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Grain trade restraints may be emerging

Positive influences supporting commodity import demand in a number of countries have been visible recently. But some signs suggest that restraints on extended growth in world seaborne dry bulk trade during the remainder of 2024 and into next year may become more prominent.

Envisaged strengthening of global economic activity this year and further ahead seems likely to be limited, providing only modest benefits for related industrial bulk commodity import demand. Declining inflation and a prospective downwards trend in interest rates in many countries is expected to gradually assist consumer and business confidence and spending patterns. But a large or rapid boost is not generally foreseen.

Grain & soya

After an upturn in the current trade year, prospects for grain trade in the 2024/25 year — starting this month for wheat, and October for corn and other coarse grains — point to a possibility that the positive trend may not continue. US Department of Agriculture estimates published last month show a 12mt (million tonnes) or 3% decrease to 434mt, following a 23mt rise to 446mt in the 2023/24 year.

A large downturn in European Union grain purchases on the international market in the next twelve months is one of the changes currently expected. Lower imports into Asian countries including China also seem to be a likely outcome. Yet these and some other importing area estimates are still tentative. Assumptions about summer 2024 domestic harvests and implications for imports may need modifying, because there is uncertainty about crop yields in harvests either not yet started or completed.

Coal

In the 2024 first five months China's coal imports exhibited a sustained strong performance, rising by 13% compared with last year's same period, to reach 205mt. Despite this boost, uncertainties persist about import demand in both China and several other major importing countries during the remainder of the year.

The latest end June quarterly forecast by analysts at the Australian Government's Department of Industry reflects doubts about trade prospects. Global trade in steam and coking coal — including some overland movements but mostly seaborne — is predicted to decline by 16mt or 1% in 2024 from last year's 1,468mt total, to 1,452mt. While rising imports into India are envisaged, potential weakness elsewhere could prevent any further trade advance.

Iron ore

Another increase in seaborne iron ore trade now seems more likely to be achieved, following the resumed growth seen in the previous twelve months. All the major importers are expected to buy additional volumes during 2024 as a whole.

Steel production data continues to show a subdued pattern unfolding, however. Based on World Steel Association figures, European Union crude steel output was flat during this year's first five months, compared with last year's same period at 56.1mt. China experienced a 1% decrease, to 438.6mt. Reductions were bigger in Japan, down by 2% to 35.7mt, and South Korea, by 6% to 26.4mt.

Minor bulks

The extensive minor bulks segment is becoming a more crucial supportive contributor to global dry bulk trade growth. One of the large elements is fertilizers, mainly consisting of potash, phosphates (rock and processed), sulphur and urea. Trade in this group evidently grew modestly in 2023 to around 190mt and a further increase is envisaged in the current year.

Minor bulks

About 12% of the world bulk carrier fleet is represented by Handysize vessels in the 10–39,999 deadweight tonnes category.

As shown by table 2, fleet growth in the segment remained stable in 2023 at just over 3%. This year's expansion may be larger, because newbuilding deliveries are set to rise sharply by perhaps 30% from last year, while current signs suggest that scrapping will remain low. A growth rate of around 4% in 2024 could result.

TABLE 1: MAJOR GRAIN IMPORTING AREAS (MILLION TONNES)

	Wheat and coarse grains, crop years ending June (wheat), September (coarse grains)					
	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24*
East Asia	58.9	69.1	106.0	96.5	89.7	101.9
Southeast Asia	45.6	47.5	46.3	45.3	43.2	49.1
European Union	32.1	24.2	21.2	26.2	37.8	36.1
Middle East	58.8	65.5	59.4	68.5	64.6	58.7
North Africa	47.7	51.9	49.6	47.1	45.8	50.8
Sub-Saharan Africa	26.2	30.9	30.3	30.8	27.9	30.9

source: US Department of Agriculture **June 2024 forecast*

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

	2018	2019	2020	2021	2022	2023*
Newbuilding deliveries	3.1	3.1	2.8	3.7	4.0	4.3
Scrapping (sales)	0.5	0.7	1.0	0.6	0.3	0.5
Losses	0.0	0.0	0.0	0.0	0.0	0.0
Plus/minus adjustments	0.1	–0.1	0.0	0.0	0.0	0.0
World fleet at end of year	**104.7**	**107.0**	**108.8**	**111.9**	**115.6**	**119.4**
% change from previous year-end	+2.5	+2.2	+1.7	+2.8	+3.3	+3.2

source: Clarksons Research & Bulk Shipping Analysis **forecast*

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China offshore moves to build alumina refineries

Kunal Bose

Indonesia is not alone in demanding that its bauxite ore is locally value added into alumina for exports. Owner of the world's largest bauxite deposits Guinea is also finding success in getting foreign investment in alumina refineries. All this goes well with China which, because of environmental concerns, wants offshore ownership of alumina and aluminium capacity.

In the universe of metals ranging from aluminium to steel to copper, China has a domineering presence to the extent that it owns in many cases over half the global capacity and, as a natural follow-up, makes more than half the production and uses that locally. But as it would happen, this gigantic profile in metals is not backed by adequate domestic extraction and supply of minerals. Take bauxite for example, the raw material containing mostly aluminium oxide, from which is extracted alumina through the Bayer process for finally white metal smelting. China has, however, large bauxite resources. But the mine output there can only meet a portion of Chinese smelting requirements. Beijing is in pursuit of a cleaner environment and progressive carbon emission reduction, so it has introduced stringent environmental and mining safety regulations, leading to some mine closures and overall production restrictions. Moreover, over the years, the quality of Chinese bauxite has been falling giving a push to imports.

"Two-and-a-half decades ago, when China without fanfare launched a programme to build capacity for metals at great speed, it was with the knowledge that there had to be growing reliance on imports of minerals, be it bauxite, iron ore or copper concentrate. Before the world realized and also got concerned, China has sewed up import sources on a sustainable basis, tapping countries in Africa, Asia and Latin America," says RK Sharma, director general of Federation of Indian Mineral Industries. The world's second largest economy after the US is around 60% dependent on bauxite imports to feed its alumina refineries whose capacity at the end of 2022 reached 99.55mt (million tonnes) with capacity utilization of 82%. According to China's General Administration of Customs, the country's imports of bauxite in 2023 were up 12.9% to 141.38mt. In the current year, except for a dip in February to 11.275mt from January's 13.2019mt, imports continued to rise. Customs data shows imports in the first four months up to April amounted to 50.5798mt.

Expectedly, Guinea where China

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Guessing 2024 average aluminium prices

What will be the 2024 average price for aluminium at LME (London Metal Exchange) or Shanghai? Forecasts keep on changing as new price-influencing developments happen, economic or otherwise. The silvery white metal finding applications in aircraft to EVs to solar panels to construction saw its price zooming to a record high of $4,100 a tonne in March 2022 following Russian invasion of Ukraine the month earlier. But the price had to soon retreat as Covid-19 returned to China obliging Beijing to once again strictly enforce movement restrictions disturbing economic activities and the US Federal Reserve raised interest rate in March 2022 to be copied by other major economies to contain inflation.

Dollar becoming pricier *vis-a-vis* other currencies as a result of the series of rate hikes by the Fed made commodities, including aluminium, denominated in the US currency raised their acquisition cost in local currencies. Moreover, high interest rates curbed consumption across the board by industrial as well as individual consumers. With the world GDP growth rate in 2022 receding to 3.09% from 6.23% in 2021, a major price correction in aluminium was unavoidable. The correction that happened in the year was the steepest since 2018. The average aluminium price in 2022 was $2,795 a tonne. The extent of price swings and with that changes in earnings of aluminium makers is underlined by the 2020 average price of $1,074 a tonne.

Last year began on a strong note. But the market lost steam with the season's progress and price at one stage fell to $2,100 a tonne. The average price for 2023, however, was $2,300 a tonne. Aluminium prices are sensitive besides demand and supply to war-related disturbances (like Russia's invasion of Ukraine and increasingly stiffer sanctions by the US and others), central bank intervention on interest rates and unfavourable developments in China.

No wonder aluminium is having a roller-coaster journey this year too. The January average price was $2,192.82. But in May, the price on some days was above $2,700 a tonne. Satish Pai, managing director of Hindalco of which the world's largest aluminium recycler and a leading manufacturer of flat rolled products Novelis is a 100% subsidiary, remains optimistic about the "future of aluminium" believing that metal prices will stabilize around $2,400 a tonne.

On May 24 when Pai made the statement, LME aluminium, in a reflection of recent price fluctuations, was priced at $2,598 a tonne. Confirming that he said: "In the last couple of weeks, aluminium prices have spiked up, but they have been fairly volatile. There have been $100 swings each way… We are working with the fact that the numbers are going to be a little bit more stable around $2,400 rather than the current $2,550 or $2,600."

To go by what Pai had said, the balanced China market in 2024 first quarter when demand growth was 10%, thanks to growing use of aluminium in solar installation and EVs should hold promise for the rest of the year. At the same time, the property sector that makes up about 30% of Chinese aluminium consumption remains a point of weak demand. Analysts are now anticipating a world market surplus of 374,500 tonnes against their earlier forecast of 250,000 tonnes in 2024. The market, according to them, will be fairly balanced next year when surplus should be a negligible 500 tonnes. Good for aluminium prices.

continues to make large investments in mines and infrastructure development to facilitate movement of bauxite from mines to ports, are neck-and-neck with Australia in terms of production. Between January and April, Guinea shipped 37.4938mt of bauxite to China that constituted 74.13% of its total imports. Australia, which is the world's largest producer of bauxite after Guinea, remained the next important import source for China having received cargoes of 3.1345mt in April. That month saw Turkey, Ghana and Montenegro overtaking Brazil in supply of bauxite to China. In the meantime, bauxite supply from domestic sources remained under pressure in view of production suspension in Shanxi and Henan output did not ease to any great extent.

China's Australian concern

What cannot be taken away from the China–Australia relationship is the complementarity of the economies of the two countries — Australia being a large producer of minerals from coal to iron ore to bauxite and China needing all these to run its gigantic industrial machinery. Their trade relationships have been historically strong to the extent that in 2020, nearly half of Australian exports went to China. But these came under cloud as recent years were marked by accusations of human rights violations by each other. Moreover, each perceived a threat to its national security from the other. Beijing did not hide its concern when Canberra joined the Quadrilateral Security Dialogue that also has the US, Japan and India as members. Then the Australian suggestion that there should be an independent inquiry into the Covid-19 outbreak in China enraged Beijing to use economic coercion against the trading partner. Through the ups and downs in relationships, Beijing has made one irreversible decision not to be overdependent on Australia for bauxite or any other mineral but diversify its supply base. That will largely explain the meteoric rise of Guinea as a producer-exporter of bauxite.

Commodity intelligence provider Kpler says in a report that China's domestic alumina production was almost flat during January to April "with some capacity idled due to bauxite supply constraints." The period was marked by a 20% setback in domestic bauxite production to below 18mt. This was sought to be made good by stepping up imports (a year-on-year rise of 2.54mt). But that proved to be insufficient to "bridge the deficit." No wonder the Chinese alumina industry inventory of bauxite hit a nearly 28-month low. Any major uptick in imports from Guinea is not likely during the six-month monsoon there from June to November when ore extraction and its transportation become a challenge. As it happened in 2023, the monsoon period saw supply easing 6.7% or 3.96mt over the previous six months. At the same time, commissioning of new capacity in Guinea could lead to some extra availability of bauxite for exports. Incidentally, around 80% of Guinean bauxite exports is China bound. The West African country accounts for around 25% global exports of the commodity.

Rise of Guinea

Wagon unloading site for bauxite in Guinea.

Credit for the emergence of Guinea, a politically unstable and extremely poor country, as a leading exporter of bauxite (this is also going to be the case with iron ore once the Simandou project — with the world's largest untapped reserve of high-grade ore — is finally commissioned, overcoming years of challenges of ownership and corruption claims) goes principally to China. At the same time, Anglo–Australian mining giant Rio Tinto, the US aluminium group Alcoa and some high-risk taking investors continue to play important roles in building mining capacity in Guinea. In the world bauxite reserves of 30bn tonnes in 2023, Guinea with 7.4bn tonnes has the maximum share among all mineral owning countries. That besides, the Guinean gibbistic ore for its high alumina content of 44% to 46% and low reactive silica of up to 1.5% compels serious attention of China and others despite all inherent political and logistical challenges.

Next in the bauxite reserves owning table is Vietnam with 5.8bn tonnes. The others in terms of ownership sizes are Australia 3.5bn tonnes, Brazil 2.7bn tonnes, Jamaica 2bn tonnes, Indonesia 1bn tonnes, China 710mt but of declining ore quality, India 650mt, Russia 480mt, Saudi Arabia 180mt and Kazakhstan 160mt. The balance of world reserves is spread among countries in all continents. "The good thing about reserves is more you invest in exploration, bigger becomes the volume of reserves. Mining has always been a cornerstone of the Australian economy. The strongly export-oriented sector with minimal onshore processing of ore had a 13.6% share of GDP (gross domestic product) in 2023. Investment in mining science technology in a sustainable way and investment friendly mining policy are the prime reasons why the country's reserves from iron ore to bauxite to lithium have continued to increase," says Sharma. Going by the Australian experience and on assumption that other major bauxite owning countries will follow that example, the world aluminium industry will always be assured of adequate bauxite supply. Moreover, the silvery white metal being

perennially recyclable with all its qualities remaining intact, it is globally coming back for reuse in bigger volumes all the while.

In the meantime, the world's biggest processor of bauxite into alumina, China, has to contend with two realities: first, Beijing has introduced more stringent conditions since 2022 for investments in new alumina projects, including brownfield capacity expansion. This has implications for both operating groups and potential new investors. Second, Beijing in its campaign against pollution has not spared alumina making, which generates 1 to 2 tonnes of red mud for every tonne of smelter feedstock production. Red mud, unless it is stored and disposed of with care, is a major environmental hazard. Unfortunately, utilization of this industrial waste in China has remained low to the concern of the authorities and environmentalists. According to China Non-ferrous Metals Industry Association, utilization of red mud, which is a toxic by-product posing serious environmental risk, in the country was a low 7.6% of annual generation of 105mt. All these problems also create opportunities of lowering risks associated with progressively growing dependence on raw material imports, in the present case bauxite and avoiding local disposal of red mud by building alumina refineries abroad.

Resource nationalism

As China contends with the challenge of seamless feeding of its smelters with alumina, major bauxite producing countries led by Indonesia want local value addition to bauxite by way of building greenfield alumina refineries. The world's sixth-largest owner of bauxite reserves Indonesia banned exports of the ore beginning mid-June last year forcing refineries in China to buy larger quantities from other traditional suppliers.

In the not-too-distant past, Indonesia put a ban on exports of several mineral ores, including bauxite from 2014 to July 2017. So Indonesian bauxite denial signals were reaching Beijing with increasing force over the years along with invitation to invest in alumina refineries and aluminium smelters. Not less than half a dozen Chinese groups are now present in Indonesia's aluminium sector. Jakarta's resolution not to export bauxite aside, local availability of good quality bauxite and low ash coal and a fairly developed infrastructure make Indonesia an ideal aluminium chain investment destination for Chinese groups such as Shandong Nanshan Aluminium. Chinese investments also fit in well with Beijing's Belt and Road initiative (BRI) and "going out" initiative. In recent times, China's investments go beyond Indonesia to various sectors, including aluminium chain in southeast and south Asian countries.

In the meantime, Guinean authorities are becoming increasingly vocal that companies active in bauxite mining should also build alumina refineries in the downstream. This will help in channelling mineral wealth into economic development through value addition, the argument goes and rightly so. The value addition campaign has yielded success for the second time by way of Emirates Global Aluminium (EGA) through its subsidiary Guinea Alumina Corporation signing a non-binding agreement with the Guinean authorities to build a 2mt alumina refinery in west Guinea. The first phase of the 4bn project sought to be commissioned by September 2026 will have capacity of 1.2mt. That EGA will have Alumina Corporation of China (popularly known as Chinalco) as partner in the Guinean project bears testimony to growing Chinese influence in the Middle East besides West Africa. Guinea's only operating alumina *cum* bauxite complex is owned by Rusal of Russia.

China offshore activities

Such offshore activities, including aluminium chain capacity building in countries with which China has good political and trade relationship, are prompted by a combination of some Chinese domestic compulsions and external pressure of resource nationalism. In its pursuit of carbon neutrality, China in 2018 put a ceiling of 45.43mt on aluminium smelting capacity. According to state-backed research house Antaike, the aluminium industry had at its disposal annual production capacity of 44.43mt by 2023 end, leaving little room for growth. Earlier in 2013, Beijing introduced capacity replacement scheme for highly polluting

and coal-based energy consuming industries, including aluminium.

Capacity swapping will allow green signalling of new projects against closed and idled units. The policy is basically highly restrictive of new capacity coming on stream forcing aluminium groups to look for opportunities abroad. According to Antaike, Chinese groups have plans to build 8mt of aluminium smelting capacity (equivalent to 18% of the 2022 domestic capacity in China) abroad, in most cases along with upstream operations in countries that have acceded to BRI.

The world's biggest alumina and aluminium producer has a structural weakness that makes the industry responsible for more than three-quarters of CO_2 emissions from the country's metals industry. This is because Chinese smelters and also upstream refineries are very largely dependent on coal-fired electricity. Things no doubt have started changing for the better with more and more smelters using power from renewable sources (hydro electricity and a mix of solar and wind power). But it is going to be a long haul, for a report by the International Aluminium Institute says as much as 82% of energy used in making primary aluminium in China 2021 came from thermal power plants against global average of 57%.

In the context of China's aluminium industry move to decarbonization — much of the quest hinges on use of variety of energy — smelters dependent on thermal power in various parts of the country are found to be gradually shifting some capacity to Yunnan province where hydro electricity is available. In fact, in view of hydro power-based decarbonization opportunities, the provincial government has set an annual primary aluminium production capacity target at 8.26mt.

But, as has been happening since 2021, the local government is rationing power supply to aluminium smelters during the low water season from December through April. S&P Global Commodity Insights estimates the running primary aluminium capacity of Yunnan at 5.7mt. Enforcement of power curbs that came into force in November 2023 due to drought condition meant, according to market intelligence, smelting capacity resting of around 1.1mt. Mercifully, return of rains to seasonal norms from May beginning stepped up hydro electricity production enabling growing volumes of primary aluminium to come online.

From a low smelting capacity use of close to 70% in March, it was past 80% in May and should be over 90% in June. China observers have come to believe, based on happenings since 2021 that Yunnan smelters home to fourth largest capacity among all regions in the country are likely to be required to curb production in future during low water season months. A smelter in Inner Mongolia too had to contend with serious power supply issue. The point is Chinese smelter operation is on a scale that dislocations of the above kind leave a global impact on demand and prices of upstream alumina and bauxite prices.

Unique India case

India presents a unique case for bauxite. Though not as enormously large as they are in Guinea and Australia, bauxite resources (reserves plus deposits underneath to be explored) in India are big enough to sustain a large aluminium value chain. In fact, if anything unlike the official policy of Guinea and Australia, Indian authorities discourage exports of bauxite for value addition going up to high value aluminium products.

According to the most recent alumina survey by the Indian Bureau of Mines, India has 3.931bn tonnes of metallurgical grade bauxite resources with major concentration in the east coast states of Orissa and Andhra Pradesh. Deposits are also found in Gujarat, Jharkhand, Madhya Pradesh and Maharashtra. About 84% of bauxite mined in the country contains 40% to 45% AL_2O_3. Besides medium to high grade bauxite going into the making of alumina, India has low-grade non-metallurgical deposits mined mostly in Gujarat and Maharashtra, mainly for exports.

Of the three aluminium groups in India, Hindalco and the largely government owned National Aluminium Company have their own mines holding high quality bauxite supplying all the ore that their refineries require. On the other hand, Vedanta Aluminium, the country's largest in terms of alumina and metal capacity, will remain largely dependent on bauxite procurement from external sources, including imports till all the hurdles, specially opposition from local tribals and civic society, are overcome in opening the Sijimali bauxite block in Orissa's Rayagada and Kalihandi districts holding estimated deposits of 311mt. In 2023, India had a share of 22.832mt in world bauxite production of around 400mt. Till such time, Vedanta start producing enough bauxite from deposits won at auctions early last year, it will be requiring significant volumes of imported raw materials to feed its alumina refinery at Lanjigarh in Odisha whose capacity has been expanded to 3.5mt. India's imports of bauxite were up from 3.009mt in 2022 to 3.596mt last year.

In the meantime, prices at which bauxite and alumina are traded are leaving producers with comfortable margins. Australian and Indian industries being among the world's lowest cost producers of alumina are doing particularly well in present times. The global alumina production of alumina in 2023 at 141.924mt shows a marginal fall from the 142.23mt in 2022. This happened because of low capacity use in the first half of last year. But the second half saw production rising 5.2% to 72.699mt from 69.225mt in the first six months of 2023.

China, which by now has achieved completed alumina capacity of 103.35mt, stayed at the top of 2023 producers' table with 82.38mt, followed by Australia 19mt, Brazil 10mt, India 7.3mt, Russia 2.4mt, UAE 2.3mt, Saudi Arabia 1.8mt, Canada 1.6mt Jamaica 1.5mt, Vietnam 1.4mt, Kazakhstan 1.3mt, Indonesia 1.2mt, etcetera.

Exploration focus needed

Sharma says considering the potential of India to convert resources into reserves through exploration backed by a right policy package, the country should see action by way of major alumina capacity addition. In this, all the three Indian primary aluminium groups — Hindalco, Vedanta Aluminium and Nalco — are participating. Nalco is in an advanced stage of implementation of the 1mt capacity fifth stream alongside its 2.1mt refinery in Orissa's Koraput district using the improved medium pressure digestion technology of Rio Tinto Alcan, says company chairman Sridhar Patra. With alumina production of 2.124mt in 2023/24,


Nalco bauxite operations.

Nalco had an exportable surplus of well over 1mt of the material. Expectedly, once the new 1mt capacity is commissioned, Nalco's exportable alumina surplus will virtually be doubled. The company, which is among the world's more cost-efficient makers of alumina, owns high quality bauxite reserves in the hills of Panchpatmali and Pottangi.

In October 2023 in a pathbreaking development, Hindalco signed a long-term bauxite supply agreement with the government owned Orissa Mining Corporation in order to build a 2mt refinery at Kanshariguda in Orissa's Raygada district with a cogeneration 150MW thermal power unit. The project will need investment of close to $1bn. Incidentally, the company is successfully running a 2.12mt refinery in the same district drawing bauxite from its own mine at Baphlimali hill.

In its quest for vertically integrated operation from bauxite mining to metal smelting, Vedanta recently completed refining capacity expansion by 1.5mt to make a total of 3.5mt at Lanjigarh alumina complex. The group as it is targeting aluminium smelting capacity of 3mt from about 2.4mt now will further increase alumina capacity to 6mt to be self-reliant in smelter feedstock. Interestingly, all the major aluminium related actions are in the country's eastern coastal state of Orissa.

A research report says, the global market valuation of alumina market will rise by a CAGR of 3.7% to $61.1bn in 2030 from $45.7bn in 2023. In this smelter segment will grow by a CAGR of 3.8% to $52.7bn while the chemical segment will record a CAGR of 2.7%. Recent periods have seen disruptions in supply of bauxite and also alumina causing concerns for the white metal makers worldwide. First, the December explosion at an oil terminal in Guinea's capital Conakry raised concerns about bauxite supply to Chinese refineries triggering a rally in prices of bauxite, alumina and the metal. More recently, alumina shortages occurred due to disruptions in Rio Tinto's Australian shipments and falling Chinese supplies.

How well metallurgical grade bauxite and alumina (in terms of demand and prices) will do will depend upon the health of the global aluminium industry, particularly China because of its enormous industry profile. Aluminium capacity and production have become more and more concentrated in China, rest of Asia and the Middle East in the wake of smelter operation becoming increasingly challenging in the European Union and the US on account of high energy and labour costs.

A steady decline in production in the EU has resulted in domestic aluminium output meeting just about 11% of its demand. In January, the closure of Magnitude 7 Metals smelter (capacity 785,000 tonnes) in the Marston, Missouri because of the combination of high energy costs and difficult business conditions has left the US with four primary aluminium smelters — one Alcoa smelter each in Massena, New York and in Warrick, Indiana and Century Aluminium ones in Mt. Holly, South Carolina and Seebree, Kentucky.

US CAPACITY FALL

The US, which through 2000 was a top producer of the metal made only 785,000 tonnes in 2023. We have it from Congressional Research Service that at its peak in 1980, the US production was 5.1mt. Now with a share of around 1% of global production, the country had to import 4.8mt in 2023 for domestic use. With the closure of Magnitude, the run rate of the US industry will fall to a new historic low this year.

In the meantime, the world aluminium production in 2023 rose to 70.593mt from 69.038mt in 2022. However, production growth rate last year was down to 2.25% from the earlier year's 3%. Take China where the annual production growth rate continued to slow down as capacity had come close to government-imposed ceiling of 45.43mt. Chinese production growth shrank to 3.7% in 2023 from 4% in 2021 and 2022. Some research agencies suggest that the country's aluminium output will be up by a little over 1mt or 2.5% to 42.7mt in 2024 from 41.59mt in 2023, aided by start up of new capacity mainly in the northern Inner Mongolia region. Improvement in power supply in earlier drought hit Yunnan province and demand rises from the green sector that particularly includes renewable energy and electric and hybrid vehicles enabled the industry to make 17.84mt of primary metal in the first five months of 2024 up to May.

Even while it had a 59% share of 2023 global aluminium production, China's imports of 1.543mt that year were close to 2021 record buying of 1.579mt of foreign origin metal. Net imports during 2023 jumped by 195.1% to 1.393mt after exports fell 23.4% over the previous year to 150,000 tonnes. Whatever be the capacity and production, global prices are a big influencer of imports and exports. So also political relationships have a bearing on a nation's foreign trade. As Russia faced punitive Western sanctions, it had to target China for disposal of a major portion of its export surpluses like energy at some discounted prices. No wonder then, Russian aluminium alone accounted for 76% of Chinese imports in 2023. The other two major exporters to Russia were India and Iran with a share of 6.4% and 3.9%, respectively.

The Chinese demand grew 3.9% last year to 42.5mt, helped by growing application of the white metal in solar photovoltaic panels and both in electric and conventional vehicles. The house building sector, however, continues to be a damper. In contrast ex-China demand shrank 3.5% in the face of weaknesses prevailing in the US and Europe. In the projected growth of world aluminium demand by 33.3mt from 86.2mt in 2020 to 119.5mt in 2030, around 33% is to be on China account, while the rest of Asia will account for 26%, North America 15% and Europe 14%, says a research report adding that the highest growth rate is to materialize in the transportation sector followed by electrical and construction sectors.

Efficient logistics enable effective mining and export of bauxite

In this article, Captain Pappu S P Sastry, Chief Executive Officer of Dubai-based Adhira Shipping and Logistics, discusses the challenges and opportunities for bauxite exports from Guinea (Conakry), and concludes that in Africa, the secret to success in mining is efficient logistics.*

Bauxite is the crude ore of aluminum, used specifically for extraction and production of aluminium which has several uses in the manufacturing industries. The raw bauxite ore (four to five tonnes) is refined to alumina (reduced to two tonnes). The alumina is smelted in to aluminum (reduced to approximately one tonne).

Aluminium is manufactured and transported as end use product. Aluminium further can be recycled with almost no loss in weight. This just means that for every one tonne of aluminium required, there is a demand for four to five tonnes of bauxite.

Use of aluminium by application (global)

- auto & transport (35%);
- construction (32%);
- electricals (17%);
- packaging (10%);
- other segments; and
- one of the growing markets India can have a different spread of application to the rest of the world.

**This article is an updated version of 'Logistics: the Secrets of Success' published in the June 2023 issue of* International Bulk Journal.

The global bauxite market size was valued at US$9.90bn in 2019 and is expected to grow at a compound annual growth rate (CAGR) of 3.3% from 2020 to 2027, the forecast being 6.6% from 2018–2026. The growth of the market is largely attributed to the growing demand for aluminium from various end-use sectors, including construction, automotive, packaging, and electrical and electronics.

World bauxite resources are estimated to be around 55 to 75bn tonnes. Recoverable reserves are estimated around 28bn tonnes located mainly in countries like: Guinea (27%); Australia (23%); Brazil (9%); Vietnam (9%); Jamaica (7%); Indonesia (4%); and Guyana & China (3% each).

Potential of Guinea

Not to be confused with various other Guineas around the world, the Guinea Conakry where Conakry is the capital city, has emerged as the largest exporter of bauxite only in the last few years. With an estimated bauxite ore reserve of 7.4bn tonnes, Guinea stands as the number one bauxite producing country of the world. The bauxite reserves are concentrated mainly in the Boke, Fria, Kindia and Labe provinces of the country (as shown in the map).

The country accounts for 26.9% of the global total reserve of the ore. Guinea surpassed Australia to become China's main source of bauxite only in 2016.

Shipments from Guinea to China reached close to 90mt (million tonnes) in 2022, up from just 300,000 tonnes in 2015.

That said, Guinea only produced 7–10% of the global bauxite in 2022.

China is the major player

Bauxite processing from ore to mineral country-wise positioning is important to understand the demand section of bauxite.

- **bauxite reserves:** led by Guinea with 26%;
- **bauxite production:** led by Australia with 27%;
- **alumina production:** led by China with 41%; and
- **aluminium production:** led by China with 45%

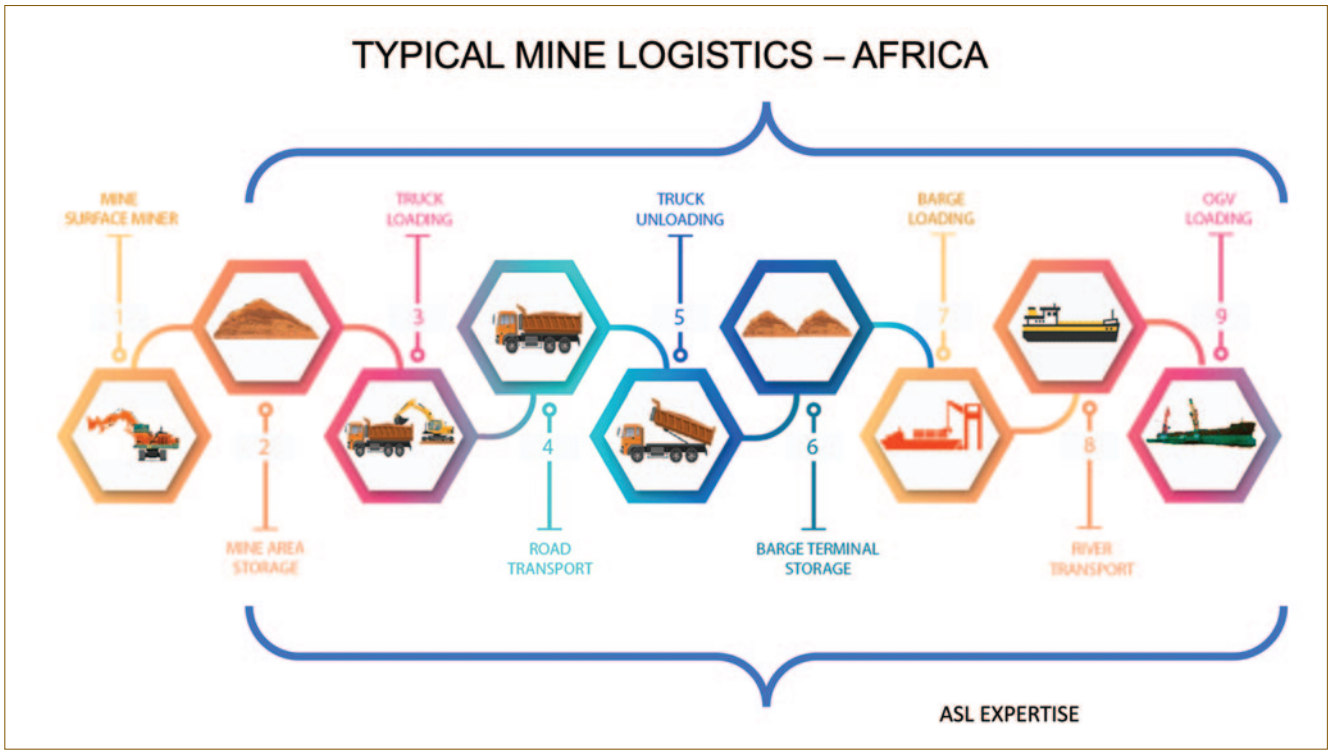
Traditional players have been there for many years in the country but the entry of end users such as the Chinese smelters into mine owning in Guinea has tremendously increased the bauxite export volumes in recent years.

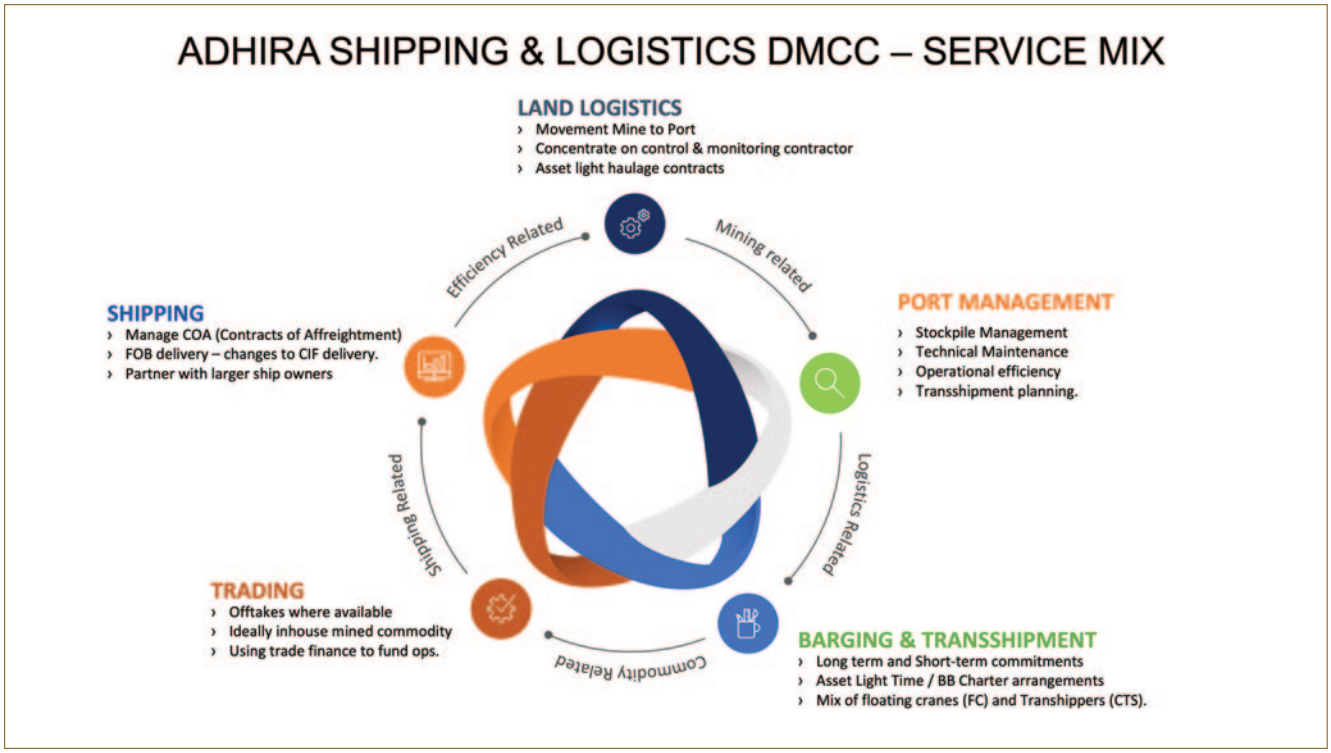
Guinea exports continue to grow with many junior mines still not exporting but expected move into production soon.

The major players on the supply side that are active in Guinea are:

SMB Winning mainly owned by the group that owns Hongqiao smelters in China. They produce and export close to 30mt a year from Guinea. The major market is China.

Rio Tinto/Alcoa including Compagnie des Bauxites de Guinea (CBG). They produce and export close to 18mt a year





from Guinea. The major market is now China.

EGA Group, from UAE, which owns the Guinea Aluminium Corporation (GAC). They produce and export close to 12mt a year from Guinea. The major markets are China and UAE.

Aluminium Corporation of China (Chalco). It produces and exports close to 12m tonnes a year from Guinea. The main market is China.

Rusal, traditionally has been one of the oldest mining entities in Guinea with exports declining recently to less than 10mt a year. The main market is Russian/ Soviet markets.

Following are the top bauxite-alumina companies in the world based on demand side market: Chalco (China); Xinfa (China); Hongqiao (China); Rusal (Russia); Rio Tinto Alcan; Alcoa (US); Norsk Hydro (Norway); South 32 (Australia); AWAC (Australia); and Jinjiang Group (China)

Growth, sustainability

Guinea will continue to lead the way in increasing exports. Consistently every year for the last three years, a fresh 20–30mt of bauxite have been added to the Guinea exports and a similar trend is expected for the next decade. Many new investments into the mining and infrastructure sections by non-African/non Chinese companies have enabled fresh capital inputs into the sector. A push for benefaction by smelting or refining in on the cards for many of the countries but the power required for such activity cannot yet be guaranteed by the governments and so such push is seen as superficial and far from realization.

The sustainability can be analysed on the basic framework as follows:

- **Political:** government support for mining and logistics has always been there, especially since 2015, after the implementation of the new Mining Code. However, there is presently a military government since September 2021. Although democratic elections were promised for 2024 and there were no mining delays even when the coup had occurred, there is always some suspicion on future policy. With increased encouragement politically, several more companies are preparing to begin exports. Bauxite mining and alumina production provide about 80% of Guinea's foreign exchange. Hence, political policies highly support bauxite mining and transportation companies.
- Economic: Guinea's economy is very much dependent on mining revenues. The global market of bauxite mining is projected to grow to reach US$20bn by the end of the 2026. Bauxite mining and alumina production provide about 80% of Guinea's foreign exchange. Moreover, with growing demand for aluminium products across the globe, bauxite mining activities will increase and are expected to gain significant traction in the coming years in Guinea which provides the platform for potential mining businesses. The rules have been guaranteeing certain rights to investors, giving more detailed tax provisions and making the fiscal regime more attractive to investors. The reduction in tax leads to increases in profits on account of mining and transportation charges.
- **Sociological:** there are always some issues related to local villages and remote area population displacement for the sake of mining. Almost all the mines are in hilly and rural areas almost always involving some backward areas. The threat to the tribal and local rural population is real. With implementation of a mining code, local conditions and local employment are well supported.
- **Technological:** recent trends in adopting new technology in mining not only increases the output and lowers down the cost, it also aids and abets the mining industry. There is an emphasis on smelting within the country which can be a game changer for bauxite miners and logistics firms. Unless power is secured for smelting, there is no real chance of that advancement.
- **Legal:** The Mining Code (comprising 186 Articles) dated 1995 has been amended in 2015 and tailor-made for each mining company. The government held company also takes a shareholding in the producing mine, ensuring the support is provided for not letting mining companies fail. This code implementation has been supporting and facilitating bauxite mining and flexibility in transportation. The code has been successful in promoting further transparency and limiting the discretionary powers of

the state while providing greater clarity on state participation. The code has helped in simplifying and clarifying permission procedures, in particular establishing a new department — the Centre for Mining Promotion and Development (CPDM), financed by the World Bank and the International Monetary Fund and intended as a 'one-stop shop' for investors into bauxite manufacturing and logistics business resulting in more investments pouring into bauxite business.

- **Environmental:** mining activity can cause pollution and land deformation. The majority of bauxite mined areas can be brought back to its original state. Bauxite is surface mined and is considered to be more environmentally friendly compared to mining of other major minerals such as iron ore and coal. The mining companies do strive for environmental sustainability to a significant extent. The Mining Code has specific requirements for protection of environment and implementation is always critical.

Role of logistics and shipping

The mining projects in Africa are generally not relying on mining costs but rely mainly on logistics cost, landing cost competition and speed to market. The concerned governments are only able to provide mining licences but are unable to provide the required infrastructure for mining growth.

On land, the infrastructure required are primarily roads and railways connecting mines to a port. There are in general no public ports that these roads can lead to, and so private ports have a huge potential and deterrent at the same time. The port infrastructure is not an easy investment for even large players who would have to afford it before they can export any cargo whatsoever. The concept of road and railway and port mutualization is not common since the investment made is probably private equity specific to a particular project and sharing it with competitors is not a beneficial idea for any mining companies. The entry barrier for mining companies in these mined commodities with need for setting up own land logistics does ensure that only credible companies with deep pockets are able to come to production. Many countries are now realizing the barrier and turning towards private investors who can facilitate the roads, railways, and ports for mining sector with a toll or mutualization process.

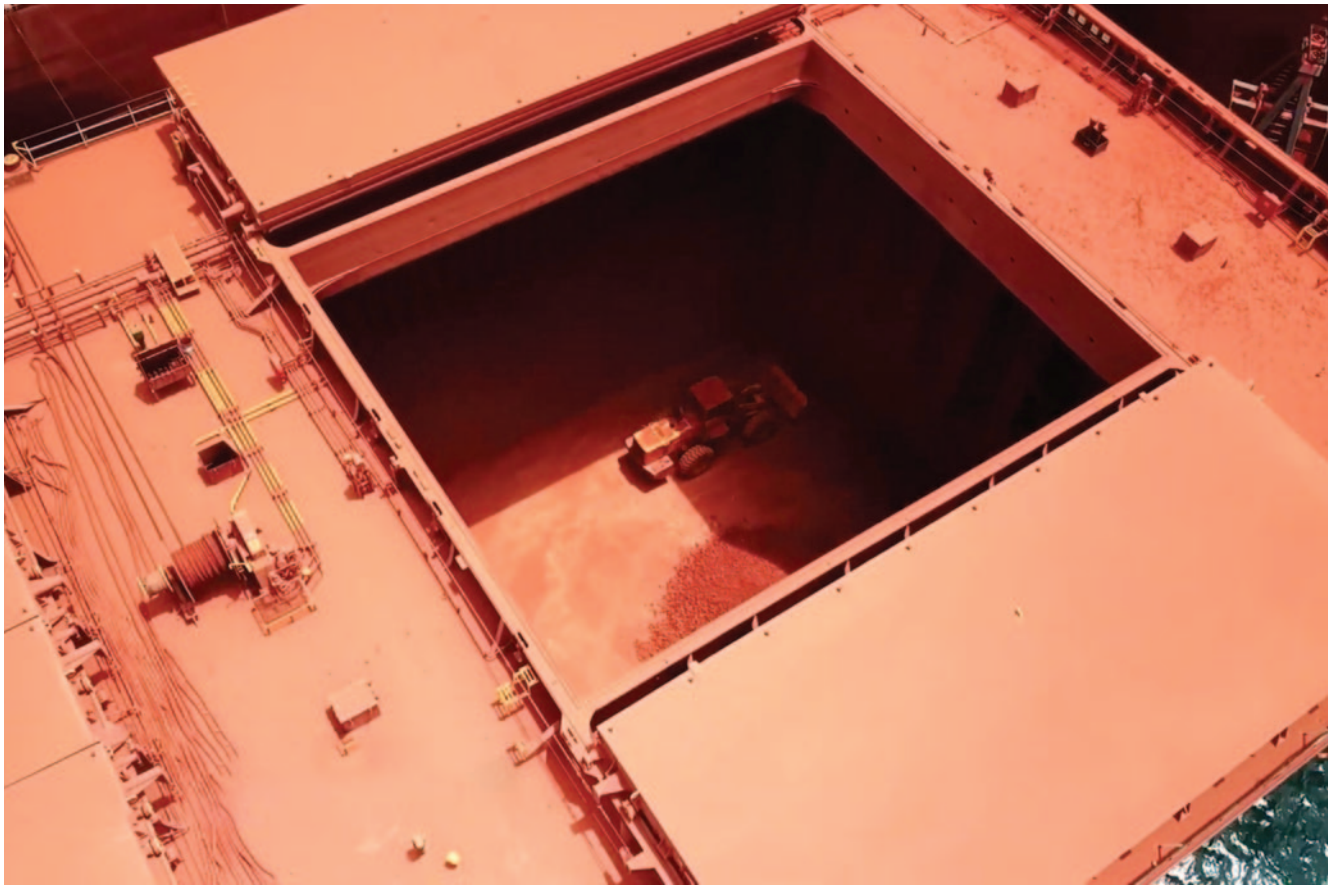
At sea, the logistics required before loading on an Ocean-Going Vessel (OGV) is also extensive and expensive. With the major players who are already exporting in large quantities, the growth in export volumes was achieved by building smaller ports in rivers and using barges to transport the commodity to anchorage where the commodity is loaded onto Capesize vessels.

Further growth in volumes in the near future are also expected at a good pace; thanks to the transshipment model used for rapidly increasing exports without waiting for port infrastructure. This is similar to the model of shipping adapted by Indonesia to grow to a 500mt export market for coal without increasing port infrastructure in a hurry.

The secret to success of mining depends on logistics in Africa, which is not for short term players. The secret to growth within mining logistics (land or sea) and/or dry bulk shipping in Africa is always a result of close and consistent collaboration with mining companies who are genuinely looking for a good long-term partnership with serious players who know the landscape — so 'knowing the landscape' is a pre-requisite but intangible entry barrier.

Disclaimer: The article is written from the personal research, knowledge and perspective of the author in a personal capacity. It does not however represent the views of Adhira Shipping and Logistics Group or related entities. If there are any queries on the content or if you need a reference list of the particular information provided, please contact the author personally.

Whatever responses he may provide will also be in a personal capacity and cannot be held against or considered as the view of Adhira Shipping and Logistics or related entity.



Guinea bauxite boom: scaling up transshipment operations

Guinea, a nation nestled in the heart of West Africa, bordering the Atlantic Ocean, is a major player on the global bauxite stage. Today, Guinea accounts for more than 70% of global seaborne exports of bauxite. In 2023, Guinea bauxite exports surged 23% from the prior year, with China being the primary destination. One driver behind this growth is Emirates Global Aluminium's (EGA) subsidiary, Guinea Alumina Corporation (GAC).

GAC's expansive bauxite concession in northwest Guinea holds nearly 400mt (million tonnes) of this valuable resource in the area to be developed by 2040. In 2023 alone, GAC's exports reached 14mt, exceeding 10% of the nation's total bauxite exports. This impressive achievement hinges on a crucial logistical element: efficient transshipment solutions. Not only does transshipment ensure cost-effective transportation, it also lowers the environmental impact of global shipping.

The challenge: shallow waters and big volumes

GAC's bauxite reaches the port of Kamsar, on the Nunez River, by train. Here, however, a key bottleneck to export efficiency emerges: Kamsar's shallow waters restrict access for the largest dry bulk vessels. This is where transshipment steps in and emerges as a crucial link in the global supply chain.

After being unloaded from trains and temporarily stored, if needed, the bauxite is directed to a barge loading facility. Laden barges then travel to a deep-water anchorage, about 20 nautical miles off the coast. Here, specialized transshipment vessels take over and load Capesize and Newcastlemax vessels in ship-to-ship operations for transport to global destinations.

Rocktree takes the helm: expanding capacity and sustainability

Rocktree joined forces with EGA in 2022 to bolster transhipment capabilities. This included mobilizing the transshipment vessel, *RT Leo*, to work together with EGA's fleet and acquiring additional tug and barge sets.

Recognizing Rocktree's expertise and thanks to the successful operation during the first months, EGA nominated Rocktree as its main transshipment operator for the GAC project in 2023.

Rocktree now manages a fleet of vessels working alongside *RT Leo*, including the transshipment vessel *Loura*, four deck cargo ships, four tug and barge sets, and two assist tugboats. This integrated operation achieved a throughput of 14mt in 2023.

Giovanni Colotto, Head of Fleet for Rocktree, emphasizes the significance of this project: "The operation in Guinea is a cornerstone in Rocktree's diversification strategy. It expands our geographic and operational footprint, solidifying bauxite as a core commodity for us. We are proud to partner with EGA and contribute to the development of Guinea's economy by facilitating the competitive transport of Guinean bauxite."

Abdessadek Karimi, Director – Inbound Logistics, Supply Chain Logistics for EGA, highlighted the criticality of the transshipment and barging services as part of the overall EGA supply chain: "Transshipment operations are fundamental in ensuring the continuous and efficient export of bauxite from Guinea. This translates to a reliable supply chain, allowing us to achieve both performance and sustainability targets. Rocktree's

expertise in managing the entire marine logistics chain, from barge unloading to rapid vessel loading, has guaranteed consistently fast vessel turnaround times."

Transshipment performance highlights: efficiency and consistency

Rocktree's transshipment operation has achieved impressive results since its inception in 2023; 16mt have been loaded across 90 separate loading operations, involving more than 1,350 barge cycles.

The average gross loading rate stands in excess of 35,000tpd (tonnes per day), translating to an average loading time of a Cape in around five days when cargo is available. Utilizing their cargo storage capabilities, *RT Leo* and *Loura* are able to continue loading even when a barge is not alongside. During a recent transshipment operation, *RT Leo* loaded more than 10% of the cargo from storage, completing loading of 175,000 tonnes in 3.25 days, an impressive gross loading rate of 54,000tpd.

The transshipment advantage: a sustainable solution

The transshipment approach unlocks several key advantages. Firstly, it allows for the utilization of larger dry bulk vessels from the global fleet, even with limited port infrastructure. This translates to economic benefits for Rocktree's clients by leveraging economies of scale and reducing overall transportation costs.

Transshipment also plays a vital role in decarbonization efforts. By enabling the

use of larger, more fuel-efficient vessels, this transshipment solution has the potential to achieve about a 20% reduction in carbon emissions compared to direct shipping in smaller vessels. Based on 2023 shipments, this is estimated to save about 200,000 tonnes of CO_2e, equivalent to planting ten million trees!

It's noteworthy that transshipment vessels themselves contribute less than 2% of the total transportation emissions in the supply chain, highlighting the emissions reduction benefits of the solution.

Another key environmental benefit is the reduction in overall ship traffic. By enabling larger vessels to be loaded at Kamsar anchorage, transshipment reduces the number of vessels needed by 150 units, minimizing congestion and environmental impact.

Shaping a sustainable future for bauxite transport

This successful collaboration between EGA and Rocktree demonstrates the importance of efficient logistics solutions in supporting large-scale mining operations. By optimizing transshipment processes, Rocktree is playing a key role in enabling EGA to meet its production and environmental targets for shipping.

Building local expertise: a key factor in successful transshipment operations

Transshipment operations differ significantly from standard shipping services. Unlike traditional shipping vessels that call at ports for short periods, transshipment necessitates a strong, sustained presence at the operational site. This includes establishing a network of local personnel, vendors, and a diversified local logistics structure.

This local focus fosters long-term benefits for the surrounding community. By engaging local suppliers and subcontractors — maritime agencies, port service providers, speed boat operators, repair workshops, provisions and spare parts suppliers, transfer services, and hospitality providers — transshipment operations contribute to the building up and strengthening of local satellite activities.

Transshipment combines the need for maritime experience and cargo handling expertise, and immediate on-board employment opportunities for local personnel may be limited. Recognizing this, Rocktree has taken a proactive approach. By establishing offices in Conakry and Kamsar, Rocktree has begun building a team of local resources specifically focused on shore-based roles. This team addresses crucial areas such as procurement and logistics management, administration and finance, IT services, and crewing support.

This commitment to local knowledge extends beyond initial hiring. Rocktree actively fosters long-term integration of the local community into the project. This includes knowledge transfer initiatives, skills enhancement programmes, and local business diversification opportunities. Ultimately, this strategy fosters a mutually beneficial relationship between Rocktree and the local community and contributes to the overall development and prosperity of the region.

About Rocktree

Rocktree is an owner and operator of a diverse global network of offshore floating terminals focusing on providing long-term solutions to our partners. It solves key 'pinch-point' areas in port infrastructure services.

Rocktree provides its customers with customized logistics solutions by performing transshipment of dry bulk commodities off-shore via transshipment and shuttle vessels, bridging the gap between on-shore port loading and shipping transportation.

Shipment quality underpins alumina trade

What do a phone, a plasma television, a lithium-ion battery, and a light-emitting diode (LED) have in common? They all rely on the purest form of alumina to make synthetic sapphire. Essentially, alumina underpins the development of modern technology and its growth.

Global trade in alumina is booming. According to leading strategic market insight company, Precedence Research, the global alumina market size stood at around US$41 billion in 2022, with around half of that attributed to the Asia Pacific (APAC) market. By the end of 2032, the global alumina market is anticipated to reach around US$64.59 billion, with the compound growth rate predicted at 4.7% during the forecast period 2023 to 2032.

The global drivers behind the dynamic trade in this white crystalline material, aluminum oxide, are many, particularly as there are so many end products that rely on its supply. From the usual domestic and industrial demands including sheet aluminum to food packaging to the less obvious, but critical, semiconductors, lithium-ion batteries, and LEDs, which all require the highest purity alumina.

No substitutes available

High-purity alumina (HPA) stands at a minimum purity of 99.99%, otherwise known as 4N HPA, rising to purities of 5N and 6N. This purity means that it can manufacture the much sought-after material, synthetic sapphire. Currently, there is no substitute for HPA in the manufacture of synthetic sapphire.

The global trade in 4N HPA runs at a different pace. With Global Market Insights estimating the HPA market predicted to grow at a compound growth rate of over 13% through to 2032 and its value standing at over US$1.7 billion in 2022.

In the context of the increasingly digitized world, it is no surprise that this specific alumina trade is almost treble that of bulk alumina in general, and with there being no other raw material alternatives to synthetic sapphire on the horizon, the global trade in alumina shows no signs of slowing.

Too expensive to waste

So where does Bruks Siwertell fit into this picture? Firstly, fines should be considered, the tiny particles created by degraded materials. Alumina processing is incredibly sensitive to the level of fines in a shipment. Secondly, spillage needs to be scrutinized. All forms of alumina are very expensive, and the higher the level of purity, the higher the cost, no part of a bulk alumina shipment should be wasted through spillage.

If these two elements alone are considered, Bruks Siwertell has estimated that it could save the bulk alumina industry a fortune if it switched to Siwertell ship-unloading technology. These savings are applicable if switching from both pneumatics and grab cranes. This is because Siwertell technology addresses the two main points of material degradation and spillage.

Let us look at them in more detail, starting with grab cranes. Because alumina is a high-value dry bulk material, spillage associated with this traditional unloading method costs the industry millions of dollars every year.

Bruks Siwertell's customers report that, depending on the type of grab crane used for unloading, 1–3% of the entire shipment can be lost during the discharge process from spillage. In contrast, independently-observed tests with Siwertell ship-unloaders showed no loss of bulk material. This is because Siwertell ship-unloaders offer a totally enclosed conveying line, from the ships' hold through to the jetty conveying system or awaiting bulk trucks. This ensures no spillage and minimal dust emissions.

Preserving particle sizes

Pneumatics are enclosed, so do not incur spillage, however, they are associated with much higher levels of material degradation, with the ensuing production of powdery fines.

Any reduction in fines throughout the industry has a huge impact on downstream processing of alumina, including the extraction of aluminum from its oxide during the energy-intense process of smelting. The lower the percentage of fines, the lower the temperature required in the smelting process, which dramatically reduces a smelting plant's energy consumption. Bruks Siwertell estimates that minimizing cargo degradation by using

Siwertell screw-type unloaders across the industry would see annual savings into the hundreds of millions of dollars.

Feedback from a Siwertell ship-unloader customer, comparing its experience with a pneumatic unloader and a Siwertell unloader, notes that alumina discharged with its pneumatic unloader had a fines content, with a particle size of less than 45µm, of up to 5%. Its Siwertell unloader consistently returns average fines values of between 0.2 and 0.3%.

This extremely low fines level is the direct result of smooth material flows within the screw conveying system. There are no major forces acting on the particles, which means that they are drawn up from the ship into the conveying system with minimal disturbance and therefore are exposed to minimal particle collisions. This preserves the shipment quality.

Operators already benefiting

Bruks Siwertell has numerous global ship loader references for handling alumina including serving Hydro Alunorte alumina refinery located in the city of Barcarena, state of Pará, Brazil. It is the world's largest outside China. Bulk alumina is handled by a Siwertell A1800 I aeroslide shiploader fitted with a cascade chute, loading vessels at a rated capacity of 2,500 tonnes per hour.

Ship-unloading references include a Siwertell 10 000 S next-generation road-mobile unloader for Trímet France, part of Germany-headquartered, Trimet Aluminum SE. It serves the company's alumina import facilities in France's largest port, Marseille, which had an intake of around 50,000 metric tonnes of alumina in 2022.

The road-mobile ship-unloader was commissioned in 2021 and discharges shipments of alumina to silos, ready to be sent in rail wagons to a long-established aluminum-producing factory in Saint-Jean-de-Maurienne, south-east France.

At the time of commissioning, a spokesperson for Trímet France noted that: "One of the biggest challenges for us has been to reduce the time that a vessel stays at the berth. The faster vessels can be turned around the higher the utilization rate of the jetty, delivering better profitability for the terminal."

Trímet France's road-mobile unloader has a designed rated capacity of 130tph (tonnes per hour) for discharging vessels up to 10,000dwt. It also features advanced digital capabilities and is fitted with the Industrial Internet of Things (IIoT) device, CompuLab, which provides customers with remote access to extensive monitoring, follow-up support, diagnostics and troubleshooting.

Cost-driven markets

Trímet France leased an older Siwertell road-mobile system prior to it ordering its own. This speaks positively about the direct benefits that this technology offered one operator. Beyond this, road-mobile systems enable operators to respond dynamically to a market that is heavily cost driven, moving between ports located close to customers and offering discharging options dependent on market drivers.

Siwertell technology offers distinct advantages to the global alumina industry as a whole. Prerequisites for commercial success are proving to be heavily intertwined with managing rising energy costs and environmental impact.

Screw-type shiploaders and unloaders are very cost-effective options for alumina operators looking to tackle both of these issues with a single approach. Their gentle cargo handling, no spillage, and minimal dust emissions, together with market-leading through ship efficiencies, may just prove to be the solution that the alumina industry needs for a sustainable future. DCi

NORDEN to acquire Norlat Shipping to further grow projects and parcelling activities

NORDEN has entered into an agreement to acquire Norwegian dry bulk operator Norlat Shipping, which specializes in the shipment of forest products and other bulk commodities, with main trading routes from Northern Europe to North Africa and North America.

"With a customer-centric business and trading routes complementary to NORDEN's, Norlat is a great fit with NORDEN,' says NORDEN CEO Jan Rindbo. "Norlat allows NORDEN to further cement our growing position within projects and parcelling, enabling us to offer our customers fully flexible solutions, as a global provider of ocean-based freight services for bulk and project cargo of all sizes."

"The Norlat team is very excited to join NORDEN, an industry leader that has shown impressive results and strong growth over the years. Honesty, integrity and reliability have been the core of Norlat's operations, and we feel that NORDEN, thinking in the same way, is an excellent fit for us. NORDEN's success and growth has been an inspiration to Norlat, and we are confident that there are a lot of synergies that can be exploited. Our operations have many similarities, but almost no overlaps. Joining NORDEN will help us bring out the untapped potential that our team possesses, we are looking forward to starting this new adventure," says Norlat Managing Director Paal Henrik Boehaugen.

Privately owned Norlat was founded in 1986 and has since developed a core business focusing on the shipment of sawn timber from Baltic and Continental ports to North Africa and North America.

Norlat has offices in Sarpsborg and Bergen in Norway and in the Swedish capital of Stockholm, from where the company's eight employees operate the asset light business, based on chartered vessels with four to five monthly shipments on predominately Handysize ships.

"Norlat is an extremely skilled parcelling business, increasing NORDEN's access to the Northern European forestry trade, new customers and cargo. Matched with NORDEN's size and access, there are significant opportunities for further growth and commercial synergies," adds Jan Rindbo.

The acquisition will be NORDEN's second, following the mid-2023 acquisition of the activities of Thorco Projects, which is today fully integrated into NORDEN's Freight Services & Trading business unit, operating as 'Projects & Parcelling'. Norlat Shipping will become part of the Projects & Parcelling team in NORDEN.

The acquisition sum is undisclosed and will not affect NORDEN's guidance for full-year 2024. The acquisition is subject to merger clearance.

Intelligent drones to inspect the safety of Danish ships

A new project will develop an intelligent drone, which will be able to recognize on its own more than 99% of the possible errors that may occur on ships when they undergo a Safety Inspection. Drones with Artificial Intelligence can thus deliver more accurate and objective results than human beings. Innovation Fund Denmark has invested DKK 11.8 million in the project.

Ships must be inspected periodically for the purposes of classification and business operation. However, it is difficult to strike the right balance between regular inspections and inspection costs in order to prevent corrosion, serious damage or even catastrophic errors on the ships. Until now, attempts at drone inspection has required human pilots and specialists, and, opposite to the actual classification inspection, they have only been based on visual input.

That task must now be taken over by intelligent drones, which will be much more precise and effective than people when it comes to inspecting ships.

The objective of the Inspectrone project, which the Innovation Fund Denmark has just invested in, is to develop an autonomous system that will use many different sensors (both visual and touch-based, e.g. ultrasound), which will provide consistent and regular inspection data. It is expected that the

technology will ultimately be used in several different areas where inspection of closed, dangerous and other hard-to-access areas are required.

One of the project parties, FORCE Technology, has performed drone-based inspections for a number of years. The company's ultrasonic systems are among the world leaders for inspection use. With the help of Artificial Intelligence, the Technical University of Denmark will find defects in images, and via touch, technology can let drones test their surroundings. Another of the parties to the project, Lloyd's Register, has the best know-how with regard to the structural integrity of ships and will therefore be able to ensure that the drone-based inspection delivers satisfactory results. Dampskibsselskabet NORDEN A/S is one of the most innovative shipping companies and will deliver the ships that the drones of the project will be trained and tested on.

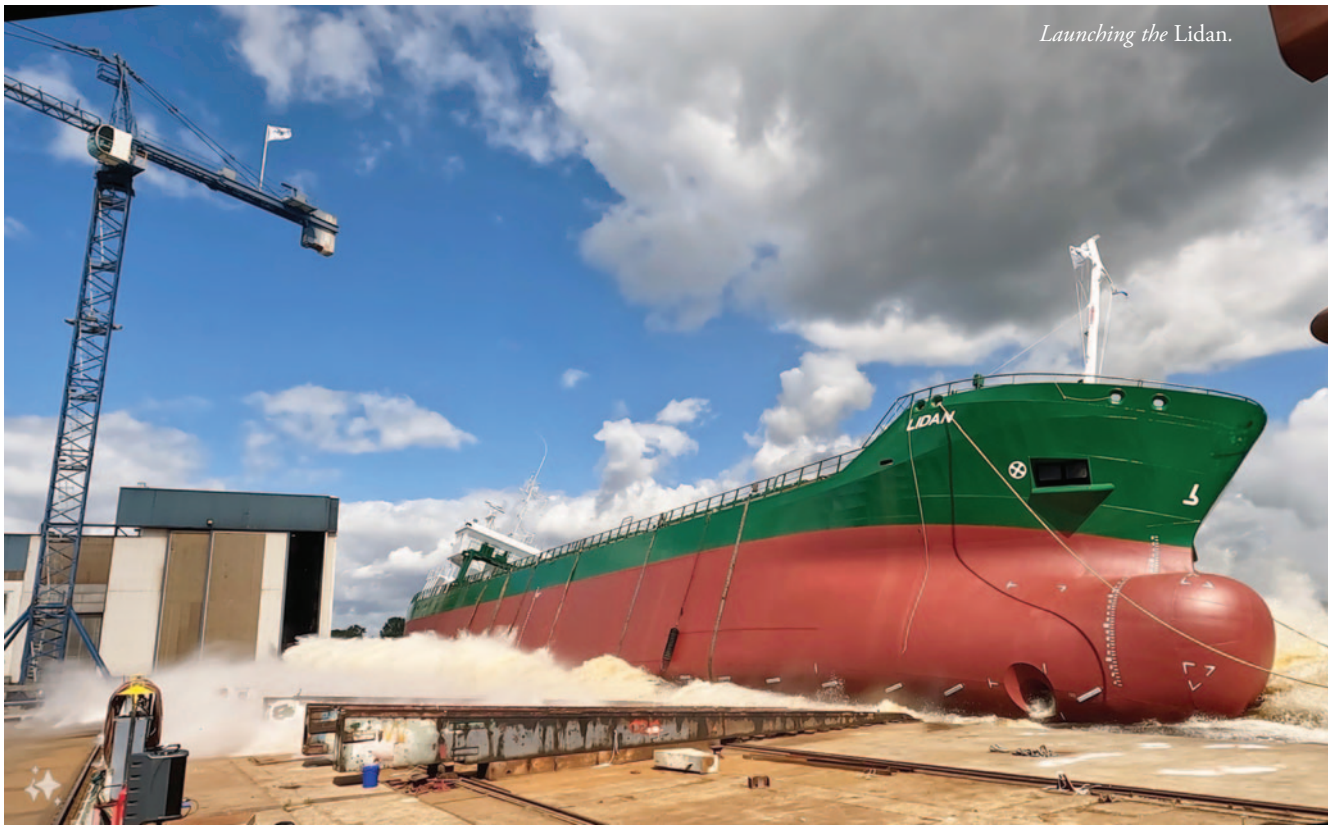
The aim of the project is, thus, to create a user-friendly system that does not require expert users, and which can provide objective and accurate inspections on its own.

"Our system contains human knowledge, but is, at the same time, more precise and objective. It will revolutionize ship inspections. The system is not costly and does not require an expert's input, as simply pressing a button on a screen is required. The system can carry out regular inspections and provide vital information on the health status of ships. I am convinced that this technology will be able to give the Danish inspection and Danish shipping industry a leading position on the market, says Evangelos Boukas, Assistant Professor at the Technical University of Denmark.

Facts

- Innovations Fund investment: DKK 11.8 million
- Total budget: DKK 19.4 million
- Duration of the project: 3 years
- Official title of the project: Inspectrone – Autonomous and high-level commanded system for remote inspection of marine vessels to support classification and commercial operations.

Erik Thun launches the next-generation Lake Vanern Max vessel



Launching the Lidan.

On Friday 28 June, the very first of Erik Thun's new dry cargo vessels, the next-generation Lake Vanern Max, was launched at Scheepswerf Ferus Smit BV in Westerbroek, Netherlands. The vessel was named *Lidan*, and the naming ceremony was performed by Godmother Benita Skisser accompanied by representatives from the yard, MF Shipping Group and Erik Thun Group.

Benita Skisser is the partner of one of Erik Thun's masters, Oscar Lancing, who is a captain in the second generation of officers from the same family sailing on the company's vessels. Erik Thun Group, a family-owned company, has always believed in the power of tradition, integrity, and forward-thinking.

The Lake Vanern Max is a testament to its dedication to being both long-term and innovative. *Lidan* is not just another addition to the fleet; she represents a significant leap forward in maritime technology.

Equipped with a state-of-the-art hybrid propulsion system, the Lake Vanern Max uses both battery power and traditional fuel to optimize energy use and reduce emissions. The battery pack enables peak shaving and power smoothing, ensuring efficient operations and minimal environmental impact. With its shore connection capability, the vessel can operate silently and emission-free while docked, significantly improving the air quality in ports and reducing noise pollution for crew members and surroundings.

Godmother Benita Skisser during the naming ceremony for the Lidan.

MAIN CHARACTERISTICS

Length overall:	89m
Breadth moulded:	13.35m
Draught:	6.24m
Deadweight:	5,100 tonnes
Hold volume:	206,000ft^3
Ice Class 1B (Finnish Swedish)	

The propulsion system of the Lake Vanern Max is designed for superior performance. With a large diameter propeller operating within a nozzle, it delivers increased thrust at lower speeds, reducing power demand during challenging seaways and icebreaking operations. This advanced design allows Erik Thun to reduce the installed main engine power by 18% without compromising performance, resulting in decrease in fuel usage and carbon emissions.

Erik Thun Group understands that the maritime industry plays a crucial role in global trade and environmental stewardship. As it continues to innovate and lead the way in maritime solutions, the company remains focused on its mission: to provide efficient, reliable, and sustainable shipping services that meet the needs of its clients and thereby it will continue to be a sustainable Swedish partner over generations.

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Berge Neblina sets sail following the installation of Anemoi's energy-saving Rotor Sails

Berge Neblina *(all pictures: Berge Bulk and Anemoi Marine Technologies).*

Berge Bulk's *Berge Neblina*, a 388,000dwt Valemax ore carrier, is currently completing its voyage to Brazil following the successful installation of four 5x35m Rotor Sails from Anemoi Marine Technologies Ltd (Anemoi).

The installation, which took place during the vessel's scheduled dry docking, was completed at Yiu Lian Dockyards (Shekou) Ltd in China. The selected Rotor Sails have been installed on Anemoi's bespoke folding deployment system, whereby the sails can be folded from the vertical to mitigate impact on air draught and cargo handling operations when in port.

"Leveraging the latest in wind technology to reduce our fleet's emissions is an important part of Berge Bulk's 'Maritime Marshall Plan' for decarbonization. We are optimistic that these Rotor Sails can deliver up to 8% carbon reduction," said Paolo Tonon, Berge Bulk's Technical Director.

Kim Diederichsen, CEO of Anemoi, said, "Anemoi's collaboration with Berge Bulk demonstrates how we are both working in partnership to ultimately secure shipping's zero-emission future. Anemoi remains committed to maintaining its position as a leading provider of critical vessel decarbonization technology."

Rotor Sails, also referred to as 'Flettner Rotors', are comprised of vertical cylinders which, when driven to rotate, harness the renewable power of the wind to propel ships. These highly efficient mechanical sails capitalize on the aerodynamic phenomenon known as the Magnus Effect to provide additional thrust to vessels. By leveraging wind energy, *Berge Neblina* will see increased efficiency by reducing the load on the main engine while maintaining speed, therefore substantially reducing fuel consumption and resulting in lower greenhouse gas emissions.

The technology is being increasingly

embraced by ship owners, especially in the bulk sector, who are aiming to achieve net-zero shipping emissions. Rotor Sails have emerged as a preferred technology to augment and enhance the energy performance of vessels. Rotor Sails are a compact technology, which offer a large thrust force to propel ships, helping them comply with pivotal international emission reduction benchmarks such as the Carbon Intensity Indicator (CII) and EEDI/EEXI.

About Anemoi Marine Technologies

Anemoi Marine Technologies is a major provider of Rotor Sails to the shipping industry. The energy saving technology offers significant reductions in fuel consumption and lowers CO_2, SOx and NOx emissions to deliver more efficient ships.

Following extensive research and development, Anemoi has commercialized the product for widespread adoption by the global merchant fleet. With a background in the bulk carrier sector, Anemoi's patented design addresses operational considerations, proving it can work for the majority of sectors.

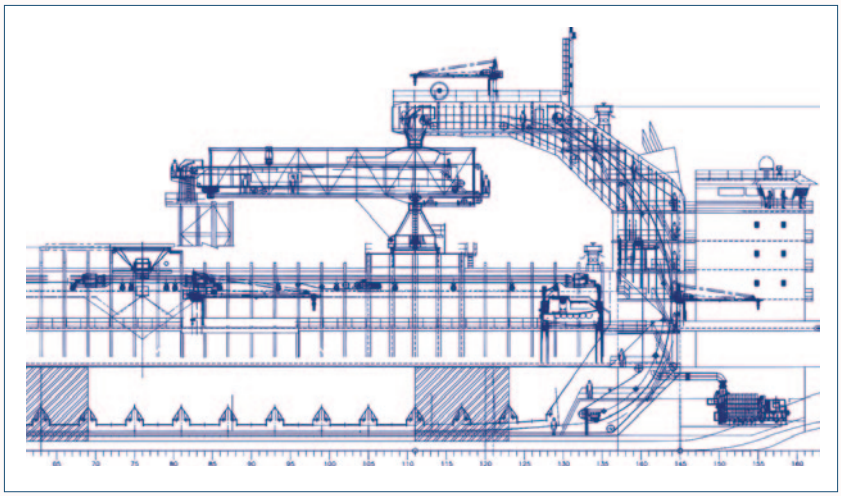
Rotor Sails play a key part in addressing industry environmental targets and creating a sustainable future of shipping.

CSL and BCI to build advanced transshipment vessel

CSL has announced a 21-year strategic partnership with BCI Minerals Limited (BCI) to build and operate an innovative transshipment vessel to support the Mardie Salt and Potash Project (Mardie Project).

As part of CSL's comprehensive transshipment solution, the custom-designed transshipper will handle 5.35 million tonnes of salt and 140,000 tonnes of sulphate of potash per year. Loading will take place at BCI's jetty loadout facility in Cape Preston, Western Australia, with the vessel navigating 12–15 nautical miles to transfer the cargo to oceangoing ships from Handysize to Newcastlemax.

"We are excited to partner with BCI and spearhead the development of this custom-built diesel-electric ship, which will provide a high-performance, safe and sustainable solution for the Mardie project," said Louis Martel, President and CEO, The CSL Group. "Aligned with CSL and BCI's commitment to environmental sustainability, the design of the new ship provides a pathway to achieve our decarbonization targets. Its diesel-electric propulsion system is engineered for future conversion to clean fuels or electrification."



New vessel highlights

- shallow draught to maximize cargo lift within tide and channel constraints;
- total deadweight of approximately 16,000 metric tonnes;
- gravity discharge, suitable for loading salt, sulphate of potash and other dry bulk commodities onto ocean-going vessels with a deadweight of up to 207,000 tonnes;
- high manoeuvrability, with double-ended propulsion;
- four azimuth drives and an integrated diesel-electric propulsion and powering system;
- single-point loading system with a loading rate of 3,300 tonnes per hour; and
- self-unloading system with a discharge rate of 4,000 tonnes per hour.

"BCI Minerals is very pleased to sign this major contract with CSL for a vessel specifically designed for the Mardie Salt and Potash Project, which will provide BCI with a secure and cost-effective shipping solution providing real benefits to our operations and our customers," said BCI's Managing Director, David Boshoff. "CSL's market leading reputation for delivering transshipment solutions and their commitment to safety and reliability make them an ideal long-term partner for BCI Minerals."

Construction of the new vessel will begin in spring 2026 with delivery scheduled in mid-2027. In the interim, beginning in the second half of 2026, CSL will provide a vessel on time charter to deliver transshipment services to the Mardie Project while the new dedicated vessel is under construction.

INTERCARGO joins shipping industry in calls for IMO to amend flaws in the Carbon Intensity Indicator

With discussions regarding the IMO's (International Maritime Organization) Carbon Intensity Indicator (CII) due to recommence at their Marine Environment Protection Committee (MEPC) 82 meeting in September, INTERCARGO, the association of dry bulk shipping companies, together with the other global shipping associations, have issued a pertinent joint policy statement to the IMO calling for changes to the flaws in the Carbon Intensity Indicator (CII).

Along with CLIA, BIMCO, InterManager, ICS, and INTERTANKO, INTERCARGO has indicated that the CII in its current format is inadequate and its one-size-fits approach, has inherent flaws that unfairly punish the shipping industry, particularly the dry bulk sector.

In line with the IMO's strategy to reduce emissions from shipping, the sector is actively striving to do all it can to achieve the goal of being carbon free by 2050. However, due to serious shortcomings with the CII metric the shipping industry is calling on the IMO to amend the current way the CII is applied, in order to avoid unintentional outcomes that conflict with the IMO Strategy to reduce overall greenhouse gas emissions.

In addition, INTERCARGO is calling on the regulatory authorities to work in closer cooperation with the shipping industry and flag states, to ensure that the true environmental performance of vessels is reflected in the CII.

Kostas Gkonis, Secretary General of INTERCARGO, said: "In March the IMO recognized the concerns raised by the shipping industry relating to the shortcomings and unintended consequences of the CII, resulting in agreement that it should be reviewed. The IMO has, so far, received 78 submissions calling for amendments and/or highlighting the concerns of the CII. INTERCARGO and the rest of the shipping industry will be part of the solution to these issues, and we look forward to the commencement of the CII review at the IMO's Marine Environment Protection Committee in the autumn."

INTERCARGO and its members remain fully committed to safe, sustainable shipping in clean oceans and in line with IMO targets, we will continue to strive to be carbon free by 2050.

The full joint policy statement can be viewed on INTERCARGO's website.

About INTERCARGO

International shipping is vital for the global economy and prosperity as it transports approximately 90% of world trade .The dry bulk sector is the largest shipping sector in terms of number of ships and deadweight. Dry bulk carriers account for 43% of the world fleet (in tonnage) and carry an estimated 55% of the global transport work.

The International Association of Dry Cargo Shipowners (INTERCARGO) unites and promotes quality dry bulk shipping, bringing together 250 forward-thinking companies from 30 countries. INTERCARGO convened for the first time in 1980 in London and has been participating with consultative status at the International Maritime Organization (IMO) since 1993.

INTERCARGO provides the forum where dry bulk shipowners, managers and operators are informed about, discuss, and share concerns on key topics and regulatory challenges, especially in relation to safety, security, the environment, and operational excellence. The Association promotes its members' positions to IMO, as well as to other shipping and international industry fora, having free and fair competition as a principle.

INTERCARGO members achieving fewer deficiencies and detentions

INTERCARGO-registered dry bulk ships continue to outperform the industry average in both deficiencies and detentions, as highlighted in the latest INTERCARGO *Benchmarking Report on Bulk Carriers*.

The report analyses a period marked by geopolitical turmoil due to the Ukrainian crisis and indiscriminate attacks on merchant vessels legally sailing through international waters in Gulf of Aden and Red Sea, leading to injuries and fatalities of innocent seafarers. It also stresses the urgent need for all stakeholders to truly focus on the safety of seafarers and eliminate the occurrence of such threats.

The report details detention rates and deficiencies per inspection across Flag States, Port State Control, Class, and P&I Clubs. INTERCARGO-registered vessels consistently demonstrate better performance in Detention Rates (DTR) and Deficiencies per Inspection (DPI) compared to the global dry bulk fleet with the report enabling members to compare their own performance against industry standards.

In 2023, DTR decreased for the dry bulk fleet globally, whilst DPI saw a slight increase across the industry. Statistics from nine regional PSC authorities and two national PSC regimes show that vessels at Australian ports have the highest DPI rate, with AMSA reporting a rate of 3.92% compared to the average of 2.00%. AMSA also has the highest DTR at 4.50%, versus an average of 1.90%. Bulk carriers in the Black Sea, Paris, and Tokyo MoU regions have higher than average detention rates. The Tokyo MoU conducted nearly 15,000 inspections, the highest amongst the regions, followed by Paris and Vina Del Mar MoUs with around 3,800 inspections each.

INTERCARGO is dedicated to operational excellence in safety, security, health, and environmental standards, maintaining a quality policy that exceeds industry norms.

In 2023, it achieved record membership, representing one-third of the global dry bulk fleet by deadweight. It continues to promote best practices as demonstrated by the launch of the DryBMS voluntary self-assessment scheme of bulk carrier operators this spring and its leading role in the founding of the Dry Bulk Centre of Excellence (DBCE), set up to govern and administer the DryBMS framework.

INTERCARGO Vice-chairman Spyros Tarasis praised members for their continued pursuit of operational excellence: "The INTERCARGO badge of quality is widely recognized in the industry; I commend members for helping to achieve the Association's ambitious goals."

Damen and Atal Solutions announce partnership to slash shipping emissions

Early in June 2024, Damen Shipyards Group announced its role in a partnership with Atal Solutions and other parties that will deliver a significant boost for the maritime green transition. For BAM Shipping, the project partners will undertake the retrofit of four bulk carriers by integrating eight different proven technologies. Damen's role is to provide the vessels with fuel-saving and emission reduction technologies. Following this, the bulk carriers are anticipated to consume at least 20% less fuel and reduce up to 99% greenhouse gases (GHG).

The increased efficiency paves the way for these and other existing vessels to sail in compliance with recent regulations such as the Energy Efficiency Existing Ship Index (EEXI) and Carbon Intensity Indicator (CII). Additionally, the reduced OPEX of the vessels is expected to yield a rapid return on investment. As a further benefit, the overhaul is anticipated to increase the vessel's lifecycle by a further ten years.

Committed to the green transition

Damen is committed to the shipping transition and has set itself the goal of becoming the most sustainable maritime solutions provider in the world. This commitment is shared by Atal Solutions, as underscored by the company's arrangement of the US$123.7 million funding for this unprecedented project. Atal will provide a supplier's credit amounting to US$105.2 million, requiring vessel owners to provide just 15% equity, and having a ten-year repayment period with competitive interest rates.

The approach enables considerable emissions reduction with conventional fuels. With no requirement to await the maturation of emerging technologies and/or relevant fuel infrastructure, a positive environmental impact can be made in the shortest possible timeframe.

New standards for emission reduction

Atal Solutions' Founder and Managing Director Edwin Sieswerda said, "We look at real impactful solutions — easy and fast to implement, based on proven technologies — and avoid idealistic solutions. If we truly believe in a project, we make it happen and don't stop until we do. Currently, we are working on four vessels, but we anticipate many similar projects will follow upon the successful implementation of this initiative. Additionally, we expect increased support from the financial sector as the positive impact of our integrated solution becomes evident. Atal's ongoing collaboration with Damen and other industry players helps them set a new standard for fuel-saving and emission-reduction solutions."

Sustainability at the forefront

Rutger van Dam, Business Development Manager at Damen said, "We are proud to team up with Atal Solutions to offer a robust solution for financing large projects such as this one on behalf of BAM Shipping, while mitigating risk and keeping sustainability at the forefront. Embracing Atal Solutions' innovative vision and capabilities, we are confident that this collaboration provides the ideal solutions to meet the current demand for cleaner shipping and fuel saving technologies. Our mutual goal is to accelerate the transition to more sustainable shipping while ensuring that the business case and revenue generation remain competitive. The financing structure of this project is a breakthrough, enabling significant advancements in sustainable shipping with a commercially viable model."

The project is currently being implemented and is expected to be realized by Q1 2025.

Damen Shipyards Group - oceans of possibilities

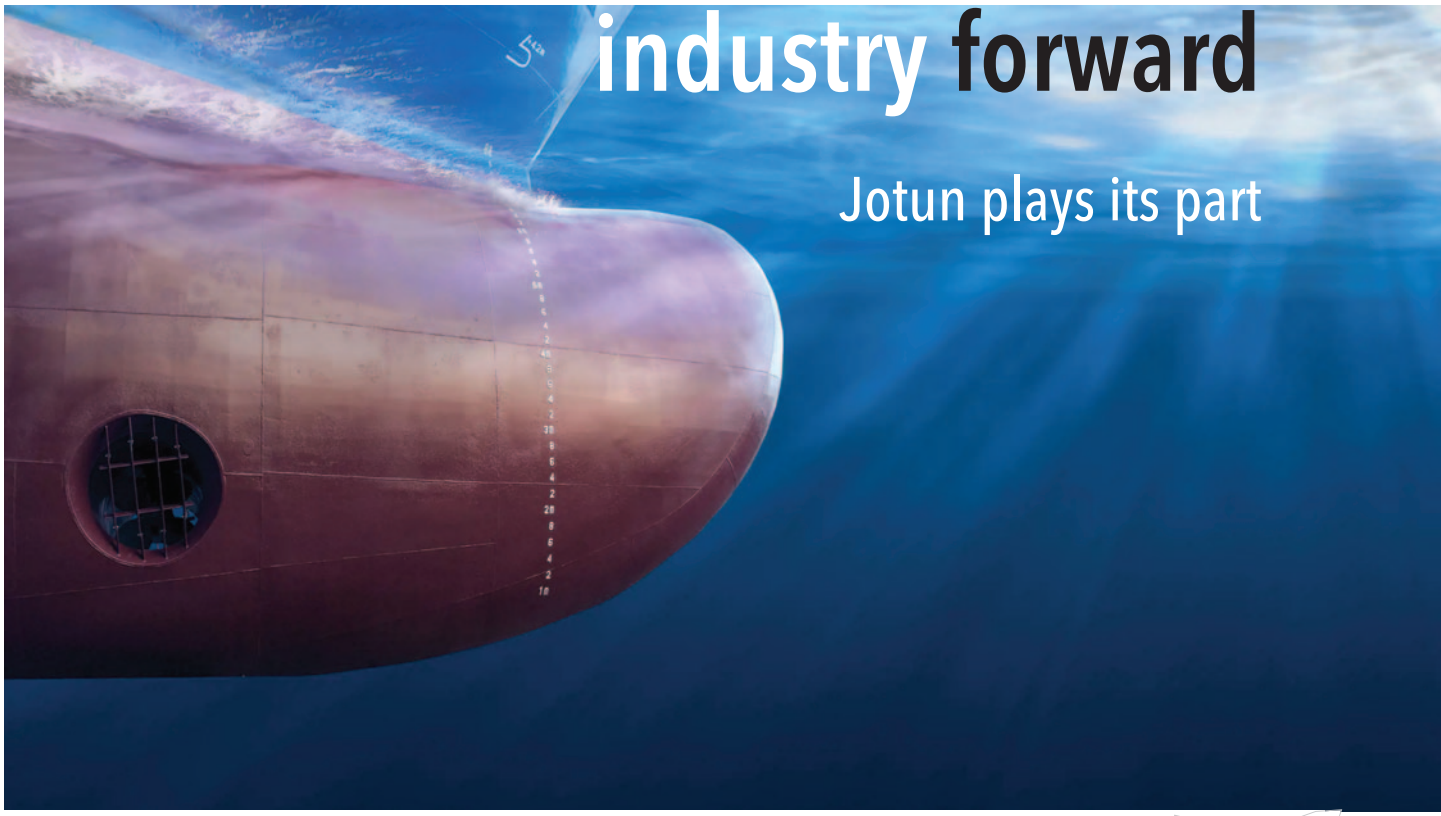
Damen Shipyards Group has been in operation for over 95 years and offers maritime solutions worldwide, through design, construction, conversion and repair of ships and ship components. By integrating systems, it creates innovative, high quality platforms, which provide customers with maximum added value.

Damen's core values are fellowship, craftsmanship, entrepreneurship and stewardship. Its goal is to become the world's most sustainable shipbuilder, via digitalization, standardization and serial construction of its innovative vessels and through use of circular materials.

Damen operates 35 shipyards and 20 other companies in 20 countries, supported by a worldwide sales and service network. Damen delivers in the region of 100 vessels per year, with a total production value of over €3 billion. It offers direct employment to approximately 12,500 people. In all that the company does, it aims to ensure a positive impact on the local environment and society.

R&D propels the shipping industry forward

Jotun plays its part



As the demands on environmental compliance, transparency and efficiency are escalating around the globe, the role of research and development (R&D) is a key for driving the industry forward. Its importance as being the first step in solving complex challenges cannot be over emphasized, but it is only of value if the industry is able to make use of the knowledge obtained.

As an industry, shipping is obliged to adapt to rapidly changing regulatory and ESG demands whilst remaining competitive and efficient. To be able to deliver both 'must haves' and 'nice to haves' to the industry, product and solution providers are increasingly investing in R&D with significant efforts targeted at green innovation which may be in production processes or in developing products that are greener or which improve efficiency and sustainability.

Jotun is recognized as one of the foremost players in the marine coating industry and has for almost a century invested significant resources in its in-house R&D. Its research activities actually started with the marine industry delivering coatings for whaling ships, and today the aim of helping the shipping industry keep clean hulls is at the core of Jotun's Clean shipping commitment. Although not all coatings companies have close to 100 years of R&D, research still serves as the backbone for the whole industry with transparency and joint industry projects helping lift the knowledge and science behind what eventually end up as products and solutions for the shipping industry.

> "As well as addressing known challenges, in essence R&D should be proactive and not reactive and look forwards to possible new challenges that may arise in the future."
>
> **Christer Lorentz Øpstad, Global R&D Director at Jotun**

Focus on sustainable solutions

"In all of its R&D, Jotun has three primary elements that it works across. These are technology and platform development, direct innovation where there is a defined product to innovate and create, and finally existing products that are in the market and their management and maintenance to keep them relevant and performing," says Christer Lorentz Øpstad, Global R&D Director at Jotun.

Øpstad points out most processes for developing new products and solutions at Jotun are driven from a customer-centric perspective. When a specific challenge arises in one of its markets, it looks for

solutions. That could be an improvement to an existing product or may involve completely new products and approaches.

"I believe we are at the forefront of driving the development of innovative solutions which aim to contribute to safe and sustainable operations in the industries Jotun serves. This does not only include the shipping industry, but also for several industries such as the energy sector both offshore and onshore, as well as infrastructure, just to mention a few," Øpstad says, and continues: "Because of the impact of new regulation and the drive to develop innovative solutions, Jotun has expanded its scientific footprint. For example, the expertise in our company centred on antifoulings is no longer solely in chemistry, but represents a wide range of disciplines, everything from data science and mechanics to polymer science and marine biology — a vast difference compared to how it used to be some years ago."

Øpstad explains that new ideas will be developed and refined through a structured innovation process that involves testing the new concept before an innovation board to determine its potential. This approach has resulted in several technologies, products and solutions that may not previously have been thought possible.

Finding smarter ways to fight fouling

In the past, the driving factor in this market was the need for owners to reduce biofouling to preserve fuel to save money and to meet time charter commitments around speed and consumption. In recent times that has changed with international regulations developed at the IMO putting a mandatory requirement upon ships to operate within strict efficiency limits to reduce emissions from the fuel used on board. In addition, emission charging such as the EU ETS has resulted in a new type of expense that shipowners need to meet.

Furthermore, a new form of regulation is slowly coming into being with ships obliged to protect biodiversity by reducing or eliminating the transfer of invasive species.

Collaboration is key to success

Øpstad firmly believes R&D is not just a matter of working with customers to overcome challenges and points out there are many benefits to also working with other stakeholders, including academic researchers and even different players in the industry.

As an example, Jotun experts recently presented papers and shared unique insight on developments in antifoulings at the International Congress on Marine Corrosion and Fouling (ICMCF), hosted in Guangzhou, China. The comprehensive papers centre on Jotun's Clean shipping commitment and details new solutions and methods to help the shipping industry navigate these challenging issues.

> "As well as addressing known challenges, in essence R&D should be proactive and not reactive and look forwards to possible new challenges that may arise in the future."
>
> **Christer Lorentz Øpstad, Global R&D Director at Jotun**

Commenting on the importance of research work and Jotun's participation at ICMCF, the Congress Chair Professor Guangzhao Zhang from South China University of Technology says, "The shipping industry is highly dependent on new and relevant research that can contribute to make it more sustainable and efficient. We find that conferences such as ICMCF are important for players who contribute in the field of marine corrosion and fouling, with research and concrete solutions. We endeavour to create an arena that can contribute to transparency, so that knowledge and research do not remain in individual silos."

The congress secretary Dr. Qingyi Xie adds, "Jotun's invited keynote talk contributes to the ICMCF, demonstrating their effort in developing new eco-friendly antifouling technology."

"It may be considered relatively niche from a commercial perspective, whereas for the scientific community revolving around this industry it is the single most important conference in terms of gathering researchers together," Øpstad adds.

New technology and field test methods

One of the papers addressed an issue that is less about ship operations and more about preventing air pollution from VOCs (volatile organic compounds) emanating from antifouling coatings, as stricter VOC regulations implemented around the world have had a major impact on the paint and coating industry. The paper and presentation explored waterborne coatings from a VOC reduction perspective and outlined some of Jotun's efforts in developing waterborne antifouling coating technology.

"Waterborne coatings contain far fewer VOCs than conventional products because the polymer particles are carried in water rather than a solvent. The coating forms and hardens as the water evaporates achieving the same end result of a stable coating with less emissions," explains Øpstad.

Another area where Jotun specialists contributed was within risk assessment of release of biocides and substances of concern such as copper and zinc from compounds in antifouling coatings. Current methods for measuring release of chemical elements are not considered accurate enough or are expensive and impractical for routine use. Jotun presented a new field test method which is believed to be more robust, and less resource demanding and proposed a new ISO standard method based on research findings.

"These are just a few of the developments within marine coating we are working on in Jotun and we know other players are also having a great focus on R&D. Adding knowledge and sharing experience on the main issues that we are trying to improve transcend what we as a company, and the whole industry, can and should achieve," says Øpstad and concludes, "So, the work we do in our labs, in combination with conferences and meeting places like ICMCF, will drive the industry forward and also pulls down the walls between stakeholders. This way we can together elevate our overall knowledge base, and faster solve the issues at hand." DCi

Launching the 'Arklow Rose'

built by Royal Bodewes

It is Tuesday 18 June 2024, *writes Simon Marrink**. Around six o'clock in the morning, the morning dew over the fields and the Eemskanaal slowly makes way for the rising sun. Near Overschild, the silence is suddenly broken. A train appears from the dew. It is a beautiful sight. The tugboat *Waterpoort*, dating from 1962, is once again pulling a new ship from a shipyard on the Winschoterdiep to Delfzijl with its 850hp strong Stork Werkspoor engine. It turns out to be the *Arklow Rose*. To find out more about this ship we visit the construction site in Martenshoek.

The office of Royal Bodewes, a trade name of the Bodewes Group, is located on the Werfkade in Martenshoek (Hoogezand). The designation Royal was awarded on 12 November, 2012. The start date of the shipyard is 7 February 1812. A little further on are the shipyard buildings, which bear the names Jachtwijk and Verstockt.

In the last century, numerous shipyards were found here, mainly building coasters. Nowadays, only the Royal Bodewes shipyard is located here, which builds ships within the width restriction of almost 16 metres, the maximum passage of the bridges.

Bodewes also has a shipyard in Foxhol, together with Passer SIDC. A RoRo cargo carrier is currently being built there under construction number 810 for a customer from French Polynesia. Earlier this year, Bodewes delivered a cement carrier from this location to a customer from Taiwan. In the past, the yard also had hulls built abroad and finished them in Martenshoek.

As a result of optimizations in the production process, it is now financially more attractive to build the ships completely in-house.

'Sustainable, innovative & reliable' family business

The shipyard is now managed by the sixth generation of the family. Herman Bodewes, together with Johan Schouwenaar and Joke Haringsma, forms the management of the shipyard. But seventh-generation family members now also work at the shipyard. This focuses on building freight ships and cement carriers for sea shipping. Occasionally special ships are built. The LNG tanker *Coralius* is a good example of this. Ships that are all characterized by being sustainable, innovative and reliable. A total of approximately 100 people work at the office and yard in Martenshoek.

** This article was written for, and originally appeared in, Dutch publication* Binnenvaartkrant.

Future

"The future of shipbuilding is linked to the question to what extent shipyards will be able to build ships that can operate climate neutrally without increasing operating costs for the shipowner," Martijn Beunk of Bodewes' Business Development department answers my question about the future of the yard. Using low-emission engines that run on alternative fuels is becoming increasingly important.

Sometimes ships are equipped with a crane for loading and unloading cargoes. In addition to innovative propulsion, Bodewes has developed an energy management system that allows a ship to carry out port activities emission-free and is also able to sail emission-free for a certain period. The yard's success is explained by a proactive market approach where the customer is always king. The family business builds at competitive prices with a high degree of flexibility.

'Arklow Rose'

This ship is the sixth unit of an order for the construction of no fewer than seven identical ships. The order comes from Arklow Shipping from Arklow, Ireland. The *Arklow Rose*, yard number 826, was launched athwartships on 26 April. The ship is of the EcoTrader 6800 type. This also indicates the carrying capacity. It can transport various types of cargo, such as grain, wood, coal and paper. The overall length is 104.93 metres and the width is 15.00 metres. To reach a speed of 12 knots, a 6-cylinder MaK main engine of the type 6 M 25 C with a power of 1,740kW has been installed on board. After the sea trials, which were held on 19 June, the ship was delivered by the yard to the shipping company two days later. After the transfer, the ship left Eemshaven for Hamburg on 22 June to join the G.T.H. She arrived at Terminal Hamburg to load for Greenore in Ireland. The *Arklow Rose* sails under the Irish flag with Arklow as its home port. The *Arklow Rover*, the last ship in this series, is now at the shipyard.

About Royal Bodewes

The past and future of shipping

Royal Bodewes has been building efficient and high quality vessels for well over 200 years. It is proud of its rich history and the progress it has made, from the wooden shipbuilder that it was in 1812 to the innovative and sustainable shipbuilder that it is today. Royal Bodewes turns ideas into high quality products. In close consultation with its clients, Royal Bodewes builds the most efficient, economical vessels in the world. Find out more about our unique building process.

Next generation shipping: Green, Lean and Clean

Shipping is a very sustainable method of logistics due to its efficient mode of transport. Because ships often last 20–25 years, in practice many ships sail with outdated techniques. With climate change becoming an increasingly important issue, Royal Bodewes — in anticipation of regulations that may come into force in the future — designs and builds highly environmentally friendly ships on the condition that these sustainable measures hardly increase the operating costs of the ships.

About Arklow Shipping

The Wind of Change

The 1960s saw a new dawn in the Irish Shipping Industry. One by one, the few remaining auxiliary schooners were replaced by more modern craft. The age of sail had finally come to an end and in some quarters it was felt that the whole approach to shipping needed to be overhauled. With this in mind Captains James Tyrrell, Michael Tyrrell and Victor Hall formed an umbrella company under which to operate their seven ships. The age of single-ship companies was past. Working in co-operation with each other gave a strengthened position in the market place and reduced overheads and thus in 1966 Arklow Shipping Limited came into existence.

The original seven ships in the fleet were: *Tyrronall* 244grt, *Murell* 319grt, *Marizell* 418grt, *Valzell* 576grt, *Kilbride* 321grt, *River Avoca* 384grt and *Avondale* 303grt.

Over the next 50+ years, Arklow Shipping has bought, sold and built ships. Like all companies in the shipping business it hasn't always been easy sailing but because of the steady expansion scheme the company has been able to meet market demand. The fleet currently stands at 59 ships.

Chartering

Two dedicated, highly motivated teams of shipbrokers manage all aspects of Arklow's vessel chartering.

The company's personnel are experienced in the transportation/logistics of project cargoes and offshore structures, offshore and landline pipes, bulk grain trades, dangerous bulk cargoes, steel rails, minerals, generals.

Arklow believes that providing customers with good and timely performance ensures their satisfaction and in turn affords further opportunities to develop the business.

Arklow specializes in the management of logistics of high volume/high frequency/ low stocking level contracts. DCi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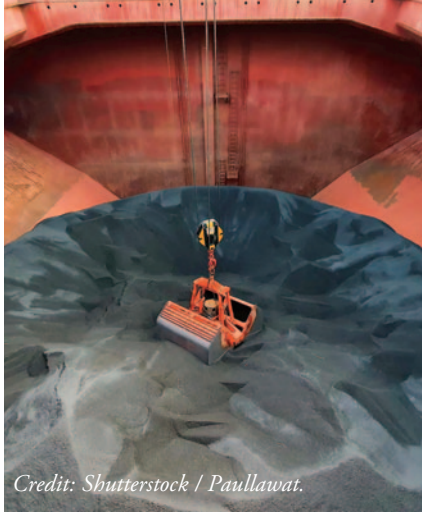

Credit: Shutterstock / Paullawat.

Bulkers in focus workhorses of the ocean

Jay Venter

Positive outlook for bulkers as demand outpaces supply

Strengthening demand and limited supply are expected to boost freight rates and increase the profitability of bulker operations over the next five years. Energy efficiency and sustainable biofuel will likely be the key focus for the decarbonization of both the existing bulker fleet and newbuilds.

Growing global demand for commodities and a sluggish newbuild market up until 2023 have set the stage for bullish growth in the bulker market in the coming years. Bulker owners are taking advantage of these favourable market conditions and starting to invest.

International demand for dry cargo is increasing

Although high interest rates and inflation have hampered the global economy over the past few years, demand for dry cargo remains strong, increasing by over 5% in 2023, led by some key commodities.

"Demand for iron ore, which has the biggest share of the global dry bulk market, is still strong," says Morten Løvstad, Vice President and Global Business Director for Bulk Carriers at DNV. "Even the demand for coal, which has the second-largest share, has remained strong despite forecasts that this would decrease due to the energy transition. On top of this, the demand for grains and especially soybeans is growing exceptionally, together with what we commonly refer to as 'minor bulk'."

China drives demand for bulkers

China, the largest global importer of dry bulk commodities, has been dictating the strength of the bulker market for years.

"The Chinese economy seems to be picking up again after some weak years during and just after the Covid-19 pandemic. While there is still uncertainty related to the strained Chinese real estate sector, and how this will impact the demand for iron ore and steel products, overall it seems to be heading towards a soft landing," says Løvstad.

This is being reinforced by the need to secure energy supply in China. "Although China is significantly expanding its renewable energy infrastructure, it continues to prioritize energy security. Coal is still the easiest way to achieve this, and we saw a record number of new coal-fired power plants being constructed in China in 2023, driving continued high demand for coal imports."

Demand for food-related commodities increasing rapidly

"On top of this, demand for food-related commodities is actually increasing faster than anything else," continues Løvstad.

For example, demand for soybeans increased by over 10% in 2023, driven by an expanding global population and changing eating habits.

"In China, the population's diet is shifting from mainly rice and vegetables to more meat-based," says Løvstad. "This resulted in sharp demand increases for soybeans as animal feed, boosting exports of soybeans from Argentina and Brazil to China."

Longer distances lead to increased tonne miles

High demand for dry bulk commodities means more tonne miles, which has been reinforced by geopolitical developments.

"Events such as the Ukraine conflict and Red Sea attacks have altered trading patterns, leading to longer shipping routes. The result is a higher increase in total tonne mile demand compared to the pure tonne demand," says Løvstad.

Demand for bulkers is outpacing supply

Favourable market conditions for bulker owners are amplified by a supply/demand imbalance for vessels. This has mainly been driven by extremely low newbuild activity between 2019 and 2022, resulting in demand outpacing supply.

"At the beginning of 2023, the ratio of the bulk carrier orderbook compared to the entire fleet was only around 5%, which was the lowest ratio in 30 years," says Løvstad.

"At the other end of the scale, much of the existing fleet is ageing, with around 30% being older than 15 years. These vessels are low on fuel efficiency with uncompetitive operating costs, and struggle to stay compliant with environmental regulations. That makes them less attractive to cargo owners and they are gradually being phased out."

Strong freight rates for bulker owners

These factors have pushed freight rates up.

"In the second half of 2023, we saw a strong uptick in freight rates, largely due to more clarity around some key factors, like the impact of the Chinese real estate market collapse on steel production and imports in China, and IMO environmental regulations following MEPC 80," says Løvstad.

"The first quarter of 2024 was also extremely strong — actually the strongest

Q1 for ten years. For some vessels, like the Capesize fleet, freight rates increased by 30% in the first quarter to reach as high as US$35,000 per day, compared to a break-even rate of about US$15,000–20,000 per day for the majority of the fleet.

"Although these rates softened at the end of the quarter, we believe they will remain quite firm, and strengthen again during the second half of 2024 and onwards."

Bulker owners keen to reinvest profits in newbuilds

As many bulker owners profit from current market conditions, and the outlook for the next three to five years remains strong, the appetite for reinvestment in newbuilds is high.

"Even though it made more sense, tactically, to invest two years ago when newbuild costs were almost 40% lower, and yard space is now getting more limited, we are seeing growing demand for newbuilds. We observed an increase in new orders in 2023, especially for Ultramax and Kamsarmax orders, with more of the same expected in 2024," says Løvstad.

New bulker orders struggling to keep pace with retiring vessels

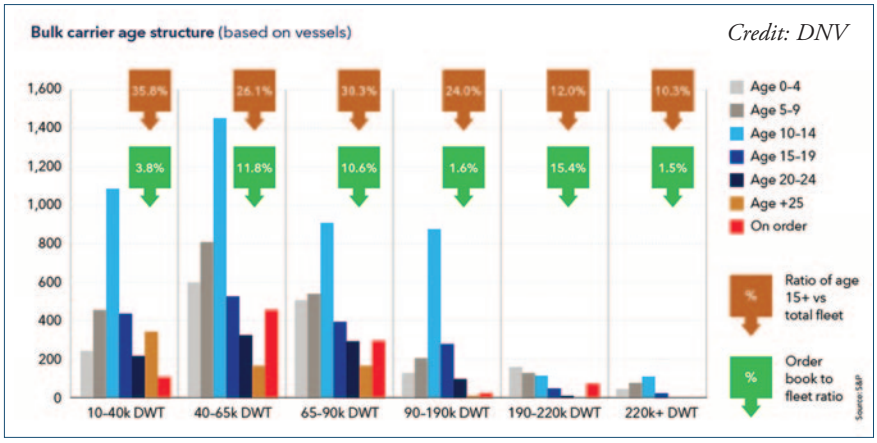
Although the proportion of vessels on the orderbook compared to the entire fleet has risen to around 8.5%, this is still low. "With the continued strong demand increase, this ratio between orderbook and fleet would need to be much higher — around 15–20% — for the market to be in balance, especially as many older vessels are likely to be phased out over the next five years."

"In 2023 more than 150 Ultramax and 150 Kamsarmax orders were placed, reflecting the expected phasing out of a high number of aged Supramax and Panamax vessels. In 2024 we expect this to continue, but with a focus switch towards the Handysize and Capesize segments."

Some factors could constrain newbuild activity

According to DNV estimates, between 400 and 500 bulkers will be ordered on average every year over the next five years. However, this will be restricted by availability of yard space, while the time it takes from order to delivery means that it will be at least three years before supply begins to catch up with demand.

Some other factors, such as uncertainty around investment in decarbonization technologies, could also restrain newbuild momentum.



"Because the capex for new bulkers is lower than most other segments, the additional capex for adding sophisticated alternative fuel solutions accounts for a much higher percentage of the overall vessel value," says Løvstad. "For example, a dual-fuel LNG solution costs around the same for tankers and bulk carriers — around USD 15–20 million for a Newcastlemax bulker and a VLCC tanker. This accounts for an additional 15–20% of the overall capex of a VLCC but closer to 25–30% of the capex of a similarly sized Newcastlemax."

Amid soaring demand for bulk shipping and an ageing fleet, the order book for new tonnage is likely to exceed yard capacities in the medium term. Credit: Shutterstock / Aerial-motion

What is the path to decarbonization for bulkers?

A range of factors cause bulkers to lag behind some other segments when it comes to decarbonization.

"For example, container shipping is more closely linked to global supply chains where environmental sustainability has been established as a more prominent concern among clients and end users for a longer period of time," says Løvstad. "Additionally, container shipping companies are much more consolidated and therefore often have greater financial resources than dry bulk companies, giving them more scope to invest in new technologies, pilot projects and alternative fuels."

Bulk carriers are also optimized to carry heavy cargo at a moderate speed. This makes them more energy efficient than other segments, such as containerships, with a lower carbon footprint per tonne mile, which reduces the urgency to decarbonize.

Low uptake of alternative fuels for bulkers

Some other factors are restraining the uptake of alternative fuels for bulkers. For example, many smaller bulkers have unpredictable and diverse 'tramping' routes, which reduces the predictability of bunkering options.

"In some segments, like containerships, most vessels have fixed routes and know exactly where and when they need to refuel. This is different for smaller bulkers, which bunker in diverse locations. This is a particular challenge if the supply of fuels like ammonia or methanol is not ubiquitous," says Løvstad.

"We therefore think that at least 90% of the newbuilds over the next five years will still be based on conventional fuel and that there will be a lot more focus on energy efficiency measures, combined with the use of biofuel as a drop-in fuel."

Energy efficiency options for bulkers

Several energy efficiency options are already being applied to bulkers, with this set to become more common during the upcoming wave of newbuilds. These include design improvements, operational efficiencies and an array of energy-saving devices, such as shaft generators, variable-frequency drives and wind-assisted propulsion systems (WAPS). Bulkers can also take advantage of digitalization solutions, such as DNV's Steel Load Planner app, which can help to reduce emissions by optimizing utilization space in cargo holds.

"There is not one fixed solution which is suitable for all types of bulkers. WAPS look promising for the bigger, gearless bulkers (Kamsarmax, Capesize etc.) because of the high availability of deck space as well as the fact that these vessels generally take long voyages on open seas, where wind conditions are usually more favourable.

"Such equipment may be less suitable for geared bulkers due to conflict with the on-board cranes as well as the fact that many of these vessels take shorter voyages with more frequent manoeuvring in and out of port."

What will bulkers of the future look like?

"The majority of newbuilds will be optimized for low fuel consumption at lower speeds – typically 10 to 12.5 knots. Combined with energy-saving technological solutions and drop-in biofuels, this is likely to be the most cost-efficient and widespread decarbonization path over the next five years," says Løvstad.

"However, we should still see some of the bigger vessels (Capesize, Newcastlemax, VLOC) and smaller vessels in specialized or coastal trade powered by alternative fuels. Most of these will continue to be LNG-based but we are also expecting some growing interest for methanol- and ammonia-powered vessels."

Further down the line, perhaps in ten years, technologies like on-board carbon capture and storage could also play an important role.

"All options are on the table, and we will likely see a combination of measures being implemented in the coming years," concludes Løvstad.

By Morten Løvstad, Vice President, Business Director - Bulk Carriers at DNV

No 'one size fits all' decarbonization solution for dry bulk

Ulrik Dan Frorup, Chief Commercial Director at Bureau Veritas Marine & Offshore, argues that each dry bulk operator needs to follow their own decarbonization strategy.

The daunting scale of the decarbonization challenge faced by global shipping is well known, as are the emissions reduction targets set by the IMO. However, the industry debate around decarbonization is sometimes guilty of treating every vessel, every segment and every owner the same.

It is misleading to talk about 'shipping's decarbonization transition' as if it were a monolithic bloc, with everyone moving at the same speed. Through this fallacy, we fall into the trap of looking for a 'one size fits all' solution. Instead, we should think of it as several transitions taking place simultaneously for different segments.

Bulk carriers, tankers, container vessels and ferries, for instance, are all experiencing different challenges and needs, depending on their operational patterns and commercial circumstances. In general, the decarbonization journey will be hardest for vessels that require a high energy consumption (or long distances), and those who call at multiple ports, where alternative energy sources may not be available, but there are many factors that dictate the options facing each owner and their most viable decarbonization pathway.

This is certainly true for the dry bulk sector. For starters, alternative propulsion

Ulrik Dan Frorup.

solutions such as batteries and fuel cells may be an interesting option for ferries, tugs and short-distance shipping, but are not yet a practical option for deep-sea shipping.

On the other hand, there is scope for efficiencies if we can tackle the challenge of long waiting times in ports. This can be a particular issue for dry bulk vessels, with significant consequences for fuel consumption and emissions, as well as the potential impact on their CII (Carbon Intensity Indicator) ratings, and batteries and fuel cells may have a role to play in decarbonizing this source of emissions.

One important point is that when we look at the bulk carrier fleet's overall emissions intensity, it seems that they are already on track with the IMO targets, basically due to slow steaming that has been in practice in the industry for some time now.

We can see a lot of activity by bulk carrier owners applying available resistance-reducing devices, both in the form of hull appendages and low friction coatings. Such measures are already providing very good results.

There are other fundamentals to the dry bulk market that mean it faces a different set of options and challenges compared to other segments. Dry cargo has arguably not been driven by the same commercial pressures to act quickly as other sectors. Trading patterns, with many ports and many different cargo types, do not so easily enable owners to make decisions based on reliable estimates of the future payback, or lock in fuel supply contracts with confidence, even if fuel availability and pricing could be made to work.

Of course, there are welcome examples of dry bulk operators that have moved early with significant decarbonization investments. One such area is wind propulsion, where Cargill, Berge Bulk, Louis Dreyfus Armateurs, and others have launched high-profile initiatives exploring how they can harness this free, abundant and zero-carbon energy source.

Another example of valuable sector-specific research into decarbonization solutions is in the potential of onboard Carbon Capture & Storage (CCS). BV worked together with Wah Kwong on a study which confirmed the technical feasibility and the economic viability of

(photo: ©Bound4blue)

integrating CCS technology on two in-service bulk carriers of different types; one a 53,000dwt Supramax vessel and the other a 176,000dwt Capesize vessel. The study identified the potential to capture 85% of the CO_2 from exhaust gases, as well as the different financial savings for each vessel, based on their respective CAPEX and OPEX.

We should also recognize the variety within the bulk sector. Whilst there are common factors shaping the fortunes of all, there is also significant diversity, from the size and type of vessels to the range of different cargoes carried, and the trading patterns, routes and ports where dry bulk cargoes are loaded and unloaded.

It is very welcome to see some of the sector's largest players taking a leading role, but the challenge for smaller operators is also clear, given their relative lack of investment or R&D resources compared to those with larger fleets and budgets. For those who cannot afford to bet the house on the wrong choice, it is understandable that they will wait and see. But there is a difference between doing nothing and picking the low-hanging fruit of efficiency savings that are a viable, attractive option for most owners, irrespective of fleet size or type.

Many of these relatively easy, practical steps are empowered by digital tools and insights that are available to all. In many cases, this starts with data collection and performance monitoring as the key enabler of improved fuel efficiency. This gives companies greater awareness and insights into their own energy consumption, and the capacity to model the impact of new measures or operational patterns.

Voyage optimization and weather routing solutions are examples of low-hanging fruit, with little upfront investment required. There are also collaborative ventures such as Blue Visby, which is targeting the emissions caused by shipping's 'Sail Fast, Then Wait' tendency. By eradicating SFTW, Blue Visby believes it can enable GHG emission savings of 15% on average, thanks to its data platform and contractual architecture. Given the clear relevance and benefits to the dry bulk market, it is no surprise to see that a number of dry bulk operators have become members of the Blue Visby consortium.

Looking ahead, we expect the short-term priority for many in the dry cargo sector, particularly smaller owners, will be finding energy-saving solutions and operational measures that will reduce fuel burn, improve vessel efficiencies and reduce emissions.

Alongside this, work will continue to assess the technical and economic merits of alternative fuels. It seems likely that more alternative fuels-capable bulk carriers will be ordered from the low base today, but uptake will still be slower than most other sectors.

There is also likely to be more focus on specific design or fuel factors for different types of dry cargo ships. For example, Newcastlemax ships on fixed routes may be better suited for ammonia as a fuel, if underpinned by purchasing at scale within a green shipping corridor that has been designed and developed with the necessary fuel infrastructure.

It is unwise to offer any guidance that is not based on the circumstances facing each operator, given the diversity of the dry cargo market. At Bureau Veritas, we anticipate a future made up of multiple overlapping energy transitions, in which each shipping company starts from a different place and moves at a different pace. As a class society, our role is to support dry cargo owners wherever they are in their sustainability journey.

Scaling decarbonization solutions for the dry bulk shipping sector

The practical challenges of trade patterns and vessel designs require cross-industry collaboration to achieve required efficiency improvements, *writes Vasilieos Gkikas, Director of Business Development and Dry Bulk Lead, ABS.*

The dry bulk sector accounts for a substantial part of the global shipping industry and faces unique challenges in achieving decarbonization. The sector's trading structure, with vessels serving an extensive and diverse array of ports and anchorages, makes the transition to low or zero carbon fuels more complex than other sectors.

Dual fuel projects using LNG are already on the water and methanol and ammonia projects are also in progress. The potential of the increased use of biofuels is also becoming a focus for the segment. Several energy-saving technologies like fitting of hull appendages for optimization, low-friction coatings, wind-assisted propulsion and carbon capture technology are progressing as well.

From a practical point of view however, bulk carriers present both technical and economical hurdles in adopting alternative fuels at scale. The design of bulk carriers, particularly smaller ones, presents technical hurdles in adding tanks for alternative fuels such as LNG. These characteristics and attributes have perhaps created a tag of a 'less-sophisticated' segment, which nevertheless is the backbone of the global commodity transportation.

From a business case perspective and compared to container shipping, for instance, there are fundamental differences when running the project de-risking exercise for any new innovative investment. Container shipping is dominated by large operator groups which in many cases have extended control of the wider supply chain, trade largely on fixed routes, operate on longer-term agreements and under the umbrella of alliances.

As a result, they have easier access to financing and can more easily mobilize other key stakeholders into entering collaborations, partnerships and large investment agreements. They are considered among the shipping industry's leaders, driving innovation in the shipping industry. These conditions are not the case for the average bulk carrier owner.

However, the segment is active with significant and notable decarbonization work, with projects running that may not make headlines as often or as easily as in other segments.

In addition to utilization of new fuels, are several projects to apply energy saving technologies including wind-assisted propulsion, hull air lubrication and carbon capture — an area the dry bulk segment is particularly looking at.

In all the above, there is one key parameter that sometimes is understated. That is the human factor, which presents challenges in terms of the new competencies, skills, knowledge and expertise that need to be added into the equation both aboard the vessels and ashore to ensure safe operations.

This requirement was a key driver to the creation of the ABS Hellenic Ship Safety Center to act as a location where the future of safety meets the future of learning. The Hellenic Ship Safety Center is designed to prepare seafarers to handle a multi-dimensional industry presented by alternative fuels and emerging technologies, recognizing that advances in decarbonization that do not prioritize safety are not sustainable.

Commodity-driven change

In the latest ABS Outlook, *Beyond the Horizon: View of the Emerging Value Chains*,

Wind-assisted propulsion

we make the important point that the speed and extent of decarbonization will to a large extent be commodity-driven.

Cargoes for which we are expecting demand to decline including major bulks like coal, will likely see a lower fleet renewal rate and thus owners will focus mainly on retrofitting energy efficiency technologies to comply with the regulations. The adoption of alternative fuels might therefore be lower in these sectors.

Achieving targeted carbon reduction targets that have been set for shipping means that existing ships must become much more efficient. It will not be possible to completely renew the existing fleet to use alternative fuels by 2050, which means the need to retrofit a large percentage of the existing bulk carrier fleet becomes essential.

Critically, the industry will need carbon capture rolled out across much of the oil-burning fleet, reducing onboard CO_2 emissions by 70%. Those that do not or cannot adopt carbon capture will need to switch to e-diesel or zero-carbon biofuels. Carbon capture is a technology that will play a significant role in the transition until 2050. Some major names in the industry have plans for millions of tonnes of carbon capture for their onboard emissions and the technology is scaling up to provide that capability.

There is a huge amount of collaborative work taking place between vendors and shipowners to understand how this emerging technology can be safely adopted and efficiently absorbed into the maritime industry, its implications for vessel design and operations and its likely impact on carbon emission reduction.

ABS applies deep technical knowledge and extensive practical experience when establishing standards for the safe operation and performance efficiency of bulk carriers.

Conscious of the challenges facing the bulker sector, ABS engineers, together with key industry stakeholders continue to pioneer solutions to serve today's fleet, while preparing for the next-gen vessels, aiming at a safe transition while improving the overall efficiency of the fleet.


Vasilieos Gkikas, Director of Business Development and Dry Bulk Lead, ABS.

Hudig & Veder: family owned shipping company with more than 225 years' experience

Founded in 1795, Hudig & Veder is a family owned shipping company, confident in its knowledge of the oceans, currents and the wind. It anticipates the demands and developments of today's market climate.

Proud of its reputation as an expert service and solution provider, it maintains its reputation by combining years and years of experience with fresh resourceful thinking.

Services

Bulk logistics

With years of experience in the bulk sector, Hudig & Veder can offer competitive and high quality handling of all dry bulk and breakbulk materials within the ARAG (Amsterdam-Rotterdam-Antwerp-Ghent) range, France and Germany.

Its dedicated team is fully aware of all restrictions and limitations that apply to each individual terminal and can therefore, always find the best solution for handling cargo — whether cargo needs to be stored at a terminal, transshipped directly board to board or needs to find its way to an inland location.

Inland barging

H&V Bulk Logistics can always charter the right barge for the job, thanks to its vast network of experienced professionals.

Cargo Inspections & Lab Services

Hudig & Veder has its own team of experienced and motivated cargo surveyors. The company inspects bulk or breakbulk cargo and the stevedore's equipment carefully.

Additionally, the dryness and cleanliness of cargo holds and/or compartments of sea-going vessels, barges, containers, trucks and silos are inspected.

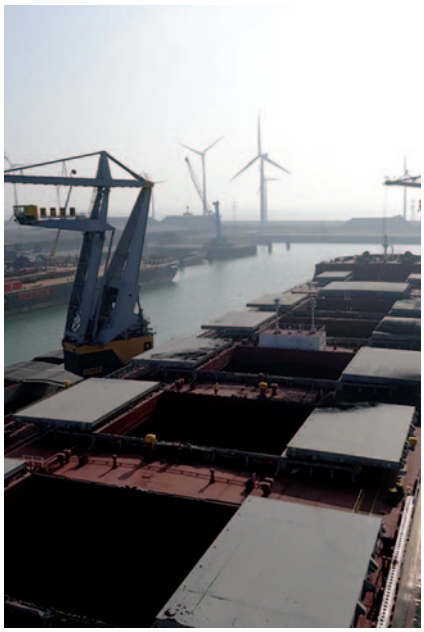
Storage

H&V Bulk Logistics can offer a wide variety of covered and non-covered storage solutions. Depending on the nature of the cargo, the company will find the best and most suitable storage possible.

In addition to its own warehouse in the Port of Rotterdam, H&V can also offer covered or non-covered storage for dry bulk minerals. These long-term rented warehouses are located in the seaports within the ARAG-range and strategic locations in France and Germany.

Bulk warehousing

In addition to various long term rented storage facilities at worldwide strategic locations, Hudig & Veder has acquired a 120,000m³ new build state of the art warehouse in the port of Rotterdam.



This warehouse located at the Laurenshaven is suitable for the covered storage of dry bulk products. The warehouse consists of multiple 5.000m³ and 3,500m³ compartments with sliding rooftops at deep water (10,65m) quay directly under grab reach.

Some interesting facts:

- Indoor connected 8,400m² covered warehouse with moveable walls;
- Loading and unloading with 50-tonnes grab-fitted mobile crane.

Forwarding

Hudig & Veder Forwarding provides worldwide tailor made logistics services for project and break-bulk cargoes. With dedicated contact persons and a no nonsense policy, it ensures that its clients' logistical needs are met. The company can serve globally with its international experts network.

Hudig & Veder Forwarding's core competence is coordinating the complete international transport from production location up to the final inland location at destination. The multimodal transports are performed by road, air and sea.

The company covers the total logistic supply chain with a complete package of services, such as customs services at origin and destination, storage, insurance and cargo surveys.

Customers have the possibility to connect with its Logistics IT Platform, making the logistics process even more transparent and efficient.

Chartering

Hudig & Veder went into business more than 225 years ago as a broker company, bringing ship and cargo together to ensure trustworthy transport by sea.

Nowadays, it has expanded its activities with fast, flexible and reliable shipping solutions. Focusing on any type of bulk commodity, breakbulk and project cargo.

Based on a foundation of knowledge, decades of experience and a dedicated staff, Hudig & Veder can offer complete and tailor-made logistic solutions.

Hudig & Veder Agencies

Thanks to its full range of expertises and services, Hudig & Veder Agencies covers and connects all chains of it clients' supply. This way it navigates their (project)cargo fluently all the way to its destination, taking care of all aspects of the expedition — including insurance, customs clearance, and product control. As an international shipping agent, carrier and guide, H&V keeps full view on every tonne, every mile and every dollar along the way. DCi

The high-water mark...

... of inland transportation

Louise Dodds-Ely

For over 45 years, Euro-Rijn Global Logistics B.V. (ERGL) has specialized in inland waterway navigation throughout Europe. From its headquarters in Moerdijk, the company's staff manage dozens of inland waterway dry bulk-shipments every day. Additionally, its team can take care of its customers' container shipments.

Every year ERGL (and its affiliates) transport about 2.5mt (million tonnes) of goods all over the inland waterways of Europe with a fleet of 65 barges, which offer tonnages ranging from 500 to 5,000dwt.

Barges can load large tonnages, which makes barge transport much more environmentally friendly than moving cargo by truck.

An additional advantage offered by ERGL is that it offers its customers reliable and competitive rates. Its employees are experienced, enthusiastic and committed to delivering customers' goods to the right destination at the right time.

General cargo

Euro-Rijn Global Logistics has had a

separate department for forwarding activities since 1997. This often relates to exports from the Netherlands in the form of 'full container loads' that are dispatched to the farthest corners of the globe. ERGL is also a specialist in the storage and transshipment of ferro-alloys and concentrates.

Inland navigation

Euro-Rijn Global Logistics actually started in the business of the freight forwarding of bulk dry goods, such as coal, ore, grain, fodder, iron, aluminum, construction materials and salt.

These days, ERGL organizes bulk shipments, project cargoes and breakbulk cargoes (general cargoes) for all types of clients. From its North Sea ports (where it has its own terminals), ERGL covers the rivers Meuse (Maas), Rhine, Main, Moselle, Neckar and Danube, as well as the entire West German canal network region. Its barge captains know the European waterways like the back of their hands.

Seagoing navigation

In addition to inland navigation, Euro-Rijn Global Logistics is also completely at home in seagoing navigation. It transports large volumes by sea, primarily bulk goods and general cargoes. Its network includes agents in such places as the Baltic States, southern Africa, the Black Sea region, the Far East and the Mediterranean region. ERGL helps customers that have a small shipments for dispatch, by combining the shipments from a number of providers, allowing customers to benefit from its competitive rates.

GB Railfreight completes historic final coal delivery and names a locomotive 'Ratcliffe Power Station'

GBRf 66781 leaves Ratcliffe-on-Soar power station.

In a landmark moment marking the end of an era, GB Railfreight has delivered the likely final coal shipment to Uniper's Ratcliffe-on-Soar power station in the UK, as it prepares for closure on 30 September.

The 1,650-tonne delivery, which is expected to be the last in the station's history, carries enough coal to generate electricity for approx. 500,000 homes for an eight-hour period. It signifies the culmination of a long-term partnership, during which more than 6,000KT of coal were transported from the Port of Immingham.

To mark the end of this partnership, GB Railfreight has named one of its locomotives *Ratcliffe Power Station*.

First commissioned in 1967, Ratcliffe power station, the last operational coal fired power station in the UK, has four 500MW units, and its total 2GW capacity is capable of producing enough electricity to power more than two million homes — roughly the whole of the East Midlands area. Over its 57 years, the electricity generated has produced enough energy to make more than 1 billion cups of tea per day and over 21 trillion overall. Ratcliffe power station will remain operational until the end of September.

The coal delivery marks a significant landmark for the power station and the country, as the UK will meet the government's target to end coal generation in 2024. At the turn of the 20th century, coal supplied over 95% of energy consumed in the UK[1]. By 2023, this figure had fallen to just 1%[2].

Whilst coal no longer has a place in a low-carbon economy, rail remains as central to UK prosperity as ever, contributing £2.45bn to the national economy, with 90% of these benefits realized outside London and the South East.

Continuing to drive economic growth, rail freight is integral to the UK's transition to a low-carbon economy. Each train can carry the equivalent load of up to 129 lorries, reducing emissions on goods moved by 74%.

GB Railfreight has invested c.£150m in new bi-mode Class 99 locomotives which are currently being built in Valencia, Spain. These cutting-edge locomotives will bolster the environmental benefits of moving freight by rail and help decarbonize the UK's supply chains.

John Smith, CEO of GB Railfreight, said: "The final coal train to Ratcliffe power station will be an historic moment in British history. Coal and rail have been pivotal in driving British prosperity for centuries. GBRf has been transporting coal to the station for many years.

"Whilst we rightly recognize that coal must be phased out for the UK to successfully transition to a modern, zero-carbon economy, rail freight will continue to play a key role in the economy of the future. GBRf is investing heavily in decarbonizing the UK's supply chains and allowing businesses to take full advantage of the environmental benefits that rail offers when compared with road freight."

Mike Lockett Uniper UK Country Chair said: "We're really proud that GB Railfreight has chosen to name a locomotive after Ratcliffe power station in honour of its 57 years of electricity generation and our people who have worked there.

"The last coal delivery will be a significant moment and one that heralds the end of the story for the power station. However, it's not the end for the site, as we look towards a future where it could become a zero-carbon technology and energy hub for the East Midlands.

"The site has a Local Development Order in place granted by Rushcliffe borough council in 2023, which provides a framework for future sustainable development, and a large section of the site is also part of the East Midlands Freeport. We're also exploring the potential for future hydrogen production at the Ratcliffe power station site. This all aligns to Uniper's aim to be completely carbon-neutral by 2040."

[1] https://ourworldindata.org/death-uk-coal#:~:text=energy%20in%202019-,Throughout%20the%2019th%20and%20first%20half%20of%20the%2020th%20century,shown%20in%20the%20chart%20below.

[2] https://www.nationalgrideso.com/news/britains-electricity-explained-2023-review#:~:text=In%20addition%20to%20new%20wind,and%201%25%20from%20coal%20stations.

GBRf 66781 collecting from Ratcliffe-on-Soar power station for likely the last time.

About GB Railfreight

Founded in 1999 and headquartered in London, GB Railfreight (GBRf) is one of the fastest growing companies in the rail industry, transporting goods for a wide range of customers across the country.

With a workforce totalling more than 1,400 staff from across the UK, in recent years, GBRf has won a number of industry awards including most recently the Freight and Logistics Excellence award at the Rail Business Awards 2024.

About Uniper

Düsseldorf-based Uniper is an international energy company with activities in more than 40 countries. The company and its roughly 7,000 employees make an important contribution to supply security in Europe, particularly in its core markets of Germany, the United Kingdom, Sweden, and the Netherlands.

Uniper's operations encompass power generation in Europe, global energy trading, and a broad gas portfolio. Uniper procures gas — including liquefied natural gas (LNG) — and other energy sources on global markets. The company owns and operates gas storage facilities with a total capacity of more than seven billion cubic metres.

Uniper intends to be completely carbon-neutral by 2040. Uniper aims for its installed power generating capacity to be more than 80% zero-carbon by 2030. To achieve this, the company is transforming its power plants and facilities and investing in flexible, dispatchable power generating units. Uniper is already one of Europe's largest operators of hydropower plants and is helping further expand solar and wind power, which are essential for a more sustainable and secure future. The company is progressively expanding its gas portfolio to include green gases like hydrogen and biomethane and aims to convert to these gases over the long term.

Uniper is a reliable partner for communities, municipal utilities, and industrial enterprises for planning and implementing innovative, lower-carbon solutions on their decarbonization journey. Uniper is a hydrogen pioneer, is active worldwide along the entire hydrogen value chain, and is conducting projects to make hydrogen a mainstay of the energy supply.

Peter O'Grady, Plant Manager, Uniper, John Smith, Chief Executive Officer of GB Railfreight, Mike Lockett, Uniper UK Country Chair, Sean Hager, Managing Director of Hargreaves Industrial Services UK & South Africa

Uniper in the UK

In the UK, Uniper owns and operates a flexible generation portfolio of seven power stations, a fast-cycle gas storage facility and two high pressure gas pipelines, from Theddlethorpe to Killingholme and from Blyborough to Cottam. It also has significant long-term regasification capacity at the Grain LNG terminal in Kent, to convert LNG back to natural gas.

Lamberts Point team sets coal processing record

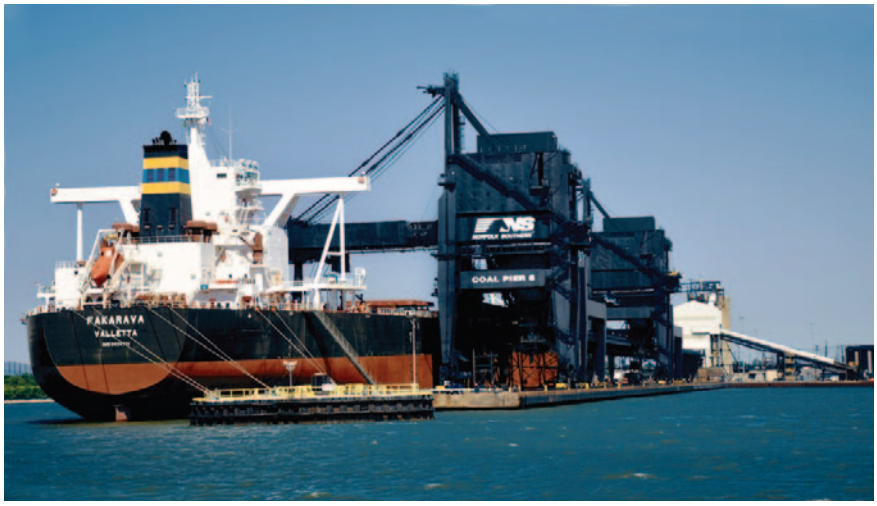
Earlier this year, crew members at Norfolk Southern's Lamberts Point Coal Terminal in Norfolk, Virginia, USA, rapidly came together to meet the needs of a key customer following the collapse of the Francis Scott Key Bridge in Baltimore. In addition to assisting the customer at a critical moment, the team set a record for loading coal that helped to ensure Norfolk Southern (NS) could meet global energy demand.

CONSOL Energy needed a new way to export its product overseas after the closure of the Port of Baltimore. The company approached NS to find a temporary solution until the port reopened. Working together, NS and CONSOL made plans to divert coal through Lamberts Point.

"Our craft and non-craft colleagues at Lamberts Point demonstrated great flexibility to come together and successfully meet the service needs of one of our most important customers," said John Orr, Chief Operating Officer. "The team's efforts had an enormous impact on the world's energy supply and demonstrated that NS can be counted on as a transportation partner of choice."

The plan required tight co-ordination with multiple teams throughout April and May to accommodate the diverted traffic without adversely affecting existing coal volumes. These efforts included:

- Over 40 conductors and engineers from across NS were deployed to Norfolk to assist with the expanded production needs.
- Every opportunity to load vessels was maximized.
- Craft colleagues worked around the clock to arrive trains from CONSOL's mines, cycle cars to the dumper for unloading, and switch empty cars into outbound trains.
- NS's Mechanical team serviced and maintained machinery and locomotives.



- NS's Communications & Signals team maintained tracks and systems to support the overall flow of traffic.

By collectively pulling together, the team loaded over 3.8mt (million tonnes) of coal over a two-month period, a record for the facility. This achievement included over 2mt in May, the first time this benchmark had been reached since April 2013. This also marked only the seventh time 2mt has been exceeded in a month since 2000.

"Our teams rallied together to effectively handle our customer's needs. What we were able to accomplish in such a short period of time was phenomenal," said Tom Novitske, Terminal Superintendent.

NS's success at Lamberts Point to meet global energy demands was made possible due to a Team of Teams approach. Transportation, Mechanical, Engineering, Communications and Signals, along with its Marketing, Network Operations Center, and Network Planning and Optimization teams each contributed to help NS increase production.

About Norfolk Southern

Spanning nearly two centuries, Norfolk Southern's history reaches back to the earliest days of American railroading. From connecting the East to the Midwest via the Horseshoe Curve to opening the world's longest railroad bridge in Louisiana and developing the first railroad technical training centre, NS has helped pave the way for the American economy. The company takes pride in its history, its customers, and the communities it serves.

NS is building a customer-centric, operations-driven organization, that is becoming the gold standard of safety in the industry. It is committed to developing its people, protecting the communities its serves, and providing long-term growth for its customers.

Everything starts with safety: rail is the safest, most efficient, and most sustainable way to transport goods over land. Every day, NS takes meaningful action to make its railroad even safer.

NS, and the industry as a whole, will never stop working to be safer until the goal of zero accidents is achieved.

NS is leveraging technology and data-driven solutions to spot problems earlier and solve them faster. It is investing in infrastructure and equipment to make its networks safer. It is modernizing operating and maintenance protocols and empowering employees to raise their hands when they see an issue.

Transport of bulk and bulk goods by truck with Rhenus Logistics

Rhenus Logistics not only handles the transportation of, but also provides customized planning for bulk and loose goods, covering the entire supply chain. It tailors processes to its customers' needs and responds flexibly to new requirements.

The company offers both domestic and international services.

- **domestic trucking solutions for bulk and loose cargo:** Rhenus Logistics's extensive national truck transport network allows it to seamlessly handle bulk and loose cargo transportation across the entire country. Thanks to its strategically located facilities within the expansive Rhenus Group network, customers will always have direct points of contact.
- **cross-border bulk cargo transportation:** thanks to its own fleet of trucks and co-operation with a large number of subcontractors, Rhenus Logistics is able to offer comprehensive cross-border transportation and logistics services for bulk goods.

Silo transport of bulk materials by truck

Rhenus provides comprehensive services for free-flowing bulk materials that go well beyond mere transportation. It not only handles silo transport, but also takes care of individual planning and complete execution of the entire supply chain.

- **Full service:** thanks to its storage capacity and unpacking capabilities, Rhenus is able to ensure the entire supply chain from the port to on-site silo storage for its customers who source bulk materials from overseas. This includes handling the delivery and import of packaged goods via sea freight containers, import customs clearance, storage, and its unpacking service. Furthermore, Rhenus is equipped with silo truck loading facilities and weighing equipment.
- **Blending damage:** Rhenus's equipment allows it to respond quickly to incidents or accidents involving bulk materials in the case of spills or accidents, swiftly containing and safely disposing of the contaminated materials on-site.
- **Silo transport of bulk materials:** Rhenus's services in the field of silo transportation encompass the reliable and swift transport of pourable and free-flowing goods from point A to point B. It provides both regular transport solutions and single shipments within Germany and the adjacent European regions.

What is a silo transport?

A silo transport refers to the transportation of bulk materials, especially those that are dusty or free-flowing, using specialized vehicles known as silo vehicles or silo trailers.

A silo vehicle typically consists of a closed container known as a silo. This silo can come in various sizes and shapes and is designed to protect the bulk material from external influences such as moisture, pollution, and contamination during transport.

Silo transports are widespread in various industries, including agriculture, construction, food industry, chemicals, and many others. They enable the efficient transport of large quantities of bulk materials by road or rail.

Which goods are suitable for silo transport?

Dusty and free-flowing bulk materials such as building materials, plastic granules, waste

products, hazardous materials (ADR), agricultural products (GMP+), animal by-products, industrial minerals, wood pellets and similar bulk materials are suitable for silo transport.

Is it possible to store goods after silo transport?

Temporary storage is possible after the silo transport has been completed. After the bulk material has been safely transported to its destination, it can be temporarily stored in facilities such as silos, warehouses, or other suitable storage facilities. Rhenus is happy to find a customized solution for its customers' goods.

Timber trade and logistics from A-Z

Rhenus is an ideal partner for the transport and trade of wood and forest products. It is an expert in the transportation of wood, whether byproducts from sawmills, recycled, energy, or industrial wood directly from the forests. The company acts as a reliable interface between suppliers and customers, covering all aspects of trade and logistics in a seamless process.

From procurement and transportation to sales and disposal, its business partners always have a personal contact ready to answer any questions.

The product line includes sawmill byproducts and biomass.

- **Sawmill byproducts** consist of: wood chips; sawdust; bark; and off-cuts.
- **Biomass includes** landscaping materials; forest wood chips; screen overflow; and waste wood classes A1 to A4 (waste wood refers to recyclable wood from buildings, furniture, or other sources — it can be reused for making particleboard, firewood, or other purposes.

Advantages of using Rhenus Logistics to transport bulk by truck

- **Warehousing:** thanks to its own storage areas, Rhenus can temporarily store dusty and free-flowing goods. This ensures that customers receive their goods exactly when they are needed.
- **Owned fleet:** Rhenus's modern fleet, with its various silo trailers, always provides the best means to accommodate customers's silo transport needs with the right equipment.
- **Digital solutions:** with digital invoice delivery, document exchange, order transmission, and modern track & trace, customers are always well-informed about their deliveries at all times.

GB Railfreight celebrates 10,000th delivery to Drax Power Station

On 4 July, GB Railfreight completed the delivery of its 10,000th biomass train from Liverpool to Drax Power Station, North Yorkshire.

Since 2016, GB Railfreight's trains have moved over 15mt (million tonnes) of sustainable biomass between Peel Ports, Liverpool and Drax Power Station in Selby, Yorkshire, UK. The biomass hauled by these 10,000 train journeys — equivalent to three journeys per day — supports Drax Power Station to provide enough power for up to 4mt and businesses. The Selby site provides around 8% of the UK's renewable energy and c.4% of the country's total electricity usage.

Sustainable biomass is vital to the UK's transition to net zero and the decarbonization of the national grid. Rail freight is also instrumental in reducing emissions throughout UK supply chains. Goods moved by rail require 76% less carbon per tonne than road freight and each freight train can remove up to 129 HGV movements, helping decongest the road network.

John Smith, Chief Executive of GB Railfreight, said: "We're hugely proud of our partnership with Drax and Peel Ports. As we have seen in recent years, the UK's long-term energy security is a key component of economic stability and national security.

"The 10,000 journeys we have made over the last eight years have supported Drax and the UK Government to produce low carbon power for us all. This power has provided for families and businesses up and down the country, helping ensure that everybody's needs are fulfilled — from keeping the central heating on in the winter to powering our electric vehicles."

Mark Gibbens, Head of Logistics at Drax, said: "Drax Power Station's supply chain partners play a critical role in helping us to keep the lights on for millions of homes and business in the UK no matter the weather. We have longstanding relationships with both GB Railfreight and Peel Ports and we are delighted to celebrate this incredible milestone with both of them."

Jon Hassett, Deputy Port Director, Peel Ports Mersey Cluster said: "Ports are central to powering the whole country in many ways. Our relationship with Drax and GB Railfreight is a perfect example of how we work with customers to improve our collective environmental performance. We're proud to have invested £100m at our biomass terminal to make this happen and to see our port rail connections so well used."

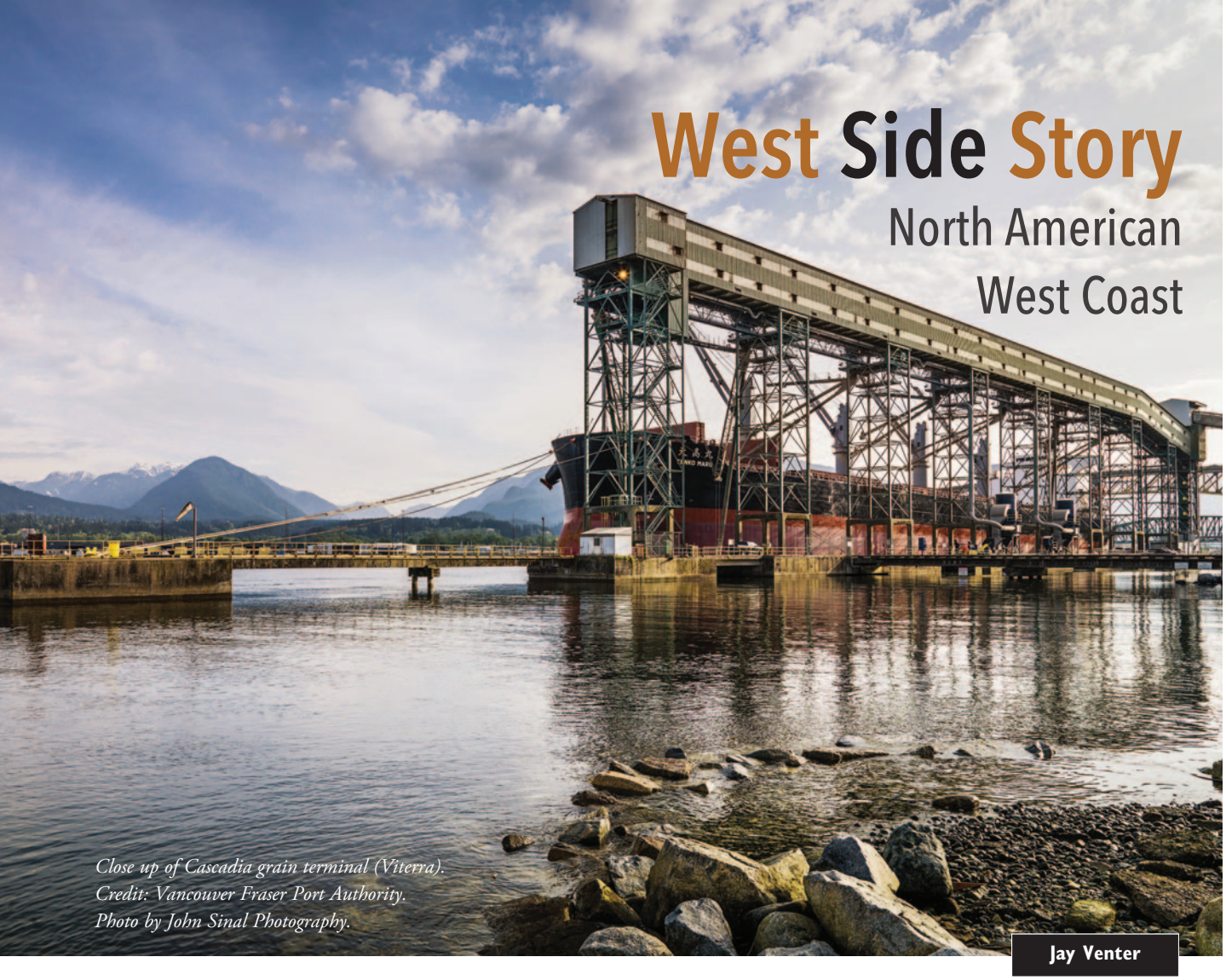
About GB Railfreight

Founded in 1999 and headquartered in London, GB Railfreight (GBRf) is one of the fastest growing companies in the rail industry, transporting goods for a wide range of customers across the country.

With a workforce totalling more than 1,400 staff from across the UK, in recent years, GBRf has won a number of industry awards including most recently the Freight and Logistics Excellence award at the Rail Business Awards 2024. DCi

West Side Story

North American West Coast



Close up of Cascadia grain terminal (Viterra). Credit: Vancouver Fraser Port Authority. Photo by John Sinal Photography.

Jay Venter

Strong Canadian exports support record 2023 trade volumes through the Port of Vancouver

Port terminals and supply chain partners at Canada's largest port demonstrated stability and reliability over a challenging period — keeping trade moving and supporting Canadians and their businesses

Cargo volumes through the Port of Vancouver increased by 6% in 2023, as terminal operators and supply chain partners moved a record 150.4mt (million [metric] tonnes) of trade.

The Vancouver Fraser Port Authority's 2023 cargo statistics, released in March 2024, show it was a mixed year at the Port of Vancouver, with growth in some sectors and softening in others. Notably, bulk and containerized exports, auto imports and cruise all grew — including near-record grain exports — while container imports softened in line with trends seen across the West Coast.

"We know reliable access to international markets is vital for Canadian exports and Canadian businesses — supporting jobs, investment and economic activity from coast to coast. I want to acknowledge the resilience of Port of Vancouver terminal operators and supply chain partners, as they moved record volumes of trade in 2023 against a challenging backdrop to support Canadians and their jobs and businesses," said Peter Xotta, president and CEO of the Vancouver Fraser Port Authority, the federal agency mandated with enabling Canadian trade through the Port of Vancouver, while protecting the environment and considering local communities.

Almost as much cargo moved through the Port of Vancouver in 2023 as moved through Canada's next five largest ports combined, while the port handled North America's most diversified range of cargo — including bulk, containers, breakbulk and automobiles, as well as overseeing cruise.

"In 2023, we saw operations at the Port of Vancouver support a 12% increase in export volumes and enable trade with 142 different countries, including delivering a near-record Prairie grain harvest to world markets," Xotta continued. "The record cargo and export volumes moved last year demonstrate that one of the port's key strengths and competitive advantages continues to be its diversification — both in terms of the commodities it can handle and the countries it connects to."

Trade last year was affected by a number of global and domestic challenges, including a cooling global economy, geo-political issues such as disruptions to the Panama Canal and Red Sea trade routes, and a strike that affected container, bulk, breakbulk and auto terminals at Port of Vancouver.

The recovery from July's 13-day strike by B.C. longshore workers — which directly impacted operations throughout the port aside from a few areas including cruise and bulk grain — was both steady and challenging, with fluidity largely restored in the fall.

Bulk exports increased 13% in 2023, compared to 2022, to reach a record 91.5mt — including increases in grain,

sulphur, coal and petroleum product volumes. Nine bulk grain terminals at the port helped to export 14.7mt of wheat to 38 different countries, a 52% year-over-year increase, while canola exports increased 36% to 7.0mt and specialty crops grew 30% to 4.0mt. Canadian grain export volumes increased sharply in 2023 because a bumper crop season was preceded by a drought-affected season.

Breakbulk volumes were down 7%, including a 25% drop in foreign breakbulk volumes due largely to the cooling economy and a fall in metals imports, as well as exports of forestry products shifting to containers.

Key port capacity and optimization projects that progressed in 2023 at the Port of Vancouver include:

- Centerm container terminal expansion was completed in partnership with DP World
- Roberts Bank Terminal 2 Project received federal approval and a B.C. environmental certificate
- Centralized scheduling system launched for commercial ships east of Second Narrows to improve reliability, safety and efficiency
- Annacis Island auto terminal optimization work was underway in partnership with Wallenius Wilhelmsen
- A permit application was approved for a rail capacity expansion on the south shore, led by CPKC
- Westshore Terminals progressed construction on their potash export project
- The port authority and Ashcroft Terminal signed a letter of intent to determine the feasibility of a new railcar storage agreement to enhance supply chain resiliency

About the Vancouver Fraser Port Authority and the Port of Vancouver

The Vancouver Fraser Port Authority is the federal agency responsible for the shared stewardship of the Port of Vancouver.

The port authority oversees the use of port land and water, which includes more than 16,000 hectares of water, over 1,500 hectares of land, and approximately 350 kilometres of shoreline.

Located on the southwest coast of British Columbia in Canada, the Port of Vancouver extends from Roberts Bank and the Fraser River up to and including Burrard Inlet, bordering 16 municipalities and intersecting the traditional territories and treaty lands of more than 35 Coast Salish Indigenous groups. The Port of Vancouver is Canada's largest port, and the third largest in North America by tonnes of cargo.

Enabling the trade of approximately $305 billion in goods with between 140 and 170 countries each year, port activities sustain 115,300 jobs, $7 billion in wages, and $11.9 billion in GDP across Canada.

New Burnaby rail overpass will improve community connections, safety and trade at the Port of Vancouver

The Holdom Overpass is advancing to construction—and will increase trade capacity at the Port of Vancouver and benefit the local community in Burnaby

Construction of a new four-lane overpass crossing the rail lines at Holdom Avenue in Burnaby will begin in late 2024. The Vancouver Fraser Port Authority is delivering the Holdom Overpass project in partnership with the City of Burnaby, Canadian National Railway (CN), and the Government of Canada.

The overpass will extend Holdom Avenue south over the rail corridor and Still Creek, connecting it with Douglas Road. Once complete, there will be an increase of rail capacity for Port of Vancouver terminals, supporting the reliable movement of goods through the region, and improved traffic flow and safety for the Burnaby community.

The rail corridor through Burnaby is the only rail connection to transport goods and commodities to and from port terminals located in North Vancouver, a vital link in the national supply chain that connects Canadian products like grain and fertilizer to global markets. The rail corridor moves more than 40 million metric tonnes of export cargo, accounting for more than 40% of the port's total international exports in 2023.

The City of Burnaby identified the Holdom Overpass as an important solution to provide better access and improve safety for cyclists, pedestrians, commuters, and first responders as part of its transportation plans. The Holdom Overpass active transportation facilities will improve connections to the Holdom Skytrain station, which is a main hub for cyclists and pedestrians, making travel from the Skytrain station to areas south of the rail tracks — such as the Central Valley Greenway — safer, faster, and more reliable.

"CN is proud to be a partner on the Holdom Overpass project," said Tracy Robinson, President and Chief Executive Officer, CN. "This vital piece of infrastructure will improve safety and accessibility to the citizens of Burnaby, as well as increase efficiency for the Port's operations including greater rail capacity to and from Port terminals in North Vancouver. This project demonstrates our commitment to moving the economy with safer, more efficient transportation solutions benefiting both our customers and the communities we serve. Together with our partners, we are committed to strengthening global supply chains, supporting growth and a sustainable future for Canada's economy."

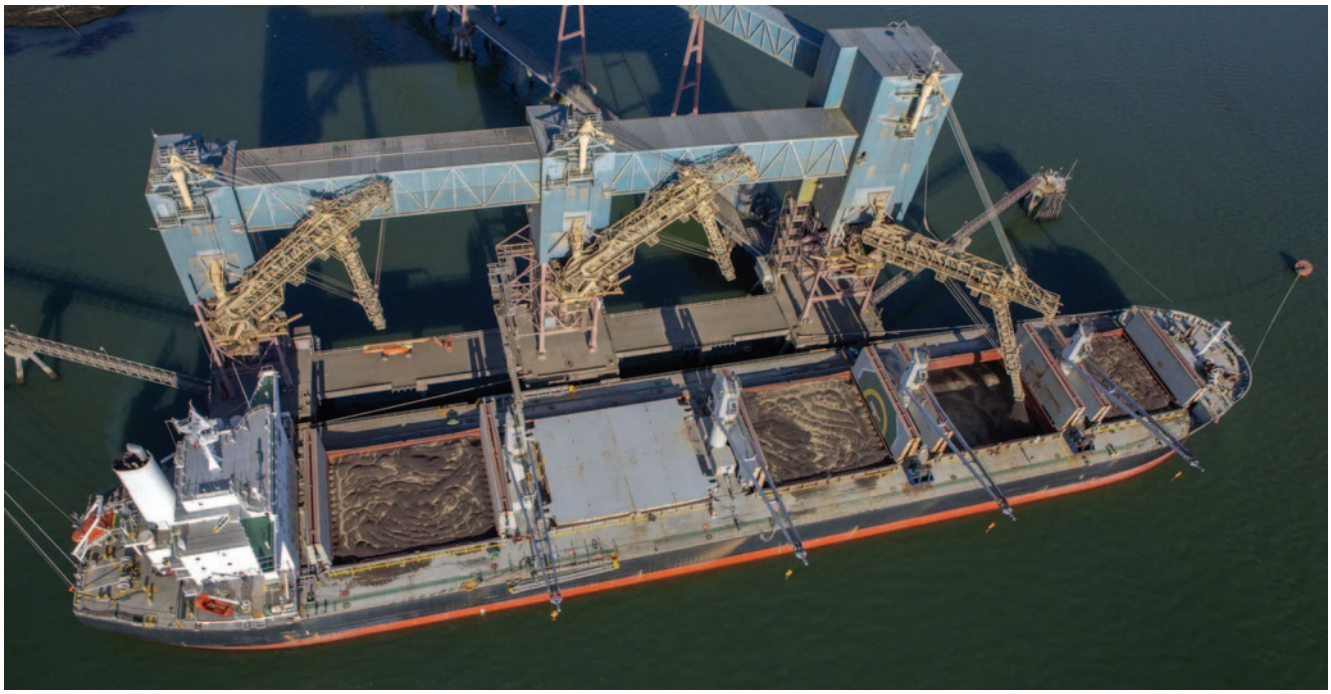
Canada's trade through the region is growing, and the project is designed to mitigate the impacts of trade on those who live, work and commute in Burnaby. It will provide significant community benefits, including improved safety and traffic flows, reduced greenhouse gas emissions from less idling traffic at the existing crossing, better community access by creating more reliable travel times, and better emergency response options.

The project will add to the rail improvements completed by CN in 2022, which included updates to the Thornton Tunnel to reduce the time between trains travelling through the tunnel and a new rail siding track running from Willingdon Avenue to Piper Avenue.

The port authority has previously completed two phases of public engagement and continuous First Nations consultation, and input from these efforts has helped shape the overpass design. Public space surrounding the overpass will include First Nations cultural recognition, public art, and improved landscaping in the Still Creek and Beecher Creek areas.

The road enhancements are part of the Burnaby Rail Corridor Improvements Project, a series of road and rail improvements to increase transportation efficiency and trade capacity through Port of Vancouver terminals on the North Shore. The Burnaby Rail Corridor Improvements Project is funded by the Government of Canada, through its National Trade Corridors Fund, the port authority, and CN.

Prince Rupert Grain Ltd. (PRG) - serving needs of western Canadian grain producers



Opened in 1984, Prince Rupert Grain Ltd. (PRG) is a federally regulated export grain terminal located on Ridley Island, approximately 15km from the coastal city of Prince Rupert BC.

It serves the export needs of western Canadian grain producers along CN Rail's northern rail line. PRG exports wheat and canola sourced from the Peace River region, northern Alberta and Saskatchewan.

PRG's facility is located on an industrial site, which includes a 600 railcar rail yard, a 330 foot tall automated terminal elevator with licensed storage space for 200,000 tonnes of grain, a marine loading dock with three loading towers, a maintenance shop, an administrative building and various outbuildings. Its business is to safely and efficiently receive and unload grain railcars from the prairies. Once unloaded it grades, cleans, stores and then loads bulk cargo onto ocean vessels for international export. PRG's customer/owners include Viterra Canada Inc., Richardson International Ltd. and Cargill Ltd. It also services a small group of local ranchers and poultry barns with by-product sales. PRG is a team of approximately 142 employees, working on-site.

Port of Long Beach Data Project receives $7.875m to speed goods delivery

State grant will facilitate new Supply Chain Information Highway features

A comprehensive Port of Long Beach digital platform being designed to help speed cargo deliveries across the nation, the Supply Chain Information Highway, is getting an infusion of funding from Gov. Gavin Newsom's administration.

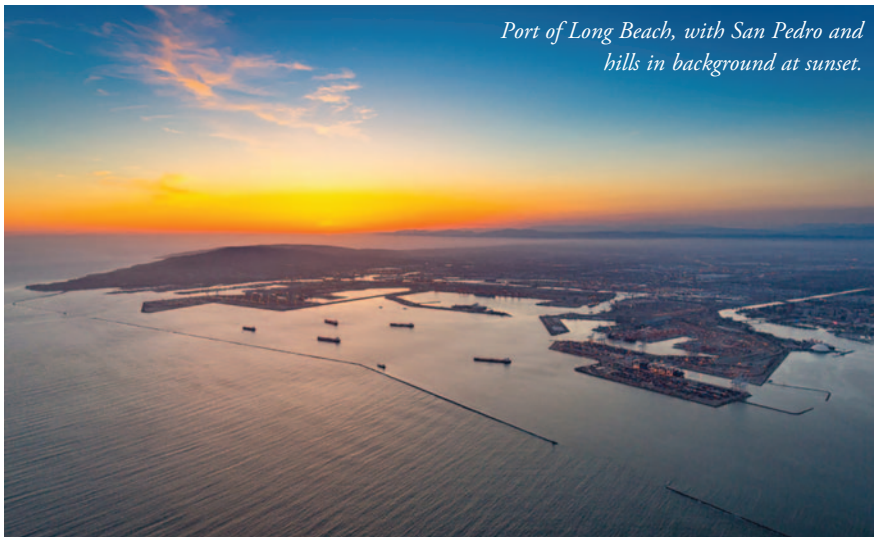
The Governor's Office of Business and Economic Development (GO-Biz) announced a $7.875 million grant for the Port's data system today. Funding is expected to help build out a variety of functions including export and rail cargo visibility, user authentication and data security, the exchange of data between foreign ports, truck appointments and a number of future project enhancements that will enhance operational efficiency and customer service.

The Supply Chain Information Highway will enable stakeholders to make scheduling, planning and operational decisions prior to cargo arrival, making the delivery of goods more efficient and cost effective. The cloud-based system is anticipated to be compatible with similar data-sharing platforms across the maritime logistics industry, including at major California ports, supporting improved supply chain resilience, goods movement efficiency, emissions reductions, and economic competitiveness.

"With six marine terminals at the Port of Long Beach now connecting to a beta version of the Supply Chain Information Highway, we've entered a crucial phase of development," said Port of Long Beach CEO Mario Cordero. "We are grateful to the State of California and GO-Biz for their continued leadership in supporting data modernization to bolster goods movement. This funding will be important as we roll out these new enhancements to increase cargo velocity and tighten coordination across modes of transportation."

"We're very excited with how this product — free to registered users — will help the more than 200,000 shippers who use the Port of Long Beach better plan and move cargo," said Long Beach Harbor Commission President Bobby Olvera Jr. "Thank you to Governor Newsom for his continued recognition of the role the state's seaports play in enhancing the economy and creating good-paying jobs."

"California's ports are an essential link in the global supply chain and this first-of-its-kind, collaborative data system will help ensure they remain so," said GO-Biz Director and Senior Advisor to Governor Gavin Newsom, Dee Dee Myers. "I want to thank Port of Long Beach CEO Mario Cordero and the rest of his team for their leadership and ongoing participation in this effort."



Port of Long Beach, with San Pedro and hills in background at sunset.

"As Chair of the Senate Select Committee on Ports and Goods Movement, I believe it is important to strive for innovative enhancements that will support jobs and help ensure the efficient movement of goods in California," said Sen. Lena Gonzalez, D-Long Beach. "I am pleased to see the Governor's Office of Business and Economic Development allocating over $7 million in state funding for the Supply Chain Information Highway digital platform. Given that the Port of Long Beach is part of the ninth-busiest port complex in the world, contributing to one in 20 jobs in Southern California and over 2.6 million jobs nationwide, this funding will not only improve goods access for Californians but also support our communities by strengthening our economic landscape."

"This is a win for both the port and the surrounding communities," said Assemblymember Josh Lowenthal, D-Long Beach. "Data is power. With this investment from GO-Biz we can ensure stakeholders are connecting and coordinating like never before. I'm confident that this will lead to fewer and more efficient trips and reduce unnecessary idling."

"The Port of Long Beach supports 1 in 5 jobs in this city and millions across the country," said Long Beach Mayor Rex Richardson. "This grant from the Governor's Office of Business and Economic Development will improve access to cargo information and help speed the movement of goods to American homes and businesses even faster and more efficiently, strengthening the economy not only here in Long Beach and California, but coast-to-coast."

The Port of Long Beach has partnered with a leading tech firm, St. Louis-based UNCOMN, to create the Supply Chain Information Highway. UNCOMN is collaborating with Amazon Web Services to provide cloud services and cloud hosting for the data.

Development is focusing on three operational platforms in 2024:

- A Container Track and Trace feature to access up-to-date information about the status of containers moving through the Port of Long Beach.
- The Port Operations Dashboard, where users can review Port of Long Beach operational metrics.
- The Beneficial Cargo Owner Dashboard, where BCOs can access more detailed information about their containers including if they have arrived or departed, and which Port terminal they are at.

The Port of Long Beach is a global leader in green port initiatives and top-notch customer service, moving cargo with reliability, speed and efficiency. As the premier US gateway for trans-Pacific trade, the Port handles trade valued at $200 billion annually and supports 2.6 million jobs across the United States, including 575,000 in Southern California. In 2024, industry leaders named it "The Best West Coast Seaport in North America" for the sixth consecutive year. During the next ten years, the port is planning $2.3 billion in capital improvements aimed at enhancing capacity, competitiveness and sustainability.

Port of Long Beach sets $760 million annual budget

Rail, zero-emissions part of $368 million for infrastructure improvements

The Long Beach Board of Harbor Commissioners have approved a $760 million budget for the Port of Long Beach for the 2025 fiscal year, establishing a plan to fund new capital improvements in rail, zero-emissions and other infrastructure.

Later this year, the budget will be sent for approval to the Long Beach City Council. It includes a record $25.8 million transfer to the City's Tidelands Operating Fund, which supports quality-of-life projects along Long Beach's 7-mile coastline that have improved shoreline safety, cleanliness, water quality, facilities and other amenities.

The port's budgeted spending for the 2025 fiscal year, which begins 1 October, is 19.5% higher than the budget adopted last year. The increase is largely due to infrastructure projects like the Pier B On-Dock Rail Support Facility, which breaks ground this year, and the proposed Pier Wind. If approved, Pier Wind would be the nation's largest facility specifically designed to assemble offshore wind turbines.

Operating revenue is estimated to be 6.8% higher than last year's budget.

"This budget reflects our values, balancing serving as an economic engine for our city and region and growing responsibly while limiting environmental impacts," said Port of Long Beach CEO Mario Cordero. "We are optimistic about the year ahead and this spending plan builds our competitive advantages for the green future."

"Because trade, construction and tourism support 51,000 jobs in Long Beach — or one in five jobs — it's important we stay focused on attracting business, building for the future and moving cargo sustainably," said Harbor Commission President Bobby Olvera Jr. "This budget advances these goals by leveraging our stable financial strength as a top gateway for global commerce."

Next year's proposed capital budget totals $368.3 million, 47.2% higher than the prior year. Of the sum, $204.9 million is for the Pier B project, which will break ground this summer. Pier B will shift more cargo to "on-dock rail," where containers are taken to and from marine terminals by trains. Moving cargo by on-dock rail is cleaner and more efficient, as it reduces truck traffic. No cargo trucks would visit the facility. The Port of Long Beach maintains one of the most comprehensive seaport infrastructure programmes in the nation.

Also included in the budget is approximately $25 million in Clean Truck Fund subsidies to support the transition of the heavy-duty truck fleet to zero emissions. The Port of Long Beach has twin goals of a zero-emissions cargo-handling fleet by 2030 and zero-emissions trucking by 2035. Additionally, during the Board's action, the amount allocated for the Community Sponsorship Program was increased from $2 million to $3 million. The sponsorship program helps the Port of Long Beach engage with and inform local community members about Port operations and initiatives.

As the City's Harbor Department, the Port of Long Beach does not use tax revenue to support operations.

Port of Long Beach looking northwest from above Pier J.

Levin Richmond Terminal – multi-cargo terminal on the San Francisco Bay

Shiploading at Levin Richmond Terminal.

The Levin Richmond Terminal Corporation (LRTC) is a privately owned and operated bulk marine terminal located on the San Francisco Bay in Richmond, CA. Having committed to purchasing 100% renewable energy to run its operations, it's been named a Deep Green Champion by MCE.

LRTC employs about 60 experienced staff, many from the Richmond and Contra Costa County area, and pay 'family wage' jobs with full health and pension benefits, with many salaries about 55% higher than the average Contra Costa County worker.

LRTC has two berths (Panamax/ Handysize) and is able to load vessels simultaneously with its three shore-side 50-tonne gantry cranes and two portable ship-loaders.

The terminal is able to stockpile multiple types of cargo, uses the latest technology and abides by the utmost air, water and safety standards set for its industry. It has the ultimate commitment of service to its customers, and the coal it currently handles is among the cleanest and highest quality in America.

Additionally, the terminal has recently revolutionized the vision of its company and has begun transitioning from transporting coal to handling exclusively non-fossil fuel commodities beginning in 2026.

LRTC's sister company, the Richmond Pacific Railroad Corporation (RPRC) serves the Levin Richmond Terminal and the greater Richmond area, sharing employees with the LRTC. It connects directly with the Union Pacific Railroad and the BNSF (Burlington Northern Santa Fe Railway).

The RPRC was the first shortline railroad in the nation to own and operate a Tier 4 Final locomotive, the cleanest locomotive available, according to EPA standards. RPRC currently owns three of the eight Tier 4 locomotives in operation in railroads of its size in California today, which are used to serve its 18 customers. The railroad handles rail traffic within the terminal and switches customers within the city of Richmond. Within the terminal, the wharves are equipped with double tracks and served by a network of spur tracks.

Moving freight by rail prevented 16.6 million tonnes of greenhouse gas emissions in 2019 alone, the equivalent of taking 3.25 million cars off the road or planting 251.5 million trees.

The benefits of partnering with Levin Richmond Terminal:

- **Strategically located on San Francisco Bay:** LRTC's convenient location in Richmond, California (Eastern San Francisco Bay) offers easy access to major inland trucking and rail routes, as well as sea routes to and from the Pacific Rim.
- **Reputation for excellent customer service and loyal, long-tenured customer base:** LRTC understands the shipping business, the dynamics of the industry, and the supply chain. Loyalty and trust with its shipping clients has been built over years of consistent and reliable service delivery.
- **Customized transportation services:** LRTC's focus is on building a lasting relationship, where it understands its customers' needs and challenges, so it can develop specific, superior solutions.
- **Combined terminal and rail operations for flexible, cost-effective transportation logistics:** the company's short line rail and marine terminal services offer "one-stop" logistics for customers desiring to bring bulk commodities to the West Coast by rail for overseas shipment. These two operations can provide first- (imports) or last- (exports) mile delivery services under one roof. The two functions work together seamlessly, under a common workforce and management structure, delivering consistent operational reliability and enhanced customer service.
- **Knowledgeable, dedicated management team and employee base experienced with a variety of commodities:** from terminal configuration to equipment inventory, LRTC is well prepared to handle a wide variety of dry bulk products based on the individual needs of its customers.

Commitment to community

The Levin family and its management teams are committed to being good neighbours and supporting the long-term goals of the communities in which they operate and make their homes.

They pride themselves on providing good-paying jobs, economic stability, civic engagement, and financial and volunteer support for a multitude of non-profit social and educational organizations within both the City of Richmond and throughout West Contra Costa County.

Buttigieg hails 'America's Green Gateway' at groundbreaking

Pier B On-Dock Rail Support Facility to shift cargo from trucks to trains

U.S. Secretary of Transportation Pete Buttigieg and officials from across the nation on 18 July attended a historic groundbreaking ceremony for 'America's Green Gateway', the Pier B On-Dock Rail Support Facility, a $1.567 billion endeavour that will define the future of cargo movement at the Port of Long Beach.

About 500 people gathered for the event celebrating the project, which will double the footprint of the existing rail yard from 82 acres to 171 acres. Pier B will be built in phases, each enhancing cargo movement, with construction scheduled for completion by 2032. The project will more than triple the port's capacity for on-dock rail to 4.7 million twenty-foot equivalent units per year. On-dock rail cargo is moved directly to and from marine terminals by trains, reducing emissions and stress on the local and regional road network.

"Today, work starts on a rail network that triples cargo volume, keeps costs down, and reduces pollution — and it's all because of the historic funding made possible by the Biden-Harris Administration," said Buttigieg. "Through projects like America's Green Gateway and the hundreds of other supply chain improvements we're making across the country, we're making our supply chains more robust and resilient in the face of any potential future disruptions."

"The Pier B On-Dock Rail Support Facility will add 130,000 feet of new tracks, build 36 new support tracks and more than double the number of trains leaving the Port to 17 per day," said Port of Long Beach CEO Mario Cordero. "These improvements will benefit the entire US supply chain and get us closer to the operational and environmental transformation into a zero-emissions port."

In recognition of the facility's importance to the future of the U.S. supply chain, the Port of Long Beach has won $643 million in grant funding from federal, state and local transportation agencies for the project. The federal government alone has awarded $404.1 million, while the state of California has invested $228.8 million and Los Angeles County $10 million. Besides Buttigieg, also in attendance were members of the U.S. Congress and California Legislature, and officials from various California state agencies, Los Angeles County, L.A. County Metropolitan Transportation Authority and the International Longshore and Warehouse Union.

Federal, state, city and Port of Long Beach officials celebrated the groundbreaking for America's Green Gateway – the Pier B On-Dock Rail Support Facility – a $1.57 billion project that will bring new efficiency, speed and sustainability to cargo flow through the port complex. Pictured from left are Dr. Noel Hacegaba, Port of Long Beach Chief Operating Officer; Long Beach Harbor Commissioner Sharon L. Weissman; Long Beach Councilmember Kristina Duggan, 3rd District; Long Beach Councilmember Roberto Uranga, 7th District; Mark Tollefson, Undersecretary, California State Transportation Agency; Long Beach Harbor Commission President Bobby Olvera Jr.; Long Beach Mayor Rex Richardson; U.S. Transportation Secretary Pete Buttigieg; U.S. Rep. Dr. Robert Garcia, California 42nd District; Long Beach Councilmember Megan Kerr, 5th District; Port of Long Beach CEO Mario Cordero; Patricia Aguirre, Board Secretary, International Longshore and Warehouse Union Local 63; Long Beach Harbor Commission Vice President Bonnie Lowenthal; Long Beach Harbor Commissioner Steven Neal; Long Beach Councilmember Al Austin, 8th District; Los Angeles City Councilmember Tim McOsker, 15th District.

"The Bipartisan Infrastructure Law continues to deliver for California by modernizing the ports that power our economy, enhancing the reliability and capacity of rail operations, and creating good-paying jobs," said U.S. Sen. Alex Padilla (D-Calif.). "This funding is a win for our economy and our environment. The Port of Long Beach's on-dock rail expansion project will slash emissions and reduce air pollution in near-port communities while creating a more efficient gateway into our national supply chain."

"This project is a homerun for good jobs, clean air, and a strong supply chain," said U.S. Rep. Robert Garcia, D-Long Beach. "As Mayor, we worked to electrify and green our port, and this major investment will do just that. In Congress, we have fought for this project every single day, and I'm grateful to President Biden and Secretary Buttigieg for investing in Long Beach and the region."

"This project exemplifies our work to create jobs, cut pollution, eliminate bottlenecks and build a more dynamic supply chain — faster," said Gov. Gavin Newsom. "California is proud to work with the Biden-Harris Administration on this and other projects that enhance our state's supply chain while flexing our power in global trade."

"The groundbreaking of Pier B marks an important day for the future of Long Beach, signifying our dual commitment to both environmental and economic progress," said Long Beach Mayor Rex Richardson. "This project will make our Port more economically competitive in the coming decades supporting one in five jobs in Long Beach, improve the health of residents, and create more than 1,100 quality union jobs through construction."

"The investments made by our local, state and federal partners are key to creating this state-of-the-art rail junction, giving shippers even more reasons to choose the Port of Long Beach as their gateway of choice," said Long Beach Harbor Commission President Bobby Olvera Jr. "This gathering today marks a historic milestone that will bring new jobs and other economic benefits to Long Beach, this state and the nation."

Buttigieg and other speakers arrived at the event in a passenger rail car transported by Pacific Harbor Line's Progress Rail "Joule" zero-emissions switcher engine, in a display of the Port of Long Beach's industry-leading sustainability initiatives. DCi

Port of Hamburg is 'Best Global Seaport'

The popularity of the Port of Hamburg remains first-class in Asia. At the Asian Freight, Logistics and Supply Chain (AFLAS) Awards ceremony in Shanghai on 25 June 2024, the Port of Hamburg won the award for 'Best Global Seaport'. During the ceremony organized by the trade journal *Asia Cargo News* in Shanghai, Darren Barton, Publisher of Asia Cargo News, presented the award to Inga Gurries, Head of Market Development Asia Port of Hamburg Marketing (HHM).

This is the third time the Port of Hamburg has won the title after 2018 and 2019. In the final vote, the Port of Hamburg prevailed against the ports of Singapore, Shanghai and Long Beach. "We are honoured that the readers of Asia Cargo News have placed their trust in us by choosing us as the Best Global Seaport," says Gurries.

Asia Cargo News presents AFLAS Awards in Shanghai.

The awards are organized annually by *Asia Cargo News*. The magazine is recognized as an important source of information for freight, logistics and supply chain companies based or operating in Asia.

Around 15,000 *Asia Cargo News* readers and e-news subscribers had the opportunity to vote for the award winners. The awards are intended to recognize leading service providers such as airlines, shipping lines, airports and seaports, as well as logistics and 3PL companies and other industry professionals, according to *Asia Cargo News*. "The vote of the trade readership also shows that the Port of Hamburg continues to impress with its services. In times of multiple crises, we have proven our resilience," emphasizes Axel Mattern, CEO Port of Hamburg Marketing.

The Port of Hamburg has also been successful at the awards in recent years. It has won the 'Best Seaport – Europe' award six times in the past ten years. The nomination criteria are determined annually by the organizer. After an initial assessment, eight nominees in each category face a final vote. The four best in each category make up the final shortlist, from which the readers select the winners.

Throughput port of Rotterdam virtually unchanged in first half 2024

Cargo throughput in the port of Rotterdam in the Netherlands remained virtually unchanged in the first half of 2024 compared to the same period last year. Cargo throughput reached 220mt (million tonnes). This is 0.3% lower than in the same period in 2023 (220mt). The decline was mainly due to less handling of coal, crude oil and other liquid bulk. In contrast, throughput of iron ore and scrap, other dry bulk, mineral-oil products and containers increased. Container throughput increased by 4.2% (in tonnage) and 2.2% (in TEUs) due to increasing (consumer) demand and an early peak season. Port of Rotterdam Authority investments were on track in the first half of the year. This includes construction starting on CO_2 transport and storage project Porthos, awarding of the contract for the construction of the Prinses Alexia viaduct and the Port of Rotterdam Authority invested in making the port of Rotterdam more digitally resilient.

Boudewijn Siemons, CEO of Port of Rotterdam Authority: "After a period of economic uncertainty, we see demand for raw materials and consumer products starting to increase. This led to growth in container throughput in the first half of the year. Whether that trend will continue in other segments will depend partly on the pace of the European industry's recovery in the coming months. In the meantime, we are holding a steady course and continue to invest in and implement projects to make the energy and raw materials transitions a success and further improve the infrastructure of the port and industrial complex."

Throughput

Dry bulk

Dry bulk handling increased by 2.1% compared to the same period last year. The increase is mainly driven by higher throughput volumes of iron ore and scrap. This segment increased by 12.6% to 14.6mt due to higher steel and iron production in Germany in the first half of the year. Throughput of coal decreased by 2.4mt (–19.7%) due to low demand for thermal coal for power generation. Solar and wind are increasingly used as renewable sources for power generation. Throughput of coking coal also fell, despite the increase in steel production in Germany. Due to sufficient stock accumulation last year, supply decreased in the first half of the year. Throughput of agribulk decreased by 1.2mt due to low demand for soybeans as a result of certain processes moving to the United States. Other dry bulk (raw materials for various industrial applications and the construction sector) shows an increase. The throughput figures for agribulk (–19.3%) and other dry bulk (80.7%) show large deviations compared to 2023. Due to a correction in 2023 to an erroneous declaration in the seaport dues system in 2022, these figures show a distorted picture. Without the correction, agribulk shows a decrease of 5.1% and other dry bulk shows an increase of 20.7%.

Containers and breakbulk

In the first half of the year, container throughput increased by 4.2% in tonnes to 67.1mt by 2.2% expressed in TEUs, to 6.8 million TEU. The first quarter already saw a slight recovery in container throughput. This trend continued in the second quarter. This is a direct consequence of an increase in demand for consumer goods. Additionally, there is an early peak season as importers order their products earlier than usual due to longer sailing times and fluctuating sailing schedules. Ships have not passed through the Suez Canal since late 2023, due to turmoil in the Red Sea. The container market is still adjusting to this new situation. Due to the longer sailing time via the Cape of Good Hope, there are challenges with finding sufficient vessel capacity. Changes in sailing schedules, increased demand and bad weather in Asia have also caused congestion at ports in Asia, the Middle East and southern Europe. Despite the fact that congestion in north-western Europe has so far been limited, there are implications for port and hinterland operations. Ship arrivals are more difficult to plan due to changes in schedules. Additionally, callsizes have also increased substantially since the start of the Red Sea crisis. As a result, terminals and hinterland modalities face peak loads, leading to delays in container handling.

Outlook

Throughput

A slight increase in throughput is expected for the year as a whole. Increased container volumes are a harbinger of this. Furthermore, accumulated stocks in other segments have been run down and European industrial production appears to be picking up cautiously on the back of lower energy prices.

Importance of European co-operation greater than ever

Energy and raw materials transitions are currently the biggest challenges facing European ports. Ports and industry in North-West Europe are therefore increasingly pulling together to secure a sustainable future for European industry and society.

Boudewijn Siemons, CEO of Port of Rotterdam Authority: "The European economy only has a future if the energy and raw materials transitions succeed. Ports play a crucial role in this. We therefore need to think and act more based on that cross-border interest. The faster Europe becomes independent of fossil fuels, the greater the chance of strategic autonomy. Delay means we remain geopolitically vulnerable, which is bad for the Netherlands as well as for Europe. A firm commitment from the Netherlands in Brussels, championing the interests of seaports in the energy and raw material transitions, is now more important than ever."

In the transition from fossil to renewable energy, challenges around nitrogen, grid congestion and permitting currently play a hampering role. Predictable and competitive market conditions for investments in making industry more sustainable and the availability of sufficient raw materials are also crucial for a successful transition. Therefore, stable policies and strong incentives for green energy and a circular economy are needed in the coming years, both from The Hague and from Brussels.

HES International signs successful €1 billion debt capital raise

HES International's EBS terminal in the Port of Rotterdam.

HES International (HES) has announced the signing of definitive documentation for its successful €1 billion debt capital raise, further fuelling its path for growth and portfolio diversification.

"This successful refinancing is yet another vote of confidence in HES executing upon its strategy to further strengthen its position as a leading European multi-purposes bulk terminal operator. We are delighted and welcome a group of reputable financing partners, which comprises relationship bank lenders and institutional investors including new partners from our debut US Private Placement issuance of €553 million, who will support us on our journey over the next five to ten years", said CEO and Chairman of the Executive Board, Cees van Gent.

The facilities raised will be used to repay the existing group financing that is maturing in March of 2025. In addition, a CapEx facility of €150 million has been secured to, amongst others, fund HES' growth strategy.

HES recently filed its consolidated annual accounts for 2023, showing record-breaking €178 million of normalized EBITDA (excluding exceptional items, 2022: €153 million) and €492 million in revenues (2022: €471 million).

"HES' ambitious long-term strategy is already yielding results. In addition, our commitment to partnering with customers to phase out thermal coal over time and diversify our portfolio is gaining momentum. We have a robust pipeline of commercial contracts and projects focused on green and sustainable commodities, reflecting our proactive approach towards a more environmentally conscious future," according to Cees van Gent.

HES International is one of Europe's largest independent bulk handling companies for liquid, dry, and breakbulk products. Its companies hold a unique independent position in the supply chain of bulk goods for a wide range of products providing first class access to Europe's deep draught terminals and excellent hinterland connectivity by barge, rail and truck. With 15 terminals in five countries at strategic located ports in Europe, HES is an important switch in the continuous delivery of essential building blocks for everyday life needed to develop, sustain and improve the world. The company's professional staff ensure that bulk commodities are safely stored, handled and processed 24/7 for customers from all corners of the globe. It has a strong ambition to further broaden its product portfolio and also wants to respond optimally to the opportunities that the energy transition offers.

HES International is headquartered in Rotterdam and has been carefully handling bulk raw materials since 1908. Macquarie Asset Management, via Macquarie European Infrastructure Fund 5, and West Street Infrastructure Partners III, managed by the Goldman Sachs Asset Management Infrastructure business, each indirectly control 50% of the shares of HES International B.V.

New auction for five Brazilian terminals

Brazil's National Waterway Transport Agency (ANTAQ) has issued a deadline for bids to be received for a new block of five port terminals. The subsequent auction, which will take place on 21 August 2024, was originally scheduled for 23 May 2024 but had to be postponed due to uncertainties in the state of Rio Grande do Sul.

Three of the terminals — REC08, REC09 and REC10 — are located in the Port of Recife; the fourth, RIG10, is at the Port of Rio Grande; and the fifth, RDJ06, at Rio de Janeiro.

A total of $13.5 million of investment will be required in the five terminals, which will be offered as ten-year concessions but with no possibility of extension.

REC08 will be used for the handling and storage of agribulk, and will attract the largest investment, of $9.32 million. REC09 is anticipated as mainly handling rice, with up to $400,000 of direct investment needed. REC10, a dry bulk and general cargo terminal, should attract $530,000 of new investment.

RDJ06 is a liquid bulk cargo and RIG10 a general cargo handling facility. *Barry Cross*

Cargo transshipment in North Sea Port remains stable over first six months

Over the first six months of this year, the companies in North Sea Port recorded a volume of 33.4 million tonnes of seaborne cargo transshipment. This is the same as in the equivalent period in 2023. Transshipment via inland navigation increased.

Looking at the different commodities handled, we again see rises in 'recession-sensitive' products such as construction materials, petroleum products and chemical products.

Increase in liquid bulk

Broken down by cargo types, the transhipment of liquid bulk goods (7.5mt [million tonnes]) grew by 5%, with increases in chemical products and fertilizers.

The transshipment of general cargo (breakbulk, 5.2mt) rose by 4.1%, primarily thanks to increased volumes of cellulose. Wheeled cargo throughput (ro-ro, 1.9mt) remained steady. Dry bulk goods fell by 2% to 18mt. Transshipment volumes dropped in categories including oil seeds and iron ore. However, there were also increases in this segment, in particular in fertilizers and raw minerals.

UK no. 1, Russia falls further

As a result of EU sanctions, trade with Russia fell by a further 17% during the first six months of the year. Russia is now North Sea Port's tenth biggest trading partner, whereas two years ago it still held top spot. The UK is currently the port's most important trading partner, followed by the United States and Sweden.

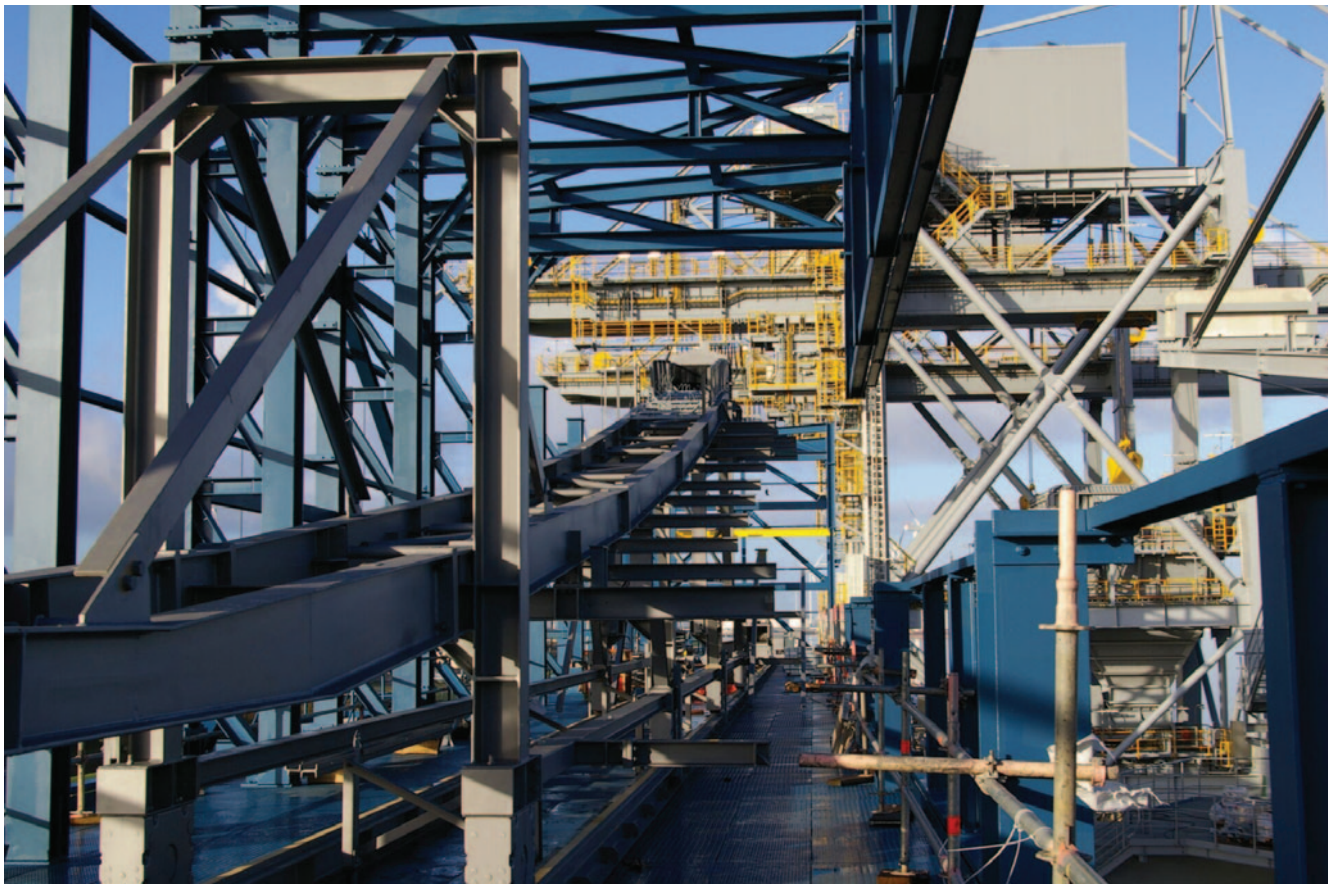
Inland navigation increases

Cargo transshipment via inland navigation rose by 2.6% over the first six months of the year to 32.2mt. Throughput in liquid bulk goods increased, while the volume of dry bulk goods handled remained static.

The future

For Western European countries, growth is looking relatively limited for this year. A slight growth of 2% over 2024 is cautiously predicted.

Loibl port handling and gypsum



Transport units for ashes and FGD gypsum transport

Between 2006 and 2015, respected bulk handling transportation specialist Loibl installed equipment for a port handling and gypsum storage system at RWE's power plant in Eemshaven in the Netherlands. Its scope of supply included:

- various belt conveyors, some of which are reversible and movable, with the necessary transfer chutes and monitoring units;
- one semi-portal scraper for temporary storage of the plaster in a warehouse;
- one loading silo for one truck loading;
- one shiploader for loading onto ships; and
- complete cabling of all electrical consumers and devices

storage in the Netherlands

Modules

The modules in the project comprised: a complete combustion chamber ash disposal system; various reversible and movable belt conveyors; components; semi-portal scrapers; loading silos; shiploaders; electrics.

Special features

Design, calculation, construction, manufacture, assembly in the company's own facilities, tests, commissioning, complete documentation, training of operating personnel, trial operation, combustion chamber ash disposal.

Fossil-fired power plant with biomass firing

Loibl supplied and installed a complete transport line for RWE's hard coal power plant (2 x 780MW) in Eemshaven, North Holland. These transport units transport the FGD gypsum from the flue gas desulphurization system and the fly ash from the filter.

The scope of delivery and services included the design, calculation, construction, manufacture, assembly in the workshops, tests, delivery, transport free to the point of use, unloading, complete assembly, commissioning, complete documentation and training of the operating personnel, the trial operation and the implementation of the evidence of the assurances of the furnace ash disposal system and system components to be delivered.

The transport system from the gypsum preparation (after filter belt presses) to the gypsum warehouse is designed for a conveying capacity of 100tph (tonnes per hour), and for the transport from the gypsum warehouse to shiploading of 400tph.

All belt conveyors are set up in closed belt bridges and are easily accessible. Safety devices such as belt misalignment monitors, speed monitors and pull rope switches monitor the correct function.

The gypsum is temporarily stored in a warehouse; both storage and retrieval are carried out using a semi-portal scraper installed in the warehouse.

Siwertell shiploader ordered for high-capacity fertilizer handling

Bruks Siwertell has secured an order for a Siwertell shiploader type-1A from Libyan Fertilizer Company (LIFECO). It is designed to offer reliable, efficient, high-capacity urea handling at the operator's facilities in Marsa al Brega in Libya, and will be fitted with the latest digital advances to enable remote support.

"Our shiploading technology has a global reputation for its quality and reliability," says Per Hansson, Sales Director EMEA & LatAm, Bruks Siwertell. "It is also low in weight, and can be seamlessly integrated with existing infrastructure, optimizing a port terminal's operation for minimized installation costs. "LIFECO is a new customer for us, and we are delighted that it recognized the benefits of our technology in an open bidding process," Hansson continues. "The Siwertell shiploader proved to be an ideal fit for the fertilizer handling operation, and our responsiveness and dedication to overcoming some of the current challenges with travel and delivering dry bulk handling equipment to Libya was essential."

The new Siwertell shiploader will have a travel length of 185m, enabling it to accommodate both large and smaller vessels. It offers a continuous rated urea loading capacity of 1,000 tonnes per hour, and will be installed on an existing quay, integrating with the present jetty belt conveyor and tripper.

"LIFECO predominantly receives long, large vessels, making our shiploader an ideal choice," explains Hansson. "We designed the lightest possible loader to fulfil LIFECO's strict requirements. The results mean that, not only will it be able to offer a significantly longer travel length, at approximately 210 metric tonnes including counterweight, it will also be much lower in weight than equivalent-sized systems." explains Hansson.

The new shiploader will be delivered fully assembled from Turkey towards the end of 2025, and will include an enhanced operator training package, incorporating instructions on how to take delivery of the system from the heavy-lift vessel.

Advanced digital features include Bruks Siwertell's augmented reality (AR) glasses and an Industrial Internet of Things (IIoT) device, enabling the equipment, and the operator, to be remotely supported, especially during commissioning and start-up.

Liebherr-Werk Bischofshofen sets the course for the

Liebherr-Werk Bischofshofen GmbH is planning to significantly expand its production capacity by building an additional manufacturing plant for small wheel loaders in Wildon, Styria. This strategic decision is a response to the steadily growing wheel loader market and underlines the company's commitment to sustainable growth. The new production site is scheduled for completion in 2029.

The Liebherr Group's wheel loader production plant in Bischofshofen employs 1,200 people on a site covering 170,000m². With its present capacity, up to 7,000 wheel loaders can be produced each year. In the medium term, the company expects demand to reach 10,000 units per year, which means that production capacity has to be expanded.

"Our site is beside the B 159 road that runs along the Salzach valley and is hemmed in by the slope to Mitterberghütte, the railway line and the river Salzach. We would only be able to expand our site by building upwards. Current projects around Bischofshofen do not have the required space and would result in a complex transport concept that would further burden traffic in the region. This makes the expansion in Wildon a logical and necessary decision in order to be able to meet the increasing market demand," says Peter Schachinger, Managing Director for Production at the Liebherr plant in Bischofshofen.

The Liebherr plant in Bischofshofen is planning to expand its production capacities.

The Wildon and Bischofshofen site

The decision was thus taken to build a state-of-the-art production facility on a spacious 200,000m² site in Wildon. The new facility will manufacture the small wheel loader models L 504 to L 518, as well as models for the OEM partners John Deere and Claas.

The location of the new site offers many advantages that make it very attractive. In particular, the excellent rail connection and the proximity to the Cargo Centre Graz (CCG) allow efficient material supply and the dispatch of finished products. This not only optimizes production processes, but also minimizes environmental impact by reducing lorry transport.

In addition, Wildon offers the ideal infrastructure for future expansion. The proximity to key suppliers and the availability of skilled workers in the region are other advantages that make the location so attractive. The planned expansion will not only create new jobs but will also strengthen the local economy and contribute to regional development. The positive co-operation with the project participants on site had a significant effect on the decision.

The Bischofshofen plant will continue to be responsible for production of large and medium-sized wheel loaders, as well as steel construction for the entire wheel loader range. Due to the increasing demand for large and medium-sized wheel loaders, and the fact that the new plant will take several years to build, good capacity utilization can be expected in Bischofshofen.

"Liebherr's Bischofshofen plant will

The four managing directors of the Liebherr plant in Bischofshofen on the company premises (from left: Peter Schachinger, Martin Gschwend, Manfred Santner and Herbert Pfab).

future: additional production site planned in Wildon

remain the centre of expertise and development for all the company's wheel loaders. The enormous potential for growth in countries such as the USA, along with increasing requirements for digitalization and intelligent assistance systems, allow us to look with confidence into the future of our main plant in Bischofshofen," says Schachinger. Employees have been involved in all of the planning at the Liebherr plant in Bischofshofen which emphasizes Liebherr's commitment to being an attractive and secure employer for the region.

Sustainability and environmental protection

Liebherr places great value on sustainability and environmental protection. The company plans to integrate state-of-the-art technologies and environmentally friendly processes at the new site. These include measures to save energy, the use of renewable energy and minimization of emissions. These initiatives are part of Liebherr's sustainability strategy, which aims to reduce the environmental impact of production in the long term while increasing efficiency.

Future vision and strategic aims

Liebherr is pursuing ambitious aims with the planned expansion. By 2030, the company plans to increase its production capacity to 10,000 wheel loaders per year and achieve a 10% share of the global market (excluding China). These objectives are part of the long-term strategy to increase production capacity, ensure high product quality and promote innovation. Only by expanding production capacity will it be possible for the plant to achieve these goals and sustainably strengthen its position in the global construction machinery market.

Conclusion

The planned expansion of Liebherr Bischofshofen with the new site in Wildon is a significant step in the development of the company. This step will enable Liebherr to expand its production capacity, ensure sustained product quality and achieve its long-term growth targets.

At the same time, it will strengthen the local economy and pursue the long-term goal of minimizing the environmental impact. Liebherr is thus sending a clear signal for a sustainable and successful future.

AGI supplies equipment to innovative new malting plant in Brazil

Ag Growth International Inc. (AGI) joined Cooperativa Agrária Agroindustrial (Agrária) and its co-operative partners — Bom Jesus, Capal, Castrolanda, Coopagrícola, and Frísia — to celebrate the commissioning of the newly minted barley malting plant in Ponta Grossa, Brazil. Hailed as an example of industry inter-cooperation, the Maltaria Campos Gerais (MCG) is an innovative, large-scale greenfield facility capable of producing 240,000 tonnes of brewer's malt per year.

MCG is strategically located in an agricultural region known for grain production and conducive to the cultivation of barley. Malted barley is the main source for fermentable sugars used by yeasts in the traditional brewing of beer.

"AGI had the privilege of being on-site for the inauguration of this state-of-the-art malt production facility to the industry and local community," says Paul Householder, AGI president and CEO, who attended the event. "Our pride stems from AGI's contribution in supplying the grain handling and storage system to this massive MCG plant. This facility plays a crucial socio-economic role within the region and broader value chain."

According to Agrária and its cooperative partners, the facility investment will provide farm-to-market benefits for the region by building

Coperative Agrária Agroindustrial (Agrária) and co-operative partners — Bom Jesus, Capal, Castrolanda, Coopagricola and Frisia — recently celebrated the commissioning of Maltaria Campos Gerais, the largest malting plant in Latin America (photo: permission of Agrária).

demand for locally grown barley, expanding markets for malted barley, fostering local jobs, and leveraging the relationships forged with two of the biggest players in the national beer market.

AGI provided a turnkey solution with customized grain storage, material handling and conveying equipment, including 52 chain conveyors, 19 bucket elevators, 14 AGI Hi Roller enclosed belt conveyors, 13 bulk flows, 26 screw conveyors, 18 square hopper bins, and two hopper bins including full engineering, installation and commissioning.

MCG is a one-of-a-kind installation built to support the processing of 240,000 tonnes of brewing malt per year and storage of 90,000 tonnes of barley and 80,000 tonnes of malt.

With a focus on safety, quality and energy and water efficiency, the project began in 2022 with design and engineering followed by two years of installation and assembly. The facility, which completed construction in March, was commissioned 6 June during a special event attended by the co-operative partners, suppliers, and federal, state and local authorities.

About AGI

AGI is a provider of solutions for global food infrastructure including seed, fertilizer, grain, feed, and food processing systems. AGI has manufacturing facilities in Canada, the United States, Brazil, India, France, and Italy and distributes its products globally.

4B Group introduces IE-GUARDFLEX – Distributed Hazard Monitoring Solution

Leeds, UK-based 4B Group has launched its Distributed Hazard Monitoring Solution (DHMS) featuring the IE-GuardFlex. Leveraging advanced industrial Ethernet technology, the IE-GuardFlex control unit seamlessly connects and monitors sensors across multiple machines using 4B's state-of-the-art IE-Node technology. This robust system can be configured for multiple machines, IE-Nodes, and sensors, directly interfacing with machine control centres to initiate shutdowns upon detecting potential risks.

Ideal for central control rooms and 'non-hazardous areas', the IE-GuardFlex connects to IE-Nodes in 'at-risk zones' via industrial CAT6 Ethernet cables. Monitored machinery includes bucket elevators, enclosed and open conveyors, chain conveyors, rollers, and more. ATEX-certified sensors connected to local IE-Nodes monitor critical conditions like belt slip (SlipSwitch, Milli-Speed), belt misalignment (TouchSwitch, Bulldog), bearing temperatures (ADB, Milli-Temp), vibration (Milli-Vib), and blockages (Binswitch).

Engineers can easily locate and configure nodes using the intuitive 7" colour touchscreen interface. The system supports up to three different ALARM/STOP configurations per sensor, with output relays assignable to alarm and/or stop conditions per sensor or per machine. Common ALARM/STOP relays indicate alarms or stops across any connected sensor. "The IE-GuardFlex system has been developed to empower facility engineering and maintenance staff to implement a comprehensive, de-centralized hazard monitoring system, using the simple and intuitive programming interface," explains Sam Payne, 4B Group CTO for electronics."This eliminates the need to implement the hazard monitoring system into the plant process control system/PLC and hence means there is NO special PLC programming software required, NO need for specialist and expensive control system engineers, NO additional PLC capacity and SCADA tags and NO plant disruption during implementation. Separating the plant control and hazard monitoring systems also provides an extra layer of redundancy and reliability."

About 4B GROUP

A subsidiary of The Braime Group, 4B GROUP has been an industry leader in developing high quality, innovative, and dependable material handling components for the agricultural and industrial sectors.

4B's product line ranges from elevator buckets, elevator bolts and drop forged conveyor chain to level monitors, speed switches and hazard monitoring systems. With offices in North America, Europe, Asia, Africa, Australia and the Middle East along with a worldwide distribution network, 4B can provide practical solutions for applications in any location.

ELECTRONIC COMPONENTS & MONITORING SYSTEMS

GROUP

PREVENTATIVE MAINTENANCE & HAZARD MONITORING SYSTEMS

BELT MISALIGNMENT SENSORS

SAFETY SWITCHES

VIBRATION SENSORS

SPEED SWITCHES

BEARING TEMPERATURE SENSORS

INDUCTIVE SENSORS

ENCODERS

LEVEL & PLUG SWITCHES

The brain behind a smart operation.

The IE-Node. *The future of hazard monitoring.*

Utilizing industrial ethernet and cloud connectivity to share real-time sensor data, alongside historical analytics, with your PLC of choice — the IE-Node is truly intelligent. You can connect your entire system and keep every component in constant communication for unprecedented hazard protection.

HAZARDOUS AREA APPROVALS
CSA, ATEX, IECEx, EAC, CCC

RJ-45 SOCKETS SUPPORT
EtherNet/IP, PROFINET and Modbus TCP/IP

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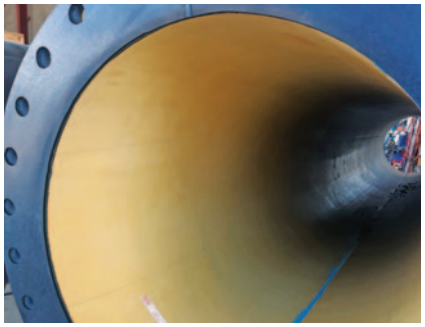
Expert interview: rubber for effective wear protection in conveyor systems



Rico Harting, Product Manager at wear protection specialist REMA TIP TOP.

Rubber is the material of choice when it comes to protecting surfaces in conveyor systems for light and medium-weight materials against wear. However, not all rubber is alike and not every elastomer is equally suitable for every requirement. Rico Harting, Product Manager at wear protection specialist REMA TIP TOP, has been developing solutions for efficient and sustainable wear protection in conveyor systems for many years. In this interview, he explains what is important when using rubber linings and why operators should regularly put the wear protection in their systems to the test.

Which particular challenges are involved in conveying lightweight materials?

When processing round grains and sticky materials such as sand, gravel or clay, abrasion and caking occur on the surfaces of system components. The greater the wear, the shorter the service life of the plant because repair and maintenance work disrupts operation. Downtime is expensive, so the challenge for plant operators is to effectively protect critical points such as transfer points against wear. Depending on the conveyed material, caking must also be avoided with the help of suitable surface coverings. Last but not least, avoiding noise also plays an important role when conveying light materials in order to protect the health of employees and the environment.

What role does rubber play in protecting against wear nowadays?

Rubber has become an indispensable material for protecting against surface wear in the conveying of light and medium-weight materials. In addition to high abrasion resistance, rubber offers a number of advantages that make it the material of choice for lightweight applications in piping, hoppers, chutes, cyclones and many other conveyor components. Rubber is a resilient material that absorbs impact energy very well, further reducing dust and noise generation. Compared to other wear-resistant materials, rubber is also very light and highly resistant to corrosion, for example, even under difficult conditions. It is very easy to install as it can be flexibly cut to size and bonded.

What are the differences between the various wear protection systems?

Various types of rubber in different Shore hardnesses are used for rubber linings in the form of mats and sheets with and without fabric reinforcement. Reinforcement with fabric is recommended if, for example, wear protection elements are to be bolted in place. The fabric gives the rubber the necessary strength to prevent screws from tearing. Rubber grades of different Shore hardness are used depending on the mechanical load: softer grades with 45–50 Shore A and less tend to be used in wet areas, e.g. sand and gravel. In quarries, on the other hand, harder types of rubber are used. Last but not least, there are types of rubber that are suitable for special applications: acrylonitrile butadiene rubber (NBR) offers high resistance to fats and oils, chloroprene rubber (CR) is self-extinguishing when used underground, to name just two examples.

What needs to be considered when using rubber for wear protection?

The most important rule when designing wear protection is as simple as it is obvious, but often not sufficiently taken into account: the materials used and the type of components must match the specific requirement. The most important criteria when assessing wear are the conveying speed, the drop height and impact angle at transfer points and the material throughput in tonnes per hour or per load. In addition, the general conditions during conveying play an important role: temperature, contact with chemicals, oils or greases, moisture content and composition of the bulk material, etc. Based on this information, we at REMA TIP TOP determine the requirements for wear protection in each specific case and develop the optimum solution together with our customers.

What advice do you have for companies that want to optimize their wear protection?

If you want to sustainably reduce downtimes due to wear in your system, you should regularly examine the situation using the above criteria. Only by critically analysing and evaluating weaknesses it is possible to identify potential for improvement and take appropriate countermeasures: how can the service life be effectively increased? How can shut-down management be improved? How can noise pollution for employees and the environment be reduced? In these cases, it is recommended that experts are brought on board to provide an objective view of the situation in order to actively address critical wear points. The experienced experts from REMA TIP TOP analyse the situation directly on site if desired and identify potential improvements and solutions for wear protection.

About REMA TIP TOP

REMA TIP TOP is a globally operating system provider of services and products in the field of conveying and treatment technology as well as tyre repair. The company has a global service network and offers a wide range of rubber products, linings and coatings for both the industrial and automotive sectors. Over almost a hundred years, the company has built up unique expertise in materials development and industrial services and is active in the belting, material processing, surface protection and automotive sectors. At the end of the 2023 financial year, REMA TIP TOP generated sales of about more than €1.4 billion. Worldwide the company employs 9,000 employees and has more than 200 subsidiaries and associated companies — including well-known brands such as Dunlop Belting Products South Africa and Asplit.

IMGS in Tanzania: wheat discharging and distribution

Tanzania, strategically positioned at the heart of bustling regional trade, plays a crucial role in alleviating food insecurity across the East Africa region. IMGS' recent operation saw the smooth discharge of 50,000 metric tonnes of wheat, marking a significant milestone in these efforts. It wasn't all smooth sailing, though.

The Port Captain expertly navigated vessel movements, safety regulations, and cargo handling. IMGS Group's expertise and network, ensured timely and efficient distribution, reinforcing its reliability in the region.

Strategic hub for regional trade

Tanzania's ports are pivotal, handling the majority of the country's international trade and serving as gateways for landlocked countries like Zambia, Uganda, Rwanda and Burundi. With ongoing government investments in road and railway infrastructure, the ports are set to double their traffic, connecting more inland hubs and providing faster, shorter, and more cost-effective routes to neighbouring countries, facilitating seamless distribution of commodities.

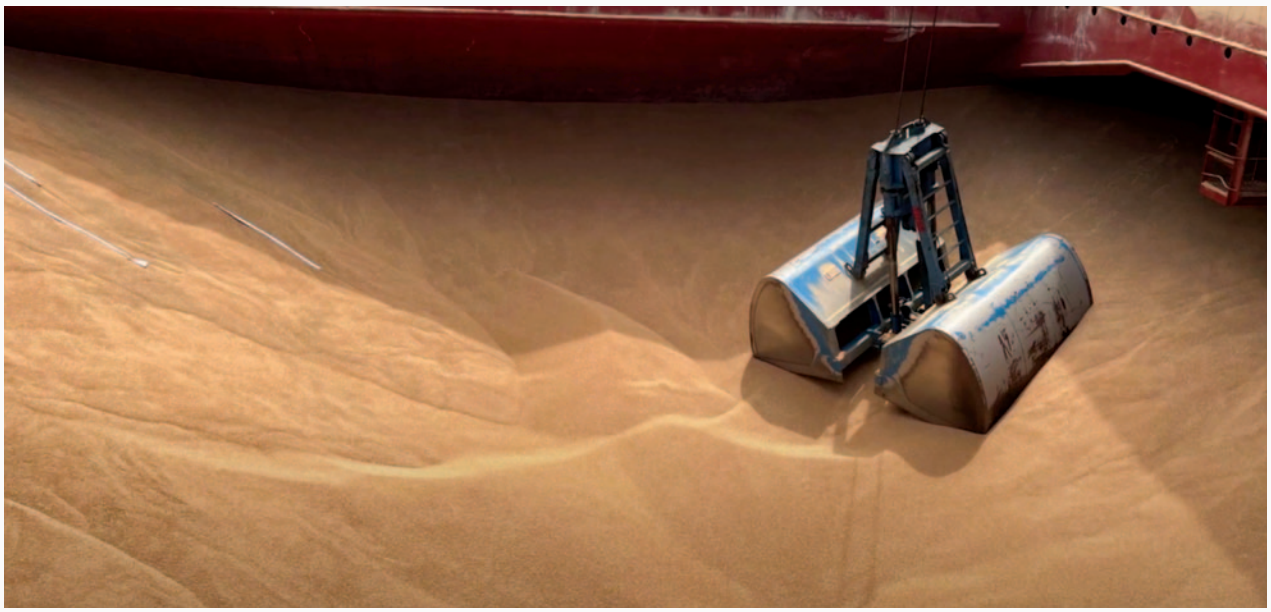
The government has also been proactive in enhancing trade agreements and policies to boost market access. Regional trade agreements like the East African Community (EAC), Southern African Development Community (SADC), and the African Continental Free Trade Area (AfCFTA) are poised to significantly increase intra-African trade.

Addressing food insecurity in East Africa

The region faces significant challenges with food insecurity and malnutrition, affecting a substantial portion of its population. With strategic investments in agriculture and logistics infrastructure, Tanzania is making strides in transforming its food systems. The recent operation by IMGS Group is a testament to these efforts, ensuring that essential commodities like wheat reach those in need across the region. By enhancing market access, improving logistics, and ensuring efficient distribution, Tanzania can overcome these hurdles while supporting the rest of the region.

Partnering for success

Ongoing developments in Tanzania are enhancing cargo handling and fostering economic growth. With continued investment in infrastructure and agriculture, Tanzania is set to become a significant player in global agricultural trade.



Containerized bulk handling

innovative systems streamline operations

Louise Dodds-Ely

Container Rotation Systems goes from strength to strength

Australian company Container Rotation Systems (CRS) is renowned for its container-emptying system, which offers an efficient solution to the problem of unloading bulk from containers.

This is a concept that is gaining in popularity worldwide, and is in use internationally handling cargoes of vastly different properties, from alumina to coal.

The company is now offering customized solutions for a range of specific commodities, optimizing operations for the use — each commodity has different properties and behaves in a slightly different way.

The commodities served include:

- **coal:** for coal, CRS has developed its Rotainer® Eurospec 38, with rotating headframe. Each container carries a load of 32 tonnes, and the Rotainer® Eurospec 38 can achieve up to 38 cycles per hour, resulting in a capacity of 1,200tph (tonnes per hour).
- **zinc:** for zinc, the Rotainer® Eurospec 38, with the CRS low-profile headframe, is ideal. It can be set up for 1,450mm half heights, and 1,800 three-quarter heights. Both are available with automated lid lifting, and can be used in combination with a mobile harbour crane.
- **copper:** for copper, CRS's Rotainer H.D. heavy duty 360 unit can be used. Each container carries a load of 32 tonnes, and the Rotainer HD can handle generic 2,200mm containers. The CRS automated lid lifting is helpful, and the unit can be operated using a Gottwald mobile harbour crane, or similar.

Also for copper, CRS can handle 1,900mm heavy duty containers with flat lids and automated lid lifting. The unit has a low-profile head frame, and direct connection.

The Rotainer HD can also handle heavier 2,200mm (38 tonnes gross weight) containers, also with automated lid lifting. This unit is diesel-powered, and can work with, for example, a Liebherr mobile harbour crane.

- **mineral sands:** for mineral sands, the Rotainer HD is ideal in combination with a mobile harbour crane It can

handle 2,200mm generic half-heights for 32 gross weight, and can be modified to include the CRS automated lid lifting system.

- **aluminium:** for aluminium, the Rotainer Eurospec 32 is perfect — for more challenging conditions, this can be equipped with CRS's arctic pack for ship's gear.
- **iron ore:** CRS's Rotainer® HD 360 comes into its own when handling iron ore. Container capacities of up to 32 tonnes can be handled, and the unit rotates at 35 cycles per hour, offering a capacity of 1,120tph using one ship-to-shore crane.
- **sugar:** for sugar, the Rotainer® HD 360 is again a good choice, With three ship-to-shore cranes, handling containers of 38 tonnes, it can achieve 350 cycles per hour and a capacity of 2,700tph.
- **grains:** for grains, the Rotainer® Eurospec 38 with low-profile headframe is popular. It can handle 32 tonnes per container, with 35 cycles per hour in combination with a mobile harbour crane.

Notable projects and developments

In 2014, CRS delivered its first Rotainer RS HD (Reachstacker), a milestone that was followed swiftly by the delivery of a further three units to Taiwan. These units have been in successful operation for ten years.

In 2018, CRS released its highly successful single-beam Rotainer Eurospec RS for 38 tonnes. These units are stand alone, being self powered with a compact diesel engine with hand held remote control, fully programmable and now standard with RRM-Rotainer Remote Monitoring for real time data transfer and diagnostics.

To meet safety regulations, the CRS Patented crank system is the preferred drive as it rotates 180° away from the operator's cabin, so there is no possibility of tipping the load onto the cabin; this is another CRS innovation.

Global mining giant Tronox is a notable user of CRS's Rotainer® Eurospec 38 RS (Reach Stacker) to its operations in Broken Hill in Australia. After the initial delivery to Tronox's Broken Hill facility, production at the plant increased dramatically, so, in 2023, a second unit was installed to assist with the high duty cycles while guaranteeing constant feed stock into the processing plant. Unit 1 is consistently cycling at over 1,200 containers per month. Both units are fitted with CRS's newly developed, innovative, highly reliable, 'Claw' lid lifting system that works perfectly for generic style container lids and lock systems.

These Rotainers are highly successful for CRS; being a standalone unit allows full functionality of the reachstacker while

using all functions of the Rotainers operating systems for seamless operations.

Operators feedback confirms the 180° rotation, away from the operators is the industry standard for safety, functionality and dust minimization.

Putting a lid on it

The latest addition to the CRS stable is a stand-alone, electronically managed, static, lid removal and replacement system (see picture, below). CRS's lid lifting is an optional extra and can be mated to any brand of open top container currently on the global market.

This unit is designed to be installed at the processing plant where containers have be loaded in a fully contained, environmentally safe manner.

A container is placed in the lid lifting station, its lid is removed, the container is filled and weighed to reach the design gross weight required, the lid is replaced and the container is then moved to a marshalling area or direct to transport logistics

This static unit is a modulated system completely manufactured in CRS's Western Sydney, state-of-the-art facility. It is a pre-tested plug and play design — users should just fit it to its mount pads, power up and it is ready to work.

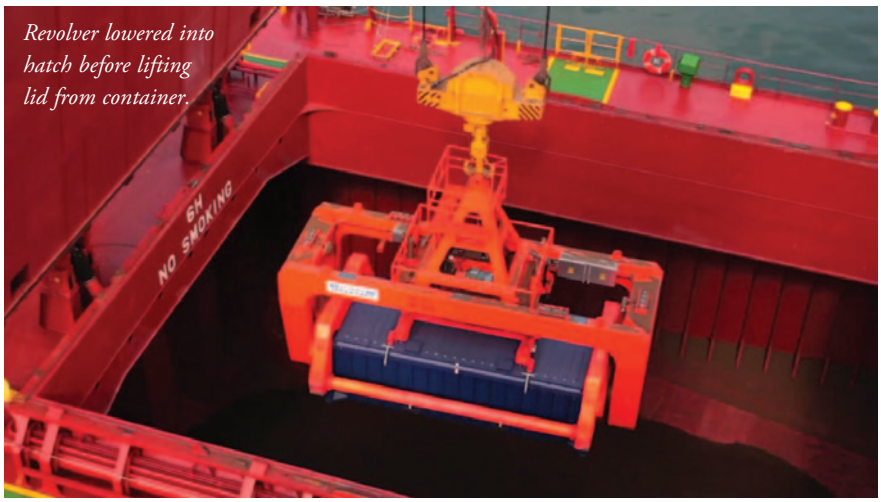
Having universal mounting points means that they are easily accommodated. Installation can be free-standing on support legs, or it is possible to mount the assembly on the surrounding building structure.

Operationally, the CRS's 'Smarts' team can set up many variations of electronic management, data logging and it can include CRS's 'RRM' Rotainer remote monitoring software for 24/7 back-up and support services.

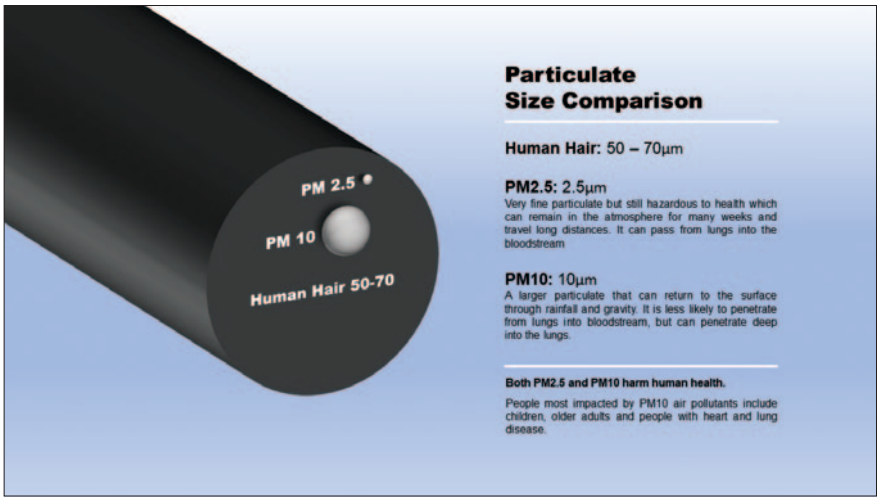
The system in the picture is a dual installation whereby two containers can be worked at the same time. This innovative system will be heading to project in Western Australia and is expected to be operation in Q3, 2024.

Let the dust settle: RAM Lifting Technologies' CBH expertise

Bulk handling is one of the many industries which has seen a steady influx of innovations and systems designed to help reduce dust generated during transportation and the handling of dry bulk commodities. One solution taking the industry by storm is Containerized Bulk Handling (CBH) using a 'revolver'.



Revolver lowered into hatch before lifting lid from container.



A matter of particulates

Traditionally, the handling of dry bulk generates certain harmful 'particulate matter', sometimes referred to as floating dust.

Fine particles can remain suspended, allowing the material to travel over long distances, with larger particles soon returning to the surface from rainfall and gravity. The level of particulate matter is gauged from the very fine PM 2.5 particles to the larger PM10 coarser particles, both of which affect health from levels of exposure.

PM health implications

Short-term health impacts of PM10 can include difficulty breathing, tightness of chest pain, fatigue, to long-term exposures causing lung tissue damage, heart failure, EWS or heart failure. Filtering out particulate matter is essential to improving health.

CBH — a proven dust-free bulk handling solution

The containerized bulk handling solution is a proven solution to the issues of dust generation during the transportation and handling of dry bulk commodities. RAM is already celebrating over 15 years of CBH success with 'revolver' and has amassed 3 industry awards for environmental protection, innovation and safety in bulk handling.

The CBH uses sealed containers as a

Dust suppression system in action.

method of transport and storage, with the 'revolver' rotating spreader used to handle the container, remove the lid and gently rotate the commodity at its destination.

Environmental best practice

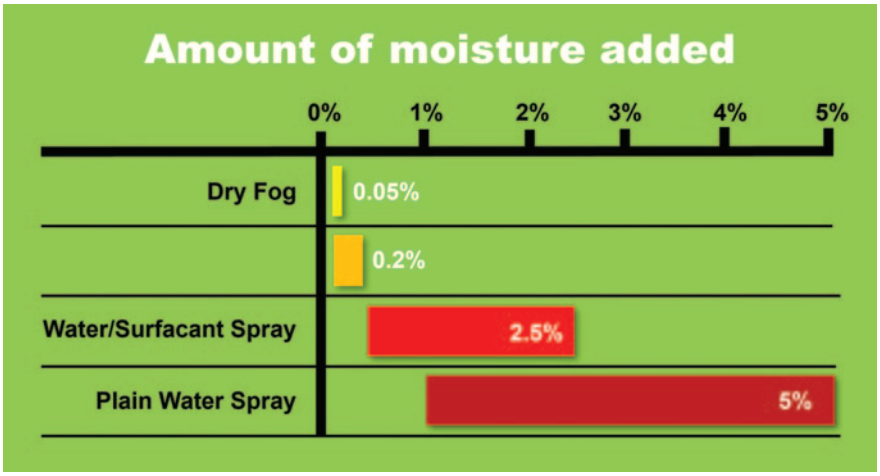
The solution is environmentally best practice, as the commodity only sees the light of day immediately before being decanted, with a dust suppression system around the ship's hatch containing the dust plume generated during the unloading process.

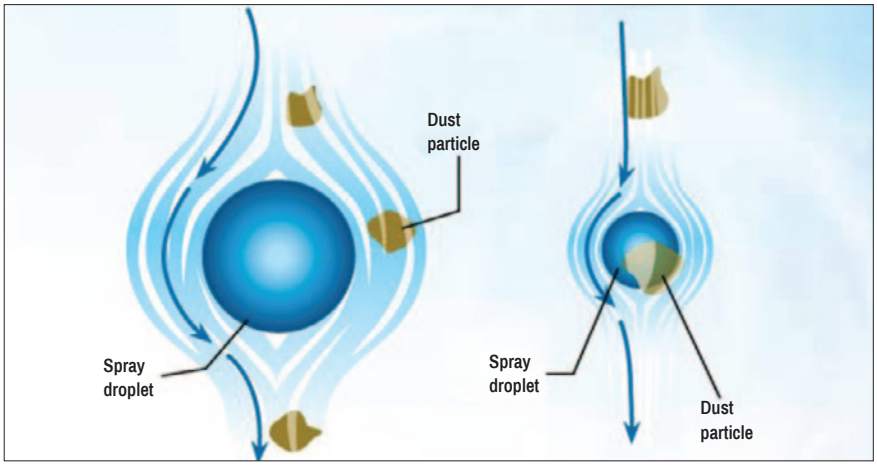
Box clever

Not only does revolver CBH protect the environment and reduce particulate matter, but it also protects valuable commodities from loss or contamination. This allows multiple types of commodities to be stored next to each other without running the risk of cross-contamination.

Lifting the lid on bulk handling

CBH follows a simple and easy handling process of load, seal, transport, store, and unload. From its initial process of loading the bulk into open-top containers, a lid is then placed locking the commodity, where it is transported either by road or by rail,





RAM SPREADERS

RAM CBH

Containerised Bulk Handling

Containerising Bulk Commodities
Sealed open-top containers as mode of transport & storage

Up to 30 Moves Per Hour
Fast & efficient with zero dust*

Environmentally Friendly
No stockpiles - No contamination - No clean-up

Cost Effective & Fast to Market
No need for expensive infrastructure to handle bulk

Export & Import Bulk
Pit/Shed-To-Ship *or* Hopper-To-Shed

**optional dust suppression system available*

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"Fine dust is very dangerous to human health. We aim to offer a zero-dust solution and help change how ports are perceived in their local community.

RAM Lifting Technologies

then can be stored without stockpiles or storage sheds, and finally picked up and unloaded by the revolver.

The revolver, which locks onto the container, also removes the lid from the sealed container and gently rotates the commodity through 360 degrees, ensuring all commodity is decanted, replacing the lid back onto the empty container completing the lift cycle.

It's in the air

Any dust generated during the unloading process is contained within the ship's hold by a dust suppression system that produces microscopic droplets creating a wall of dry fog around the ship's cell to contain the commodity.

The dust suppression system uses a series of spray bars mounted easily to the vessel's hatch. The nozzles on the spray bars produce microscopic droplets that collide with airborne dust particles, which are returned to the ship's cell.

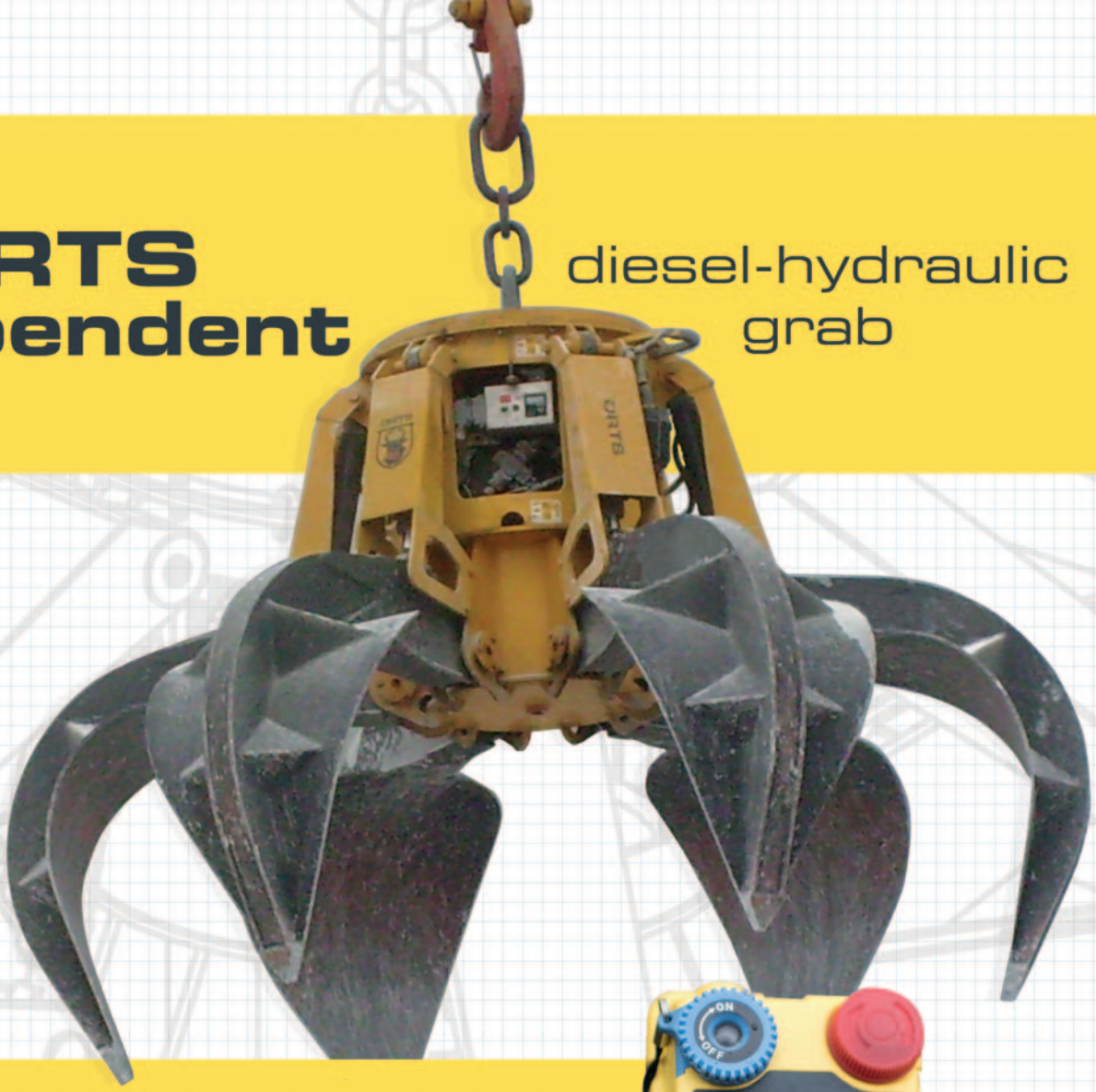
A global success

From its initial introduction in 2008 in Australia, a system still being used today has paved the way for revolver CBH projects in Africa, UAE, Europe, and Asia. This dust-free solution has also been particularly successful in South America, with projects using all crane types, including STS, ship, MHC, reachstacker, and bridge crane.

Sealed containers at port ready for export (note: different types of commodity can be stored in close proximity).

ORTS independent

diesel-hydraulic grab



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Green logistics with containerized transportation from Bulk Flow

Triple Screw Conveyor Container Filling System.

As the global push for sustainability gains momentum, Europe has set an ambitious goal to achieve net zero emissions by 2050. The transportation sector, a significant contributor to greenhouse gas emissions, is under increasing scrutiny to adopt greener practices. Containerized transportation, particularly when integrated with rail transport, offers a promising solution to reduce emissions and promote sustainable logistics. This article explores the benefits of containerized transport, the challenges it addresses, and how Bulk Flow's innovative solutions, led by our founder and innovator Oswaldo Mino, are driving this shift.

Embracing containerized transportation on railways:

Why we should embrace it

Containerized transportation, especially via rail, presents a compelling case for sustainable shipping. Unlike conventional methods that rely heavily on road transport, containerized rail transport is significantly more efficient and environmentally friendly. Trains can move a tonne of freight over 470 miles on a single gallon of fuel, making them vastly superior in terms of energy efficiency. This one-carrier-only method minimizes handling and reduces the risk of spillage and contamination, ensuring that goods arrive at their destination in optimal condition.

Sustainable shipping

Shipping goods in containers reduces emissions and congestion on the roads. According to the European Environment Agency, rail transport emits up to 76% less CO_2 compared to road transport. By shifting freight from trucks to trains, it is possible to cut down significantly on greenhouse gas emissions and contribute to cleaner air and less-congested urban areas. Additionally, rail transport is inherently safer, with lower accident rates compared with road transport, further enhancing its appeal.

The adoption of containerized transportation aligns with global sustainability goals, making it a key strategy for companies looking to reduce their environmental impact. As more industries recognize the benefits of sustainable shipping, the demand for efficient containerized transport solutions continues to grow.

Challenges of containerized transportation

While the benefits are clear, containerized transportation also presents challenges that must be addressed to ensure seamless and efficient operations. Handling bulk materials in containers requires specialized equipment and expertise to ensure that the cargo is loaded, transported, and unloaded safely and efficiently.

One significant challenge is the risk of contamination and moisture ingress. Bulk materials must be protected from external elements that could compromise their quality. Effective sealing and protective measures are essential to maintaining the integrity of the cargo throughout the transportation process.

Another challenge is the logistics of coordinating rail transport with other modes of shipping. Intermodal transport requires precise planning and execution to ensure smooth transitions between different carriers. This complexity can be managed through advanced logistics systems and real-time tracking technologies, which provide visibility and control over the entire supply chain.

What issues Bulk Flow is solving

Bulk Flow is dedicated to solving the challenges of containerized transportation through innovative solutions. Its liner bags, designed to be used inside containers, are a cornerstone of its approach. These bags are safe and clean, preventing the product from becoming contaminated or moistened during transport. They are also recyclable, aligning with the company's commitment to sustainability and reducing waste.

Bulk Flow's liner bags provide an additional layer of protection, ensuring that bulk materials remain in optimal condition from origin to destination. By preventing contamination and moisture ingress, these bags help maintain the quality and safety of the transported goods, reducing the risk of spoilage and product loss.

Triple Screw Conveyor Container Filling System

The Triple Screw Conveyor Container Filling System is one of Bulk Flow's flagship products designed to address the issue of

uneven distribution of bulk materials within containers. This system ensures that materials are evenly distributed, reducing the risk of load imbalances that can cause instability during transport.

The system's design allows for precise control over the flow of materials, ensuring that each container is filled to the optimal level. This not only improves the stability of the load but also maximizes the use of container space, enhancing overall efficiency.

Technical specifications

- **Handling capacity:** capable of filling containers at a rate of 150tph (metric tonnes per hour).
- **Power requirements:** depending on application and region requirements.
- **Flexibility:** adaptable to various types of bulk materials, ensuring optimal performance under different conditions.

Tilt-less Container Discharge System

Bulk Flow's Tilt-less Container Discharge System revolutionizes the unloading process by eliminating the need for tilting containers. This system offers secure discharging, significantly reducing the risk of spillage and contamination. It also minimizes the need for manual labour, reducing the reliance on forklifts and bypassing the need for port bulk handling operations. Additionally, the Tilt-less Discharge System can feed directly into the production process, making it ideal for end users that do not have silos in place.

The Tilt-less Discharge System is designed to provide a stable and controlled unloading process, ensuring that bulk materials are discharged efficiently and safely. By eliminating the need for tilting, this system reduces the risk of accidents and injuries, enhancing overall safety in bulk handling operations.

Technical Specifications

- **Handling capacity:** capable of unloading up to 27tph without tilting.
- **Power requirements:** depending on application and region requirements.
- **Safety features:** includes advanced controls to ensure stable and secure unloading under various conditions.

The Tilt-less Discharge System is particularly effective for handling materials that are prone to compaction and flow issues. Its advanced technology ensures that materials are discharged smoothly and efficiently, reducing the risk of blockages and ensuring consistent flow.

Conventional Container Discharge Method by Tilting vs. Tilt-less Container Discharge System (and below).

Bulk products suitable for containerized transport

Bulk Flow's equipment is capable of handling a wide range of bulk products, ensuring safe and efficient transport. These products include aluminium oxide, bentonite, cement, kaolin, corn flour, starch, gypsum, iron oxide, lime, manganese oxide, milk powder, PVC emulsion, and soda ash. Each of these materials has unique characteristics that Bulk Flow's systems can accommodate, ensuring they are transported safely and efficiently. The company's solutions ensure that these materials are protected from contamination and moisture ingress, maintaining their quality from origin to destination.

By providing specialized equipment and tailored solutions, Bulk Flow addresses the unique challenges of transporting these diverse materials. Its systems are designed to optimize the handling, loading, and unloading processes, ensuring that bulk materials are transported efficiently and safely.

Conclusion

As Bulk Flow strives towards a more sustainable future, embracing containerized transportation and railway transport is crucial. It is at the forefront of this transformation, providing innovative solutions that address the challenges of handling bulk materials in containers. Its liner bags, Triple Screw Conveyor Container Filling System, and Tilt-less Container Discharge System are designed to enhance safety, efficiency, and sustainability in bulk solids handling. By leveraging these technologies, Bulk Flow can reduce emissions, decrease road congestion, and contribute to a cleaner, greener future.

A turnkey approach to bulk handling and transport

proper planning is key to success

Safe, low maintenance conveyors ensure the logistical throughput from rail to vessel has consistent and dependable uptime (all images ©Martin Engineering 2024).

Designing conveyor upgrades for production and safety

Conveyors are among the fastest and potentially dangerous cargo transport systems at a port or bulk terminal, *writes Todd Swinderman/President Emeritus, Martin Engineering*. Even though their safety and performance are critical to the operation's success, the impact of their contribution to overall efficiency is often unrecognized by management and workers alike. Operational basics of belt conveyor systems are too often a mystery to those employees who have little understanding about the hardware installed and the performance required from the components.

The knowledge gap is understandable. The attention of personnel at a port operation is centred on logistical and scheduling concerns. The 'care and feeding' of belt conveyors — i.e., the adjustment, maintenance and troubleshooting — make a huge difference in safety and performance but is typically outside of operator's expertise. It's not that they don't care about conveyors but the ongoing maintenance and service of these systems is often usurped or deprioritized for other issues.

Low-Bid Process and Life Cycle Cost

Although the policy is generally not explicitly stated by companies, the Low-Bid Process is usually an implied rule that is baked into a company's culture. It encourages bidders to follow a belt conveyor design methodology that is based on getting the maximum load on the conveyor belt and the minimum compliance with regulations using the lowest price materials, components and manufacturing processes available.

Maximizing the volume of cargo and minimizing the price of the system usually means choosing the narrowest feasible belt, operating at the highest speed possible. This leaves little margin for error and in many cases results in chute plugging, excessive spillage and reduced equipment life.

When companies buy on price, the benefits are often short-lived, and costs increase over time, eventually resulting in losses. In contrast, when purchases are made based on lowest long-term cost (life-

cycle cost), benefits usually continue to accrue and costs are lower, resulting in a net savings over time.

Conveyor System Design Hierarchy

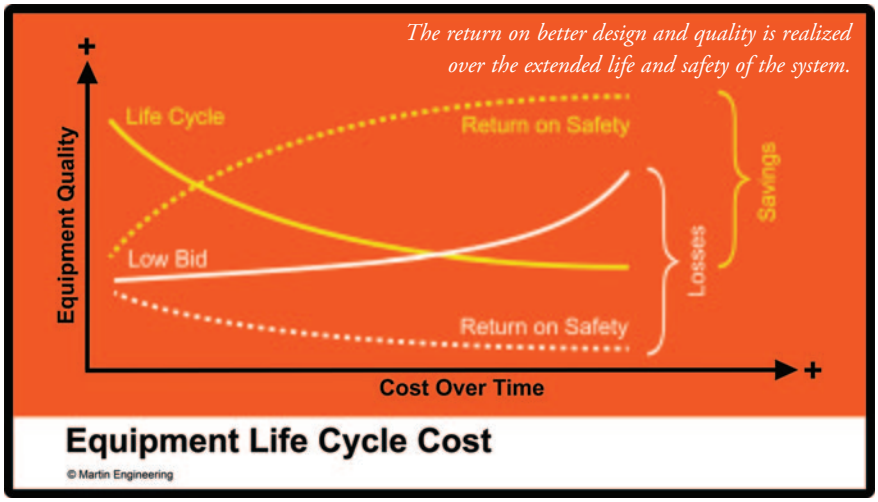
To safely maximize production, designers and engineers are urged to approach the project with a specific set of priorities. Rather than meeting minimum compliance standards, the conveyor system should exceed all code, safety and regulatory requirements using global best practices. By designing the system to minimize risk and the escape and accumulation of fugitive material, the workplace is made safer and the equipment is easier to maintain.

Life cycle costing should play into all component decisions. Be aware of specifications on project components that state 'Specific Manufacturer Name/Or Equal'. Vaguely written 'Or Equal' specifications are there for competitive reasons and allow contractors to purchase on price without adequate consideration for construction or performance. Rather, buying on Life Cycle Cost or Engineer-Approved Or Equal and anticipating the future use of problem-solving components in the basic configuration of the conveyor provides improved safety and access, without increasing the structural steel requirements or significantly increasing the overall price. It also raises the possibility for easier system upgrades in the future. The ability to accommodate future increases in capacity can also be included in the original design, expanding options and reducing future modification costs.

Designing Conveyor Upgrades for Safety

There is continuous pressure from port operators to increase production to match customer demand. However, standards continue to tighten as government regulators retain their strong focus on worker safety, driving the need for equipment designs that are not just safe, but optimized for safety (designed for safety). Personnel are the single most important resource of any industrial operation. That's why conveyor system designers are incorporating greater functionality into designs that will improve safety.

To reduce hazards in the workplace, operators employ a variety of methods, from requiring the use of personal protective equipment (PPE) to installing the latest and safest equipment designs. When examining the safety of a system, improving efficiency and reducing risk can be achieved by utilizing a hierarchy of control methods



Red, Amber, and Green List for Designing Better Belt Conveyors	
RED List	*Procedures, techniques, products, and processes to be prohibited in the Specification and Design stages of a conveyor project.*
	Prevent loading on the transition of the belt.
	Prevent transition of more than 1/3 trough.
	Prevent loading against the direction of the receiving belt.
	Prevent loading conveyor to 100% of CEMA standard cross section capacity.
	Prevent control and sequencing that allows conveyor(s) to run empty longer than necessary.
	Prevent belt identification stamps in top cover.
	Prevent installing equipment in elevated locations without provision of safe access or tie-offs.
	Prevent Component Selection Based on 'Or Equal' Specifications or 'Price Only' Bidding.
AMBER LIST	*Procedures, techniques, products, and processes to be eliminated or reduced as much as reasonably possible. Only allowed with a change in the specification and notice to project owner/manager explaining potential issues and ability to address them in the future.*
	Avoid reversing conveyors.
	Avoid multiple load points on a single conveyor.
	Avoid designs created with the intention to increase capacity in the future by increasing conveyor speed; design the system to accommodate future needs
	Avoid combined vehicle and personnel travelways or uncontrolled exits from buildings into traffic patterns.
	Avoid a site layout that does not allow for safe and efficient delivery, storage, lifting of major components such as pulleys, drives, and belting.
GREEN LIST	*Procedures, techniques, products, and processes to be encouraged in specification and design stages of a conveyor project.*
	Consider ergonomics in the design and access of frequently cleaned or maintained equipment.
	Consider use of pulleys with diameters larger than minimum required for the specified belting.
	Consider access and clearances according to CEMA recommendations.
	Consider the use of design to reduce exposure to hazards.

(Above) Rather than meeting minimum compliance standards, conveyor systems should exceed code, safety and regulatory requirements.

for alleviating hazards. The consensus among safety professionals is that the most effective way to mitigate risks is to eliminate the hazard by design. This usually requires a greater initial capital investment than short-term fixes but yields more cost-effective and durable results.

Examples of Eliminate by Design are longer, taller and tightly sealed loading chutes to control dust and spillage or heavy-duty primary and secondary cleaners to minimize carryback. By using hazard identification and risk-assessment methods early in the design process, engineers can create the safest, most efficient system for the space, budget and application. These designs alleviate several workplace hazards, while minimizing cleanup and maintenance, reducing unscheduled downtime and extending the life of the belt and the system itself.

Experienced engineers often recommend that operators retain an outside firm to examine system

A properly designed conveyor controls dust emissions for improved safety and easier maintenance.

requirements and design new equipment around historical issues and specific needs of the application. An outside eye can generally observe potential hazards that can be overlooked by workers who experience them daily.

Before the drafting phase, designers should establish the goals of reducing injuries and exposure to hazards (dust, spillage, etc.) to increase conveyor uptime and productivity, and seek more effective approaches to ongoing operating and maintenance challenges. Designs should be forward-thinking, exceeding compliance standards and enhancing operators' ability to incorporate future upgrades cost-effectively and easily by taking a modular approach.

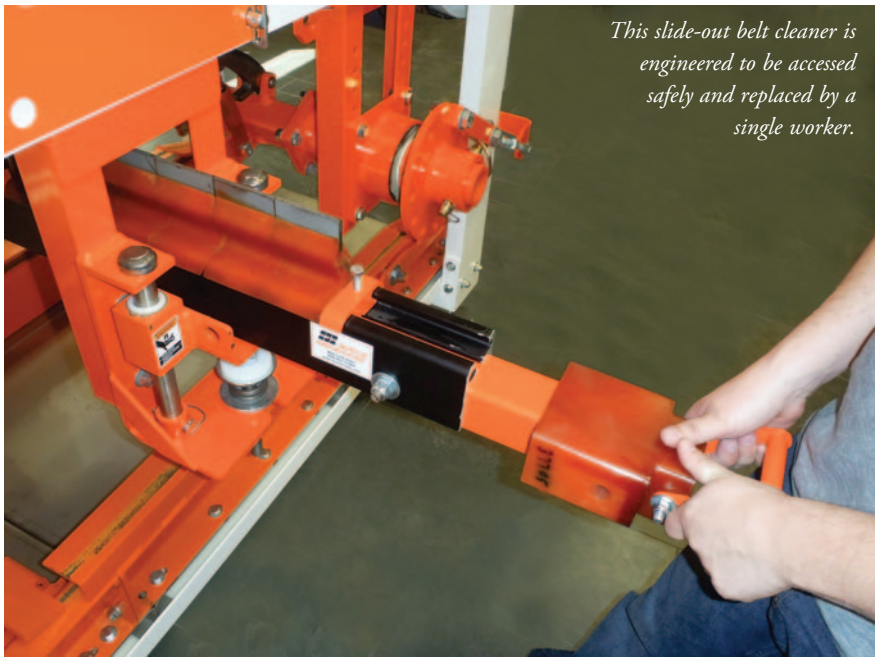
Combining Safety & Productivity

To meet the demands for greater safety and improved production, some manufacturers have introduced equipment designs that are not only engineered for safer operation and servicing, but also reduced maintenance time. One example is a new family of heavy-duty conveyor belt cleaners, designed so the blade cartridge can be pulled away from the belt for safe access and replaced by a single worker.

The same slide-out technology has been applied to impact cradle designs. The systems are engineered so operators can work on the equipment safely, without breaking the plane of motion. External servicing reduces confined space entry and eliminates reach-in maintenance, while facilitating faster replacement. The result is greater safety and efficiency, with less downtime.

Another example is a revolutionary new belt cleaner design that can reduce the need for bulky urethane blades altogether, an innovative belt cleaning system that has received the Australian Bulk Handling Award in the 'Innovative Technology' category for its design and potential benefits. The patented design delivers extended service life, low belt wear, significantly reduced maintenance and improved safety, ultimately delivering lower cost of ownership.

Unlike conventional belt cleaners that are mounted at an angle to the belt, the unique cleaner is installed diagonally across the discharge pulley, forming a three-dimensional curve beneath the discharge area that conforms to the pulley's shape. The novel approach has been so effective that in many operations, previously crucial secondary belt cleaners have become



This slide-out belt cleaner is engineered to be accessed safely and replaced by a single worker.

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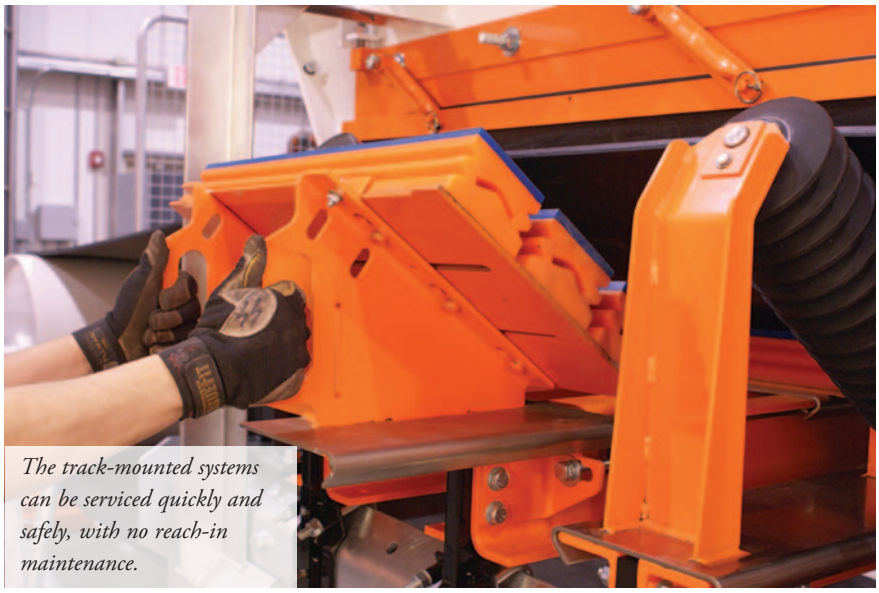
unnecessary, saving further on belt cleaning costs and service time.

Conclusion

Engineering safer conveyors is a long-term strategy. Although design absorbs less than 10% of the total budget of a project, Engineering/Procurement/ Construction Management (EPCM) services can be as much a 15% of the installed cost of a major project, additional upfront engineering and applying a life cycle-cost methodology to the selection and purchase of conveyor components proves beneficial. By encouraging the use of the Hierarchy of Controls at the planning stage, along with the Design Hierarchy at the design stage, the installation of an Evolved Basic Conveyor can be achieved. The system will likely meet the demands of modern production and safety regulations, with a longer operational life, fewer stoppages and a lower cost of operation.



The track-mounted systems can be serviced quickly and safely, with no reach-in maintenance.

About R. Todd Swinderman, P.E./President Emeritus/Martin Engineering

R. Todd Swinderman earned his B.S. from the University of Illinois, joining Martin Engineering's Conveyor Products division in 1979 and subsequently serving as V.P. and General Manager, President, CEO and Chief Technology Officer. Swinderman has authored dozens of articles and papers, presenting at conferences and customer facilities around the world and holding more than 140 active patents. He has served as President of the Conveyor Equipment Manufacturers' Association and is a member of the ASME B20 committee on conveyor safety. Swinderman retired from Martin Engineering to establish his own engineering firm, currently serving the company as an independent consultant.

About Martin Engineering

Martin Engineering has been a global innovator in the bulk material handling industry for more than 75 years, developing new solutions to common problems and participating in industry organizations to improve safety and productivity. The company's series of *Foundations* books is an internationally recognized resource for safety, maintenance and operations training — with more than 22,000 print copies in circulation around the world. The 500+ page reference books are available in several languages and have been downloaded thousands of times as free PDFs from the Martin website. Martin Engineering products, sales, service and training are available from 16 factory-owned facilities worldwide, with wholly owned business units in Australia, Brazil, China, Colombia, France, Germany, India, Indonesia, Italy, Mexico, Peru, Spain, South Africa, Turkey, the USA and UK. The firm employs more than 1,000 people, approximately 400 of whom hold advanced degrees.

The unique belt cleaner forms a 3-D curve beneath the discharge that conforms to the pulley's shape.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BEUMER Group sets up state-of-the-art production site in Reliance MET City in India

- Foundation stone ceremony for INR 2 billion investment
- First German company to set up production in "Model Economic Town"
- New site plays a pivotal role in BEUMER's global factory network

Rudolf Hausladen, CEO of BEUMER Group, at the laying of the foundation stone together with Dr. Shrivallabh Goyal, CEO and WTD of Reliance MET City.

BEUMER Group is continuing on its growth path and expanding its commitment in India. The global manufacturer of material handling solutions invests more than INR 2 billion in a new, state-of-the-art production city in Reliance MET City/Jhajjar. Laying of the foundation stone took place on 27 June 2024, with representatives of BEUMER Group and Reliance MET City attending the ceremony.

The new production site will further strengthen BEUMER's global factory footprint as well as boosting the continued success of its BEUMER India subsidiary. With an area of more than ten acres, the new plant will be placed at a highly strategic location, with Reliance MET City offering exemplary infrastructure and support. BEUMER will be the first German company to set up production in the development zone. Construction work will commence this summer, the inauguration of the new plant is scheduled for September 2025.

BEUMER Group has been active in India since 2003. Initially catering to the cement industry exclusively, BEUMER India has grown significantly over the years and now offers solutions for the airport industry, minerals and mining, for automated warehouses and distribution centres in the retail industry as well as in the areas of e-commerce and courier, express and parcel. In addition, BEUMER India is also providing engineering support to the group's global network.

On the product side, BEUMER India has been a trailblazer of new bulk as well as discrete material handling technologies to India, for example: high-capacity, high-speed automatic loop sortation for passenger baggage, fully automated truck loading for cement bags, high-efficiency bulk material transport, as well as curved belt and pipe conveyors.

Over the years, BEUMER strengthened its position in India through various steps, such as diversifying to all business segments as global operations, acquisition of ENEXCO Technologies India, FAM India and the establishment of a modern manufacturing unit at Naurangpur, Haryana.

"This expansion reflects BEUMER Group's strategic focus and commitment to long-term success in India. The new production site plays an important part in our global factory footprint, strengthening our position as a quality leader and partner of choice for our customers," said Rudolf Hausladen, CEO BEUMER Group.

"Our new production site at Reliance MET City offers a convenient ease of business and synergy in approaching infrastructure and facilities with a vision towards sustainable development. Setting up a manufacturing unit in the context is truly 'plug and play', with Reliance staying true to its goal of developing a 'Model Economic Town'", said Nitin Vyas, Cluster Asia CEO, BEUMER Group.

Ceremonial laying of the foundation stone. The new BEUMER production site in India is scheduled to start operations in September 2025 (photos: BEUMER Group GmbH & Co. KG).

About BEUMER Group

BEUMER Group is a global manufacturer of material handling solutions. As a third-generation family-owned business, the company offers high-quality system solutions and comprehensive customer support worldwide and is a 'Partner of Choice' for the mining, cement, building materials, petrochemical, consumer goods, postal, e-commerce, fashion, and baggage handling industries. With 5,600 employees worldwide, BEUMER Group generates an annual order intake of around €1.25 billion. In line with the company motto 'made different', BEUMER commits to the highest standards of quality, innovation and sustainability.

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Optimizing transfer points to lower total cost of ownership

The efficiency and reliability of transfer points are pivotal in lowering the total cost of ownership (TCO) on mines and minerals processing plants. These transfer points, where materials move from one conveyor belt to another, from conveyor to equipment or into storage facilities, are critical junctions that, when optimized, can lead to significant cost savings and operational benefits.

Mark Baller, CEO of Weba Chute Systems explains that transfer points serve as the heart of materials handling systems. "Chute systems ensure the seamless flow of bulk materials such as minerals and aggregates, from one process to another. However, these points are also prone to issues like spillage, dust generation, material degradation and equipment wear. Addressing these challenges is key to reducing maintenance costs, downtime, and overall TCO."

Weba Chute Systems, an expert in transfer point solutions, has been instrumental in assisting mining and minerals handling operations to achieve lower costs and increased reliability. With decades of experience and a deep understanding of the unique challenges in bulk material handling, the company has developed innovative solutions that address the critical issues associated with transfer points.

Baller says that optimized transfer points are designed to minimize spillage and dust creation. "Using well-engineered chutes can greatly reduce material loss through the creation of excessive finds or spillages eliminating the need for frequent clean-ups. This not only lowers labour costs but also mitigates environmental and health risks," he says.

Properly designed transfer points ensure a smooth and controlled material flow, which is essential to prevent material degradation, and this is where Weba Chute Systems leverages its extensive experience and expertise. Using advanced flow control techniques, such as curved chute designs and flow aid devices, the company designs transfer points that help in maintaining material integrity and consistency.

Transfer points are often sites of high wear and tear due to the impact and abrasion of materials, and Weba Chute systems prioritizes the use of high quality wear resistant materials of construction. The company's robust structural designs further enhance the longevity of transfer points, providing a substantial reduction in

A Weba screen and underpan transfer chute discharging onto a conveyor at a coal mine.

overall maintenance costs. This focus on durability extends to the lifespan of equipment, reducing the need for frequent replacements and maintenance.

"Safety and operational efficiency are at the core of Weba Chute Systems' solutions, and by minimizing the risk of blockages and equipment failures, we significantly enhance safety and ensure continuous, uninterrupted operations for our customers," Baller says. "This not only boosts productivity but also minimizes downtime, leading to significant cost savings."

"Optimizing transfer points in materials handling applications is a strategic move that can significantly lower the total cost of ownership, and this applies to both greenfield and brownfield installations," Baller says. "Investing in well-engineered transfer points is not just about improving individual processes but rather a holistic approach to enhancing the entire materials handling system's performance and profitability."

An incoming belt feeding a head chute at a coal mine.

A transfer point with a bifurcated Weba transfer chute.

A moving Weba head chute installed at a coal mine.

Rise & shine

Cranes & crane components

Loaded onto the MS MERI on June 1st, this high-rise version LHM 550 supports the Port of Dover's strategic growth in handling perishables and other cargoes.

Jay Venter

Adjacent to the main Channel shipping lanes, the Port of Dover's new mobile harbour crane helps facilitate efficient throughput for swift UK-EU cargo transit.

New Liebherr LHM 550: Logistics powerhouse for Port of Dover

The Port of Dover's acquisition of a LHM 550 from Liebherr Great Britain signifies a strategic enhancement in its cargo handling capabilities. The crane's advanced features — such as the hydrostatic drive for extremely precise control, a minimum number of components, and reduced fuel consumption — ensure efficient operations, crucial for the busy port's diverse cargo range.

The LHM 550's integration into the port's cargo handling equipment heralds a new era of productivity, with the capacity of up to 32 cycles/hour in container operation, the crane is an invaluable new asset for the port, which handles a significant volume of the UK's maritime trade.

The port's specialized facilities, including multi-temperature-controlled warehousing and a secured terminal, are complemented by the crane's robust performance, ensuring seamless cargo transitions and maintaining Dover's reputation as a reliable trade gateway. The new LHM 550 joins the already established LHM 550 and LHM 280, of the previous generation.

Improving operations with the latest technology

As the global maritime cargo logistics industry shifts towards digitalization, decarbonization, and automation, the Port of Dover has invested in the LHM 550 which embodies these advancements in its technology. With its more advanced software architecture, upgraded cabin, and all-rounder performance, the new LHM 550 will support increasing cargo handling demands that will serve the port long into the future. As the backbone of the LHM 550's operations, Liebherr's service network and customer support will help ensure the crane's high-volume cargo throughput is maintained with precision and efficiency.

The new LHM 550, just like the two other Liebherr cranes, runs on Hydrotreated Vegetable Oil (HVO), an alternative fuel made from 100% renewable raw materials. This aligns with the port's drive towards achieving its decarbonization targets and promoting sustainability in its operations. The cranes are also capable of working in wind speeds of up to a force 9 severe gale, or 75–88kmph, allowing vessels to be unloaded in nearly all-weather conditions throughout the year.

Emma Whelan, Business Development Manager at the Port of Dover said: "The Cargo team would like to extend thanks to Liebherr for their professionalism and contribution to the extensive programme of investment that the terminal is undergoing to further enhance its deep-sea capabilities and support our robust eco-lens objectives."

Rob Alexander, Sales Manager for maritime cranes at Liebherr Great Britain, commented: "We would like to thank the Port of Dover for their continued trust and partnership with Liebherr. The purchase of its third LHM crane is a testament to our shared commitment to excellence and innovation in port operations. We look forward to further supporting the Port in enhancing its capabilities and achieving new milestones."

About Port of Dover

The Port of Dover is closing the gap every

day between the UK and the world by connecting trade, travel, visitors and communities locally-globally, collaborating with local and international partners to create a more seamless, sustainable and tech-enabled port.

As the UK's busiest international ferry port and a vital gateway for the movement of people and trade, Dover handles £144 billion of trade per year, 33% of UK trade in goods with the EU and welcomes over 11 million passengers.

The port's cargo terminal, which opened in 2019, has seen a thriving trade in various cargo types, including perishables, breakbulk, containers, project cargo, general cargo, and grain. In 2021, the port received its first steel cargo and has since seen substantial growth in this commodity, handling products like rebar, coil, mesh, beams, and plate. The cargo terminal has experienced a thriving breakbulk trade, in addition to its established perishable freight business. Port of Dover continues to handle a high volume of perishable cargo, with weekly specialized reefer vessel arrivals. The port's warehousing has a capacity of 9,639m² with 8 individually controlled chambers with a maximum of 693 pallets per chamber, totalling around 5,500 pallets.

With a cargo terminal that opened in 2019 and a capacity for thousands of pallets, Dover is well-prepared for the increasing demands of international trade.

About Liebherr-MCCtec Rostock GmbH

Liebherr-MCCtec Rostock GmbH is one of the leading European manufacturers of maritime handling solutions. The product range includes ship, mobile harbour and offshore cranes. Reachstackers and components for container cranes are also included in the product portfolio.

About the Liebherr Group — 75 years of moving forward

The Liebherr Group is a family-run technology company with a highly diversified product programme. The company is one of the largest construction equipment manufacturers in the world . It also provides high-quality, user-oriented products and services in a wide range of other areas. The Liebherr Group includes over 150 companies across all continents. In 2023, it employed more than 50,000 staff and achieved combined revenues of over €14 billion. Liebherr was founded by Hans Liebherr in 1949 in the southern German town of Kirchdorf an der Iller. Since then, the employees have been pursuing the goal of achieving continuous technological innovation, and bringing technologically advanced solutions to its customers. Under the slogan '75 years of moving forward', the Group celebrates its 75th anniversary in 2024.

MacGregor electric deck systems prove optimal for bulk carrier operations

The superior efficiency of electric deck systems makes them an increasingly attractive solution for bulk carrier operators amid rising costs and evolving regulations, says MacGregor.

As a world-wide provider of maritime cargo- and load-handling solutions, MacGregor offers an extensive portfolio of shipboard equipment for multiple vessel types. In the bulk carrier segment, its hydraulic cranes, hatch covers, and deck machinery — including anchor windlasses, mooring winches, and steering gears — are popular solutions with proven high standards in performance, safety, and reliability.

Yet with rising costs and evolving regulations emphasizing the need for efficiency in every aspect of ship operations, there is a growing market for electric deck systems. In recent years, MacGregor has developed a comprehensive range of electric cranes, deck machinery, and hatch covers that provide an array of benefits to owners and operators of bulk carriers.

While cost has previously limited the uptake of electric deck solutions in the bulk carrier segment, owners are increasingly recognizing the significant long-term savings they achieve by choosing an electric alternative over one using conventional hydraulics.

"Bulk carrier operators have been deterred from investing in electric systems due to the higher initial outlay," says Carsten Sietas, Senior MacGregor Executive, Cranes. "That is now changing as owners come to realize the difference in cost between electric and hydraulic cranes isn't all that great — while the savings enabled by electric solutions in the long run are considerable."

Cranes

MacGregor's electric cranes are highly efficient, Sietas explains, and can cut power consumption by up to 50%, resulting in significant savings in operating expenditure. The systems' relatively low energy demands reduce fuel consumption by generators — and since alternative fuels

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are more expensive than oil, electric cranes will become even more valuable in the future.

When combined with other factors such as a streamlined installation process, the downsizing of auxiliary generators can partly offset the higher initial cost of electric cranes, minimizing CapEx for both the ship owner and yard.

According to Sietas, the relatively simple configuration of electric systems can also help to cut OpEx, with one MacGregor case study showing a 22% reduction in service and spare-parts costs — amounting to a saving of up to $75,000 over 15 years. This is because many of the parts in a hydraulic system that require frequent exchange — such as hydraulic oil, hoses, and filters — are not present in the electric drive.

Another major benefit of the electric crane is its superior environmental performance. Helping bulk carriers to decarbonize by enhancing energy efficiency, the technology also eliminates the risk of oil spills, which pose a slip hazard and a threat to marine life. Reduced noise and vibrations also minimize environmental impact and enhance operator comfort.

Deck machinery

Similar benefits can be attained through electric deck machinery. With less need to include energy-reducing components than in hydraulic-electric systems, pure electric drives require a lower installed output and consume less fuel, achieving an efficiency rate of approximately 75–80%. For comparison, the efficiency rate of hydraulic-electric drives is typically around 50–60%.

"As with electric cranes, electric deck machinery enables significant OpEx savings — especially when factoring in its reduced maintenance and spare parts requirements," says Thomas Kappel, Senior MacGregor Executive, Deck Machinery. "It is also more compact and easier to install than hydraulic-electric systems, while the absence of hydraulic oil makes it safer for the crew and the environment."

In addition, reliability, performance, and operational availability are maximized — and unplanned downtime minimized — through the combination of tried-and-tested components and cutting-edge technology, he adds. "The reduced operating cost of electric deck machinery, as well as its superior technical reliability and safety, make it a smart investment for bulk carrier operators."

While some owners have expressed concerns about their crew's ability to handle electric systems, Kappel explains that "we've observed the winch is relatively simple to operate, and it usually doesn't require much time to train personnel in its usage".

Hatch covers

The final component in MacGregor's offering of electric deck solutions is its electric-driven hatch cover, which the company has been manufacturing and supplying since the early 2000s with E-Roll and, more recently, MacRack.

"Like our electric cranes and deck machinery, MacRack is more energy efficient than its hydraulic counterparts, enabling reduced OpEx and a smaller environmental footprint," says Henrik Grönlund, Senior MacGregor Executive, Hatch Covers. "It also features a more streamlined design, with simpler, easy-to-maintain coamings; an absence of pipework and other hydraulic components; and a combined rack-and-pinion drive and lifter system that eliminates the need for separate hatch cover lifters."

Furthermore, MacRack is easy to monitor and operate — an optional portable or wireless operating system is also available — and is more resistant to cold climates than hydraulic hatch cover systems, Grönlund adds.

A solution greater than the sum of its parts

However, the true value of MacGregor's electric cranes, deck machinery, and hatch covers is realized when the three systems are deployed in combination, says Mattias Gunnarsson, Vice President, Newbuilding.

"With its superior efficiency, simplicity, and reliability, the cost-saving potential of the combined electric deck solution is huge, and the reduced power consumption enabled by all three components goes a long way to supporting regulatory compliance. Both factors are key to encouraging bulk carrier operators to adopt electric systems."

Gunnarsson points to the complete elimination of hydraulic oil as an additional benefit of the combined electric deck solution and adds that the best time to install electric systems is during vessel construction.

"Installing all three electric deck solutions simultaneously is the most efficient approach, and by considering this at the ship design phase rather than for a retrofit project, owners minimize installation costs and downtime and maximize savings over the course of the vessel's lifecycle."

Meanwhile, the reliability and performance of MacGregor's electric deck solutions can be further enhanced through connection to OnWatch Scout, which enables advanced monitoring and analytics for optimized systems availability and maintenance planning.

"For bulk carrier operators looking to reduce costs while enhancing environmental performance, reliability, and safety, MacGregor's electric deck systems represent a simple, future-proof solution that comes with a multitude of benefits," concludes Gunnarsson.

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Finnish Port of Oulu extends cargo handling with Konecranes Gottwald Generation 6 portal harbour crane

During the Break Bulk Europe (from left to right): Sampo Kananen, Traffic Manager, Port of Oulu, Marko Mykkänen, Managing Director, Port of Oulu, Hans-Jürgen Schneider, Regional Sales Manager, Port Solutions, Konecranes.

The Port of Oulu has ordered a Konecranes Gottwald ESP.7 portal harbour crane to improve cargo handling capability at their Main Quay. The new Generation 6 machine allows operators to reach across special RoRo vessels that have containers stacked high on deck, in addition to handling general cargo. Ordered in Q2 2024, the crane will be delivered in Q2 2025.

One of the busiest seaports in northwestern Finland, the Port of Oulu provide extensive cargo services at three commercial harbour facilities, including Oritkari, which handles mostly containers. As modern commercial sea traffic employs different types of vessels, the new Generation 6 portal harbour crane will be used to handle the RoRo vessels with containers stacked high on deck. It will also increase flexibility to handle general cargo as well as heavy project cargo up to 125 t.

"This new portal harbor crane will expand our container handling capacity, adding essential flexibility to handle also other kind of cargo. Slewing gives it the extra range of motion to access every container on the RoRo vessels, including those in hard-to-reach corners. In addition, its electric drive will reduce our energy consumption, which aligns to our state environmental permit," says Marko Mykkänen, Managing Director, Port of Oulu.

"The outstanding performance from the two Konecranes cranes onsite already in the Port of Oulu convinced the customer that a Generation 6 portal harbour crane was the right solution for their current needs. We'll be able to install the crane on existing rails, minimizing downtime as the port transitions to a new era of productivity," says Hans-Jürgen Schneider, Regional Sales Manager, Port Solutions, Konecranes.

The order is for one Konecranes Gottwald ESP.7 portal harbour crane, with a working radius of up to 51m and a maximum capacity of 125t to serve container ships up to post-Panamax class. Strong lifting capacity curves, improved handling rates and a high classification ensure a long service life. Powered from the harbor mains by cable reel, it eliminates local exhaust emissions and collects lowering and braking energy for auxiliary consumption on the crane or to be fed back into the grid. Tailored for the existing portal, the crane has a track gauge of 18m with a clearance height of 7m and is to be mounted closer to the water side to maximize its working radius. To support this asymmetrical design, there are eight wheels on each corner on the water side and six wheels on each corner on the land side.

Powered by Ecolifting

This order is part of Ecolifting™, Konecranes' vision to increase its handprint — meaning the beneficial environmental impact that can be achieved with our product and service portfolio — while reducing customers' carbon footprints. From eco-optimizing diesel drives, to hybridization and fully-electrified fleets, we will continue to do more with less.

A strong focus on customers and commitment to business growth and continuous improvement put Konecranes at the forefront of the material handling industry. This is underpinned by investments in digitalization and technology, plus the company's work to make material flows more efficient with solutions that decarbonize the economy and advance circularity and safety.

About Konecranes

Konecranes is a respected global specialist in material handling solutions, serving a broad range of customers across multiple industries. It consistently sets standards in the industry, from everyday improvements to the breakthroughs at moments that matter most, because it knows that it can always find a safer, more productive and sustainable way. That's why, with around 16,600 professionals in over 50 countries, Konecranes is trusted every day to lift, handle and move what the world needs. In 2023, Group sales totalled €4.0 billion. Konecranes shares are listed on Nasdaq Helsinki.

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Konecranes Gottwald Mobile Harbor Cranes ensure highly efficient handling of bulk materials of all kinds. Our Generation 6 four-rope grab cranes will impress you with their robustness. With their 74 t grab curves and high classifications for a long service life, they handle up to 2,200 tph. The result: strong performance over the long term – even in continuous operation.
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Introducing a new elevator for harsh industrial environments

Alimak, the global provider of vertical access solutions, is launching the Alimak SE 240L rack and pinion elevator, designed for installation on silos, storage vessels, cranes and other industrial applications. The SE 240L elevator enables customers to access, monitor, and service key processes in their plants, increasing operational safety, improving productivity, efficiency, and uptime for their facilities.

The SE 240L elevator is a game-changer for the industry, as it eliminates the need for a machine room or a supporting elevator shaft, reducing building requirements and ongoing structural maintenance. This feature also makes it easy to retrofit to existing structures, thanks to the rack-and-pinion drive technology.

The Alimak SE 240L elevator is engineered for tough operational and environmental working conditions, making it reliable, durable and robust.

The SE 240L elevator maximizes operational efficiency, reduces plant maintenance costs, and increases health and safety performance, by reducing climbing and manual lifting, whilst providing access during incidents and accidents. It has a payload capacity of 240kg (two passengers), a travelling speed of 0.4m/s, a lifting height of up to 45m, and can be provided with doors on one or two sides of the car.

The safety features of the SE 240L elevator include a safety device, mechanical and electrical door interlocking, centrifugal emergency lowering system, and overload protection.

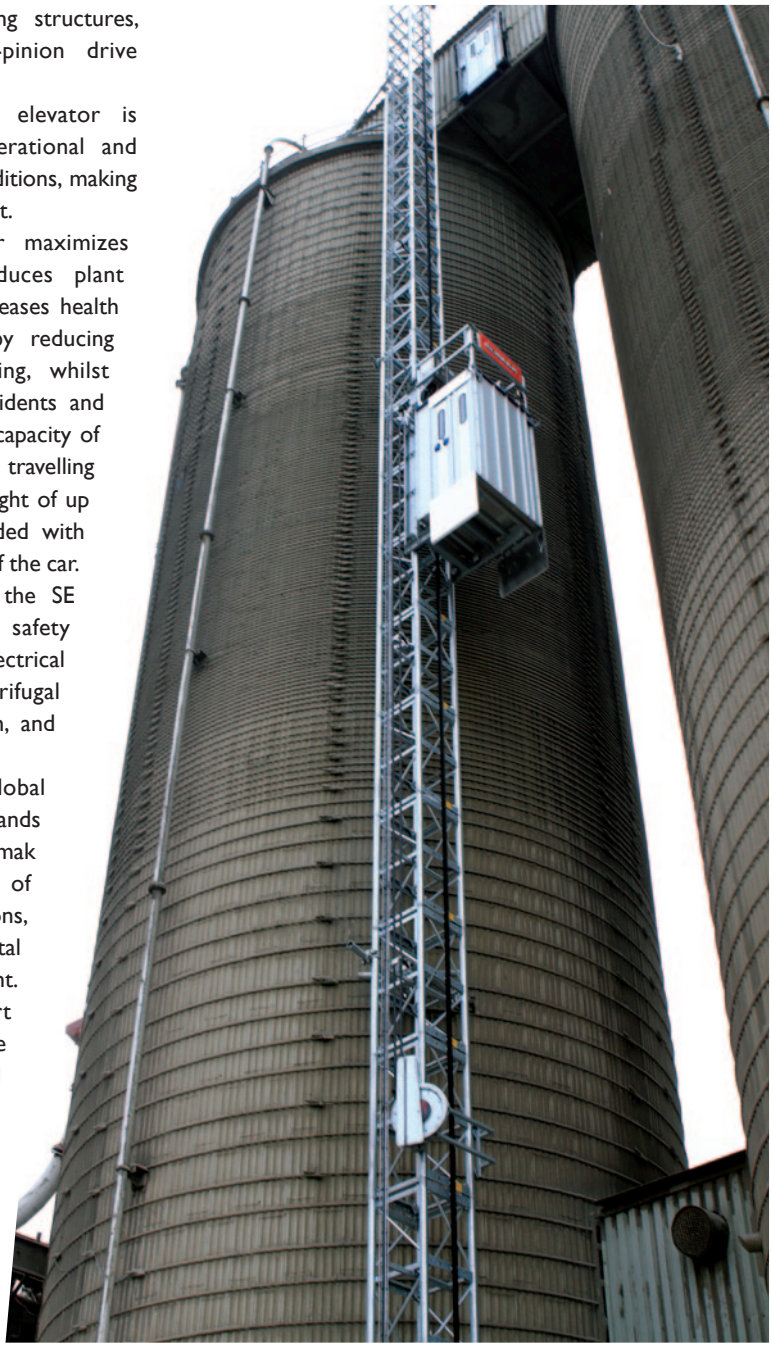
With a superior global support network, which expands to over 100 countries, Alimak offers a complete range of service and support solutions, tailored to manage the total lifecycle of Alimak equipment. The company's support solutions include on-site surveys, design, technical support, installation, maintenance, statutory inspections and training.

The SE 240L product is included in Alimak's Building Information Modelling (BIM) gallery, with object files, which allow customers to compare and select the most suitable lifting option for their needs and enables them to incorporate the elevator model in their overall facility design package.

In conclusion, the Alimak SE 240L elevator is a durable, robust, and cost-effective solution for customers in harsh industrial environments. It maximizes operational efficiency, reduces plant maintenance costs, and increases health and safety performance.

About Alimak

Alimak is a global market leader and pioneer in the design and manufacture of vertical access solutions for industrial and construction industries. The company provides high-quality rack and pinion and traction elevators, construction hoists and work platforms. Alimak has a well-established global sales, service and distribution platform across more than 100 countries with a strong market presence. The company has a large global installed base of over 23,000 units which provides unique know-how of all industrial application areas. Alimak was founded in 1948 and is part of Alimak Group which is headquartered in Stockholm, Sweden.



Alimak Group's SE 240L elevator, designed for installation on silos, storage vessels, cranes and other industrial applications, eliminates the need for a machine room or a supporting elevator shaft, reducing building requirements and ongoing structural maintenance.

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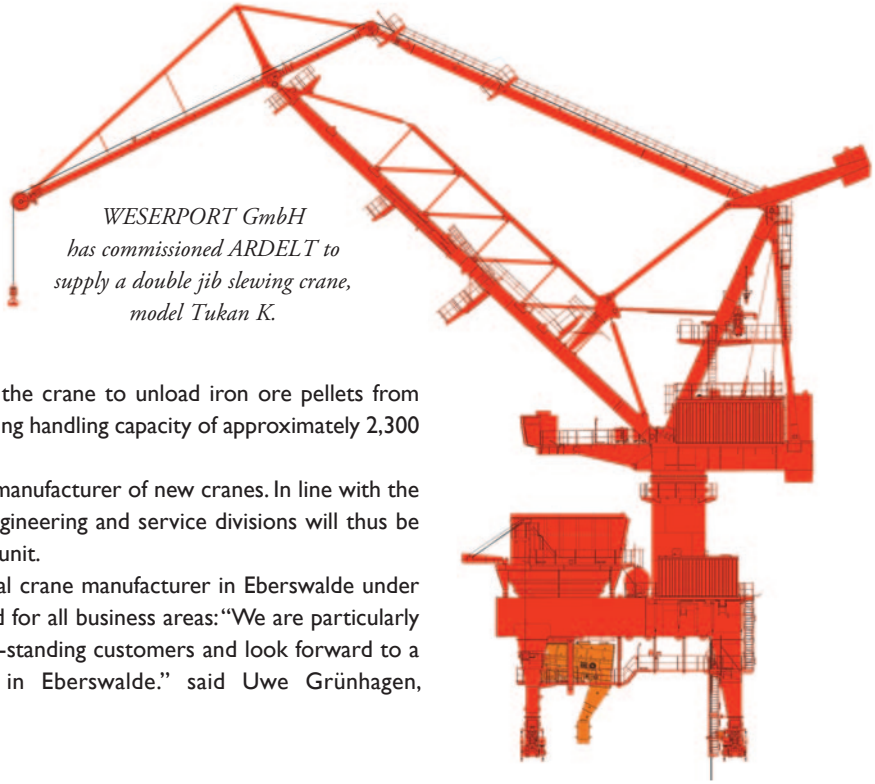
ARDELT receives crane order from WESERPORT GmbH

WESERPORT GmbH has commissioned ARDELT to supply a double jib slewing crane with integrated hopper model Tukan K. The crane is destined for use at Terminal 3 of the Weserport in Bremen and is scheduled to go into operation by December 2025.



WESERPORT GmbH has commissioned ARDELT to supply a double jib slewing crane, model Tukan K.

Especially designed to handle iron ore pellets and fine ore, the crane intended for Weserport will have a maximum outreach of 55m and will be equipped with two grab stages, with a maximum lifting capacity of 50 and 63 tonnes. These parameters enable the crane to unload iron ore pellets from Panamax-size vessels with a designed free-digging handling capacity of approximately 2,300 tonnes per hour.

This order means ARDELT is once again a manufacturer of new cranes. In line with the new strategy adopted in 2023, the existing engineering and service divisions will thus be supplemented by another important business unit.

One year after the restart of the traditional crane manufacturer in Eberswalde under new ownership, the order books are well filled for all business areas: "We are particularly pleased about the continued trust of our long-standing customers and look forward to a successful future for crane construction in Eberswalde." said Uwe Grünhagen, management and partner.

The Tukan K, a special crane

With all the advantages of the Tukan and with a bunker integrated on the seaward side. The respective trigger devices are attached to the underside of this bunker. They enable the loading of trucks, trains, conveyor belts and other means of transportation or the landside discharge of bulk material onto storage areas and stockpiles. Compared to loading bridges with trolleys, cranes with integrated hoppers are more flexible, more universal and more energy-efficient because they have smaller masses to be accelerated.

The advantages and possible uses of the Tukan K at a glance

- **Very flexible:** by maintaining the possibility to slew, the Tukan K remains flexible and highly versatile (no direct need for repositioning by travelling gear to reach next section inside the ship hold as well as possibility to serve stock-piles with alternative handling materials in the back-range of the crane and pick up and lift the cleaning equipment, such as wheel-loaders, in- and outside the ship hold);
- Short load paths, short cable and pendulum lengths, advantageous centre of gravity: the double-jib principle;
- **Extremely environmentally friendly:** low energy consumption, low dust emissions, low noise pollution;
- Comparatively low acquisition costs;
- High turnover rate;
- **Maximum efficiency and user-friendliness:** always takes the shortest route, no turning movements, semi-automatic operation possible;
- Very low operating costs.

MacGregor maintenance services go the extra mile for optimal safety and efficiency

While safety and efficiency are designed into its load-handling equipment, MacGregor stresses that comprehensive systems service is critical to protect vessel crew, the environment, and the customer's bottom line.

As a worldwide supplier of cargo- and load-handling solutions, MacGregor understandably counts safety as a core value for the design, development, and operation of every system it offers. Across a range of equipment designed to maximize efficiency and minimize operational risk, certain systems, such as hatch covers, play a direct role in ensuring a ship's seaworthiness. Others — davits, for example — are used to support life-saving operations.

Yet according to Göran Johansson, MacGregor's Regional Account Manager for the North Sea area, upholding safety standards is by no means simply a matter for system design and delivery. The company's maintenance services are critical to ensuring its solutions continue to operate safely, efficiently, and in accordance with regulations for the duration of the vessel's lifecycle.

"Most of our products involve heavy lifting, high pressures, and heavy-duty components, while some, like davits, are directly related to safety," says Johansson. "So while all our systems comply with the highest safety standards, we are acutely aware that improper maintenance puts the ship, its crew, and the environment at risk. Keeping equipment in good working order is of paramount importance."

MacGregor service engineers have unrivalled knowledge of the company's products and are trained in line with latest regulations and class requirements. Moreover, in some cases, the safety performance of MacGregor systems, including the watertightness of its hatch covers and ro-ro ramps, has set the benchmark for class standards on testing and safe operation at sea.

Risk management

This is one reason MacGregor service agreements offer the best way to keep systems functioning optimally, says Johansson. By carrying out inspections and maintenance at regular intervals as laid out in a service agreement, MacGregor cuts unplanned downtime and reduces the risk of serious incidents. The company's service agreements can include the scheduled delivery of spare parts, meaning that if a component fails mid-voyage, it can be replaced quickly and cost effectively.

"By anticipating faults and proactively addressing them, we minimize the risk of incidents such as injuries to crew or oil spills from faulty hydraulic equipment," says Corrado Tabaton, Regional Account Manager, Mediterranean and Middle East. "Service agreements are about giving customers peace of mind. Our customers also benefit financially through reduced repair costs and maximized vessel uptime."

Tabaton refers to a ship owner whose vessels had experienced frequent off-hire periods of several hours at a time due to persistent faults with their cranes and ramps. After signing a MacGregor service agreement, the customer was able to cut its off-hire hours to zero over an entire year, improving its reputation among charterers as a result, he says.

According to Johansson, another ship owner was able to dramatically reduce cargo damages with a MacGregor service agreement applying to hatch covers. This not only enhanced the company's reputation but also ensured the quality of hatch covers was consistent across its fleet, he explains. "Now, when fulfilling an order, the owner can deploy whichever vessel is closest to the loading port rather than sending a specific ship regardless of its position. This has had a hugely positive impact on the customer's fleetwide operational efficiency."

Through-life care, anywhere

To maximize the value of their investment, MacGregor customers can opt to upgrade equipment halfway through its service life. "Our equipment is built to last for the full vessel lifecycle, and in that time, a lot can change in terms of technology and regulations," says Tabaton. "We therefore offer upgrades in which we apply, for example, new, energy-efficient technology to an existing system to help the customer reduce operating expenditure and maintain regulatory compliance."

MacGregor customers also benefit from the company's global service network, which minimizes delay and cost when a technician is required to travel to a customer's ship.

The value of having a local presence in major ports worldwide was emphasized during the Covid-19 pandemic, Johansson says. "With global trade continuing to rely on shipping during the pandemic, ship owners continued to rely on our services to keep their vessels up and running. Our extensive service network allowed our engineers to reach customers despite the complicated travel restrictions. It is reassuring for us and our customers to know that any similar situations in the future will not prevent us from providing our services."

For less complex procedures, MacGregor can provide remote support by connecting to faulty equipment on board a customer's vessel via satellite link. In this

way, technicians in a shore-based office can identify the issue and help the crew to resolve it, eliminating the need for the ship to deviate from its planned route for repairs and saving the operator time and money.

Alongside remote troubleshooting, MacGregor offers condition-based maintenance through OnWatch Scout. Connecting onboard equipment to advanced monitoring systems, OnWatch Scout continuously analyzes component condition. This enables users to plan maintenance activities more effectively, thereby maximizing equipment availability and minimizing unplanned vessel downtime.

As a standalone product, OnWatch Scout includes pre-installed maintenance manuals and system drawings, while all alarms include troubleshooting guidelines complete with illustrations and a list of required spare parts, helping crew to carry out basic procedures independently.

Training matters

Empowering customers to perform their own routine maintenance and minor repairs reflects a service approach that extends to crew training. For an increasing number of products, MacGregor offers virtual training simulators that allow crew to practise operating equipment in a safe and controlled environment, with a high degree of realism.

"Having people on board the ship who are well trained in the operation of its systems is essential," comments Tabaton. "I would say that as many as eight out of ten incidents on board are due to the misuse of equipment, which can be prevented with proper training. This is why we invest heavily in virtual training simulators as part of our wider service offering."

Ultimately, well-planned and -executed maintenance is critical to the safe and efficient operation of cargo-handling and life-saving systems, Tabaton stresses. "We believe that every single component of our equipment plays a part in vessel safety, with even the smallest loose screw in a ramp potentially compromising watertightness and preventing a ship from sailing. Our service offering goes the extra mile to ensure our systems function optimally at all times, for the vessel's full lifespan, to help protect crew, the environment, and the customer's bottom line."

Göran Johansson, MacGregor's Regional Account Manager for the North Sea area.

Corrado Tabaton, Regional Account Manager, Mediterranean & Middle East, MacGregor.

Intergis adds flexibility to cargo handling in South Korea with Konecranes Gottwald Generation 6 mobile harbour crane

Intergis Co., Ltd ordered a Konecranes Gottwald ESP.5 mobile harbour crane to improve its general cargo and bulk handling capacity and lower local emissions at the Port of Busan in South Korea. This new Generation 6 machine builds extra versatility into Intergis' existing fleet as the port undergoes major redevelopment. Ordered in Q2 2024, the crane will be delivered in early 2025.

Logistics company Intergis provides services at six commercial harbours across South Korea, including the Port of Busan, the largest port in the country. It ordered a new Generation 6 mobile harbour crane to handle anticipated increases in bulk and cargo traffic while reducing carbon emissions at the region's major logistical hub.

"The Port of Busan is fast becoming very important for international trade. With the addition of this new crane, we can handle whatever our market demands. Not only that, its electric drive will both reduce our fuel consumption and help the port meet its goal of creating an eco-friendly commercial waterfront. And we really appreciate Konecranes' continuous local service support," says Dong Ho Park, CEO, Intergis.

"Intergis approached us asking for equipment delivering smooth, efficient operations with the minimal amount of downtime — and with reduced emissions as well. Konecranes has been a trusted Intergis partner for years, and is pleased to continue this relationship, backed by our long-term service agent Kilwoo," says Jerry Fann, Sales Director, Port Solutions, Konecranes.

The order is for one Konecranes Gottwald ESP.5 mobile harbour crane, with a working radius of up to 46m and a maximum capacity of 100t to handle general cargo and bulk with a special motor grab. Strong lifting capacity curves, improved handling rates and a high classification ensure a long service life. When connected to the harbour mains by cable reel, it eliminates local exhaust emissions and collects lowering and braking energy to be used in electrical components on the crane or fed back into the grid. For unplugged operation, the crane is powered by a fuel-optimized diesel generator set.

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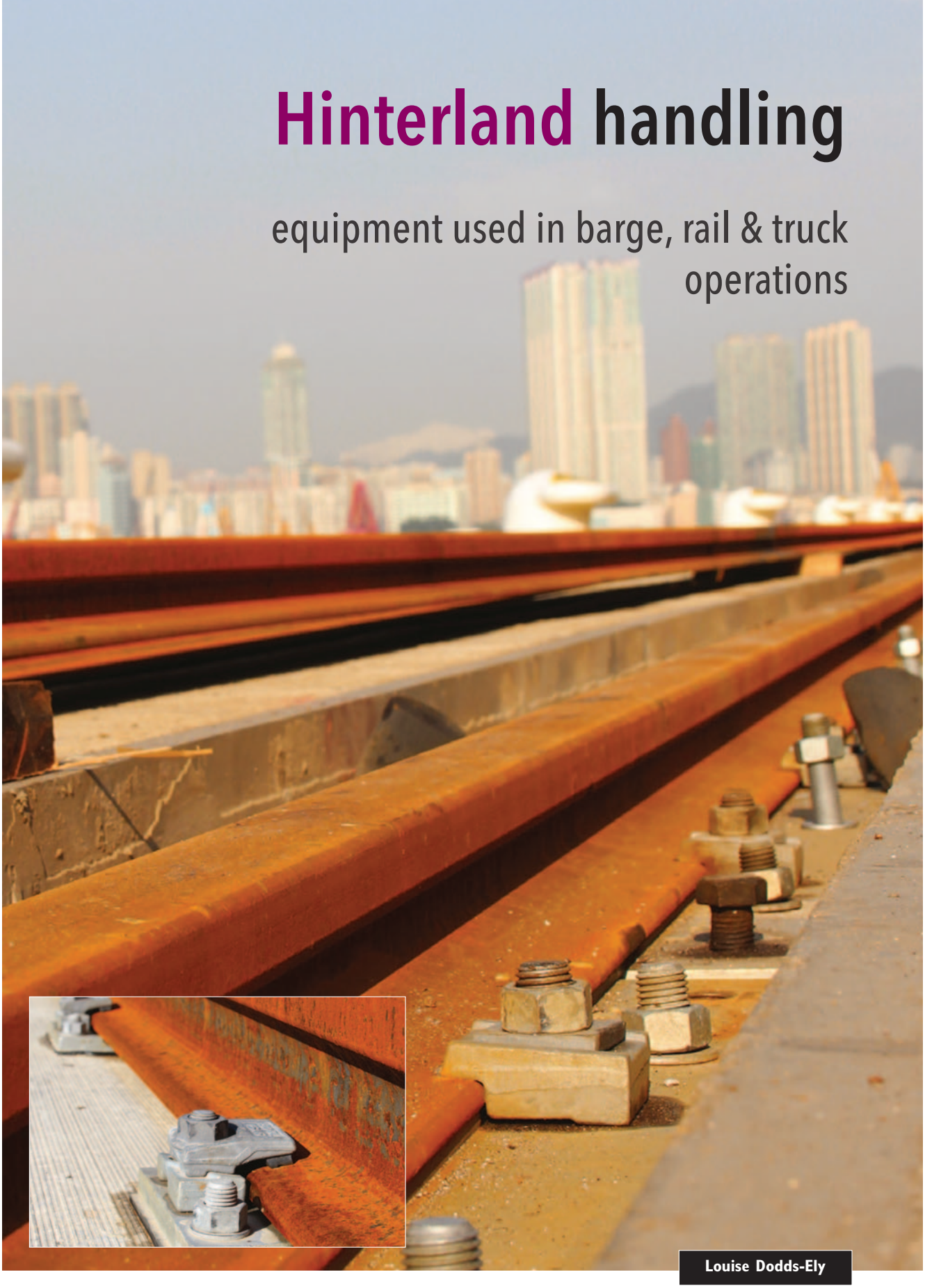
Hinterland handling

equipment used in barge, rail & truck operations



Louise Dodds-Ely

Bemo Rail BV: showing the way in rail and shunting technology

Bemo Rail BV epitomizes the essence of a quintessential Dutch company: a team of highly skilled and passionate employees, grounded and pragmatic.

Established in 1970, Bemo Rail has evolved from a modest trading business into a globally recognized expert in rail and shunting technology. This transformation has been marked by strategic decisions, innovative development, and a steadfast commitment to meeting customer needs.

From trading company to innovator in shunting systems

Bemo Rail began its journey as a trading company, focusing on meeting the needs of its clientele through the distribution of various rail-related products. The turning

point came in 1984, driven by specific customer demands. Recognizing a gap in the market, Bemo Rail ventured into developing its own shunting systems. This strategic pivot marked the beginning of a new era for the company.

In 1986, Bemo Rail moved to larger premises, a move that not only facilitated the production of their shunting systems but also marked the start of a manufacturing legacy. By 1990, the company had further expanded its production activities to include the assembly of crane tracks, setting the stage for significant growth and diversification.

A global specialist in rail and crane track solutions

Over the years, Bemo Rail has seen considerable growth, developing into a global specialist renowned for its expertise in the design, trade, production, and installation of rail and crane tracks, as well as rail-related internal transport systems. The company's ability to innovate has led to the development of many industry-specific products, securing a unique position in the market.

Bemo Rail's operations are primarily divided into two business units: Rail Technology and Shunting Technology. This division allows for a focused approach to each sector, ensuring that the company can swiftly adapt to customer demands. The organization boasts a flexible structure with all-round project managers, a well-equipped workshop, and in-house production, assembly, and maintenance staff, all of which contribute to its ability to deliver high-quality solutions efficiently.

Mission and vision: driving success and sustainability

Bemo Rail's mission is to be the leading expert in rail systems and rail-related transport solutions for industrial, storage, and transshipment companies. The company is dedicated to translating customer requirements into practical, effective solutions, ensuring that every project meets the highest standards of quality and functionality.

Bemo Rail envisions:

- **Sustainable and customer-oriented service:** Bemo Rail aims to provide services that are not only customer-focused but also sustainable. The company believes in the importance of using sustainable materials and methods, reflecting its commitment to environmental responsibility.
- **Market leadership in rail constructions:** Bemo Rail aspires to maintain and strengthen its position as a leader in the market for rail constructions. This involves continuous innovation and improvement in its offerings.
- **Early project involvement:** the company strives to be involved in the preliminary phases of projects. Early involvement allows Bemo Rail to contribute to the development of high-quality, competitive, and practical solutions that meet the specific needs of its clients.
- **Market leadership in shunting equipment:** Bemo Rail aims to grow towards being the market leader in the Netherlands for shunting equipment. The company focuses on providing solutions where functionality and price are perfectly balanced, ensuring value for money for their clients.
- **Upgrading and modernizing locomotives:** the company seeks to distinguish itself by offering services in upgrading and modernizing existing locomotives. This aspect of the business highlights Bemo Rail's expertise and dedication to enhancing the efficiency and performance of rail transport.

Bemo Rail is committed to demonstrating the importance of sustainable practices to the market. This involves not only adopting environmentally friendly methods internally but also encouraging clients and partners to do the same.

A commitment to excellence and innovation

Bemo Rail's success can be attributed to its commitment to excellence and continuous innovation. The company's dedication to research and development ensures that it stays at the forefront of technological advancements in the rail industry. By investing in state-of-the-art facilities and fostering a culture of continuous improvement, Bemo Rail is able to deliver cutting-edge solutions that meet the evolving needs of its clients.

Conclusion

Bemo Rail BV stands as a testament to innovation, quality, and sustainability in the rail and shunting technology industry. From its humble beginnings as a trading company to its current status as a global specialist, Bemo Rail's journey has been marked by a relentless pursuit of excellence and a deep commitment to meeting customer needs. With a clear mission and vision guiding its path, Bemo Rail is poised to continue its prominent role in the industry, setting standards for quality, sustainability, and customer satisfaction.

Van Beek Dino bulk truck loaders simplify the handling process

Van Beek manufactures a specialized machine — called the Dino bulk truck loader. Under the brand name Dino, Van Beek is at the forefront of the global market in this type of equipment. Bulk truck loaders are used to discharge the contents of Big Bags into silo wagons.

Bulk truck loaders are in great demand in the chemical industry, logistics services, storage and transshipment companies, bulk conveyor companies, recycling businesses, and the cement and the food industry. And that's hardly surprising. Loading bulk goods safely and efficiently using a loading machine means a sound and sustainable investment that will quickly pay for itself.

What is a bulk truck loader?

A loading machine provides an automated and dust-free method for loading products packed in big bags and/or loose bulk goods into silo trucks, for example. Apart from the intake of big bags and loose bulk goods, it is also possible to tip octabins (25kg) sack goods into the Dino bulk truck loader, or to use a shovel, Bobcat or front loader. Heights of four to six metres can be bridged. As part of an optimized logistical routing, a bulk truck loader can fill a silo truck in less than 30 minutes.

What types of bulk truck loaders are available?

- **Static and mobile:** mobile bulk truck loaders can be moved easily. This makes it easy to fill bulk loaders at different locations on site, or move the Dino to a washing area using a forklift truck.
- **Steel and stainless steel versions:** bulk truck loaders with stainless steel conveyor section have excellent resistance to corrosion, corrosive (chemical) substances and other challenging environments, whereas steel versions have greater resistance to wear and tear. The cleaning protocol also influences the choice of material; if it's important to be able to clean the bulk truck loader thoroughly with water for example, Van Beek recommends a stainless steel Dino.
- **Bulk truck loading machines for loading one product and for loading multiple products:** easy-to-clean bulk truck loader components are essential. For this reason, the 'standard Dino' is equipped with a hinged top lid, to allow the interior of the inclined screw conveyor to be easily cleaned and/or inspected.
- Bulk truck loaders with a basic capacity of 40m³ per hour, and a very high capacity of 80m³ per hour.
- Bulk truck loaders for special products such as cement and cementitious products, such as limestone, soda ash and bentonite.
- ATEX bulk truck loaders for explosive substances where different ATEX zoning is possible, such as zone 20, 21 or 22 internally, and zone 21 or 22 externally.
- Bulk carriers are for high hygiene requirements where food safety certificates for plastics and synthetics can be provided (EC1935/2004), and supplemented by materials certificates for the stainless steel contact parts.

Standard Dino

The Dino DR300 is a Dino with a capacity of 40m³/hour and can be equipped with a lot of popular options for loading into bulk trucks. This Dino has been designed based on many years' experience in response to a market that makes increasingly more stringent hygiene requirements.

The Dino DR300 can, for example, be equipped with:

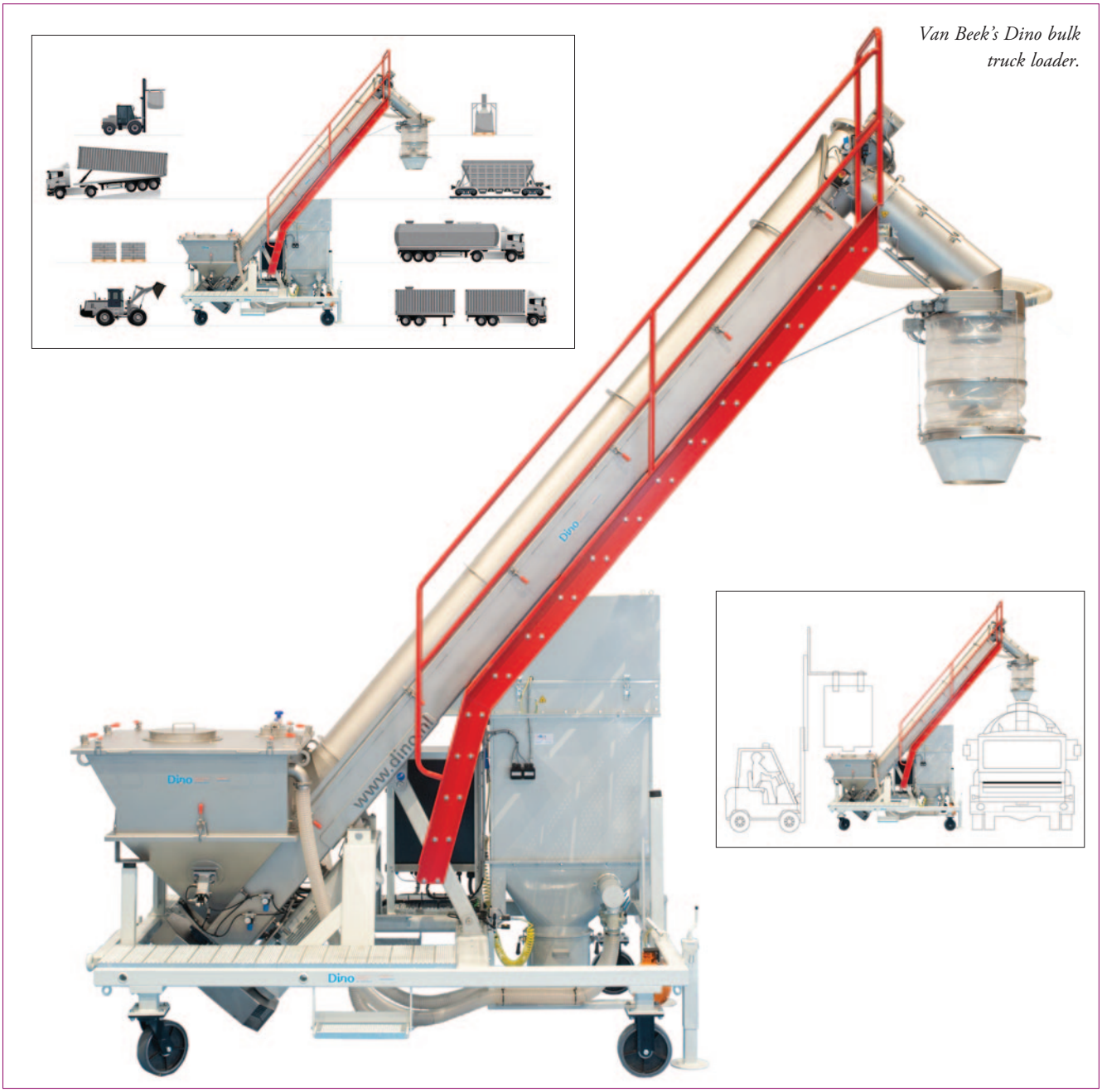
- Manually operated loading bellows on outlet side: for adequate connection to the bulk truck.
- Pneumatic beaters on the outside of the inlet hopper: so that product does not remain stuck to the sides.
- Fluidizing pads in the inlet hopper: these blow air through the product so that it flows more easily into the screw.
- Extension rim on inlet hopper: this increases the volume from 450 litres to 1,450 litres.
- Lid on inlet hopper: to reduce dust.
- Industrial dust filter mounted on base frame: for dust reduction on inlet and outlet side

Cement Dino

The Dino DS400 Cement has been adapted for loading big bags of cement and cement-like products such as limestone, soda ash and bentonite into bulk trucks.

The Dino Cement has a capacity of 80m³/hour, where the capacity of a standard Dino is 40m³/hour. The inlet hopper is fitted with a cross- or U-shaped blade so that a forklift truck driver can pour in the bags quickly, safely and easily. He does not have to get out to cut the big bag open and can immediately fetch the next big bag. This means a bulk truck can be filled within 30 minutes.

On the inlet hopper is a screening deck with vibrator. This separates the large chunks and lumps from the cement powder. The vibrator breaks down the



Van Beek's Dino bulk truck loader.

chunks so that they can flow freely. The inlet hopper itself is fitted with fluidizing pads. These spray air into the product and create an 'air film' on the inside of the inlet hopper so that the product can flow into the screw more easily.

ATEX Dino

The Dino ATEX has been developed for loading explosive substances such as starch, sugar, milk powder, lactose and similar powders into bulk trucks.

The design is based on maximum dust reduction and as high as possible a loading speed. In this Dino, all the hotspots that can cause an explosion have been modified. The Dino ATEX is developed for each project in co-operation with Van Beek's notified body TÜV in Germany. For every Dino ATEX there is an ATEX construction file. It is of course possible to modify this Dino to suit customer requirements, with the technical facilities that we have for ATEX-design.

Customization

Van Beek's standard Dino models offer an immediate solution to suit most situations. Many decades of experience have taught that a specific challenge often requires a customized Dino, something that Van Beek understands better than most. Its sales engineers work together with customers to assemble a bespoke Dino, configured to meet specific loading operations.

Uses for a bulk truck loader

Bulk truck loaders vary in height and can be fitted with options that prevent dust emissions or improve the flow of a product. Almost any type of dry bulk goods can be loaded safely and efficiently. Examples include:

- Loading rail wagons with, for example, plastic granulate pellets.
- Loading chemical powders.
- Loading flour in big bags.
- Delivering recycled substances.

The benefits of a bulk truck loader

A bulk truck loader puts an end to unsafe working practices and enables the user to deliver a large(er) capacity in a shorter time. With Van Beek's custom-made loading machines, specific requirements such as hygienic or dust-free loading are easily achievable. Moreover, with modular Van Beek Dino bulk truck loaders, users will always be able to respond flexibly to changing circumstances without the need to buy a new machine, as every Dino can be expanded with a variety of options at that particular time, even years after purchase.

KINSHOFER re-handling attachments for rail and barge transportation

The Kinshofer C-VHD is often seen working on Dutch harbours. Here it is the C40VHD in action.

For more than 50 years now, Kinshofer GmbH has been a leading manufacturer of high-quality attachments for truck mounted cranes and it is now on the way to get one of the leading excavator attachment producers worldwide, too. In the last two decades, Kinshofer has become more and more interesting for the re-handling business, producing large re-handling clamshell buckets (C-Series) for excavators and carriers with an operating weight from 18 tonnes of up to 100 tonnes as well as smaller ones for loader cranes.

If you want to handle bulk material on industrial or harbour sites or transshipment stations in large amounts, it highly depends on the kind of 'mass' you want to grab when choosing the right attachment for the job. Wherever giant cranes, pneumatic vacuum elevators (grain blowers) or conveyors are not available or possible, the classical grabbing devices will always be first choice. Attached to an excavator, their mobility makes them extra attractive. These are all available at Kinshofer's one-stop-shop.

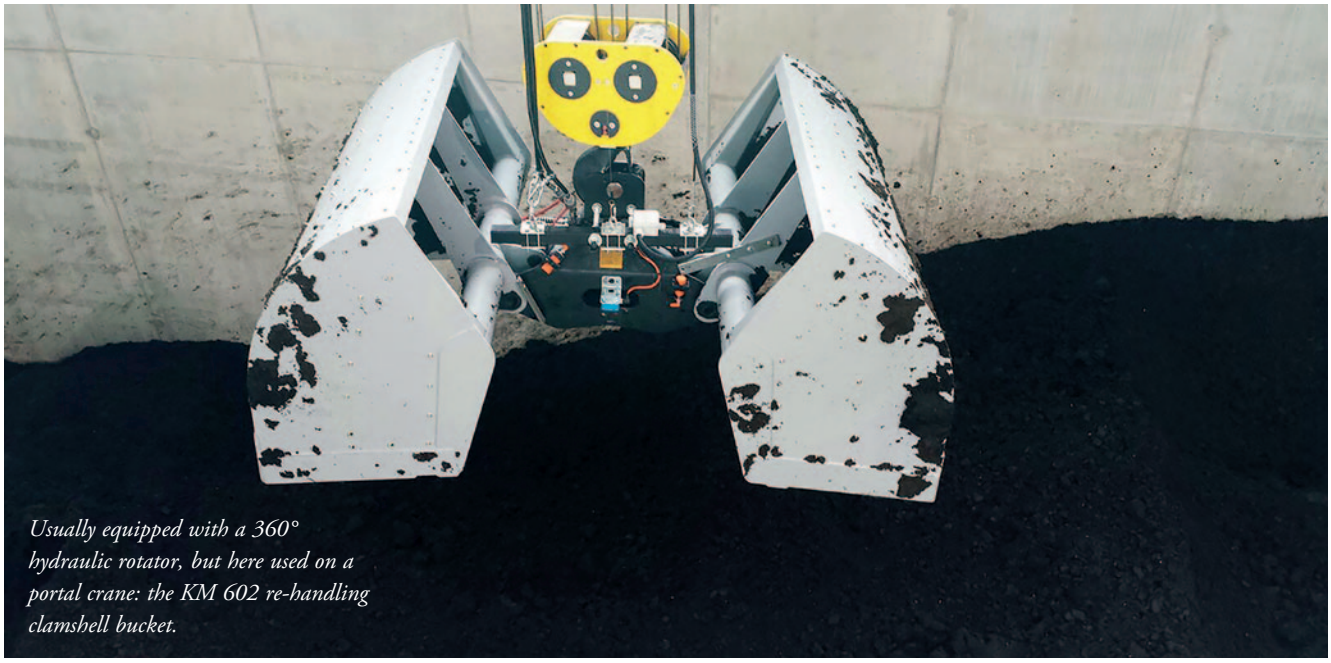
The sturdy Kinshofer re-handling clamshell buckets of the C-VHD-series have been developed especially for the loading and unloading of bulk materials in large amounts. They feature high volume, torsion-resistant shells and thanks to the integrated 360° rotation, the grab can always be positioned precisely. Bearing points have been equipped with specially coated bushings and hardened pins. For especially delicate cargo like grain, there is also the option of closed shells. The shells of the C-VHD-series is driven by vertical hydraulic cylinders with piston rod protection.

With a truck, it is easy to bring material to a designated spot — may it be a harbour or railway station. And even easier to load or unload a barge or waggon there with the Kinshofer re-handling grapples for loader cranes.

Thanks to the dedicated shell design of the KM 622 and KM 602 grapples, there are practically no 'leftovers' of the material to be picked up, as the working edges are vertical when the buckets are open. This also allows a deep plunge into the pile of material.

The low self-weight of the clamshell

For excavators and re-handling carrier machines up to 60t operating weight: the C60VHD with vertical cylinders.



Usually equipped with a 360° hydraulic rotator, but here used on a portal crane: the KM 602 re-handling clamshell bucket.

bucket guarantees a maximum load and due to the flat closing curve, the base of the wagon or barge will not be damaged during unloading.

The Kinshofer department for special solutions is frequently developing attachments for excavators and loader cranes for re-handling tasks, as this field of industry is getting bigger and more important every day. More dedicated tools for specific tasks or materials are needed and this is where the Kinshofer special developments come into action. Not only the tasks and materials might vary, but also the carrier machines. So Kinshofer can e.g. also equip portal cranes, which require especially designed grabs.

Kinshofer sticks strictly to innovation and quality. Thomas Friedrich, President & CEO of the Kinshofer Group, says: "Kinshofer continues its strategy to provide the industry with a 'one-stop-shop' solution of outstandingly engineered products to increase efficiency and, more importantly, profitability of our customers."

Kinshofer's subsidiaries are based in Germany, the Netherlands, UK, Italy, France, Austria, Czech Republic, Canada, USA, People's Republic of China, Sweden, New Zealand and Australia.

Lion Bulk Handling's truck handling expertise serves the bulk market

Lion Bulk Handling designs, manufactures and commissions bulk handling systems for the marine, offshore, port and terminal applications.

With more than 55 years of design and engineering experience in equipping dry bulk ships, barges, supply vessels, shiploading and unloading equipment, drilling rigs and floating terminals, Lion Bulk Handling has hundreds of excellent references from all around the world.

Among Lion Bulk Handling's many capabilities is truck loading. Before dry bulk material, like cement, is used in the construction process, the unpackaged dry bulk material needs to be transported to the building site by dry bulk trucks. And therefore, these trucks also need to be loaded efficiently and effectively. Each of the company's loading systems is supplied with the necessary dust extraction equipment for dust-free loading. The material will be conveyed through an internal hose, steel telescope or bucket segment, so dust cannot escape during the loading process.

Lion Bulk Handling's truck loading solutions included several dry bulk material solutions and bagging/bag loading solutions.

System configurations

Truck loading station

Truck loading stations supplement the sale and distribution of the terminals. Lion Bulk Handling's Truck Loading Stations are highly suitable for dedicated loading locations. The system consists of one or more cement silos equipped by telescopic loading below. The truck loading system is equipped with a weighbridge installed under the silos. For each loading point, the loading capacity is 200tph (tonnes per hour).

Key benefits

- highly reliable system;
- dust-free — integrated filter possible;
- adjustable lift height;
- fully automated;
- no weather delays;
- multiple loading points; and
- continuous material flow.

Technical details

- maximum trucks per loading point: two bulk trucks; and
- maximum conveying capacity: up to 200tph.

Big Bag to truck loader

Truck loading

Lion Bulk Handling's Big Bag-to-Truck Loader is used for efficiently discharging Big Bags and dust-free loading of bulk trucks. The system consists of a mobile platform, big bag discharger hopper, screw conveyor, telescopic chute, and dust collector. When placed on the hopper, the Big Bag discharger hopper can be integrated with a cutting knife to cut the big bags instantly. The system can be towed by a forklift or towbar for easier and safer transportation.

Key benefits

- it is the ideal system when the product is in large bags;
- efficient (efficient for nearly every throughput capacities);
- offers high standards for material, plant and operators protection;
- low dust emission; and
- economical.

Technical details

- maximum trucks per loading point: one bulk truck; and
- maximum conveying capacity: up to 30tph.

Vollert delivers seventh shunting robot to Brazil

Equipped with an automatic sanding system and interchangeable couplings for 1,000 and 1,600mm track widths, the new shunting technology from Vollert at TES in the port of Santos, Brazil, is optimally equipped for feeding freight trains of up to 3,900 tonnes.

Soya handling: TES handles 3,900 tonnes 24/7

The Santos export terminal in Brazil recently started using a PRO DER240 shunting robot from Vollert to move freight trains weighing up to 3,900 tonnes. The new addition complements the existing robot fleet on site: a total of seven shunting systems from Vollert now accelerate the low-dust 24/7 unloading of soya, bran and maize in the modernized ship terminals of the two operators TES and ADM.

TES and ADM are two neighbouring companies united by one goal: the modernization of the ship terminals for loading agricultural goods in the Port of Santos, Brazil. In several steps, investments were made in the demolition and conversion of the existing halls and loading facilities as well as in new and modern shunting and transport technology to reduce dust pollution from grain particles and emissions from the entire facility. Within just three years, TES was able to increase its capacity from around 2.3mt (million tonnes) to 4.5mt.

ADM increased its capacity to 8mt. At the same time, dust emissions were reduced by around 80%. This is also made possible by Vollert's modern shunting systems, which enable efficient 24/7 shunting operations on four unloading tracks with optimum interplay, while at the same time reducing noise and exhaust emissions.

TES and ADM have been using four cable-connected, all-electric and therefore emission-free STANDARD TANDEM KR130 and STANDARD KR70 shunting robots to move freight wagons since 2020. The new diesel-electric drive of the PRO DER240 also uses state-of-the-art drive technologies to reduce fuel consumption and CO_2 emissions.

The new shunting robot from Vollert complements the existing fleet in the port of Santos, Brazil. A total of seven shunting machines, including four all-electric and three diesel-electric, now ensure sustainable 24/7 shunting operations.

Concentrated power: 108 tonnes with 240kN tensile load

While the four cable-connected shunting robots take over the semi-automated unloading and return of the empty wagons to the terminals, the new PRO DER240, together with two other identical machines, feeds the loaded freight trains. With an operating weight of 108 tonnes, the PRO DER240 shunting robot is a real heavyweight. Equipped with two bogies and four spring-mounted drive axles, its frequency-controlled diesel-electric drive offers 240kN of tractive force — and therefore enough power to shift up to 3,900 tonnes at a travel speed of 6km/h. It can be controlled either from the two control stations or by radio, and the coupling can also be opened either automatically or manually. Due to the numerous coupling processes involved in weighing, unloading and returning the wagons to the port terminals, this saves a considerable amount of time. In addition, the coupling is compatible with trains with 1,000mm and 1,600mm track widths.

Robust technology and fast on-site service

In order to cope with the harsh working conditions and daytime temperatures of up to 40°C in continuous operation, the new shunting robot at TES has an air-conditioned driver's cab and reinforced supply and exhaust air for the diesel unit, as well as air/water heat exchangers to cool the frequency converter. Drive is provided by four 75kW electric motors.

An automatic sanding system with integrated slip measurement also ensures optimum power transmission even in adverse weather conditions.

In damp conditions, maize and soybean residues on the tracks can lead to considerable friction losses. "In addition to the robust technology, we also offer our customers components with service and replacement in Brazil. Thanks to our Brazilian subsidiary, we have our own service technicians and fitters on site — an important aspect when it comes to the operational reliability of the systems," explains Wesley Gomes, CEO of Vollert do Brasil. His team is also responsible for project management and commissioning on site. Vollert do Brasil, based in Belo Horizonte in eastern Brazil, is responsible for direct contact with customers from Mexico to Chile.

InnoTrans 2024

Vollert will be presenting this and other international projects and shunting solutions at InnoTrans 2024, which takes place in late September. These include battery-powered, emission-free and noise-free shunting vehicles as well as stationary, cable-bound shunting systems. With the battery-powered road-rail vehicle VLEX, Vollert also offers a compact solution for internal shunting of up to 600 tonnes by rail and road.

About Vollert Anlagenbau GmbH

As an innovator, Vollert Anlagenbau develops economical shunting systems for branch and connecting lines. Since the 1950s, Vollert's stationary, cable-bound shunting systems have been used worldwide for the shunting of railroad wagons and trains. As a technology expert, Vollert also offers self-sufficient shunting vehicles (shunting robots), heavy-duty transport vehicles and transfer cars for reliable and efficient processes in refineries, mines, ports, steel and cement works, in explosion protection areas, train washing facilities and maintenance operations.

Vollert's plant and machine solutions are used in over 80 countries worldwide, and the company's own subsidiaries in Asia and North and South America also strengthen its sales activities.

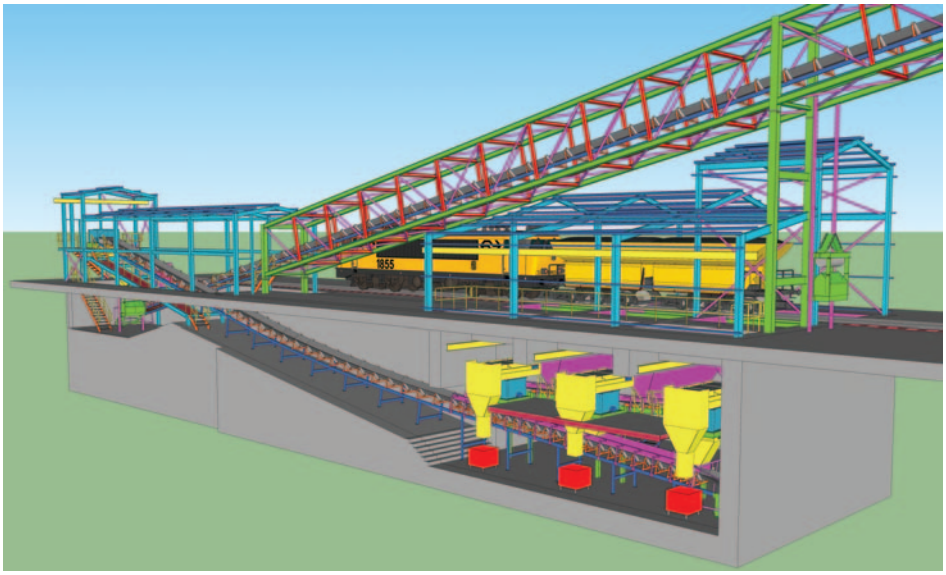
Rail- and barge-related projects from SAMMI

SAMMI's railcar unloading and transfer system for St Gobain PAM (and below).

Bulk handling equipment specialist SAMMI is involved in many aspects of the industry. Its expertise includes systems for the loading and unloading of bulk materials into rail wagons and barges.

- In 2018, SAMMI carried out a project in Pont-A-Mousson, France, for end user St Gobain PAM. The work involved a railcar unloading system and transfer to storage silo of aggregate, carbon coke and iron pellet for blast furnace feeding.
- In 2014, SAMMI supplied a radial stacker for muck/spoil removal storage on open area and barge loading system. SAMMI designed and supplied one tunneling muck radial stacker RS1400 x 26.75 for stockpile and barge loading, slurry muck conveyor with a capacity of 1,800 tonnes per hour.

  The system was designed to be able to withstand typhoon wind limits of 250km/h (storm-locked). The stacker was installed in Hong Kong, for customer Marti Technics Ltd.



In 2014, SAMMI designed and supplied one tunneling muck radial stacker RS1400 x 26.75 for stockpile and barge loading, slurry muck conveyor with a capacity of 1,800 tonnes per hour (and below).

About SAMMI

SAMMI: building for the future

SAMMI s.r.l. specializes in the design and manufacturing of machines for bulk materials handling, providing complete systems and solutions in different fields. Over its almost 50 years of history, SAMMI has expanded its action and production sectors, by increasing and improving its human, managerial and technical skills.

SAMMI believes that "No barriers exist, only new challenges". This philosophy leads the way the company does business. Over the years, SAMMI has always tried to extend its target market, offering new specific services and facing new markets. In the globalized world, high product quality alone is no longer sufficient. Being dynamic, open and ready for every new challenges and opportunities is fundamental to remaining competitive in the market.

SAMMI offers technologically advanced equipment, several application fields, flexibility to adapt itself to most demanding customers. These are the main elements of SAMMI's strategy for being competitive in the complex, selective and extremely demanding sector of bulk handling industry. The company's aims are to: design, build and innovate. SAMMI invests constantly to offer solutions that anticipate the needs of its customers. DCi

Liebherr première

first large wheel loader with hydrogen engine

The Liebherr plant in Bischofshofen presented the first large wheel loader with a hydrogen engine.

Hydrogen-powered large wheel loader & hydrogen filling station in Salzburg

Liebherr is pressing ahead with phasing out fossil fuels and preparing solutions to decarbonize construction sites, gravel plants etc. The Liebherr plant in Bischofshofen, Austria, celebrated two groundbreaking events: the presentation of the first large wheel loader with a hydrogen engine and the opening of the first hydrogen filling station in the state of Salzburg.

At a trade event at the Liebherr plant in Bischofshofen, the world's first large wheel loader with a hydrogen engine was recently presented to high-ranking representatives from politics and business. The event included a series of talks on the topic of alternative drives. However, the focus was on Liebherr's impressive machine show, where the hydrogen wheel loader was demonstrated for the first time in practical use.

At the same time as this world première, the first hydrogen filling station in the state of Salzburg was inaugurated, representing an important milestone in the use of hydrogen as a sustainable energy source.

"To make progress in hydrogen research, we need to have access to hydrogen. We built this filling station to further advance our goals for decarbonizing construction machinery," says Dr.-Ing. Herbert Pfab, Chief Technical Officer of Liebherr Bischofshofen.

Prototype L 566 H is the world's first wheel loader with a hydrogen engine

The L 566 H from Liebherr is the world's first prototype large wheel loader with a hydrogen engine. Following extensive studies, this groundbreaking technology was identified as the optimal solution for operating large vehicles that are difficult to electrify without CO_2 emissions.

For smaller vehicles up to about 15 tonnes, battery-electric solutions are often suitable. However, the situation is different with larger machines with an operating weight of up to 40 tonnes and high energy requirements. Hydrogen reciprocating piston engines prove to be ideal in this case.

These hydrogen engines are manufactured at the engine plant of Liebherr's Components product segment in Bulle (Switzerland). They enable not only zero emissions of greenhouse gases and almost no nitrogen oxides, but are also highly efficient. Another advantage is that the interfaces are comparable to those of a diesel engine — thermally and mechanically. This represents a significant step forward in the development of sustainable large-scale machinery.

Another highlight of the show was a MAN truck, also with a hydrogen engine. This shows that hydrogen technology is not only feasible in wheel loaders, but is already used in construction site trucks.

First hydrogen filling station in the state of Salzburg

As part of the development of the hydrogen wheel loader, Liebherr Bischofshofen opened its own hydrogen filling station — the first of its kind in the entire state of Salzburg. An important strategic partner in this project is Maximator Hydrogen, which is not only the manufacturer of the newly opened filling station, but is also a research partner of Liebherr. Together, they are working on mobile filling facilities so that machinery can be refuelled directly at the construction sites. This is particularly important for remote construction sites and machines that are not very mobile.

Another reliable partner is MPREIS, which ensures the supply of green hydrogen. This is important because only through emission-free production — using wind, hydroelectric or solar energy — can hydrogen play a key role as a sustainable and climate-friendly energy source.

The hydrogen refuelling station was officially opened at the plant site in Bischofshofen.

The large wheel loader with hydrogen engine was demonstrated in practical use during a machine show.

About Liebherr-Werk Bischofshofen GmbH

Liebherr-Werk Bischofshofen GmbH develops, produces and sells wheel loaders from the Liebherr Group. The plant in Salzburger Land (Austria) has grown steadily over the decades thanks to sustainable innovations, creative solutions and high quality standards. The wheel loader range is constantly being expanded and includes models in different product groups: compact loaders, stereo loaders, and mid-sized and large wheel loaders with impressive, innovative drive designs.

Refuelling takes place at the company's own hydrogen filling station on the Liebherr factory premises.

About the Liebherr Group — 75 years of moving forward

The Liebherr Group is a family-run technology company with a highly diversified product programme. The company is one of the largest construction equipment manufacturers in the world. It also provides high-quality, user-oriented products and services in a wide range of other areas. The Liebherr Group includes over 150 companies across all continents. In 2023, it employed more than 50,000 staff and achieved combined revenues of over €14 billion. Liebherr was founded by Hans Liebherr in 1949 in the southern German town of Kirchdorf an der Iller. Since then, the employees have been pursuing the goal of achieving continuous technological innovation, and bringing industry-leading solutions to its customers. Under the slogan '75 years of moving forward', the Group celebrates its 75th anniversary in 2024.

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Bilfinger Tebodin is a multidisciplinary industrial Consultancy & Engineering firm, active in the markets Food, Beverage & Agro, Pharmaceuticals, Energy, Oil & Gas and Pipelines & Infrastructure.
With a broad network in 17 countries we maintain long-lasting relationships with many clients worldwide.

Bleste SIA Port Equipment

Sloka 7122 (p/b №56)
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Blue Water Misting

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Dust suppression systems to eliminate dust in bulk handling operations.

BLUG Credeblug S.L.

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BLUG is strongly related to bulk terminal handling operations for more than 57 years, with different grabs performing successfully in the 5 continents. BLUG's presence in maritime terminals is mainly focused in European, American and African ports as a quality product reference.

Bobcat EMEA s.r.o

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Range of compact skid-steer and tracked loaders for ship-trimming and cargo hold unloading (together with grab) with operating capacities from 343 - 1850kg: telescopic handlers with lift capacities from 2.6 - 5.0 tonnes and max lift heights from 5.8 - 24.1 metres.

BossTek

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DustBoss® suppression systems deliver field-proven solutions for open-area dust issues, including source-point particle management and a family of mobile units. Proprietary technology delivers superior results and reliability, able to blanket up to 280,000 square feet with a single oscillating machine.

Breston B.V.

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Bruks Siwertell AB

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Bruks Siwertell is a market-leading supplier of dry bulk handling and wood processing systems. With thousands of installations worldwide, our machines handle your raw materials from forests, fields, quarries and mines, maintaining critical supply lines for manufacturers, mills, power plants and ports.

BSP ENGINEERING S.R.L

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B.S.P. is a leading European company specialized in design, manufacture and installation of storage facilities.
B.S.P. production does not limit to metal spiral silos but it also includes tanks for liquids, extraction and handling equipment thus supplying complete turnkey plants.

Buhler AG, Grain Quality and Supply

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Customized solutions for grain handling.
Bühler Grain Logistics Terminals is the ideal partner when it comes to reliable solutions in the area of grain handling and storage. The company's wide range of offerings includes ship loading and unloading solutions, conveying systems and silos as well as storage equipment.

Buhler GmbH

Grain Quality & Supply
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Bühler Grain Quality & Supply offers package solutions, machinery and components throughout the entire food value-added chain - from the reception of agricultural products through to the final stages of processing. Whether it's a silo installation, a rice mill or individually tailored malting systems: Bühler is a competent global partner providing individualized on-site customer service from conception to startup. Safety, dependability and sustainability thereby form the basis of a trustful customer relationship.

Bulk Lift International

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Manufactures a wide array of flexible intermediate bulk containers (FIBCs), or bulk bags. With manufacturing faciliies worldwide and stocking available in the United States the company can offer just in time deliveries of all bulk bag requirements.

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Buttimer Engineering
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Buttimer Engineering is a diversified mechanical engineering firm specialising in bulk materials handling solutions and high-quality steel fabrication. From once off design, fabrication or installation works to full turnkey projects, Buttimer Engineering can call upon skilled teams to deliver the service that our clients require.

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Spencer Group is an industry leader in materials/mechanical handling, including the transportation of biofuel and biomass. We have vast experience in heavy-duty materials handling including loading/unloading, by road, ship or rail, and the automatic transportation of materials using bespoke conveyors.

C Transport Maritime S.A.M
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Monaco
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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.

Cachapuz – Weighing & Logistics Systems, Lda
Parque Industrial de Sobreposta
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Cachapuz is a reference in the implementation of innovative solutions to automate the logistics, dispatching, reception and weighing processes in industrial plants. With a modular platform and extensive know-how, Cachapuz is able to meet the needs of several sectors worldwide.

+Calhoun Super Structure
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As a leader in the fabric structure industry, we've spent 30 years designing, engineering, and manufacturing the strongest, most reliable fabric structures in the market, with an extensive dealer network across North America to serve you.

Calim Grab Industry
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Calim Grabs is a manufacturer of mechanical, electro-hydraulic and remote controlled grabs.

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Founded on years of experience, CAMAR is a leader in the feed and grain industry, providing complete project engineering, high performance equipment and site wide process automation.

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Suppliers of fully moulded sidewall belting, high incline conveyor systems, dome storage reclaim systems and conveyor components.

Cavotec SA
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Cavotec Group is a global leader in connecting mobile equipment. Products from the Cavotec Group manufacturing units include: Eex radio remote controls, electrical connectors up to 15kV, flexible cables, cable reels, and slipring units. Distribution is supported by 22 Cavotec sales and service companies around the world.

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CDM Systems offers a comprehensive array of Bulk Conveying Systems, Components and Engineering/Design Services. With over 30 years of experience, we can provide you with conveying and bulk handling solutions for Materials from Ash through Zinc, including marine applications as well as those in hostile, severe or high-temperature environments.

Centaur Technologies

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Cesur Packaging Corporation

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Cesur Packaging is a manufacturer of all types of FIBC 's (Type A, B, C, D for various industries - UN, Food Grade, Hygiene big bags), PP woven bags and international dunnage bags with 82 years of experience in the industry and international markets.

CHIA Espirales

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CHIA focuses its efforts on providing tailor-made solutions for port, coal and olive oil industries. Specialized equipment for industry, hoppers, ship unloaders conveyor belts, lifts, port terminals, solid bulk storehouses, ecological load and unload systems are only some of the tasks most carried out by this enterprise.

Chief Industries UK Ltd.

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International supplier of galvanized grain storage silos and ancillary equipment. Undertake complete projects or component supply to main contractors. Manufacturing companies in USA, UK and France, providing flexibility for international design standards. Experienced in countries throughout the world.

Chief Industries, Inc.

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Chief Agri specializes in the design, manufacture and sale of grain storage systems around the world. Chief offers everything needed in a complete grain storage system, including steel grain bins, grain handling, conditioning equipment along with continuous flow grain dryers and square feed mill storage bins.

China Huadian Engineering Co., Ltd

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Manufactures ship unloaders and conveyor systems under brand names of Handlair, VacBoss, Vac-U-Vator, SeedVac, ChemVac, Push-Pac, SuperTower and SuperPortable.
Equipment for the transfer of dry flowable products including grain, feed, seed, rocks and sand.

Cimbria A/S

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Cimbria is a global leader in the conveying, drying, processing and storage of grains, seeds, food and bulk products. The Cimbria conveying solutions can be delivered for ship loading, stock piling, road and rail.
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Civettini Italo & c sas (CFS Handling)

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Clariant Corporation

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Clariant Cargo and Device Protection offers moisture solutions such as Container Dri® II container desiccants for a broad range of transport applications: from goods traveling in conventional cargo containers to shipment and storage of sensitive electronic and semiconductor devices.

Claudius Peters Projects GmbH

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Cleveland Cascades Ltd

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Designs, manufactures, markets and installs bulk loading chutes for ship loading, silo filling, truck loading, conveyor transfer point; minimising dust emissions and product degradation, as well as segregation.

COBRA Europe SAS

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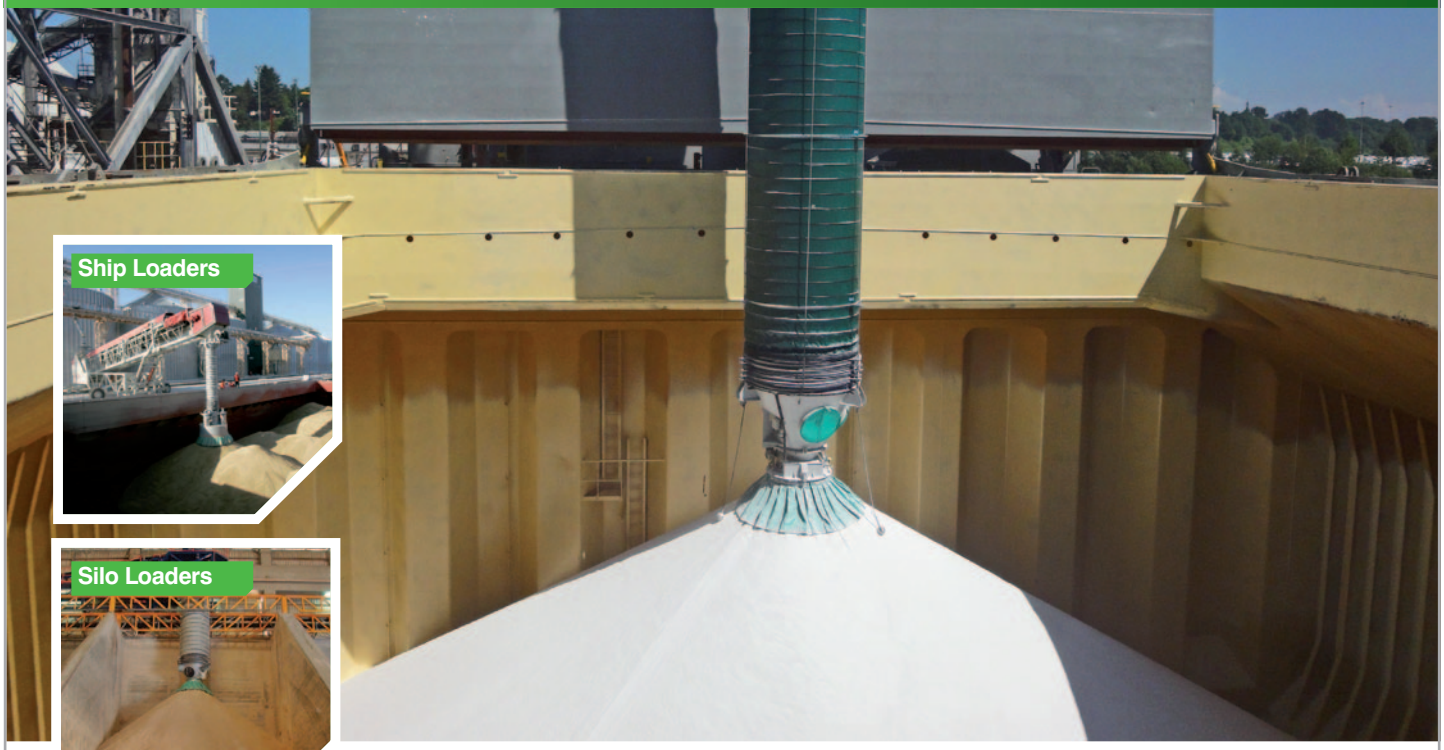
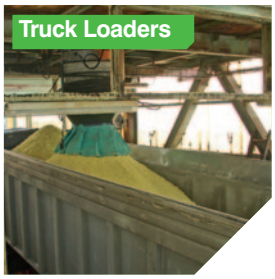
The COBRA group is one of the leading manufacturers of conveyor belts. Our products are intended 3 brands as DEPREUX to heavy

Cleveland Cascades Ltd

Global leader in bespoke dry bulk loading chutes





Cleveland Cascades are Specialists in the design and manufacture of bespoke dry bulk loading chutes.

Our bespoke solutions are designed to meet each customer's specific requirements from a tool kit of proven components, utilising the expertise of a team of specialist in house design engineers.

We lead the loading chute industry & set the standard for dust emissions and environmental pollution control in dry bulk handling.

Our worldwide reputation is built on high quality, well-engineered, robust, high performance chutes, backed up by excellent customer service and global lifetime product support.

Contact Cleveland Cascades Ltd

Unit 22, Dukesway, Teesside Industrial Estate, Thornaby, Stockton-on-Tees, Cleveland, TS17 9LT, United Kingdom Tel: +44 1642 753260 | Fax: +44 1642 753270

E-mail: enquiries@clevelandcascades.co.uk | Website: **www.clevelandcascades.co.uk**

industries (mines, steel mills and power plants), TRANSCO for the food industry and INDI for pharmaceutical and transporting isolated loads and packages.
Our mission: to provide you solutions in order to meet your rubber conveyor and elevator belts requirements.
More information on our web site : www.cobra-europe.eu

Commodity Inspection Services

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CIS Commodity Inspection Services are global providers of inspection services with a strong focus on import & export inspections of agricultural products. Our knowledge of and dedication to the agribusiness ensures that seller's and buyer's interests are protected in the best possible way. Inspections are conducted during the entire loading and/or off loading operations; from arrival of the vessel to completion of cargo operations our inspectors monitor the quality & quantity of your cargoes. CIS Commodity Inspection Services are recognized by SAGO-KSA, MIT-Jordan, GASC-Egypt and SSMO-Sudan.

Concetti S.P.A

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Manufactures and commercialises big bags made of polypropylene to store or transport merchandise ranging from 500 to 2000kg, with one or four lifting points. Also manufacture liners in polyethylene or polypropylene 'Dbulk' for maritime containers to store or transport merchandise in bulk. All the products manufactured are food approved.

Conductix-Wampfler Americas

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Mobile Electrification systems: Motorized reels, cable festoon systems, cable chains, slip ring assemblies (including hazardous duty), and pendant or radio remote controls. Conductix Wampfler is a global leader in the electrification of rail mounted equipment and bulk handling equipment involved in the storage and handling of all types agricultural products.

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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, 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.

Conservatek Industries, Inc.

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Designs, fabricates and installs aluminium domes and aluminium roof structures for use on tanks of various shapes and sizes. Typical applications include bulk storage enclosures.

Continental Construction (Memphis)

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Heavy Industrial Contractor for Foundations, Silos, Conveying, and Unloading. Call (901)382-4070 or go to www.continentalconst.com for more information.

Continental Conveying Solutions

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We offer a wide range of products, services and technologies for mining and industrial applications. Our full-service capabilities include planning and commissioning, technical advice, training, digital monitoring and on-site maintenance for the life of the conveyor operation.

Con-Vey Keystone Inc

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Conveyor Dynamics, Inc.

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CDI designs the longest, strongest, and most advanced belt conveyor systems in the world. Last year we commissioned the world's longest belt conveyor: a 27km conveyor in South Africa. We specialize in detailed mechanical design, software development, and control system.

Cooper Marine & Timberlands

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Cotecna Inspection Denmark A/S

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Custom clearance
Evaluation of damages
Draft/bunker Survey

Cotecna Inspection SA

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Affiliated with CPS Projects Pty and Salzgitter SA Pty in South Africa, Portquip Pty provides mechanical shiploaders, grabs and truck loaders and unloaders.

CRS - Container Rotation Systems Pty Ltd

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CRS specialises in the design and manufacture of Container Rotators and specialised rotatable heavy duty containers.

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CST Covers

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Designs, manufactures and installs large (30m to over 145m diameter) clear span aluminium domes for covering storage systems of all types. Conveyor penetrations and support can be all part of the roof design. Each dome is custom designed to the site and customer specific requirements worldwide. Cost competitive and virtually maintenance free as aluminium does not rust, rot or solar degrade.

CST Storage

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Columbian TecTank is the leading manufacturer of bolted steel, and factory welded storage tanks for the dry bulk market. Columbian TecTank is proud to introduce a new coating -Trico-Bond EP™, a high-performance, factory-applied, thermally-cured, highly-engineered modified epoxy powder coating.

DCL, Incorporated

08660 Ance Road
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E: sales@dclinc.com
W: www.dclinc.com
DCL provides loading systems as well as components to the bulk material handling industry. Our product line includes Loading Spouts, Loading Spout Positioners, Aeration Equipment, Shut-Off Valves, Diverter Valves, Dust Collection Equipment, Bag and Drum Filling, System Design, and Plant Automation.

De Regt Conveyor Systems

Ijzendijkseweg 5
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Zeeland
4521 GX
The Netherlands
Contact: Mr Peter De Regt
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E: peter@deregt.com
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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
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IL
60039-1138
USA
Contact: Mr Thomas DeMarco
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T: + 1 815 344 2222
F: + 1 815 344 2223
E: Sales@DeMarcoVacuums.com
W: www.DeMarcoVacuums.com
Manufacturer of Patented DEMARCO Industrial Vacuum Systems and vacuum loaders for portable, stationary and central manifold systems. 10 to 300 HP

DMN-WESTINGHOUSE

Gieterij 3
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NL-2211 WC
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Contact: Mrs Tonneke Krempel
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E: dmn@dmn-nwh.nl
W: www.dmnwestinghouse.com
Offering tailor-made solutions in the design and manufacture of rotary valves, diverter valves and other components for the bulk solids handling industry for more than 45 years. The company's products are distributed and supported worldwide.

Dome Technology, LLC

4946 North 29th East
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83401
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Contact: Mr Heath Harrison
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T: + 1 208 970 0233
E: heath.harrison@dometechnology.com
W: www.dometechnology.com
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Donaldson Filtration Deutschland GmbH

Industriestraße 11
Dülmen
48249
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E: IAF-de@donaldson.com
W: www.DonaldsonToritDCE.com
Donaldson offers innovative dust collection systems. The products are engineered to improve efficiency, save energy and extend filter lifetime. The R&D engineers invented new filtration technologies for customers and their specific applications.

Dos Santos International, LLC

531 Roselane Street NW
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GA
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USA
Contact: Mrs Amy D. Duncan
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E: info@dossantosintl.com
W: www.dossantosintl.com
Foremost authority on Sandwich Belt high angle conveyors with the inventor of the system at the helm of the company. DSI offers discipline-oriented engineering services in mechanical and structural engineering, along with their in-house conveyor analysis software, ExConTec.
Other Equipment: DSI Adder Snake, overland conveyors, pipe conveyors, hoppers.

DPC Hydraulic

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Dry-Bag A/S

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E: production@dry-bag.dk
W: www.desiccant.com

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A one hundred sixty-six year-old company specialized in turn-key projects worldwide for the bulk handling sector. Its great experience enables the company to develop state of the art designs and achieve high performance as well as run all the projects based on environmentally friendly solutions and competitive costs.

Dust Solutions Inc

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SC
29906
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Contact: Mr Richard Posner
Job Title: President
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Manufacturers of Dry Fog Dust Suppression Systems for conveyors, truck & rail dumps, hoppers, feeders, crushers, ship loaders/unloader. Modular systems produce fog droplets that attach to like size airborne dust particles. Functions in below freezing temperatures. DustTamer Windfences for hoppers & stockpiles.

E-Crane Worldwide

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Adegem
Oost Vlaanderen
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Belgium
Contact: Mr Lieven Bauwens
Job Title: CEO, E-Crane Group of Companies
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E: lieven.bauwens@e-crane.com
W: www.e-crane.com
Hydraulic, balanced, bulk material handling cranes from 5.5 to 43 tons, 19 meters to 45 meters reach. ECI imports, markets and supports the E-Crane in the Americas. ECI offers complete material handling solutions including the E-Crane.

E-Crane Worldwide

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44833
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Contact: Ms Kelly Carl
Job Title: Project Engineer & Marketing
T: + 1 419 468 0090
F: + 1 419 468 0074
E: kelly.carl@e-crane.com
W: https://www.e-crane.com/
Equilibrium Cranes from 6 to 40 tons capacity, reach from 64 to 147 feet with project specific lowers such as fixed, gantry, rail or crawler for bulk material handling.

EDGE INNOVATE. (NI) LTD

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Edge Innovate are a blue sky thinking, imaginative and creative equipment manufacturing company. With our ethos of "Innovation at Work" EDGE persist in pushing the boundaries of design and manufacturing to produce hard working, quality machinery to fit any materials handling requirement from recycling, material handling to quarrying.

Elgin Engineering and Construction

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An international consulting and engineering firm specialised in conceptual development, planning, feasibility studies, design engineering, project management, construction supervision, etc.

EMS-Tech Inc

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A multi-task, multi-discipline company specialising in design and supply of dry bulk material handling equipment, including custom designed conveyors, shiploaders, stackers and reclaimers, self-unloading ships, transhippers, belt elevators, receiving hoppers, storage/loadout systems, environmental controls.

Endress + Hauser Inc

2350 Endress Place

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IN
46143
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W: www.us.endress.com
Processes control devices and measurement systems, which include level flow, pressure tank guaging, temperature and liquid analysis systems.

Engicon nv (Geldof)

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Specialised in the engineering, construction and erection of storage and handling installations for bulk goods. Loading and unloading stations, hoppers and stackers; Silos; Tanks; Transport systems completely installed employing conveyors and elevators; Large turnkey installations combining storage and handling.

Engineering System Solutions, ES2

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EQUIPO LLC

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Operating in more than 40 ports around the Iberian Peninsula and the American continen, handling the entire shipment process from inception to delivery including: loading, discharging, warehouseing, agency, customs and inland transportation.

ES2, Engineering System Solutions

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ES2, established in 1999, has provided Planning, Final Engineering, Procurement & Construction Management Services for bulk material handling projects across the USA and within 6 continents. ES2 holds licenses for all 50 states both structurally and electrically.

Esch Group bv
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A manufacturer (production) of transport rollers, drive and tension drums and import bearings and bearing blocks.

ESI Eurosilo BV
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Purmerend
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The Netherlands
Contact: Mr Richard Spaargaren
Job Title: Commercial Director
T: + 31 299 630 730
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E: sales@eurosilo.com
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Large scale flat bottom storage silos with a Eurosilo stacking and reclaim system inside. Max.storage volume 100,000 m3 per unit.

Euromec S.r.l.
Via Visano 78/80
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Euro-Tech Corporation
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Eurotech Corporation is a distributor of crane & excavator attachments. We service North and Central America. Our product range includes attachments of all types and in all size ranges including hydraulic, electro hydraulic, diesel hydraulic and mechanical grabs for bulk material handling.

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Spacelab 47 D
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E: sales@tramco-europe.com
W: www.tramcoinc.com
Manufactures chain, screw and bucket conveyors and 'Aerobelt' air-supported belt conveyor systems.

Fabtech International Ltd
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Together with the FAM Minerals & Mining BEUMER Group is a leading global supplier for bulk materials, processing and conveying systems for open-cast mining, stockyards, and ports. A comprehensive and global customer support portfolio offering completes the portfolio.

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Flexco provides the world's belt conveyors with efficient, safe products, services, and solutions for splicing, belt cleaning, belt tracking, spillage, and slippage. The company is based in Downers Grove, Illinois USA and operates subsidiaries in Australia, Chile, China, England, Germany, India, Mexico, Singapore, and South Africa. Flexco markets its broad line of products through a worldwide network of distributors, under the Flexco® and Mineline® names.

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W: www.flexco.com
Manufacturer and distributor of mechanical belt fastening systems, installation tools, ceramic lagging, cleats and cleaners.

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Flexoveyor Conveyor
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Contact: Mr Bill Priday
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E: billpriday@flexoveyor.com
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A leading manufacturer of material handling equipment for bagged material to include belt conveyors, bag palletizers, empty pallet dispenser and full pallet conveyors. Systems are complete with all required electrical controls, wiring and programming. All equipment is shipped as fully assembled as possible and is tested 100% prior to shipment.

Fogco Systems, Inc.
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Suppliers of mechanical shiploaders and unlaoders, level luffing harbour grab cranes, floating grab cranes and other bulk handling equipment.

Geo - Chem Laboratories Pvt. Ltd

Geo - Chem House
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Geometrica Inc

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Job Title: Sales and Marketing Manager
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W: www.geometrica.com
Specializes in design, fabrication and installation of bulk storage enclosures requiring large, column-free interiors. Geometrica structures may span over 300m and may be galvanized steel or aluminium. Geometrica domes are used over circular, square, rectangular, and irregular piles.

Geroldinger GmbH & Co KG

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Product range includes grain silos and bins, railcar loaders and unloaders, truck loaders and unloaders and hopper systems.

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Part of the Norwegian Goodtech Group, Goodtech AS' business network provides superior materials handling technology, services and systems, under the PORTABULK® brand, to a wide variety of user segments throughout the world.

Grain Capital

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Grapplers India Pvt Ltd (Essar Industries)

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Guttridge Limited

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T: + 44 1775 765300
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E: enquiries@guttridge.co.uk
W: www.guttridge.com
Guttridge - A Mitchells Group Company, manufacture a range of bespoke bulk conveying and elevating equipment solutions capable of moving between 1 and 2000tph for a wide range of applications and complete deployable modular mill systems.

Guven Grab Machine Inc.

Akse Mahallesi 535. Sk. No: 3/1
Çayırova
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T: + 90 262 743 8858
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W: www.guvengrab.com
Established in 1984, Guven Grab & Machine (Guven Kepce Makine) has its own manufacturing facilities. Its product range includes radio remote control grabs, electro hydraulic clamshell/orange peel grabs, mechanical clamshell orange peel touch down grabs and mechanical double wired grabs. It has supplied its units to countries all over the world.

H.E.M.C. GmbH

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Hanson Silo Company

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Hanson Silo is the leader in Modular Precast Concrete Storage Systems.

Hapman

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Heavy Handling

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Beveren (Kallo)
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9130
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Contact: Mr Mathias Matton
Job Title: Sales Director Port Cranes
T: + 32 479190755
E: info@heavyhandling.be
W: www.heavyhandling.be
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HEKO Ketten GmbH

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Henan SRON Silo Engineering Co., Ltd.

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W: www.grainsilo.com
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Henry International Diplomatic Marine

27502 Vilna Avenue
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T: + 1 713 676 2400
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Products include:
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KOAMING-AIDE - Coaming joint sealant
RAM-WRAP - Pipe repair system

Heyl & Patterson Equipment Member of The HALL Group

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Heyl & Patterson Equipment specializes in custom engineered capital equipment for bulk material handling. We engineer railcar movers, dumpers, stacker reclaimers and barge unloaders, as well as provide replacement parts, upgrades and retrofits for the life of our equipment, which is measured in decades.

HIT S.r.l.

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HKD Blue

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HKD Blue engineers and manufactures water-atomizing dust control equipment and technology. The company offers powerful misting cannons for sensitive material handling, as well as turnkey engineering and design services for automated dust suppression infrastructure.

Horizon Conveyor Equipment

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Manufacturers of steel, plastic idler rollers and Idler Sets, conveyor belt scrapers, pulleys/drums and conveyor components.

HP Handling SRL

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HP Handling designs and manufactures integrated solutions for grain, flours, meals and dry bulk materials for food and non-food industry.

Hycontrol Limited

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Hycontrol has been providing precision level measurement solutions to industry for over thirty-five years, measuring most liquid and solid materials including slurries, pastes, powders, grains, pellets and flakes at ranges up to 100m. Hycontrol is also the world's leading silo pressure safety system expert.

IBL SOLUTIONS

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T: + 1 780 963 3084
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W: www.infinitybelting.com
Vacuum Scrapers - Particulate Capture, Finger Scraper - Carryback Removal on Conveyor Systems

ICCE d.o.o.

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E: filip.sisko@icce.com
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We provide turnkey electrical and automation solutions for your processes.
We provide electrical and automation design, medium & low voltage, MCC panel building, PLC & SCADA software development, IT solutions, installation, commissioning, training, and technical support.

IHI Transport Machinery Co., Ltd. (IUK)

8-1 St Luke Tower
Akashi Cho
Chuo-Ku
Tokyo
104-0044
Japan
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W: www.iuk.co.jp
IHI is Japan's leading company of bulk material handling system. IHI's products and service cover various equipment for coal, iron ore, grain and biomass pellet etc. and has been contributing to different industries all over the world.

IMASA

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Imeca Cranes

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E: sales@nkmnoell.com
W: www.imeca-reel.com
Leading manufacturer of lemniscates cranes and special equipment for the bulk industry. Turn key project capability; design, manufacturing and erection in-house. Our maintenance division provides added value service for refit, modernisation and redesign for increased performance.

IMGS Group

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Império Inteligência

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Intercomp Scales

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W: www.intercompcompany.com/
With a history spanning more than 40 years, Intercomp is a leader and pioneer in the truck scale industry. The company offers Weigh-In-Motion (WIM) and portable scale solutions for a variety of transportation-related industries and businesses.

Intermodal Solutions Group

Nuñez de Vela N36-193 y NNUU
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E: gdelgado@isgpts.com
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Intermodal Solutions Pty Ltd

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Suppliers of a dust free logistics , storage and ship loading system using bulk containers and tipplers. Visit our website to see how the system works www.pittoship.com

ISKAR Mühendislik Ltd

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Istop Spamat Srl

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The first stevedoring company in Bari and Molfetta. We work in three ports: Bari, Molfetta and Barletta.

Italgru S.r.l

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F: + 39 035 4932 409
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W: www.italgru.com
Since 1954 a total number of 1500 cranes have been delivered world wide and ITALGRU is an established market leader in crane technology.

J & B Grijpers b.v.

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Utrecht
3545 NA
The Netherlands
Contact: Mr Edgar Joustra
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W: jb-grijpers.nl/
Designs, engineers and manufactures mechanical and hydraulic grabs for all kinds of bulk material.

Jansen & Heuning

Bulk Handling Systems
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JEM International

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F: + 1 913 441 1711
E: info@JemScales.com
W: www.JemBaggingScales.com
Manufactures complete range of open-mouth bag filling equipment, bag closing conveyors and robotic palletizing systems. Also makes self-contained bag plants comprising bag filling scales, bag closing conveyors, air compressor surge hoppers, control panels - all container installed and mounted.

Jenike & Johanson Inc.

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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 57+ years, they've tested 19,000+ unique materials and worked on 9,000+ projects, including testing, modeling, functional design, and structural design

Jiangsu ZDPM Manufacturer Co.,Ltd

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Jimway Enterprise Co., Ltd

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Established in 1982 and obtained ISO 9001 certification in 1998, Jim Way is an expert belt conveyor components manufacturer. We focus our expertise to produce idlers, pulley laggings, belt cleaners, skirt rubber, ceramic liners, etc. for conveyor solutions.

Kalenborn Kalprotect GmbH & Co. KG

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KenzFigee Group B.V.

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Engineering, manufacturing, commissioning and service of a wide range of harbour cranes and lifting systems such as grab cranes, including floating Lemniscate cranes, single and double boom cranes and gantry grab cranes.

Kilic Engineering

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Kinergy Corporation

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Manufacturer of vibratory machines for bulk solid material handling. Induced Vertical Flow units either discharge or densify materials placed in storage. Induced Conveying units use vibration to transport or process bulk solid materials.

King Bag & Manufacturing Co

1500 Spring Lawn Avenue
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OH
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USA
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Job Title: Sales Manager
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E: mike@kingbag.com
W: www.kingbag.com
Manufactures FIBCs with 100 years of experience in the speciality bag business producing custom sewn products for customers around the world.

KINSHOFER GmbH

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Job Title: Sales
T: + 49 8021 8899 0
F: + 49 8021 8899 37
E: info@kinshofer.com
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KINSHOFER GmbH produces Premium Quality Attachments such as Clamshell Grabs (up to 7 cubic metres) for excavators & re-handling machines up to 100t operating weight, HD Orange Peel, Selector and Timber Grabs. Big Bag Handlers too. Custom solutions. Catalog available.

Komatsu Mining Corp. Group

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Previously known as Joy Global and Continental Conveyor Ltd. Capabilities range from manufacturing of individual conveyor components to full project design and execution, with over 100 years' experience.

Konecranes Port Solutions - Konecranes GmbH

KONECRANES

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FOR GREATER BULK HANDLING PRODUCTIVITY
Reach out and grab it with eco-efficient Konecranes Gottwald Mobile Harbor Crane technology. Depending on site and operating conditions, our four-rope grab cranes, also available as rail-mounted portal and cranes on barges, achieve handling capacities of up to 2,200 tph in continuous-duty bulk handling. Our broad range of products with their smart features is supported by dedicated planning and consultancy services and backed by a global service network.

Kröger Greifertechnik GmbH & Co. KG

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KRÖGER Greifertechnik is one of the worldwide leading grab systems manufacturers. KRÖGER grabs are successfully used at maritime and inland ports for bulk handling, in warehouses and at industrial or handling sites; as well as in cranes on ships or dredgers for gravel extraction, in excavation diggers, for demolition and waste incineration, in steel mills and in the timber industry.

Lachenmeier Monsun A/S

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Laidig Systems Inc

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Laidig Systems Inc, manufactures custom engineered storage and reclaim systems for tough, hard to handle materials and whole grains. Such materials include soybean meal, other grain meals, whole grains, wood chips, sawdust, and recycled materials.

Langston Companies Inc.

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Lawrence Industries, Inc.

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Lawrence Industries, Inc. is a supplier of industrial lining materials that improve bulk material flow in silos, bins, and bunkers. TIVAR 88 is a primary material that is used to eliminate bridging, arching and ratholing. Lawrence Industries designs and fabricates.

LD Ports & Logistics

LD Ports & Logistics

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LDPL Middle East Shipping LLC

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Legacy Building Solutions, Inc.

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E: marketing@legacybuildingsolutions.com
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Legacy structures harness the power of corrosion resistance, natural light, and a faster installation process for an increase in ROI. Custom engineered to spec, worldwide installation, built in half the time, warrantied in corrosive environments. Legacy Building Solutions, customized for your needs.

Librawerk Maschinenfabrik GmbH

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F: + 49 531 3709888
E: info@librawerk.de
W: www.librawerk.de/en/home.html
Fully automatic and semi-automatic bagging units for almost all kinds of bulk goods. Big bag filling machines with a weighing range of up to 2,000kg, with capacities from 5 to 60 bags/hour.

Liebherr-MCCtec Rostock GmbH

LIEBHERR

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E: maritime.cranes@liebherr.com
W: www.liebherr.com
With over 1,600 machines delivered in more than 100 countries Liebherr mobile harbour crane offers today a range of 7 models (42 - 308 tonnes capacity), providing ideal solutions for the efficient handling of containers, bulk, general cargo and heavy lifts.

Lion Bulk Handling b.v.

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Listenow GmbH & Co.

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T: + 49 7152 50900
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Loading equipment from 200-2000mm and length up to 24m, loading tubes - patented - PU flex, loading tubes of many materials, filter for loading equipment, electric rope winches, bellow expansion joints, collars, hoses, folding stairways, transport racks.

Loibl Förderanlagen GmbH

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Loibl is a leading global supplier and manufacturer of customised conveying solutions for bulk materials, from individual components to complex systems. Decades of experience and comprehensive knowledge about the physical requirements of all types of bulk materials make Loibl an essential partner in the development of customised solutions for a wide range of industries and applications.

Macawber Engineering, Inc

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Designing and manufacturing low-velocity pneumatic conveying systems to solve your conveying needs, especially when your material is difficult to handle. With thousands of materials conveyed in virtually every industry, Macawber has remained X to its core business for 40 years with proven capability and expertise to create systems that are not only reliable and efficient but also cost-effective to operate and maintain.

Mack Manufacturing Inc

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W: www.mackmfg.com
A leader in designing and building heavy-duty high performance grapples and clamshell buckets since 1942. We are dedicated to supplying our customers with the right attachment for their application. Quality and reliability are trademarks of Mack grapples and buckets.

Mantsinen Group Ltd Oy

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MANTSINEN builds the largest hydraulic material handling machines and cranes in the world and supplies them through an extensive dealer network worldwide. MANTSINEN also provides large scale logistic services in Finland and Russia. We are a family owned company with over 550 employees in Finland, Russia and Sweden. Our company is headquartered in Liperi, Finland where we have also our production facilities. Our heart has been beating to port and terminal logistics since 1963.

Maquinas Condor SA

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RS
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F: + 55 51 2104 3345
E: andre@maquinascondor.com.br
W: www.maquinascondor.com.br
Founded 1959. Engineers and manufactures complete systems for solid bulk materials handling ports and terminals. Equipment range includes pneumatic grain unloading, continuous shiploading, bulk stacking, reclaiming, belt coveyor, bucket elevator and mechanical conveyor. Operating from barges up to capesize ships, to 3000 tph. Shipunloaders and shiploaders operating successfully in ports around the world.

Marco – A Terex Brand

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MO
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F: + 1 636 680 2037
E: marco@terex.com
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Martin Engineering

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Job Title: Customer Service Manager
T: + 1 309 852 2384 ext 214
F: + 1 800 814 1553
E: rickf@martin-eng.com
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Supplier of conveyor components, flow aids, safety products and training to make bulk material handling cleaner, safer and more productive.

Martin Engineering GmbH

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D-65396
Germany
Contact: Mr Oliver Kämpfer
Job Title: Sales Manager DACH
T: + 49 6123 9782 - 19
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E: info@martin-eng.de
W: www.martin-eng.de
Conveyor Inspection (WTB) Safety training seminars, Remote Monitoring, Conveyor equipment, belt cleaners, belt tracking systems, impact cradles, sealing systems, dust containment and filtering systems, air cannons, silo cleaning services.

Maschinen und Mühlenbau Erhard Muhr GmbH

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Job Title: Graphic Designer/ Marketing Assistant
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E: david.fichtmueller@muhr.com
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MUHR offers a wide range of high quality Bulk Loading Systems (for open and closed, dust-free loading), Loading Spout Positioners, Pneumatical Docking Devices and even Railcar Dumping Systems for economical unloading of trains with open railcars.

Maschinen-und Industriebau Feld GmbH

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Matrix PDM Engineering

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Matrix PDM Engineering delivers complete design-build services to the grain industry for 35 years. From greenfield facilities, retrofits, and expansions our services include Owner's Engineer, multidiscipline engineering, fabrication, construction, marine and dock expertise, silo design and inspection and control systems integration.

MegaDome® Buildings by Harnois

1044 Prinicipale
St-Thomas
Saint-Thomas
Quebec
J0K 3L0
Canada
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E: N.Harnois@harnois.com
W: www.megadomebuildings.com
MegaDome® Buildings, a division of Harnois Industries. Our mission is to be a leader in design and manufacture innovative steel structures.
Our engineered buildings meet the needs of the agricultural, industrial and municipal sectors.

MegaRoller Africa

38 Theuns Mulder Street
Industrial Area
Brits
North West
0250
South Africa
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Job Title: Technical Marketing Manager
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W: www.megarollerafrica.com
Megaroller is entrenched as a world leading manufacturer of long lasting, innovative and environmentally sound conveyor rollers and idlers for the mining and bulk material handling industries.

Merrick Industries

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Lynn Haven
FL
32444
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Contact: Mr Erik Nolte
Job Title: General Manager
T: + 1 850 265 3611
F: + 1 850 265 9768
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W: www.merrick-inc.com
Invented dynamic weighing in 1908 and has been operating continuously ever since. Offer carbon and stainless steel belt scales, weigh belt feeders, loss-in-weight feeders, volumetric feeders, flow meters and microprocessor controls. The company is focused on the dynamic weighing of powders, granules, pellets and liquids while in motion. Products are supplied worldwide and can be used in batching, continuous weighing and continuous feedrate control applications.

Metso Brasil Industria e Comercio Ltda.

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Metso Outotec USA, Inc.

Bulk Materials Handling
2715 Pleasant Valley Road
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PA
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USA
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Job Title: Senior Sales Manager, USA
T: + 1 412 999 8552
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E: Tom.Lippencott@mogroup.com
W: www.mogroup.com
Products: Railcar and Barge Pullers, Railcar Dumpers and Positioners, Grab & Equilibrium Unloaders, En-Masse Conveyors, Ship Trimmers, Throwers, Railcar Indexers, Barge Haul Systems, Breasting Winches, Apron Feeders Brand Names: Stephens-Adamson, McNally Wellman, PECO, Nolan HCM, MKT, Mead Morrison, McDowell Wellman, NICO

Meyland NV

Vaartkant 3
Adegem
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Mideco Jia Pty Ltd

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Mideco is an Australian owned, designer and manufacturer of dust and air pollution control systems with headquarters in Melbourne, Victoria. Mideco have developed industry leading equipment for dust control including innovations - Burnley® Baffles and Bat Booth®.

Midwest International Standard Products, Inc.

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Contact: Mr Walter Pair
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T: + 1 231 547 4000
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Midwest International's specialized Vacupac™ Bustle Filters, velocity reduction modules, and vented low velocity trimming spoons make loading of grains into barges and ocean going vessels simple and dust free. Available in multiple configurations and sized to handle up to 100,000 bushels per hour, these devices can be adapted to an existing telescoping spout, or supplied as a complete telescoping solution.c

Mitsubishi Chemical Advanced Materials Inc.

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With more than 40 years experience, MCAM's SystemTIVAR® Engineering designs, fabricates and installs lining systems worldwide for use in hoppers, chutes, bins, dump bodies, railcars, ships, etc., featuring industry-leading low coefficient of friction, abrasion-resistant TIVAR® 88 family of products.

Mole Master Services Corporation™

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Silo, bin, bunker, transport and process vessel cleanout & unclogging services and equipment. Pipe cleaning, Vacuum services, Dry ice Blasting, Media Blasting, Silo structural inspection services and facility cleaning.

Monolithic Constructors, Inc.

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Motherwell Automation

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W: www.motherwell.net.au
Motherwell Automation is a dynamic Perth-based company that has built an excellent reputation for providing, in partnership with world leading manufacturers,

leading edge Industrial Automation, Control and Information Technology products and solutions to the Australian market for over 30 years.

MRS Greifer GmbH

Talweg 15-17
Helmstadt-Bargen
D-74921
Germany
Contact: Mr Peter Koerting
T: + 49 7263 9129 20
F: + 49 7263 9129 12
E: export@mrs-greifer.de
W: www.mrs-greifer.de
Approaching 50 years experience in producing all types of grabs. The company's product range extends from mechanical grabs, also radio-controlled, to hydraulic and electro-hydraulic grabs with motor drive. Besides excellent after-sales service, MRS provide spare parts from stock.

Mühlen Sohn GmbH & Co. KG

Lindenstrasse 16/1
Blaustein
D-89134
Germany
Contact: Mr Thomas Klein
Job Title: Head of Sales Fluitex
T: + 49 7304 801 143
F: + 49 151 15192754
E: info@muehlen-sohn.de
W: www.muehlen-sohn.de
Mühlen Sohn GmbH & Co. KG is one of the leading suppliers of fluidising fabrics and looks back to a success story since 1880 which means over 140 years of weaving experience.
Fluitex® air slide fabrics for pneumatic loading and unloading systems, airslides for pneumatic conveying, storage and homogenising silos, discharging cones, fly ash handling systems.

Muller Beltex BV

Tochtweg 1
Pijnacker
2642 AP
The Netherlands
Contact: Mr Lars Muller
T: + 31 15369 5444
F: + 31 15369 7864
E: info@mullerbeltex.com
W: www.mullerbeltex.com
Other Equipment: Elevators. Specialists in elevator components, buckets belts ATEX conform safety monitoring equipment. Design engineering and problem solving. Elevator belt bolt hole punching up to 2000 mm width
Specialist in abrasion resistant polyurethane liners.

MWI Silo Systems Inc.

5001 Rd. 104 N. Easthope Perth East
Wellesley
Ontario
N0B 2T0
Canada
Contact: Ms Jacqueline Gingerich
T: + 1 519 656 2341
E: jacqueline@mwisilo.com
W: mwisilo.com

Nantong Rainbow Heavy Machineries Co.,Ltd.

NO.88,Rongsheng Road(chenqiao),
Nantong Marine Equipment Industrial Zone
Nantong
Jiangsu
China
Contact: Mr Julien Zhu
Job Title: Brand Promotion
T: + 86 513 80108718
E: genma@rainbowco.com.cn
W: www.genmasolution.com
Nantong Rainbow Heavy Machineries Co., Ltd. is the heavy machineries supplier for global market, focusing on highquality lifting/ mining/ports/bulk material handling equipment's etc. supply.

Natural Grabs

Toros Caddesi Fethi bey sokak no 11
Natural Business Center
Maltepe
Istanbul
Turkey
Contact: Cpt Hayrettin Yakut
T: + 90 216 380 60 03
F: + 90 216 380 65 59
E: sales@naturalgrab.com
W: www.naturalgrab.com/

NAVCO (National Air Vibrator Co)

PO Box 40563
Houston
TX
77240-0563
USA
Contact: Mr Trey Gros
Job Title: Technical Sales Manager
T: + 1 832 467 3636
F: + 1 832 467 3800
E: trey@navco.us
W: www.navco.us
Manufacturer of high quality, industrial grade air vibrators and vibratory equipment. NAVCO is the leading expert in material flow solution using industrial vibrators and vibratory equipment.

Nectar Group Ltd

No 1 Ashton Gate
Ashton Road
Harold Hill
Romford
Essex
RM3 8UF
UK
Contact: Mr Guy Wilkes
Job Title: Commercial & Business Development Director
T: + 44 1708 386 555
F: + 44 1708 386 665
E: commercialteam@nectar.co.uk
W: www.nectargroup.co.uk
Nectar is involved in handling bulk commodities such as cereals and fertilizers in ports and/or inland locations. Involvement ranges from positioning of mobile bagging machines for spot cargoes to long term projects including terminal management and storage and logistics solutions.

NEDCRANES BV

Duikerweg 30-32
Portnumber: 1187-1189
Waalwijk
5145 NV
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Contact: Mr Arno Koolen
Job Title: Managing Director
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Negrini Srl

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Job Title: Managing Director
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F: + 39 059 920378
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W: www.negrini.org
Negrini srl considers the attainment of client satisfaction our primary objective, through a continuous and effective process of study and collaboration with both clients and suppliers. Professionalism and versatility towards different customer demands: this is the business philosophy of Negrini srl.

Nemag BV

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4301 RC
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Contact: Mr Rudy Bovée
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T: + 31 6 51 426 882
E: rudy.bovee@nemag.com
W: www.nemag.com
NEMAG specializes in sales and manufacture of tailormade mechanical grabs. Also rope end fittings like the NEMAG Rope Pear Socket and NEMAG Quick Release Link. NEMAG is one of the leading grab manufacturers world wide.

Neuero Industrietechnik GmbH

Neuerostrasse 1
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Contact: Eng. Andreas Haeuser
Job Title: Sales & Project Manager
T: + 49 5422 9503 26
F: + 49 5422 9503 50
E: a.haeuser@neuero.de
W: www.neuero.com
NEUERO offers a wide range of pneumatic ship unloaders up to 1,000tph and ship loaders with Neuero KIKO system and loading capacities up to 3,000tph.
Bulk handling products varies from grain to alumina and biomass.
Special unloading systems with rotating feeder for non-free flowing materials are also available.

NK Tehnologija SIA

120Z Dzelzavas Street
Riga
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Contact: Mr Aleksejs Busils
Job Title: Sales Manager
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E: nkteh@nkteh.com
W: www.nkteh.com
Industrial design, engineering and assembly company specializing in dry bulk material handling projects and lifting equipment since 2001. In addition to shiploaders, weigh hoppers and container tilting spreaders we supply solutions for integrated bulk handling systems and equipment allocation.

NMH s.r.o

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O. B. Wiik AS

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Skedsmokorset
N-2021
Norway
Contact: Ms Henrik Kalager
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T: + 47 64 83 55 00
E: obw@obwiik.no
W: www.obwiik.com
WiikHall Storage Tents are used for storage of food and non-food items within the construction segment, industry in general, Storage and logistics, Oil and gas. WiikHalls are installed in more than 100 countries. Size: in widths from 4 to 100 meter. Unlimited length in 5 meter sections.

OPTION srl

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UD
33033
Italy
Contact: Mr Roberto Baradello
T: + 39 0432909727
F: + 39 0432909728
E: info@optionsrl.eu
W: www.baggermachine.eu
We are active in the bagging sector of small bags and big-bags, vibrating and rotating screens as well as conveyor belts and hoppers.

Orthos Projects Ltd.

Fernie Road
Market Harborough
Leicestershire
LE16 7PH
UK
Contact: Mr Nick Hall
Job Title: Director
T: + 44 1858 462806
F: + 44 1858 464403
E: Nick.Hall@orthosprojects.com
W: www.orthosprojects.com
Orthos Projects, specialists in bulk materials handling, have taken over the operation of E&F services. Their Dockside Mobile Loaders have gained a technological lead in eliminating spillage and controlling dusty products from Ports operations. Their range of Filters eliminate pollution.

ORTS GmbH Maschinenfabrik

Schwartauer Strasse 99
Serez
D-23611
Germany
Contact: Herr Sigvard Orts
T: + 49 451 3988515
F: + 49 451 392374
E: info@orts-gmbh.de
W: www.orts-grabs.de
Grabs "Made in Germany". Whole range of grabs for all kind of bulk materials, dredging and scrap handling: Radio controlled independent working motor grabs, electro- hydraulic grabs, mechanical rope grabs, load/lifting beams. For nearly all kinds of dry bulk materials and scrap handling.

PAGE MACRAE ENGINEERING

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Bay of Plenty
3116
New Zealand
Job Title: Business Development Manager
T: + 64 7 575 5079
E: enquiries@page-macrae.co.nz
W: www.page-macrae.com
With over 65 years of engineering experience behind it, Page Macrae Engineering is regarded as Australasia's leading manufacturer of ship cargo handling equipment. They have commanded a reputation for delivering high quality equipment that is robust, low maintenance and highly productive, regardless of conditions and loads. Page Macrae is leading the way with innovative solutions to industry challenges.

Pakiet

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Panford LTD

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Paul Hedfeld GmbH

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The company has produced complete installations for over 60 years for the transport of bulk goods such as bucket elevators, screw- and chain conveyors. The delivery of spare parts used in these conveyors was and is the basis of the current business.

PEBCO®

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T: + 1 270 442 1996
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W: www.pebco.com
PEBCO® is recognized world-wide as the leading manufacturer of powder and dry bulk solids handling equipment. Products range from truck, train, and ship loading equipment to gates, valves, diverters, mass flow feeders, Cascade® and dustless loading chutes.

Peinemann Cranes

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F: + 31 10 295 50 49
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W: www.peinemann.nl

NEGRINI
since 1967 S.R.L.

Negrini company, established in 1967, specializes in engineering and manufacturing a comprehensive range of grabs and buckets for rope machines and crawler mounted cranes; they are employed to do many jobs. Negrini buckets and grabs are very well-known for quality as well as for the very accurate and skilful engineering work; in fact Negrini supports their clients by analyzing the job to be done and, if needed, by adjusting the standard design of grabs and buckets to enhance their performance once in operation.

VIA TORRICELLI 4 - CASTELFRANCO E. (MO) - ITALY

PEINER SMAG Lifting Technologies GmbH

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Job Title: Sales Director
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F: + 49 5341 302 424
E: sales-grabs@peiner-smag.com
W: www.peiner-smag.com
We offer a wide range of models and the optimum bulk handling solutions for every application. Mechanical four-rope grabs, electro-hydraulic motor grabs, radio-controlled single-rope grabs, hydraulic grabs, rotators as well as special load handling devices of all kinds.

Penkert GmbH

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W: www.penkert-gmbh.de

Peterson

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Contact: Mr Arno Maehlmann
T: + 31 10 282 3333
F: + 31 10 282 3282
E: info@peterson.nl
W: www.peterson.nl
Offers a wide range of logistic, inspection, laboratory and certification services in agribulk commodities, mineral bulk commodities, chemicals, biomass and biofuels. Complete supply chain covered from origin to destination.

Pfister Waagen Bilanciai GmbH

Linker Kreuthweg 9
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Job Title: Marketing and Sales Manager
T: + 49 82 07 9 58 99 28
F: + 49 82 07 9 58 99 29
E: marketing@pfisterwaagen.de
W: www.pfisterwaagen.de
Truck weighbridges, railway scales, platform scales, crane scales, weighing data management software, load cells, load cell units, weighing indicators.

PHB Weserhütte, S.A.

Parque Científico y Tecnológico de Gijón
C/Ada Byron, 220
Gijón
Asturias
33203
Spain
Contact: Dr Jose Ramón Prado
Job Title: Technical & Commercial Director
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F: + 34 985 134 222
E: jrprado@pwh.es
W: www.grupotsk.com/
PHB Weserhütte, has over 60 years' experience and its own "know how" in the area of materials handling. The company has vast experience in the development of Turnkey Projects in the sectors of energy, cement, ports, iron and steel, fertilisers, mining and industrial plants.

PHOENIX Conveyor Belt Systems GmbH

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Hamburg
21079
Germany
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F: + 49 40 7667 2413
E: info@phoenix-cbs.com
W: www.phoenix-conveyorbelts.com

Pirnar and Savšek d.o.o.

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PLM Cranes B.V.

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Contact: Mr Pieter Pulleman
Job Title: Managing Director
T: + 31 167 528 510
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E: info@plmcranes.com
W: www.plmcranes.com
We build hydraulic and electric cranes from 50 to 2000 tm with a transhipment capacity up to approx. 2000 ton/hour. We are specialized in shipboard cranes, mobile cranes and harbour cranes for dredging, transhipping, hoisting and pile-driving.

Pneumat Systems Inc

110 Mohr Dr
Mankato
MN
56001
USA
Contact: Mr Sam Cebula
Job Title: Sales and Marketing Manager
T: + 1 507 345 4553
F: + 1 507 345 3639
E: info@pneumat.com
W: pneumat.com/
Pneumat Systems is the leading source for bin and silo cleanout equipemnt. The BinWhip and our patented "Dual Impact" Whiphead will clear the toughest problems. Pneumat also has equipment to empty hopper trucks and railcars quicker and our RailSpreader can load 5-10% product in your railcars.

Polymer Industries - Ultrapoly Division

2404 Center Street
Tacoma
WA
98409-7638
USA
Contact: Mr Bryan Olin
T: + 1 253 272 1217
F: + 1 253 272 1457
E: bryan.olin@polymerindustries.com
W: www.polymerindustries.com
Other equipment: wear and liner components.
UHMWPE and other olefins for impact, wear and flow applications.

Portpack UK Limited

Unit A2/G11 Enterprise Business Park
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Nottinghamshire
NG15 7SZ
UK
Contact: Ms Sharon Henson
Job Title: General Manager
T: + 44 1159 680130
F: + 44 1159 641926
E: portpack@portpack.biz
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Portpack design and manufacture containerised Mobile Bagging Systems for the direct discharge of bulk carriers in the port of arrival, with materials weighed and bagged at dockside, filled sealed bags are loaded directly onto trucks for onward distribution or delivery.

Port-Trade AS

Karetmagervej 9
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DK 7000
Denmark
Contact: Mr Peter J Muller
Job Title: Managing Director
T: + 45 7628 0102
F: + 45 7628 0103
E: peter.muller@port-trade.com
W: www.port-trade.com
Sales and service in all Nordic countries of mobile harbour cranes, grabs, containerspreaders, shiploaders, reclaimers, material handling equipment etc.

Powertex Inc

1 Lincoln Boulevard
Rouses Point
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New York
12979
USA
Contact: Mr Stephen Podd
Job Title: President and CEO
T: + 1 518 297 4000 ext 102
F: + 1 518 297 2634
E: stephenpodd@powertex.com
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Powertex is a market leader in the dry bulk container liner market, with its Sea Bulk container liner system for 20' and 40' ocean containers. Powertex assist clients through Project Management, with Logistics and with Loading and Discharge Equipment - supplying equipment specifically designed for the use of bulk container liners.

PRADO SILOS

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Precia-Molen Nederland BV

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Contact: Ms Héloïse Massé
Job Title: Marketing & Communication
T: + 31 76 524 2510
F: + 31 76 522 8039
E: export@preciamolen.nl
W: www.preciamolen.nl
For almost 150 years Precia Molen is specialized in industrial weighing equipment such as weighbridges, hopperscales, baggingscales, platformscales, truckdumpers etc.

PREMIER TECH

Premier Tech World Headquarters
1, avenue Premier
Rivière-du-Loup (QC)
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Canada
Contact: Mr Chakim Belrhali
Job Title: Marketing Director
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E: belc3@premiertech.com
W: www.ptsystemsautomation.com
Among the largest packaging equipment manufacturers in the world, Premier Tech is committed to creating sustainable solutions that help improve the efficiency of manufacturing facilities in the nutrition, industrial, agricultural and organics market sectors.

Premier Tech Chronos b.v.

Meerheide 40
Eersel
Noord Brabant
5521 DZ
The Netherlands
Contact: Ms Marie-Pier Vallée
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PREMIER TECH CHRONOS (PTC) is recognized worldwide for its innovative and customized packaging, material handling and bulk processing solutions. We are driven by innovation: we developed several state-of-the-art technologies which are still in the lead today. Our prime objective is to meet your packaging needs in the most creative and efficient way.

Premier Tech Chronos Ltd

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Notts
NG6 8WN
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Contact: Mr Peter Orm
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PREMIER TECH CHRONOS (PTC) is recognized worldwide for its innovative and customized packaging, material handling and bulk processing solutions. We are driven by innovation: we developed several state-of-the-art technologies which are still in the lead today. Our prime objective is to meet your packaging needs in the most creative and efficient way.

Procon Engineering Limited

Vestry Estate
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Kent
TN14 5EL
UK
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T: + 44 1732 781 300
F: + 44 1732 781 311
E: joe.naylor@proconeng.com
W: www.proconeng.com
Manufactures belt weighers for process control and trade use in the grain industries. Weighing systems for grain have been produced with capacities as low as 2t/h and as high as 2,000t/h. (In other materials the company has machines as high as 12,000t/h. Many single sites trade over GBP£100 million per annum over their Procon Inflo trade approved belt weighing systems.

ProStack

Terex Materials Processing
20 Keans Hill Road
Campsie Industrial Estate
Campsie, Co. Derry
Ulster
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Northern Ireland
Contact: Mr Declan McErlain
Job Title: Marketing Manager
T: + 44 7864049888
E: declan.mcerlain@terex.com
W: www.terex.com/prostack
ProStack offers a comprehensive portfolio of products to address the needs of the bulk material handling and product stockpiling markets. Key markets and applications include aggregate, mining, recycling, agriculture, ports & terminals and many other bulk material handling industries.

Protan International

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Brakerøya
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Contact: Mr Erik Øyno
Job Title: Direktor Protan International Roofing
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PSB Inspection

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E: info@psbinspection.com
W: psbinspection.com/nl

PT Armada Rock Karunia Transshipment

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Jl. Jend. Sudirman Kav. 48 A
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South Jakarta
12930
Indonesia
Contact: Ms Lisa Witono
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W: www.ark-transshipment.com

PT. Bando Indonesia

Wisma Hayam Wuruk, 6th floor, Suite 600
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10120
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Contact: Mr Wahyono Wardiman
Job Title: Conveyor Belt Division
T: + 62 21 3517590
F: + 62 21 3517591
E: conveyor.div@bandoindonesia.com
W: www.bandoindonesia.com
PT. Bando, established in 1987, is one of the leading automotive and industrial power transmission belt manufacturers in Indonesia. It has one main plant located in Tangerang and its marketing office located in Central Jakarta.

QCA Systems Ltd.

101-6951 72 St
Delta
BC
V4G 0A2
Canada
Contact: Mr Craig Pearce
Job Title: Director, Sales & Marketing
T: + 1 604 908 5835
E: cpearce@qcasystems.com
W: qcasystems.com/
QCA Systems is a specialty electrical engineering and integration firm focused on bulk material handling. We partner with owners and OEMs to mitigate project risk by owning design and deployment of Automation, Electrical Power, and Information Systems including Data Analytics which lower project cost and risk.

QML Services

Unit 4, 178 Main Road
Speers Point
NSW
2284
Australia
Contact: Mr Steve Maxwell
Job Title: GVice President, Mining, APAC Sales
T: + 61 2 4908 2222
F: + 61 2 4958 4255
E: qml@qmlservices.com
W: www.qmlservices.com

Quality Handling Systems Pty Ltd

6 Metters 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
Design and manufacture of sampling equipment and sampling systems. Includes grain inspection conveyor tables, samplers, sample dividers, sample collectors, etc.

Quanergy

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R & S Srl / Roncuzzi - WAM Group

Via del Cmapo Sportiuo 40
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Contact: Ms Sara Zaccarelli
Job Title: Marketing
T: + 39 0535 61 81 11
E: sara.zaccarelli@wamgroup.com
W: www.roncuzzi.com
Design and build wide range of equipment for bulk handling material. Pneumatic ship unloaders, mechanical ship loaders (bulk and bags), grab loading hoppers (dust free) conveyor belt, bucket elevators and chain conveyors. Rotary valves, Screw conveyors, diverters, telescopic bellows.

RAM Lifting Technologies

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Stanley
Skelmersdale
Lancashire
WN8 8EF
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T: + 44 1695 556355
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W: www.ramspreaders.com/
Part of the SMAG Group, we are the world's leading lifting accessories suppliers in the bulk cargo industry; providing bulk handling solutions to ports, ships, crane manufacturers, waste-to-energy plants, recycling/scrap handling industries, as well as providing container lifting spreaders.

PEINER Grabs

Customized Bulk Handling Solutions

Take advantage of our expertise and long-term market experience for your next project. We help you reduce your handling costs.

Our services include

- Wide range of bulk handling equipment
- Industry specific solutions
- Client support – from consulting through to delivery and commissioning
- Worldwide service network
- Global After Sales Support
- 24/7 h service and spare parts hotline

PEINER SMAG
Lifting Technologies

T: +49 5341 302-647
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www.peiner-smag.com

Visit us on LinkedIn and join our community!

SMAG
GROUP COMPANY

Rapat Corporation

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MN
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Rapidpack Corporation

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Jameirah Lakes Towers
Dubai
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Rapidpack designs, engineers and manufactures state of the art bulk cargo handling machinery for ports, trading houses and shipping companies around the world.

RBL REI

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RBL-REI France

140 bis rue de Rennes
Paris
Cedex 14
75006
France
Contact: Mr David Nirefois
Job Title: Project Manager
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F: + 33 2 41 21 19 59
E: d.nirefois@rblrei-france.com
W: www.rblrei-france.com
Designs, builds and supplies continuous bulk handling belt conveyor systems and associated equipment, stackers up to 10,000 tph, reclaimers up to 15,000 tph and shiploaders up to 3,000 tph.

RC Inspection B.V

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REEL Alesa AG

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REEL MÖLLER design, develop and manufacture pneumatic conveying and storage solutions for the mining industry and for an expanding range of adjacent industries.
We have substantial know-how in the field of pneumatic conveying engineering, and our R&D team has attained many protected patents and licences.
This enables us to provide industry-leading performance and reliability within the transportation and storage of fine-grained, mineral bulk materials across industries.

REEL Möller GmbH

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REEL is a global leader in delivering complex and robust lifting and handling equipment to sectors where safety and reliability are major concerns. As an integrated engineering company, we design, manufacture, commission and maintain high-performance solutions adapted to everevolving markets and client requirements.

REMA TIP TOP AG

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World leader in high-quality conveyor maintenance, wear protection and corrosion prevention. Provides products, accessories, technical consultancy and customized problem solving solutions in over 150 countries. Equipment range - rubber linings for wear protection; rubber repair material for conveyor belts; pulley laggings; corrosion protection linings; coating and bonding systems.

REPA Conveyor Equipment B.V.

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Conveyor Belts, Rollers, Pulleys, Frames, Tracking systems.

Representaciones Alfredo Brand y Cia. Ltda.

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RHC Deutschland GmbH

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RHC is a German company with engineering and manufacturing facilities in Europe and Asia.

RIKON A/S

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A/S RIKON manufactures portal slewing and gantry cranes, parts of cranes, grabs, spreaders. A/S RIKON makes handling devices, overhead cranes and other steel structures, provides services for installation, commissioning and handling portal cranes, gantry cranes and various other port equipment.

Robson Handling Technology Ltd

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Design and Manufacture and Install Bulk Handling Systems including Belt, Screw and Chain Conveyors, Elevators, Hoppers, Vibros and Feeders. Steelwork and Supports. Individual units or Turn Key Projects.

Ronin System Solutions

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Ronin System Solutions supplies Bulk Inventory management solutions, analytical grading equipment and services to the Southern African Grain Handling Industry. We provide Cargo Monitoring, Bulk Audits, Portside and Marine services on hard Commodities. We promote our laser Inventory Systems Worldwide.

Royal Haskoning DHV

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With knowledge and experience in the development of modern ports and (un)loading, transport and storage systems, high quality advice and comprehensive project management is provided in the field of grain and other dry bulk handling. Clients' objectives vary from increasing capacity, operational efficiency and handling speed to shifting from road to rail or inland water transport. From pre-investment studies and conceptual design to construction management, practical, sustainable and cost-effective engineering solutions are offered.

Rubb Buildings Ltd

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Team Valley Trading Estate
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Designs, manufactures and installs bulk storage and general storage buildings from 3m span to 100m span. Supply structures for storage of all types of cargo, from coal and grain to salt. The structures are totally prefabricated and relocatable, are maintenance free and the fabric has a life expectancy of up to 25 years depending on usage.

Rud Chains

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RULMECA HOLDING S.P.A.

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The RULMECA Group specializes in the production of rollers, motorized pulleys and other components (such as stations, suspended garland sets and covers) for bulk material handling applications. It is composed of 9 manufacturing units and 8 sales companies and employs 1300 people.

SAMSON Materials Handling Ltd (AUMUND Group)

Gemini House
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Experts in mobile bulk materials handling equipment for surface installation: from truck unloaders, to ship loaders, rail and barge loaders, ecological import hoppers and mobile stockpiling equipment. Also specialised in process optimisation and conversions. After Sales Services include spare parts, PREMAS®/PREMAS® 4.0 and Field Service.

Saxlund International Ltd

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Schenck Process Group provides innovative solutions for the handling and storage of bulk materials using pneumatic and mechanical conveying technologies together with weighing, feeding and air filtration equipment to give a comprehensive package of products and services.

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www.drybulklogistics.in
www.optimumbulkhandling.com
The company engineers and manufactures a complete range of powder, grain & flour handling equipment with turnkey engineering capability. Capacities of equipment range from a few tonnes per hour to about 300mt per hour. (ship unloaders) Key strengths are the ability to engineer, manufacture, install and commission complete systems for ports and plants.

Screw Conveyor Corporation

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Screw Conveyor Corporation engineers and manufactures Screw Conveyors, Screw Feeders, Drag Conveyors, Bucket Elevators and Hydraulic Truck Dumpers.

Seabulk Inc

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Design and build contractors involved with ports, self-unloaders and transshippers for bulk cargo. The firm provides turn-key logistics solutions for the transportation, storage and handling of bulk materials, prototype new developments including material handling systems for ship and open-sea transshipment.

S-E-G Instrument AB

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Sempertrans Conveyor Belt Solutions GmbH

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Sempertrans France Belting Technology

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Servo Berkel Prior B.V. is the biggest manufacturer and supplier of weighing equipment in the Netherlands.

SESCOTRANS For Developed Logistics (SAE)
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SGH Equipment Limited
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SGH Equipment provide process & materials handling engineering solutions, specialising in bulk powder & granular materials Equipment: Storage Silos & Vessels, Conveying, Weighing, Mixing & Blending, FIBC Fill+Discharge, Dust Collection, Filtration, & Suppression, Bagging, Weighing & Packing Machines Services: Design, Manufacturing, Fabrication, Electrical - Control & Instrumentation, Installation (Mechanical & Electrical), Commissioning

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We are a Chinese grab manufacturer, specializing in the shore and ship crane grabs for handling bulk cargo, such as radio remote control grabs and motor-hydraulic grabs.
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Develops high-tech grabs, such as motor hydraulic bulk grab, motor hydraulic orange peel grab, wireless remote control bulk grab and contractible single rope bulk grab. Also manufactures a variety of handing tools, loading and unloading equipment, steel structure frame and other mechanical products.

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Manufacturer & Exporter of Radio Remote Control Grabs, capacity from 6 CBM to 55 CBM, with the unique features of Grabs operation counting, with Weight calculation, online Grab monitoring systems etc.

Shi.E.L.D. Services srl
Shi.E.L.D. Services

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We provide management and consultancy services for the shipping and industry markets and for the on-shore and off-shore logistics of dry bulk materials, including design, construction, maintenance, management and operation of ships and transhippers and cargo handling equipment.

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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.

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Discharge aids for storage silos.

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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.

South Africa Cargo Services
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Manufactures pneumatic and mechanical shiploading and unloading systems, belt conveyor systems and other bulk handling equipment.

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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.

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STATEC BINDER is a worldwide specialist for packaging and palletizing of bulk materials and stands for high performance and high quality. With its flexible and customer-oriented solutions, the company is one of the leading suppliers of bagging and palletizing systems.

Stemm Equipos Industriales, S.L.
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With extensive experience in the bulk handling sector, STEMM manufactures a wide range of grabs for harbour and industrial cranes, especially electrohydraulic clamshell and orange peel grabs and single rope radio-controlled clamshell grabs with state-of-the-art construction and service concepts.
STEMM is your partner for consulting, manufacturing and servicing around the grab world. For further information, kindly check our website www.stemm.com

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Strudes Inc. is an Engineering Consulting Company, specializing in design for heavy industry in general and Cement Industry in particular. For markets and more information: www.strudes.com.

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Supercargo is a GAFTA and FOSFA accredited members Superintendent and applies a Quality Management System for Supervision, Inspection and Surveys in International Trade according NP EN ISO 9001:2015

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TAKRAF GmbH

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Tamtron Group

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Specialize in Industrial IT Solutions. The CommTrac system is a total Facility Management solution for grain and animal feed stores, combining optimized operations and stock control with traceability and HACCP food safety procedures in compliance with legislation and assurance scheme requirements.

TBMA Europe BV

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Systems and components for dry bulk solids handling. Pneumatic and mechanical conveying, rotary valves, diverter valves, sampling equipment, loading chutes, big-bag filling and discharging systems, dosing feeders, silo discharge equipment etc.

TD Micronic

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T.D. Micronic has developed and produced the ONLY 0.1% Certified Legal for Trade Conveyor Scale System. Our Certifications are NTEP (USA) and Measurement Canada approved.
For a Better Weigh, T.D. Micronic.

techNaero aps

Blaabaervej 3
Haslev
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Denmark
Contact: Mr Anders Larsen
Job Title: CEO
T: + 45 56314925
F: + 45 56314555
E: sales@techNaero.dk
W: www.techNaero.dk
Other Expertise: Pneumatic transport systems.
Supply of complete, high quality, low cost, professional dust removal systems according to ATEX. Efficient round filters. Spotfilters to removal from transferpoints. Pit-intake filters for discharge from trucks, railcars and around crane hoppers.
Complete projects for Pneumatic Transport.

Tecpro Australia

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2765
Australia
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W: www.tecpro.com.au/

Tele Radio

International Brand Marketing
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2665 NS
The Netherlands
Contact: Mr Ron van Gent
Job Title: Marketing Manager
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Tele Radio are experts on safe wireless and radio remote control. Our main business areas are within industry, industrial-, lift, mobile-, doors, gates and barriers applications. We also offer remote controls for hydraulic machinery.

Telestack Limited

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BT79 0NZ
Northern Ireland
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Telestack Limited specialize in the design, manufacture, installation and commissioning of MOBILE bulk material handling solutions for the Ports & Inland Terminals, including a range of ship-loaders / Ship Un-loaders, mobile truck un-loaders, link conveyors and hopper feeders.

Terex

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Teta Mühendislik A.Ş.

Çankırı Yolu 7.km Aselsan Karşısı
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Ankara
06950
Turkey
Contact: Mr Talat Isik
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W: www.tetamuh.com.tr
Provides engineering, representation, manufacturing and erection of industrial equipment and plants for storage, handling and weighing, as well as bagging and loading of wide ranging bulk products.

The Grab Specialist b.v.

Draaibrugweg 1
Almere
1332AA
The Netherlands
Contact: Mr Emiel Bleyenberg
Job Title: Director
T: + 31 365 32 88 22
F: + 31 365 49 99 22
E: info@tgs-grabs.nl
W: www.tgs-grabs.nl
The Grab Specialist B.V. design, develop and manufacture grabs for the dry bulk cargo-, dredging- and recycling industry. A service-oriented company, complying with the highest standards of after-sales and spare part supply service to secure productivity in your operations.

Tinamu Labs AG

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TMSA Tecnologia em Movimentação S/A

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Porto Alegre
RS
91160-310
Brazil
Contact: Mr Rodrigo Pereira
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W: www.tmsa.ind.br
Headquartered in Brazil with offices in Latin America, TMSA, is one of the largest suppliers for bulk material handling equipment to Port Terminals, Grain or Oilseed Processing Industries. Portfolio includes high capacity grain cleaners, enclosed belt conveyors, shiploaders among others.

Tobu Jukogyo Co, Ltd.

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Topcon Technology Ltd

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RDS specialises in the design and manufacture of electronic instrumentation including on-board weighing systems for loaders operating in grain and animal feed applications enhancing operational efficiency. The range includes the Weighlog 10, Weighlog 200 and Loadmaster series.

Total Milling Solutions Ltd

Unit 16-17 Sterling Complex
Farthing Road Industrial Estate
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IP1 5AP
UK
Contact: Mr Neil Baker
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E: nbaker@totalmillingsolutions.co.uk
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Total Milling solutions are a installation company specializing in the supply & manufacture of grain processing equipment. From storage to cleaning, sorting & milling. We offer turnkey project solutions to maintenance contracts over the UK & Europe.

Trac SA

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Tramco Europe Limited

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E: sales@tramcoeurope.co.uk
W: www.tramceurope.com
A global leader in bulk material handling, TRAMCO EUROPE LTD produce a complete line of high quality, robust, fully ATEX certified enclosed conveyors including TramrollTM, JetBeltTM, Bulk-FloTM, the Model G, Model RB, and Bucket Elevators.

Transship LTD

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Triodetic

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Designs, manufactures and installs unique enclosed storage systems for all kinds of bulk materials, including the high capacity Space Frame domes and barrel vaults.

TSP Korea

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Tsubakimoto Bulk Systems Corp.

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Produces bulk handling systems equipment, bucket, flow and pan conveyors.

Ucelo do Brasil

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UK Bagging

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T: + 44 7966 142285
E: info@ukbagging.com
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UK Bagging, a totally mobile bagging service that travels throughout the UK and Ireland bagging dry bulk products into 500, 600 & 1000kg bags. We also provide a screening and re-bagging service for lumpy and hard products, bulk or bagged.

Veenstra Machinefabriek B.V.

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Vendig AB

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Vendig develops and markets conveyor components for bulk material handling industry in Sweden and rest of Europe and distributors.
Vendig delivers affordable products, such as cleaning device, transfer point sealing and belt covers, with high quality and with best service.

Verachtert Nederland B.V.

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In 60 years Verachtert has developed into the market leader of Work Tools for all types of diggers and wheel loaders, and offers solutions for the specific wishes of the customer. Verachtert products represent quality and productivity.

Verstegen Grijpers BV

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Manufactures and supplies wide range of grabs for all bulk commodities.

Vibco Inc

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We're the Expert Vibrator Guys! Since 1962, providing 1800+ standard products developed with more than 46 Patents. We create value by manufacturing high-quality and low-maintenance industrial and construction vibrators; offering world-class technical support and personalized service.

Vibrafloor

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VIBRAFLOOR, the modular vibrating floor, is used in various bulk industries, inside silos, ships and railway cars as a versatile reclaimer using powered gravity.

VERSTEGEN
GRAB INTELLIGENCE

Professional companies in more than 110 countries worldwide work with Verstegen grabs, because our grabs offer them the highest reliability and best productivity. Combining our extensive knowledge and experience with the feedback from our loyal customers results in optimized grabs for all bulk materials and unloading situations. We call this 'Grab Intelligence'.

Looking for increased reliability and productivity, lower maintenance costs and an extended lifespan? Let us know, because together we can move mountains.

LET'S MOVE MOUNTAINS

WWW.VERSTEGEN.NET

Vigan

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VIGAN equipment are suited for most of materials in bulk such as cereals, oilseeds, alumina, chemicals and wood pellets. As a solution provider, VIGAN can manage your bulk handling projects from initial design up to full erection under "turnkey" conditions.

Viterra

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VIVO consult s.r.o.

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E: demands@vivoconsult.com
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VIVO consult provides individual deliveries in dust suppression. These products include Dry Fog, DustTamer, Wind Fence and Wind Screen Systems, Soil stabilization and Road Dedusting, Antierosion Control, Odour Control and Remediation, Algae Reduction, Waste Water Treatment, Decontamination of Petroleum Products.

Vortex Global Limited

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Vortex manufactures quality slide gates, diverters, iris valves, and loading spouts for dry bulk solids. Our products can be specifically designed for individual applications in the agriculture, bakery, cement, chemical, coal, food, milling, mineral, pharmaceutical, plastics, and rubber industries.

W&R Barnett

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Walinga Pneumatic Conveying Systems

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WeatherSolve Structures

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T: + 1 604 607 7781
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WeatherSolve Structures dust control professionals that build customized suspended fabric systems for many situations from dust / wind fencing, hopper, truck dumps, conveyor and many more situations requiring dust control. Give a call today and we will come up with a solution for you.

Webster Griffin Ltd

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Since 1975 Webster Griffin has manufactured all types of bag and sack filling systems (including mobile systems), big bag/bulk bag filling systems, bag palletising, and bag conveying systems for all types of solids, grains or powdered products.

Weightron Bilanciai Ltd

Titan Works
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Chesterfield
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Contact: Mr Nick Burley
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Wolf Point Engineers & Contractors

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W: www.wolfpointengineers.com/

Wölfer by WiCHMANN E GmbH

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World Domes - A Domtec International Company

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Serving the bulk storage industry for many years, constructing concrete domes to store a multitude of products. The company designs and constructs high quality concrete domes, delivering projects on time and within budget. They have broad experience with a variety of reclaim systems, both mechanical and pneumatic, pending on clients' needs.

ZAO SMM (CJSC SMM)

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ZPMC - Shanghai Zhenhua Heavy Industries Company Limited

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A world-famous manufacturer of bulk materials handling equipment. Its main products include ship loaders and unloaders, bucket wheel stackers and reclaimers. With proven design, manufacturing and fully-erect shipment capabilities to ensure on time delivery.

Handle bulk with efficiency and reliability

Pneumatic and mechanical ship (un)loaders

Up to 2500 tph for loaders and up to 1200 tph for unloaders.

Low noise & no dust emission

Turnkey solutions for cereals, soy flour, fertilizer, pellets and more...

SCAN ME

VIGAN

GRAIN HANDLING EQUIPMENT SUPPLIED

KEY

S&BL	=	ship and barge loaders
PS&BL	=	pneumatic ship and barge loaders
MS&BU	=	mechanical ship and barge unloaders
C	=	conveyors
FB	=	FIBCs, bags & bag handling
H	=	hoppers
G	=	grabs
DS	=	dust suppression
S&I	=	sampling & inspection
W&M	=	weighing & measuring
G&S	=	grading & sifting
TL&U	=	truck loaders & unloaders
RL&U	=	railcar loaders & unloaders
SS	=	storage systems
EC	=	engineering consultants
O	=	other

	S&BL	PS&BL	MS&BU	C	FB	H	G	DS	S&I	W&M	G&S	TL&U	RL&U	SS	EC	O
2000 Engineering															✔	✔
4B BRAIME Components Ltd			✔	✔										✔		
AAF International																
ABC Engineering LLC				✔											✔	
Advanced Conveyor Technologies Inc (AC Tek)																
Ag Growth International (AGI)				✔											✔	
AGI																
AGI				✔						✔	✔			✔	✔	✔
AGI - Marshall				✔										✔		
Agrico Sales, Inc.	✔			✔										✔		
Agromatic AG				✔					✔	✔				✔	✔	
Air Envirotech																
Air Spectrum								✔								
Airoflex Equipment																
Alekon Cranes OÜ																
Alex Stewart Agriculture Ltd									✔	✔	✔					✔
Alex Stewart International Corporation Ltd									✔	✔	✔					
Alimak																✔
Altra Industrial Motion																
AMECO Group	✔				✔			✔						✔		✔
Apollo Group				✔	✔									✔	✔	✔
Applied Conveyor Technology, Inc. DBA The ACT Group				✔		✔		✔		✔			✔		✔	✔
Ardelt Kranbau GmbH	✔		✔													
Arlona Engineering			✔	✔	✔	✔	✔								✔	
Arodo BV					✔											✔
Ashton Bulk Ltd				✔		✔							✔			✔
Astec Bulk Handling Solutions																
ATLAS-SSI Co. Inc							✔									
Aurecon	✔															
Ausenco Engineering Canada Inc.	✔		✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Australian Superintendence Company									✔	✔						

	S&BL	PS&BL	MS&BU	C	FB	H	G	DS	S&I	W&M	G&S	TL&U	RL&U	SS	EC	O
B.V. BECO							✔									
Basic Machinery Co. Inc.	✔		✔	✔		✔					✔	✔	✔	✔		✔
Bateman Manufacturing	✔						✔					✔	✔			
Bayards Aluminium Constructions														✔		✔
Bedeschi SpA	✔		✔	✔		✔	✔	✔				✔	✔	✔	✔	✔
BEHN + BATES					✔					✔						
Belt Conveyor Guarding																
Bendezu Port Equipment GmbH	✔		✔	✔		✔	✔	✔							✔	✔
BERGU (Bertram Process Engineering AB)				✔										✔		
Bilfinger Tebodin															✔	
Bleste SIA Port Equipment																
Blue Water Misting								✔								
BLUG Credeblug S.L.							✔									
Bobcat EMEA s.r.o	✔		✔									✔	✔			
BossTek				✔		✔		✔								✔
Breston B.V.																
Bruks Siwertell AB	✔		✔	✔								✔		✔		
Bruks Siwertell AB	✔		✔	✔		✔						✔		✔	✔	✔
BSP ENGINEERING S.R.L				✔		✔								✔	✔	
Buhler AG, Grain Quality and Supply	✔	✔	✔	✔		✔		✔	✔	✔	✔	✔	✔	✔	✔	
Buhler GmbH	✔		✔	✔	✔			✔	✔	✔	✔	✔	✔	✔	✔	✔
Bulk Lift International	✔				✔									✔		
Bulk Storage Inc																
Bureau Veritas									✔							
Buttimer Engineering	✔		✔	✔		✔		✔		✔		✔		✔	✔	
C Spencer Ltd	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
C Transport Maritime S.A.M																✔
Cachapuz – Weighing & Logistics Systems, Lda										✔		✔			✔	✔
Calhoun Super Structure														✔		
Calim Grab Industry	✔					✔	✔					✔	✔			
Camar Mill Systems Ltd														✔	✔	
Cambelt International LLC				✔								✔	✔	✔		✔
Cavotec SA																✔
CDM Systems, Inc			✔	✔												
Centaur Technologies																
Cesur Packaging Corporation					✔											
CHIA Espirales	✔		✔	✔		✔		✔			✔	✔	✔	✔	✔	
Chief Industries UK Ltd.				✔										✔		
Chief Industries, Inc.														✔		
China Huadian Engineering Co., Ltd																
Christianson Systems Inc.		✔		✔								✔	✔			
Cimbria A/S	✔			✔				✔			✔	✔	✔	✔	✔	
Civettini Italo & c sas (CFS Handling)							✔									
Clariant Corporation																✔
Claudius Peters Projects GmbH																
Cleveland Cascades Ltd	✔							✔				✔	✔	✔		
COBRA Europe SAS				✔												
Commodity Inspection Services									✔							
Concetti S.P.A																
Condepols S.A.					✔											
Conductix-Wampfler Americas	✔	✔	✔	✔		✔							✔	✔		✔
Conductix-Wampfler GmbH	✔	✔	✔	✔								✔				✔
Conservatek Industries, Inc.														✔		
Continental Construction (Memphis)	✔	✔	✔	✔		✔		✔				✔	✔	✔		
Continental Conveying Solutions	✔			✔					✔						✔	✔
Con-Vey Keystone Inc																
Conveyor Dynamics, Inc.				✔									✔		✔	
Cooper Marine & Timberlands																

	S&BL	PS&BL	MS&BU	C	FB	H	G	DS	S&I	W&M	G&S	TL&U	RL&U	SS	EC	O
Co-Operative Bulk Handling Ltd																
Cotecna Inspection Denmark A/S									✔	✔						
Cotecna Inspection SA									✔							
CPS Projects (Pty) Ltd	✔						✔					✔				
CRS - Container Rotation Systems Pty Ltd														✔		✔
CSSC Huahai Marine Equipment Co., Ltd																✔
CST Covers														✔		
CST Storage						✔								✔		
DCL, Incorporated	✔			✔	✔			✔				✔	✔	✔		
De Regt Conveyor Systems				✔												
DeMarco Industrial Vacuum Corporation	✔	✔			✔							✔	✔			
DMN-WESTINGHOUSE					✔					✔						
Dome Technology, LLC														✔	✔	
Donaldson Filtration Deutschland GmbH								✔								
Dos Santos International, LLC	✔		✔	✔											✔	✔
DPC Hydraulic																
Dry-Bag A/S																✔
DSH Systems Ltd.	✔					✔		✔				✔	✔	✔		
DURO FELGUERA, S.A.	✔		✔	✔		✔						✔	✔	✔	✔	
Dust Solutions Inc								✔								
E-Crane Worldwide																
E-Crane Worldwide	✔		✔			✔	✔								✔	
EDGE INNOVATE. (NI) LTD	✔			✔								✔	✔			
Elgin Engineering and Construction															✔	
EMS-Tech Inc	✔		✔	✔		✔		✔					✔	✔	✔	✔
Endress + Hauser Inc										✔						
Engicon nv (Geldof)	✔			✔		✔						✔	✔	✔		
Engineering System Solutions, ES2																
EQUIPO LLC							✔									
ERSHIP, S.A.																
ES2, Engineering System Solutions	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	
Esch Group bv																✔
ESI Eurosilo BV														✔	✔	
Euromec S.r.l.							✔									
Euro-Tech Corporation							✔									
Euro-Tramco BV			✔	✔												
Fabtech International Ltd																
Factum																
FAM Minerals & Mining GmbH	✔		✔	✔	✔	✔			✔			✔	✔	✔	✔	
Fenner Dunlop Americas																
Ferrmix														✔		
Flexco				✔												
Flexco Europe GmbH				✔												
Flexicon Corporation																
Flexoveyor Conveyor				✔								✔	✔			
Fogco Systems, Inc.								✔								
FWS Group																
Ganz Danubius HUTI Kft	✔		✔				✔									
Geo - Chem Laboratories Pvt. Ltd									✔	✔						
Geometrica Inc								✔						✔		
Geroldinger GmbH & Co KG				✔	✔	✔						✔	✔	✔		
Getriebebau NORD GmbH & Co. KG																
Goodtech AS				✔	✔	✔		✔		✔				✔	✔	✔
Grain Capital	✔			✔				✔		✔		✔	✔	✔		
Grapplers India Pvt Ltd (Essar Industries)																
Guttridge Limited	✔		✔	✔	✔	✔				✔		✔	✔	✔	✔	✔
Guven Grab Machine Inc.							✔									
H.E.M.C. GmbH																
Hanson Silo Company														✔		
Hapman																

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Haskoning India Pvt Ltd																
Heavy Handling	✔															
HEKO Ketten GmbH																
Henan SRON Silo Engineering Co., Ltd.				✔						✔		✔			✔	
Henry International Diplomatic Marine																✔
Heyl & Patterson Equipment Member of The HALL Group	✔		✔				✔	✔					✔		✔	
HIT S.r.l.																
HKD Blue																
Horizon Conveyor Equipment				✔												
HP Handling SRL	✔	✔	✔	✔								✔		✔	✔	
Hycontrol Limited										✔					✔	✔
IBL SOLUTIONS			✔	✔		✔		✔				✔		✔		
ICCE d.o.o.	✔			✔				✔						✔	✔	✔
IHI Transport Machinery Co., Ltd. (IUK)		✔	✔	✔		✔								✔	✔	
IMASA																
Imeca Cranes	✔		✔												✔	✔
IMGS Group																
Império Inteligência																
Intercomp Scales										✔						
Intermodal Solutions Group																
Intermodal Solutions Pty Ltd	✔													✔	✔	
ISKAR Mühendislik Ltd																
Istop Spamat Srl	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		✔	✔	
Italgru S.r.l																✔
J & B Grijpers b.v.							✔									
Jansen & Heuning																
JEM International				✔	✔	✔				✔						
Jenike & Johanson Inc.				✔		✔		✔	✔					✔	✔	
Jiangsu ZDPM Manufacturer Co.,Ltd																
Jimway Enterprise Co., Ltd				✔												
Kalenborn Kalprotect GmbH & Co. KG																
KenzFigee Group B.V.	✔		✔			✔		✔							✔	
Kilic Engineering																
Kinergy Corporation				✔		✔					✔		✔			
King Bag & Manufacturing Co					✔									✔		
KINSHOFER GmbH					✔		✔									
Komatsu Mining Corp. Group				✔												
Konecranes Port Solutions - Konecranes GmbH	✔		✔													
Kröger Greifertechnik GmbH & Co. KG							✔									
Lachenmeier Monsun A/S				✔				✔				✔		✔		
Laidig Systems Inc						✔						✔		✔		✔
Langston Companies Inc.					✔											
Lawrence Industries, Inc.						✔								✔	✔	✔
LD Ports & Logistics																
LDPL Middle East Shipping LLC																
Legacy Building Solutions, Inc.	✔			✔		✔								✔	✔	✔
Librawerk Maschinenfabrik GmbH					✔					✔						
Liebherr-MCCtec Rostock GmbH	✔		✔													
Lion Bulk Handling b.v.																
Listenow GmbH & Co.	✔				✔							✔	✔			
Loibl Förderanlagen GmbH	✔	✔	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Macawber Engineering, Inc				✔												
Mack Manufacturing Inc							✔									
Mantsinen Group Ltd Oy	✔		✔				✔					✔	✔			✔
Maquinas Condor SA	✔	✔	✔	✔			✔	✔								
Marco – A Terex Brand																

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Martin Engineering				✔				✔							✔	
Martin Engineering GmbH	✔			✔				✔	✔						✔	
Maschinen und Mühlenbau Erhard Muhr GmbH	✔											✔	✔			
Maschinen-und Industriebau Feld GmbH																
Matrix PDM Engineering															✔	
MegaDome® Buildings by Harnois														✔		
MegaRoller Africa																
Merrick Industries										✔						
Metso Brasil Industria e Comercio Ltda.																
Metso Outotec USA, Inc.	✔		✔	✔			✔						✔	✔	✔	
Meyland NV																
Mideco Jia Pty Ltd								✔								
Midwest International Standard Products, Inc.	✔							✔				✔	✔			
Mitsubishi Chemical Advanced Materials Inc.	✔					✔						✔	✔	✔		
Mole Master Services Corporation™						✔								✔	✔	
Monolithic Constructors, Inc.														✔		
Motherwell Automation															✔	
MRS Greifer GmbH							✔									
Mühlen Sohn GmbH & Co. KG	✔	✔		✔		✔						✔	✔	✔		
Muller Beltex BV				✔											✔	✔
MWI Silo Systems Inc.																
Nantong Rainbow Heavy Machineries Co.,Ltd.	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	
Natural Grabs																
NAVCO (National Air Vibrator Co)																✔
Nectar Group Ltd		✔	✔	✔	✔	✔	✔			✔		✔	✔	✔	✔	
NEDCRANES BV																✔
Negrini Srl							✔									
Nemag BV			✔				✔	✔								
Neuero Industrietechnik GmbH	✔	✔	✔	✔												
NK Tehnologija SIA	✔		✔	✔		✔	✔	✔				✔	✔	✔	✔	
NMH s.r.o																
O. B. Wiik AS														✔		
OPTION srl				✔	✔	✔				✔	✔					
Orthos Projects Ltd.			✔	✔		✔		✔		✔				✔		
ORTS GmbH Maschinenfabrik							✔									✔
PAGE MACRAE ENGINEERING				✔		✔	✔	✔				✔				
Pakiet																✔
Panford LTD																
Paul Hedfeld GmbH				✔												
PEBCO®	✔							✔		✔		✔	✔			
Peinemann Cranes																
PEINER SMAG Lifting Technologies GmbH							✔									
Penkert GmbH	✔			✔				✔	✔	✔		✔	✔		✔	
Peterson									✔							
Pfister Waagen Bilanciai GmbH										✔						
PHB Weserhütte, S.A.	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
PHOENIX Conveyor Belt Systems GmbH																
Pirnar and Savšek d.o.o.																
PLM Cranes B.V.							✔									
Pneumat Systems Inc												✔	✔	✔		
Polymer Industries - Ultrapoly Division																✔
Portpack UK Limited					✔											
Port-Trade AS	✔		✔			✔	✔						✔	✔		
Powertex Inc					✔											✔
PRADO SILOS																

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Precia-Molen Nederland BV					✔	✔				✔						
PREMIER TECH				✔	✔	✔		✔	✔	✔						
Premier Tech Chronos b.v.				✔	✔	✔				✔						
Premier Tech Chronos Ltd				✔	✔	✔				✔						
Procon Engineering Limited										✔						
ProStack	✔			✔		✔						✔	✔			
Protan International																
PSB Inspection																
PT Armada Rock Karunia Transshipment																
PT. Bando Indonesia				✔												
QCA Systems Ltd.	✔			✔		✔	✔	✔	✔	✔			✔	✔	✔	✔
QML Services																✔
Quality Handling Systems Pty Ltd									✔							
Quanergy																✔
R & S Srl / Roncuzzi - WAM Group	✔	✔		✔	✔	✔		✔		✔		✔	✔	✔	✔	✔
RAM Lifting Technologies	✔							✔						✔		
Rapat Corporation																
Rapidpack Corporation	✔	✔	✔	✔	✔	✔	✔	✔		✔	✔	✔	✔	✔	✔	
RBL REI																
RBL-REI France	✔		✔	✔	✔	✔						✔	✔	✔		
RC Inspection B.V																
REEL Alesa AG	✔	✔		✔								✔	✔	✔		
REEL Möller GmbH	✔	✔		✔								✔	✔	✔	✔	
REMA TIP TOP AG				✔					✔					✔	✔	✔
REPA Conveyor Equipment B.V.				✔												
Representaciones Alfredo Brand y Cia. Ltda.																
RHC Deutschland GmbH	✔	✔	✔	✔		✔		✔	✔				✔	✔	✔	
RIKON A/S							✔									✔
Robson Handling Technology Ltd				✔		✔				✔		✔		✔	✔	
Ronin System Solutions									✔	✔	✔			✔		✔
Royal Haskoning DHV															✔	
Rubb Buildings Ltd														✔		
Rud Chains																
RULMECA HOLDING S.P.A.				✔						✔						
SAMSON Materials Handling Ltd (AUMUND Group)	✔		✔			✔		✔				✔	✔			
Saxlund International Ltd																
Schenck Process UK Limited				✔						✔	✔					
Scorpio Engineering BMH Pvt. Ltd	✔	✔		✔	✔	✔		✔		✔		✔	✔	✔	✔	
Screw Conveyor Corporation				✔								✔				
Seabulk Inc	✔			✔											✔	
S-E-G Instrument AB										✔						
Sempertrans Conveyor Belt Solutions GmbH				✔												
Sempertrans France Belting Technology																
SENNEBOGEN Maschinenfabrik GmbH	✔		✔		✔		✔					✔	✔			
Servo Berkel Prior B.V.										✔						
SESCOTRANS For Developed Logistics (SAE)	✔	✔	✔	✔	✔	✔	✔			✔	✔	✔		✔	✔	✔
SEW-EURODRIVE GmbH & Co KG																✔
SGH Equipment Limited				✔	✔	✔		✔		✔	✔	✔		✔	✔	
SGS (Nederland) BV									✔							
SGS Canada Inc																
SGS Minerals Services									✔							
Shanghai Global Machinery Co Ltd							✔									
Shanghai Guanbo Machinery Equipment Co.,Ltd																


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Shanghai Janus Grab Co., Ltd.						✔	✔									
Shanghai Qifan Co., Ltd.	✔						✔									
Shanthi International		✔	✔	✔		✔	✔							✔		
Shi.E.L.D. Services srl	✔			✔		✔	✔	✔	✔						✔	
Sly LLC								✔								
SMB International GmbH	✔		✔	✔	✔					✔		✔		✔	✔	✔
Smiley Monroe Ltd				✔												
Sobemai Crane Services bv	✔					✔	✔					✔	✔	✔		
Société ferroviaire et portuaire de Pointe-Noire																
Solimar Pneumatics														✔		
Solo Engineering																
Sotecma	✔	✔	✔	✔		✔		✔		✔		✔	✔	✔	✔	
South Africa Cargo Services	✔	✔		✔												
Spraystream								✔								
STAG AG				✔												
STATEC BINDER GmbH				✔	✔					✔					✔	✔
Stemm Equipos Industriales, S.L.							✔									
Strudes Inc	✔	✔	✔	✔	✔	✔		✔	✔	✔		✔	✔	✔	✔	
Supercargo, Lda									✔	✔				✔		
Superior Industries																
Superior Industries, Inc.	✔			✔		✔						✔	✔	✔	✔	✔
TAKRAF GmbH	✔		✔	✔								✔	✔		✔	✔
Tamtron Group																
Tank Connection														✔		
TBA Group										✔				✔	✔	
TBMA Europe BV	✔		✔		✔	✔			✔	✔		✔	✔	✔	✔	
TD Micronic				✔		✔				✔						
techNaero aps								✔								
Tecpro Australia								✔								
Tele Radio		✔	✔	✔							✔	✔	✔	✔		✔
Telestack Limited	✔		✔	✔		✔		✔				✔	✔			
Terex																
Teta Mühendislik A.Ş.		✔	✔	✔	✔					✔				✔		
The Grab Specialist b.v.							✔									
Tinamu Labs AG																
TMSA Tecnologia em Movimentação S/A	✔	✔	✔	✔		✔	✔	✔	✔			✔	✔	✔		✔
Tobu Jukogyo Co, Ltd.						✔	✔									
Topcon Technology Ltd										✔						
Total Milling Solutions Ltd				✔	✔	✔		✔	✔	✔	✔			✔	✔	
Trac SA																
Tramco Europe Limited	✔		✔	✔									✔			
Transship LTD																
Triodetic								✔						✔		
TSP Korea																
Tsubakimoto Bulk Systems Corp.				✔												
Ucelo do Brasil																
UK Bagging					✔					✔						✔
Veenstra Machinefabriek B.V.	✔							✔								
Vendig AB																✔
Verachtert Nederland B.V.							✔									
Verstegen Grijpers BV							✔									
Vibco Inc				✔		✔					✔	✔	✔			
Vibrafloor																
Vigan	✔	✔	✔	✔								✔	✔	✔	✔	
Viterra														✔		
VIVO consult s.r.o.								✔								
Vortex Global Limited	✔							✔				✔	✔			✔
W&R Barnett																
Walinga Pneumatic Conveying Systems			✔		✔											
WeatherSolve Structures	✔	✔	✔	✔		✔		✔				✔	✔	✔		
Webster Griffin Ltd				✔	✔											
Weightron Bilanciai Ltd																
Wolf Point Engineers & Contractors																
Wölfer by WiCHMANN E GmbH				✔								✔	✔	✔		✔

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World Domes - A Domtec International Company														✔		
ZAO SMM (CJSC SMM)																
ZPMC - Shanghai Zhenhua Heavy Industries Company Limited	✔		✔												✔	

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