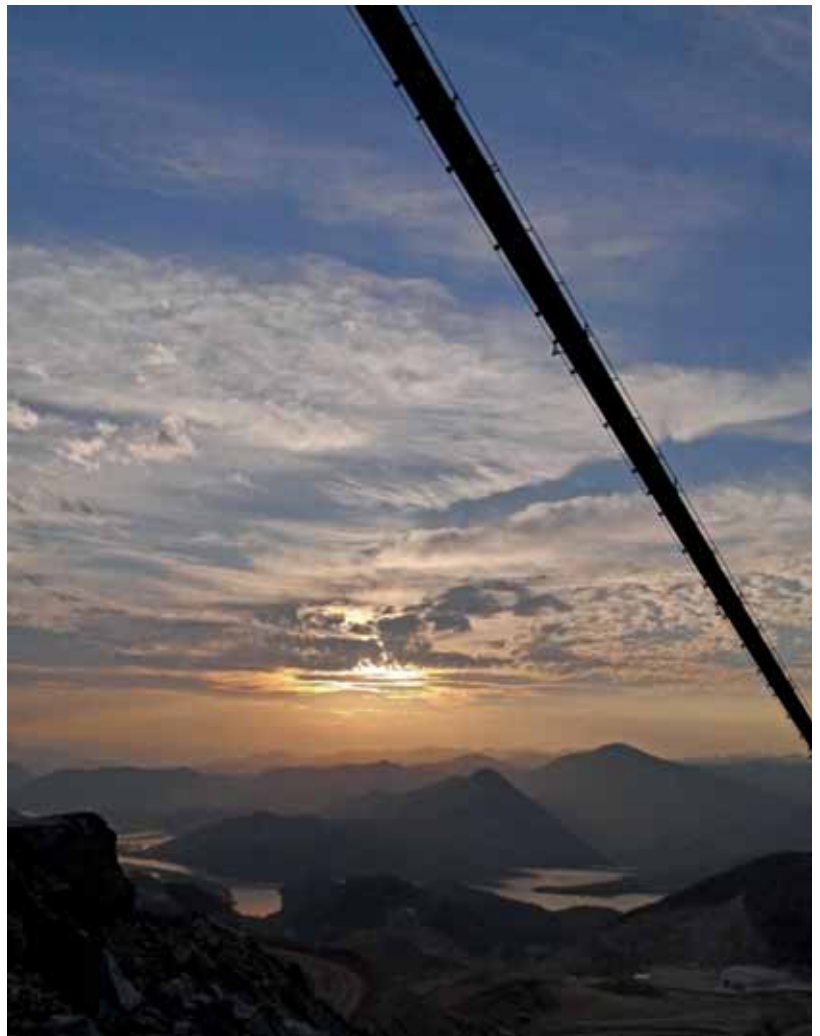
Apart from the positive effects on operating costs, resulting from straight-forward maintenance and regenerative operation due to downhill transport, the avoidance of dust and noise emissions is another argument which strongly supports the use of the RopeCon®. The automatic transport system will also help to enhance operational safety and its controls can be integrated into the central control system of the mine.

The decision to use the RopeCon® to transport the crushed ore from the pit to the stockpile in the valley also means that the access road to the pit does not have to be upgraded for truck transport. Access can now be narrower and steeper and can follow a different route. The footprint of the roads can thus be reduced. The RopeCon® system as such operates off-ground and does not touch the ground between the loading station and the track rope anchoring point in the valley except with one tower structure. With a height of 44m, this tower achieves the discharge height required for the stockpile. The span between the loading station and the tower structure is 1,200m. The conveying angle comes up to 32°.

Viewed over the entire life of the mine of an estimated ten years, the RopeCon® will transport approximately 1,000 metric tonnes of ore per hour from the crusher to the stockpile, from where the material will then be taken to the processing plant.

Doppelmayr Transport Technology GmbH is a 100% subsidiary of the international Doppelmayr Group with headquarters in Wolfurt, Austria. Within the group, Doppelmayr Transport Technology GmbH is the expert in transport systems and specializes in a wide range of transport solutions for different materials and

bulk. Doppelmayr is a leader and a pioneer in ropeway engineering and, apart from material transport systems, designs and manufactures also other products such as passenger ropeway systems for summer and winter tourism or urban transport, rope-hauled automated people movers like the ones at Toronto and Mexico City airport, and fully automated high bay warehousing systems.



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"The XR rotator has a rigid design that exceeds all of our expectations. It works extremely well in whatever way we put it to use. XR has extremely high torque and still very smooth to operate."

Bernard Grantner, Pabst Holzindustrie, Obdach, Austria

"Performs beyond expectations"

"The XR has worked like clockwork for a very long time. Not only does the rotator cope with powerful side forces, I also find the low, compact design incredibly flexible as we don't need to build the rotator into the grapple."

Jan Lindbäck, CEO, Marine Cranes, Sweden

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MOBILE COAL HANDLING SYSTEMS



Radial Telescopic Shiploader and Mobile Truck Unloader loading pet coke to Handymax vessels



Radial telescopic stockpiling coal @ 2000tph
in powerplant receiving from ship unloading system



Hopper Feeder & Radial Telescopic reclaiming/
stockpiling coal in stockyard of powerplant

Telestack **mobile** coal handling systems offer significant **operating costs savings** compared to traditional methods of material handling (e.g wheel loaders, mobile harbour cranes, stacker/reclaimers etc.) as well as providing **environmental** and **health & safety benefits**. Additional benefits include **reduced planning** permission required due to product **mobility**. Also the **flexibility** to move Telestack Mobile Conveyors off site. Telestack Conveyors can be **rapidly deployed** on site with handling rates of up to 3,000 TPH.

THE POWER TO MOVE MATERIALS



Demand from the East for DemcoTECH stockyard design

With Asia and the Pacific constituting the most dynamic region in the world today having rapidly moved to an industrialized economy, South African engineering and project management houses such as DemcoTECH Engineering are seeing growing market demand for their services from this region. Fresh from the successful delivery of the engineering contract for the major Teluk Rubiah iron ore maritime terminal for Brazilian miner Vale in Malaysia, DemcoTECH is now involved in the development of a power station expansion project as well as a new stockyard and ship loading facility comprising storage stockpiles, complete with stacker, scraper reclaimer and shiploader.

With a solid footprint in South Africa, including being responsible for such major stockyard projects as the materials



DemcoTECH radial stacker.

Run-of-mine (ROM) stockpile system at Letšeng Diamond Mine, Lesotho.



required, considering a number of parameters including partitioning to eliminate material contamination, material size, shape of the stockpiles, terrain limitations, stacking methodology, stockyard layout and equipment selection.

“Our ability to carry out the entire chain, from concept to construction management enables us to take a holistic approach to the project, with seamless integration from one project phase to another,” adds van de Vyver.

For the Teluk Rubiah Maritime Terminal in Malaysia, DemcoTECH was involved in the entire project from concept to completion of the implementation phase, FEL4. DemcoTECH together with partners completed the simulation study for the project. The study simulated operational processes such as import of materials from bulk carriers via the ship-unloaders and transport on the import conveyor system to the stockpiles, including blending and export of iron ore from the process stockpiles to the bulk export carriers.

Following a design audit on the run-of-mine (ROM) stockpile system at Letšeng Diamond Mine in Lesotho, DemcoTECH upgraded the Run-of-Mine (ROM) stockpile stacker as a turnkey contract. This included relocating the drive on the 24m-high stacker, to ground level for ease of maintenance, as well as redesigning the head arrangement to ensure that the material is distributed evenly over the stockpile reclaimer feeders.

In other studies, DemcoTECH carried out an FEL2 concept study for the stockyard extension of an Industrial Complex in Oman, providing layouts and design for the stockyard and conveyor capacities for the installation of 27 new conveyors, as well as the extension of two of the existing conveyors and

handling portion of the expansion to Grindrod’s multi-product terminal at the port of Richards Bay in South Africa, DemcoTECH has seen increasing international success.

“Our extensive track record in developing stockyard facilities now covers Africa, the Far East and Eastern Europe, with our most recent work, including, in addition to Vale’s Malaysia terminal, the detailed engineering of the entire materials handling system stockyards for a multi-product import terminal project in Croatia,” says Paul van de Vyver, DemcoTECH GM.

“In addition to the state-of-the-art technologies, much of our success has been due to our ability to cover the complete scope of project services from concept development, feasibility studies and audits through to project execution.”

Stockyard design is complicated by the nature of the incoming and outgoing product, and the requirement to blend material in some cases. Understanding the entire system is therefore



Construction of conveyors and transfer house at the Richards Bay multi product terminal, KwaZulu-Natal, South Africa.

interfacing with the existing plant.

For a concept study to determine different methods to export iron ore from the Republic of Congo, DemcoTECH investigated the optimum layout of the materials handling at the port. Five options were presented, together with full operating expenditure (OPEX) and capital expenditure (CAPEX) breakdowns.

Expansion to the manganese export facility at Assmang Limited's Cato Ridge Alloys plant in KwaZulu-Natal, South Africa, consisted of an 80,000-tonne stockpile with reclaim facilities and an automated truck loading facility. The scope of the turnkey project consisted of the feasibility study and costing through to full implementation. Working jointly with Kantey & Templer Engineers, DemcoTECH's scope comprised three parts: refurbishment of the tippers, followed by refurbishment of the two existing conveyors and, lastly, establishment of a greenfields truck load-out station.

"The design changes to be made to the existing train tippler system were fully evaluated in a feasibility study beforehand, which included a time and motion study," says van de Vyver.

DemcoTECH's comprehensive service covers all processes required in developing a new stockyard or upgrading an existing facility. This ranges from the generation of stockyard layouts using various equipment types, based on the client's operational, maintenance and financial requirements and/or constraints, through to detail design and equipment selection, equipment

DemcoTECH mobile maintenance trolley at Richards Bay multi product terminal, KwaZulu-Natal, South Africa.



procurement and fabrication, and plant commissioning and performance testing. Operational readiness programmes including personnel training are completed during the erection phase of the project, while post project a comprehensive and spares service is provided.

"As there is often a need for stockyards to provide blending capabilities for quality control, we also design blending stockpiles and sampling plants (including gravity sampling plants)," added van de Vyver.

Fit-for-purpose equipment includes rail wagon tippers for unloading wagons, moving-heads on conveyors transporting material to different stockpiles for blending purposes and environmentally friendly pipe conveyors for 'enclosed' conveying of material to stackers or elevated trippers stockpiling onto selected stockpiles. Reclaim equipment includes a range from mobile plant with vibratory feeders under stockpiles through to bucket wheel-reclaimers and export conveyors designed to feed shiploaders or automatic truck loadout facilities.

Assmang's Cato Ridge expansion, KwaZulu-Natal, South Africa.





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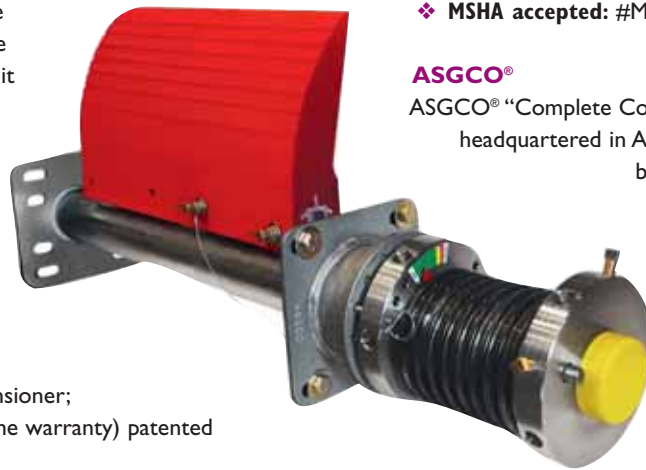
HIGHLY EFFECTIVE BELT CLEANING SYSTEM FOR HIGH-SPEED, HIGH VOLUME CONVEYORS IN THE TOUGHEST ENVIRONMENTS

High speed belts moving high volumes of material can create unique challenges for conveyor belt cleaning systems. In addition, many of these conveyors use large head pulleys, further complicating the application of an effective primary belt cleaner. ASGCO® offers a solution to these challenges with the Super-Skalper HD®.

Available in several blade configurations, ASGCO®'s Super-Skalper HD® can tackle the toughest carry-back applications. The one piece mounting tube and E-Z Torque® Tensioner applies consistent and proper pressure ensuring constant cleaning contact throughout the life of the blade. The Blade Wear Indicator allows users to monitor blade wear without having to shut down the system for inspection and can be done in minutes, without tools. This makes it ideal for both above and below ground mining.

KEY BENEFITS

- ❖ **one piece mounting tube:** single mounting tube constructed of 2-1/2" sch 80 pipe;
- ❖ **strong tube support:** for robust new enhanced E-Z Torque® HD tensioner;
- ❖ **E-Z Torque® HD Tensioner:** (lifetime warranty) patented



— made of all 304 stainless steel mounting plates, collars and springs allows the blade to self-adjust throughout the entire life of the blade and is the most robust and accurate belt cleaner tensioner in the industry;

- ❖ **Blade-Wear Indicator:** allows users to monitor blade wear easily without having to shut the system down for inspection;
- ❖ **torque spring:** provides a greater degree of tensioning per inch of blade, verses compression springs which require more tensioning adjustment for the life of the blade;
- ❖ **rubber corrugated dust covers and UHMW bushings:** ensure no build-up in the spring tensioning area and provide smooth non-binding tensioning;
- ❖ **quick-change blade:** stainless steel pin blade change-out system, one-minute, no-tool; and
- ❖ **MSHA accepted:** #MSHA IC – 174/1

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STM: Italian expertise in the stockyard handling coal and petcoke

STM is an Italian company that prides itself on 30 years' experience in the engineering and supply of belt conveyor systems for use in stockyards and elsewhere in the bulk handling process. The company develops innovative solutions for bulk materials handling in order to meet the needs of all its customers in over 20 different countries across five continents.

The whole supply process, from feasibility study to final delivery and commissioning, is entirely carried out in the STM factory which is located with the company headquarters in Tito Scalo (Potenza) in Italy. This allows STM to optimize the design, the industrialization time and the information exchange with the customer.

Its attention to the quality, the focus on the customer and the continuous improvement of industrial standards and practices, STM is globally recognized as a trusted partner in developing custom-made solutions, offering its customers a full range of project services: engineering, fabrication and commissioning. The company specializes in developing flexible, individual and effective solutions.

Over the years the STM portfolio have become more challenging and specialized, with specific and innovative solutions



for each applications: mining conveyors, RCC conveyors, Tunnelling conveyors, crushing plants conveyors, batching plant conveyors and waste to energy plant conveyors.

STM DESIGNS INNOVATIVE SOLUTIONS FOR COAL HANDLING

The economic situation in recent years and the uncertainties in short-term pick-up has resulted in the optimization of new coal projects in different fields (mining, energy, terminal port). STM has extensive experience in dry bulk material handling, and designs innovative solutions to increase efficiency and meet stringent environmental regulations.

STM designs and manufactures conveyor belts systems in the mining and in the energy fields to handle materials such as petcoke (petroleum coke), cold coal, and ashes produced by the combustion of incinerating plant and refineries.

Thanks to its flexibility and its long experience in this field, STM is able to create and manage equipment of any size and complexity, including mobile plants. This configuration satisfies the plant owner who wants to have freedom to move the plant after limited time usage in determined area.

STM, for example, supplies conveyor systems to power generation plants, where fossil fuel, such as





coal, is burnt in order to have pressurized high-temperature steam and to use it to rotate a turbine, with electricity production as result. Handling those kind of materials in a complex power plant imposes to design a system with exceptional reliability in order to avoid any kind of shutdown for tens of years.

STM is able to provide a complete engineering including

specific back-up solutions, limited maintenance devices, best-in-class components manufacturers.

STM EXPERTISE FOR PETROLEUM COKE HANDLING

STM has also gained experience in the handling of other materials to produce energy such as petcoke, which is similar to the coal in terms of handling properties.

Petroleum coking is an environmentally responsible recycling process used in some oil refineries to make the most use of hydrocarbon residuals that otherwise would go to waste.

STM designs innovative solutions for petcoke handling. In its plants, all the electrical and mechanical equipment is ATEX-certified to run a good and safe operation and to respect the main international regulations.

STM designs and supplies a belt conveyor system that runs inside an enclosed gallery and, by means of transfer tower, the solid bulk material is redirected by loading a new belt conveyor. The





structure of these towers is buffered by waterproof and air-tight panels and equipped with a dedusting system to prevent fugitive dust.

In this way, the material can be conveyed to different points on the site into a storage facility, and then moved onto the docks for loading onto ships, barges or land-based transportation loading facilities for lorries etc.

ENI REFINERY, GELA

For the Eni refinery in Gela, STM supplied a system which uses dynamic flow conveyors. This conveyors use a special conveyor for handling petcoke in refineries. The conveyors have no rollers, and the rubber belt moves on an air cushion provided by blowing air at speeds of 5m/sec. This conveyor is specially designed to reduce to zero the fine dust emissions in the atmosphere. The air jet is carried out with a pressure of only 1.5 bar, and it guarantees the absence of friction between the belt and the steel pipe.

BRINDISI THERMAL PLANT 'FEDERICO II'

Another valuable example of STM's long experience in coal handling is the supply of seven conveyor belts to ENEL's Federico II power plant, in the territory of Brindisi in Italy. This thermal power plant, with a total capacity of 2,640MW installed and with an area of about 270 hectares, is the second-largest thermal power plant in Italy and one of the largest in Europe. The entire conveyor system supplied by STM to this power plant comprises: seven conveyors, with one of them reversible; two distributors; four tank feeders; two transfer towers and all the supporting steel structures for the conveyors and mixers.

This conveyor system is used to transport light humidified ash which is the result of the coal combustion. For this reason, the STM team created conveyor belts able to handle very hot material with high level of moisture and abrasiveness.

Moreover the conveyors are situated outdoors so they are equipped with a rainproof roofing and they are treated to face



different atmospheric conditions like temperature leap and a saline and industrial atmosphere.

Although the material in this case is not in itself difficult to process or transport, its low density means that it has been necessary to change the design approach to handle a high volume of material but at same time to guarantee high values of tonnes-per-annum to feed the processing machines adequately.

Thanks to its great expertise, its attention to quality, its strong customer focus and the continuous improvement in its industrial standards and practices, STM is globally recognized as a trusted partner in developing custom-made solutions.

Moreover, the conveyors use cutting-edge software which provides full details from structural calculation up to detailed drawings of all the plant for flows exchanges, paths for personnel, access points, maintenance areas, load bearing structures, pylon towers and conveyor switching.

STM's principles of expertise in all areas of activity, strong customer focus, passion for innovation and improvement and particular attention to quality have all helped it to achieve an excellent level of service to the industry.

DCi



Automation & controls

driving the bulk market



With MOVIFIT® compact SEW-EURODRIVE created a driving component for gearmotors up to 4kW.

Jay Venter

Minimal effort – maximum benefit

Components from SEW-EURODRIVE's decentralized drive system are making the economic implementation of more efficient materials handling possible. The drive specialist in Bruschal, Germany, is expanding its range of decentralized drive solutions with a compact device that has been specially designed for intralogistic applications.

With MOVIFIT® compact SEW-EURODRIVE created a driving component for gearmotors up to 4kW. This field device completes the drive portfolio in the lower functional area and keeps the required functionalities and properties for intralogistics ready. The power modules are available as frequency converter up to 1.5kW or as a motor starter adjustable to 4kW or 2 x 2.2kW. Its cost-effective, plug-and-play

connection technology, installation and commissioning makes it very simple. Communication is via AS-Interface or standardized binary signals. An optionally available EMI filter allows the use of the device even in EMI-sensitive environments.

The product family MOVIFIT® compact is available in eight variants, all with uniform housing and dimensions. All devices have a local service interface. It also allows easy connection of a PC or the intuitive hand-held controller for programming and local control of the decentralized drive unit. Together with the optional main switch, which is needed for commissioning or maintenance, it results in a very compact unit. Design and execution of MOVIFIT® compact meet the requirements of European standards and UL, EAC and RCM.

New product selection tool saves time and provides optimum results

Bosch Rexroth recently launched its integrated LinSelect selection and sizing software tool, enabling design engineers to find optimal linear axes and actuators from around 100,000 possible Bosch Rexroth product variants for their application in just five steps. The company presented an alpha version of the software at the 2016 Automatica trade fair, held in Munich, Germany, from 21–24 June 2016.

LinSelect delivers an integrated digital engineering process, from selection right through to configuration and electronic order at the Bosch Rexroth eShop. Here, selecting complete axes and actuators extends beyond the mechanical considerations; it also encompasses suitable Bosch Rexroth motors and drive controllers.

LinSelect doesn't just simplify design and procurement for experienced engineers; even inexperienced users are guided intuitively through the selection process, without the need for laborious training and familiarization. In just five steps, the software narrows down the number of possible variants based on individual needs.

In addition to a pure calculation of mathematical parameters, the software developers have also integrated algorithms with comprehensive application-specific know-how of linear motion systems. Beyond pure mechanicals, the tool also suggests suitable Bosch Rexroth motor and drive controllers.

Bosch Rexroth's range of linear technology and electric drives and controls is available exclusively in sub-Saharan Africa through Tectra Automation, a member of the Hytec Group of companies.



Bosch Rexroth's new selection and sizing tool LinSelect for linear axis and actuators, closes the digital workflow from product selection right through to the electronic order.

ABOUT BOSCH REXROTH

Economical, precise, safe, and energy efficient: drive and control technology from Bosch Rexroth moves machines and systems of any size. The company bundles global application experience in the market segments of Mobile Applications, Machinery Applications and Engineering, and Factory Automation to develop innovative components as well as tailored system solutions and services.

Bosch Rexroth offers its customers hydraulics, electric drives and controls, gear technology, and linear motion and assembly technology all from one source. With locations in over 80 countries, more than 31,100 associates generated sales revenue of approximately €5.4 billion in 2015.

Condition monitoring and predictive maintenance

DRIVES WITH ADVANCED CONDITION MONITORING CAPABILITIES THAT SUPPORT PREDICTIVE MAINTENANCE WERE SHOWCASED BY NORD DRIVESYSTEMS AT THIS YEAR'S HANNOVER MESSE EXHIBITION ON 16 JUNE IN BARGTEHEIDE IN GERMANY

NORD employs frequency inverters with an integrated PLC to monitor the complete drive system, evaluate sensor data, and assess the system state by means of intelligent algorithms. An industrial gear unit demonstrates the condition monitoring approach based on sensors and dedicated evaluation technology. Vibration and oil sensors provide crucial live data about the wear and tear. Vibration analysis then enables conclusions about the state of the bearings as well as the gearing, and oil analysis can help determine when the lubricant needs changing.

As the "virtual sensing" model demonstrated, predictive



maintenance is also possible without external sensors and the accompanying higher costs: in this showcase, the inverter assembles the drive system's process data and calculates the maintenance time using an algorithm that also incorporates product data and application know-how acquired through decades of experience. The functionality is based on the

fieldbus-independent reference architecture for condition monitoring in factory automation defined by the German Engineering Federation in technical rule VDMA 24582. In order to represent the real drive state as closely as possible, NORD has thoroughly verified calculated values against true laboratory measurements to further optimize the algorithm. These software diagnostics are a particularly efficient solution which is also suitable for small drive sizes. Customers achieve a longer product life, enhanced availability, and lower maintenance costs with this new inverter function.

Cavotec builds 'world's largest' crane cable reel



Cavotec has recently built what the company believes to be one of the world's largest mono-spiral motorized cable reels. With a drum diameter of 9.2m, and weighing in at 10,000kg, it is the largest drum manufactured by Cavotec to date.

This extraordinary unit has even prompted the release of a new gearbox specifically for it — the T9.

The unit is part of an order placed by crane manufacturer ZPMC for four complete cable reel sets now installed on cranes at two major ports — one in Asia, the other in Europe.

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Integrated design concept for drive solutions on bulk material handling equipment delivers substantial improvement in efficiency

When it comes to bulk materials handling, geared motors are used to power a wide variety of handling equipment from pumps to conveyors and bucket elevators. Different materials and operating conditions mean that each application can pose an individual challenge requiring expertise and a wide range of solutions in order to guarantee both product flexibility and universal reliability, real-world gains in efficiency however can only be achieved through an integrated design approach.

Bauer Gear Motor is working hard to satisfy industry demands with an expanding range of quality drive solutions available in a variety of configurations, including the ability to integrate the drive into the machine design, all of which can be arranged to meet specific client requirements and make substantial improvements in efficiency.

OEMs require rugged-duty geared motors for use on a variety of applications within their plants and Bauer is setting new standards for the future of design in the area of bulk materials handling equipment. The design process for a drive solution requires a flexible approach which can use the experience and engineering knowledge of industry experts and is also supported by a wide product range that can be developed into a bespoke package.

Conveyors and elevators are used across the mining, cement, asphalt and construction industries and can vary enormously in size from smaller mobile plants to vast fixed installations. For manufacturers of such equipment, it is essential that the drive package will deliver reliable service, but in addition it must cope with overloading as well as the harsh local environment. Energy efficiency however is also vital.

With increasing energy costs, efficiency is an important factor, with many manufacturers concentrating on the electric motor and speed control method to deliver savings, whereas the mechanical aspect of the drive can actually deliver the largest savings. Bauer is able to deliver these compound savings using a combination of modular products, in-house engineering and partnerships with system expertise. The greatest savings, can be made by optimizing the mechanical efficiency of the drive system and it is this area that Bauer is leading the way with its new 'design concept'.

André Bubolz, Director of Industrial Drive Applications for Bauer, comments: "Within any drive system there are potential energy savings to be made, but we have found that improving the motor efficiency will only realize 10% of the maximum potential savings available, while changing to electronic speed control addresses a further 30%. Bauer has a range of standard efficiency class motors right through to super efficient IE4 class PM motors for maximum energy saving in continuous or heavy duty cycle applications.

"Addressing the motors and inverter drive however leaves a further 60% of the potential savings to be gained by improving the mechanical aspect of the drive. Bauer has the expertise to engineer the complete drive package, but it is the mechanical section which holds the key not just in terms of the flexibility and reliability of the design, but also in improved efficiency.

"Thanks to our constantly expanding standard range and our Special Serial Demand service, which offers totally bespoke designed gearboxes supplied as one-offs or in full volume production, we are able to offer a gear motor solution for almost any bulk materials handling application.

Bauer is setting new standards for the future of design in the area of bulk materials handling equipment.



"The launch of the Industrial Drive Application Service means we are able to extend this expertise to offer our design concept of a combined power transmission package that includes the motor, inverter drive, gearbox and coupling, providing flexibility, reliability and convenience of supply to our customers.

"It doesn't matter if it is a replacement situation or a series production item for an OEM manufacturer, the key is integration and optimization between all the components. We have even built bespoke gearboxes that incorporate the motor, gear stages and couplings into one direct fit unit." (See images)

To augment the power transmission partnership role, Bauer Gear Motor is able to draw on the huge resources of the wider Altra Group — providing access to worldwide support and delivery of the world's largest range of industrial clutches, brakes and couplings. The combination of expertise and product range allows Bauer to provide a solution that will not only drive, but protect and optimize the entire mechanical power transmission line.

By working closely with OEMs, Bauer engineers are able to offer the exact specification of drive train required for the application. From standard gearbox designs to those which are integrated into the machine, the design is suited specifically to the working environment and specifications of the client. Expert field engineers can assess the best solution for each individual application and offer advice on the suitability of an



Bauer has the expertise to engineer the complete drive package, but it is the mechanical section which holds the key not just in terms of the flexibility and reliability of the design, but also in improved efficiency.

integrated design.

Bubolz continues: "Bulk handling equipment is often found outdoors, and in relatively inaccessible locations, so minimum maintenance and maximum reliability is essential. We exhaustively test all our modular components and engineer each product to meet the requirements of the application, with heavy duty bearings, advanced shaft seals and robust geared components, plus reinforced housings - where required.

"We also have the one of the world's largest selections of couplings designed for misalignment compensation and vibration isolation, plus a vast range of brakes and overload protection devices available for large conveyors carrying heavy materials."

Offering a complete package also simplifies the specification

Exports to grow for UK sensor maker

Overseas business is expected to increase for British sensor manufacturer Sensor Technology Ltd, following two ultra-successful exhibitions in Germany during the spring of 2016.

The company attended both the Hannover Fair and Sensors & Test in Nurnberg, for a total of eight days exhibiting, and reported very high levels of interest on all fronts.

"Hannover is very global and wide ranging while Nurnberg is more focused and European-centric," observes Mark Ingham, who manned both stands on behalf of the company. "Perhaps most notable was that we signed up several new distributors, including for China and other Asian countries, South America and Central Europe."

"We already have about 40 overseas distributors and they account for 60% of our business. The new distributors are all well qualified to handle our products and are established operators in their own regions, so we are expecting them to add significantly to our export figures over the next few years."

Ingham says there was also interest from engineers and designers looking to solve particular torque or load sensing problems, and the company's new optical sensors, the digital ORT 230/240 series, were well received. These are designed for low torque and/or high bandwidth applications, providing precise, dynamic measurement of rotary and static torque less than 100Nm and for bandwidths of up to 50kHz.



Bauer gear motors offers a high quality, well-engineered and above all reliable and efficient solution, with responsive engineering capabilities, prototyping and delivery times as well as an extensive global sales and service network.

process for the customer, as they only need to speak to a single contact, while reducing costs and removing the headache of specifying components which will integrate with each other. Again, the one-stop-shop approach not only delivers customer convenience and flexibility, but also a more efficient way of doing business.

Ultimately, Bauer gear motors offers a high quality, well-engineered and above all reliable and efficient solution, with responsive engineering capabilities, prototyping and delivery times as well as an extensive global sales and service network which provides local contacts and support wherever in the world the final application is located.

Their high speed capability comes from an inherently low inertia, since the electronics are not fixed to the shaft, while non-contact operation ensures a long and reliable life (which Sensor Technology backs up with a lifetime warranty) with high accuracy. The optical operating principle also ensures excellent noise immunity.

"Our previous model optical torque sensors are well respected and the new ones take the capabilities to the next level, with significant gains in resolution, frequency response, reduced sensor current consumption and faster digital data throughput," says Ingham. "Additionally, they have multi-point self-diagnostics to enhance their reliable long term performance."

The company's range of wireless load sensors is now well established in many fields, including in manufacturing, automation, handling and test and measurement applications.

ABOUT SENSOR TECHNOLOGY LIMITED

Sensor Technology Limited has been manufacturing quality torque measurement solutions and wireless load sensors for over 40 years and operates from Apollo Park in the heart of rural Oxfordshire. Sensor Technology also has a global network of distributors assisting sales and a network of world-renowned technical experts assisting the development of TorqSense and other technologies.

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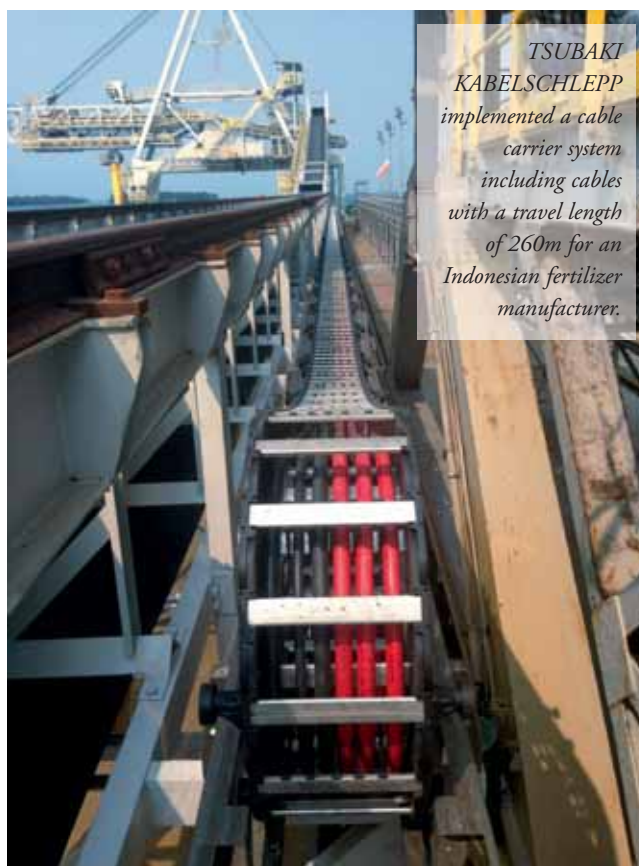
Cable carriers deliver power safely and efficiently

Roller Supported Chain (RSC) cable carrier with TRAXLINE drag chain cables

CABLE CARRIER AND CABLES FROM ONE SOURCE: TSUBAKI KABELSCHLEPP IMPLEMENTS CABLE CARRIER SYSTEM WITH TRAVEL LENGTH OF 260M

A robust cable carrier including a cable package and with a particularly long travel length for a new crane system in the company's own port: this was the tender issued by the Indonesian fertilizer manufacturer Pupuk Kaltim. TSUBAKI KABELSCHLEPP was able to win the bid and to successfully implement the project with an international team. The basis for this RSC system is a MCI300 cable carrier equipped with TRAXLINE drag chain cables.

Pupuk Kaltim is a subsidiary of the PT Pupuk Indonesia Holding Company with a current production capacity of 2.98mt



TSUBAKI KABELSCHLEPP implemented a cable carrier system including cables with a travel length of 260m for an Indonesian fertilizer manufacturer.

PROJECT SUMMARY

- ❖ project duration May 2013 – September 2015
- ❖ international team consisting of TSUBAKI KABELSCHLEPP Germany, TSUBAKI Singapore and ATI Indonesia
- ❖ cable carrier and TRAXLINE cable package from one source
- ❖ use of special TRAXLINE medium voltage cables: optimized weight, compact design, highest capacity
- ❖ one of the longer travel lengths (260m) ever implemented by TSUBAKI KABELSCHLEPP with a 'rolling system'
- ❖ all steel and sheet metal parts manufactured and accepted locally to detailed specifications
- ❖ successful installation and commissioning of the entire cable carrier system through local partners

(million tonnes) of urea, 1.85mt of ammonia and 350,000 tonnes of NPK fertilizer per year. Pupuk Kaltim also produces organic fertilizers with a capacity of 45,000 tonnes per year. The company was founded in 1977 and is headquartered in the city of Bontang in the Indonesian part of the island of Borneo.

In early 2013, Pupuk Kaltim launched a tender for a new crane in the company-owned port, which was to be equipped with a

Since commissioning in September 2015, the system has been running successfully at the Pupuk Kaltim port on the island of Borneo.





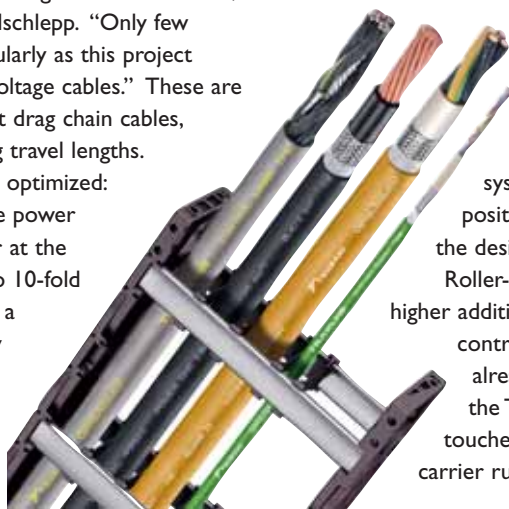
An international team consisting of TSUBAKI KABELSCHLEPP Germany, TSUBAKI Singapore and the local partner ATI was able to implement the project successfully and cost-efficiently.

cable carrier including special cables across the 260m travel length from the stockyard to the shiploader. The installation is used for loading ships. After a face-to-face meeting with the customer and submitting a detailed quotation, Pupuk Kaltim chose to cooperate with TSUBAKI KABELSCHLEPP in summer 2013.

CABLE CARRIER AND CABLES FROM ONE SOURCE

“One of the decisive aspects for the customer has been that TSUBAKI KABELSCHLEPP is able to supply cable carrier and cables from one source,” explains Dipl.-Ing. Winfried Sambale, Product Specialist for Cables at Kabelschlepp. “Only few suppliers are able to offer this, particularly as this project required the use of special medium voltage cables.” These are continuous bending hi-flex 10,000 Volt drag chain cables, which are designed especially for long travel lengths. Weight and capacity of the cables are optimized: compared to 1,000V cables, the active power cable is only a few millimeters thicker at the same weight, but it can transmit up to 10-fold of electric power. This is achieved by a special design, particularly high quality components and materials and a special semiconductor layer.

Low weight and high capacity in a compact design — these cable properties provide an economic benefit for the overall system design: the lighter the electric cables, the less drive power is eventually required. The special



One of the decisive aspects for Pupuk Kaltim was that TSUBAKI KABELSCHLEPP was able to supply cable carrier and cables from one source, using medium voltage cables from the TRAXLINE range.

Practical testing

The RSC cable carrier/cable system is also suitable for high additional loads, high travel speeds and accelerations. This has been proved by extensive test series, which are carried out continuously by TSUBAKI KABELSCHLEPP at its company-owned outdoor test facility. Travel lengths of more than 100m and travel speeds of up to 5m/s can be simulated fully automatically there. Several test tracks allow simultaneous testing of both gliding systems and RSC solutions — in 24/7 testing cycles and even under extreme external conditions such as rough winter weather, direct solar radiation or heavy rainfall.

single cores applied also make it possible to reduce the cable carrier radius and thus to keep the height of the overall cable carrier system low. These special cables significantly contribute to the performance of the entire system: the main components — cable carrier and cables — are perfectly matched, allowing TSUBAKI KABELSCHLEPP to supply the customer with a ready-to-install ‘black box’. The principle ‘everything from one source’ also implies for the customer ‘everything from one responsibility’: the customer has only one contact for cable carrier and cables, who can respond quickly to maintenance tasks and hence ensure the highest possible operating reliability over a long time. This is a particular advantage in the highly competitive field of container logistics. It is important to ensure functional reliability of individual components at any time and thereby to ensure the planned availability of the entire cable carrier system.

DECISION FOR ROLLING CHAIN APPLICATION

TSUBAKI KABELSCHLEPP has quickly found the right cable carrier for the high performance cable package: “Based on the required travel length in conjunction with the associated cable package, we have immediately decided to use a rolling chain application,” explains Thorsten Serapinas, Manager Project Engineering at TSUBAKI KABELSCHLEPP GmbH. “Our innovative RSC system and the long-term tests of our TRAXLINE

cables at the company’s outdoor testing facility convinced Pupuk Kaltim. The project was ready to go ahead.” In the following months, detailed technical co-ordination with both the customer in Indonesia and the manufacturer of the crane system in Sweden took place, to define the position of the complete cable carrier system and the design and connection of the driver.

Roller-supported chains are an ideal solution for higher additional loads and long travel lengths. In contrast to the combined gliding/rolling systems already available in the market, the upper run of the TSUBAKI KABELSCHLEPP RSC system never touches the lower run. The upper run of the cable carrier runs on a guide profile with maintenance-free ball bearing rollers. As this requires only low pull/push forces, wear within the bolt/hole connections of the cable carrier is reduced to a minimum. This virtually excludes unwanted lengthening



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of the overall system and additional load on the guided cables is avoided. Due to the low pull/push forces the required driving force is reduced and thereby the power of the drives is scaled down as well. All RSC systems are based on a combination of a proven standard cable carriers from TSUBAKI KABELSCHLEPP and TRAXLINE E-cables, in this case a MCI 300 — a multi-variable cable carrier designed especially for crane applications, featuring e.g. seawater resistant aluminium stays for extremely high stability.



At the company's own outdoor test facility, TSUBAKI KABELSCHLEPP can run fully automated simulations of travel lengths of more than 100m and travel speeds of up to 5m/s.

IMPLEMENTED AN INTERNATIONAL PROJECT TEAM

TSUBAKI KABELSCHLEPP set up an international team for implementing the project: the project has been planned and managed from the headquarters in Germany while the TSUBAKI team in Singapore has supported the co-ordination. For reasons of cost efficiency and sustainability, all steel and sheet metal components were manufactured locally. TSUBAKI KABELSCHLEPP has provided all necessary drawings and quality assurance documents — so that components could have been manufactured in Indonesia in accordance with the defined quality standards. Only the TRAXLINE cable package and the cable carrier itself have been supplied from Germany in individual parts (in pre-assembled roller segments or reeled). The Indonesian project partner ATI was responsible for installation of the system.

“This was indispensable for the success and the cost efficiency of the project,” Serapinas stresses. “The travel time from Germany to the site is approx. 30 hours. Without our local partners it would have been impossible to manage this task within budget.”

Final commissioning and successful acceptance of the system through TSUBAKI KABELSCHLEPP took place in September 2015. Since then, the RSC system has been operating successfully in the Pupuk Kaltim port. “Two-hundred-and-sixty metres is one of the longer travel lengths we have ever implemented with a rolling system and TRAXLINE electric cables,” concludes Serapinas. “One of the reasons why this project is outstanding is that we have been able to implement it successfully and cost-efficiently with an international team co-operating across great distance.”



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Powering conveyors: small components for more power with Franz Wölfer

Electrical motors for use in dry cargo equipment — including conveyors — need to be powerful and highly efficient to reduce energy consumption, writes Klaus Spreklemeyer. Germany's Franz Wölfer Elektromaschinenfabrik Osnabrück GmbH designs and produces special inverter-driven low-voltage-squirrel-cage-motors for cargo equipment like conveyors and cranes, which meet both of these criteria.

A special rotor-geometry leads to a higher pull-out torque of the motor. A Wölfer motor has a pull-out torque of up to 400%, compared with approximately 250% of other motors. In this way, Wölfer motors can handle higher overload requirements and the motor can provide high torque, also at high speeds. With this torque, the motor can also be controlled easily, even if it is operated at speeds of 1,600 or 1,800rpm.

Wölfer's goal is not only to optimize the efficiency of the motor itself, but to minimize energy consumption and maximize the power of the whole equipment with the special motors. The special rotor-design is also effective at a lower inertia. Based on this, the total inertia of the power-train is reduced. This lower total inertia leads to lower energy consumption. On the other hand, it is possible to accelerate the speed of the power-train, with the same energy level as another motor. Based on the faster acceleration and deceleration process, a higher number of goods can be handled. Therefore the user can increase turnover by handling a higher volume of material, or reduce energy cost, thereby protecting the environment.

The lower inertia leads to further advantages, e. g. other components can be downsized. Depending on the design of the equipment, smaller gearboxes, brakes, inverters or cable diameters can be used. As a result, the weight of the application is lower and investment costs are also lower. Finally, not only does the motor operate at a high level of efficiency, the efficiency of the whole system is increased by Wölfer motors.

Beside these technical characteristics, the reliability of a motor is a critical factor. In motors which are driven by frequency-inverters, the windings need to resist partial discharges – so-called voltage peaks. By using material which is designed for inverter operation and handmade windings, Wölfer achieves a very long lifetime of the windings. Also AC-motors reduce the amount of maintenance required when compared with DC. While DC-motors need periodic inspections and reconditioning, especially for brushes, AC-motors get by with inspection of motor connections and lubrication. The AC-motors run very smoothly, so that significant reductions in mechanical wear and mechanical repairs e. g. in cranes have been noticed. The higher

Motor from Franz Wölfer
Elektromaschinenfabrik Osnabrück
GmbH.



reliability of the electric motors results in fewer outages due to motor failure.

“We apply our know-how to produce robust reliable motors for individually adapted drive mechanism solutions,” says Klaus Spreklemeyer, Vice President Sales at Wölfer. “Our motors are built for use in extreme demanding environments, like dust, heat or marine-conditions.” For 70 years now Franz Wölfer Elektromaschinenfabrik has been developing and manufacturing electric motors for use in hoisting equipment, in and on ships as well as in general mechanical engineering.

Wölfer provides steel-welded housings in addition to grey-cast-iron-housing for surface-cooled motors; this, for example, makes it as easy and efficient as possible to make technological changes. Using the steel-welded design Wölfer provides 1:1 drop-in motors for retrofits. “Normally the new AC-motor can be offered in a smaller frame size compared to the existing DC-motor. Therefore the machinery house needs to be adjusted to the new dimensions. Wölfer offers a new AC-motor with minimized inertia, but with the same mounting dimensions as the DC-motor. So the motor itself can be changed within one day, without modifying the basement of the machinery house and without shaft adjustments. This leads to a shorter downtime and lower cost“, says Spreklemeyer. This steel-welded housing design is available for surface-cooled applications like conveyor- and excavator-motors.

Klaus Spreklemeyer.



ABOUT THE AUTHOR

Klaus Spreklemeyer is the Vice President Sales of Franz Wölfer Elektromaschinenfabrik Osnabrück GmbH. He has worked for the company for more than 16 years with over ten of these in the sales department. In 1999, Mr Spreklemeyer started an apprenticeship for three years as a blue collar employee and white collar employee in parallel. After achieving several technical and commercial skill enhancements, Spreklemeyer took over responsibility for the sales department in 2007. Since beginning of 2014 Spreklemeyer has been a member of the board.

smart plastics for industry 4.0 condition monitoring and predictive maintenance

IGUS® EMBEDS INTELLIGENCE INTO MOTION PLASTICS TO INCREASE PLANT AVAILABILITY

igus®, the motion plastics specialist, has announced new technologies to enable Industry 4.0 applications — smart plastics. This evolution of its cable, energy chain and linear bearing products embeds intelligence into its motion plastics via the addition of sensing, monitoring and communications. Using smart plastics, customers can increase plant availability, maximize uptime and reduce costs through condition monitoring and predictive maintenance.

igus® motion plastics are already used extensively worldwide throughout industry and everyday life in moving applications. Its high performance engineering plastics are self-lubricating and maintenance free, as well as being lighter, harder-wearing and more energy efficient than traditional materials. For dynamic applications, this results in more reliable and cost-effective solutions which also defy rain, salt and extreme temperatures, as well as being resistant to UV, oil and chemicals. Thanks to extensive testing in its 2,750m² test lab in Cologne, the largest facility of its kind in the world, igus® is able to accurately predict the service life of its motion plastics, offering reliability guarantees. Smart plastics represent the next step



for motion plastics: adding intelligence and networking to enable Industry 4.0 smart factories of the future via automated condition monitoring and predictive maintenance, improving reliability and reducing costs. Intelligent cables, energy chains and linear guides constantly monitor themselves, providing performance data and early warning of critical wear. isense encompasses a range of sensing technologies and monitoring modules, while networking with the igus® Communication Module (icom) provides direct integration with the customer's IT infrastructure or the igus® data cloud.

“isense continuously monitors the service life of your e-chain, cable or linear guide via measurements and calculations using the parameters of your system,” says Matthew Aldridge, managing director, igus®. “These measurements are referenced against aggregated test data from the igus® test laboratory to reliably predict smooth functioning in real-world operation. Alerts are sent when measured values exceed thresholds, allowing timely maintenance or replacement.”

Data can also be optionally shared with the igus® data centre, opening up additional possibilities for customized service life calculation and optimization of business processes, including maintenance commissioning, spare parts ordering and just-in-time delivery. In this way, electronic intelligence lowers maintenance costs even further and increases plant availability.

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Hübner Giessen: switched on to the bulk market

Nowadays safety functions are more and more required in the dry bulk industry. This is ensured by U-ONE®-SAFETY of Johannes Hübner Giessen.



Cutting edge competition for mechanical position switches

U-ONE-SAFETY ENCODER SYSTEM REPLACES OUT-OF-DATE TECHNOLOGY

Today, thousands of mechanical position switches such as limit switches for gears and spindles or rather rotary cam limit switches are installed worldwide in cranes as well as mining and bulk material handling installations. They were once considered to be robust and standards compliant. However, they cannot compete with modern-day electronics, and some have been unable to fulfil current technical safety requirements for some time. With its new universal encoder series U-ONE-SAFETY Johannes Hübner Fabrik elektrischer Maschinen GmbH now offers a rugged, safety certified replacement solution that also offers a wealth of compelling features.

Giant conveyor bridges and bucket excavators with slewable and height adjustable booms are still in use in open cast mining operations today. So-called limit switches are required to precisely monitor their movements. Their task is to ensure the

machinery does not under any circumstances leave the designed possible, or rather the technologically allowable, range of travel. Otherwise, this would risk endangering personnel or even the open-cast mining machine toppling over, because, for example, the centres of gravity are suddenly displaced. To ensure it is possible to secure previously defined operating ranges the respective positions must be accurately determined on the one hand. On the other, it is also necessary to reliably limit the end positions of moving plant components in relation to one another.

To date, these tasks have been carried out on the large machines mentioned above by mechanical levers and/or spindle limit switches or rather rotary cam limit switches that were developed more than 30 years ago and in the meantime are no longer always available. However, the monitoring technology installed during modernization programmes in particular must fulfil safety requirements applicable today. Consisting of a basic unit with two multiturn sensor systems and two logic units this is

precisely where the universal encoder system U-ONE®-SAFETY-Compact (USC) from Johannes Hübner Giessen comes into its own. Depending on the application suitable function modules are added. For example, the function module SRC is equipped with six safe position switches and represents the replacement solution for mechanical rotary cam limit switches, which consist of a gearing and switching component.

All functions have been integrated in a robust casing that has been designed to meet the specific demands of heavy industry. Safety switching signals are issued according to position and speed based on a 13/15 bit resolution (max. 32768 rotations). It is possible to combine diverse bus interfaces as well as a 4–20mA analogue output or an incremental output to suit application requirements. With its additional functions, internal diagnostics and certified safety level the compact universal encoder system USC replaces several individual devices; the two-channel system architecture facilitates safety functions to Category 3 as well as Performance Level d and SIL 2 in accordance with DIN EN ISO 13849 as well as simple parameterization without the need to intervene in the control software.

DUAL SYSTEM ARCHITECTURE OFFERS A HIGHER LEVEL OF SAFETY

Thomas Brandenburger, head of the Project Management department at Hübner Giessen explains: “There are two parallel signal paths independent of one another. If one should fail, the other transports the information. If a comparison of both channels at the same position delivers precisely the same value, it is guaranteed there is no error present. Conversely, any deviation is reliable circumstantial evidence that something is amiss. If a single channel device is installed the signalled values

must be assumed to be correct. On the other hand a two-channel system architecture with internal cross-checking achieves a significantly greater level of safety.”

If one takes a look at how many switching points the respective systems can monitor, it is obvious that the universal encoder system USC also performs better in this respect: it is equipped with between three and a maximum of 18 position switches; it is worth noting that it is possible to realize the associated hysteresis points for each on/off switching position. In comparison, customary mechanical rotary cam limit switches have only five (small series) up to a maximum of 14 (large series) contacts.

The imprecise switching points are another weakness of these devices. The installation via a transfer case can under certain circumstances result in additional gear backlash. Furthermore, because it is a purely mechanical solution the system is more susceptible to wear. With 28-bit resolution (approximately 270 million steps) and total freedom from backlash the precision of the switching points of the universal encoder system USC is beyond comparison. In addition, it is wear-free; in other words it offers constant precision over its entire operating life. Whereas the switching hysteresis of the position switches deployed to date depended on the switching elements and could not be altered, today the USC allows these to be adapted at the application and, moreover, its parameters are easily configured.

If the customary position switches used to date suffer a mechanical failure, it is possible for essential switching points to be lost; under certain conditions such an event could have fatal consequences. In comparison, the Hübner replacement solution guarantees constant and reliable status monitoring through internal self-diagnosis; a signal is issued immediately if a fault should occur. The respective current position value is supplied

Frank Tscherney, General Manager

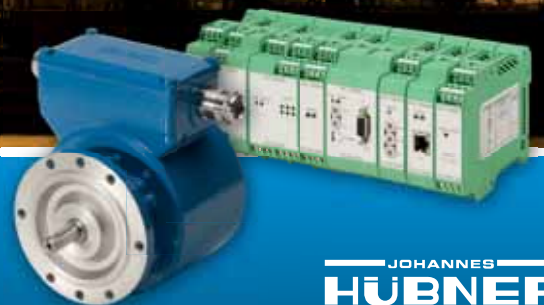
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The modular concept behind the universal encoder system U-ONE®-SAFETY makes it possible to tailor individual solutions to suit application requirements.

by the configurable current output (4–20mA) of the USC, which can also be used for additional display or monitoring tasks. It can also be extended with a bus module (e.g., PROFIBUS, PROFINET) without an additional transfer case and made suitable for safety related applications (e.g., PROFIsafe) to SIL 2 / PL d. Mechanical rotary cam limit switches or rather spindle limit switches could only retrieve the aforementioned position value in conjunction with an additional absolute encoder. Then there was the costly installation of an additional transfer case.

CURRENT OPERATING STATUS IS DISPLAYED

Rotary cam limit switches have no error outputs; in comparison, products belonging to the USC series have a digital error output that is monitored by the safety PLC or safety modules. Furthermore, it is possible to integrate an error switch (relay) directly in the emergency stop circuit. The lack of self-diagnosis also meant the service life of customary rotary cam limit switches was not monitored. The service life of the devices and bearings belonging to the USC encoder system as well as the

The new universal encoder system U-ONE®-SAFETY offers extensive diagnostic functions and options to configure parameters.



switching frequency of the relays are monitored internally and a signal issued should the corresponding parameters be exceeded at any time. Generally speaking, it is not possible to analyse the operating status of mechanical rotary cam limit switches due to the lack of status/error indicators. That is different with the USC encoder system: it is possible to read off the current operating status via a status and error output; in addition, the operating status is displayed via LEDs in the terminal box.

It is possible that customary mechanical cam switches and spindle limit switches neither detect nor signal a possible error, because there is no internal system diagnostics. However, using the reset input provided with the USC encoder it is possible, for example, to reset an error.

With this system it is also possible to quickly make adjustments via the preset input, which sets the current position to the preset position configured in the device. This function makes it possible to eliminate the effects of slip and wear; that dispenses with time-consuming mechanical adjustments at each individual cam disk as is the case with customary rotary cam limit switches, e.g., after ropes are replaced.

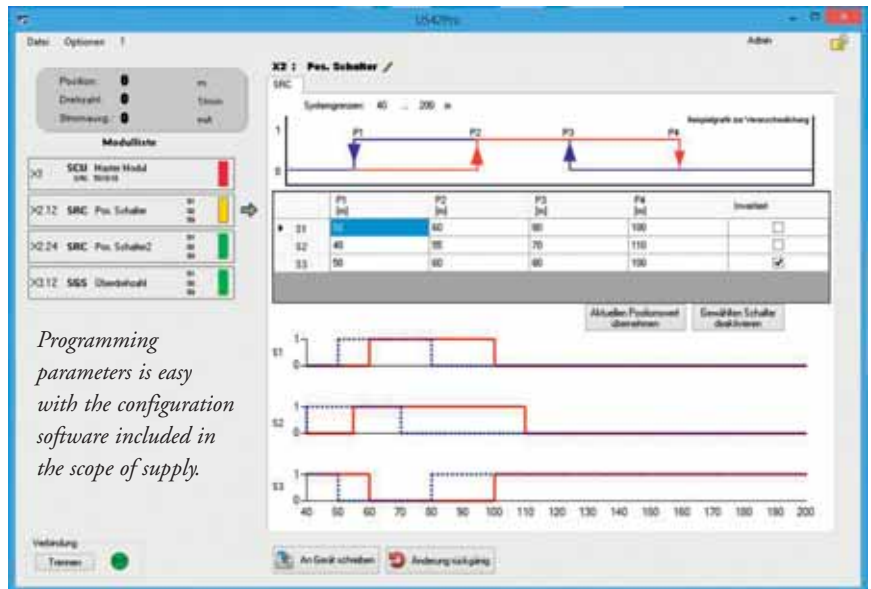
The reason why setting the switching points of a mechanical rotary cam limit switch can prove a lengthy undertaking is because it is necessary to turn cam disks each time, which, depending on their place of installation, can prove difficult to reach. In contrast, there is no comparing the speed with which the parameters of the USC series are set via a USB port: all device settings are made in the operating software US42Pro; the switching points can either be quite simply entered or copied from the application in an easy drag-and-drop operation. All values remain stored and can be re-imported at any time.

With conventional devices it was only possible to additionally monitor the speed in conjunction with a dedicated encoder installed for the purpose with downstream evaluation or by means of a separate speed switch. The fact that the installation required an additional transfer case did not make things easier. The encoder series USC can be extended with an incremental output or rather with a further speed switch module, which means a separate transfer case is not required.

IMPORT SAVED PARAMETERS

The need to wire up a mechanical rotary cam limit switch generally demands a considerable amount of time; the reason is the protective casing has to be completely removed, in other words, pulled back to the rear. Depending on the place of installation the terminals are often difficult to reach and the terminals are obviously unprotected as long as the casing remains open. In contrast, it is possible to remove the terminal box cover of the USC series by simply pulling it upwards; double-tier terminal blocks in the terminal box facilitate easy cable termination. And, because the base of the terminal box is fully encapsulated the switches and electronics are not exposed to the risks of the ambient environment even when the cover is open.

As all of the parameters can be programmed and stored in USC series devices beforehand, it is possible to begin with checks or rather test runs immediately following installation. In



Programming parameters is easy with the configuration software included in the scope of supply.

contrast, each individual switching element of mechanical rotary cam limit switches needs to be set and, in addition, the position calibrated and tested, which is not always possible for technological reasons. Moreover, fine adjustments and securing in position can prove quite difficult depending on the installed position.

If it became necessary to replace one of the customary devices used to date, this also entailed a long-winded procedure that in turn required having to reset all of the cams/switching points again: each individual switching position needed to be calibrated separately and tested. In contrast, when using products from the USC series it is possible to quickly import all stored parameters into the replacement device. A simple preset at a known position suffices to adapt the whole system to the respective application.

Depending on the application mandatory inspections can be required to follow widely varying cycles (e.g., following each shift, daily or weekly); with mechanical rotary cam limit switches these then entail testing the diverse switching positions each and every time. If one wishes to take a look at the switching mechanism, the initial act of having to open the casing is unavoidable. Thanks to the integrated switch test function including report generation this is also considerably less time-consuming with devices from the USC series.

ALL KEY FUNCTIONS IN JUST ONE SYSTEM

If one compares the mechanical characteristics of both systems, it quickly becomes clear that the traditional solution has far more difficulties with regard to wear and is far more susceptible to corrosion. The universal encoder system USC also proves to be far superior in these points, a fact that can be traced back to the enclosed, encapsulated design and the use of high-quality materials. For instance, the stainless steel shaft is corrosion resistant and a protective coating is applied to the surface of the casing made from an aluminium alloy. In addition, the devices are vibration resistant up to 5g (to DIN EN 60068-2-6) and shock resistant up to 25g (to DIN EN 60068-2-27). For mechanical rotary cam limit switches there are no reliable details available regarding these characteristics.

Brandenburger sums up: "We have integrated all important key functions in our new USC universal encoder system. Consequently, the customer is able to implement these in line with application requirements without any delay."



Louise Dodds-Ely

Port of Kokkola: Finland's number one mining port

The Port of Kokkola in Finland has gained a strong reputation within the mining industry. Also, in 2015, the port was Finland's largest bulk handling port. It provides professional services for the handling of dry bulk products including zinc concentrates, iron ore and iron pellets, as well as quality handling of breakbulk, liquid bulk and containers.

The Port of Kokkola earned this strong service position through persistent efforts and by developing good solutions to serve the mining industry. Massive and valuable long-term investments in infrastructure, machinery are also key to its success, as are the strong relationships and business partnerships that it has formed with port-related companies.

PORT OF KOKKOLA OFFERS OVER 50 YEARS OF EXPERIENCE

The Port of Kokkola's success can be measured in more than just numbers. Its pre-eminent position is also due to the fact that it has been a reliable partner to the mining industry for



over 50 years. Over this time, it has learned the logistics of the industry. It serves the mining industries of Central and Northern Finland, Sweden and Russia. "Although cultures are different, the laws of the industry are, however, the same," emphasizes the CEO of the Port of Kokkola, Torbjörn Witting. "Thanks to the local industry and good partnerships, we know how we can improve our own operations. Due to our extensive and reliable expertise, we have managed to tempt new players to Port of Kokkola, and the Port of Kokkola is now their port of choice."

INVESTING IN A LONG-TERM FUTURE

One of the most expensive and long-term investments that a port can make is the building of new quays. The Port of Kokkola currently offers a quay length of 2.3km, of which 400m has been added in the last few years in Deep Port and Silverstone Port. This investments means that it can now handle Capesize and Panamax vessels. It can also handle two Capesize vessels simultaneously.

The Port of Kokkola has also invested in port cranes, and for the last five years, it has bought one new crane each year.



Another development aim is extending the port's field area. This represents enormous costs, as it is necessary to build new embankments in areas reclaimed from the sea. This is a long-term process, involving much work getting the necessary permissions and tackling environmental concerns. It can take five to ten years from start to finish — and the port cannot generate any income from the project until it is completed. So this is a real investment for the future.

PORT OF KOKKOLA The Main Dry Bulk Port in Finland



Ideal location with 13 m draft

The Port of Kokkola is ideally located, with rail and road connections to every part of Finland and to Russia. We are Finland's largest transit port delivering goods to and from Russia.

Continuous investments have made it the leading dry bulk port in Finland.

The draft of 13 m allows Panamax class vessels to load full loads of 75,000 ton, and larger vessels (120,000 DWT) have loads of more than 100,000 ton.



Mantsinen to operate wood yard at Metsä Group's bioproduct mill in Äänekoski

Metsä Fibre Oy, part of Metsä Group, and Mantsinen Group Ltd Oy logistics services have signed a contract on operating the wood yard of Metsä Group's bioproduct mill in Äänekoski. The contract covers unloading the wood flow transported by train or lorries either directly to the debarking feeding line or storage field. Mantsinen will start operations in the summer of 2017. The bioproduct mill will consume more than 5.5 million cubic metres of roundwood annually; overall, the bioproduct mill will use 6.5 million cubic metres of wood annually and produce 1.3mt (million tonnes) of pulp and other bioproducts.

Camilla Wikström, director of Metsä Group bioproduct mill, says that Mantsinen's service concept combines reliability, energy efficiency and the capacity for constant improvement. Mantsinen Group Ltd Oy's CEO Martti Toivanen is very pleased that the company will be a significant service provider of the



A Mantsinen 120 crane handling wood in Germany.

world's first next-generation bioproduct mill.

"This speaks volumes of Mantsinen's seamless long-term development work of logistics services and material handling machinery, which generates superior added value for the client. We will provide the bioproduct mill with the latest technology largely based on electric power instead of the traditional combustion engine power sources. We will deliver to the mill three Mantsinen 120 electric machines and two robot locomotives powered with electricity. The bioproduct mill in Äänekoski will employ dozens of logistics professionals," Toivanen says.

In Finland, Mantsinen Logistics Services operates in Uimaharju, Imatra and Rauma. In addition, Mantsinen operates in several locations in Russia. Mantsinen Logistics Services handles approximately 26 million cubic metres of wood and 6mt of other materials annually.

Slight increase in traffic for Port of Pori

The 2016 half-year point shows slight growth for traffic at the Port of Pori in Finland. Total cargo through the port was 1.62mt (million tonnes), 4.7% less than during the equivalent period in 2015. Imports fell by 14.4%, but exports increased 13%. Excluding non-existent coal traffic, the total traffic increased by 2.5% compared with last year.


For imports, breakbulk traffic increased by 49%, and chemicals increased by 18.5%. For exports, breakbulk increased 45%, and sawn goods by 19%.

A total of 274 ships had called at the Port of Pori by the end of June 2016.

The Port of Pori boasts deep fairways, the best ice conditions in Finland and on the Gulf of Bothnia area, and great expertise in bulk handling. The Port of Pori is also a general port which can serve the needs of the whole mining cluster. The Port of Pori can handle not only ore, minerals and concentrates, but also mining machinery and equipment as well as chemicals.



Aerial view of Tabkoluoto harbour at the Port of Pori.



PORT OF FREDERICIA - THE BALTIC GATEWAY FOR **DRY BULK**

The Port of Fredericia is, due to its central location in the middle of Denmark, an attractive gateway for dry bulk operations in the Baltic region.

- Large shipments incl STS to overseas markets
- Water depth of 15 meters
- Warehouse capacity for dry bulk of 154,000 tonnes
- Handling capacity of more than 14,000 tonnes per day
- Easy access to the international deep-water route in the Great Belt

ADP - OBLIGATED BY LOCATION



Connecting Baltic dry bulk customers with Europe from the Port of Fredericia



The Port of Fredericia.

The Port of Fredericia in Denmark, owned and operated by ADP A/S is, due to its central location on the European Core Network Corridor, an attractive hub for dry bulk operations

With easy access to the European and overseas markets, Baltic customers can optimize their bulk operations, especially regarding transshipment operations of grain, soy meal, wood pellets and similar cargo.

EASY ACCESS AND IDEAL DRY BULK FACILITIES

Customers in the Baltic region largely use Fredericia as a hub for dry bulk operations to and from Baltic countries due to the port's prime navigation conditions, easy access to the international deep-water route in the Great Belt and a water depth of 15 metres. Additionally, the port offers considerable quay and hinterland areas as well as warehouses dedicated to dry bulk. For customers, this means facilities that are ideal for transshipment from large ship loads to smaller vessels that can dock at ports of the region with lower water depth and vice versa.

ADP A/S INVESTS IN STORAGE CAPACITY FOR DRY BULK

As of 2016, ADP has invested tens of millions DKK in facilities that support the trend towards larger shipments to and from overseas markets. Among other initiatives, a newly built warehouse with a capacity of 10,000 tonnes was put into operation in early September. The new warehouse gives ADP a total warehouse capacity for dry bulk of 40,000 tonnes. It is located at the Center Port, directly at the quay with a water depth of 15m. Furthermore, shipping companies at the Port of Fredericia have a total warehouse capacity of more than 114,000 tonnes — a significant storage and space capacity that customers look for in order to collect or contribute with part loads for large shipments.

EFFECTIVE DRY BULK OPERATIONS

Expertise in handling dry bulk including shipments of up to 72,000 tonnes shows that the Port of Fredericia can meet

customer requirements, and the potential is huge for many operators in Scandinavia and the Baltic region. The logistic conditions, the dedicated dry bulk areas and an efficient infrastructure at the Port of Fredericia provide high efficiency with loading and unloading capacity of over 14,000 tonnes every day.

“Our customers and business partners require effective operations in order to improve their bottom line. Our aim as port operator is to optimize all parameters, making it possible for customers to utilize the advantages of the ADP ports. Therefore, we are also looking into a potential deep-water expansion so that we can receive Capesize ships in the Port of Fredericia,” says Jacob Gerdes, COO at ADP A/S.

OPEN AREAS FOR PROJECT CARGO

Besides the Port of Fredericia, ADP also owns and operates the Port of Nyborg, and both ports have large open areas that are ideal for project cargo.

“The ports of ADP are ‘free’ ports with room for many types of goods and multiple players,” says Jacob Gerdes and continues: “The Port of Fredericia has the water depth for large ships and wide areas for project cargo. The Port of Nyborg has a water depth of 11m, large open areas and is only nine nautical miles from the international deep-water route in the Great Belt. Together, the two ADP ports offer ideal solutions for all types of goods and projects.”

ADP

ADP owns and operates the ports of Fredericia, Nyborg and Middelfart. Each of the ports has a unique central location, good logistic conditions and international standards in capacity and water depth. Its commercial activities range widely — from container handling, miscellaneous cargo, heavy lift, dry and liquid bulk carriers, ro/ro and in the case of Fredericia, cruise liners.

ADP established Denmark's Multimodal Transport and Logistic Centre, DMTC, at Taulov near Fredericia — and in addition owns and operates Fredericia Marina.

Every cargo has its risks

Before NORDEN says yes to a load of dry cargo, it must be documented that there are no actual risks involved in carrying the cargo. NORDEN relies on the regulations which the UN's maritime organization (IMO) has laid down to ensure safety on board vessels.

When customers decide to have NORDEN carry their dry cargo, they are not only purchasing transportation. They are also purchasing the expertise which NORDEN makes available to its customers to ensure safe transportation.

Carrying coal, bauxite, grain, iron ore, cement and other dry cargo products involves serious risks that must be managed carefully in order to safeguard the crew, the cargo and the vessel. If the cargo liquefies it can affect the stability of the vessel and at worst cause the vessel to capsize. Chemical hazards can develop into a fire or result in explosions, and poor loading procedures can result in damages to vessel structures.

Dry cargo is far from just dry cargo. Dry cargo covers a range of different things that require widely different handling procedures in order for crew, cargo and vessel to have a safe journey from loading port to the port of discharge. The operation in NORDEN's Dry Cargo Department therefore has a permanent and uncompromising focus on the management of every single cargo.

"Ultimately, we are talking life and death if a dangerous situation is allowed to develop into an accident. Unfortunately, there are examples of this in the business. To NORDEN, safety on board always has first priority — regardless of the type of cargo the vessel is carrying. One of NORDEN's four core values is reliability, and a high level of safety for the crew, the cargo and the vessel is part of being reliable," says acting head of dry cargo operations, General Manager Mette Stenild Grøn.

Operators' bible

The UN's maritime entity the International Maritime Organization (IMO) has adopted a safety convention that commits all signing countries to follow certain minimum standards for the construction, equipping and operation of vessels. The name of the convention is the International Convention for the Safety of Life at Sea (SOLAS). It is regarded as being the most important one of all international conventions concerning safety on board merchant vessels.

The SOLAS convention is from 1960 and has been renewed several times since.

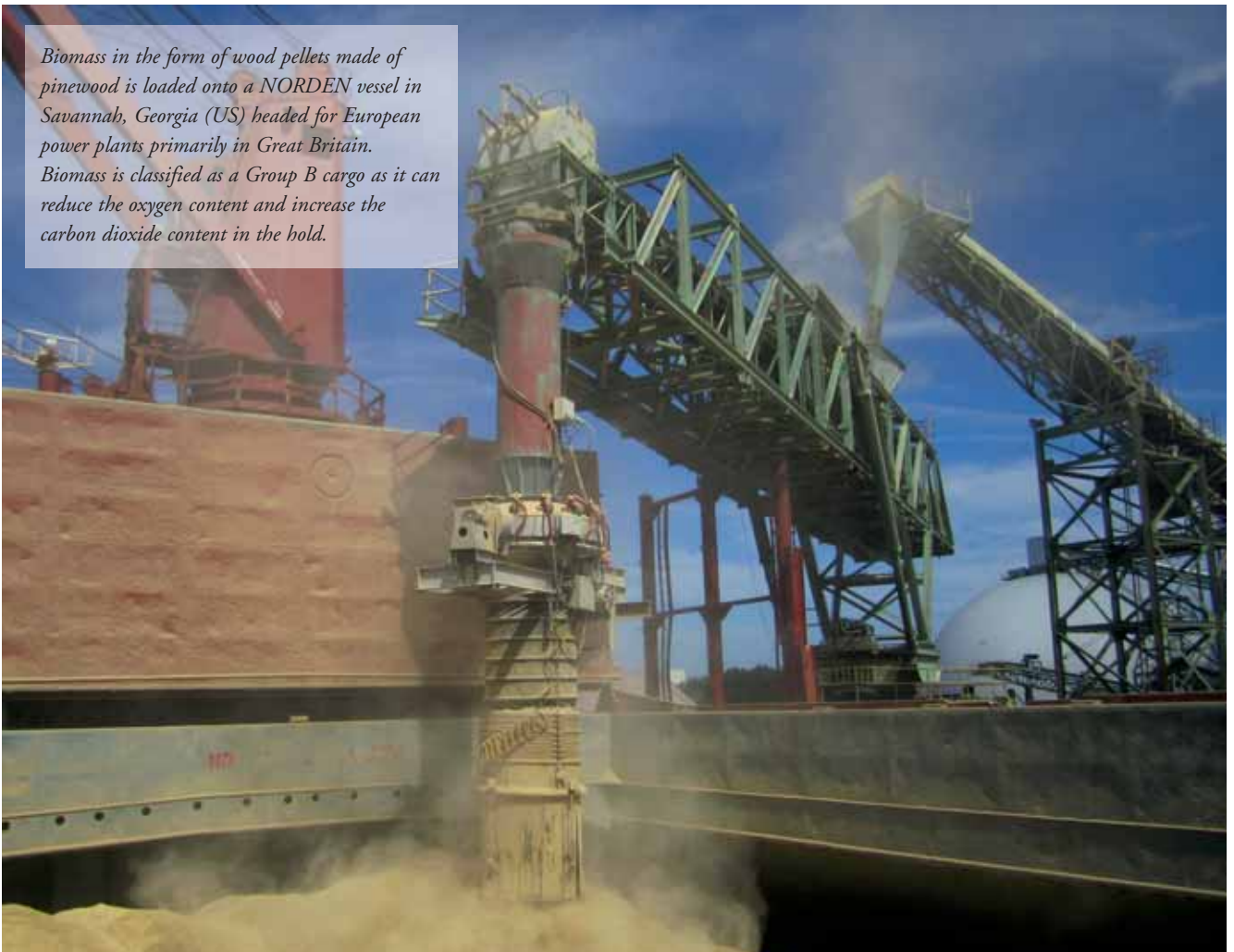
Legislation on how shipping companies must handle loading and transportation of dry cargo in bulk is found in the International Maritime Solid Bulk Cargoes Code — the IMSBC Code — from 2011, which is a result of the SOLAS convention. In NORDEN, the IMSBC Code is the dry cargo operators' bible.

THE BIBLE ON CARRYING DRY CARGO

Legislation on how shipping companies worldwide must handle dry cargo is found in the bible on carrying dry cargo by the long name the International Maritime Solid Bulk Cargoes Code — the IMSBC Code — which has been drawn up by the UN's maritime organization the International Maritime Organization (IMO).

The IMSBC Code has a permanent place in the back of the

Biomass in the form of wood pellets made of pinewood is loaded onto a NORDEN vessel in Savannah, Georgia (US) headed for European power plants primarily in Great Britain. Biomass is classified as a Group B cargo as it can reduce the oxygen content and increase the carbon dioxide content in the hold.



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mind of every operator in NORDEN's Dry Cargo Department, and this regardless of whether the operator is based in the head office in Hellerup or in one of the offices overseas. The IMSBC just has to be observed. In the last resort, the regulations can therefore result in NORDEN turning down cargo and therefore also revenue.

That safety is a high priority in NORDEN is evident already from when a trip is being planned and arranged by the charterer, the person who obtains cargoes for NORDEN to carry. When the charterer has obtained a cargo, he enters into a charter party (a contract) with the customer, and this contains, among other things, a description of the cargo. So, already at this point, there is focus on how to handle the cargo in question taking into account risks and safety concerns. When the charterer has done his job, the handling passes onto the operator, who is responsible for the completion of the trip itself.

THE OPERATOR IN A KEY ROLE

The role of the operator depends on which cargo the vessel will be loading and carrying.

If it concerns Group A cargoes and certain Group B cargoes, which may liquefy (Group A) and combust spontaneously during the trip, release toxic gasses or result in corrosion on the vessel (Group B), it is necessary for the operator, the captain and the shipper and/or the customer to be in close cooperation. For example, as a condition for carrying the cargo in question, NORDEN can demand that specific inspections are carried out in connection with the loading in order to prevent accidents en route. In this case, it is the responsibility of the operator to ensure that these inspections are carried out in a satisfactory manner.

"It means a lot that NORDEN because of its size has experience with transportation of largely all types of dry cargo. We draw on this experience to a great extent, and we are obviously happy to share our knowledge with the shipper, the customer and the captain, who can all only be interested in everything going by the book — meaning the IMSBC Code," says General Manager Mette Stenild Grøn.

During the trip, NORDEN's operator is often also the one who must ensure that everything is carried out correctly on the whole, even if a shipper or customer somewhere in the world does not have a complete understanding of the IMSBC Code, and even if the captain does not have sufficient knowledge of the



"Ultimately, we are talking life and death if a dangerous situation is allowed to develop into an accident," says acting head of operations in the Dry Cargo Department, General Manager Mette Stenild Grøn.



regulations, because it has been a while since he last transported such cargo. It is the responsibility of the operator to make the ends meet to ensure that the safety regulations are met to the letter. This is done when the operator obtains all the specifics and communicates them to the shipper, the customer and the captain, so that all parties are clear about what has to be done to ensure a safe journey.

THE CAPTAIN ALSO IN PLAY

Which role does the captain play?

"His job is to be familiar with the characteristics of the cargo that is being loaded into the hold and to ensure that the cargo matches expectations as well as the characteristics of the IMSBC Code. It is a very important job, and a job that cannot be handled by an operator in an office far away. It is a job that has to be monitored carefully on board and therefore locally," says Stenild Grøn.

WATCH WITH YOUR OWN EYES

Which role does the port captain play — if a port captain is involved?

"NORDEN's port captain can play a role if we want an extra set of eyes on the situation on board, which is particularly useful if a disagreement between the shipper and the vessel has arisen. This may concern the characteristics of the cargo or the way it is being loaded onto the vessel. But the port captains also play a proactive role as we are regularly on fact finding missions, when we are considering new cargo types or new loading ports/areas. In such situations, it is really useful to get out and have a look with your own eyes at what the situation is like. Documents can be okay, but rather than trusting any kind of certificate blindly it may be appropriate to actually get out and view the foundation for the certificates and the tests and checks which they document."

THE ROLE OF THE SHIPPER

Which role does the shipper play?

"The role of the shipper is to provide the precise name of the cargo to ensure that there is no doubt about the type of cargo in relation to the IMSBC Code. His role is also to document the characteristics of the cargo. It is crucial for the safety on board that the name and the description of the characteristics are correct. When we talk about characteristics, we often talk about the moisture content. If we are carrying coal for example, there is a risk that it will liquefy if 75% of the coal consists of particles smaller than 5mm in size. Bauxite for the production

The three groups of cargoes

GROUP A CARGOES

The major risk associated with Group A cargoes is that they can liquefy, shift and at worst cause the vessel to capsize, if they contain too much moisture and are made up of many small particles, and if the cargo is compacted during the journey.

Examples of Group A cargoes include: mineral concentrates; nickel ore; and coal.



Coal is a Group A cargo as it can liquefy. At the same time, coal is a Group B cargo as it can also combust spontaneously.



Logs are a Group B cargo as they can reduce the oxygen content and increase the carbon dioxide content in the hold.



Iron ore is a Group C cargo because with its high density it can overstress the bottom of the hold.

GROUP B CARGOES

The major risks associated with Group B cargoes are spontaneous combustion, explosion, release of toxic gases and corrosion.

Examples of Group B cargoes include: ammonium nitrate-based fertilizers; seed cake (by-product after for example oil extraction from soy beans); wood products – logs, pulpwood, roundwood and timber; and coal.

GROUP C CARGOES

Although Group C cargoes do not present the dangers to crew and vessel associated with Group A and B cargoes, they

can still carry risks.

Examples of Group C cargoes include: iron ore and other high density cargoes that can overstress the bottom of the cargo holds; sand and other fine particle materials that can result in respiratory diseases; cement that may shift when aerated during loading; and bauxite for the production of aluminium.

of aluminium, which after several fatal accidents might be on its way to be categorized as Group A cargo instead of with the less hazardous Group C cargo, can also be a challenge due to the risk of liquefaction when the moisture content gets too high. NORDEN is therefore continuously working to heighten the awareness of the shippers and the customers with regard to the regulations of the IMSBC. We know every detail of the regulations and are happy to help spread the knowledge," says Stenild Grøn."

BOTH GUIDANCE AND REQUIREMENTS

Stenild Grøn points out that the IMSBC Code contains both guidance and requirements.

"There are certain requirements that NORDEN cannot compromise on — and hopefully nor can any other shipping company. We do not carry cargo belonging to Group A where there is a risk of liquefaction during the course of the trip, if documentary proof cannot be provided that the moisture content is below the threshold value. In this connection, NORDEN is interested in the real safety. It is not enough with a piece of paper in the form of a certificate. We only head out when we know that the official safety requirements have also

been met, says Stenild Grøn.

She acknowledges that NORDEN from time to time — for example if a shipper does not at first deliver the documentation he is required to according to the IMSBC Code — can end up in the role as bogeyman, where the company is seen as both rigid and unco-operative.

IN MOST CASES, A SOLUTION IS FOUND

"We have to be certain that the safety issues in actual fact have been taken care of. We always try to solve the problems in a fast and efficient manner — for example by giving the shipper/customer a thorough and comprehensible explanation as to why NORDEN might need more information about the cargo before we can agree to transport it. We work hard to find a solution, and also here we draw on our experience, knowledge and network to a great extent. We therefore typically find a solution to the problems quite fast which everyone can support. In this situation, it helps a lot that the shipper and the customer are also interested in that safety issues have been taken care of meaning that the trip can be completed in a safe and efficient manner," says Stenild Grøn, acting head of operations in the Dry Cargo Department.

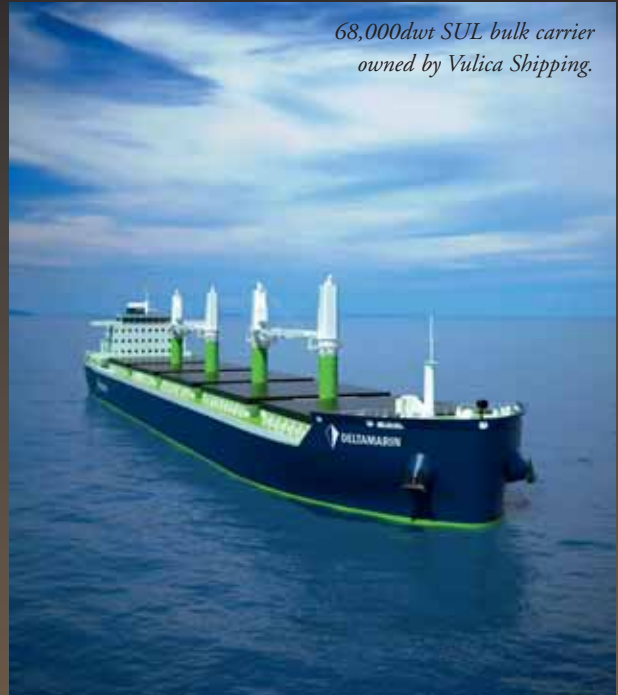
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Why not build a ship with outstanding energy efficiency and great owner value? By applying innovative and proven technologies, WE Tech Solutions (WE Tech) has transformed the ship's energy system to bring the next level in terms of energy efficiency, fuel consumption and green values. This makes the company a prominent solution provider within the marine industry.

Finnish company WE Tech is delivering its direct-drive permanent magnet (PM) shaft generator solution to a series of two 68,000dwt bulk carriers built in the Chinese Jiangsu Hantong Ship Heavy Industry, Co., Ltd shipyard, for Texas-based ship-owner Vulica Shipping. With the active front-end low harmonic drive technology (WE Drive™) and the PM shaft generator technology in the solution, the energy efficiency of the machinery reaches unmatched levels in the marine industry. WE Drive™ allows the shaft generator to operate over the full main engine speed range, while generating electricity for the vessel's electrical network with high efficiency over the entire range. In Power Take Out (PTO) mode, power for the vessel's electrical network is generated by the two-stroke main engine instead of the less efficient auxiliary generators. As the operating hours of the auxiliary generators are drastically reduced, significant savings are achieved from reduced maintenance as well.

The solution is also to be delivered to the first LNG-fuelled Handysize bulk carriers in the world. The series of two new ice-class IA 25,600dwt bulk carriers are built by the Chinese shipyard Qingshan Shipyard of Sinotrans & CSC SBICO for Finland-based ship-owner ESL Shipping. Besides the PTO mode mentioned earlier, the vessels can also use the Power Take In (PTI) mode. WE Drive™ converts auxiliary generator power to propulsion power by employing the direct-drive permanent magnet shaft generator as an electrical motor. The solution is used to boost the propulsion system with 1,250kW mechanical power when operating in demanding conditions. The PM shaft generator is installed directly on the propeller line and allows extremely high energy efficiency, especially in part loads. A PM shaft generator is the most energy-efficient way to generate power in a vessel.

The newbuilding vessels are all designed by the Finland-



*68,000dwt SUL bulk carrier
owned by Vulica Shipping.*

based ship-designer Deltamarin Ltd. The delivery from WE Tech to the first vessel is scheduled in this year for the Vulica newbuildings, and the first quarter of 2017 for the ESL newbuildings. "Our vision is 30% less fuel consumed in the global shipping industry by 2030," says Mårten Storbacka, Managing Director of WE Tech. The company is excited for both new builds and upgrading existing ships for better energy efficiency. WE Tech has a proven record of delivering energy efficient solutions to vessels around the world.

WE Tech is a leading energy efficiency solution provider with a global presence in the marine industry. The company specializes in supplying solutions based on variable frequency drives and permanent magnet machine technologies. Its portfolio of solutions provides many benefits for new builds and existing ship upgrades worldwide, including increasing energy efficiency, reducing fuel consumption and lowering environmentally harmful emissions. The company is headquartered in Vaasa, Finland.

*25,600dwt dual-fuelled Handysize
bulk carrier owned by ESL Shipping.*



Norrköping invests in Mantsinen's machinery and the creation of a modern port

The co-operation between Mantsinen and the Port of Norrköping in Sweden began in 2011 when Norrköping purchased its first Mantsinen 120 R HybriLift® material handling cranes. The successful co-operation has continued into 2016 with Norrköping taking into use two brand new, electric motor material handling cranes that operate on rails.

The purpose of the investment is to enhance productivity and discontinue the use of traditional cable cranes. The aim of the Port of Norrköping is to make itself an ever-more attractive export port for Swedish industry, particularly for the flow of selected breakbulk materials, such as timber, paper, pulp and FIBC bulk bags.

The Mantsinen 200 ES is able to efficiently load timber on to ocean liners of 32,000dwt.



The Mantsinen 120 ES has the HybriLift® energy saving system as standard equipment enabling up to a 35% saving in energy consumption.



Mantsinen wants to offer solutions for bulk and breakbulk handling at the lowest possible unit costs. That is why Norrköping's situation — the need to handle timber using ever-larger cranes to load ever larger ships — was an interesting challenge to meet.

The machines were delivered to Norrköping in March and June 2016 — the Mantsinen 120 ES and the Mantsinen 200 ES, respectively. The cranes are based on standard machine design, however, the functionality of the end results in the world's largest hydraulic boom cranes is determined by numerous extra technical details, features and equipment.

For example, the Mantsinen 200 ES has a 15-metre-wide gantry undercarriage on rails and the reach of the crane including the attachment is 40 metres. The machine is also equipped with a special attachment for four timber packages that is fully hydraulically controllable in all directions; nothing similar has ever been seen before — at least not in Scandinavia. The 200 ES is even able to efficiently load timber on to ocean liners of 30,000dwt.

Both machines have the HybriLift® energy saving system as standard equipment enabling up to a 35% saving in energy consumption. The energy efficiency of the machines is enhanced by the fact that Mantsinen is able to offer the right machine for

each need: the excellence of the machines is based on precise engineering, structural strength calculations and, whenever needed, new solutions.

Another important design element is the operator's work environment and the controllability of the machine. The basis of the development of Mantsinen's material handling machinery comes from studying their everyday usage and the adoption of the company's vision: Mantsinen's machinery is made by operators for other operators.

The Port of Norrköping considers its collaboration with Mantsinen to be first-rate from the initial conceptualization and engineering of the cranes to their final delivery.

"Mantsinen has kept us in the loop about the progress of the project and respected the set requirements and observations made during the project. Crane investments are part of the published strategy of the port, including our plans to develop handling volumes and the productivity of material handling — while also taking steps to reach our environmental goals through the reduction of energy consumption and environmental impacts. According to our calculations, this investment will help us to reach greater productivity and also lower unit costs," explain Stefan Sundén, Norrköping's Purchase and Project Manager, and Ola Hjærtström, the Marketing Manager.

Clipper: Brilliance in the Baltics with its Handysize and Supramax vessels

Danish company Clipper Group A/S operates in the Baltic bulk market, mainly on a spot basis without regular trading patterns. Most of the cargo that it ships out of the Baltics are carried on its Handysize and Supramax fleets — the cargo being primarily coal and coal products, fertilizer, timber and grain. The coal and coal products Clipper ships out of the Baltics are mainly loaded in Riga, Gdansk and Szczecin, to name a few ports. The coal cargoes are mostly destined for the Continent and the UK for use by steel manufacturing companies producing



Russia. Thus, its timber shipments in the Baltics are mostly packaged sawn timber rather than logs. One prime example of a vessel especially well-suited for the job is the *Clipper Brilliance*, built in 2014. She is a logger with a grain cubic capacity of 1,664,149ft³, five holds and four 30.5mt cranes. Timber is frequently shipped to ports in Egypt. In addition to coal, fertilizer and timber, Clipper carries a lot of grain out of the Baltics. That is mainly wheat and barley from the Southern Baltics to the Spanish Mediterranean and northern coast of Africa. DCi

finished and semi-finished steel products, for example for the car industry. Clipper steps in again to serve the steel industry when its steel services division ships the ready steel products out of Antwerp and over the Atlantic to the US and Mexico to their final destination.

Clipper also moves bulk fertilizer. It typically loads this in Klaipeda and St Petersburg, shipping to South and Central America and the US, and at times to India and West Africa. For timber, it is well geared to serve the market not only with its ships but also using the vessels in the Clipper Logger Pool. Most often, Clipper acts as the timecharter tonnage provider for parcel lines that pick up timber products from saw mills from multiple ports, mainly in Finland, Sweden and



All photos: taken at the Port of Raaja, Finland by Matti Möttönen.



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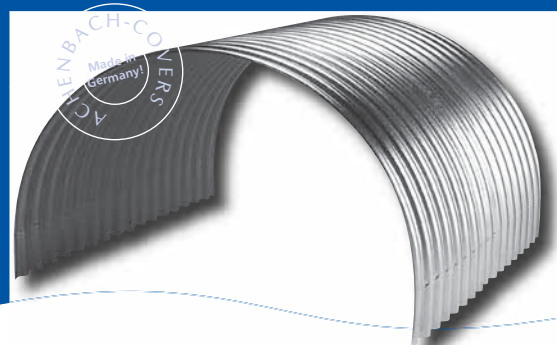
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Aurecon provides engineering,
management and specialist
technical services for support
infrastructure solutions for
international and local coal and
mineral clients in full or partial
'Pit to Port' projects.

Bauer Gear Motor

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Bedeschi Mid-West Conveyor

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Products include motorized
trippers, telescopic chutes,
rotary plow feeders, barge
loading and unloading systems,
pipe conveyors, air supported
conveyors, Silo storage and
reclaiming systems. Materials
handling systems are furnished
for terminals, power plants,
cement plants, fertilizer plants,
steel mills and mines.

Bedeschi SpA

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Founded in 1908 and since the
early '70s has offered its
experience to the cement,
gypsum, mining, energy
production (coal and petcoke)
industries and pollution
prevention, with a complete line
of solutions for crushing
(primary and secondary) and
bulk material handling.

Bekaert NV

Product Group Steelcord
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Bekaert is a leader in
manufacturing of wire and wire
products for a wide range of
industrial and household
applications.
Steel cord is the best way to
reinforce a tire, a conveyor belt.
Bekaert produces conveyor belt
cords and woven steel cord

fabrics for conveyor belt
reinforcement.

Benetech GmbH

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Benetech provides engineering,
equipment, installation, and
field services for bulk material
handling projects, dust control
equipment, advanced transfer
chutes, flue gas conditioning
chemicals and systems, and
slagging/fouling control
products. Our Plant
Professionals division provides
operating and risk management
consulting.

Best Service Group (B.S.G.) bvba

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Manufacturer of equilibrated
cranes, selling to the
international market.

Beumer Group GmbH & Co KG



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Curved belt conveyors can be
supplied as open-air or
enclosed, weather-tight
systems. A diversified line of
apron conveyors also supplied:
high material flow volume, large
centre distances, varying
conveyor routes, handling of
considerable conveying heights
and intermediate discharge
facilities.

BGS Holland

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Dust free loading chutes for
shiploaders, truck and railcar
loaders.

Binder + Co AG

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BLUG Credeblug S.L.



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BLUG has over 40 years
experience, more than 5,000
grabs delivered worldwide and
offers a wide grab catalogue.
BLUG solutions - from single-
rope operated radio controlled
and automatic grabs, to 4-rope
and electro-hydraulic high

volume grabs - to fit any crane,
material and production
requirements.

Bogaert Transmission (GEHA)

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Specialists for over 30 years in
supplying, engineering and
manufacturing high quality
chains and sprockets as well as
for bucket-elevators en masse
conveyors, apron conveyors etc
and for cement, coal, fertilizer,
steel, ore, minerals and other
plants and factories.

Bosch Rexroth B.V.

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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.

Bosch Rexroth Mellansel AB

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Boyne Area Manufacturing
designs and builds bulk
material handling equipment for
ship, barge, railcar, & trailer
loading & stockpiling. Over 40
years experience. We build
loading spouts, positioners,
gates and valves, diverters, air
flow conveyors, wet or dry dust
collectors, hopper feeders, and
bag filters.

Brelko Conveyor Products

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Development, production and
marketing of an exclusive
range of products for the bulk
materials handling industry
backed-up by a comprehensive
installation and maintenance
service, including 24-hour call
out. BRELKO products assist in
the control of spillage,
carryback and dust, as well as
promoting trouble free flow of
material at belt conveyor
transfer and load points. Other
equipment: Air Cannons.

Bretby Gammatech Ltd.

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Our equipment is vitally
important as lesser quality coal
with a high ash content could be
rejected, at huge cost to the
producer. Our products are
accurate to within 1% of actual
laboratory analysis enabling
real time decision making.
Other Equipment: Coal Quality
Monitoring Systems

Bridgestone Industrial Limited

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BRUKS AB

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BRUKS Rockwood Incorporation

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Machines and complete plants
for processing, storing and
handling bulk materials in Bulk
Terminals - including Tubulator
conveyors, various storage
solutions and ship loaders as
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BRUKS supplies complete
stockyard equipment and
systems which range from the
smallest semi-automated
systems to the largest fully
automated systems including
open storage and closed or
covered storage configurations.

Bucket Mart Inc.

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We have all sizes and types 1Yd.-32Yd. of new or used Clamshell/Grapple/Dragnet/Rock Scoop/Misc. buckets for sale, rent or lease. Supplying Material Handling Service Companies Worldwide around the clock, 24/7!

Bulk Cargo Handling BVBA

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BULK.ID

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BULK.ID is strong in turn-key solutions for the handling and recycling industries. We collaborate with leading German manufacturers who deliver innovative products. A stable German partner and our own engineering, construction, assembly and service departments leads to an ideal collaboration for the customer. Other Equipment - Wind Sifters

Buttimer Engineering



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Buttimer Bulk Engineering are experts in the mechanical handling of dry bulk materials - including coal, grain, minerals and others - and offer consultancy, design, procurement, installation, bespoke fabrication and project management of complete turnkey solutions for ports, mines and industrial facilities.

BV Beco

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One of the world's leading specialists in grabs for the bulk market. For more than 20 years BV Beco has been providing high-end, ready-to-run technological solutions. We have a big scale of products: Grabs - Wheelloaders, excavator and demolition equipment - Tipping Trailers - Hooklift carriers - Harbour- and industrial trailers.

C Spencer Ltd

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Cable Arm Inc

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As well as offering environmental dredging expertise, Cable Arm manufactures a range of equipment for bulk handling. Its buckets incorporate special features for moving nearly any granular material. Utilizing a patented level-cut bite, its buckets are faster and more efficient in bulk handling, eliminating extra cleanup equipment.

Cachapuz Bilancial Group

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Calim Grab Industry

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Calim Grab Industry, established in 1970, specializes in manufacturing grabs for international seagoing cargo handling grabs. Over 2.300 grabs have been delivered worldwide to date. High-standard technology and reliable products are the result of our respect for the requirements of the market in combination with incremental improvement and implementation of experience gained throughout decades. CALIM GRABS will continue to be a reliable name in the machine industry.

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Carbonser, S. A. DE C. V.

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Carbonser is a company owned by Techint Group for the construction and operation of the 6 million tpa Petacalco Coal Terminal in the Pacific shore of Mexico. The installation includes two CSU manufactured by Techint Technology and is able to unload cape size vessels up to 150,000dwt.

Cargotec Sweden AB, Marine Selfunloaders

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SE-745 25
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Cargotec offers dry bulk handling systems for ship operators worldwide. Through the MacGregor brand, we provide complete self-unloading/loading systems for dry bulk carriers, integrated transloading solutions and bulk handling systems for offshore supply vessels - all designed to ensure efficient, flexible and environmentally-friendly operation. The systems are tailor-made for each customer's particular requirements. Virtually any dry bulk material can be handled.

Carlsen Group

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Caterpillar Inc

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Offers five models of wheeled material handlers and six models of tracked material handlers. The diesel powered, hydraulic machines feature efficient Caterpillar engines, powerful hydraulics, fast cycle times and great mobility and versatility. Capacities range from a few tons to more than 20 tons.

Caterpillar SARL

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Caterpillar builds and supports products that are ideally suited for dry bulk handling in port environments. CAT equipment can be used to load and unload ships, barges; transfer, load and store materials; build and manage stockpiles; clean and maintain ships and quays.

Cavotec SA

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Other Equipment: Electrical Equipment. Cavotec is a global engineering group that enables industries worldwide to improve productivity, safety and sustainability. Cavotec delivers power transmission, distribution and control technologies that

form the link between fixed installations, in for example airports, ports and mines, and mobile equipment such as aircraft, ships, mining equipment and cranes.

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Over 30 years experience offering a comprehensive range of bulk conveying systems, components and engineering/design services. Provide conveying and bulk handling solutions for materials from Ash through to Zinc, including marine applications as well as those in hostile, severe or high-temperature environments.

Changsha Kaiyan Instruments Co. Ltd

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CHIA Espirales.es

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CHL Equipment Ltd (incorp. Verstegen Grabs UK)

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Cimbria Bulk Equipment



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Develops and markets a line of loading chutes and screw conveyors within dust-free bulk handling. Supplies solutions for all types of dry bulk materials and for all loading tasks - ship loading, warehousing, road and

The quality of our products is a result of our passion, dedication and hard work.



Sele legale - Registered Office

Civettini Italo & c sas
Via Campagnoli Golgi,7
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P.I. 01583540982

Registro Imprese di Brescia 01583540982 – Iscrizione R.e.a 324999

Sede Operativa - Working Headquarters

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25018 - Montichiari - (BS) - Italy

Mobile: (+39) 340 1358822 **Foreign office:** (+44) 7978302839
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rail. Chutes are supplied with or without integrated filter and made of modularly-structured components, all kept in stock.

Citalogistics LLC

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ATIC Services provides a range of services along the coal chain: sourcing, seaborne and inland waterway transportation, port handling in the ARA area, sampling and quality control. In recent years, seaborne logistics services have undergone significant growth.

Civettini Italo & c sas (CFS Handling)



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CFS International Engineering Handling srl works in design and manufacturing of equipment for handling across a range of sectors including, coal, cement, steel mills, demolition, ores, urban solid waste, paper etc.

The company's product range includes mechanical, hydraulic and electro-hydraulic buckets as well as hydraulic and electro-hydraulic grabs to suit customer's specific needs.

Claudius Peters Projects GmbH

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Product lines include grinding systems, storage and mixing silos, pneumatic conveying systems, ash removal systems, self-unloading vessels, packing and palletising systems, pulverised coal injection systems for blast furnaces.

Claudius Peters Technologies S.A.S

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Claudius Peters Technologies SAS is a company of Langley Holdings. Specialised in Stockyards and Belt Conveying systems we develop all kind of projects with stackers, reclaimers, including side stackers, tripper, shuttle type stackers; bridge, portal or side reclaimers; linear or circular, open or covered.

Cleveland Cascades Ltd

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Designs and constructs the Cleveland Cascade bulk loading chute for shiploading, silo filling, truck and railcar loading and for conveyor transfer points. The chute minimises dust emissions and reduces product degradation and segregation.

Clough Limited

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A service provider of Project Management, Engineering and Construction Contracting services in the oil and gas (onshore and offshore), petrochemicals, mining and minerals processing industries, infrastructure (including power and harbour works) and manufacturing sectors.

CNBM International Engineering Co., Ltd.

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Contact: Mr Edgar Mansour

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F: + 33 384 40 44 92

E: emphone@cobra-cs.com

W: www.cobra-cs.com

The COBRA group is specialized in the manufacturing and distribution of conveyor components for the material handling industry. COBRA group combines five businesses: Conveyor belts (Depreux, Transco, Indi), Components for conveyor (Go Smart) and Vulcanising presses (Mossier). Headquartered in France with the following sales subsidiaries: Russia and Central Asia (Kazakhstan, Ouzbekistan, Tajikistan); COBRA EURASIA

Tel: 73 84 25 85 598, **Email:** cobraeurasia@bk.ru
North and Central America: COBRA AMERICA **Tel:** 1423 968 9700, **Email:** bambi@cobraamerica.com
Australia & New Zealand: COBRA SOUTH PACIFIC **Tel:** +61 2 4722 5633, **Email:** info@cobrasp.com.au

Coeclerici Logistics S.p.A.



Piazza A. Diaz, 7
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Contact: Captain Giordano Scotti

d'Aniello

Job Title: Head of Commercial

Department

T: + 39 02 6246 9451

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E: newprojects@coeclerici.com

W: www.coeclerici.com

Additional equipment: Offshore

transloading operations

One of the best known and

most reputed companies in the

field of offshore transloading

operations. This achievement is

based on the dedication and

commitment of the company

towards its clients as well as

being an integral part of the

production chain with a view to

long term relationships.

Coles Associates

PO Box 5096
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6009
Australia

Contact: Mr Richard Coles

Job Title: Manager Business

Development

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E: rcoles@colesassociates.com.au

W: www.shiploader.com.au

Specialising in acquisition,

divestment and relocation and

of pre-owned mining and

infrastructure equipment

worldwide.

Comercial Tauro S.A.

Merced 380 Of. 71
Santiago
Metropolitana
8320310
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Contact: Mr Matias Leyton

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E: mleyton@vibratfloor-latam.com

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Conductix-Wampfler Australia

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Contact: Mr Mark Howlett

Job Title: Managing Director

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E: sales-australia@conductix.com

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Conductix-Wampfler is a

manufacturer and supplier of

Power and Data Transfer

equipment including conductor

bar, festoon, cable and hose

reels, Kabelschlepp cable chain

and flexible cable, slip ring

assemblies, radio controls,

Kiepe conveyor belt monitoring

equipment, UEE high voltage

connectors and buffers.

Conductix-Wampfler



Rheinstrasse 27 + 33
Weil am Rhein
79576
Germany

Contact:

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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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USA

Contact: Mr Mark Zuroske
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E: mark.zuroske@conductix.com
W: www.conductix.us
Leading global supplier of motorized cable reels, cable festoon systems, energy chains, conductor bar, and slip rings to the bulk materials handling and mining industries. We specialize in reliable, customized electrification systems for the most demanding applications. ISO9001:2008 certified.

Continental Construction (Memphis)

5646 Shelby Oaks Drive
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Tennessee
38134
USA

Contact: Mr Brian Morphis
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E: mail@continentalconst.com
W: www.continentalconst.com
Continental Construction Company, Inc. is a general contractor specializing in slip form concrete construction, pile driving, structural steel erection, millwright work, marine construction, heavy concrete foundations, industrial buildings, and material handling systems.

Continental Conveyor & Equipment Co Inc

PO Box 400
438 Industrial Drive
Winfield
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USA

Contact: Lou Boltik
Job Title: Director Marketing & Communications
T: + 1 205 487 6492
F: + 1 205 487 4233
E: info@continentalconveyor.com
W: www.continentalconveyor.com
The company's High Angle Conveyor (HAC) system employs standard conveyor components and belts to utilize a simple but unique 'sandwich belt' approach to steep and even vertical conveyor elevations.

CONTINENTAL MATADOR RUBBER, s.r.o.

Terezie Vansovej 1054
Puchov
020 01
Slovakia

Contact: Mr Pavol Martinko
T: + 421 42 461 3365
F: + 421 42 461 3365
E: pavol.martinko@matador.sk
W: www.matador.sk
One of the biggest companies in the chemical and rubber

industry in the Slovak Republic. Up to 85% of its production of tyres and conveyor belts is exported. Producer and supplier of textile and steel cord conveyor belts for the mining and construction industries worldwide.

ContiTech Transportbandsysteme GmbH

Breslauer Strasse 14
Northeim
D-37154
Germany

Contact: Ms Marion Braun
Job Title: Assistant to General Manager
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F: + 49 5551 702 504
E: transportbandsysteme@contitech.de
W: www.contitech.de/conveyorbelts
ContiTech Conveyor Belt Group is a leading development partner, manufacturer and system supplier of steel-cable and textile-ply conveyor belts, service materials and special products. In addition, Contitech provides a worldwide installation and maintenance service.

Control Systems Technology Pty Ltd

47 Fitzpatrick Street
Revesby
NSW
2212
Australia

Contact: Mr Leonard Ian Burrell
T: + 612 8708 0200
F: + 612 8708 0280
E: lburrell@controlsystems.com.au
W: www.controlsystems.com.au
CST design and manufacturer high accuracy belt scale systems designed to provide the customers specified accuracy "in conveyor". CST say "Different Scales for Different Conveyors to achieve the Same Accuracy". Since 1984, CST has remained committed to high integrity, shunning short term commercial game for long term customer satisfaction.

Conveyor Dynamics, Inc.

1111 West Holly St.
Bellingham
Washington
98225
USA

Contact: Mr Andrew Jennings
Job Title: President
T: + 1 360 671 2200
F: + 1 360 671 8450
E: cdi@conveyor-dynamics.com
W: http://conveyor-dynamics.com/
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

Calle 103 No.14A-43
Oficina 20
Edificio Gemedco
Santafe
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Colombia

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CPS Projects (Pty) Ltd

PO Box 47261
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KZN
4023

South Africa

Contact: Mr Banzhi Majola
Job Title: Managing Director
T: + 27 31 466 4396
F: + 27 31 466 4399
E: banzi@cpsprojects.co.za
W: @blurb:Port related services offered by CPS Projects as follows:
-Maintenance Contracts (including labour supply)
-Electrical and automation services
-Structural repairs, equipment overhauls and upgrades
-Ad-hoc repairs (accident damage and component failure)
-Supply of Spare Parts
-Erection and Commissioning of new equipment

Cranes Machinery Co., Ltd(CMC)

CMI China Office
No.8-20 Shunyu Road
Xinchen Industrial Park
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Changzhou
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CST Covers

498 N Loop 336 E
Conroe
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77301
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Contact: Mrs Kimberly Mathis
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T: + 1 936 539 1747
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E: kmathis@cstindustries.com
W: www.cstcovers.com
Founded in 1964 the company designs, manufactures and erects architectural and environmental enclosures. These are primarily clear-span domes and related space frames fabricated mostly from aluminum. Structures are used for covering tankage and bulk storage facilities of all types and shapes.

CST Storage

903 E 104th Street, Suite 900
Kansas City
MO
64131
USA

Contact: Mr David Wheat
Job Title: Director
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W: www.cstindustries.com
Formerly Columbian TecTank, the world's largest manufacturer of factory-coated bolted and welded tanks for dry bulk storage. Flat-bottomed tanks and hopper bottom silos with capacities up to 13,200 cubic meters. ISO Certified.

CWA Engineers

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Dalian Huarui Heavy Industry International CO. LTD

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Dbis (Software and Automation) Ltd

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Ten Pound Walk
Doncaster
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Contact: Mr David Trueman
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DBIS provides real time terminal management systems to over 25 terminals 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
Provides full dust control loading systems and partial components to the bulk material handling industry and designs custom equipment. A complete Research/Development team is located on site. Single source manufacturing from ship loading systems to valves and dust collectors can be provided.

De Regt Conveyor Systems

Ijzendijkseweg 5
Bierliet
Zeeland
4521 GX
The Netherlands

Contact: Mr Peter De Regt
Job Title: Director
T: + 31 115 481238
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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
Manufactures a complete line of heavy duty DEMARCO Industrial Vacuum Systems and for all flowable materials, wet or dry, etc. Units are available in portable, stationary, towable, central turnkey installed systems, canister vacuums, and custom engineered systems.

DemcoTECH Engineering

Modderhouse
Moddercrest Office Park
1 High Street
Modderfontein
Gauteng
1645
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Contact: Mr Paul van de Vyver

Job Title: General Manager
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Den Bakker Dustcrusting Technology b.v. (dbd global b.v.)

Christiaan Huygensweg 2
Hellevoetsluis
Zuid Holland
3225 LD
The Netherlands

Contact: Mr J.A.A. den Bakker
Job Title: CEO
T: + 31 181 399 635
E: j.d.bakker@denbakker.nl
W: www.dbdglobal.com
Den Bakker Dustcrusting technology b.v. (dbd global b.v.), is an expert in dust control and prevention. dbd global b.v. specializes in the control of dust, not only by cleaning areas that are already dusty, but also and most importantly working to ensure that dust does not become a problem in the first place.

Deutsche Grobwälzlager GmbH

Marieneher Strasse 17
Rostock
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Contact: Mr Andreas Wiedenhoef
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T: + 49 1621088866
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DMN-WESTINGHOUSE

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NL-2210 AA
The Netherlands

Contact: Mrs Tonneke Krempel
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T: + 31 252 361 800
F: + 31 252 375 934
E: dmn@dmn-nwh.nl
W: www.dmnwestinghouse.com
Other equipment: Rotary Valves, Diverter Valves. Designs and manufactures rotary valves, diverter valves and other components. Optionally pressure shock resistant to 10 bar, flame proof also suitable for handling St2 powders, ATEX compliant to Directive 2014/34/EU. Extensive sales and distribution network, ensures global service and support.

Dome Corp of North America

5450 East Street
Saginaw
Michigan
48601
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F: + 1 517 777 3477
E: sales@dome-corp-na.com
W: www.dome-corp-na.com

Dome Technology, LLC

4946 North 29th East
Idaho Falls
ID
83401
USA

Contact: Mr Jason Miller
Job Title: Vice President of Marketing
T: + 1 208 529 0833
F: + 1 208 529 0854
E: jason.miller@dometechnology.com
W: www.dometechnology.com
Other equipment: Serve the

biomass, power, mining, cement, fertilizer, and grain markets. We provide geotechnical analysis, deep foundation solutions, engineered tunnels. Integrate material handling safety protocols with dome design. Concrete domes are designed to contain volatile products as well as cover products.

DOMTEC International LLC

4355 N Haroldsen Drive
Idaho Falls
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USA

Contact: Mr Mike Hunter
Job Title: General Manager
T: + 1 208 522 5520
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E: domtec@domtec.com
W: www.domtec.com
World class, high quality concrete dome builder for storage of a multitude of dry bulk materials, including coal. DOMTEC has broad experience with reclaim systems. Projects are delivered around the world on time and within budget.

Donaldson Filtration Deutschland GmbH

Industriestraße 11
Dülmen
48249
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F: + 49 2594 781 21
E: IAF-de@donaldson.com
W: www.DonaldsonToritDCE.com
Donaldson is a leading worldwide provider of filtration systems that improve people's lives, enhance our Customers' equipment performance, and protect our environment. We are committed to satisfying our Customers' needs for filtration solutions through innovative research and development, application expertise, and global presence.

Doosan Benelux SA

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E: george.schmalzried@doosan.com

W: www.bobcat.eu;
www.doosanequipment.eu
World leader in compact loaders. Offers a line of skid-steer and compact-tracked loader models used in shiptrimming, shiphold and railroad box car unloading operations. The compact loaders have rated operating capacities ranging from 343-1600 kg and operating weights from 1.2 - 4.6 tonnes.

Doppelmayer Transport Technology GmbH

Holzriedstrasse 29
Wolfrut
6922
Austria

Contact:
T: + 43 5574 604 1800
F: + 43 5574 604 1209
E: dtt@doppelmayer.com
W: www.doppelmayer-mts.com
Doppelmayer Transport Technology solves all transport issues in the field of bulk materials and unit loads with a range of sophisticated material transport systems - from well-proven material ropeways to innovative long-distance conveyor systems for high capacities.

Dos Santos International, LLC

531 Roselane Street
Suite 810
Marietta
Georgia
30060
USA

Contact: Mrs Amy D. Duncan
Job Title: Marketing Manager
T: + 1 770 423 9895

F: Text: + 1 916 US SNAKE
E: info@dossantosintl.com
W: www.dossantosintl.com
Other Equipment: DSI ExConTec - conveyor analysis software.

Dos Santos International is the world's foremost authority on high-angle conveying technology. We offer the DSI Snake, the most reliable high-angle and vertical conveying means for your high tonnage, high lift requirements. DSI also offers engineering consulting and provides in house software for load analysis.

Dosco Overseas Engineering Ltd

Ollerton Road
Tuxford
Newark
Nottinghamshire
NG22 0PQ
UK

Contact: Mr Phillip Adrych
Job Title: Export Sales
T: + 44 1777 870 621
F: + 44 1777 871 580
E: padrych@dosco.co.uk
W: www.dosco.co.uk
Manufacture twin roll crushers. The range can process from 100-5000 tph with installed powers of 100kW-500kW. Manufacture economic and environmentally friendly pipe conveyor.

Doubrava Ges GmbH

Industriestrasse 17-20
Atnang-Puchheim
A-4600
Austria

Contact: Mr Stefan Wenninger
Job Title: Director sales/Sales Dry Mortar Plants
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Dry-Bag A/S

Dalgaard 1
Aarhus C
DK 8000
Denmark

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Dunlop Conveyor Belting

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The Netherlands

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W: www.dunlopconveyorbelting.com
Manufactures a full range of textile, aramid and steelcord conveyor belting systems.

DURO FELGUERA, S.A.

Parque Científico y Tecnológico de Gijón
c/ Ada Byron, 90
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Asturias
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Spain

Contact: Mr Angel Pelegruy

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T: + 34 985 199 201
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E: dfmh@durofelguera.com
W: www.durofelguera.com
DF Mining & Handling is the DF division specialised in turnkey projects for Mineral Processing and Bulk Material Handling Facilities, mainly Concentration Plant and Loading and Unloading Terminals at Ports. The company assists customers and investors in all phases of a project: feasibility studies, design, detailed engineering, procurement, construction, commissioning and operation and maintenance of the facility and it's recognised on a global scale as a reputable EPC contractor.

Dust Control Technology

1607 W. Chanute Rd.
Peoria
IL
61615
USA

Contact: Mrs Laura Stiverson
Job Title: President
T: + 1 309 693 8600
F: + 1 309 693 8605
E: info@dustboss.com
W: www.dustboss.com
The DustBoss line of portable dust suppression equipment uses atomized mist technology, a more effective and less wasteful alternative to traditional methods such as hoses and sprinklers. The OdorBoss line of equipment uses that same technology to distribute odor control treatments.

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 Dry Fog Dust Suppression Systems for bulk material handling - 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 Windfence Systems for 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
Main activity is the sale and support of the E-Crane, a multifunctional crane designed for bulk material handling, storage, process feeding at ports etc.

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
E-Crane International USA offers the E-Crane (Equilibrium Crane) in capacities ranging from 5.5 to 39 (metric) tons and outreach ranging from 24.8 to 47.8 metres (82 to 157 feet) for efficient offloading of bulk commodities.

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
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W: www.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.

Egis Ports

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Guyancourt
78286
France

Contact: Mr Pierre Aristaghes
T: + 33 1 30 12 47 84
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E: Pierre.aristaghes@egis.fr
W: www.egis-international.fr

IEFFEL Etablissement SOMDEL

80 bis rue Jean Jaurès
Quiévreachain
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France

Contact: Mr Gérard Pellez
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T: + 33 32 714 1516
F: + 33 32 714 1515
E: contact.somdel.eiffel@eiffage.com
W: www.eiffel.fr
Specialised in the provision of tailor made lifting and handling equipment. The range of products extends from EOT for steel plants, nuclear power plants and gantry cranes to ship loaders, ship unloaders, stackers and reclaimers, conveying systems and turnkey installations.

Elecon Engineering Company Ltd

Post Box # 6
Anand Sogitra Road
Vallabh Vidyanagar
Gujarat
388 120
India

Contact: Mr B J Babaria
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T: + 91 2692 237016 / 227131
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E: bjbabaria@mhe.elecon.com
W: www.elecon.com
Elecon since established in 1951, apart from Power Transmission Products, provides engineered solutions, manufactures and supplies Bulk Material Handling Plants and Equipments for the core sector industries which includes power, steel, cement, fertilizer, port mechanisation and open cast mines in India and Abroad.

Elecon Singapore PTE Ltd.

10, Anson Road
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International Plaza
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079903
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Elgin Engineering and Construction

2001 Butterfield Road
Downers Grove
Chicago
Illinois
60515
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Contact: Mr Bob Williams
Job Title: Marketing Director
T: + 1 630 434 7200
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E: soros@elginindustries.com
W: www.elginindustries.com
An international consulting engineering firm specialising in conceptual development, planning, feasibility studies, design engineering, project management, construction supervision, rehabilitation and

expansion of port facilities.

EMS-Tech Inc

699 Dundas Street West
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Ontario
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Canada

Contact: Ms Gail Carl
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T: + 1 613 966 6611
F: + 1 613 966 8710
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W: www.ems-tech.net
A multi-task, multi-discipline company specialising in design and supply of dry bulk material handling equipment, both mobile and stationary; including custom designed conveyors, belt elevators, receiving hoppers, storage/load-out systems, environmental controls, shiploaders, stackers and reclaimers, transhippers, self-unloading ships.

EMS-Tech Inc.

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1976 AS
The Netherlands

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T: + 31 251 291 340
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W: www.ems-tech.net
A Multi-task, multi-discipline company specializing in design and supply of dry bulk material handling equipment, both mobile and stationary; including custom designed conveyors, belt elevators, receiving hoppers, storage/loadout systems, environmental controls, shiploaders, stackers and reclaimers, self-unloading ships.

EMTICI Engineering Co Ltd

68 Sarat Bose Road
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Contact: Mr D Sen
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E: dsen@calemtici.elecon.com
W: www.elecon.com

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
Provides a broad spectrum of services ranging from conceptual studies through

detailed engineering and supply of shiploaders/unloaders and related bulk materials handling equipment.

Engicon nv

Broelstraat 20
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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
Offers complete solutions in bulk handling systems. Product range includes silos with extraction systems, discharge hoppers, pressure vessels and storage tanks, conveyor belts, screw conveyors, chain conveyors, bucket elevators.

Enviro Abrasion Resistant Engineers Pvt. Ltd

"ENVIRO HOUSE", Sector-27
Plot No. F/12
Near Sambhaji Chowk
Pradhikaran
Pune
411044
India

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EPN Solutions

Karl Grankvist 1C
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EQUIPO LLC

Salahudeen Road
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Contact: Mr Mohamad Yasar Aboobacker
Job Title: Operations & Sales Manager
T: + 971 4 268 2216
F: + 971 426 822 17
E: yasar@equipo.ae
W: http://www.equipo.com/
We are one of the suppliers of grabs in PG & Indian Subcontinent. All our grabs are radio remote controlled varying from 5 to 12 cbm. Grabs can be supplied on short term and long term rentals.

Eriez Europe

Bedwas House Industrial Estate
Bedwas
Caerphilly
CF83 8YG
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Contact: Ms Gareth Meese
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T: + 44 29 20 868 501
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Eriez, a world authority in separation technologies is a one-stop solution thanks to its range of magnetic separators, metal detectors, feeders, wet drums and other processing equipment, particularly suited to the mining, aggregate and coal processing sector.

Esch Group bv

Veerweg 14
Hoom
5145 NS
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Contact: Mr Rob ver Doren
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Stas is a manufacturer (production) of transport rollers, drive and tension drums and import bearings and bearing blocks.

ESI Eurosilos BV



Newtonstraat 26-28
Purmerend
1446 VR
The Netherlands
Contact: Mr Jaap P J Ruijgrok
Job Title: Managing Director
T: +31 299 630 730
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E: esi@eurosilo.com
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Other Equipment: Mammoth silo systems.
Active in the field of design construction and/or turnkey delivery of large scale enclosed storage systems for coal, FGD-gypsum, limestone, minerals, basic chemicals and potato starch. Storage capacity of this flat bottom mammoth silo system (Eurosilos) can range from 1,000 up to 100,000 m3 per unit.

Essar Industries

15/B, Manjushree, 1st Floor, 2nd Floor
Sri MVC Hanumanthaiah Road
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R.T. Nagar
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India
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Euromec Srl

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E: sales@euromecsr.info
W: www.euromecsr.com
Our deep knowledge and 60 year's experience in the process of handling all materials guarantees our presence in the most important ports and plants all over the world.
Euromec pays particular attention to the simplicity of the manufacturing processes so that it can keep production costs low, improve final quality and reduce maintenance. As a result, our electrohydraulic and mechanical equipment are economical, reliable, long-lasting and with very low maintenance costs.
Equipment is built with respect to the most rigorous certifications worldwide, both NEMA, ATEX and NEC 500 regulations for dangerous environments and GOST laws.

Euro-Tramco BV

Spacelab 47 D
Amersfoort
3824MR
The Netherlands
Contact: Mr Hans Plekkenpol
T: +31 33 4567033
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E: hans@tramco-europe.com
W: www.tramcoinc.com
Manufactures chain, screw and bucket conveyors and 'Aerobelt' air-supported belt conveyor systems.

F E Schulte Strathaus GmbH & Co KG

Rüntesstrasse 42
Werl
D-59457
Germany
Contact: Mr Andre Hanke
T: +49 2922 9775 0
F: +49 2922 9775 75
E: ha@schulte-strathaus.de

W: www.schulte-strathaus.de
Accessories for Conveyors:
Starclean Conveyor Belt
Scrapers, Belt Trackers, Spillex
transfer point seals, Frillo
impact tables and bars.

F L Smidth A/S

Vigerslev Alle 77
Valby
DK-2500
Denmark
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FLSmidth offers products and solutions to handle any type of bulk material: lumpy, powdery, sticky, wet or dry. We supply process design and equipment for all materials handling applications for the cement industry, pulp & paper, fertiliser and related industries.

Fairport Engineering

Market Place
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FEL is the UK market leader in the successful development and delivery of major projects for the coal, quarrying & aggregate and building and concrete product sectors is a company and is continually enhancing its position within the power, alternative fuels and recycling markets.

FAM Magdeburger Förderanlagen und Baumaschinen GmbH

Sudenburger Wuhne 47
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D-39112
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Contact: Mr Michael Kutza
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FAM successfully plans, designs, constructs and manufactures turnkey plants and systems for extracting, producing, loading and storing minerals, raw material and goods. FAM combines know-how of series and customized production processes and offers a complete range of manufacturing services including after sales services in addition to engineering services. As a global provider of solutions, FAM has linked technical excellence, cutting edge engineering and high-quality project management for more than 100 years.

Famak SA

Machinery and Equipment Company
Fabryczna Street 5
Kluczbork
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Contact: Mr Wojciech Staszak
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Over 60 years experience as manufacturers of transport-hoisting equipment. Highly qualified technical engineering staff have interdisciplinary knowledge and experience and design-development base, implementing the highest

technical level of offered products. Products designed according to individual needs and installed on-site. Full service after installation.

Fantuzzi Reggiane S.p.a

Via Cisa Ligure 51/A
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FELD Maschinen- und Industriebau GmbH

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E: Andre.Stueckradt@maschinenbau-feld.de
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High-Tech for preservation of our resources.

Fenner Dunlop Conveyor Belting Europe

Marfleet
Hull
Yorkshire
HU9 5RA
UK
Contact: Mr Jim Jones
T: +44 1482 785450
F: +44 1482 785438
E: jim.jones@fennerdunlop.com
W: www.fennerdunlop.com
Fire-resistant, solid-woven

conveyor belting, with rubber or PVC covers, is manufactured to all major national safety standards. Supplied to all major underground materials handling and extraction industries and to other coal handling operations where safety and economy are major criteria.

Fenner plc

Hesslewood Country Office Park
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FFE Ltd

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Fige Crane Services BV

PO Box 235
Zaandam
1500 EE
The Netherlands
Contact: Mrs Babette Sloven
T: +31 75 6810 410
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E: b.slovan@kenz-figee.com
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Merger of Kenz offshore cranes and Fige harbour cranes. Founded in 1836, Fige designs and manufactures a complete range of bulk handling cranes including the



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WWW.EUROSILO.COM

P.O. Box 1047
1440 BA Purmerend
The Netherlands

Newtonstraat 26 - 28
1446VR Purmerend
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Nazım Hikmet Caddesi, 536 Sokak, No.9 41420 Akseköyü Çayırova - Kocaeli / TURKEY

Tel.: +90 262 743 88 58 pbx Fax: +90 262 743 11 41

info@guvengrab.com

www.guvengrab.com



unique and well proven Lemniscate floating grab cranes with capacities from 16-50 tonnes, gantry grab unloaders, single- and double boom cranes, kangaroo cranes.

Flexco

2525 Wisconsin Avenue
Downers Grove
IL
60515-4200
USA

Contact: Ms Jayne Dore
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Manufactures conveyor belt fasteners, installation tools and conveyor belt accessories. A broad line of products is marketed through a worldwide network of distributors under the brand names of Alligator, Clipper, Flexco, Tatch-A-Clear, Eliminator and Flex-lag.

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

Mechanical conveyor belt fastening systems and accessories; belt cleaning systems; ceramic lagging; maintenance tools.

Flexicon Corporation

2400 Emrick Blvd
Bethlehem
PA
18020-8006
USA

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T: + 1 610 814 2400
F: + 1 610 814 0600
E: sales@flexicon.com
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Flexoveyor Conveyor

3795 Paris St., Unit D
Denver
Colorado
80239
USA

Contact: Mr Bill Priday
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FLSmidth GmbH

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Contact: Ms Susanne Stidl
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FLSmidth Minerals Pvt. Ltd

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Chennai
Tamil Nadu
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FLSmidth Wadgassen GmbH



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W: www.flsmidth.com

FLSmidth has developed a worldwide reputation for supplying innovative, fully-mobile material handling equipment solutions including mobile conveyors, stackers, loaders and unloaders, stockyard systems, and crushing and sizing equipment.

Franz Wölfer Elektromaschinenfabrik Osnabrück GmbH

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Frigate Technologies Private Limited

Gr. Floor, No. 9,
Block 5, Eros Garden
Charmwood Village
Surajkund Road
Faridabad
Haryana
121 001
India

Contact: Mr Ajay Hooda
Job Title: Director (Marketing)
T: + 91 129 4116470
F: + 91 11 66173981
E: office@frigate.in
W: www.frigate.in
Other Equipment: Silo, Bucker Elevator, Deep Pan Conveyor, Marine Vessels

Gama Endustri Tesisleri Imalat Ve Montaj AS

Narcissus Street No: 9, 06 520
Söğütözü
Ankara
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Contact: Mr Mehmet Artun
Job Title: General Manager
T: + 90 312 248 42 00
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W: www.gama.com.tr
Other Equipment: Apron feeders, Air slides, Scrapers. One of Turkey's most prestigious leading contracting companies, with experience in constructing industrial and power plants, dams, pipelines, infrastructures and similar. Established in 1959, with clients worldwide, has completed more than 200 significant sized projects internationally.

Gambarotta Gschwend

Viale Verona 200
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Job Title: Sales Manager
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F: + 39 0461 933391
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W: www.gambarotta.it
Manufacture of bucket

elevators, pan conveyors, drag chain conveyors, extractors and feeders, palletised product loaders, gate valves, cell feeders, flap valves and screw conveyors used in petrochemicals, cement, coal, waste to energy plants and for power generation, steel and heavy industry applications.

Ganz Danubius Trading Co Ltd

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Contact: Mr Karol Bayas
Job Title: Director
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F: + 36 1 329 8041
E: gdco@hu.internet
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Suppliers of mechanical shiploaders and unloaders, level luffing harbour grab cranes, floating grab cranes and other bulk handling equipment.

Garwood Consulting Ltd

Garwood Lodge
Wentworth
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Cambridgeshire
CB6 3QG
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Contact: Mr Barry Woodbine
T: + 44 780 102 4583
F: + 44 1353 777315
E: barry@garwoodconsulting.com
W: @blurb:Advice and consultancy on the design and implementation of fuel intake and storage systems in cement, power or CHP plant including the use of alternative fuels and Biomass plus Ship Loading and Discharge systems at Port and Terminal.

General Kinematics Corp.

5050 Rickert Rd.
Crystal Lake
IL
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T: + 1 815 455 3222
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E: info@generalkinematics.com
W: www.generalkinematics.com
General Kinematics specializes in vibrating and rotary equipment and solutions for bulk processing of material in the foundry, recycling, scrap, mining, minerals, food, chemical, and wood industries. Each piece of GK equipment is custom engineered to your specifications to meet your process objectives.

Geo - Chem Laboratories Pvt. Ltd

Geo - Chem House
294 Shahid Bhagat Singh Road,
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Geometrica Inc

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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
Specialists in the design,

fabrication and installation of bulk storage domed structures requiring large, column-free interiors, utilizing low maintenance galvanized steel or aluminum. Structures can cover any shaped area, can span over 300m, and can be erected even over operating stockpiles.

Gertech Handling Systems cc

PO Box 4014
Durbanville
Cape Town
Western Cape
7551
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Contact: Mr Gerrit De Hoog
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GF MHS Srl

Via Guido Rossa, 11
Paderno Dugnano (MI)
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Contact: Mr Francesco Tummillo
Job Title: Managing Director
T: + 39 0 2 91 08 20 02
F: + 39 0 2 91 84 31 47
E: info@gfms.it
W: www.gfms.it
Other Equipment: Pipe Conveyors. Please contact us with any Handling System problems, such as lay-out or pollution of your handled product.

GGT Goldengrain Trading SA

Via Capelli 28
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Contact: Ms Cornelia Riep
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Golden West Industries

332 West Railroad Ave
Price
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Contact: Mr Ellis Pierce
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T: + 1 435 637 3211
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E: pwynny@gbis.com
W: www.goldenwest-industries.com
17 years experience providing dust control and anti-freeze solutions to the mining and material handling industries.

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
Provides a wide selection of belt conveyor idlers and components, together with a comprehensive selection of bulk conveyor equipment and components. Belt conveyors available in belt widths 14"-96"; screw conveyors available in diameters 4"-60". Centrifugal and continuous discharge bucket elevators also available.

Gordinne & Co NV/SA

Belgian Ports Operation
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B-9060

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Contact: Mr Doug Anderson
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W: www.guttridge.co.uk
Guttridge offer a wide range of bulk handling machinery, ideal for moving ores, granules, powders, sand, cement, salt and fertilizers around process plants. All our machines are manufactured to suit customers' individual requirements.

Güven Grab and Machine Ltd. Co



Nazim Hikmet Cad 536. sk. No: 9
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Turkey

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Established in 1984, with it's own manufacturing facilities, Guven Grab and Machine supplies it's range of grabs all over the world. These include radio remote control grabs, electro hydraulic clamshell/orange peel grabs, mechanical double wired grabs and mechanical clamshell/orange peel touch down grabs.

Hangzhou Huaxin Mechanical & Electrical Engineering Co., Ltd.

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Sandun
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Hans Turck GmbH & Co. KG

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Hansen Industrial Transmissions (HIT) Ltd

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Contact: Mr Terry Drayton
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W: www.hansenindustrialgearboxes.com
Hansen Transmissions design, manufacture, install and service industrial gearing. Our range spans from 80 Nm to 800 KNm (0.12 KW to 12MW) and is available in many configurations and drive packages.

Hansen Industrial Transmissions (HIT) nv

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Hansen Industrial Transmissions is at the pinnacle in innovation and durable drives for a wide range of industrial applications throughout the world, especially in sectors where low noise levels, minimum weight and high reliability are essential (including cooling towers, material handling, water treatment, etc.)

Hasel Machinery Inc

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Haskoning India Pvt Ltd

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Hasler International SA

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HAUGEN System AB

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Hitachi Construction Machinery (Europe) NV

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Job Title: Manager, Corporate Communication
T: + 31 20 44 76 700
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W: www.hcme.com
Hitachi Construction Machinery (Europe) NV's (HCME) main products are hydraulic crawler and wheeled excavators, crawler cranes, wheel loaders, rigid dump trucks and light compaction equipment. HCME provides a broad product line-up that has earned an excellent reputation for performance, reliability and safety.

Horizon Conveyor Equipment

Unit 1, Haysech Road
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Contact: Mr Alan Bowler
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E: info@horizonconveyors.co.uk
W: www.horizonconveyors.co.uk
Manufacturers of Steel, Plastic & Aluminium Idler rollers, Conveyor Belt Scrapers and Conveyor Components & Equipment.

HOSCH-Fördertechnik Recklinghausen GmbH

Am Stadion 36
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Contact: Mr Giancarlo Leombruno
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F: + 49 2361 5898 40
E: sales@hosch.de
W: www.hosch.de
HOSCH has been manufacturing and distributing Sprung Blade Scrapers and accessories for high precision belt cleaning for more than 30 years. The innovative design principle of its C-series, which is patented world-wide, utilises modular components and guarantees total belt cleaning efficiency for all types of installations.

Huadian Heavy Industries Co., Ltd.



No. 6 Auto Museum
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Beijing
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China
Contact: Ms Chen Qiao
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W: www.hhi.com.cn;
www.chec.com.cn
With the engineering system design and EPC as the principal business and the R&D and manufacturing of core products and relevant high-end products and investment operations as the support, HHI is committed to providing the clients with integrated solutions in terms of material handling engineering, thermal power engineering, industrial noise



treatment engineering, clean & effective coal utilization engineering and offshore wind power engineering etc.

Hycontrol Limited

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B98 7DP
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Hyundai Heavy Industries Co

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IBAU HAMBURG



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IBAU HAMBURG supplies installations and components for the transfer, storage and conveying of dry products, including among others fly ash and coal. Our scope includes the engineering and supply of plant components such as ship loaders and unloaders, as well as storage silos.

Igus GmbH



Spicher Str. 1a
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Job Title: Head of Intl. Cranes & Materialhandling
T: + 49 2203 9649 0
F: + 49 2203 9649 222
E: cranes@igus.de
W: www.igus-cranes.com
Products include E-ChainSystems - in operation on Ship to Shore Cranes, RTGs, RMGs, Goliath Cranes, Spreaders, Reach Stacker etc. More than 3,000 port equipment applications are running world-wide with igus® E-ChainSystems.

IHI Transport Machinery Co., Ltd. (IUK)

8-1 Seiroka Tower
Akashi Cho
Chuo-Ku
Tokyo
104-0044 MZ
Japan
Contact: Mr Tadashi Ito
Job Title: Manager, Overseas Sales Dept
T: + 81 3 5550 5375
F: + 81 3 5550 5366
E: tadashi.ito@iuk.co.jp
W: www.iuk.co.jp
In addition: Multi-purpose gantry cranes
IUK has supplied a lot of coal handling equipment and systems with cutting edge technology for world-wide customers and has had a world leading delivery record of the continuous ship unloaders.

IMASA

Palacio Valdes 1
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Imperial Technologies, Inc.

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E: rontschantz@imperial-technologies.com
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Imperial Technologies designs and supplies bulk material equipment including our enclosed "environmentally friendly" conveyors under Multi-Fold and Flexi-Cleat belt designs. We also provide conventional trough conveyors, fixed and radial stackers, sidewall conveyors, tripper conveyors, reversing shuttle conveyors, drag conveyors, related bulk materials handling equipment and our coal "variable speed vertical impact breaker" for dry coal processing called the Accelerator to improve raw coal from the mine.

Incolab Services BV

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Incolab Services main target is to serve the solid fuel industry with own office and laboratories. Most of our laboratories are 17025 accredited. Present in Europe, former USSR, North and South America and North

and South Africa.

Inspectorate International Ltd

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Inspectorate offers a full range of inspection, analytical and specialist testing services to the solid fuels industries and has coal-handling coordination offices and ISO 17025 accredited laboratories in all the major coal producing/consuming countries worldwide.

Instral B.V.

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Intermodal Solutions Pty Ltd

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International Bulk Handling Technology BV

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W: www.ibtbulk.nl
IBT offers over 40 years of expertise in the field of complex bulk handling systems. Capacity up to 6,000tph. Systems include high capacity steep incline conveyors, pipe conveyors, semi mobile large overland conveyors etc.

Intersystems

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Intersystems reaches a worldwide market and numerous industries with expertise in the engineer and manufacture of bulk material handling and industrial sampling systems.

iSAM AG Gesellschaft fuer angewandte Kybernetik

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Contact: Dr Juergen Hellmich
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W: www.isam-ag.de
iSAM delivers the full range of products and services for advanced automation of bulk material handling and port operations. We handle turn-key solutions for new automation projects as well as the upgrading of existing equipment including project management, electrical engineering and commissioning.

Isomonte SA

Rua Cristiano Franca Teixeira
Guimaraes, 265
Bairro Cinco
Contagem
Minas Gerais
CEP 32010-130
Brazil

Contact: Mr Jose Rubem Almeida
T: + 55 31 2128 2600 / 2641
F: + 55 31 2128 2690
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Specialises in the design and construction of turnkey systems for materials handling, including shiploaders/unloaders, grabs, stacker/reclaimers and conveyor systems.

Italgru S.r.l.

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J & B Grabs b.v.

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Designs, engineers and manufactures mechanical and hydraulic grabs for all kinds of bulk material.

James A. Redding Company

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Jansen & Heuning

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Jenike & Johanson Inc.

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Jenike & Johanson is the world's leading company in powder and bulk solids handling, processing, and storage technology. Over the past 55 years, we've tested over 10,000 unique powders and bulk solids and worked on more than 7,500 projects, giving our team the broadest real-world and in-depth experience in the industry to address a wide variety of bulk material handling and engineering needs.

JFE Engineering Corporation

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Jim Way Enterprise Co., Ltd

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Joy Global

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Joy Global Inc

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Kalenborn Kalprotect GmbH & Co. KG

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Wear-protection materials and services. Engineering, production, and worldwide installation of highly wear-resistant linings and components made of ceramic, metallic and plastic materials for protecting all kinds of bulk handling equipment.

Kardesler Grab & Machine Co.

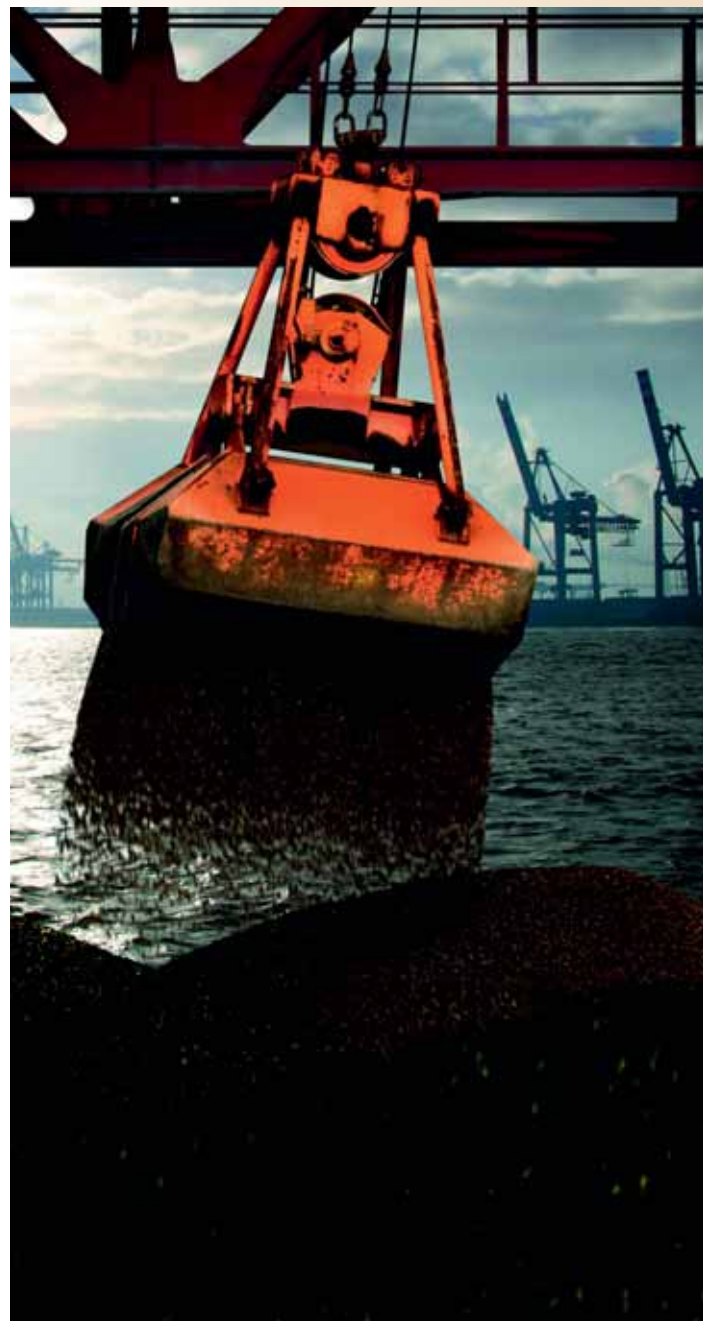
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Other equipment: Vibrating Feeders and Conveyors; Bin Activators, Storage Pile Dischargers, Rail Car Dischargers and Densifiers, Fluid Bed Dryers and Coolers, Vibrating Spiral Elevators. Kinergy Corporation is a vibratory machine manufacturer designing, engineering and fabricating machines for capacities ranging from pounds



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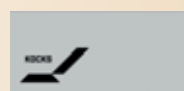
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KOCKS ARDELT KRANBAU GMBH



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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).

KOCKS ARDELT KRANBAU GMBH



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Provides complete crane service worldwide for all types and makes of harbour and shipyard cranes. These services include: inspections, maintenance, spare parts, engineered parts, repairs, modernisation/refurbishment, moves/relocations and second hand cranes.

Konecranes Finland Corporation

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Konecranes Hafentechnik GmbH

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Provides a complete crane service worldwide for all types and makes of harbour and shipyard cranes. These services include inspections, maintenance, spare parts, engineered parts, repairs, modernisation/refurbishment, moves/relocations and second hand cranes.

KPI-JCI and Astec Mobile Screens

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KPI-JCI and Astec Mobile Screens, Astec companies (NASDAQ: ASTE), is a worldwide leader in manufacturing equipment for the aggregate, construction, paving and recycling industries. KPI-JCI and Astec Mobile Screens proudly manufacture its products in Yankton, South Dakota, Eugene, Oregon and Sterling, Illinois.

KRANUNION GmbH



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Kranunion is an association of three crane manufacturers specialised in lifting and transporting heavy loads. Kirow is the world market leader for railway cranes and slag pot carriers. Ardel is the world market leader for double jib level luffing cranes. Kocks is the world market leader for Goliath cranes and innovator for STS container cranes.

Krech Ojard & Assoc

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Minnesota 55082

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Kröger Greifertechnik GmbH & Co. KG

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W: www.kroeger-greifertechnik.de
Manufacturer of grabs of all types since the year 1962. Main products - two and four rope grabs, hydraulic grabs, electro hydraulic grabs from 0.5-25m3.

Laing O'Rourke

825 Ann Street
Brisbane
Queensland 4105
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Larsen & Toubro Limited

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W: www.lassingdibben.com
Award winning consulting engineers, specialising in bulk material handling. Extensive experience around the world means the company can handle all aspects of system design. Projects include shiploading and unloading equipment for coal and coke, stackers, conveyor systems and storage facilities.

Lawrence Industries, Inc.

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W: www.tivar88.com
Lawrence Industries, Inc. is a fabricator and distributor of TIVAR 88 polymer liners. TIVAR 88 is a low coefficient of friction liner that is used to eliminate sticking, pluggage, ratholing material build-up. TIVAR 88 has excellent wear properties.

Legacy Building Solutions, Inc.

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Legacy Building Solutions designs, manufactures, engineers, and installs large-scale custom fabric structures for a wide range of industries. A pioneer in the use of a rigid steel frame for fabric structures, the company has achieved ISO 9001:2008 and CSA-A660 certifications.

Libran Engineering and Services

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LIEBHERR

Liebherr- Hydraulikbagger GmbH

LIEBHERR

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Liebherr Group and manufacturer of
hydraulic material handlers.

Liebherr-MCCtec Rostock GmbH

LIEBHERR

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E: maritime.cranes@liebherr.com
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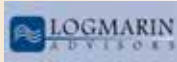
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E: c.lohr@listenow.com
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Other equipment: loading
equipment, filters.

LoadFast Systems Limited

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is to provide an integrated,
comprehensive and tailor-made
advisory service for marine
terminals and associated
handling infrastructures, both
off-shore and on-shore.
Logmarin individuals and its
associates have pioneered dry-
bulk shipping logistics off-
shore, devising and designing
innovative floating terminals,
self unloading vessels and
floating cranes, as well as on-
shore terminals.

Loibl Allen- Sherman-Hoff GmbH

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Core business is the process
engineering of bulk goods.
With a highly specialized team,
an environmentally conscious
approach and reliability in our
way of planning and managing,
and through the application of
state-of-the-art manufacturing
engineering methods, we will
live up to our reputation, meet
the requirements of materials
and technology, and guarantee
the highest quality possible.

Lycopodium

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Mack Manufacturing Inc



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E: sales@MackMfg.com
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Manufactures all types of
grabs and grapples, both wire
rope and hydraulically
operated, as well as radio-
controlled and diesel operated
systems.

Mac Tenn Systems Ltd.

One Bull Lane
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W: www.mantsinen.com
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, Subcontracting.

Marine Inspection LLC

621 North Carrollton Avenue
New Orleans
LA 70119
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Contact: Mr Robert Drew
Job Title: Managing Partner
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E: rdrew@marineinspection.com
W: www.marineinspection.com

Martin Engineering

One Martin Place
Neponset
Illinois
IL 61345
USA
Contact: Mrs Chelsea Blake
Job Title: Marketing
T: +1 309 852 2384
F: +1 800 814 1533
E: chelseab@martin-eng.com
W: www.martin-eng.com
Martin Engineering makes bulk
material handling cleaner, safer
and more productive, improving
belt conveyors by suppressing
dust, reducing spillage,
removing carryback and
tracking belts. Specialists in
belt cleaners, air cannons,
vibration, transfer point
technologies, dust
management, railcar unloading,
silo cleaning.

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: joachim.preiss@martin-eng.de
W: www.martin-eng.de
Since 1944 Martin Engineering
has been a worldwide leader in
making Bulk Material Handling
cleaner, safer and more
productive.
Other equipment: Field
Services, Safety Products, Flow
Aids, Screen Vibrators

Mack Manufacturing Grapples & Buckets

“Quality First”
Since 1942

www.mackmfg.com



7205 Bellingrath Road, P.O. Box 1559, Theodore, Alabama 36590, USA
Fax: +1-251-653-1365

Email: sales@mackmfg.com

Telephone: +1-251-653-9999
Website: www.MackMfg.com

Maschinen und Mühlenbau Erhard Muhr GmbH



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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, Pneumatically Docking Devices and even Railcar Dumping Systems for economical unloading of trains with open railcars.

Mega Dome

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Quebec J0K 3L0
Canada
Contact:
T: + 1 450 756 1041
F: + 1 450 756 8389
E: info@harnois.com
W: www.megadomebuildings.com

Mentor Dynamics

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Maryland 21061
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Contact: Mr Don Watts
Job Title: President
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F: + 1 410 760 8284
E: don.watts@MentorDynamics.com
W: www.mentordynamics.com
Leading supplier of cargo hold liners for self unloaders, barges, and other bulk material storage & handling equipment.

Products include Dyna-Flo high performance plastic liners and ceramic wear liners.

Merrick Industries

10 Arthur Drive
Lynn Haven FL 32444
USA
Contact: Mr Tommy Lynch
Job Title: Applications Specialist
T: + 1 850 265 3611
F: + 1 850 265 9768
E: info@merrick-inc.com
W: www.merrick-inc.com
Merrick Industries is a leader in continuous weighing and feeding solutions, since 1908. Merrick designs, manufactures, and supports all of our products at our Lynn Haven, Florida plant for the Coal, Cement, Mining, Chemicals, Lime, Gypsum, Steel and Aggregates industries.

Metso Minerals Industries, Inc.

Bulk Materials Handling
4000 Town Center Boulevard
Suite 400
Canonsburg
PA
15317
USA
Contact: Mr Tom Lippencott
Job Title: VP, Mineral Process Solutions Sales, USA
T: + 1 412 269 5137
F: + 1 412 269 5212
E: Tom.Lippencott@metso.com
W: www.metso.com
Products include stacker/reclaimers; railcar dumpers/wagon tippers; grab, continuous and balance unloaders; bargeship loaders; barge and train positioning systems; mechanical ash handling systems; coal preparation equipment; apron feeders and overland conveyor systems.

Midwest Industrial Supply Inc

1101 3rd St. SE
Canton
Ohio 44707
USA
Contact: Ms Liz Campbell
Job Title: Marketing
T: + 1 330 456 3121
F: + 1 330 456 3247
E: liz.campbell@midwestind.com
W: www.midwestind.com
Provide a complete line of dust control, erosion control, soil stabilization lubricants, anti-icing and de-icing products that are developed by the company staff of chemists and backed by a complete range of services, equipment, expertise and technical support since 1975.

Midwest International Standard Products

105 Stover Road/ PO Box 438
Charlevoix MI 49720-0438
USA
Contact: Mr Walter Pair
Job Title: Director of Operations
T: + 1 231 547 4000
F: + 1 231 547 9453
E: sales@midwestinternational.com
W: www.midwestmagic.com
Founded in 1967, the company focuses on dust free loading and stockpiling of dry bulk with products including The Paragon Series and the Heavy Duty Mining Series. The Chokefeeder® dust free shiploading systems are used by governments and industries in over 50 countries.

Mitsui Miike Machinery Co., Ltd.

Nihonbashi-Muromachi 2-1-1
Chuo-ku,
Tokyo 103-0022

Japan
Contact: Mr Hachiro Naito
Job Title: General Manager,
Material Handling Machinery
T: + 81 3 3270 2001
F: + 81 3 3245 0203
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W: www.mitsumiike.co.jp

Moffatt & Nichol

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E: tbertola@moffattnichol.com
W: www.moffattnichol.com

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
In addition: Silo cleaning services and equipment. Silo, bin, bunker, transport and process vessel cleaning, clearing and unlogging services and equipment.

Monolithic Dome Institute

177 Dome Park Place
Italy
Texas 76651
USA
Contact: Mr David B South
Job Title: President
T: + 1 972 483 7425
E: sales@monolithic.com
W: www.monolithic.org/

Motherwell Automation

10 Sangiorgio Court
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Contact: Mr Chris Watson
Job Title: Marketing Manager
T: + 61 8 9212 4444
F: + 61 8 9212 4479
E: ctownsend@motherwell.net.au
W: www.motherwell.net.au

Motridal SpA

Via Pietro Bubba 17
Piacenza 29122
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Contact: Mr Giampietro Calvi
Job Title: Sales Manager
T: + 39 0523 59 66 11
F: + 39 0523 59 01 28
E: motridal@motridal.com
W: www.motridal.com
Specialist, with over 50 years experience, in heavy-duty, high-capacity machines, intended for operating under severe conditions in cement factory, steel works, power plant, aluminium smelter...
Product line includes screw, chain, belt and pipe conveyors, bucket elevators, stackers. Worldwide operation.

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 more than 40 years experience in producing all types of grabs. The company's product range includes mechanical grabs, radio-controlled, hydraulic and electro-hydraulic grabs. MRS has an excellent after-sales and repair service, provides spare parts from stock and supplies parts for a long period after delivery.

Natural Grabs

Toros Caddesi Felhi 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 Ann Hutchinson
T: + 1 832 467 3636
F: + 1 832 467 3800
E: ben@navco.us
W: www.navco.us

Negrini Srl



via E. Torricelli n.4
Castelfranco Emilia
Modena 41013
Italy
Contact: Mr Massimo Negrini
T: + 39 059 923110
F: + 39 059 920378
E: info@negrini.org
W: www.negrini.org
Engineers and producers of state-of-the-art grabs, clamshells and buckets.



Nemag BV



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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
Specialized in the sales, engineering and construction of rope operated grabs for large scale dry bulk handling. The company has a vast record of worldwide deliveries and is recognized as one of the leading grab manufacturers worldwide.
Other equipment: NEMAG Quick Release Links and Rope Pear Sockets.

NERAK GmbH Fördertechnik

Brigitta 5
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F: + 49 50 84 944 222
E: bleeker@nerak.de
W: www.nerak.com
NERAK Continuous Bucket Conveyors are designed for combined horizontal and vertical conveying. Each bucket is securely attached to adjacent buckets and located between two steel reinforced rubber block. The assembly with no moving parts is capable of high conveying rates.

Neuro Industrietechnik GmbH

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E: ha@neuro.de
W: www.neuro.com
NEURO designs and manufactures a wide range of pneumatic and mechanical ship/barge unloaders, ship/barge loaders and pneumatic conveyors, with high capacities and gentle handling of materials.

NILOS GmbH & Co KG

Reisholzstrasse 15
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40709
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T: + 49 2103 9510
F: + 49 2103 951 209
E: jens.hamacher@nilos.de
W: www.nilos.com
Conveyor belt equipment ranges from simple small tools to vulcanising presses up to the planning, construction and commissioning of complete conveyor belt repair workshops. Range of products include hot and cold repair material, along with basic overhauling, reconditioning, maintenance and assemblies.

NK Tehnologija SIA

120Z Dzēlavas Street
Rīga
LV-1021
Latvia
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T: + 371 67271092
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E: nkteh@nkteh.lv

W: www.nkteh.com/
Custom design and integrated solutions for dry bulk handling: shiploaders, dry bulk terminals, terminal efficiency analysis & development. Service & maintenance of crane equipment.

NKM Noell Special Cranes GmbH

Kruisweg 643
Hoofdorp
2132 NC
The Netherlands
Contact: Mr Gerard de Wild
T: + 31 20 655 0030
F: + 31 20 655 0040
E: gerard.dewild@nkmnoell.com
W: www.nkmnoell.com/
Company is specialized in special cranes. For the bulk industry the knowledge is concentrated on floating lemniscate cranes and terminals.

NM Heilig BV


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1704 SB
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T: + 31 72 571 6688
F: + 31 72 571 6020
E: info@heiligbv.com
W: www.heiligbv.com
Heilig Holding is a company group based in Europe specialized in manufacturing bulk handling and recycling systems.
- Custom design and engineering
- High quality manufacturing facilities
- Experienced Assembly and service staff
We are 35 years on the market, privately owned family company with over 250 employees.
Other Equipment: Mobile (on tracks) stackers, conveyors and feeders

NMH s.r.o

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Nordströms Konstruktionsbyrå

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Contact: Mr Peter Vedin
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T: + 46 90 1136 4500
F: + 46 90 1330 69
E: arletun@nordstroems.se
W: www.nordstroems.se

Nordstrong Equipment Ltd

5895 Ambler Drive
Mississauga
Ontario
L4W 5B7
Canada
Contact: Mr Bill Van Duijn
Job Title: Sales Manager
T: + 1 289 562 6402
F: + 1 289 562 6445
E: nmvanduijn@nordstrongequipment.com
W: www.nordstrongequipment.com
Product range: screw conveyors/feeders; belt conveyors/feeders; pipe conveyors; flexible wall conveyors; drag conveyors; apron conveyors/feeders; bucket elevators; idlers. Every endeavour will be made to provide clients with an efficient and honest assessment of their needs.

North American Crushing & Screening, LLC

322 Lafayette Street
New Orleans
Louisiana
LA 70130
USA
Contact: Mr Gilbert Wright
T: + 1 504 866 0014
F: + 1 504 866 0016
E: gwright@nacslc.com
W: www.nacslc.com
Contract processing services (crushing and screening) for all types of heavy bulk cargo. Also reconditions soft commodities offering solutions for distressed cargo. Processing and reconditioning equipment is designed for mobile operations and can be relocated to almost any site.

N-service ApS.

Mommarkvej 81
Sønderborg
DK-6400
Denmark
Contact: Mr Niels Jørgen Xlsen
T: + 45 53 28 32 90

NSL Engineering Pte Ltd

117 Dalhousie St
Haberfield
Sydney
NSW
2045
Australia
Contact: Mr Cameron Hay
Job Title: Sales & Marketing Manager
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W: www.ramspreaders.com/

o.z. HENNLICH ENGINEERING

HENNLICH s.r.o.
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412 01
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Contact: Mr Jan Petruzalek
Job Title: Sales Director
Sales Director
T: + 420 416 711 357
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E: engineering@hennlich.cz
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Offshore Bulk Terminal Pte Ltd

50, Collyer Quay
QUE Bayfront, #06-04
Singapore
049321
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Contact: Mr Stephen Suharya
Job Title: Director
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E: marketing@obt-group.com
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Orthos Projects Ltd.

Fernie Road
Market Harborough
Leicestershire
LE16 7PH
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F: + 44 1858 464403
E: Nick.Hall@orthosprojects.com
W: www.orthosprojects.com
Since 1977 Orthos Projects have designed, manufactured and installed bulk solids raw materials handling plant to the highest specification. Best qualified to serve the Port, Bulk Handling, Quarry, Foundry, Recycling and related industries. Special purpose machine design, conveyor systems to ISO 9001 (2008).

ORTS GmbH Maschinenfabrik



Schwartauer Strasse 99
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Germany
Contact: Herr Sigvard Orts
T: + 49 451 3988515
F: + 49 451 392374
E: soj@orts-gmbh.de
W: www.orts-grabs.de
We offer the whole range of grabs: electro-hydraulic, radio controlled diesel-hydraulic, mechanical rope (single-rope, two-rope and four-rope). For bulk, metal scrap, dredging, salvage.
Repairs (also grabs from other makers) and spare parts.
Crane-equipment for electro-hydraulic grabs.
Lifting beams (max. load 150t) and flat-frames.

Oxbow Energy Solutions BV

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3007 GB
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International Operations
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P.T. Mitra S.K. Analisa testama

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Jl. Raya Bekasi Km 21
Kawasan Industri
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13930
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PAGE MACRAE ENGINEERING

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Contact: Mr Bruce Ennis
Job Title: Cargo Handling
Equipment Manager
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E: bruce@page-macrae.co.nz
W: www.page-macrae.co.nz
With over 50 years of engineering experience, Page Macrae Engineering is regarded as Australasia's leading manufacturer of ship cargo handling equipment. The company's bulk handling expertise covers the complete concept, design, build and commission process. The company has 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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Parker Plant Ltd

Viaduct Works
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Leicestershire
LE4 6GH
UK
Contact: Mr Richard Fothergill
Job Title: Marketing Manager
T: + 44 116 266 5999
F: + 44 116 261 0812
E: sales@parkerplant.com
W: www.parkerplant.com
Manufactures a complete range of conveyor systems and components.

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 acknowledged throughout the world in the field of moving, controlling and loading dry bulk materials. Resources and responsibilities include customized gates and valves, mass flow feeders, dustless loading spouts, telescopic chutes, PEBCO® Cascade® chutes and truck, ship, railcar and barge loadouts.

Peinemann Cranes

Nieuwe Langeweg 40
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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
Other equipment: Container Spreader
Manufacturer and supplier of a wide range of grabs and other lifting equipment, e.g. motor grabs, single-, two- and four-rope grabs, scissor grabs, hydraulic grabs as well as rotators and special grabs for all kinds of bulk materials in a variety of industries, such as ports, ships, steel mills, waste-to-energy plants and recycling businesses.

Peterson Agricare & Bulk Logistics BV

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Rotterdam 3011 XZ
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Contact: Mr Arno Maehlmann
T: + 31 10 282 3333
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E: info@peterson.nl
W: www.peterson.nl

Pfister Waagen Bilanciai GmbH

Linker Kreuthweg 9
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Contact: Ms Susanne Geller-Dürr
Job Title: Marketing and Sales
Manager

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E: marketing@pisterwaagen.de
W: www.pisterwaagen.de
Founded in 1894 as a manufacturer of mechanical weighbridges. Suppliers of innovative, high quality, fully electronic weighing systems, incorporated in data networks, capturing and processing weighing data in cost-efficient control systems. Specialized in truck weighbridges, railway scales, weighing software.

PHB Weserhütte, S.A.

Parque Científico y Tecnológico de Gijón
C/Ada Byron, 220
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Spain
Contact: Dr Jose Ramón Prado
Job Title: Technical Commercial Director
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W: http://en.grupotsc.com/
Efficient port systems, handling all types of bulk solids such as coal, iron ore, bauxite, fertilizers, clinker, cement and general cargo, with different solutions for maritime or river ports.
Design of circular or longitudinal stockyards combining a wide range of reclaimers and different types of stackers.

PHOENIX Conveyor Belt Systems GmbH

Hannoversche Strasse 100
Hamburg 21079
Germany
Contact: Mr Danny Slonka
T: + 49 40 7667 03
F: + 49 40 7667 2413
E: info@phoenix-cbs.com
W: www.phoenix-conveyorbelts.com
With 110 years experience, the world leader for high performance heavy-duty conveyor belts, serving the worldwide bulk handling industry.
The programme includes textile and steel cord conveyor belts for underground and surface applications.

PINTSCH BUBENZER GmbH


Friedrichshüttenstraße 1
Kirchen-Wehbach
RLP
57548
Germany
Contact: Mr Arno Weill
Job Title: Director of Sales
T: + 49 27 41 9488480
F: + 49 27 41 9488484
E: arno.weill@pintschbubenzler.de
W: www.pintschbubenzler.de
PINTSCH BUBENZER is focused on the design, production and service of high quality braking systems for both static and dynamic applications which involve the precise control of small to very large amounts of kinetic energy. The challenge is to control that energy in the most efficient, cost-effective way.

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
Storage solutions for dry bulk commodities, including coal.

PIV Drives GmbH - a Brevini Power Transmission Co.

Justus-von-Liebig-Straße 3
Bad Homburg
D-61352
Germany
Contact: Mr Christoph Höhr
T: + 49 6172 102 450
F: + 49 6172 102 8807
E: Christoph.Hoehr@brevini.com
W: www.piv-drives.com or www.brevini.com
PIV Drives, a company of Brevini Power Transmission, has over 80 years experience in providing quality power transmission solutions for every industry sector. PIV Drives developed modular concepts for its comprehensive product range, providing the flexibility to deliver high-quality optimised solutions, both standard and bespoke, quickly and at competitive cost.

PLM Cranes B.V.

Sluisweg 21-25
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4794 SW
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Contact: Mr Pieter Puleman
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 | Pneumat Systems
T: + 1 507 345 4555
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
Tough, self-lubricating Ultra Poly Ultra High Molecular Weight polyethylene provides durable protection for metal surfaces and eliminates noise associated with metal-on-metal contact. And its slick, nonstick properties assure unimpeded flow of materials, even under wet, sticky or freezing conditions.

Portasilto Ltd

New Lane
Huntington
York YO3 9PR
UK
Contact: Mr Fin Farrelly
T: + 44 1904 624 872
F: + 44 1904 611 760
E: bulk@portasilto.co.uk
W: www.portasilto.co.uk
Designs, manufactures and installs bulk handling equipment for the storage and handling of powdered and granular materials. Equipment supplied includes silos, hoppers, mechanical conveyors, lean phase and dense phase pneumatic conveying systems. Full turn key solutions can be offered.

Port-Trade AS


Karelmagervej 9
Fredencia
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
Port-Trade is a Danish company with more than thirty years of experience with cargo handling systems, including mobile harbour cranes, container spreaders, bulk handling grabs, and loading equipment. Port-Trade provides analyses of customer requirements and proposes and delivers complete equipment solutions.

Powerscreen International

200 Coatisland Road
Dungannon
County Tyrone
BT71 4DR
Northern Ireland
Contact: Mrs Michelle Killen
Job Title: Marketing
T: + 44 288 77 18500
F: + 44 288 77 47231
E: sales@powerscreen.com
W: www.powerscreen.com
Manufacture a complete range of mobile screening equipment. This is made up of 30+ products sold across a range of dry screening, washing and recycling applications, from aggregate screening to sand extraction; from screening of construction and demolition waste to skip waste and compost.

Precia-Molen Nederland BV

Fransje 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@preciamol.nl
W: www.preciamol.nl
At the forefront of the industry, has provided weighing solutions for more than 147 years and established a worldwide reputation for quality and reliability. The large product range consists of weighbridges; bulk, belt, bagging, platform and aircraft weighing check-in scales; load cells, indicators, controllers and truck dumpers.

Primasonics International Limited

North Lakes Business Park
Flusco
Penrith
Cumbria
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E: sound@primasonics.com
W: www.primasonics.com; www.quattrosonics.com
Primasonics Audiosonic Acoustic Cleaners are air operated devices which produce high energy, low frequency sound waves and will significantly aid material flow and eliminate particulate build up wherever soot, dust, powders or granular materials are processed, generated, stored or transported.

Procon Engineering Limited

Vestry Estate
Offord 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
Continuous digital belt weighing and weigh feeding systems - capacities - 12,000 max tph, 9 m/s speed, 400-2400 belt widths.
Batch weighing, Loss in weight, and Level weighing.

PT Bukaka Teknik Utama

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F: + 62 21 823 2323
E: bdv@bukaka.com
W: www.bukaka.com

PT Carsurin

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Jakarta
DKI Jakarta
11410
Indonesia
Contact: Mr Hal Loevy
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E: coal.sales@carsurin.com
W: www.carsurin.com
Established in 1968, PT CARSURIN is the largest privately owned Inspection, Testing and Verification company in Indonesia, with a growing international presence. We provide independent third party services to mitigate risk for our clients across a broad range of industries including Coal. We are the only independent Indonesian member of the International Federation of Inspection Agencies and are the sole Lloyd's Agent in Indonesia.

PT CCIC Jakarta

Menara Citicon
Jl. Letjen S. Parman Kav. 72
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W: www.ccicsg.com

PT Geoservices

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E: jktbranch@geoservices.co.id
W: www.geoservices.co.id

PT Jakarta Prima Cranes

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PT MacGregor Indonesia

hanurata Graha 5th Floor
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10340
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Marine & Offshore
T: + 62 21 319 27746
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W: www.macgregor.com

PT Mitra Bahtera Segarasejati

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Kav 1-2 Kuningan
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12950
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W: www.mbss.co.id

PT Pamapersada Nusantara

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Jakarta
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F: + 62 21 460 1916
E: busdev@pamapersada.com
W: www.pamapersada.com

PT SpanSet Indonesia

Jl. Marunda Center Blok F No.20
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Tarumajaya
Bekasi
Jawa Barat
14350
Indonesia
Contact: Mr Mario Harben
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F: + 62 21 28510088
E: sales@spanset.co.id
W: www.spanset.co.id
PT SpanSet Indonesia as one of the authorized distributor for Bridon, Kiswire, Usha Martin and Verope is the member of Association of Wire Rope Fabricators (AWRF). We always provide the highest quality product and services in wire rope applications.

PT Thiess Contractors Indonesia

Ratu Prabu 2
Ratu Prabu 2
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12560
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Contact: Mr. Matahara
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E: thiess@thiess.co.id
W: www.thiess.co.id

PT. Anugrah Lautan Luas

Jl Raya pahlawan Seribu
Golden Boulevard 2 Blok O No. 5-6
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Serpong
15321
Indonesia
Contact: Mr Teddy Saoutra
Job Title: Operation Executive

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W: www.anugrahlautanluas.com/

PT. Bando Indonesia

Wisma Hayam Wuruk, 6th floor,
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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.

PT. Thermalindo Sarana Laboratoria

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Contact: Mr Eduard Sasmita
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E: edo@thermalindo.com
W: http://www.thermalindo.com/

Quadrant Engineering Plastics Products

2120 Fairmont Avenue
Reading
PA
19612
USA
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Job Title: Project Development Manager
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F: + 1 412 384 8910
E: ron.mesing@qplas.com
W: www.systemivar.com
Polymer liners for self-unloading ships, hoppers, chutes, bins, railcars, silos. SystemIVAR Engineering designs, fabricates and installs lining systems worldwide to promote bulk material flow, featuring industry-leading low coefficient of friction and abrasion-resistant TIVAR® family of products.

Quality Handling Systems Pty Ltd

6 Meters Place
Wetherill Park
Sydney
NSW
2164
Australia
Contact: Mr Peter Taylor
Job Title: Project Manager
T: + 61 2 9756 1921
F: + 61 2 9756 4212
E: ptaylor@qhs.com.au
W: www.qhs.com.au
Specialists in the design and supply of mechanical sampling systems for bulk materials. The company can also assist in the design and specification of new sampling systems and review existing systems to improve their reliability and accuracy.

Qube Ports & Bulk

Level 22
44 Market Street
Sydney
NSW
2000
Australia
Contact: Mr Paul White
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W: www.qube.com.au/ports-and-bulk

R & S Sr.L.

Via del Cmapo Sportivo 40
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48123
Italy
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T: + 39 0535 61 81 11
F: + 39 0544411 099
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W: www.ronuzzi.com
Designs and builds green hoppers, belt conveyors and transhipment plant for coal, cereals, mineral.

RAM SMAG Lifting Technologies

6 Selby Place
Stanley
Skelmersdale
Lancashire
WN8 8EF
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T: + 44 1695 556355
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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

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Pampanga
061
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Rapat Corporation

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W: http://www.rapat.com/

Rapidpack Corporation

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Jameirah Lakes Towers
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E: peter@rapidpack.ca
W: www.rapidpack.ca

RBL-REI France

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France
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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 and shiploaders up to 3,000 tph.

RC Inspection B.V



Gustoweg 66
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NL 3029
The Netherlands
Contact: Mr Kees
Maarschalkeweerd
T: + 31 10 4250245
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W: www.rc-inspection.com/
RC inspection is an independent inspection company for quality and quantity control in the market of Solid Fuels, Metals-Minerals, Scrap and Marine Surveys with offices all over the globe.

RDS Technology

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Stroud
Gloucestershire GL6 9BH
UK
Contact: Mr Mark Evans
Job Title: Business Development Manager
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F: + 44 1453 733311
W: www.rdstec.com
RDS Technology (Topcon Positioning Group) was formed in 1969 and specialises in the design and manufacture of on-board weighing scales for loaders (LOADMASTER 100, LOADMASTER 50), excavators (LOADEX 100) and rigid dump trucks (WEIGHLOG 10).

Redaelli Tecna S.p.A.

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REEL Alesa Ltd

Max Hogger-Strasse 6
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Contact: Mr Marcel Polidori
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E: marcel.polidori@reel-alesa.com
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REMA TIP TOP AG

Gruber Straße 65
Pöing
Bavaria D-85586
Germany
Contact: Mr Lorenz Appel
T: + 49 8121 707 234
F: + 49 8121 707 222
E: info@tip-top.de
W: www.rema-tip-top.com
Materials developed and manufactured by REMA TIP TOP are installed and maintained by its service facilities around the world. It provides a full range of conveyor belt repair and splicing products, corrosion and wear protection products, modern vulcanising materials/methods and full laboratory testing and technical assistance.

RHC Deutschland GmbH

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W: http://rcheavymachinery.com/

RHC can provide a competitive package of different kinds of Material Handling Systems.

RHC Heavy Machinery Ltd

China Office Shanghai
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Man Ma You Road
Pudong
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Contact: Mr Rolf Hofmann
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E: info@rcheavymachinery.com
W: http://rcheavymachinery.com/
RHC can provide a wide range of Coal Handling Equipment according international Standards and Components. Due to European Engineering and strict Quality Control we can provide a very competitive product to our clients. We would like to be at your service.

Richwood Industries, Inc.

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Huntington
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Risun Technologies

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River Consulting

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W: www.riverconsulting.com
River Consulting delivers turn-key solutions for global coal industry clients. With four offices and more than 30 years of experience, we provide proven experience including blending, conveying, silo and stacking tubes, receiving/loading systems, automation and controls, and marine structures.

Roberts & Schaefer Company

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Contact: Mr Ike Miller
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RockTree Logistics Pte. Ltd.

3 Church Street
#24-01/02
Samsung Hub
Singapore
049483
Singapore
Contact: Mr Daniele Pratalongo
T: + 65 6622 65 10
F: + 65 6622 65 11
E: info@rocktree.sg
W: www.rocktree.sg
RockTree Logistics Pte. Ltd. Designs customised logistics that manage the complete transshipment aspect of your supply chain for all dry bulk commodities. Our goal is to get your dry bulk moving on schedule, saving you time and money in the process.

Ronin GMS

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Johannesburg
Gauteng
1645
South Africa
Contact: Mr Ferdinand Meyer
Job Title: Sales and Marketing Executive, Ronin Group
T: + 27 11 608 3666
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E: ferd@roningms.com
W: www.roningms.com
Ronin GMS provide bulk inventory management systems and moment in time audits for balancing real-time stock positions to stock positions on book. Our systems can be used in Silo's, warehouses and open air stock yards. Enrolling business partners worldwide.

Royal Haskoning DHV

George Hintzenweg 85
Rotterdam
3068 AX
The Netherlands
Contact: Ms Berte Simons
Job Title: Director Advisory Group
T: + 31 10 2865 398
F: + 31 10 443 3688
E: info@rotterdam.royalhaskoning.com
W: www.royalhaskoning.com
Studies on marketing/distribution/feasibility/management handling/storage/ environmental impact. Design, procurement, tender evaluation, contract aware, on-site supervision. Has carried out projects in over 70 countries.

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 relocatable flat storage buildings. Structures are made from a frame consisting of hot dip galvanised steel and PVC impregnated polyester outer membrane. Structures can be supplied worldwide complete turnkey solutions to any bulk storage problem can be offered.

RULMECA HOLDING S.P.A.



Via A Toscanini 1
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E: rulmecca@rulmecca.it
W: www.rulmecca.com
Specialises in the production of rollers, motorized pulleys and components. Rulmecca Group means: wide distribution networks; close relationships with customers

and complete service; manufacturing flexibility; continuously expanding and evolving product range; constant improvement in technical, design and sales service; global market reach and a network of skilled agents.

SABS - Mining & Minerals

PO Box 413
Richards Bay
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3900
South Africa
Contact: Ms Audrey Ndlovu
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F: + 27 35 797 7122
E: ndlovua@sabs.co.za
W: @blurb:Provides a holistic range of sampling, analytical and product certification services to the solid-fuel and mineral industries. In addition to its core values of Accredited Quality (ISO 17025), integrity, accuracy and speed, also offered is a very competitive pricing structure resulting in product samples for analysis being received from around the world.

Sammi

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Nami Scalco
Terni
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Contact: Mr Daniele Bellezza
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T: + 39 0744 733832
F: + 39 335 5313331
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W: www.sammi.it
In addition: Lime kilns equipment, Ceramic casting equipment
Sammi is a leading company in design, supply and installation of industrial plant, able to resolve customer's needs with a wide range of application, such as:
- Complete industrial plants
- Bulk handling equipment
- Off-shore conveyor systems
- Lime kilns
- Machine for the ceramic sector
In January 2012, acquired majority shareholder of PLANIA Ingegneria (Architectonic Engineering Planning); a company of professional civil, industrial engineers and architects, completing the competences already present at Sammi.

Sampling Associates International

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SAMSON Materials Handling (AUMUND Group)



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Planning, consulting, engineering, manufacture and supply of mobile bulk materials handling equipment for surface installation such as SAMSON Material Feeders, Shiploading systems, Boom Feeders, Stormajor® Radial Boom Stackers and Eco Hoppers for dust controlled vessel unloading.

Sandvik Mining & Construction

Materials Handling GmbH & Co KG
Vordemberger Strasse 12
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A-8700
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E: ivan.jovanovic@sandvik.com
W: http://www.home.sandvik/en/
Sandvik has the long term experience to design and install virtually any kind of bulk materials handling system. From continuous opencast mining systems to integrated stacking and reclaiming systems for mines, terminals, power plants and port facilities, we offer total solutions and turnkey installations and services.
Other equipment: Continuous Mining Equipment e.g. bucket wheel excavators, belt wagons, spreaders, transport crawlers, fully-, semi-mobile and stationary crushing plants, mine- and overland conveyors.

Sandvik Mining and Construction (China) Co., Ltd.

No.986, Baota Rd
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201821
China
Contact: Mr Zhang Jianyuan
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W: www.sandvik.com
Continuous open pit mining systems, including bucket wheel excavators, belt wagons, spreaders, transport Crawlers.

Scantech International

PO Box 1485
Springwood
Queensland
4127
Australia
Contact: Mr Henry Kurth
T: + 61 7 3710 8406
F: + 61 7 3710 8499
E: sales@scantech.com.au
W: www.scantech.com.au
World leader in process control solutions for conveyed bulk materials. On-belt analysers with proven technologies. Reliable, accurate and dependable ash, moisture and elemental measurement minute by minute. Control quality through blending or monitor specification compliance. Over 1,000 installations.

SCHADE Lagertechnik (AUMUND Group)



Bruchstraße 1
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Contact: Mr Karl-Heinz Fiegenbaum
Job Title: Managing Director
T: + 49 209 50 31 60
F: + 49 209 50 31 62 88
E: sales@schade-lagertechnik.com
W: www.schade-lagertechnik.com
Planning, consulting, engineering, manufacture and supply of Stockyards and

Blending Beds of circular and longitudinal shape with Stackers and Tripper cars, Bridge-type Scraper Reclaimers, Portal and Semi-portal Scraper Reclaimers, Portal Scraper Reclaimers as well as Wagon Unloading Systems.
Services also include field assembly, site supervision, commissioning, after sales service, refurbishment and upgrading of existing equipment.

Schenck Process UK Limited

Carolina Court
Lakeside
Doncaster
South Yorkshire
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Contact: Mr Richard Sims
Job Title: Director of Heavy Sales International
T: + 44 1302 321 313
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E: enquiries@schcnkprocess.co.uk
W: www.schenckprocess.co.uk
Schenck Process is an expert in the weighing, conveying and handling of coal. Using a range of equipment including train loading and unloading systems, mechanical conveyors and weighing technologies the movement of the material can be accurately monitored and recorded.

Scorpio Engineering Pvt. Ltd

Scorpio House
132 Wheeler Road
Cox Town
Bangalore
560 005
India
Contact: Mr Jacob P.
Job Title: VP - Marketing & Application
T: + 91 99801 625 39
F: + 91 80 2548119
E: jacob@scorpioengg.com
W: www.scorpioengg.com
In addition: fly ash conveying, liner container filling & discharging equipment. The company is a 25-year-old manufacturing organisation in the areas listed and the capacities of the equipment are custom specified and built. The average range is from 100 tph to 1000 tph.

Sea Transport Corporation

PO Box 1043
Southport
QLD
4215
Australia
Contact: Mr Ross Ballantyne
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W: www.seatransport.com
Sea Transport Corporation group of companies own, operate and construct commercial vessels. We offer specialist marine design and consulting services with extensive commercial experience through our team of Naval Architects, Consultants, Surveyors and Project Managers.

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: sts@seabulk.com
W: www.seabulk.com
Involved in 'design and build' projects in the marine bulk transportation industry. Ports, self unloaders and transhipper

developed by Seabulk have improved bulk transportation logistics significantly.

Selpeco Resources Inc.

14150 NE 20th Street
F1, PMB342
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W: www.selpeco.com
Selpeco is a project, program and construction management company for all types of bulk material handling projects. The company has particular skill at development of material handling terminals, cost analysis, project plans and creating teams of companies to design and build turnkey material handling facilities.

Sempertrans France Belting Technology SAS

Sempertrans Marketing
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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
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Contact: Mr Bernhard Kraus
T: + 49 9421 540143
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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.

Sensor Technology Ltd

Apollo Park
Ironstone Lane
Wroxton
Banbury
Oxon
OX15 6AY
UK
Contact: Mr Mark Ingham
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E: info@sensors.co.uk
W: www.sensors.co.uk
Manufacturers of TORQSENSE and LOADSENSE Sensors and Transducers. The TorqSense and LoadSense range of sensors offer accurate, affordable, market leading products across the whole range of industrial applications.

SERAM GROUP

817 Boulevard Marius Berliet
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W: www.seramgroup.com
Company has specialized in cargo handling since 1973. Its premium product is the hydraulic equilibrium crane, for which we had the exclusive patent.

SESCOTRANS (SAE)

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Job Title: VP & CEO
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SESCOTRANS has 50 years of experience in integrated logistics solutions for your business - serving main Egyptian main 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

P O Box 3023
Bruchsal
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T: + 49 7251 75 0
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E: sew@sew-eurodrive.de
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.

SGS (Nederland) BV

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SGS Australia Pty Ltd

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SGS is the world's leading inspection, verification, testing and certification company. SGS also designs and supplies mechanical sampling systems for a wide range of bulk materials. SGS has more than 30 years experience in this field with equipment in operation throughout the world.

SGS Minerals Services

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The SGS Group is the global leader and innovator in verification, inspection, testing and certification services.

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SGS Minerals Services

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W: www.sgs.com/coal
Knowing your coal quality and representatively sampling are essential to eliminate penalties and maximize profits. SGS' technical expertise provides unrivalled experience and value throughout the coal value chain to eliminate operation risk.

Shanghai Global Machinery Co., Ltd (SGMC)

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Shanghai Guan Hai Engineering Co.,Ltd

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Shanghai Janus Grab Co., Ltd.

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Shanghai Qifan Co., Ltd.

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Shanghai Yo-Pi Port Machinery Co. LTD

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Shanghai Zhenhua Port Machinery Co (ZPMC) Ltd

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World-famous manufacturer of cranes and large steel structures. Products include quayside container cranes, gantry cranes, shiploader/unloaders, bucketwheel stackers and reclaimers, portal and floating cranes, engineering vessels and big steel bridge structures etc.

Shanthy International

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Our manufacturing range of Four Rope Mechanical Grabs, Orange Peel Grabs, Radio Remote Control Grabs includes the capacity from 6.0CBM to 52.0CBM and is suitable to handle many types of bulk materials. Please visit our website
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SIBRE - Siegerland Bremsen GmbH

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SIBRE-Siegerland Bremsen manufactures industrial brakes (drum-, disc-, caliper- and storm brakes) and drive components (e.g. drum couplings) and offer an optimum combination of innovative high quality products, easy usage and minimized life-cycle costs, by employing latest manufacturing and quality assurance technologies.

SIDERAR / TERNIUM

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Engineering Manufacturer Steel Plants, group of companies.

Siebtechnik GmbH

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Wormscreen, pusher-type and vibratory centrifuges, centrifuges for granular products; decanters for continuous separation of solids from liquids; laboratory centrifugal, size-reduction machines, especially vibratory mills for grinding to ultimate fineness, machines and plants for taking and preparing samples. Horizontal, elliptical and circular motion screening machines, jigs.

Siemens AG

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Simplicity Projects Pvt Ltd

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Siwertell AB

Siwertell

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For dry bulk handling, Cartotec offers high-capacity, efficient and environment-friendly systems under their brand name Siwertell. Products include ship loaders, ship unloaders, bulk terminal systems, horizontal and vertical screw conveyors and storage systems. Deliveries are uniquely tailor-made to suit each customer's specific requirements.

SMB International GmbH



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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
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Exporting worldwide - experts in the design, manufacture and service of conveyor belts, screening media and conveyor spillage control & dust encapsulation systems for bulk materials handling. Industries served range from quarrying, mining and cement plants to ports, steelworks and power stations.

SMM-UM Sociedade de Montagens Metalomecnicas SA

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Solitec Engineering Ltd

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Design and manufacture bulk materials handling equipment to food, pharmaceutical, cement, petrochemical and other industries. Product range, typically, consists of screw conveyors, bucket elevators, mixers (various), IBC systems and silo discharge aids. Part of the ROTOLOK Group of companies.

Sotecma inc

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Tranchemontagne
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E: info@sotecma.com
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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.

Specialised Handling & Eng (Pty) Ltd

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Contact: Mr Derek Albertson
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W: @blurb:Custom designs bulk materials handling stacking and reclaiming machinery and systems. Specialist suppliers of rail wagon tipplers and positioners. Patented circular stockpiling system stacks and reclaim multiple grades of materials.

STAG AG

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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.

Stewart Inspection and Analysis (Pty) Ltd

PO Box 267



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STM srl

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STM is specialized in the engineering and supply of belt cover systems for bulk materials handling facilities. Since 1975 we provide worldwide innovative integrated solutions in order to increase efficiency, reliability and cost savings for the customers' production processes.

Stock Equipment Company

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Other equipment: High capacity hopper and belt feeder reclaim. Stock Equipment and the Schenck Process Group are global specialists in the weighing, screening, feeding and conveying of bulk materials. Systems include railcar unloading, stockpile stackers, plant transfer and high capacity volumetric and gravimetric material reclaiming and feeding systems

Stokman BV

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Strudes Inc

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Strudes Inc. is an engineering consulting company, founded in Montreal in 1984. We specialize in design for heavy industry. We provide full range of engineering services including preliminary and final design, contract evaluation and administration, environmental studies, schedule development, etc.

STUDIO TECNICO MALNATI SAS

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Our company represents several industrial manufacturers. We develop basic engineering for solid material handling systems. Our team is focused on selecting machineries and designing plants for:
- crushing - screening
- handling systems
- rollers and rubber belt
- e-motors and inverters
- process automation
Other Equipment: Telescopic Cascade Chutes

Sucofindo

Laboratory Strategic Business Unit
Graha Sucofindo 6th Floor
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Sumitomo Heavy Industries Material Handling Systems Co., Ltd.

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SES has produced a very wide range of materials handling equipment for many years and perseveres in its efforts to improve the efficiency of their leading continuous ship unloading range of machines.

Superior Industries, Inc.

315 East State Highway 28
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Superior Industries is the only North American based company to manufacture a complete line of conveying equipment like telescoping radial stackers, mobile shiploaders, truck unloaders and fixed conveyor systems; plus conveyor related components like idlers, pulleys, scrapers and other accessories.

Swire CTM Bulk Logistics

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7 Rue du Gabian
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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.

Synergy Engineering Ltd

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TAIM WESER, S.A.

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TAIM WESER is a world leading company within the fields of bulk materials handling, lifting equipment, waste treatment plants and renewable energy, with more than 100 years of experience and committed to innovation and technology.

TAKRAF GmbH



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With more than a century of experience and tradition in the field of open cast mining, bulk materials handling, and port facilities, the company is proud of its worldwide standing. Services offered: planning, design, fabrication, erection and after sales service of machines, systems and complete plants.

Tank Connection

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TBS Shipping Services

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techNaero aps

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Other equipment: Silo systems

Telestack Limited



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terminals, Mines, Quarries, Steel Mills, Cement Plants and Powerstation industries globally. The mobile range of equipment offers unrivalled flexibility for the operator, reducing costs in Cap-Ex Investment compared to fixed installations, fuel and labour. Equipment includes; mobile shiploaders/unloaders, mobile stackers, mobile truck unloaders, mobile reclaim hoppers, mobile rail wagon loaders/unloaders and mobile link conveyors. We have supplied and support some of the world largest blue chip companies.

Tema BV

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Coal centrifuges for coarse and fine coal; Sample taking, sample preparation, complete sampling plants and laboratory equipment; Linear- and circular-motion screening machines.

TEMA Systems Inc.

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Ohio
45249
USA
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T: + 1 513 489 7811
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E: sales@tema.net
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Other equipment: Centrifuges/dryers. Manufacture and supply cross-belt sampling systems (up to 3M wide primary cutter) in accordance with ISO standards, screening machines and centrifuges for the coal and other mineral industries. Please visit our web page for additional information.

TENOVA S.p.A - Tenova Takraf Italy

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Tenova TAKRAF Africa

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

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Terex Port Solutions (TPS) supplies customers in ports with a unique combination of machines, software and services under the Terex and Terex Gottwald brands. TPS provides various types of harbour cranes and integrated systems for rapid, safe, efficient handling of all kind of bulk materials.

Teufelberger Seil Ges.m.b.H

Teufelberger
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TEUFELBERGER is a globally successful enterprise specialized in manufacturing high performance wire ropes for various crane applications such as bulk handling for more than 225 years. TEUFELBERGER operates six manufacturing sites worldwide and possess a close-knit network of distribution partners worldwide.

The ACT Group

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Fontana
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USA
Contact: Mr Edward Sunseri
T: + 1 909 350 4703
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Bulk material handling; includes supply and design of conveyor, hoppers, screens, crushers. Dust control includes dust collection and dust suppression utilizing air, water and chemicals. Engineering services and complete service and installation capabilities are also offered.

The China Navigation Co. Pte. Ltd

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The Grab Specialist b.v.

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F: + 31 365 49 99 22
E: info@tgs-grabs.nl
W: www.tgs-grabs.nl
We supply all types of bulk handling grabs like clamshells in single line/remote control/electro-hydraulic/2-line and 4-line. Grabs can be

supplied in standard design or to clients specification. We stand for good advice, quality, short delivery times and good service.

The Raring Corporation

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Thermo Fisher Scientific

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Thermo Scientific branded products are a specialty line of industrial in-motion weighing, inspection, monitoring and control equipment. These products, formerly branded as Ramsey, are used for process control, production monitoring and automation in the coal and minerals mining, cement, construction and aggregates industries, among others.

THIELE GmbH & Co KG

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T: + 49 2371 947 399
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ThyssenKrupp Canada

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T: + 1 403 209 4431
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E: infocanada@thyssenkrupp.com
W: www.krupp.ca
Involved for many years in the design and supply of turnkey, environmentally sensitive mining and material handling projects. Product range: conveying systems; crushing systems; stackers; ship loaders and ship unloaders; storage and reclamation design and supply.

ThyssenKrupp Industrial Solutions AG



Bus. Unit Resource Tech./Mining-
Materials Handling
Ernst-Heckel-Strasse 1
St Ingbert-Rohrbach
Saarland D-66386
Germany
Contact:
T: + 49 6894 599 0
F: + 49 6894 599 468
E: Info-mh@thyssenkrupp.com
W: www.thyssenkrupp-industrial-solutions.com
Beside individual items listed, the company designs and supplies complete material handling plants turnkey to thermal power plants, the fertilizer industry (for handling of urea, phosphates etc), the cement and mining industry as well as complete port handling

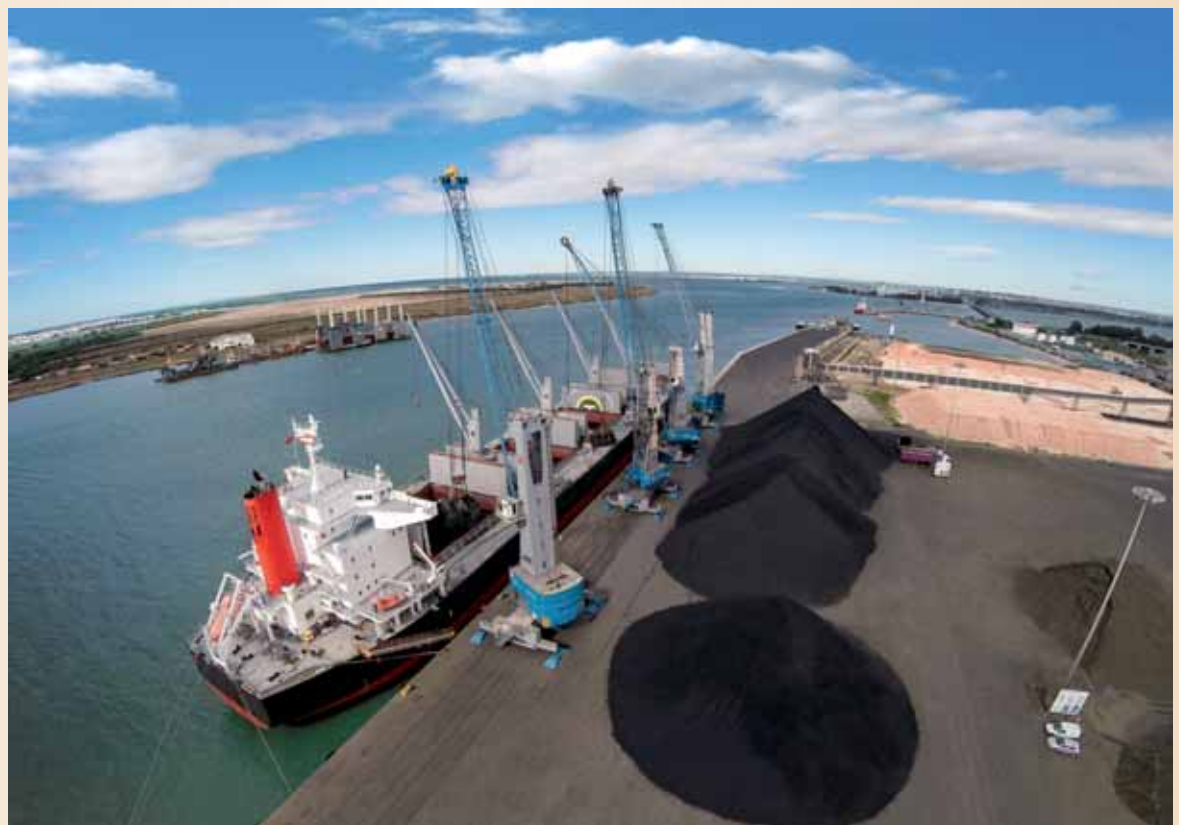
solutions.

ThyssenKrupp Industrial Solutions South Africa - Resource Technologies

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Johannesburg
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South Africa
Contact: Mr Ralf Hesemann
Job Title: Managing Director
T: + 27 11 236 1000
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E: info.tkrft@thyssenkrupp.com
W: www.thyssenkrupp-materialshandling.co.za and/or www.thyssenkrupp-industrial-solutions.co.za
We offer a comprehensive product portfolio and a close-knit sales and service network for our customers in the sectors of mining, cement, mineral processing and bulk materials handling. Our customers benefit from our decades of experience and our unique know-how in the fields of research and development, engineering, project management and after-sales service.

ThyssenKrupp Robins, Inc.

7730 E. Bellevue Ave
Suite #404
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Colorado
80111-5820
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Contact: Mr Bill Halley
Job Title: Mechanical Engineer
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Design and supply turnkey, environmentally sensitive mining and material handling projects. Product range includes: conveying systems; crushing systems; stackers; ship loaders and ship unloaders; storage and reclamation design and supply.



TME BV

Hoekerweg 2
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8000 AD
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E: i.tollenaar@tme.nl
W: http://www.tme.nl/

TMEIC

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Virginia
24018
USA
Contact: Mr Don Samsa
Job Title: Marketing
T: + 1 540 283 2000
F: + 1 540 283 2001
E: don.samsa@tmeic-ge.com
W: www.tmeic.com

TMSA Tecnologia em Movimentação S/A


Avenida Bernardino Silveira
Pastoriza, 710
Bairro Sarandi
Porto Alegre
RS
91160-310
Brazil
Contact: Mr Mathias Elter
Job Title: CEO
T: + 55 51 2131 3318
F: + 55 51 2131 3330
E: mathias.elter@tmsa.ind.br
W: www.tmsa.ind.br
Design, manufacturing, assembling and representation of mechanic, pneumatic and electrohydraulic equipments for handling and processing solid bulk materials (ore, cereals, sugar, flour, etc.), for port terminals or industries and agricultural facilities.

Tramco, Inc

1020 East 19th Street
Wichita
KS
67214
USA
Contact: Mr Ben Cott
Job Title: Sales Product Manager
T: + 1 316 264 4604
F: + 1 316 264 7965
E: sales@tramcoinc.com
W: www.tramcoinc.com
Manufactures enclosed belt, drag chain and bucket elevators for industrial markets. The JetBelt conveyor is a belt supported by a cushion of air between the belt and the pan and offers an entirely new level of operating efficiency for dry bulk handling of coal.

Trans Elektro

Spuiweg 8a
Waalwijk
N-Br
5145NE
The Netherlands
Contact: Mr Ronald van Egeraat
Job Title: Business Development
T: + 31 416 34 00 16
F: + 31 416 56 07 90
E: egeraat@transelektro.nl
W: www.transelektro.com
BMAir systems provide Clean Cabin Air for all brands of mobile plant. The usage of a BMAir systems means complying to HSE and taking care of plant operatives' health. The wide range of products starts from step-in models up to advanced systems.

Trans-Global Solutions, Inc

11811 East Freeway
Suite 630
Houston
Texas
TX 77029
USA
Contact: Mr Dan Orsini

T: + 1 713 453 0341
F: + 1 713 453 2756
E: dorsini@tsgsgroup.com
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Trans-Global Solutions, Inc.

5255 N Twin City Hwy
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TX
77627
USA
Contact: Mr William Scott
Job Title: Vice President
T: + 1 409 727 4801
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W: www.tsgsgroup.com

Transship LTD

Marazievskaya Str, 8
Odessa
65014
Ukraine
Contact: Mr Eugene Mashtakov
T: + 380 482 33 33 32
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E: e.mashtakov@transship.ua
W: www.transship.com.ua

TRF Limited (TaTa)

11 Station Road
Burma Mines
Jamshedpur
Jharkhand 831 007
India
Contact: Mr D.C. Jha
Job Title: Sr. Divisional Manager (Marketing)
T: + 91 657 2345728
F: + 91 657 2271 075
E: dcjha@sr.trftrfd.com
W: www.trftrfd.com / www.tata.com/trf
Other equipment: Port crane, Special duty crane, SDL, Steep Inclined Conveyor. A TaTa Group of company producing service to all sectors in bulk material handling & processing system on epc basis.

Triodetic

10 Didak Drive
Amnpor
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
Geodesic Domes and longitudinal covers for dust control and to protect against material loss. New or existing stockpiles where dust issues are a problem. Triodetic Domes can be installed over operation Stockpile without downtime.

Triple Point Technology

PO Box 495
Newcastle
NSW
2300
Australia
Contact: Mr Steve Maxwell
Job Title: G/Vice President, Mining, APAC Sales
T: + 61 2 4908 2222
F: + 61 2 4968 2043
E: info@tpt.com
W: www.tpt.com
Triple Point Technology@ is the leading global provider of Commodity Management software. Triple Point's Commodity XL Metals and Mining solution reduces operational, logistical, marketing and commercial costs by managing the tonnage, quality and value of coal and mineral supply chains.

Tsubaki Kabelschlepp GmbH

Daimlerstr. 2
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D-57482
Germany
Contact: Mr Frank Springer
T: + 49 2762 4003 0
F: + 49 2762 4003 220
E: info@kabelschlepp.de
W: www.kabelschlepp.de
Founded in 1954, KABELSCHLEPP is known today as one of the world leaders where cable carriers, guideway protection and conveyor systems are concerned. Products are today being used by numerous well-known machine builders in Germany and abroad.

Tsubakimoto Bulk Systems Corporation

4-1
Terauchi 2-Chome
Toyonaka
Osaka
561-0872
Japan
Contact: Mr Y Horii
Job Title: Overseas Business Dept.
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 (Transportation Technology Systems) LLC

60F Darziema Street
Riga
LV-1073
Latvia
Contact: Mr Alex Menschikov
Job Title: Sales Europe
T: + 371 6713 8267
F: + 371 6713 8365
E: alex.menschikov@tts.lv
W: www.tts.lv
TTS is a production company with more than 20 years of experience in manufacturing of non-standard material handling systems and large-scale steel structures. Company is able to complete the most complex technological tasks that meet the highest international standards.

TTS HuaHai Ships Equipment

18th Floor
3255 Zhou Jia Zui Road
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200093
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Contact: Mr Lian Zhou Yang
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F: + 86 21 6539 7400
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TTS Marine AS

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F: + 47 55 94 74 01
E: info@tts-marine.no
W: www.ttsgroup.com
TTS is a global company that develops and supplies equipment for the maritime and offshore industry, organised in five divisions: Marine Cranes, Drilling Equipment, Dry Cargo Handling, Deck Machinery and Port & Material Handling. TTS has 25 operational units in 12 countries.

Ulrich Brehme GmbH

Otto-Hahn-Str. 1
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37197

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Contact: Mr Bodo Altgeld-Wichmann
Job Title: Marketing Manager
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F: + 49 5584 94210 99
E: info@brehme-ubo.com
W: www.brehme-ubo.com

V D D B (Pty) Ltd

PO Box 16985
Lyttelton
Gauteng
0140
South Africa
Contact: Mr Leonard van der Dussen
T: + 27 12 664 2300
F: + 27 12 644 2902
E: admin@vddb.co.za
W: www.vddb.co.za
Manufactures air-supported belt conveyors. Low-pressure air is blown in, replacing roller-riders on the carrying side. The aeroconveyor is a bulks solid conveyor and is suitable for a wide range of products. It can be totally enclosed protecting the product from the environment and vice versa.

Veenstra Machinefabriek B.V.

De Holwert 10
KC Coevorden
7741
The Netherlands
Contact: Mr Paul Kuiper
T: + 49 7134 52 232
F: + 49 7134 52 222
E: juergen.schiemer@vollert.de
W: www.vollert.com
Other equipment: Shunting Systems. Vollert shunting systems are the ideal solution for rail-bound in-plant loading and shunting operations handling all kinds of materials (bulk cargo, liquids etc) - ranging from stationary shunting systems to free-moving shunting robots with diesel or electric drive.

Ventyx

193 Turbot Street
Brisbane
Queensland
4000
Australia
Contact: Mr Greg Clark
Job Title: CEO
T: + 61 7 3303 3333
F: + 61 7 3303 3232
E: info@mincom.com
W: www.ventyx.com

Verachtert Nederland B.V.

De Bloemendaal 8
Hertogenbosch
North Brabant
5221EC
The Netherlands
Contact: Mr Robbert Boersma
Job Title: Sales Manager
T: + 31 73 640 41 11
F: + 31 73 641 97 40
E: info@veraned.nl
W: www.veraned.nl/en
Verachtert has developed itself in 60 years into the market leader of Work Tools for all types of excavators and wheel loaders, and offers solutions for the specific wishes of the customer. Verachtert products represent quality and productivity. Other equipment: Coal handling buckets & funnel buckets

Verstegen Grijpers BV


PO Box 1014
Nieuwegein
3430 BA
The Netherlands
Contact: Mr Eric Visser
Job Title: Managing Director
T: + 31 3060 62222
F: + 31 3060 60657
E: info@verstegen.net
W: www.verstegen.net
A leading manufacturer, specialising in developing, designing and constructing all kinds and types of grab units. Its product range includes single/two four rope grabs and hydraulic grabs.

Vibrafloor

Za 27 Rue de la Tuilerie
Dracyle-Fort
71640
France
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
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Vollert Anlagenbau GmbH

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74189
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F: + 49 7134 52 222
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W: www.vollert.com
Other equipment: Shunting Systems. Vollert shunting systems are the ideal solution for rail-bound in-plant loading and shunting operations handling all kinds of materials (bulk cargo, liquids etc) - ranging from stationary shunting systems to free-moving shunting robots with diesel or electric drive.

Vossloh Kiepe GmbH

Kiepe-Platz 1
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D-40599
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Contact: Mr Rainer Luehring
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F: + 49 211 7497 1265
E: r.luehring@kiepe-elektrik.com
W: www.kiepe-elektrik.com
Vossloh Kiepe is a leading supplier of pull wire switches, belt drift switches and speed monitoring devices for the control of belt conveyor systems. The trade mark KIEPE is worldwide a synonym for proven products of highest quality.

VSR Industrietechnik GmbH

Am Alten Schacht 6
Duisburg
D-47198
Germany
Contact: Mr Wolfgang Schlabach
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F: + 49 20 66 99 66 62
E: info@vsr-industrietechnik.de
W: www.vsr-industrietechnik.de
Products have been proving themselves in the bulk handling business for more than 39 years. Due to the specially designed and patented products, they have achieved a name for their high effectiveness and dependability.

WeatherSolve Structures

3127 248th St
Langley
British Columbia
V4W 1X7
Canada
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W: www.weathersolve.com

Wellasiana Technology Co, Ltd

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Keelung City
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Taiwan
Contact: Mrs Janet Shentu
Job Title: Managing Director
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F: + 886 2 2649 3182

Wirtech AG

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W: www.wirtech.ch

Wolf Point Engineers & Contractors

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Suite 4000
Chicago
IL 60602
USA
Contact: Mr Robert Williams
Job Title: Vice President of Sales and Marketing
T: + 1 312 508 5555
E: bob.williams@wpengrs.com
W: www.wolfpointengineers.com/
Wolf Point Engineers & Contractors is a leading EPC Firm specializing in the implementation of Bulk Material Handling Systems for numerous industries including but not limited to the Power Mining, Pulp and Paper Industries.

Worley Parsons Canada (Westmar)

400-233 West First Street
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BC V7M 1B3
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Contact: Mr Stanley Cowdell
Job Title: President
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F: + 1 604 985 2581
E: info@westmar.com
W: www.westmar.com

Wuvio Chemicals International

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Zuid-Holland 2676 LV
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Contact: Mr Marck Hagen
Job Title: Director
T: + 31 1745 200 01
F: + 31 1745 200 03
E: info@wuvio.com
W: www.wuvio.com
Wuvio supplies innovative and proprietary products to combat dust during handling and storage of dry bulk. Our aim is to suppress dust in an effective and sustainable way. Our solutions are tailor-made for your specific situation.

Yernaux-Pasage

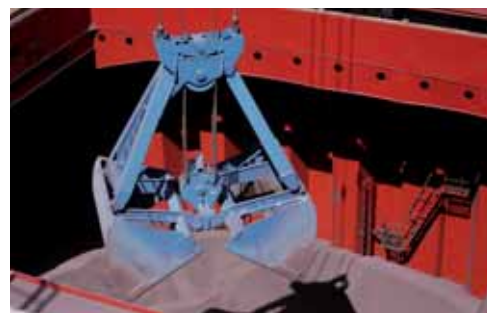
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Brive Cedex
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Contact: Mr Willy Banc
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KEY

SL	=	shiploaders
GSL	=	ship-unloaders
GL	=	grab loaders
GUL	=	grab unloaders
G	=	grabs
CSU	=	continuous ship-unloaders
BL	=	barge loaders
BU	=	barge unloaders
SU	=	self-unloaders & equipment
BE/L	=	belt conveyors/loaders
S	=	stackers
R	=	reclaimers
S/R	=	stacker/reclaimers
C	=	conveyors & accessories
F-EL	=	front-end loaders
H	=	hoppers
Cr	=	crushing
Sc	=	screening
Bln	=	blending
Wg	=	weighing
S&I	=	sampling & inspection
DC	=	dust control & suppression
DC&A	=	drives, controls & automation
ES	=	enclosed storage
SS	=	stockyard systems
RL/U	=	railcard loaders/unloaders
EC	=	engineering consultants
O	=	other



	SL	GSL	GL	GUL	G	CSU	BL	BU	SU	BE/L	S	R	S/R	C	F-EL	H	Cr	Sc	Bln	Wg	S&I	DC	DC&A	ES	SS	RL/U	EC	O
2000 Engineering																												
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A. Friedr Flender AG																												
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AE Automation (M) Sdn bhd																												
AFM Industries																												
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AS RIKON																												
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ASGCO Manufacturing																												
Ashton Bulk Ltd																												
ATIC Services																												
Atlas Manufacturing Co. Inc																												
AUMUND Foerdertechnik GmbH																												
Aurecon																												
Bauer Gear Motor																												
Bedeschi Mid-West Conveyor																												
Bedeschi SpA																												
Bekaert NV																												
Benetech GmbH																												
Benetech USA																												
Best Service Group (B.S.G.)																												
Beumer Group GmbH & Co KG																												
BGS Holland																												
Binder + Co AG																												
Birrus International Pty Ltd																												
Blue Water Misting																												
BLUG Credeblug S.L.																												
Bogaert Transmission (GEHA)																												

	SL	GSL	GL	GUL	G	CSU	BL	BU	SU	BE/L	S	R	S/R	C	F-EL	H	Cr	Sc	Bln	Wg	S&I	DC	DC&A	ES	SS	RL/U	EC	O
Dome Corp of North America	S																											
Dome Technology, LLC	S																											
DOMTEC International LLC	R																											
Donaldson Filtration	E																											
Deutschland GmbH	R																											
Doosan Benelux SA	R																											
Doppelmayr Transport Tech	A																											
Dos Santos International, LLC	D																											
Dosco Overseas Eng. Ltd	R																											
Doubrava Ges GmbH	A																											
Dry-Bag A/S																												
Dunlop Conveyor Belting	L																											
DURO FELGUERA, S.A.	O																											
Dust Control Technology	A																											
Dust Solutions Inc																												
E-Crane World Wide	R																											
E-Crane World Wide/ E-Crane International USA	I																											
EDGE INNOVATE. (NI) LTD	R																											
Egis Ports																												
EIFFEL Etablissement SOMDEL	R																											
Elecon Engineering Co Ltd	R																											
Elecon Singapore PTE Ltd.	I																											
Elgin Engineering & Constr.	R																											
EMS-Tech Inc	R																											
EMS-Tech Inc	R																											
EMTICI Engineering Co Ltd	R																											
Enco Engineering Inc	R																											
Engicon nv																												
Enviro Abrasion Resistant Engineers Pvt. Ltd	S																											
EPN Solutions																												
EQUIPO LLC																												
Eriez Europe	R																											
Esch Group bv																												
ESI Eurosilio BV																												
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Euromec Srl																												
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Fenner Dunlop Conveyor Belting Europe	S																											
Fenner plc																												
FFE Ltd																												
Figeo Crane Services BV	R																											
Flexco																												
Flexco Europe GmbH																												
Flexicon Corporation																												
Flexoveyor Conveyor																												
FLSmidth GmbH																												
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Franz Wölfer Elektro- maschinenfabrik Osnabrück	R																											
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Gertech Handling Systems cc																												
GF MHS Srl																												
GGT Goldenrain Trading SA																												
Golden West Industries																												
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Guttridge Limited																												
Guven Grab & Machine Ltd.																												
Hangzhou Huaxin Mechanical & Electrical Engineering Co.	S																											

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Hans Turck GmbH & Co. KG	S																												
Hansen Industrial Transmissions (HIT) Ltd																													
Hansen Industrial Transmissions (HIT) nv																													
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Hasler International SA																													
HAUGEN System AB																													
Hitachi Construction Machinery (Europe) NV																													
Horizon Conveyor Equipment																													
HOSCH-Fördertechnik Recklinghausen GmbH																													
Huadian Heavy Industries Co. Hycontrol Limited																													
Hyundai Heavy Industries Co IBAU HAMBURG																													
Igus GmbH																													
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IMASA																													
IMGS																													
Imperial Technologies, Inc.																													
Incolab Services BV																													
Inspectorate International Ltd																													
Instral B.V.																													
Intermodal Solutions Pty Ltd																													
International Bulk Handling Technology BV																													
Intersystems																													
iSAM AG Gesellschaft fuer angewandte Kybernetik																													
Isomonte SA																													
Italgru S.r.l																													
J & B Grabs b.v.																													
James A. Redding Company																													
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Jenike & Johanson Inc.																													
JFE Engineering Corporation																													
Jiangsu Zhendong Port Machinery Manufacturing Co.																													
Jim Way Enterprise Co., Ltd																													
Johannes Hubner Fabrik elektrischer Maschinen GmbH																													
Joy Global																													
Joy Global Inc																													
JSC Tehnoros																													
Kalenborn Kalprotect GmbH																													
Kardesler Grab & Machine Co.																													
KCT Grab Industry																													
Kinergy Corporation																													
Kingfisher Industrial Ltd																													
Kiruna Wagon AB																													
Kleemann GmbH																													
Knight Energy Services Ltd																													
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Liebherr-MCCtec Rostock GmbH																													
Listenow GmbH & Co.																													
LoadFast Systems Limited																													
Logmarin Advisors Srl																													
Loibl Allen-Sherman-Hoff GmbH																													
Lycopodium																													
Macawber Engineering, Inc																													

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MacGregor SWE AB																													
Mack Manufacturing Inc																													
Mactenn Systems Ltd.																													
Mantsinen Group Ltd Oy																													
Marine Inspection LLC																													
Martin Engineering																													
Martin Engineering GmbH																													
Maschinen und Mühlenbau																													
Erhard Muhr GmbH																													
Mega Dome																													
Mentor Dynamics																													
Merrick Industries																													
Metso Minerals Industries, Inc.																													
Midwest Industrial Supply Inc																													
Midwest International																													
Standard Products, Inc.																													
Mitsui Miike Machinery Co.																													
Moffatt & Nichol																													
Mole-Master Services Corp																													
Monolithic Dome Institute																													
Motherwell Automation																													
Motridal SpA																													
MRS Greifer GmbH																													
Natural Grabs																													
NAVCO (National Air																													
Vibrator Co)																													
Negrini Srl																													
Nemag BV																													
NERAK GmbH Fördertechnik																													
Neuro Industrietechnik GmbH																													
NILOS GmbH & Co KG																													
NK Tehnologija SIA																													
NKM Noell Special Cranes																													
NM Heilig BV																													
NMH s.r.o																													
Nordströms Konstruktionsbyrå																													
Nordstrong Equipment Ltd																													
North American Crushing & Screening, LLC																													
N-service ApS.																													
NSL Engineering Pte Ltd																													
o.z. HENNLICH ENGINEERING																													
Offshore Bulk Terminal Pte Ltd																													
Orthos Projects Ltd.																													
ORTS GmbH Maschinenfabrik																													
Oxbow Energy Solutions BV																													
P.T. Mitra S.K. Analisa																													
testama																													
PAGE MACRAE ENGINEERING																													
Pakiet																													
Parker Plant Ltd																													
PEBCO®																													
Peinemann Cranes																													
PEINER SMAG Lifting Technologies GmbH																													
Peterson Agricare & Bulk Logistics BV																													
Pfister Waagen Bilanciai GmbH																													
PHB Weserhütte, S.A.																													
PHOENIX Conveyor Belt Systems GmbH																													
PINTSCH BUBENZER GmbH																													
Pirs SAS																													
PIV Drives GmbH - a Brevini Power Transmission Co.																													
PLM Cranes B.V.																													
Pneumat Systems Inc																													
Polymer Industries - Ultrapoly Division																													
Portasilo Ltd																													
Port-Trade AS																													
Powerscreen International																													
Precia-Molen Nederland BV																													
Primasonics International Ltd																													
Procon Engineering Limited																													
PT Bukaka Teknik Utama																													
PT Carsurin																													
PT CCIC Jakarta																													
PT Geoservices																													
PT Jakarta Prima Cranes																													
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PT Pamapersada Nusantara	S																												
PT SpanSet Indonesia	R	S																											
PT Thies Contractors Ind.	R	S																											
PT. Anugrah Lautan Luas	R	S																											
PT. Bando Indonesia	R	S																											
PT. Thermalindo Sarana Lab	R	S																											
Quadrant Engineering Plastics	R	S																											
Quality Handling Systems Pty	R	S																											
Qube Ports & Bulk	R	S																											
R & S S.r.L.	R	S																											
RAM SMAG Lifting Tech.	R	S																											
Rapat Asia	R	S																											
Rapat Corporation	R	S																											
Rapidpack Corporation	R	S																											
RBL-REI France	R	S																											
RC Inspection B.V	R	S																											
RDS Technology	R	S																											
Redaelli Tecna S.p.A.	R	S																											
REEL Alesa Ltd	R	S																											
REMA TIP TOP AG	R	S																											
RHC Deutschland GmbH	R	S																											
RHC Heavy Machinery Ltd	R	S																											
Richwood Industries, Inc.	R	S																											
Risun Technologies	R	S																											
River Consulting	R	S																											
Roberts & Schaefer Company	R	S																											
RockTree Logistics Pte. Ltd.	R	S																											
Ronin GMS	R	S																											
Royal Haskoning DHV	R	S																											
Rubb Buildings Ltd	R	S																											
RULMECA HOLDING S.P.A.	R	S																											
SABS - Mining & Minerals	R	S																											
Sammi	R	S																											
Sampling Associates Int.	R	S																											
SAMSON Materials Handling	R	S																											
Sandvik Mining & Construction	R	S																											
Sandvik Mining & Construction (China) Co., Ltd.	R	S																											
Scantech International	R	S																											
SCHADE Lagertechnik GmbH	R	S																											
Schenck Process UK Limited	R	S																											
Scorpio Engineering Pvt. Ltd	R	S																											
Sea Transport Corporation	R	S																											
Seabulk Inc	R	S																											
Selpeco Resources Inc.	R	S																											
Sempertrans France Belting Technology SAS	R	S																											
SENNEBOGEN	R	S																											
Maschinenfabrik GmbH	R	S																											
Sensor Technology Ltd	R	S																											
SERAM GROUP	R	S																											
SESCOTRANS (SAE)	R	S																											
SEW-EURODRIVE GmbH	R	S																											
SGS (Nederland) BV	R	S																											
SGS Australia Pty Ltd	R	S																											
SGS Minerals Services	R	S																											
SGS Minerals Services	R	S																											
Shanghai Global Machinery	R	S																											
Shanghai Guan Hai Eng.Co.	R	S																											
Shanghai Janus Grab Co., Ltd.	R	S																											
Shanghai Peiner Smag Machinery Co.,Ltd	R	S																											
Shanghai Qifan Co., Ltd.	R	S																											
Shanghai Yo-Pi Port Machinery Co. LTD	R	S																											
Shanghai Zhenhua Port Machinery Co (ZPMC) Ltd	R	S																											
Shanthy International	R	S																											
Shaw Almex Canada	R	S																											
SIBRE - Siegerland Bremsen	R	S																											
SIDERAR / TERNIUM	R	S																											
Siebtechnik GmbH	R	S																											
Siemens AG	R	S																											
Siemens AG International	R	S																											
Siemens Nederland NV	R	S																											
SIG Società Italiana Gomma	R	S																											
Simplicity Projects Pvt Ltd	R	S																											
Siwertell AB	R	S																											
SMB International GmbH	R	S																											
Smiley Monroe Ltd	R	S																											
SMM-UM Sociedade de Montagens Metalomecanicas	R	S																											

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Sotecma inc																													
Specialised Handling & Eng	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
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STM srl																													
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Tebodin Consultants & Engrs																													
techNaero aps																													
Telestack Limited																													
Tema BV																													
TEMA Systems Inc.																													
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Takraf Italy																													
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Solutions South Africa -																													
Resource Technologies																													
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